

# Climate Resiliency Report

2024

energir

imagine  
energy  
differently

## Caution regarding forward-looking statements

The forward-looking statements contained in this Climate Resiliency Report for Énergir (as defined in the Glossary) (the “Report”) include information regarding the impact of climate change on a global scale, including in the communities served by Énergir and its subsidiaries, GMP and VGS (as defined in the Glossary) (collectively, the “Corporations”), the Corporations’ decarbonization strategy and their activities aiming to reduce the risks and impacts of climate change and to adapt to such changes and seize opportunities as well as other information that is not historical fact. These forward-looking statements reflect the intentions, projects, expectations, and opinions of the Corporations’ management team (collectively, “management”) in that regard, and are designed to help stakeholders better understand the approach management intends to take in managing climate change risks and opportunities. Such information may not be pertinent for other purposes. Generally, forward-looking statements are often identified by words and expressions such as “anticipates”, “believes”, “estimates”, “expects”, “seeks”, “plans”, “projects”, “forecasts” and other variants and similar expressions suggesting the possibility of future outcomes or perspectives, as well as the negative or conjugated forms.

This Report contains forward-looking information or statements relating in particular to the following:

- the future of energy on a global scale, particularly factors and trends that could or should shape that future;
  - the transition towards a low GHG (as defined in the Glossary) emissions economy and the role that certain energy sources should play in this transition;
  - quantitative scenarios issued by organizations forecasting several possible global GHG emission pathways by 2030-2050 and which the Corporations have relied on. Following different time horizons, these scenarios take into account the impact that the climate risks and opportunities identified in this Report have on the resilience of the Corporations’ business model. It should be noted that no climate scenario is perfect and, in this context, the Corporations have chosen those that best meet the TCFD criteria. Readers should note that the scenarios are not a statement by the Corporations on plausible assumptions, but aim instead to cover the realm of possibilities;
  - the scenarios of Énergir, GMP and VGS (collectively, “the scenarios”) as they have been scaled for Quebec and Vermont since the two jurisdictions have their own policies and regulations and they have each made political commitments to fight climate change;
  - the trends shaping these scenarios and their expected or potential impact on energy markets in general and the Corporations in particular, as well as the physical and transition risks associated with each of these scenarios for the Corporations’ business model;
- the analysis of the scenarios on the Corporations’ strategies with respect to the resilience of their respective business models;
  - the effectiveness of the Corporations’ risk management strategies, particularly in mitigating climate change risks;
  - Strategic Vision of Decarbonization for 2030-2050;
  - Énergir’s climate metrics and targets directly related to GHG emissions from its operations (Scopes 1 and 2), as well as some of those from its entire value chain, both upstream and downstream from its customers’ sites (Scope 3);
  - GMP’s climate plan Path to 100% Renewable;
  - GMP’s Zero Outages Initiative;
  - VGS’s climate plan to aligns with Vermont’s greenhouse gas emission reduction targets;
  - GMP and VGS’s climate metrics and targets that are linked to their respective customers’ GHG emissions; and
  - expected future financial and operating performance, financial strength and flexibility, opportunities for growth and expansion, strategic planning, and the execution of the Corporations’ strategic plans.

Such forward-looking statements reflect the current opinions of management and are based on information currently available to management.

Forward-looking statements involve known and unknown risks and uncertainties, as well as other factors outside the control of management, including but without limiting the generality of the foregoing, terms of decisions rendered by regulatory agencies; uncertainty that approvals will be obtained by the Corporations from regulatory agencies and interested parties to carry out all of their activities and the socio-economic risks associated with such activities; the competitiveness of natural gas in relation to other energy sources in a context of worldwide fluctuations in petroleum product prices; climate change and its impact on the Corporations’ business activities, whether due to acute or chronic physical events, political, regulatory, technological, market, or legal changes; uncertainty related to the implementation of Canada’s 2030 Emissions Reduction Plan, Quebec’s 2030 PGE, the Montréal Climate Plan and Vermont’s RES, as well as the government’s and municipalities’ implementation of laws, regulations, plans and objectives for adapting to climate change as well as the positioning of Énergir, L.P. and its subsidiaries in that regard, including other measures, plans, laws or regulations with respect to the environment and the climate that are constantly evolving; the reliability or costs of the natural gas and electricity supply; the integrity of the natural gas and electricity transportation and distribution systems; the evolution and profitability of development projects; the ability to complete attractive acquisitions and the

related financing and integration aspects; the ability to complete new development projects; the ability to secure future financing; general economic conditions; the impact of an epidemic or pandemic outbreak or other public health crises; exchange rate and interest rate fluctuations; a potential U.S. or Canadian tax reform; the impact of a war or other geopolitical conflicts and other factors described in section G) Risk Factors Relating to Énergir Inc. and Énergir, L.P. in Énergir Inc.’s annual MD&A for the fiscal year ended September 30, 2024 and in subsequent quarterly Énergir Inc. MD&As that might address changes to these risks. Variations in these factors could cause the information provided in this Report to differ materially from actual results. Such variations could, for example, include unforeseen changes in the legislative and regulatory framework, failure to obtain certain authorizations, significant fluctuations in natural gas prices, supply difficulties or any other significant change related to one or more of the aforesaid factors.

Although the forward-looking statements contained in this Report are based on what management believes to be reasonable assumptions, management cannot assure investors and other stakeholders that actual results will be consistent with these forward-looking statements. These forward-looking statements are made as at the date of this Report, and management assumes no obligation to update or revise them to reflect new events or circumstances, except as required under applicable securities laws. These statements do not reflect the potential impact of any unusual item or any business combination or other transaction that may be announced or that may occur after the date hereof. All forward-looking statements in this Report are qualified by these cautionary statements. Readers are cautioned to not place undue reliance on these forward-looking statements.



In this Climate Resiliency Report:

**2030 PGE** means the 2030 Plan for a Green Economy of the Quebec government.

**°C** means degrees Celsius.

**Announced Pledges Scenario of the IEA (IEA APS)** means the Announced Pledges Scenario that aims for a reduction of less than 2°C compared to pre-industrial levels published by the IEA. This scenario is described at greater length in Appendix 3 to this Report.

**Carbon Capture** means the process of capturing the CO<sub>2</sub> molecule found in gas emissions, thus limiting the accumulation, or reducing the concentration of, additional CO<sub>2</sub> in the atmosphere. In this Report, the term is used in the context of capturing from the combustion or process emissions so as to limit the accumulation of CO<sub>2</sub> in the atmosphere.

**Carbon Neutrality** means a net GHG emissions balance of zero, in other words the anthropogenic CO<sub>2</sub> emissions are balanced by the anthropogenic sequestration of CO<sub>2</sub>. In the context of a Carbon Neutrality approach, this presupposes first reducing one's GHG emissions as much as possible, and then increasing the number of carbon sinks allowing for sequestration (notably by using bioenergy with carbon capture, direct air carbon capture and storage or reforestation).

**Carbon Removal** means an activity the purpose of which is to remove CO<sub>2</sub> from the atmosphere as a result of deliberate human activities faster than what is usually observed in nature. Carbon Removal therefore implies creating carbon sinks allowing for the capture and storage of the CO<sub>2</sub> present in the atmosphere.

**CATS** means the cap-and-trade system for greenhouse gas emission allowances established by the *Regulation respecting a cap and trade system for greenhouse gas emission allowances* (Quebec). This market is linked to the California market.

**CCUS** means carbon capture, utilization and storage.

**CAT (Climate Action Tracker)** means the independent organization that tracks and evaluates the climate action of countries then measures that action's compatibility against the Paris Agreement objectives. Its goal is to provide transparent and comparative analyses of governments' climate commitments and their potential impact on global warming. The CAT publishes several scenarios that help estimate how temperatures will evolve based on commitments and climate action.

**CSSB** means the Canadian Sustainability Standards Board.

**CO<sub>2</sub>** means carbon dioxide.

**CO<sub>2</sub> eq** means carbon dioxide equivalent.

**Corporations** means Énergir, GMP and VGS, collectively.

**Decarbonization**, in this Report, means the implementation of measures and techniques to limit CO<sub>2</sub> emissions and other GHGs to reduce their climate impact.

**Delayed Action Scenario** means the 2°C or less by 2100 scenario compared to pre-industrial levels by delayed action published by the Bank of Canada. This scenario is described at greater length in Appendix 3 to this Report.

**Énergir** means Énergir, L.P.

**Énergir Board** means the board of directors of Énergir Inc., in its capacity as general partner of Énergir, L.P.

**Énergir's Management** means the management of Énergir Inc., in its capacity as general partner of Énergir, L.P.

**ESG** means environmental, social and governance factors.

**EUHC** means Énergir Urban Heat and Cooling, L.P.

**GEEP** means Énergir's Global Energy Efficiency Plan.

**GHG** means greenhouse gases.

**GMP** means Green Mountain Power Corporation, an indirect subsidiary of Énergir.

**GMP Board** means the board of directors of GMP.

**GRS** means gas from renewable sources.

**GWh** means gigawatt hours.

**IEA** means the International Energy Agency, an international organization with 32 member states that was created in 1974 within (but independent from) the Organization for Economic Cooperation and Development (OCDE).

**IPCC** means the Intergovernmental Panel on Climate Change, established in 1988 by the World Meteorological Organization and the United Nations Environment Program, to provide periodic scientific assessments on climate change, its implications and potential future risks.

**IRENA** means the International Renewable Energy Agency (known in French as the Agence internationale pour les énergies renouvelables). Founded in 2009, this intergovernmental organization's mission is to promote renewable energies worldwide.

**ISSB** means the International Sustainability Standards Board.

**Low-Carbon Hydrogen** means hydrogen the production process of which results in low-CO<sub>2</sub> emissions or, in cases of more significant emissions, is accompanied by Carbon Capture that in large part compensates for such emissions.

**Mm<sup>3</sup>** means millions of cubic metres.

**NATEM** means the North American TIMES Energy Model, an optimization energy system model used as a decision-making tool.

**NDC** means Nationally Determined Contributions, in other words the national climate plans that countries are required to submit as part of the Paris Agreement. The NDCs must be updated and enhanced every five years.

**NDC Scenario** means the NDC pursuant to the CAT. This scenario is described at greater length in Appendix 3 to this Report.

**Net Zero Emissions Scenario** means the Net Zero Emissions by 2050 Scenario, as published by the IEA, limiting global warming to 1.5°C by 2100 compared to pre-industrial levels, as described at greater length in Appendix 3 to this Report.

**Price of Carbon** means an economic tool which serves to internalize the costs of damages caused by GHG emissions into the market price of a product in order to direct consumers and society towards lower carbon choices. The simplest expression of carbon pricing is the carbon tax. CATS is a form of carbon pricing.

**RCP Scenarios** means the Representative Concentration Pathways. The scenarios established by the IPCC were designed to be representative of the changing concentrations of GHGs in the XXI<sup>st</sup> century and beyond. These scenarios are often used to study realistic future climate changes and take into consideration future GHG emissions, deforestation, population growth and many other factors. In this Report, we refer to RCP 1.9, 2.6 and 4.5.

- **RCP 1.9** means a scenario with low levels of global GHG emissions that leads to the lowest global warming, namely 1.5°C by 2100 compared to pre-industrial levels.
- **RCP 2.6** means a scenario with low levels of global GHG emissions. In this scenario, global warming is maintained at under 2°C by 2100 compared to pre-industrial levels.
- **RCP 4.5** means a scenario with moderate levels of global GHG emissions. This scenario includes measures to limit or mitigate climate change and is associated with a global warming of 2°C by 2100 compared to pre-industrial levels.
- **RCP 6.0** means a scenario with high levels of GHG emissions and an increase in global temperatures of around 3 to 4°C by 2100 compared to pre-industrial levels.
- **RCP 8.5** means a scenario with high global emissions. This scenario leads to the highest global warming (50% probability of a temperature increase of over 4°C by 2100 compared to pre-industrial levels).

**REC** means a renewable energy certificate certifying that one megawatt hour of electricity was generated from an eligible renewable energy source. RECs can be sold and traded independent of the underlying energy source, and their owner can claim that they purchased renewable energy.

**Régie de l'énergie** means the Régie de l'énergie du Québec.

**RES** means the mandatory Renewable Energy Standard for Vermont utilities established under the Vermont renewable energy law.

**RNG** means renewable natural gas.

**Scope 1** means direct GHG emissions from fixed or mobile Énergir, GMP or VGS facilities, as the case may be.

**Scope 2** means indirect GHG emissions associated with the generation of electricity, heat or vapour imported for the operations of Énergir, GMP or VGS, as the case may be.

**Scope 3** means indirect GHG emissions other than the Scope 2 emissions produced by the operations of Énergir, GMP or VGS, as the case may be. These are linked to all or part of their value chain.

**Societal Cost** refers to the concept of “total cost in resources,” in other words all additional annual expenditures required comparatively to a benchmark configuration to implement a measure, including those required on energy systems, distributors’ and consumers’ expenses as well as public expenses (subsidies, financial assistance, etc.). By definition, this cost does not take the entity bearing these costs into consideration.

**Status Quo Scenario** means the CAT’s Policies & Action Scenario resulting in 2.7°C warming by 2100 compared to pre-industrial levels, as described at greater length in Appendix 3 to this Report.

**Strategic Vision of Decarbonization for 2030-2050** means Énergir’s strategy for how it will adapt, within the 2030 and 2050 horizons, to the evolving energy context and the impacts of climate change.

**TCFD** means Task Force on Climate-Related Financial Disclosures.

**Under2 Coalition** means the coalition of sub-national governments committed to limiting global warming to less than 2°C.

**VGS** means Vermont Gas Systems, Inc., an indirect subsidiary of Énergir.

**VGS Board** means the board of directors of VGS.

**VPUC** means the Vermont Public Utility Commission.



- 7 > **President’s Message**
- 9 > **Executive summary**
- 12 > **About this Report**
- 14 > Natural Gas Distribution in Quebec
- 16 > Distribution of Electricity in Vermont
- 18 > Distribution of Natural Gas in Vermont
- 19 > Governance**
- 20 > Oversight by the Énergir Board
- 22 > Oversight by Énergir’s Management
- 24 > Oversight by the GMP Board and Management of GMP
- 25 > Oversight by the VGS Board and Management of VGS
- 26 > Alignment of compensation with strategic and commercial objectives and the reduction of GHG emissions
- 27 > Strategic workforce planning
- 28 > Strategy**
- 29 > GHG Emission Scenarios
- 30 > Activities in Quebec**
- 31 Quebec-wide scenarios
- 32 Strategic Vision of Decarbonization for 2030-2050
- 35 Detailed presentation of Énergir’s four initiatives
- 52 Decarbonization pathway
- 57 Resiliency of Énergir’s Business Model
- 60 > Activities in Vermont**
- 61 Vermont-Wide Scenarios
- 62 GMP’s Path to 100% Renewable and Zero Outages Initiative
- 64 Resiliency of GMP’s Business Model
- 65 VGS’s Path to Align with State Greenhouse Gas Emission Reduction Requirements
- 66 Resiliency of VGS’s Business Model
- 67 Funding Énergir’s strategy
- 68 > Risk management**
- 69 > Risk and business opportunity management process
- 73 > Climate Change Risks and Opportunities
- 75 > Physical risks**
- 77 Electricity generation, transmission and distribution
- 80 Transmission and distribution of natural gas
- 82 > Metrics and Targets**
- 83 > Énergir’s performance in terms of its metrics and targets
- 85 > GMP’s performance in terms of its metrics and targets
- 87 > VGS’s performance in terms of its metrics and targets
- 89 > Appendix**
- 90 > Appendix 1 – Operational context – GHG emissions
- 91 > Appendix 2 – Additional information on the other affiliates
- 92 > Appendix 3 – Key definitions and hypotheses of the scenarios used
- 94 > Appendix 4 – Scenarios and scaling
- 95 > Appendix 5 – Impact of the climate scenarios on the activities of Énergir, GMP and VGS
- 96 > References

## List of tables and charts



|    |   |                           |  |
|----|---|---------------------------|--|
| 14 | > | <a href="#">Table 1:</a>  | Normalized Natural Gas Distributed in Quebec and Revenues Generated                            |
| 16 | > | <a href="#">Table 2:</a>  | GMP's Electricity Deliveries and Revenues Generated  |
| 18 | > | <a href="#">Table 3:</a>  | Volume of Normalized Natural Gas Distributed in Vermont and Revenues Generated                 |
| 55 | > | <a href="#">Table 4:</a>  | Projection of fossil GHG emissions in sectors served by Énergir in 2050                        |
| 74 | > | <a href="#">Table 5:</a>  | Climate change risks and opportunities For Énergir, VGS and GMP                                |
| 78 | > | <a href="#">Table 6:</a>  | Climate risks related to electricity production, transmission and distribution                 |
| 79 | > | <a href="#">Table 7:</a>  | Chronic risks related to electricity production, transmission and distribution                 |
| 81 | > | <a href="#">Table 8:</a>  | Climate risks related to natural gas transmission and distribution                             |
| 83 | > | <a href="#">Table 9:</a>  | Énergir's GHG emissions  |
| 84 | > | <a href="#">Table 10:</a> | Énergir's metrics and taguets  |
| 85 | > | <a href="#">Table 11:</a> | GMP's GHG emissions  |
| 86 | > | <a href="#">Table 12:</a> | GMP's metrics and tagets   |
| 87 | > | <a href="#">Table 13:</a> | VGS's GHG emissions  |
| 88 | > | <a href="#">Table 14:</a> | VGS's metrics and targets  |
|    |   |                           |  |
| 16 | > | <a href="#">Chart 1:</a>  | GMP's Energy Supply Sources after the retirement of RECs                                       |
| 29 | > | <a href="#">Chart 2:</a>  | Global scenarios   |
| 31 | > | <a href="#">Chart 3:</a>  | Possible annual GHG emission pathways according to the scenarios used as they apply to Quebec  |
| 44 | > | <a href="#">Chart 4:</a>  | RNG contracted volumes and supply plan for 2030-2031   |
| 53 | > | <a href="#">Chart 5:</a>  | Decarbonization of natural gas volumes distributed in the industrial sector in 2050            |
| 54 | > | <a href="#">Chart 6:</a>  | Projection of fossil GHG emissions in the buildings sector in 2030                             |
| 54 | > | <a href="#">Chart 7:</a>  | Projection of fossil GHG emissions in the industrial sector in 2050                            |
| 56 | > | <a href="#">Chart 8:</a>  | Pathway for 2050: Low-Carbon Energy Vision   |
| 59 | > | <a href="#">Chart 9:</a>  | Competitive position for 2023-2050   |
| 61 | > | <a href="#">Chart 10:</a> | Possible annual GHG emission pathways according to the scenarios used as they apply to Vermont |

# President's Message

2024



**Éric Lachance**  
President and Chief Executive Officer

Throughout the world, energy is a topic that sparks interest and debate. Energy extends far beyond the purely technical realm: it has a strong human component. While it obviously impacts our climate, it also influences our daily routine, lifestyle and economic choices. But the energy transition and measures required to guarantee its success demand significant behavioural changes on our part.

Both at the individual and community levels, the energy transition's challenges are becoming increasingly concrete. It was precisely to face these challenges that, for several years now, Énergir's teams have been implementing our Strategic Vision of Decarbonization for 2030-2050 in a pragmatic way where we favor the deployment of an array of energy solutions adapted to needs of our customers, at the best cost and at the appropriate time.

## » Realities without borders

Énergir's activities are concentrated in Quebec and Vermont; two territories that were affected by winter storms, high winds and significant temperature variations this year. While these weather events damaged infrastructure and caused power outages, the underground natural gas system has fortunately been spared, as it is buried and therefore less exposed.

These increasingly severe and frequent climatic events are concrete manifestations of climate change in our communities. While we need to act at the source, it is also imperative that we adapt our infrastructure and energy system to make them reliable and resilient, all while providing energy with an ever-lower carbon footprint.

## » Major advances

I am especially proud of two initiatives launched by our group over the past year.

In October 2023, GMP launched the Zero Outages Initiative, a first in the United States. The goal is to increase the network's resiliency and reduce customer outages as much as possible by 2030 by building underground lines and more weather resistant overhead lines, and multiplying decentralized power storage assets. Creating the means to adapt our energy infrastructure in the face of climate change is also part of the solution.

The second measure, this one in Quebec, was clearly the coming into force of our initiative to no longer accept requests to interconnect with the fossil natural gas system in the buildings sector. Indeed, all new interconnections with Énergir's system must now be for renewable energy (RNG-dual energy or 100% RNG) for buildings in the residential, commercial and institutional sectors. Since this measure was launched in April 2024, it was well received by a vast majority, an indication not only of its importance, but also proof that the bar can be raised by taking bold action.

It also bears noting that in Quebec, Énergir's role, its energy solutions and the relevance of its network in the energy transition have all been recognized.

### » Towards a human-scale transition

On both sides of the border, we are confidently progressing towards the goals we set for 2030 and 2050. While much road remains to be covered, we can proudly recognize and celebrate how far along we've already come. The solid pillars we have put in place were built with pragmatism, clear-sightedness and, above all, the strong commitment of our teams.

The profound transformations that lie ahead must be supported at the community level and by each individual. Human beings are and will be at the forefront of the transition that is taking place, both in terms of climate change impacts and the initiatives deployed to counter them.

From the outset of our business model's transformation, our teams have played an active role in its realization and success. This is why Énergir conducted a rigorous workforce planning exercise that, ultimately, will equip the organization with tools that are adapted to this major evolution in order to support existing teams and foster the development of new talent.

Human beings therefore remain at the heart of our transformation and of the energy transition.

Together, we wholeheartedly support the vision that will guide us through the next 30 years. We are 2,300 individuals who are committed to maintaining and improving stable and reliable energy networks. Every day, we find innovative solutions to achieve ambitious Decarbonization goals, and we put all our energy into creating a resilient, lower carbon future that will benefit society.



**Éric Lachance**  
President and Chief Executive Officer



# Executive summary

The challenge that climate change poses for Énergir requires responding to **three types of imperatives**. First, the **Decarbonization** of operations and energies is crucial since it minimizes the impacts, especially on ecosystems. Second, **resilience** is a criterion that must be met if this transition is to be successful. This entails taking measures to reduce our vulnerabilities and strengthen the capacity of natural and man-made systems to adapt to the effects of climate change. Third, this transition must be carried out at the **best cost** to society and customers, while making sure that the financial burden of this Decarbonization and societal adaptation is shared equitably.

This is the context in which, for several years now, Énergir has been deploying its Strategic Vision of Decarbonization for 2030-2050 and is producing its fifth annual Climate Resiliency Report. This Report not only covers Énergir (essentially for its natural gas operations in Quebec), it also covers Énergir's subsidiaries VGS (for its natural gas distribution in Vermont) and GMP (for its generation and distribution of electricity in Vermont). These three entities represent more than 93% of Énergir's total assets on a consolidated basis.

The Report is based on the recommendations of the TCFD that break down into four pillars: **Governance, Strategy, Risk Management** as well as the setting (and monitoring) of **Metrics and Targets**. Plausible climate scenarios are used to assess the organization's robustness in the face of climate change.

## » Engaged governance that is aligned with and committed to a fair transition for employees

This Report reveals that monitoring, management and oversight of climate change risks and opportunities are properly integrated into the Corporations' governance:

- With a view to ensuring an **energy transition that is fair for employees**, a strategic workforce-planning exercise was conducted to better understand the impact of introducing RNG into operations and to see what effect this had on Énergir's workforce. Afterwards, measures to support individuals were identified and Énergir improved projections for future workforce needs required by the energy transition.
- At Énergir, environment and climate change expertise is central to many of the business's teams and is part of the **director skills matrix**. The mandate of the Énergir Board and its three standing committees includes monitoring climate resiliency and climate risk management. Énergir's firm commitment to ESG factors also reinforces the corporation's climate governance.
- Since fiscal year 2022, Énergir's various **compensation policies** have incorporated climate performance metrics and have therefore abandoned metrics based on increased volumes of fossil natural gas.

## » A Strategic Vision of Decarbonization for 2030-2050 supported by concrete action

Énergir, GMP and VGS are taking action to decarbonize their energy distribution activities (Scope 1 and Scope 2 emissions) and the energy they distribute (emissions resulting from the use of Scope 3 products sold).

### Quebec: Actions aligned with government targets to achieve the Carbon Neutrality of distributed energy by 2050

In the geographical north, where peak and seasonal energy needs are expected to grow significantly, Énergir believes that its existing gas energy storage and distribution infrastructure will contribute to the Decarbonization of Quebec's energy ecosystem at a **competitive Societal Cost** by further integrating **renewable energy sources** and ensuring the **resiliency of energy systems**.

Based on its own projections, Énergir estimates that it should **distribute approximately 50% less gas energy** by 2050 by focusing on sectors where this energy and its infrastructure bring real added value to Québec's energy ecosystem.

Énergir's Strategic Vision of Decarbonization for 2030-2050 relies on four initiatives:

- Increasing energy efficiency efforts;
- Converting natural gas users to a complementary solution combining electricity and natural gas (including dual energy);
- Accelerating RNG injection;
- Developing low-carbon growth vectors through its affiliates.

The important steps completed over the last year to make this vision a reality include:

- Énergir started offering dual energy to commercial and institutional customers in November of 2023.
- Approval from the Régie de l'énergie<sup>1</sup> was obtained for Énergir's proposal to require that new interconnections in the buildings sector opt for a 100% renewable solution and the creation of the Decarbonization Incentive Program offering customers incentives based on the amount of fossil GHG emissions reduced or avoided.

- Énergir maintained its ability to mobilize financial resources that indirectly attests to the credibility of Énergir's strategy. In September 2024, the Caisse de dépôt et placement du Québec and Fonds de solidarité FTQ announced a \$575 million reinvestment in Énergir to support the business's growth and carry out of its Decarbonization and climate resiliency plan.

To provide a more in-depth understanding of Énergir's Strategic Vision of Decarbonization for 2030-2050, this Report also provides readers with long-term RNG supply prospects for first, second and third generation RNG in and outside Quebec. This Report also offers information on the outlook for Carbon Capture and Low-Carbon Hydrogen as tools for Decarbonization over the longer term, notably by analyzing real-life business cases.

#### Vermont: concrete Decarbonization actions being deployed

Although GMP already has a carbon-free supply portfolio,<sup>2</sup> it continues to take decarbonization measures by pursuing its plan to have a 100% renewable energy power supply portfolio by 2030. At the same time, to address the impacts of climate change, in October 2023 it announced its Zero Outages Initiative to make its electricity network more resilient to climate change for the benefit of its customers.

For its part, VGS announced new Decarbonization programs for its customers that focus on electrification in the residential sector, more specifically through the use of heat pumps.

#### » Proactive and dynamic risk management

For several years now, the Corporations have had a business risk governance framework founded on the principles of proactiveness, continuous improvement and transparency. The process of managing business risks and opportunities is therefore an ongoing one that includes identifying, assessing and managing risks, as well as reporting them to the board of directors of each corporation. This Report provides a summary of climate change risks and opportunities as well as the Corporations' approach to adapting to various physical risks.

The Corporations are making progress in achieving their targets, which are dealt with in the [Metrics and Targets](#) section.

1. The Régie de l'énergie decision regarding renewable interconnections is currently undergoing a review proceeding before the Régie de l'énergie.

2. Through direct sourcing, the retirement of RECs or a combination of both.

# About this Report

## » Presentation of the Corporate Group

With more than \$11 billion in assets, Énergir, on a consolidated basis (i.e. including its subsidiaries), is a diversified energy business whose mission is to meet the energy needs of approximately 540,000 customers and the communities it and its subsidiaries serve in an increasingly sustainable way in Quebec and Vermont. Énergir is the largest natural gas distribution company in Quebec where it also generates electricity from wind power (through joint ventures). Through subsidiaries and other investments, Énergir is present in the United States, where it generates electricity from hydraulic, wind, and solar sources; it is also the largest electricity distributor and the sole distributor of natural gas by pipeline in the State of Vermont. Énergir values energy efficiency and invests its resources and continues its efforts in innovative energy projects such as RNG as well as liquefied and compressed natural gas. Through its subsidiaries, it also provides a variety of energy services.

The distribution of natural gas in Quebec and Vermont is a regulated activity, as are the production and distribution of electricity in Vermont.



## » Scope of this Report

Each year, Énergir publishes a climate resiliency report that outlines the impacts, risks and opportunities that climate change has on its operations and allows its stakeholders to appreciate the role it intends to play in the transition to a lower-carbon economy. Its first report was on fiscal year 2020. Like its predecessors, this fifth Report follows the recommendations set by the TCFD.<sup>3</sup> This Report discloses, presents and accounts for climate-related risks and opportunities. **Governance, Strategy, Risk Management** as well as the setting (and monitoring) of **Metrics and Targets** are the four pillars of the TCFD. Climate scenarios are used to assess the resiliency of the business and its business model in the context of climate change.

In addition to covering Énergir's activities, this Report also covers its subsidiary VGS as regards the distribution of natural gas in Vermont, and GMP, which is its largest subsidiary in terms of its size and the type of activities relating to climate change. GMP produces and distributes electricity in Vermont. This Report therefore covers entities that represent more than 93% of the total assets of Énergir, on a consolidated basis.<sup>4</sup>

This Report covers these entities' fiscal years ended on September 30, 2024, i.e., the period from October 1, 2023 to September 30, 2024.

Therefore, the following Énergir affiliates are excluded from this Report: Énergir Development Inc., EUHC, Gaz Métro LNG, L.P., Gaz Métro Transport Solutions, L.P., Champion Pipe Line Corporation Limited, Intragaz L.P., Beaupré Éole General Partnership, Beaupré Éole 4 General Partnership. Énergir intends to gradually expand the scope of its climate resiliency report to include affiliates.<sup>5</sup>

To learn more about Énergir's sustainable development performance, including various ESG indicators, please refer to its sustainability performance tracking platform.<sup>6</sup> For GMP's performance, please refer to its B Corp certification documents.<sup>7</sup> For VGS's performance,<sup>8</sup> see its strategy documents for 2050. Please note that these documents are not incorporated in this Report.

To learn more about the operations of Énergir, GMP and VGS, please refer to Énergir Inc.'s MD&A for the fiscal year ended September 30, 2024 (which must be read alongside its financial statements for the fiscal year ended September 30, 2024) and its 2024 Annual Information Form, available online on SEDAR+ at [www.sedarplus.com](http://www.sedarplus.com) under Énergir Inc.'s profile.

3. Énergir took note of the TCFD's dissolution in 2023 and the transfer of its responsibilities to the IFRS Foundation. Until the ISSB standards are formalized in Canada by the Canadian Sustainability Standards Board (CSSB), Énergir continues to disclose its information in keeping with the TCFD principles, while preparing itself for the future possible legislation of the Canadian Securities Administrators.
4. Appendix 1 sets out the main relevant applicable regulations by jurisdiction.
5. Appendix 2 provides additional information on the other affiliates not covered by this Report.
6. The sustainability performance tracking platform is available at [https://energir.metrio.net/indicators/profil/gazmetro\\_bref/demarche\\_esg](https://energir.metrio.net/indicators/profil/gazmetro_bref/demarche_esg) (in French only).
7. Available at <https://www.bcorporation.net/en-us/find-a-b-corp/company/green-mountain-power/>.
8. Available at <https://vgsvt.com/wp-content/uploads/2024/02/VGS-2024-Integrated-Resource-Plan.pdf>.



Natural Gas Distribution  
in Quebec



energir

More than  
**211,000 customers**  
in Quebec

In more than  
**330 municipalities**

Approximately  
**11,000 km**  
network

## » Natural Gas Distribution in Quebec

Through its approximately 11,000 km network, Énergir distributes around 97% of the natural gas consumed in Quebec to some 211,000 customers in more than 330 municipalities. Énergir also has the storage capacity to manage fluctuations in its customers' consumption. Énergir provides natural gas service to the residential, commercial and industrial markets.

The following table illustrates the distribution of the volumes of natural gas distributed by Énergir and the total revenue for its fiscal year 2024.

**Table 1: Normalized Natural Gas<sup>9</sup> Distributed in Quebec and Revenues Generated**

|              | Volumes distributed (Mm <sup>3</sup> ) | Volumes distributed by market (%) | Revenues (Millions \$) | Revenues by market (%) |
|--------------|--|-----------------------------------|------------------------|------------------------|
| Industrial   | 3,938                                  | 63                                | 566                    | 36                     |
| Commercial   | 1,643                                  | 27                                | 686                    | 44                     |
| Residential  | 604                                    | 10                                | 317                    | 20                     |
| <b>Total</b> | <b>6,185</b>                           | <b>100</b>                        | <b>1,569</b>           | <b>100</b>             |

9. Includes the volume of natural gas from fossil and renewable sources.



## Distribution of Electricity in Vermont

Over  
**275,000 customers**  
in Vermont

Over  
**2,750 km**  
of overhead  
transmission lines

**17,150 km**  
of overhead  
distribution lines

**2,650 km**  
of underground  
distribution lines



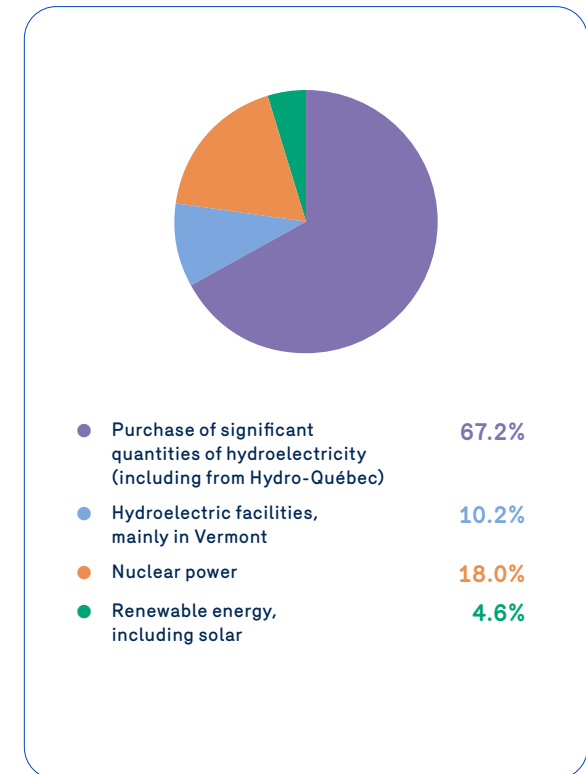
## » Distribution of Electricity in Vermont

GMP distributes more than 76% of the electricity in the State of Vermont to over 275,000 customers. GMP’s core business includes the production, purchase, and sale of electricity in Vermont and, to a much lesser degree, electricity transportation in New Hampshire and electricity production in New York, Maine, New Hampshire and Vermont. GMP’s network comprises over 2,750 km of overhead transmission lines, 17,150 km of overhead distribution lines and 2,650 km of underground distribution lines, located mainly in Vermont but also extending to the States of New Hampshire and New York.

For the 2024 calendar year, at least 63% of GMP’s supply portfolio must consist of renewable energy sources. GMP has also set a 100% carbon free supply objective which comprises several sources of power generation, including hydroelectricity and, to a lesser extent, nuclear, wind and solar power. During the 2023 calendar year, GMP’s supply portfolio consisted of 82% of renewable energy sources and was 100% carbon free.<sup>10</sup>

GMP has 40 small hydroelectric facilities across New England. It also owns Kingdom Community’s 69 MW wind farms in Lowell, Vermont. The following chart illustrates the breakdown of the electricity distributed by GMP, in GWh, and revenues during fiscal years 2023 and 2024.

**Chart 1: GMP’s Energy Supply Sources after the retirement of RECs<sup>11</sup>**



**Table 2: GMP’s Electricity Deliveries and Revenues Generated**

|  | Deliveries (GWh) | GWh Delivered by market (%) | Revenues (Millions US\$) | Revenues by market (%) |
|--|------------------|-----------------------------|--------------------------|------------------------|
| Residential  | 1,592            | 39                          | 347                      | 47                     |
| Small and Medium Consumption Commercial and Industrial Customers | 1,463            | 36                          | 275                      | 37                     |
| High Consumption Commercial and Industrial Customers             | 1,024            | 25                          | 111                      | 15                     |
| Other Customers  | 4                | 0                           | 3                        | 1                      |
| <b>Total</b>   | <b>4,083</b>     | <b>100</b>                  | <b>736</b>               | <b>100</b>             |

10. These percentages reflect the purchase or sale of RECs and other zero carbon-emissions attributes under the mandatory RES applicable to Vermont utilities.

11. The data in this figure reflect the treatment of supply sources for which RECs and other zero carbon-emissions attributes were bought or sold. GMP’s supply, prior to the retirement of RECs, is available at <https://greenmountainpower.com/energy-mix/>.





## Distribution of Natural Gas in Vermont

Over  
**55,000 customers**  
in Vermont

Transportation and  
distribution network of  
over  
**1,600 km**



## » Distribution of Natural Gas in Vermont

VGS owns and operates a natural gas transportation and distribution network of over 1,600 km in Vermont, United States. VGS is the sole gas distributor in Vermont, serving over 55,000 mainly residential and commercial customers. The following chart illustrates the distribution of customers according to the natural gas volume distributed by VGS and the total revenues for its 2024 fiscal year.

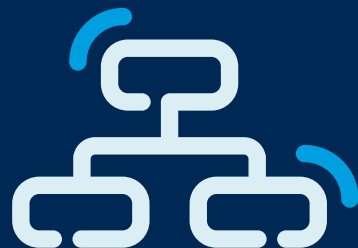
**Table 3: Volume of Normalized Natural Gas Distributed<sup>12</sup> in Vermont and Revenues Generated**

|              | Volumes distributed (Mm <sup>3</sup> ) | Volumes distributed by market (%) | Revenues (Millions US\$) | Revenues by market (%) |
|--------------|--|-----------------------------------|--------------------------|------------------------|
| Residential  | 101                                    | 29                                | 61                       | 53                     |
| Commercial   | 253                                    | 71                                | 55                       | 47                     |
| <b>Total</b> | <b>354</b>                             | <b>100</b>                        | <b>116</b>               | <b>100</b>             |

12. Includes the volume of natural gas from fossil and renewable sources.

# Governance

The governance of Énergir, GMP and VGS reflects a commitment to contribute to and support efforts to address the impacts of climate change.



## » Oversight by the Énergir Board



**Énergir is regulated by the Régie de l'énergie, which each year sets the rates and oversees the operating and development activities of the natural gas distribution networks in Quebec. The Énergir Board, its three standing committees and Énergir's Management monitor the climate change risks and opportunities. Moreover, Énergir is pursuing its ESG approach, in other words it is incorporating ESG factors into its culture and business model, for which climate is a central issue.**

The Énergir Board oversees the management of Énergir's activities to ensure, among other things, Énergir's financial health and resiliency over the short, medium and long term. More specifically, it ensures that Énergir's Management adopts a strategic planning process and periodically implements a strategic plan that addresses business opportunities and risks, among other things. It also ensures that Énergir's corporate strategy, including strategic initiatives stemming from climate change issues, is deployed. It identifies and monitors Énergir's main risks and each year approves Énergir's integrated risk management plan, including climate risks. Twice a year, it reviews Énergir's Management's report on the integrated management of risks and opportunities and ensures the implementation of appropriate measures and management systems for such risks. An analysis of the energy, climate and physical transition risks is periodically presented to the Énergir Board and discussed. In fiscal year 2024, the Énergir Board was supported by the following committees, which jointly oversaw the effectiveness of Énergir's strategies and performance with respect to climate change risks and opportunities: the Corporate Governance, Ethics and Environment Committee, the Human Resources and Social Responsibility Committee as well as the Audit Committee, following changes to the committee structure of the Énergir Board.

The Énergir Board's mandate was amended on October 18, 2022, December 15, 2022, and August 7, 2024 to reflect changes to the committees' structure. The Énergir Board's mandate explicitly sets out the Énergir Board's oversight responsibility for ESG factors. In order to ensure that the members of the committees described below have the expertise and knowledge required to support the Énergir Board, a grid of the requisite qualifications and profiles has been drawn up indicating environmental and climate change expertise.

### » The Corporate Governance, Ethics and Environment Committee

The Corporate Governance, Ethics and Environment Committee reports to the Énergir Board and assumes the environmental responsibilities. It is responsible, among other things, for the climate change component, and it periodically receives reports from Énergir's Management in this regard, including a follow-up report on the achievement of GHG reduction targets. Moreover, the Corporate Governance, Ethics and Environment Committee develops Énergir's governance approach, including governance as it relates to the monitoring of climate change risks and opportunities.

The committee's main environmental and climate change responsibilities are as follows:

- Receiving and reviewing environmental strategies, trends and best practices and making recommendations to the Énergir Board, as appropriate;
- Reviewing and periodically monitoring actions, targets, performance indicators and environmental objectives included in Énergir's ESG approach<sup>13</sup> or identified by it;
- Receiving a report each quarter on Énergir's environmental performance to ensure its activities comply with industry standards and the applicable legislative and regulatory standards;
- Receiving and reviewing the CATS report on a quarterly basis;
- Reviewing, if necessary, the year's strategies, plan and priorities in relation to the Climate Resiliency Report;
- Receiving and reviewing the Climate Resiliency Report and recommending its approval to the Énergir Board;
- Presenting periodic reports and making recommendations on significant environmental matters; and
- Reviewing, at least once every three years, Énergir's environmental policy and recommending the approval thereof to the Énergir Board.

### » The Human Resources and Social Responsibility Committee

The Human Resources and Social Responsibility Committee, which also reports to the Énergir Board, has certain environmental and climate-change responsibilities pertaining to social responsibility. These responsibilities are mainly the following:

- Recommending to the Énergir Board appropriate compensation packages in light of the benefits and risks associated therewith, including the risks associated with environmental factors;
- Ensuring that Énergir's human resource practices and organizational culture are aligned with Énergir's environmental practices and strategies;
- Reviewing and monitoring, on a yearly basis, the corporate social responsibility actions, targets, performance indicators included in Énergir's ESG approach or identified by Énergir.

### » The Audit Committee

The Audit Committee is the third committee that reports to the Énergir Board and is specifically responsible for environmental matters, including financial risks. It ensures that Énergir's Management takes appropriate steps to identify financial risks (including those arising from climate change) that may affect Énergir. The Audit Committee also ensures that Énergir's Management implements appropriate measures to mitigate these risks.

13. In fiscal year 2024, Énergir pursued the advancement of its ESG roadmap, the ESG priorities of which are monitored by management as well by the Énergir Board.

## » Oversight by Énergir's Management

Énergir Inc.'s President and Chief Executive Officer manages Énergir's operations. He is ultimately responsible for strategic planning and ensuring that the strategic orientations cover climate change risks and opportunities. He is supported in his group-related responsibilities by the Group Management Committee, which consists of certain members of Énergir's Management as well as the presidents of GMP and VGS.

Under the leadership of Énergir Inc.'s Executive Vice President, Quebec, the Management Committee (in which all sectors of the corporation are represented) has developed the Strategic Vision of Decarbonization for 2030-2050 to guide Énergir's development in Quebec. The undertakings conveyed in this strategic vision are regularly reviewed to take emerging trends into account, among other things, and ensure that they remain relevant. The Management Committee has established a framework allowing it to identify, assess and manage the various risks inherent to the industry in which Énergir operates, including those related to climate change. These elements are also addressed during the Group Management Committee meetings.

Énergir has adopted an internal governance structure that promotes the sound management of climate issues in establishing its objectives, strategies and actions across the organization. Thus, the offices of several vice presidents and the financial department support the Management Committee in its reporting to the Énergir Board and its committees. They are assisted by their respective teams, the ESG Leadership Committee, and collaborators from different sectors of Énergir.

### » ESG Governance

Énergir has been actively advancing its roadmap for ESG factors in its corporate culture and business model since its fiscal year 2021. In this process, which is based on open discussions with its stakeholders, Énergir has undertaken to:

- Become a Canadian leader in ESG factor integration;
- So as to, ultimately, accelerate a fair energy transition to fight against climate change while actively contributing to improving the quality of life in the communities in which it operates.

Decarbonization is one of the six priority ESG topics identified from our consultation with stakeholders.

Énergir has designated ESG sponsors, individuals who represent different teams within Énergir (Sustainable Development and Public Affairs, Employees and Culture, Corporate Secretariat as well as Finance) that follow up with Énergir's Management and the Énergir Board. These sponsors represent the ESG Executive Committee.<sup>14</sup>

Responsibility for risk management, impacts and disclosure of ESG information is spread across several Énergir teams. The ESG Leadership team is a multidisciplinary team that acts as a centre of excellence by monitoring and coordinating ESG issues among the various teams.

14. For more on this, please refer to Énergir's "ESG Approach" indicator on the sustainability performance tracking platform. The sustainability performance tracking platform is available at [https://energir.metrio.net/indicators/profil/gazmetro\\_bref/demarche\\_esg](https://energir.metrio.net/indicators/profil/gazmetro_bref/demarche_esg) (in French only).



\* With the exception of continuous improvement issues that involve ad hoc initiatives.

## » Oversight by the GMP Board and Management of GMP

GMP is regulated by the VPUC and governed by the GMP Board, which has the power to oversee management of the business to ensure the resilience of GMP for its customers in the short, medium and long term. GMP is managed by its President and Chief Executive Officer. Its corporate governance structure is comprised of the GMP Board, two GMP Board Committees and its executive team.

The GMP Board reviews the corporation’s strategic goals with its management, provides advice and suggests general guidelines to GMP’s management. The GMP Board currently maintains an Audit Committee and a Compensation and Governance Committee, and carries out many of its responsibilities through these two committees.



**GMP is committed to environmental action, awareness and accountability in all its business practices and operations.** GMP has in effect certain procedures, plans and guidelines applicable to climate-change related matters adopted in the normal course of business. GMP’s by-laws include a requirement that the GMP Board consider the environment and how to use energy as a force for the common good in its decision-making process. GMP must meet this requirement to be eligible for certification as a “Certified B Corporation” pursuant to the requirements and performance standards of B Lab, a non-profit organization that certifies companies who voluntarily meet higher standards of social and environmental performance, transparency and accountability.

GMP has successfully completed the certification three times, in 2014, 2017 and 2021. The next certification is underway for 2024.

Regular updates on GMP’s activities are provided to the Énergir Board, including updates on its strategic initiatives related to low carbon energy and climate change.



## » Oversight by the VGS Board and Management of VGS

VGS is regulated by the State of Vermont Public Utility Commission and governed by the VGS Board of Directors. The VGS Board exerts strategic influence on the business to ensure VGS’s long-term resiliency and maintenance of the foundational values of a safe, reliable, and affordable service for its customers. VGS is led by its President and Chief Executive Officer. The corporate governance structure is comprised of the VGS Board and senior management team.

The VGS Board reviews and approves VGS’s annual strategic plan along with key performance indicators and major initiatives and provides general advice and guidance to VGS’s team. The VGS Board currently has an Audit Committee and a Human Resources and Compensation Committee, which meet regularly to review VGS’s performance and fulfill other VGS Board responsibilities. Regular reports on VGS’s activities are provided to the Énergir Board and the VGS Board, including updates on its strategic initiatives related to carbon reduction and climate change.



### VGS Board

**Audit Committee:** The Audit Committee is responsible for advising VGS’s management and making recommendations to the full VGS Board on all financial and accounting issues. Specifically, it is responsible for risk management review, including reviewing climate related risks.

The Audit Committee participants from VGS’s management: Chief Executive Officer, Vice President Finance & Strategy, and Vice President Regulatory & General Counsel.

**Human Resources and Compensation Committee:** The Human Resources and Compensation Committee is responsible for corporate performance plans and awards inclusive of reviewing climate related goals around carbon emission reduction.

Participants from VGS’s management: Chief Executive Officer, Vice President Regulatory & General Counsel, Vice President Finance & Strategy, Senior Director of People & Safety.

## » Alignment of compensation with strategic and commercial objectives and the reduction of GHG emissions

### » Énergir – Review of commercial approach

Following the execution, in fiscal year 2022, of an agreement respecting bonuses with the Syndicat des employés et employés professionnels.L.es et de bureau – Énergir (SEPB-463)’s executive, the energy solutions representatives, who were already promoting the energy efficiency programs, have objectives to induce customers to consume less and opt for renewable energy. They therefore adopt the attitude of Decarbonization agents and are compensated in part based on the fossil GHG emission reductions their contribution will have generated.

### » Short-term incentive program

Since October 1, 2022, the short-term incentive compensation for Énergir’s professionals, executive managers and executive officers is aligned with the ESG priorities. Decarbonization indicators affecting the three entities (Énergir, GMP and VGS) also influence the short-term incentive compensation for executive officers.

### » Long-term incentive program

Énergir, VGS and GMP’s long-term incentive programs for executive officers are both based on the monitoring of performance indicators and incorporate the following strategic environmental indicator – “Decarbonization Effort – Reduction of Greenhouse Gas (GHG) Emissions.” This indicator tracks GHG emission reductions in Quebec and Vermont.



## » Strategic workforce planning

The energy transition has an impact on the workforce. It will bring drastic changes to the nature of some jobs and give rise to particularly critical issues in a labour shortage context where it is crucial to attract, develop and retain the best talent.

Consequently, in the fall of 2022, Énergir began a strategic workforce planning exercise. This process helps better understand how the business model's transformation might impact workforce needs over the medium and long run in terms of the required expertise and skills, and to prepare therefore as effectively as possible.

Pilot projects, conducted in various phases, helped analyze the impact of Énergir's strategic plan on the trades working in the main areas of the business's traditional activities, namely those relating to network operations, sales and marketing, as well as gas supplies. These exercises yielded the following findings: by 2027, few changes are expected in terms of workforce requirements as far as labour volume is concerned. The slowdown in historical activities will be offset by activities required to introduce renewable energy into the network. The resources and work time freed up thanks to optimization initiatives must continue to be reinvested in higher value-added

activities, such as customer data analytics or the optimization of marketing strategies or operations. This exercise also helped identify the major trends in the development of trades and pinpointed which ones are most likely to experience labour variations or transformation in terms of skills development.

**The strategic workforce planning initiative helps mitigate the execution risks of Énergir's transformation and allows it to continue refining its workforce planning approach while creating an environment conducive to talent development.**

Predicting workforce requirements is a complex exercise. Although it depends on the validity of the assumptions used to make the projections, a multitude of factors can influence the variables. Despite these uncertainties, Énergir believes that this strategic workforce planning allows it to pursue the transformation of its business model by identifying the risks and opportunities, always with a view to achieving Énergir's climate objectives and supporting its workers through the energy transition.



# Strategy



The Corporations strive to be proactive leaders in the fight against climate change thanks to the types of energy they distribute and, where applicable, produce. To do this, they support their customers and society by offering them innovative solutions that help contribute to the Decarbonization of their activities. They therefore pursue an approach that will make their energy distribution activities (Scope 1 and Scope 2 emissions) and the energy that they distribute (emissions generated by the use of Scope 3 products sold) carbon neutral by 2050.

The Corporations are also aware that they must take into consideration exogenous constraints over which they have little or no control, including:

- political and economic environment, as well as the availability of labour;
- changes in the legislative and regulatory framework, the Price of Carbon, the evolving scientific knowledge on climate change and the generally accepted GHG emissions measuring principles;
- technological developments related to the production of renewable energies and other Decarbonization technologies;
- Decarbonization plans of their industrial customers (desired technologies, timeframe for implementation, Decarbonization targets, etc.);
- social acceptability of certain Decarbonization technologies.

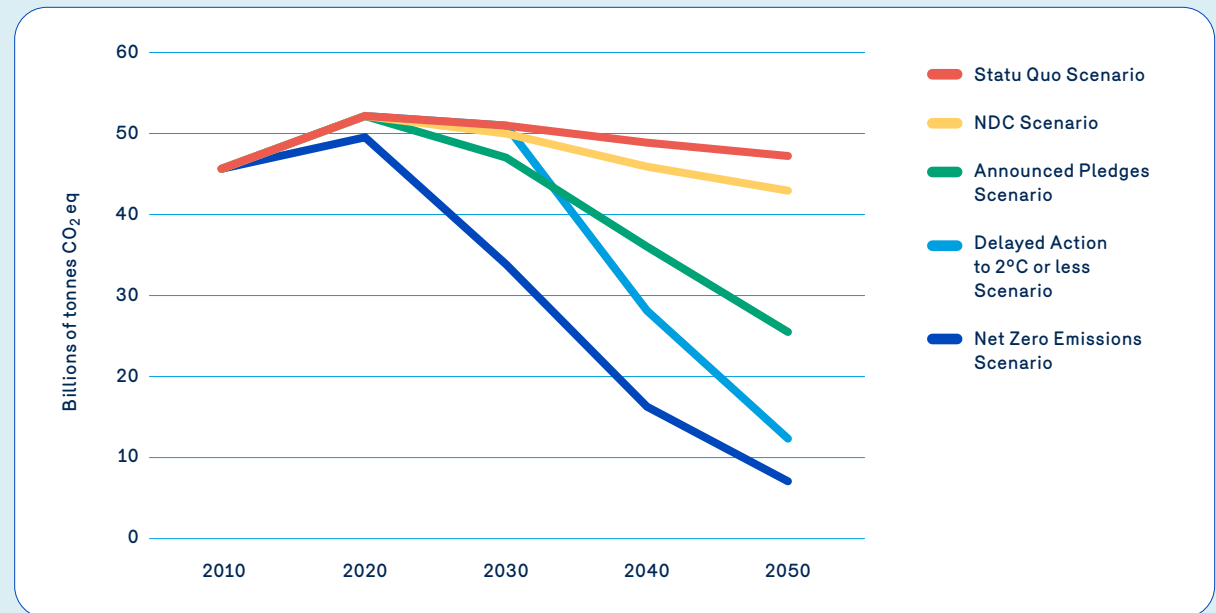
## » GHG Emission Scenarios

Scenario analysis enables us to assess the robustness of Énergir's business model in the face of climate change, based on a range of future possibilities.<sup>15</sup> According to the TCFD, scenarios highlight key elements of a possible future and draw attention to the determining drivers. Scenarios are not forecasts, predictions or sensitivity analyses. In a world of uncertainty, scenario analysis helps improve strategic thinking by challenging conventional wisdom and exploring alternatives that could significantly change business-as-usual assumptions.

Compared with the previous edition, three of the five scenarios have been modified. Firstly, the Sustainable Development Scenario has been replaced by the Announced Pledges Scenario, since the former is no longer updated by the IEA. Secondly, the Net Zero Emissions Scenario has been updated. Finally, in light of a new way of presenting data and the scenario by the CAT, an adjustment has been made to the definition and trajectory of the NDC Scenario. These updates and changes to the scenarios are intended to present a distinct and mutually consistent set of scenarios, as well as to present the most up-to-date scenarios in the light of recent information. The changes made to these scenarios in 2024 are reflected in the scaling for Quebec and Vermont presented later in this Report.

For more information on the Status Quo and Delayed Action Scenarios, please refer to Appendices 3, 4 and 5.

Chart 2: Global scenarios



15. Since the first report was published in 2021, Dunsy Energy Consulting has contributed to the process by supporting the definition, quantification and scaling of the scenarios. More information on the scenarios is provided in Appendices 3 to 5.

# Activities in Quebec



Natural Gas Distribution  
in Quebec

energir

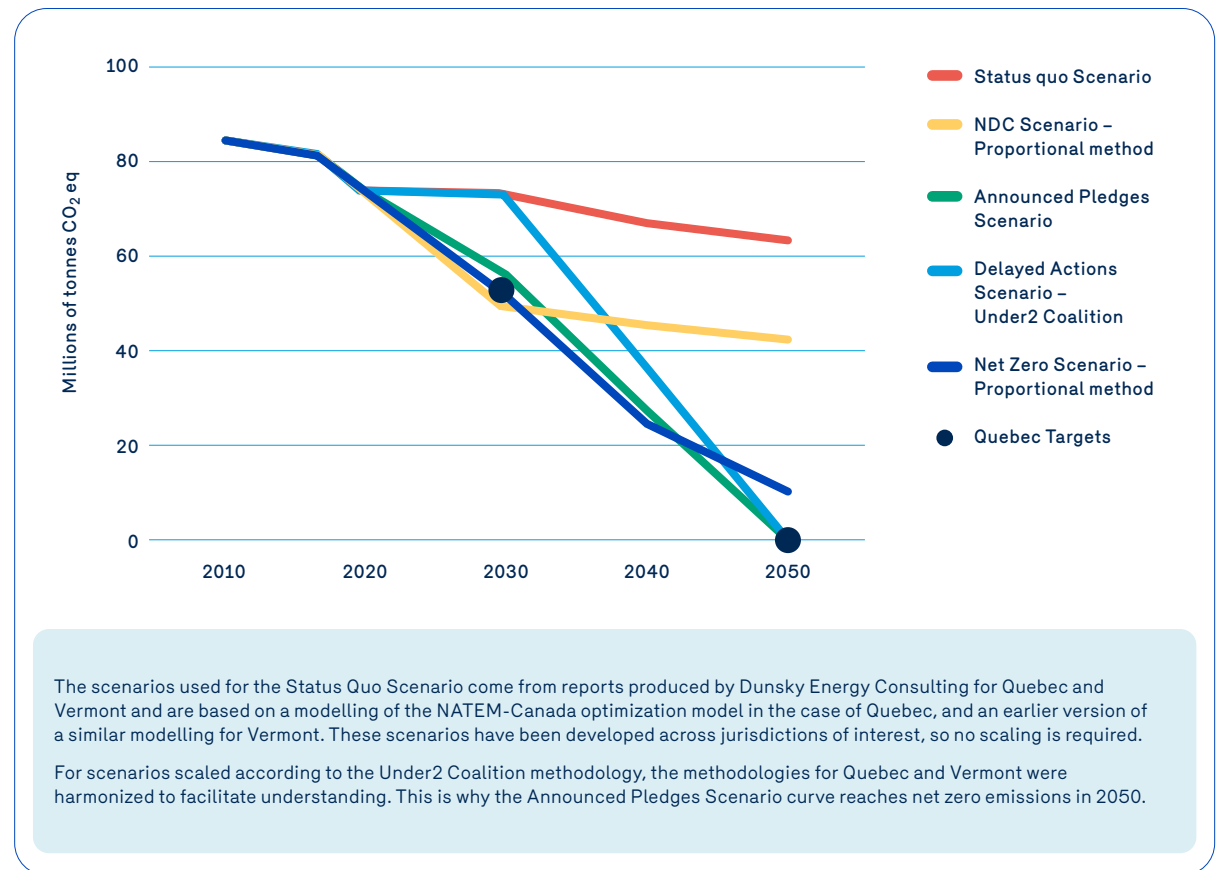
In this section, Énergir means the entity in the context of its natural gas distribution activities in Quebec, with the exception of content on the fourth initiative relating to other growth vectors.

## » Quebec-wide scenarios

The following graph presents the possible GHG emission pathways according to the scenarios used as they apply to Quebec.<sup>16</sup> It also presents the Government of Quebec's targets in 2030 and 2050. As indicated in the [GHG Emission Scenarios](#) section, the scenarios used by Énergir are not projections but are used to analyze the risks and opportunities related to climate change from different angles.

To update the Quebec pathways, Énergir is using a common base year for all global scenarios, namely 2020, given that certain global scenarios have not been updated for more recent years (Government of Quebec, 2022).

**Chart 3: Possible annual GHG emission pathways according to the scenarios used as they apply to Quebec**



16. Appendix 4 provides additional information on the scaling of the scenarios.

## » Strategic Vision of Decarbonization for 2030-2050



Although Énergir is not legally obligated to reduce its emissions explicitly, the legislative and political framework in which Énergir distributes natural gas in Quebec is affected by the Decarbonization objectives. Indeed, the *Canadian Net-Zero Emissions Accountability Act* aims to achieve this objective nationwide by 2050 (Government of Canada, 2021). At the provincial level, the Government of Quebec has enshrined GHG reduction targets of 37.5% below their 1990 levels by 2030 in its framework policy, the 2030 PGE (Government of Quebec, 2020). This plan also stipulates that the government is expected to make a longer-term commitment, with a view to achieving Carbon Neutrality by 2050. Thanks to its Strategic Vision of Decarbonization for 2030-2050, Énergir is positioning itself to contribute to the achievement of these governmental ambitions, all while ensuring that Decarbonization comes at the best Societal Cost and the resiliency of the energy network, resulting in an economy that is less vulnerable to climate change.

To make its Strategic Vision of Decarbonization for 2030-2050 a reality, Énergir hopes to guide its customers towards energy solutions that are adapted to their Decarbonization journey, all while developing new low-carbon activities. The goal is to propose an integrated Decarbonization approach. To do this, Énergir is betting on the lasting value that its infrastructure and gaseous energy can bring to Quebec's energy ecosystem, a value that it believes will stand the test of time.

### » Énergir's three energy-transition strengths

In 2024, the Government of Quebec tabled Bill 69, the *Act to ensure the responsible governance of energy resources and to amend various legislative provisions*. The bill seeks to reform the regulatory framework of Quebec's energy sector. At the parliamentary committee, Énergir supported the implementation of the integrated energy resource management plan proposed in the bill. If this planning is adopted, it would allow Énergir to better align its plan with the government's by, among other things, highlighting Énergir's role in the energy

transition and the usefulness of its infrastructure, thanks to its three main strengths provided below.

**Gaseous energy plays a complementary role that is key to meeting peak and seasonal energy needs,** especially in a rigorous climate like Quebec's. With storage and distribution infrastructure already in place, Énergir emphasizes that, for the several hundred most critical hours of the year, gaseous energy (including from a renewable source) can meet a considerable portion of the province's energy needs at a globally more advantageous Societal Cost<sup>17</sup> than that of renewable electric energy sources. This complementarity helps limit the need for the addition of new electrical infrastructure.

17. RNG, when used to reduce fossil GHG emissions, offers a competitive Societal Cost for all market segments; this competitiveness increases dramatically when it is used to meet seasonal peak demands and in those cases where converting from gas to another energy source is technically complex. When RNG is used as dual energy in the buildings sector, the contribution of RNG to reducing the impact on peak electricity periods is on average more than eight times greater than when it is used in an industrial process. This is due to the small quantity of RNG required during peak periods when used as dual energy in buildings, compared to the larger quantities required when it is used throughout the year in industries, outside of peak periods and even in summer.



Also, **injecting more RSG into its network** (including RNG and Low-Carbon Hydrogen) helps reduce fossil GHG emissions<sup>18</sup> by replacing fossil natural gas in uses that are difficult to electrify, whether in industrial processes or in heavy road and maritime transport. The use of RNG, which is interchangeable with the fossil natural gas molecule, can also help minimize the need for new infrastructure and energy configuration modifications (for example, a change of equipment).

Finally, there are two ways that Énergir can contribute to the **resiliency of Quebec's energy system**. On the one hand, keeping a portion of gaseous energy in Quebec's ecosystem ensures a redundancy. On the other hand, Énergir's network, which is essentially underground, in good condition and vast in territory, offers greater resiliency than that of electrical overhead power grids in the face of extreme weather events.

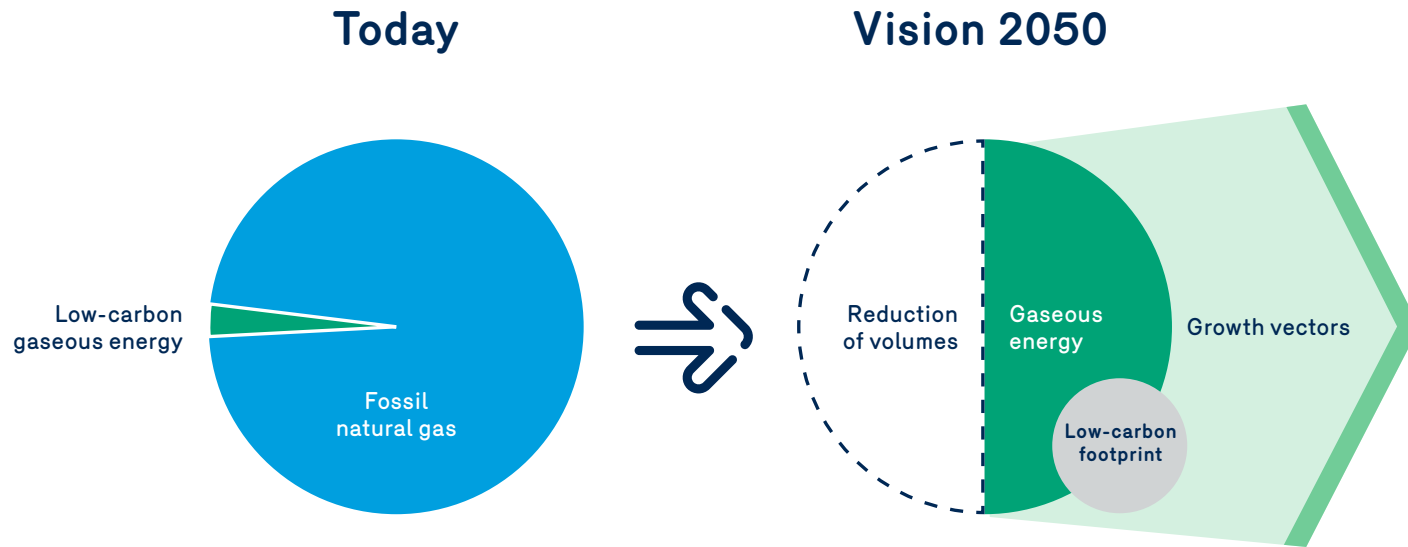
#### » Four strategic initiatives

The three major strengths addressed in the preceding page should continue to allow Énergir to contribute to the energy transition. In order to Decarbonize the energy distributed by its network, Énergir is relying on four initiatives, which are detailed in the following pages:

1. Increasing energy efficiency efforts;
2. Switching from natural gas uses to a complementary solution that combines electricity and natural gas or electricity and RNG;
3. Accelerating RNG injections;
4. Developing, through its affiliates, low-carbon growth vectors.

The first two initiatives seek mainly to reduce the consumption of natural gas and enhance Énergir's infrastructure in order to meet seasonal and peak needs. The third initiative aims to gradually integrate more renewable energy to replace any remaining fossil natural gas and thereby reduce the fossil GHG emissions associated with uses that are difficult to electrify. Finally, the fourth initiative ensures growth by developing low-carbon solutions that Énergir believes will be competitive in a Decarbonizing future, while protecting the energy systems' resilience and allowing for a transformation of its activities that might represent opportunities for its workforce.

18. RNG reduces emissions by using the methane released by the decomposition of organic matter on the one hand, and then replacing a fossil energy by a renewable energy. Note, however, that RNG does emit biogenic CO<sub>2</sub> upon combustion (from biomass). Biogenic CO<sub>2</sub> is part of the short carbon cycle. It was previously fixed in plant matter and will be fixed again. Biogenic CO<sub>2</sub> emissions must be quantified and reported separately. According to the GHG quantification conventions, such as ISO 14 064-1 or the GHG Protocol or the GHG Quantification Guide published by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs.



By 2050, according to its projections,<sup>19</sup> Énergir believes it should distribute approximately 50% less gaseous energy by concentrating on uses where this energy and its infrastructure will bring more added-value to Quebec's energy ecosystem. By developing low-carbon growth vectors, Énergir aims both to decarbonize the energy it distributes and to offer new services to its partners in order to positively contribute to Quebec's energy transition.

19. The [Decarbonization Pathway](#) section presents these projections, and the [Resilience of Énergir's Business Model](#) section presents the assumptions used to complete this pathway.

## » Detailed presentation of Énergir's four initiatives

This section presents the four main strategic initiatives that Énergir intends to deploy by 2030 and 2050. Each initiative is detailed and analyzed from a technical and economic perspective, among others, with an eye to the key factors that influence the adoption of measures over time. Énergir also presents an overview of its activities and objectives, as well as the progress it has made in the achievement of its targets.



**Increasing**  
energy efficiency efforts



**Switching**  
from natural gas uses to  
a complementary solution  
combining electricity  
and natural gas



**Accelerating**  
RNG injections



**Developing**  
low-carbon growth vectors  
through its affiliates

# 1

## Increasing energy efficiency efforts

### » Context

In keeping with the principles of the IEA (IEA, Energy Efficiency, 2023a), Énergir considers energy efficiency to be the first decarbonization measure that should be deployed. This approach presents numerous advantages, both from a societal and economic perspective, and for energy consumers.

Énergir has been an energy efficiency pioneer in Quebec, having offered its customers a Global Energy Efficiency Plan (GEEP) for more than 20 years. Énergir wants to speed up its long-term growth since it is an initiative that is crucial to its relevance and offers many advantages:

- **For customers**, it reduces their energy bills, enhances their competitiveness and frees up financial resources that can be reinvested in other Decarbonization solutions (such as RNG), thereby further contributing to the reduction of GHG emissions.
- **For society**, it helps limit or avoid GHG emissions at a lower cost by limiting new production, transportation and energy distribution infrastructure, among others.
- **For Énergir**, it promotes customer loyalty, lowers the attrition rate and helps ensure sustainable and predictable revenues.

To this end, Énergir intends to launch several strategies to enhance its offering, while promoting the adoption of new and more effective technologies and favouring the integration of smart digital solutions. It is also developing marketing strategies and communication campaigns to maximize customer commitment in its energy efficiency programs and propose new energy services.

### » Énergir's strategic vision for energy efficiency

Énergir has set itself the target of helping its customers, through its various energy efficiency programs, to avoid one million tonnes of CO<sub>2</sub> eq emissions per year, with the efforts made between 2020 and 2030.<sup>20</sup> This ambitious target represents achieving the performance Énergir achieved between 2001 and 2020, but in half the time. Since fiscal year 2020, energy efficiency efforts have allowed a total of 0.4 million tonnes of CO<sub>2</sub> eq to be avoided per year.

In the buildings sector, Énergir's efficiency efforts would contribute to avoiding or reducing GHG emissions by about 0.4 million tonnes of CO<sub>2</sub> eq per year by 2030. These efforts, combined with those carried out by third-parties, are expected to help avoid 0.9 million tonnes of CO<sub>2</sub> eq emissions per year in the buildings sector by 2030, which is in line with the Government of Quebec's targets.

20. This target covers the period from October 1, 2020 to September 30, 2030 and all markets served by Énergir, and takes into account the contribution of Énergir's energy efficiency programs.

For its 2050 pathway, Énergir believes that its energy efficiency efforts, encouraged by its programs, could significantly reduce the volumes its customers consume, contributing by 19% to the Decarbonization efforts in the buildings sector and 24% in the industrial sector, compared to GHG emission levels in 2020.

#### Climate metrics in energy efficiency

##### 2030 target

One million tonnes of CO<sub>2</sub> eq avoided per year for all markets served between 2020 and 2030 resulting from Énergir's energy efficiency efforts.

##### 2024 performance

Énergir's energy efficiency programs generated savings of **50.5 Mm<sup>3</sup>** in consumed natural gas per year. These savings were made possible thanks to a total of **\$46.8 million** in financial assistance paid to customers participating in **2,936** energy efficiency **projects** carried out in fiscal year 2024. Consequently, the programs of Énergir's Global Energy Efficiency Plan helped avoid **97,008 tonnes of CO<sub>2</sub> eq** per year in 2024.

The cumulative results between 2020 and 2024 reached **0.4 million tonnes of CO<sub>2</sub> eq** per year and are therefore aligned with the pathway for the 2030 horizon.



## Switching from natural gas uses to a complementary solution combining electricity and natural gas

### » Context

The complementarity of gas and electricity systems is a crucial component of a vision where integrated energy resources management planning is used to meet Quebec's needs. As reported annually by Hydro-Québec in its capacity balance,<sup>21</sup> Decarbonization and economic growth exert strong pressure on electricity needs, while the development of additional low-carbon power generation, transmission and distribution assets is increasingly complex and costly. The context in Quebec is particular, as the territory differs from other regions of the world in terms of the severe winters, its vast territory and its low density. For instance, Montréal is the city with the coldest winter temperatures of all C40<sup>22</sup> cities (a global network of nearly 100 mayors of the world's leading cities that are united in action to confront the climate crisis). Based on data from the Copernicus Climate Data Store and the NASA Socioeconomic Data and Applications Center (SEDAC) compiled by Énergir, less than 5% of the world's population experiences colder winter temperatures than those recorded in Montréal. These frigid temperatures generate very significant energy needs for heating within only a few hundred hours per year.

Although direct electrification from renewable sources is globally preferred as a Decarbonization solution due in particular to its rates, efficiency and low environmental impact, a number of challenges persist. On the one hand, electrifying a portion of the energy needs that Énergir is currently servicing

21. Capacity balance refers to the notion of the appropriateness of the supplies to the power needs. The same concept can be used for the energy component. The evidence of Phase 2 of Electricity Supply Plan 2023-2032 filed by Hydro-Québec with the Régie de l'énergie on November 2, 2023 shows a capacity deficit for 2032 in Table 4.3 (Hydro-Québec, 2024). The deficit within the time horizon of the supply plan is reported in previous versions of the same recurring file presented to the Régie de l'énergie.

22. Measured by using hourly global climate data recorded in 2010, 2015 and 2020 by the Copernicus Climate Data Store (Copernicus Climate Change Service, 2023).

presents major technical challenges, such as when the methane contained in natural gas is used as an industrial chemical production input or when an industrial process requires very high temperatures.

On the other hand, even when electrification is technically possible, obstacles may limit complete conversion to electricity. In the Quebec energy context, where a reliable power supply from the grid is very valuable in the wintertime, complete electrification can lead to power infrastructure only being oversized for the sole purpose of meeting the needs for a short period of the year. Thus, for space heating and industrial processes that are easier to electrify (typically low temperature processes), Énergir is proposing to rely on its existing gas infrastructure for the hundred or so most critical hours for the power grid so as to reduce the pressure on the need for new electric power generation, transmission, storage and distribution assets (such as the construction of new hydroelectric plants), and contributing to Decarbonization.

Gaseous energy, when used in the right place and at the right time, represents an important asset in Quebec that not only relieves pressure on the capacity and electricity energy balance<sup>23</sup> in winter, but contributes to the energy system's resiliency at an advantageous Societal Cost. When the fossil natural gas is replaced by RNG, this decarbonization

measure becomes all the more beneficial. These findings also apply to the buildings and industrial markets. This is why Énergir is working jointly with Hydro-Québec and the Government of Quebec to expand dual-energy solution eligibility to larger buildings, and is exploring options that could help its industrial customers achieve Decarbonization using this approach.

### » Énergir's strategic vision for dual energy

With the dual energy initiative, the two leading energy distributors in Quebec are therefore working to considerably reduce the natural gas consumption (and, consequently, GHG emissions) of over 100,000 Énergir customers currently using natural gas for heating purposes. By 2030, Énergir hopes to reduce GHG emissions by 400,000 tonnes CO<sub>2</sub> eq thanks to this initiative. The principle is the following: a vast majority of the time, electricity is used for heating while, during peak periods, natural gas takes over, thereby relieving Hydro-Québec's network. Consequently, approximately 70 to 75%<sup>24</sup> of natural gas volumes are converted into electricity, whereas the remaining amounts are used to cover heating needs during the coldest periods. The distributors also offer all Énergir customers, including new buildings, a 100% renewable solution thanks to dual-energy electricity-RNG. The dual-energy project

is counting on a pragmatic approach that could help save Quebec society considerable amounts of money while accelerating the Decarbonization of building heating. Note that as part of a joint effort between the Government of Quebec, Hydro-Québec and Énergir, dual-energy participants may, on certain conditions, receive advantageous financial assistance that could help accelerate demand for dual energy.

On May 19, 2022, the Régie de l'énergie approved Hydro-Québec and Énergir's joint application to offer a shared dual-energy electricity-natural gas solution to existing natural gas customers in the residential sector. Hydro-Québec therefore pays Énergir a GHG contribution that implicitly recognizes the gas network's value during winter peak demand periods and that allows Énergir to maintain a significant portion of its distribution revenues. The Régie de l'énergie decision acknowledges that it is in the public interest that regulated entities assume their responsibilities by contributing to the economy's Decarbonization in a context of climate crisis. The Régie de l'énergie decision is currently being challenged.<sup>25</sup> It is important to note that during the proceedings, dual energy continues to be offered, and Hydro-Québec is paying the GHG contribution to Énergir.

23. Energy and capacity are two different concepts. Capacity is the quantity of energy used or generated per unit of time, and is expressed in kilowatts (kW). Energy is the product obtained when capacity is multiplied by the length of time of use and is expressed in kilowatt hours (kWh). Capacity will vary depending on the activities carried on.

24. The conversion of natural gas volumes into electricity depends on various parameters, notably temperature, natural gas heating equipment (standard or high efficiency).

25. The Régie de l'énergie decision dated May 19, 2022 was subject to a review application. In the decision D-2023-024 rendered on February 22, 2023, the Régie de l'énergie, without questioning the merits of dual-energy, partially allowed the applicants' grounds, in particular as regards the challenge of the possibility that the GHG contribution paid by Hydro-Québec is an expense that can be incorporated into the revenue required of Hydro-Québec for fixing its rates (Régie de l'énergie, 2023). The decision rendered on February 22, 2023 was subject to a judicial review before the Superior Court of Québec. The court set aside the February 22, 2023 decision of the Régie de l'énergie and reinstated the February 19, 2022 decision (Superior Court of Québec, 2024). The judgment of the Superior Court of Québec was appealed before the Court of Appeal, where the case is scheduled to be heard in 2025.

Énergir anticipates that marketing its dual energy offering will be easier following the Régie de l'énergie approval, obtained in the spring of 2024, of its proposal requiring that new interconnections in the buildings sector opt for a 100% renewable solution starting April 1, 2024, subject to certain exceptions.<sup>26</sup> Customers may then opt for a 100% RNG supply or for dual energy combining electricity and RNG. Since that same date, Énergir has been offering its existing customers ad hoc financial Decarbonization assistance to, among other things, lower the cost of converting their configuration to dual energy. Through its new Decarbonization Incentive Program, Énergir offers financial support to existing customers that choose to decarbonize thanks to Énergir's fossil GHG reduction options, namely dual energy and/or RNG. This financial support consists of financial assistance that reflects the number of tonnes of fossil GHG emissions avoided thanks to the GHG reduction options selected and helps accelerate Decarbonization of the customer base.

Hydro-Québec's application to offer a dual energy rate to the commercial and institutional sectors was approved by the Régie de l'énergie in June 2023. The offer to commercial and institutional customers began in November of 2023, following publication of the normative framework of the Government of Quebec's EcoPerformance program in force since October 3, 2023.

As regards its pathway for the 2050 horizon, Énergir believes that converting natural gas uses over to complementary electricity-gas solutions could significantly reduce the volumes consumed by its customers, contributing by 40% to the Decarbonization efforts in the buildings sector and 33% in the industrial sector, compared to GHG emission levels in 2020.

#### Climate metrics related to dual energy

##### 2030 target

Reduction of 400,000 tonnes of CO<sub>2</sub> eq between 2020 and 2030.

##### 2024 performance

The dual energy agreements have allowed **3,989 tonnes of CO<sub>2</sub> eq** to be avoided in fiscal year 2024. On an annual basis, GHG reductions from these agreements are estimated at **9,364 tonnes of CO<sub>2</sub> eq** per year. This performance must be placed in the context of the recently launched dual energy offers: in the residential sector, dual energy was launched in June 2022, while the commercial and institutional dual energy offer was launched in November 2023. At the commercial and institutional levels, the results materialized mostly in the second half of the year, with 86% of subscriptions being recorded after April 1, 2024.

26. Starting April 1, 2024, all new interconnections to Énergir's gas network are required to use 100% renewable energy, with the exception of the industrial market, temporary construction heating and in cases of technological limitations. Note that this decision is subject to a review application before the Régie de l'énergie.



## Accelerating RNG injections

### » Context

With the expected increase in the Price of Carbon over the medium and long terms, the implementation of a fossil GHG Decarbonization pathway, combined with the RNG initiatives deployed by Énergir (such as energy efficiency or dual energy), allow customers to significantly reduce their carbon footprint related to the use of fossil natural gas and maintain the competitiveness<sup>27</sup> of Énergir's solutions.

In order to meet the 2030 PGE targets, as well as Énergir's commitments relating to the buildings sector, Énergir believes that the consumption of RNG in this sector is unavoidable.

Increasing the marketing of RNG to its customers is a key initiative in terms of Énergir's resiliency, as its benefits are multiple:

- **For customers**, RNG offers a source of renewable energy that enhances the energy supply to contribute to Decarbonization. It allows them to decrease their fossil GHG emissions without requiring investments in new equipment, whether in the buildings, industrial or transportation sector.
- **For society**, there are multiple positive impacts. First, the full or partial use of RNG in replacement of the fossil natural gas molecule enables Decarbonization at a globally competitive Societal Cost for various market segments<sup>28</sup> compared to other renewable energy solutions, like firm renewable electricity. In fact, the RNG molecule (which is interchangeable with that of fossil natural gas) allows Énergir's existing and

well-maintained storage, transportation and distribution infrastructure to remain relevant, but also helps avoid having to rely on new assets in the electricity value chain. In addition, the RNG sector allows the recovery of residual organic emissions, as well as the reduction of GHG emissions from several sectors (such as the municipal and agricultural sectors) in a circular economy perspective. RNG is also a sector where renewable energy can be locally produced, promoting regional economic development. Also, as explained in the [dual-energy](#) section, during peak periods, using RNG in combination with electricity presents economic benefits to both customers and society, compared to full electrification.

- **For Énergir**, RNG makes it possible to replace the fossil natural gas with renewable energy, thus reducing the attrition rate of its customers and maintaining the relevance of its distribution network in the long run.

27. Depending on RNG prices projected by Énergir, taking into consideration Énergir's RNG supply contracts until 2030. The *Clean Fuel Regulations* (Government of Canada, 2022) enhances the use of RNG as a replacement for fossil natural gas by creating compliance credits that can be sold to entities subject to the regulations for their compliance. However, a Régie de l'énergie decision rendered in the spring of 2024 does not allow Énergir to reduce the RNG rate for its customers through the disposal of these compliance credits. Bill 69, the *Act to ensure the responsible governance of energy resources and to amend various legislative provisions* tabled before the National Assembly in June 2024 contains a provision that, if passed, should allow Énergir to do so.

28. RNG, when used to reduce fossil GHG emissions, offers a competitive societal cost for all market segments; this competitiveness increases dramatically when it is used to meet seasonal peak demands and in those cases where converting from gas to another energy source is technically complex. When RNG is used as dual energy in the buildings sector, the contribution of RNG to reducing the impact on peak electricity periods is on average more than eight times greater than when it is used in an industrial process. This is due to the small quantity of RNG required during peak periods when used as dual energy in buildings, compared to the larger quantities required when it is used throughout the year in industries, outside of peak periods and even in summer.



## » Long-term RNG supply Outlook

**Development of the RNG market is booming. North American production capacity increased sevenfold between 2010 and 2023, and now stands at over 4,000 Mm<sup>3</sup>.<sup>29</sup> This growth is used to meet multiple needs (transportation, electricity generation, gas utilities, industrial private agreements, and more). As an RNG buyer in this context, Énergir represents one of the players in this market and uses four sources to support its long-term supply strategy.<sup>30</sup>**



1

### First-generation RNG from Quebec

RNG produced from residual organic matter, processed in anaerobic digesters or in landfill sites, is a well-established technology that represents the main source of production worldwide (around 90%) (IEA, 2020). It relies on existing operations, such as landfill and manure/slurry sites, to recover methane that would otherwise have been burned or released into the atmosphere, in accordance with applicable regulations. The theoretical potential<sup>31</sup> in Quebec advanced by a study the WSP Canada Inc. conducted on behalf of Quebec's Ministry of Economy, Innovation and Energy in 2021 suggests millions of tonnes of organic matter, or the equivalent of more than 1,000 Mm<sup>3</sup> of methane, can be upgraded to RNG (WSP Canada Inc., 2021). To date, 11 RNG production sites are active, nine of which inject into the Énergir network on behalf of customers in Quebec. Four projects are under construction and around 30 additional projects received a government subsidy<sup>32</sup> to conduct a study or begin an RNG production plant. According to data collected by the Canada Energy Regulator (2023),

more than 280 Mm<sup>3</sup> are or will be produced in Quebec in 2025, which represents a significant development potential for a market that is still emerging. The economic output potential should continue to grow if the supporting conditions are right.

2

### Second-generation RNG from Quebec

RNG produced by pyrogasification or pyrolysis is a promising technology currently under development. According to the consultant Guidehouse Inc. (2023), production costs could equal those of RNG produced by anaerobic digesters by 2035. The main focus of this technology is to exploit forest biomass resources. In Quebec, this resource is highly integrated into and upgraded by the lumber, energy production and pulp and paper industries (firewood and biomass boilers). While the theoretical potential advanced by WSP Canada Inc. in 2021 exceeds the volumes distributed by Énergir in 2023 (estimated theoretical potential of 7,000 Mm<sup>3</sup>, or approximately 250 bcf), Énergir does not foresee a significant supply of this resource unless the structure of the wood industry

29. Data taken from "US Renewable Natural Gas Database (1.2)" BloombergNEF 2023 for the United States, while data for Canada was taken from "Table 1: 39 Current and Planned RNG Projects in Canada" on the page entitled "Market Snapshot: Two Decades of Growth in Renewable Natural Gas in Canada" (Canada Energy Regulator, 2023).

30. The four long-term supply sources are not listed in order of importance.

31. Maximum quantity of material that can be harvested or collected, without regard to technical, environmental or economic constraints.

32. The list of projects supported by the PSPGNR can be consulted at [https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/economie/contenu/programmes/LI\\_PSPGNR\\_projets\\_soutenus.pdf](https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/economie/contenu/programmes/LI_PSPGNR_projets_soutenus.pdf) (in French only)(Government of Québec, 2024a).

changes significantly, and major technological advances are made. Énergir would like to source its supplies from resources that do not disrupt the industrial forest ecosystem or compete with existing uses, namely using the residual forest biomass. For example, several thousand tonnes of construction, renovation and demolition (CRD) waste are eliminated or difficult to recycle by sorting centers, and could contribute to Quebec's energy production (Ministère de l'Environnement et de la Lutte contre les changements climatiques, 2020).

3

#### Third-generation RNG from Quebec

RNG produced by methanation of Low-Carbon Hydrogen and biogenic CO<sub>2</sub> is a third major opportunity for RNG production. Though tried and tested (nearly 60 active projects in 2019 (Thema, Bauer, & Sterner, 2019) have been identified mainly in Germany, Denmark, the United States and Canada), this technology is currently much more expensive than producing fossil natural gas (van Leeuwen & Zauner, 2018). Furthermore, the value chains for Low-Carbon Hydrogen or biogenic CO<sub>2</sub> are not yet

structured in Quebec, although some projects are in the advanced stages of development. This notwithstanding, the outlook for RNG produced by methanation is interesting given the prospects for technological developments and electricity costs. RNG produced by methanation presents opportunities for Decarbonizing through indirect electrification. Indeed, RNG produced by electrolytic methanation requires using electricity that could come from production sources that are asynchronous with demand, such as solar or wind power, which are otherwise less valued. Moreover, RNG would become an energy vector that could service uses that are difficult to electrify, such as seasonal peaks and high-temperature industrial processes, while avoiding investments in the equipment and infrastructure specific to hydrogen consumption. According to an internal study conducted by Sia Partners in 2023, biogenic CO<sub>2</sub> sources suggest a significant theoretical production potential of 2,300 Mm<sup>3</sup> in 2050, which represents higher RNG volumes than is anticipated by Énergir's pathway. Although this potential appears promising, several challenges bar the way to this resource's development.

4

#### RNG from resources outside Quebec

Énergir is an important ally in the development of the RNG sector in Quebec. Nevertheless, to meet its needs and regulatory targets, Énergir is exploring all Decarbonization solutions while addressing its customers' environmental and economic concerns. This is why Énergir is currently acquiring most of its RNG from outside Quebec.<sup>33</sup> These contracts allow supplies to be secured at an attractive cost to its customers. The growing needs to meet regulatory targets have prompted Énergir to consider burgeoning opportunities elsewhere in Canada and the United States. It is important to note, however, that while natural gas consumption on the North American continent is significant,<sup>34</sup> there are many Decarbonization pathways for these uses and do not rely solely on conversion to RNG. Like Énergir, several distributors and governments are first looking into reducing energy demand at the source. Other uses currently served by natural gas may also be converted to other low-carbon energy sources.

33. Theoretical North American potential for RNG production is approximately 410,000 Mm<sup>3</sup> per year, with 389,000 Mm<sup>3</sup> in the United States according to ICF (2019) and 21,000 Mm<sup>3</sup> in Canada according to TorchLight Bioresources (2020).

34. The North American consumption of fossil natural gas in 2022 was 1,036,000 Mm<sup>3</sup>, including 915,000 Mm<sup>3</sup> in the United States ([U.S. Energy Information Administration: Natural Gas Consumption by End Use, Release Date 9/30/2024](#)) and 121,000 Mm<sup>3</sup> in Canada ([Statistics Canada: Supply and disposition of natural gas, monthly, Table: 25-10-0055-01 Date of modification: 2024-10-01](#)).

Finally, Énergir belongs to a minority of North-American gas distributors with RNG injection targets for 2030 and is the first distributor to require the purchase of RNG for new interconnections in the buildings sector since April 1, 2024, subject to certain exceptions. This context provides Énergir with strong assets to secure long-term supplies at attractive conditions for all.



**These four supply sources allow Énergir to face its growing future RNG supply with confidence. This begins by prioritizing the well-established potential of Quebec's first-generation RNG. But this potential will not be enough to meet all of the needs projected for 2050, which is why Énergir is also focusing on developing technologies to upgrade resources that would otherwise be left behind, and this at a competitive cost compared to other renewable energies. Finally, aside from these Quebec resources, RNG is developing elsewhere in North America, and Énergir will continue to supply itself from these sources, as it does for its fossil natural gas. By committing to long-term RNG purchase contracts, Énergir is already supporting businesses that are developing projects in Canada and the United States. It has also created a team entirely dedicated to securing its supplies and contributing to the development of the RNG sector in partnership with key players.**

» **Énergir's strategic vision**

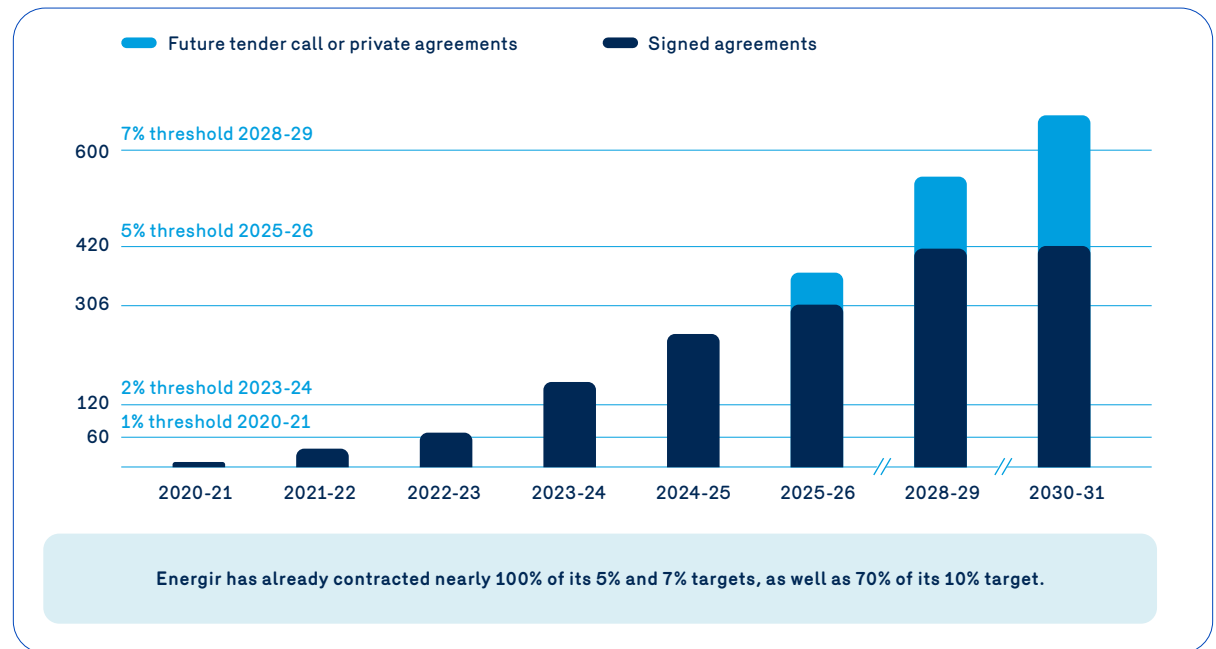
Énergir aims to inject and market increasing volumes of RNG to its customers annually. Énergir has an obligation to have RNG represent at least 10% of the annual volumes distributed by 2030, in accordance with the *Regulation respecting the quantity of gas from renewable sources to be delivered by a distributor*, which would equate to an annual reduction of approximately 1 million tonnes of CO<sub>2</sub> eq of fossil GHG emissions. In November 2024, the Government of Quebec announced a framework for the use of natural gas in the buildings sector, which should lead to changes in this regulation. These changes should increase the gas distributors' obligation to gradually reduce the quantity of fossil natural gas delivered to residential, commercial and institutional customers. Distributors should therefore increase the percentage of RSG in existing buildings that use natural gas to become 100% renewable by 2040. This framework will also bring changes to the *Regulation respecting oil-fired heating appliances*.

**RNG supply**

During its fiscal year 2024, Énergir signed four new RNG supply contracts, three of which are expected to begin in fiscal year 2025. These three contracts and the contracts signed in previous years allow Énergir, once again, to obtain the necessary supply to meet the requirement under the *Regulation respecting the quantity of gas from renewable sources to be*

*delivered by a distributor*, namely, 2% RNG for its fiscal year 2025 (i.e., approximately 124 Mm<sup>3</sup>). All contracts executed as at September 30, 2024 represent a potential contractual volume of 303 Mm<sup>3</sup> by 2025-2026, namely 99% of the volumes needed to reach the regulatory requirement of 5% for that fiscal year.

**Chart 4: RNG contracted volumes and supply plan for 2030-2031**  
(in Mm<sup>3</sup>)



### Voluntary RNG purchases

The *Regulation respecting the quantity of gas from renewable sources to be delivered by a distributor* establishes a minimal quantity of RNG to be delivered by the gas distributor. If this volume is not delivered to voluntary customers, the units missing to achieve the regulation's minimal quantity will be socialized, and therefore delivered, to all of Énergir's customers. For fiscal year 2024, the threshold is set at 2%, or 124 Mm<sup>3</sup>. Since 33,742,249 m<sup>3</sup> of RNG were purchased voluntarily,<sup>35</sup> the volume to be socialized rose to 89,823,751 m<sup>3</sup>. Énergir anticipates that changing market conditions, as well as growing environmental concerns, should stimulate demand in the medium and long term.

Énergir believes that the quantities of RNG distributed to its customers could grow significantly between 2030 and 2050 to reach approximately 1,900 Mm<sup>3</sup> annually, based on the Énergir pathway presented in the [Decarbonization pathway](#) section (allowing for the reduction of approximately 3.7 million tonnes of CO<sub>2</sub> eq from fossil fuels at combustion in 2050).

In its pathway for the 2050 horizon, Énergir believes that RNG injections could significantly reduce the fossil GHG emissions of its customers, contributing by 42% to the Decarbonization efforts in the buildings sector and by 28% in the industrial sector, compared to GHG emission levels in 2020.

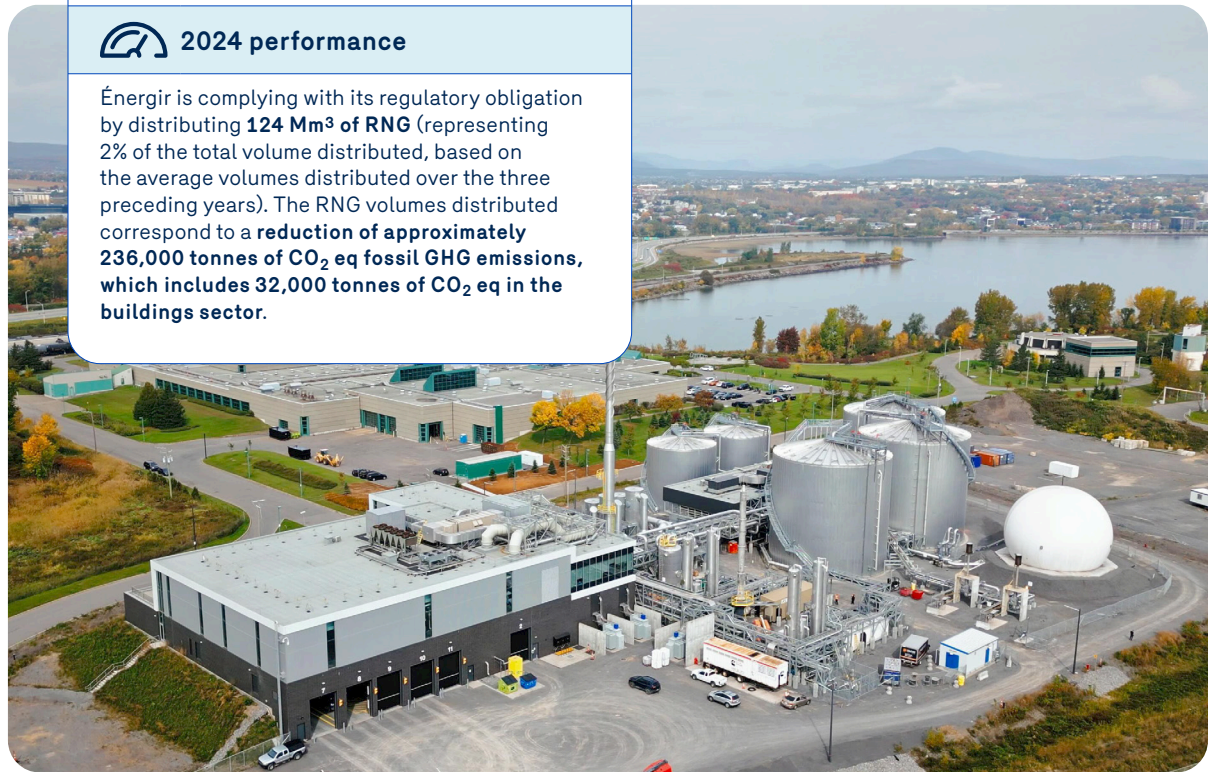
#### Climate metrics related to RNG

##### 2030 target

Reduction of 1 million tonnes of fossil CO<sub>2</sub> eq between 2020 and 2030, including 0.6 million tonnes in the buildings sector.

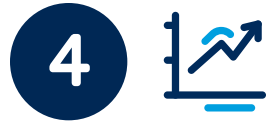
##### 2024 performance

Énergir is complying with its regulatory obligation by distributing **124 Mm<sup>3</sup> of RNG** (representing 2% of the total volume distributed, based on the average volumes distributed over the three preceding years). The RNG volumes distributed correspond to a **reduction of approximately 236,000 tonnes of CO<sub>2</sub> eq fossil GHG emissions, which includes 32,000 tonnes of CO<sub>2</sub> eq in the buildings sector.**



Québec City Biomethanation Centre

35. When a customer purchases RNG, the quantity it chooses to buy represents the quantity of RNG purchased by Énergir that is contractually attributed to this customer's service address. This quantity differs from the quantity physically delivered up to the customer's appliances, and it is impossible to distinguish the RNG molecule from a fossil natural gas molecule, seeing as they are mixed together in the gas network.



## Developing low-carbon growth vectors through its affiliates

### » Context

The Quebec economy's Decarbonization by 2050, as well as Énergir's ambitions to Decarbonize its natural gas distribution activities in Quebec, open up interesting growth and diversification opportunities. To identify the sectors that offer a competitive advantage in a low-carbon future, Énergir is keeping a close eye on developments in technologies, policies and regulations, as well as the guidelines and pathways proposed by international agencies and business intelligence providers. At the same time, it analyzes and evaluates its business environment in Quebec.

First, Énergir and its affiliates are active in sectors that bank on mature technologies.

There is no question that renewable power generation technologies are becoming increasingly cost competitive compared to conventional power sources. Lower level production costs contribute to the rapid adoption of these technologies worldwide. In Quebec, Énergir, through affiliates, has been involved in the **production of wind power** for more than 10 years. Together with its partners, it currently operates the Seigneurie de Beaupré wind farms, which have a total capacity of 340 MW. In addition, the Des Neiges wind farm, in partnership with the Séminaire de Québec, Hydro-Québec and Boralex Inc., a major project consisting of three phases of 400 MW each, for a total of 1,200 MW, will be added to the wind farms that are already in operation, provided that regulatory approvals are obtained.

Over the past few years, Énergir has identified geothermal heat pumps as offering an economically advantageous solution for society when all costs are considered. Quebec's particularly harsh climate places a lot of pressure on the power grid, especially during winter peak demand periods. Globally, aerothermic heat pumps offer significant value to energy systems year-round. This finding is more nuanced in Quebec. Indeed, the very high efficiency of heat pumps tends to decline during periods of extreme cold,<sup>36</sup> limiting not only this equipment's ability to provide sufficient heat to buildings, but also increasing the strain on the electrical grid; efficiency erodes significantly until it becomes equivalent to less expensive conventional electric heating technologies. Because **geothermal systems** draw thermal energy from the ground, not only are they more efficient than aerothermal heat pumps, but their efficiency is also maintained in conditions of extreme cold, relieving pressure on the power grid. Énergir believes there is a promising opportunity in Quebec to reduce the capacity impact of buildings that rely on electricity to meet their space heating needs.

Bioenergy is also an energy vector that can be found in any Decarbonization pathway of global agencies and business intelligence providers. Its contribution to Decarbonization is highly varied, from road transport, aviation, industrial processes, buildings to power generation. However, bioenergy is limited worldwide, which suggests fierce competition for deposits. This is the context in which one Énergir affiliate has identified **RNG production** activities that would stimulate the development of bioenergy deposits in order to reduce the fossil GHG emissions generated by gas distribution activities, all while striving to use these deposits where the molecule has the most value.

36. Technical limitation documented in the literature, including in the following American Council for Energy-Efficient Economy study (ACEEE) (2021).

From a local perspective, it is possible to improve energy efficiency by leveraging the complementarity of different uses nearby, more specifically by **recovering thermal waste. Energy loops**, when supported by centralized infrastructure and heat pump technologies, allow for final energy needs to be met and minimize the addition of generation assets. These systems are evolving and can combine several technologies, such as geothermics and RNG, to meet the specific needs of communities. Énergir, through its subsidiary EUHC, already operates an energy loop in downtown Montréal (a thermal system supplying nearly two million square metres of building space) that illustrates this model. Two types of energy loops are under consideration: **neighborhood loops**, which serve dense residential or commercial areas, and **waste heat recovery**, a point-to-point network that reuses waste heat from neighboring buildings or industries. Thanks to their optimized configuration, thermal networks aim to generate savings not only for end users, but for society in general by reducing the addition of infrastructure to meet energy and electrical power needs. These energy loops also help leverage local synergies between buildings to maximize efficiency gains and minimize energy costs.

Énergir affiliates are also exploring opportunities in such emerging sectors as Low-Carbon Hydrogen and CCUS.

In the area of **Low-Carbon Hydrogen**, a key power solution in the energy transition, Énergir has developed a strategic roadmap to assess and seize the opportunities afforded by this sector. This approach has already led to several projects, including tests for injecting green hydrogen into an Énergir site simulating a multitude of tasks that are difficult to perform in real-life situations and at the thermal energy distribution plant of EUHC. Énergir is also examining the potential impacts of injecting Low-Carbon Hydrogen into its natural gas distribution network. At the same time, Énergir is evaluating where it could bring the most value to different stages of the hydrogen value chain, including inputs, production, distribution and end uses. Methanation, which produces third-generation RNG, is also an area of interest for the corporation.

Regarding **CCUS**, Énergir has implemented a roadmap to play a proactive role in this emerging industry in Quebec. One of the opportunities identified is the capture and sequestration of carbon emitted by Énergir's large industrial customers, thereby contributing to the reduction of Énergir's Scope 3 emissions. The capture and recovery of biogenic CO<sub>2</sub> for the production of third-generation RNG is another interesting opportunity.

### Particularities of the industrial sector

In the industrial sector currently served by Énergir, it would be difficult to rely on direct electrification in some applications and configurations, whether for economic or technical reasons. This makes the GHG emission reduction pathway for these uses more uncertain, since it relies on a cluster of developing technologies (see the following section on the [Decarbonization pathway](#)). In addition to the solutions mentioned in the three previous strategic initiatives, the two following technologies could have a major impact on the industrial sector's GHG emissions: Carbon Capture and Low-Carbon Hydrogen.

At this point in time, CCUS is in some cases a competitive Decarbonization solution compared to the alternatives, especially for large industrial facilities whose gaseous discharges contain high concentrations of CO<sub>2</sub> (IEA, 2021a). Recognized as a key element in all pathways leading to Carbon Neutrality on a global scale (IPCC, 2023; IEA, 2021b; IRENA, 2023), this technology plays an indispensable role in, among other things, reducing the emissions of such chemical industrial processes as cement production (see the Sidebar What is the role of Carbon Capture?). What is more, Carbon Capture can be combined with other Decarbonization strategies, such as the use of bioenergy.

Because the bioenergy combustion emissions are biogenic in origin, their sequestration could result in the Carbon Removal from the atmosphere (referred to as bioenergy with Carbon Capture and sequestration “**BECCS**”). As a result of these anticipated benefits, Énergir has increased the contribution of Carbon Capture in its pathway compared to the previous fiscal year (see [Decarbonization pathway](#) section), as it believes that some of its customers in the forestry and pulp and paper sectors may be more interested in the BECCS strategy in non-gas operations. What is more, combining RNG, a bioenergy, and CCUS opens up the possibility of Carbon Removal.<sup>37</sup>

Furthermore, hydrogen's use as a Decarbonization tool could play a niche role in certain industrial sectors with processes that are difficult to electrify. At this point in time, there is an interest for green hydrogen<sup>38</sup> that is produced using renewable electricity and water electrolysis, with thought going into its development and use even though other technological options aiming to produce Low-Carbon Hydrogen may also stand out. In addition,

green hydrogen can be produced when electricity generation exceeds demand, thus optimizing the value of electricity and its use. Énergir believes that the Low-Carbon Hydrogen sector could, much like Carbon Capture, represent an additional attractive Decarbonization option that would complement the cluster of potential strategies in the industrial sector.

Although CCUS and Low-Carbon Hydrogen are not very mature technologies yet, Énergir believes they offer interesting opportunities to decarbonize its customers' GHG emissions that are linked to the distribution activities and invest in sustainable growth vectors. To better explain these technologies, Énergir proposes presenting several facts and case studies.



Industrial customer – aluminium sector

37. According to the World Resources Institute (WRI) (2023), Carbon Removal differs from Carbon Capture in that carbon already present in the atmosphere is being removed. Bioenergies accompanied by Carbon Capture are considered Carbon Removal, since the CO<sub>2</sub> released by combustion was originally absorbed via photosynthesis. According to the WRI, this is a strategy to achieve net negative emissions and thus achieve net zero emissions when CO<sub>2</sub> emissions are too difficult to reduce by other means.

38. There are different techniques for producing hydrogen. Depending on the process selected, the hydrogen obtained may be labelled as black, grey, blue, green, etc. Assigning a colour to hydrogen is a visual way of reflecting its origin, that is, the material and energy sources used in its production cycle. Hydrogen can be produced by water electrolysis, whereby an electric current is passed through water to break down its molecules (H<sub>2</sub>O) and extract hydrogen. If, in addition, the current comes from a renewable energy source, all elements of the generation cycle are low-carbon. The hydrogen produced is then labelled as green hydrogen.



## What is the role of Carbon Capture?

In its Sixth Assessment Report (AR6), the IPCC deals at length with CO<sub>2</sub> capture, which is considered essential to achieving Carbon Neutrality by 2050 and limiting global warming to 1.5°C (IPCC, 2022). The IPCC notes that Carbon Capture is not a substitute for reducing emissions, but is indispensable for treating the residual emissions of hard-to-decarbonize sectors. To limit global warming to 1.5°C, the IPCC estimates that between 5 and 10 gigatonnes of CO<sub>2</sub> will need to be captured annually by 2050.

The IEA also supports the use of Carbon Capture and sequestration technologies, emphasizing that massively adopting renewable energy will not be enough to eliminate all emissions. Some emissions will be inevitable, particularly in sectors such as cement production and other industrial products, where CO<sub>2</sub> emissions are inherent in the processes. Cement production, for example, accounts for approximately 7% of global GHG emissions (1.4% in Canada) (Cement Association of Canada, n.d.). In the IEA's Net Zero Emissions Scenario for 2050 (IEA, 2023b), 8% of emissions reductions will come from Carbon Capture, with capture volumes rising from 45 million tonnes of CO<sub>2</sub> in 2022, to 6,040 million tonnes captured annually in 2050 (IEA, 2023b, p. 102).

There are several economic benefits to integrating CCUS into the energy transition. First, it helps preserve jobs in heavy industries while reducing their carbon footprint. In addition, the implementation of CCUS infrastructure can stimulate technological innovation and create new economic opportunities, particularly in the management and upgrading of the CO<sub>2</sub> captured. The development of CO<sub>2</sub> markets, for use in industrial processes or the production of synthetic fuels, for example, could also be a significant long-term economic benefit. Finally, CCUS could help stabilize the costs associated with the energy transition by avoiding massive investments in rebuilding global industrial infrastructure.

## Case Study



### » The CO<sub>2</sub>ment project at Lafarge Cement (Richmond, British Columbia)

Lafarge's CO<sub>2</sub>ment project<sup>39</sup> is an initiative to reduce CO<sub>2</sub> emissions in the cement industry, a sector that has historically been one of the biggest emitters of GHGs. Launched in 2019 in collaboration with Svante, a company specializing in Carbon Capture technologies, and with the support of TotalEnergies, the CO<sub>2</sub>ment project is attempting to demonstrate the viability of CCUS technologies applied to a cement plant.

#### Objective of the CO<sub>2</sub>ment project

The primary objective is to capture CO<sub>2</sub> emissions directly from the cement plant's flues and reuse or store them so as to reduce the cement production process's carbon footprint. Svante provides the Carbon Capture technology. Their process relies on solid filters that capture CO<sub>2</sub> efficiently and at a lower cost than conventional technologies.

#### CO<sub>2</sub> upgrading technology

In addition to capturing CO<sub>2</sub>, the project explores the possibility of reusing this captured CO<sub>2</sub> in various applications, such as the production of synthetic fuels or transformation into valuable materials.

#### Potential impact

If deployed on a large scale, the technology could significantly reduce emissions in the cement sector, an important step towards achieving global climate targets, while demonstrating the feasibility of integrating CCUS into other carbon-intensive industries.

**This project is part of the global strategy of Lafarge and Holcim (Lafarge's parent company) to achieve Carbon Neutrality by 2050.**

39. <https://www.lafarge.ca/en/project-co2ment>

## What is the role of Low-Carbon Hydrogen?

According to the Net Zero Emissions Scenarios developed by IEA and IRENA, and the business intelligence provider BloombergNEF, Low-Carbon Hydrogen is expected to play an important role in energy transition as a versatile energy vector. According to the IEA, global production of Low-Carbon Hydrogen will need to rise from 0.6 million tonnes per year in 2020 to 420 million tonnes in 2050 to meet the net zero emission targets (IEA, 2023b, p. 78).

Several technologies can be used to produce Low-Carbon Hydrogen. "Blue" hydrogen is produced by reforming natural gas using steam, followed by Carbon Capture and sequestration, significantly reducing the CO<sub>2</sub> emissions associated with the process. "Green" hydrogen, on the other hand, is produced by the electrolysis of water using renewable electricity, which maximizes the reduction of CO<sub>2</sub> emissions during production. "Turquoise" hydrogen, which is produced by methane pyrolysis, is another promising option that could become more interesting as the technology matures.

Hydrogen plays a multitude of roles in the energy transition. On the one hand, it can be used to decarbonize energy-intensive uses where direct electrification is technically more difficult and costly, perhaps even impossible, and where the hydrogen molecule is necessary, as in the steel and fertilizer industries. On the other hand, hydrogen can be a high-value energy solution for withstanding the seasonal imbalances between energy supply and demand in the low-carbon future; indeed, Low-Carbon Hydrogen and its prospects in terms of synthetic methane, green methanol or ammonia are deemed to represent a comparative advantage for managing seasonal imbalances despite significant energy losses along the value chain (IEA, 2023c; IEA, 2024a).

In addition, replacing the "grey" hydrogen currently used by "green" hydrogen is an effective strategy to significantly reduce emissions. However, green hydrogen is not without challenges. Its generation requires significantly more electricity than direct electrification, which can pose problems in regions where the supply of renewable electricity is already under pressure. It is therefore crucial, in Énergir's view, to prioritize the use of hydrogen in "no regret" sectors, i.e. those for which no more effective Decarbonization alternative exists.

## Case study



### » Hydrogen use, ArcelorMittal

In 2022, ArcelorMittal Long Products Canada Inc. successfully tested the use of green hydrogen in the production of direct reduced iron ("DRI") at its steel plant in Contrecoeur, Quebec (ArcelorMittal Long Products Canada, 2022). This initiative is part of the company's ambition to become a leader in the steel industry's Decarbonization. This test marks an important milestone in the production of low-carbon emissions steel, combining the use of electric arc furnaces and green hydrogen to reduce iron.

#### Test objective

The objective was to assess the feasibility of replacing natural gas with green hydrogen in the iron ore reduction process. During this first phase, 6.8% of the natural gas was replaced by green hydrogen over a 24-hour period, resulting in a significant reduction in CO<sub>2</sub> emissions. The green hydrogen used was produced using an electrolyzer belonging to a third party that was transported to Contrecoeur. This progress is noteworthy because iron ore reduction accounts for more than 75% of the overall CO<sub>2</sub> emissions of ArcelorMittal Long Products Canada Inc.

#### Next steps

ArcelorMittal Long Products Canada Inc. plans to conduct further tests in the future, gradually increasing the use of green hydrogen in its reduction plant. This could potentially reduce CO<sub>2</sub> emissions by several hundred thousand tonnes a year.





## » Énergir's strategic vision

To support the building and industrial sectors that it currently serves in a low-carbon economy, among other things, Énergir is examining sectors which, in its opinion, could provide a strong competitive advantage from a societal standpoint and properly align with its existing operations.

Several activities target markets that are not currently served by Énergir. However, certain technologies could directly contribute to Decarbonizing the fossil natural gas consumption of Énergir customers in Quebec.

In its pathway for the 2050 horizon, Énergir believes that the Carbon Capture and Low-Carbon Hydrogen sectors could significantly contribute to reducing its customers' fossil GHG emissions by contributing approximately 14% and 12%, respectively, compared to GHG emission levels in 2020.

The following table shows the progress of the various efforts Énergir has deployed as part of its initiative to diversify into sustainable growth vectors.

| 2024 Update  |   |
|--|---|
| <b>Low-Carbon Hydrogen</b><br>                                    | <p>The development of the Low-Carbon Hydrogen industry is an opportunity to promote new growth vectors and decarbonize certain sectors of the economy. In this context, Énergir is questioning its role in the Low-Carbon Hydrogen value chain in Quebec. One possible avenue is the distribution of this hydrogen (pure or in the form of RNG). However, one of the major challenges of hydrogen is its transportation and its impact if injected into Énergir's network and its customers' equipment.</p> <p>Énergir is conducting pilot projects to proceed with the technical validation of the effects of a mixture of hydrogen and natural gas on network components and natural gas appliances.</p>  |
| <b>Energy loops</b><br>   | <p>The market for new generation energy loops continues to grow in Quebec, and the partnership proposed by an Énergir affiliate is well received by stakeholders met with in the buildings sector (real estate developers, municipalities, businesses and industries). Owner of its subsidiary EUHC, the largest thermal power plant for buildings in Quebec, Énergir wants to expand its energy loop expertise and promote the deployment of new heating and air conditioning networks that are efficient, resilient and contribute to Decarbonization. Developing this energy industry is in line with Énergir's diversification objectives, squares with the expertise of existing teams and is highly complementary to the dual-energy and RNG production growth initiatives. These solutions contribute in a concrete way to Quebec's energy transition, in particular by promoting the circular economy by recovering our customers' waste heat resources. At this point in time, the Énergir Development Inc. team is conducting a detailed feasibility study on around a dozen or so new energy loop projects, and construction of the first projects is slated to begin in 2025.</p> |
| <b>Carbon Capture, utilization and sequestration (CCUS)</b><br> | <p>During fiscal year 2024, Énergir continued analyzing opportunities related to CCUS technologies. In April 2024, Énergir Development Inc. and Exterra Carbon Solutions Inc. announced a strategic collaboration to identify business opportunities that could result from the complementarity of their expertise and to develop joint and innovative Decarbonization solutions related to the capture, transportation and sequestration of CO<sub>2</sub>. Exterra Carbon Solutions Inc. is a company specializing in accelerated carbon mineralization, a permanent, verifiable and safe sequestration solution.</p>   |
| <b>Geothermal energy</b><br>                                    | <p>Énergir takes a great interest in this sector and is considering the best way to get involved. Geothermal energy is similar to its traditional activities, and offers a renewable, economical and efficient solution.</p>  |

## » Decarbonization pathway

To achieve its objectives, Énergir proposes four guiding principles that rely, in particular, on the Decarbonization pathways of global agencies (IEA, 2021b; IRENA, 2020) and a business intelligence provider (BloombergNEF, 2022.)<sup>40</sup>

1. Energy efficiency first;
2. Electrification where (use) and when (time) it is favourable;
3. Resorting to developing technologies contributes to the Decarbonization of uses that are more difficult to electrify;
4. RNG, a keystone to aligning with the 1.5°C pathway.

These principles apply in the buildings and industrial sectors. However, Énergir does not foresee any direct contribution of Low-Carbon Hydrogen or Carbon Capture in its building Decarbonization pathway.



40. In this section, the pathways of these agencies are compared to the industrial Decarbonization pathway presented by Énergir, which also integrates the particularities of the context in Quebec and the composition of its industrial customers.

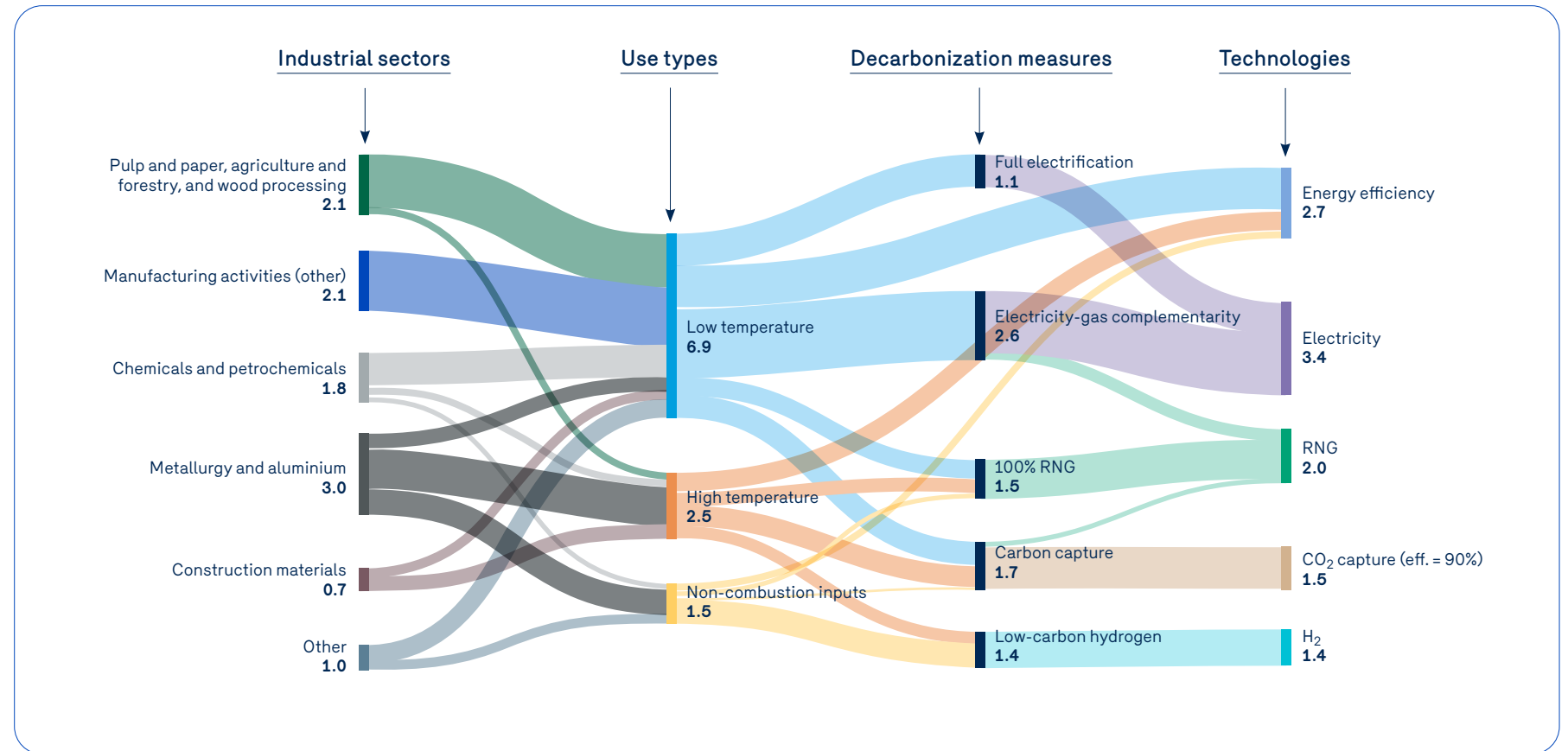
» **Pathway to decarbonize the industrial sector by 2050 – 2024 update**

The chart 5 below shows the 2024 update on the static 2050 forecast for the industrial Decarbonization pathway. This forecast is clearly influenced by the intrinsic Decarbonization ambitions of its large industrial customers, the regulatory context and the evolution of the overall technological context.

The figure must be read as follows (left to right):

- Segmentation of volumes delivered, by industrial group;
- Breakdown into three types of uses for natural gas, namely low-temperature, high-temperature and non-combustion uses;
  - Illustrates the consumption share of the various industrial sectors, by type of use.
- Forecasted Decarbonization of these uses, through various measures;
  - Illustrates the consumption share of these types of use, by various measures.
- Contribution of various technologies;
  - Illustrates the share by which technologies contribute to different decarbonization measures.

**Chart 5: Decarbonization of natural gas volumes distributed in the industrial sector in 2050<sup>41</sup>**  
(in millions of tonnes of fossil CO<sub>2</sub> per year)



41. Includes Énergir’s activities serving the freight industry.

Note: Energy efficiency is presented as a decarbonization measure and a group of technologies.

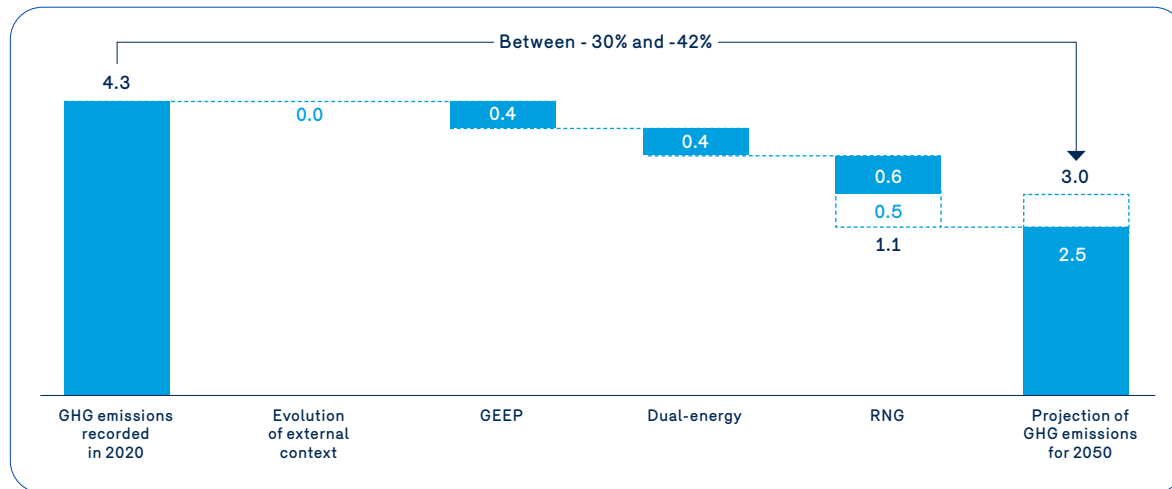
» **Forecast of the benchmark decarbonization pathway**

The updated projection of possible GHG emission reductions integrates the new consumption data of Énergir’s customers, as well as the latest estimates cost-of-service changes that directly influence Énergir’s competitiveness. This update also reflects changes in Énergir’s external business environment, such as evolving energy prices, the Price of Carbon pursuant to the regulations in effect, restrictions on the use of natural gas and other relevant factors.

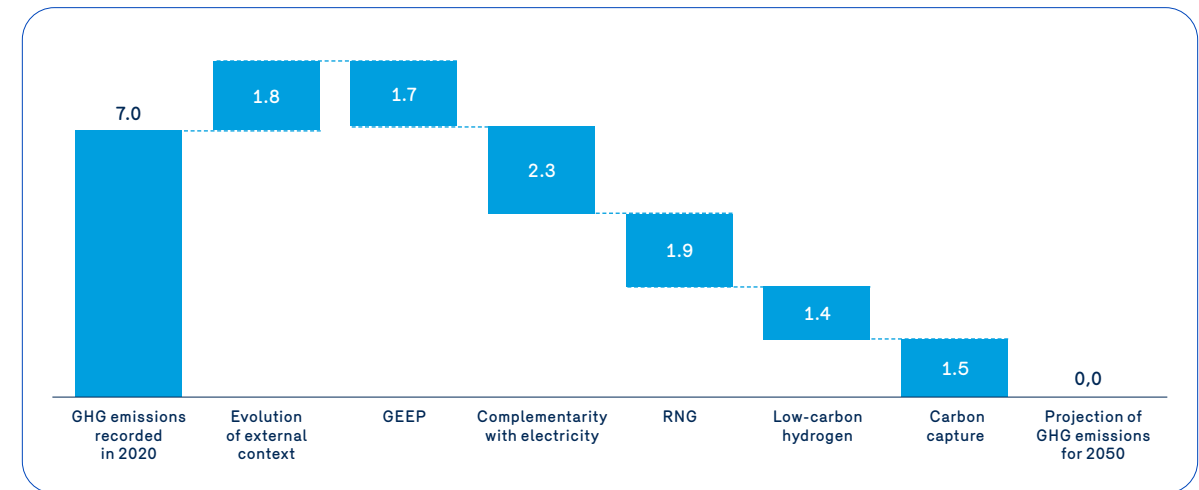
This projection of the GHG emission reductions, according to the solutions identified in Énergir’s Strategic Vision of Decarbonization for 2030-2050, are illustrated in the following tables. Énergir recognizes that significant developments in new energy sectors will be required to achieve its Carbon Neutrality target for the energy distributed to its customers by 2050,<sup>42</sup> and this in a manner consistent with a pathway limiting the temperature rise to 1.5°C by 2100 compared to pre-industrial levels (for more details, see the [Resiliency of Énergir’s Business Model](#) section).

Although the Government of Quebec’s intention did not indicate the percentage of RNG required in the buildings sector by 2030 at the time of drafting this Report, in its high level evaluation, Énergir evaluated what the framework for the use of natural gas in the buildings sector announced by the Government of Quebec in Novembre 2024 (see p. 45) might represent in terms of additional fossil GHG reductions in the buildings sector (0.5 million tonnes CO<sub>2</sub> eq per year). According to the assumptions used, the competitiveness of Énergir’s solutions remain globally competitive compared to full electrification solutions.

**Chart 6: Projection of fossil GHG emissions in the buildings sector**  
(in millions of tonnes CO<sub>2</sub> eq per year)



**Chart 7: Projection of fossil GHG emissions in the industrial sector**  
(in millions of tonnes CO<sub>2</sub> eq)



42. Scope 3 emissions, Category 11 (use of products by customers).

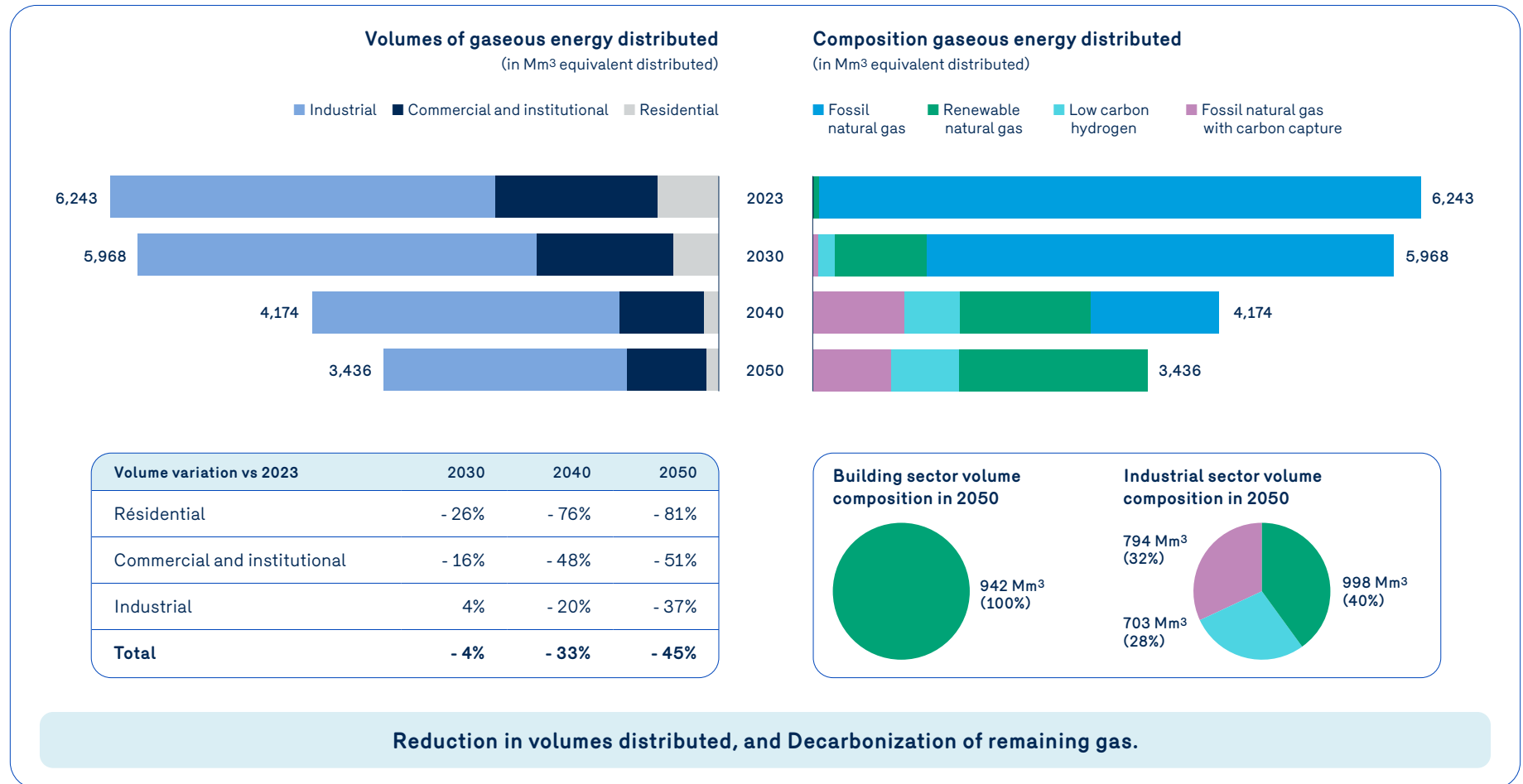


**Table 4: Projection of fossil GHG emissions in sectors served by Énergir in 2050**  
(in millions of tonnes CO<sub>2</sub> eq per year and % of change compared to 2020 levels)

|   | Buildings   |              | Industrial <sup>43</sup> |              | Total        |              |
|---|-------------|--------------|--------------------------|--------------|--------------|--------------|
|   | (absolute)  | (% of 2020)  | (absolute)               | (% of 2020)  | (absolute)   | (% of 2020)  |
| <b>2020 Emissions</b>   | 4.3         | -            | 7.0                      | -            | <b>11.3</b>  | -            |
| <b>Evolution of external context</b>                              | 0.1         | 1%           | 1.8                      | 26%          | <b>1.8</b>   | <b>16%</b>   |
| GEEP  | -0.8        | -19%         | -1.7                     | -24%         | -2.5         | -22%         |
| Complementarity with electricity                                  | -1.7        | -40%         | -2.3                     | -33%         | -4.0         | -36%         |
| RNG   | -1.8        | -42%         | -1.9                     | -28%         | -3.7         | -33%         |
| Low-Carbon Hydrogen   | -           | -            | -1.4                     | -19%         | -1.4         | -12%         |
| Carbon Capture  | -           | -            | -1.5                     | -22%         | -1.5         | -14%         |
| <b>Subtotal of Decarbonization strategies</b>                     | <b>-4.4</b> | <b>-101%</b> | <b>-8.8</b>              | <b>-126%</b> | <b>-13.1</b> | <b>-116%</b> |
| <b>Projected GHG emissions reduction in 2050 compared to 2020</b> | <b>4.3</b>  | <b>-</b>     | <b>7.0</b>               | <b>-</b>     | <b>11.3</b>  | <b>-</b>     |

43. Includes Énergir's activities serving the freight industry.

Chart 8: Pathway for 2050 – Low-Carbon Energy Vision



Note: RNG represented for 2023 indicates the customers' voluntary purchases and socialized quantities (and not the RNG supplied by Énergir).



## » Resiliency of Énergir's Business Model

**Énergir believes that the achievement of the four initiatives of its Strategic Vision of Decarbonization for 2030-2050 is consistent with an emission reduction pathway that is aligned with the Government of Quebec's targets.**

To aim for a more ambitious pathway that would limit global warming to 1.5°C, Énergir recognizes that it will need to make significant additional efforts, notably to accompany its customers on their path to Decarbonization.

With its Strategic Vision of Decarbonization for 2030-2050, Énergir also wants to position itself in a way that will protect it against the main threats and allow it to seize the opportunities offered by Decarbonization, provided the relevant energy transition technologies are mature. Énergir believes that certain aspects of the Quebec-specific context as well as technological development should have an impact on the deployment of the energy transition.

On the one hand, in a pathway led by massive electrification of the economy, the importance of RNG and Carbon Capture could be reduced since preference is given to solutions that benefit from the abundance of renewable energy production. Low-Carbon Hydrogen and geothermal energy are two technologies that would benefit from

this context. For example, Low-Carbon Hydrogen represents an interesting seasonal storage solution when renewable electricity is produced, while geothermal energy, with its high efficiency, even during extreme cold periods, could ease the pressure on energy and electrical capacity balances.

On the other hand, in a pathway where deploying power infrastructure throughout the value chain is more complex, in particular by the ability to build electricity generation capacity at the appropriate pace, or by technical, economic and behavioral constraints to modify the energy configuration behind customers' meters, Carbon Capture technologies would make it possible to contribute to GHG reduction targets with less upheaval.

Finally, in the pragmatic pathway considered by Énergir, all technologies are required and have a role to play in contributing to reducing the GHG emissions of its customers.

Ensuring the resiliency of Énergir's business model is a complex task. The business model must maintain competitive rates and preserve revenues and profits, at a time when the volumes distributed are expected to decrease and the integration of new sources of renewable energy will be more costly. With the initiatives set out in its Strategic Vision of Decarbonization for 2030-2050, Énergir expects to ensure this resiliency.

This Report introduces the competitive position of four Énergir customer archetypes, customers whose purchases of natural gas molecules consist entirely of RNG, in a manner consistent with Énergir's positioning regarding its Decarbonization pathway. Several elements are considered when calculating a competitive position's evolution, especially the evolution of cost of service, as well as the evolution of electricity rates. These elements are updated on an ongoing basis.

**These projections show that the energy solutions Énergir offers should remain globally competitive.**

The measures to ensure Énergir's resilience by 2050 are based mainly on the following premises, as shown in the graph below:

|   |   |
|---|---|
| 1 | In most markets, Énergir anticipates that by 2050, RNG should provide a competitive energy solution compared to electricity. RNG is expected to remain less expensive from a societal perspective <sup>44</sup> than most solutions involving conversion to electricity: RNG draws its main value from being interchangeable with fossil natural gas, leveraging existing infrastructure and offering the same flexibility to meet Quebec's demanding seasonal needs. Moreover, RNG is a low-impact option that allows Énergir customers to decarbonize their activities without requiring modifications or investments.                                |
| 2 | Hydro-Québec should be facing major challenges in terms of the growth of renewable or low-carbon source tools for meeting the needs generated by the heightened seasonal demand profile that comes with Quebec's rigorous climate, notably with the greater presence of intermittent renewable energy in its supply portfolio. Énergir believes that the rate signals sent by Hydro-Québec will be strong and stable over time (much like the dual energy rate) so as to encourage lower electricity consumption at the most critical times, as such a reduction will be of great value to the power grid in both the buildings and industrial sectors. |
| 3 | The reduction in revenues associated with the estimated decrease in the natural gas volume distributed in 2050 could be offset by initiatives that allow Énergir to maintain its revenues, such as government support for energy efficiency or maintenance of the joint dual-energy program with Hydro-Québec.  |

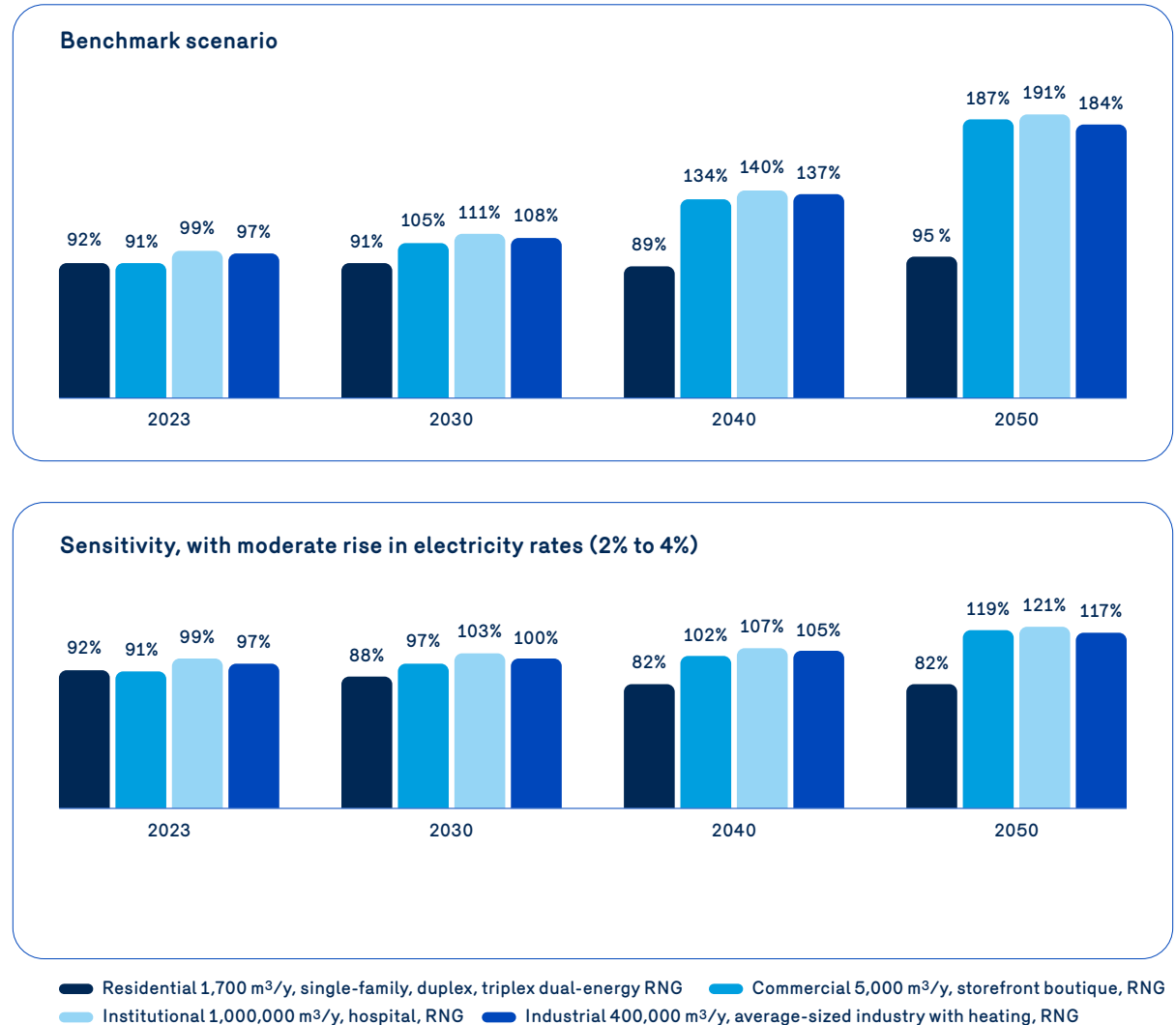
Maintaining Énergir's competitive position is indeed important. A decrease in distributed volumes coupled with an increase in costs (Price of Carbon, integration of renewable energy sources) induces upward pressure on rates. To limit this pressure over time and maintain a competitive energy supply, Énergir must therefore focus on value-added activities. Maintaining a competitive energy supply is an essential element of Énergir's business model. Indeed, natural gas distribution activities in Quebec are regulated. The return on capital employed generated by Énergir depends on the net value of its assets (its rate base), its capital structure as well as the rate of return authorized by the Régie de l'énergie. Like operating costs, profit is authorized annually during the presentation of the rate case to the Régie de l'énergie and recovered through Énergir's rates. Rates that remain competitive in the majority of the target markets significantly limit the risk of not recovering invested capital and the associated return in the medium and long term. It is in this context that Énergir illustrates in the chart 9 the evolution of the competitive position in the main target markets.

44. See "Societal Cost" in the Glossary.

In this graph, a market with a competitive position greater than 100% is a market in which Énergir's rates, determined based on costs, capital costs and distributed volume, are advantageous for its customers compared to electricity. A competitive position of 125% or more represents a 25% economic advantage over a competing energy source. For typical dual-energy cases, it is important to note that the comparable electrical configuration used is a solution that relies on an air-air heat pump with electrical backup, a solution for which the conversion costs are generally higher than those of switching to dual energy, since converting to all-electric usually involves major work like upgrading the electrical entrance and panel.

- The data used for the evolution of inflation and interest rates come from Desjardins' economic and financial forecasts up to 2026-2027 and from assumptions on long-term values based on historical values.
- RNG forecasts are based on Énergir's RNG supply contracts until 2030, on assumptions respecting the long-term composition of the supply portfolio and on the impact of Canada's *Clean Fuel Regulations* on the total cost of acquisition.
- For the benchmark scenario, the projection of long-term electricity rate levels is based on growth not exceeding inflation or 3% in the residential sector, and 5 to 6% in the business market.

**Chart 9: Competitive position for 2023-2050**  
(electricity bill as % of RNG bill)



# Activities in Vermont



Electricity Distribution  
in Vermont



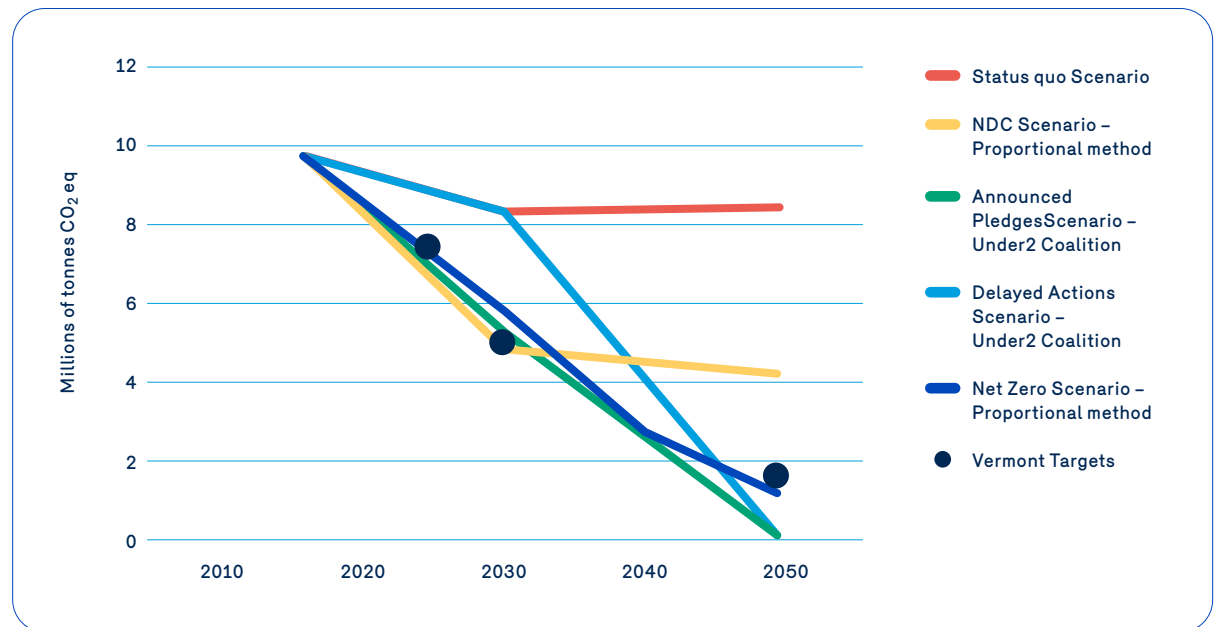
Distribution of  
Natural Gas in Vermont



## » Vermont-Wide Scenarios

The scaling of the NDC Scenario for Vermont reveals a rise in GHG emissions in 2050 due to the changes made to this scenario explained above.<sup>45</sup> These emissions should exceed 4 million tonnes of CO<sub>2</sub> eq in 2050, though they were estimated at close to 3 million tonnes in 2023. Once again, the 2030 pathway remains unchanged.

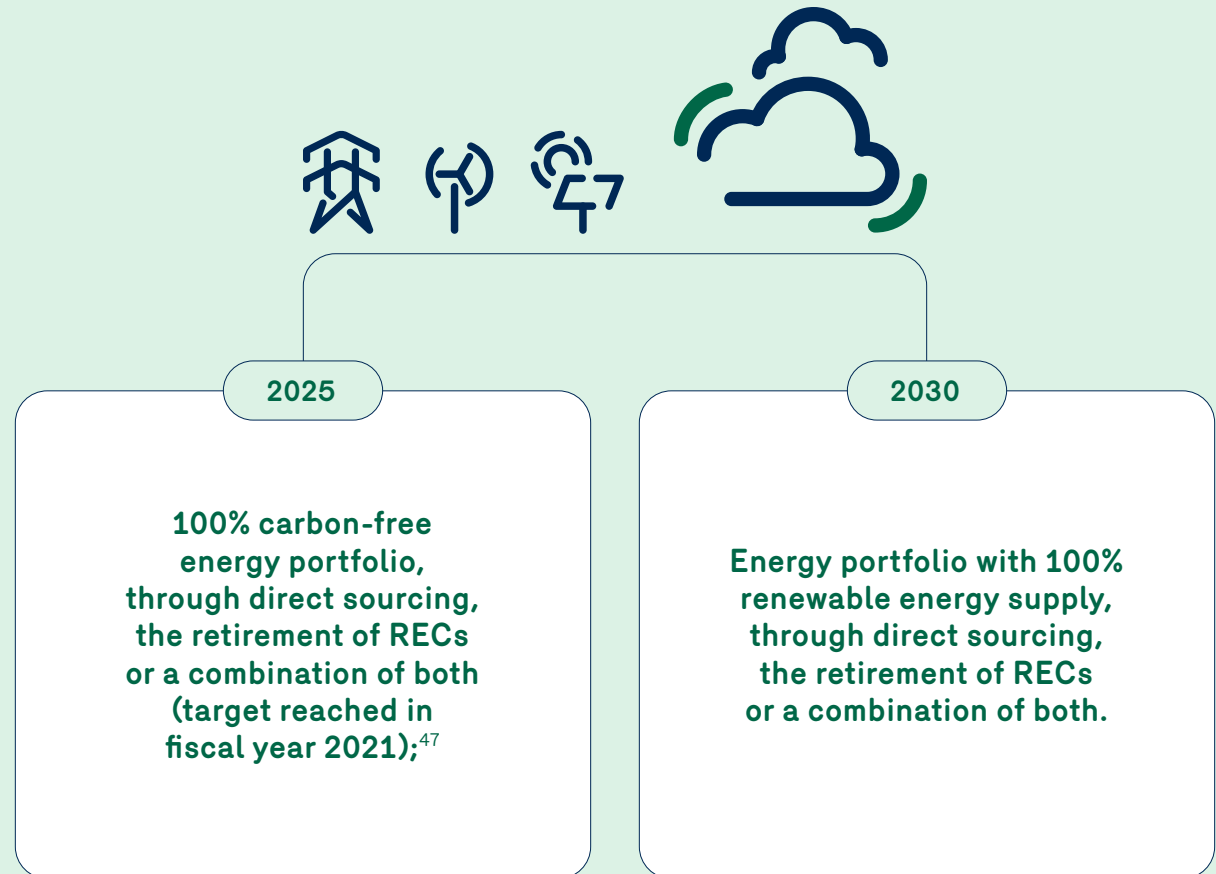
**Chart 10: Possible annual GHG emission pathways according to the scenarios used as they apply to Vermont**



45. Appendix 4 provides additional information on the scaling of the Scenarios.

## » GMP's Path to 100% Renewable and Zero Outages Initiative


To address climate risks and opportunities, GMP's Path to 100% Renewable and Zero Outages Initiative have one priority: customers – how best to serve them in a cost effective and reliable way in this time of climate change. GMP is providing clean, cost-effective, and reliable power, to help support customers as more choose strategic electrification. For these purposes, GMP has adopted a proactive and detailed plan to achieve 100% renewable energy supply by 2030 on an annual basis. And GMP's objective to have 100% carbon-free portfolio had been achieved four years early from 2025.<sup>46</sup> As noted above GMP's annual electricity supply portfolio is 100% carbon free and 82% renewable.




46. Through direct sourcing, the retirement of RECs or a combination of both.

47. On an annual basis.

**Main axes of GMP’s Path to 100% Renewable and Zero Outages Initiative**

|   |  |
|---|--|
|  | <p><b>Supply portfolio</b></p> <p>Because its supply portfolio is already low carbon, GMP is less exposed to the transition risks inherent to climate change. This is why it is focusing on physical resilience risks to develop an energy system where generation is closer to interconnected customers and empowers those customers, which requires:</p> |
| <p><b>1</b></p>   | <p>Switching from a one-way energy system of centralized generation transmitted to far away customers through conventional electric poles and cables to a generation system that is lower in GHG emissions, renewable and distributed with new possibilities for managing complex local and regional networks;</p>   |
| <p><b>2</b></p>   | <p>Switching from one-way electricity flowing from a central plant to storage and delivery of a two-way flow between customers and GMP. GMP is deploying a large battery fleet across its system to reduce costs and carbon emissions and increase resiliency for customers;</p>   |
| <p><b>3</b></p>   | <p>Leveraging growing demand associated with strategic electrification to decarbonize the transportation and thermal power sectors, which are major sources of carbon pollution in Vermont;</p>  |
| <p><b>4</b></p>   | <p>Continually improving the resiliency of the energy distribution system and customers’ buildings through innovative programs and solutions, including battery storage and smart electric infrastructure in homes and businesses.</p>   |

|   |  |
|---|--|
|  | <p><b>Distribution</b></p> <p>GMP to invest in energy distribution models that seek transformation to adapt to the evolving energy generation context in the following ways:</p>   |
| <p><b>1</b></p>   | <p>Leveraging many different resources (distributed energy resources) to manage the new, multi-directional grid with intermittent resources. Using battery storage to meet the needs previously satisfied by fossil-fuel generators and retiring these assets;</p> |
| <p><b>2</b></p>   | <p>Establishing communities of decentralized power generation that are communications enabled to optimize the operating cost of the power grid and the use of renewable and non-GHG-emitting generating sources;</p>   |
| <p><b>3</b></p>   | <p>Offering a diverse portfolio of innovative energy programs that promote measures consistent with Vermont’s energy policy and appeal to the specific goals of each customer.</p>   |

|   |   |
|---|---|
|  | <p><b>Resiliency</b></p> <p>GMP invests in resiliency and reliability measures to counter the effects of climate changes on its system through its climate plan and Zero Outages Initiative, by:</p>  |
| <p><b>1</b></p>   | <p>Integrating evolving technology to underground parts of the distribution system to lead to a more competitive solution allowing for more burial of lines in locations with reliability issues, notably to reduce exposure of GMP’s assets to physical risks of climate change, such as violent storms;</p>   |
| <p><b>2</b></p>   | <p>Better preparing GMP’s grid to serve as the backbone for Vermont’s aggressive goals to cut GHG emissions and transition off fossil fuels;</p>  |
| <p><b>3</b></p>   | <p>Favouring the creation of resiliency zones to take a targeted approach to communities that have multiple resiliency challenges, including electric, communications and social vulnerabilities. This helps customers achieve ubiquitous broadband connectivity that is required to unlock innovative energy services that help cut costs and reduce GHG emissions through load management and control.</p> <p>GMP successfully launched a broadband internet service deployment program to quickly help more Vermonters get connected at a lower cost. GMP is deploying a federally funded major rollout.</p> |

## » Resiliency of GMP's Business Model

GMP has set specific targets for itself that are either more stringent than those of the Under2 – Coalition of which Vermont is a member – or in line with Vermont's stated objectives.

GMP uses a scenario to assess its climate resilience in a pathway to limit the temperature rise to 1.5°C or less by 2100 compared to pre-industrial levels. It is important to clarify that, for the moment, neither Vermont nor the United States have adopted climate targets to align with this pathway. GMP is aware that additional emission reductions would need to be achieved, particularly in the next ten years, if Vermont were to adopt a more aggressive GHG emission reduction pathway than those limiting global warming to 2°C or less by 2100 compared to pre-industrial levels. This may have a positive impact on GMP's customers, as the corporation is already well positioned to offer low-carbon solutions to Vermonters that will grow load, which will reduce pressure on rates.

### GMP's objectives

- |   |   |
|---|---|
| 1 | <b>Achieve</b> a carbon-free annual power supply portfolio by 2025, which was completed four years earlier than GMP had anticipated through direct sourcing, the retirement of RECs or a combination of both.   |
| 2 | <b>Achieve</b> a 100% renewable annual power supply portfolio by 2030, through direct sourcing, retirement of RECs or a combination of both. These goals exceed Vermont's requirements.   |
| 3 | <b>Contribute</b> to Vermont's goal of reducing GHG emissions by at least 26% below 2005 levels by 2025, and at least 40% below 1990 levels by 2030, in part by electrifying transportation, per the <i>Global Warming Solutions Act</i> which came into force in 2020. |
| 4 | <b>Leveraging</b> Vermont's <u>Tier III – Renewable Energy Standard</u> by delivering solutions directly to customers that eliminate or reduce fossil fuel consumption and help reduce their bill.  |



## » VGS's Path to Align with State GHG Gas Emission Reduction Requirements



VGS has been offering its customers a safe, reliable, and affordable source of energy for over five decades. As a natural gas distribution utility that is evolving to address its customers' changing thermal energy needs, VGS acknowledges that its legacy fossil product has significant climate impacts. To address this fact, VGS has proactively adopted a strategy to reduce dramatically its GHG emissions to make its in-house activities and energy distributions in line with the State of Vermont's GHG emission reduction requirements. VGS has steadily expanded its weatherization efforts and added to its suite of decarbonized services for homes and businesses, as described at greater length in the table below. VGS is also establishing a portfolio of low- and no-carbon alternative supplies to transform how its customers warm and cool their homes and businesses.

To achieve its climate plan benchmarks, VGS's innovation is focused on three key areas:

|   |   |   |
|---|---|---|
| 1 | <b>Accelerating Access to Affordable Weatherization Services.</b> | Energy efficiency is the cornerstone of VGS's climate efforts. Through its State-appointed Energy Efficiency Utility (EEU), VGS has increased weatherization rebates and incentives available to income-qualified Vermonters and is assessing ways to enable these funds go to customers with the highest energy burden. In 2024, VGS joined state partners to enhance programs for low- and moderate income (LMI) customers, including Weatherization + Health, to understand the health benefits of home weatherization, and Switch & Save, to give rebates for electric heat pump water heaters. VGS has specific annual goals to serve LMI customers, who are prioritized for audits or participation, with specific attention being spent on health and safety improvement including vermiculite removal. VGS continues to participate in a pilot on-bill financing tariff available under the Weatherization Repayment Assistance Program (WRAP). |
| 2 | <b>Launching Renewable In-Home Solutions</b>                      | Over the past three years, VGS has launched a series of in-home electric heating and cooling technologies, including electric heat pump water heaters, centrally-ducted heat pumps with integrated controls, and – new in 2024 – ductless mini-split heat pumps. VGS installs and services these systems with its own technicians. For homes and businesses that are not candidates for electric heat pumps, VGS is piloting highly efficient gas absorption heat pumps, which offset as much as 33% natural gas usage. VGS is actively exploring networked geothermal energy systems for commercial and multi-family housing applications. Finally, VGS is developing and testing heat pump technologies for commercial and industrial customers for deployment in future years.   |
| 3 | <b>Growing the Alternative Energy Supply</b>                      | VGS leads in diversifying its gas supply with RNG sourced from farms, wastewater, and landfills. The company continues to add both in-state and out-of-state supply contracts, and is on track to have RNG as 5% of its retail gas portfolio in 2025. VGS actively supports RNG projects in Vermont, and, in 2024, commenced construction on a line extension to connect a new in-state farm RNG project that is expected online in 2025. VGS continues to partner on the development of green hydrogen, district energy, and networked geothermal energy for commercial purposes.  |

## » Resiliency of VGS's Business Model

VGS has set specific goals that conform to those set through the *Vermont Global Warming Solutions Act* that took effect in 2020. This Act was passed in response to Vermont's concerns over climate change and the magnitude of what must be done to reduce GHG emissions and prepare for the impacts of climate changes on Vermont, its communities, and its residents.

In this context, this Act requires the State of Vermont to reduce GHG emissions to:

- 26% below 2005 levels by 2025;
- 40% below 1990 levels by 2030; and
- 80% below 1990 levels by 2050.

Over the past years, global climate discussions and government commitments have begun to take greater account of new scenarios aligned with pathways to limit temperature rise to 1.5°C or less than pre-industrial levels. To reflect this reality, VGS uses a scenario in the range of pathways to be used to assess its climate resiliency. It is important to clarify that for the moment, neither Vermont nor the United States have adopted climate targets to align with a pathway to limit the temperature rise to 1.5°C or less. VGS is aware, however, that additional emission reductions would have to be achieved, particularly in the next ten years, if Vermont were to adopt a more aggressive GHG emission reduction pathway than those limiting global warming to 2°C or less.

Vermont's 2023 enactment of the *Affordable Heat Act* began a regulatory process to develop a performance standard (the Clean Heat Standard) to guide the state's thermal sector to achieve GHG emissions reductions in line with the *Global Warming Solutions Act's* 2030 and 2050 mandates. The Clean Heat Standard would require parties that import fossil heating fuels into Vermont to reduce their emissions by annually retiring established amounts of clean heat credits. VGS is an obligated party under the Act, however, those obligations will only take effect if the program is fully enacted. Vermont regulators have been working to develop the policy and will present proposed final rules in January 2025. VGS has been an active participant in regulatory proceedings. Ultimately, Vermont lawmakers will need to determine whether to approve the rules to enact the program's requirements during the 2025 legislative session.



Contribute to Vermont's goal of  
**reducing GHG emissions**  
 by at least  
**40%**  
 below 1990 levels by 2030.

## » Funding Énergir's strategy

While some initiatives are funded using Énergir's cash flows, others may have greater capital requirements. Énergir benefits from access to capital markets and the support of shareholders who believe in its strategic vision, which will allow it to efficiently finance its Decarbonization and climate resiliency projects. The following elements are examples of this:

- **September 2024:** Énergir shareholders announced a reinvestment of up to \$575 million to support its plan.
- **July 2024:** Issuance of US\$300 million in unsecured notes maturing in 2034 by Northern New England Energy Corporation, Énergir's U.S. subsidiary and parent corporation of GMP and VGS.
- **May 2024:** Issuance of US\$75 million in first mortgage bonds maturing in 2034 by GMP.
- **June 2023:** Issuance of \$400 million in first mortgage bonds maturing in 2053.

These recent successes illustrate Énergir's ability to raise significant financial resources and benefit from advantageous financing conditions.

**Thanks to its solid reputation, as well as its ambitious and credible Decarbonization and resilience strategy, Énergir continues to attract investor interest and reinforce its vision and market position.**

The term of the financing conditions and Énergir's credit rating of A also attest to this.

Énergir is confident that its vision and initiatives will continue to attract investors in the upcoming years and that it will have the means to achieve its ambitions.

# Risk management



## » Risk and business opportunity management process

For several years, the Corporations have adopted an enterprise risk governance framework that draws its inspiration from three guiding principles:

|   |                               |  |
|---|-------------------------------|--|
| 1 | <b>Proactivity</b>            | Strategic risks and opportunities likely to impact the Corporations are proactively identified and assessed. Mitigation or adaptation measures for dealing with these risks are also targeted. |
| 2 | <b>Continuous improvement</b> | The Corporations implement measures to improve risk management strategies to remain flexible in the face of changing environmental, social and business challenges.                            |
| 3 | <b>Transparency</b>           | Management reports to the board of directors and the audit committee of the Corporations at least once a year.   |

The risk management approach is based on proactive and dynamic risk management, and involves each of the pillars of Corporations' governance. It is an ongoing process whose purpose is to align the organizations and the critical areas of their operations, all while remaining flexible in the face of emerging risks. Although the Corporations each have their own risk management process, pooling results helps create a holistic portrait of their risks.

## » Four phases of the risk and business opportunity management process



### 1

## Identification of risks and opportunities

The Corporations are responsible for identifying risks and opportunities relevant to their respective business strategies and for updating their risk universe annually. Ongoing adjustments are made to adapt to operational realities and the external environment. The Corporations proactively monitor and assess overall risks in order to follow the trends and new risks that are emerging. Identifying risks is also an integral part of management discussions and operational committees. The approach for identifying risks uses best practices, including those recommended by the TCFD for the risks and opportunities related to climate change. This approach consists of:

- Monitoring best practices (risk publication and climate change data) to track the evolving climate-related risks and opportunities.
- Reviewing the sectoral documentation to understand the potential impacts on the respective industries of Énergir, GMP and VGS, including the integration of processes for identifying, assessing, prioritizing and tracking opportunities and risks related to sustainability (SASB).
- Complying with applicable guidelines and standards of the TCFD, ISSB and Canadian or American regulators, and identify key disclosure elements so as to comply therewith.

Ongoing efforts are being made to ensure complete risk coverage and reduce any discrepancies in the coverage of the risk identification process. Énergir is also working with GMP and VGS to align processes and disclosures.

The process of identifying and assessing business risks as described above should not only help align the processes and methods with best practices, but also cover a majority of the risks and result in the emergence of opportunities that fuel business strategies and decision-making processes.



## Evaluation of risks and opportunities

Once the risks have been identified, they are assessed to determine the level of residual risk, which is the risk that remains after applying strategies to reduce or manage the original risks. The residual risk level is calculated using various parameters. First, the risk's likelihood of occurrence and velocity, which is the speed at which it occurs, are assessed. A multi-criteria analysis is then used to assess the magnitude of the risk's impact. Finally, the strength of the control measures that can be deployed to address this risk is taken into consideration. Each entity is also responsible for assessing the probability of these risks' occurrence and their potential impacts (note that the methodology may differ from one entity to the next, depending on the type of risk).

To ensure a multidisciplinary assessment of Énergir's risk universe, more than 60 employees with expertise in various fields are interviewed annually, which helps fuel reflection, promote an understanding of the market and ensure a comprehensive risk coverage. In addition, physical and transition risks related to climate change are modelled and quantified to better understand the potential financial and social impact associated with these risks or specific scenarios.

Risk assessment is carried out using a matrix that allows each risk to be classified based on the following criteria:

- **Financial:** potential impact on capital expenses, operating expenses, profits or customer rates, monetary impact of lawsuits or fines.
- **Health and safety:** risk of accident, serious injury or death. Psychological impacts on employees.
- **Regulatory or legal:** risk of intervention by a government body, including an investigation, audit, and the issuance of notices of non-compliance.
- **Environmental:** risk of impacts on natural environments that could affect flora and fauna, water or air, possibility and duration of decontamination and/or restoration efforts, as well as leaks of gas or other contaminants.

- **Supply reliability:** risk of disruption in supply or distribution activities.
- **Reputational impact:** risk of negative media coverage or loss of the trust of stakeholders, including customers.

Once a year, a risk matching process is launched to develop a joint perspective of the Corporations' risk profile. Discussions with each of the subsidiaries on the assessment's findings and a closer examination of the emerging risks helps tease out the common trends.



## Risk management and mitigation

The Corporations are developing comprehensive risk mitigation strategies based on their risk assessment findings. These strategies are designed to proactively address risks and improve the resiliency of operations. For example, targeted and detailed studies are carried out to ensure the continued performance of major infrastructures and to promote the implementation of adaptive management practices.

Continuous control over risk monitoring is maintained. This is a key element of the Corporations' risk mitigation strategy. Oversight mechanisms have been implemented within each of the entities.

Operational risks, business-wide risks or climate-related risks are prioritized based on various factors such as their potential impact, residual exposure, and the reliability of potential mitigation or adaptation measures.

Thanks to this ongoing oversight, the Corporations can proactively adapt and deploy appropriate measures as circumstances change.

Through this ongoing process, the results of the analyses identify the risks to prioritize and for which the mitigation actions must be taken. Operational committees are the first to identify where best to intervene so as to reduce the probability, minimize the consequences or prioritize mitigation efforts based on the evolving risks.



## Reporting

Proactive oversight and transparency of the risk management approach are commitments that are important to the Corporations. A risk governance framework has therefore been adopted to encourage each of the organizations' governance bodies to get involved in the process. The Corporations present their risk assessment findings to their board at least once a year. The consolidated tables are also used as a reference in presentations to the Énergir Board.

Management, audit and risk committees play an important role in managing risks. These committees ensure that management teams implement appropriate measures to manage these risks. Consolidated dashboards that encompass the Corporations' activities serve as a basis for the risk presentations given to the management committee, the audit committee and the Énergir Board.

The Corporations continually improve their approach to ensure the development of a comprehensive and exhaustive portrait of their risks. Although some risks are specific to each of the entities' operations and strategic objectives, the annual consolidation of risks results in the prioritization of some of the Corporations' significant ESG risks.

The Corporations recognize that transitioning to a low-carbon economy not only creates risks, but also opportunities. They are determined to adjust their strategies and processes to effectively manage these ever-changing risks.

In fiscal year 2024, the risk universe was reviewed to ensure better coverage of sustainability risks, including climate and transition issues. The risk universe was also updated to include several risks identified during workshops and discussions so as to validate its completeness. The new risks identified were therefore incorporated into the assessment process.



## » Climate Change Risks and Opportunities

The Corporations use an integrated process to structure their understanding of the risks and opportunities related to climate change, based on the TCFD recommendations.

The tables on the following pages present the Corporations' main risks and opportunities, and specify how they would manifest themselves and what the potential financial impacts would be. Appendix 5 provides information on the impact of climate scenarios on the activities of Énergir, GMP and VGS.

To assess the potential financial impacts, an analysis was carried out and is updated every year based on one or several of these measures, namely the impact on the capital cost, net profit, the rate of return and the impact on rates.







Considering that the risk manifestations generally have favourable or unfavourable economic repercussions on the competitive position of Énergir, GMP or VGS, the tables present certain risks and opportunities, as well as an assessment of the impact of these risks on their competitive position and on Énergir customer rates.

Three levels of impacts have been retained. The perspective chosen is that of the 2030 and 2050 horizon, knowing that some of these risks could have uncertain repercussions over the longer term.



Table 5: Climate change risks and opportunities for Énergir, VGS and GMP

● Limited Impact    
 ● Moderate Impact    
 ● Potentially Significant Impact

| Risks   | Factors considered  | Sensitivity  |              | Potential financial impacts | Opportunities   |   |
|---|---|--|--------------|-----------------------------|---|---|
|   |   | Horizon 2030   | Horizon 2050 |                             |   |   |
| <b>Political and legal</b><br> | Increase in the Price of Carbon   | CATS price (Énergir)   | ●            | ●                           | <ul style="list-style-type: none"> <li>• Increase in service and/or non-rate-base costs (implementation of specific measures to reduce the carbon footprint) reflected in customer rates.</li> <li>• Decrease in demand for fossil natural gas, resulting in particular from increased compliance costs (e.g., CATS).</li> </ul>  | <ul style="list-style-type: none"> <li>• Increased demand for RNG and energy services.</li> <li>• Increased demand for natural gas from certified suppliers eligible to the initiative for the measurement, monitoring and reporting regarding fossil gas supply.</li> <li>• Policies, regulations and financing conducive to the development of the RNG and hydrogen sectors.</li> <li>• Injection of Low-Carbon Hydrogen in the gas network.</li> <li>• Diversification of renewable energy sources.</li> <li>• Energy efficiency in offices, electrification of certain vehicle fleets, reduction at the source, re-use, recycle and repurpose of resources used.</li> <li>• Achievement of the 100% renewable supply targets (GMP's 2030 target).</li> <li>• Reduction of emissions with a renewable electricity supply (GMP).</li> </ul> |
|   | More aggressive and intensified Decarbonization goals   | CATS price, energy efficiency program and RNG injections   | ●            | ●                           |   |   |
|   | More restrictive regulation of existing products and services   | Adoption of dual energy and RNG, and customer retention  | ●            | ●                           |   |   |
|   | Inconsistency between the regulatory framework and our business objectives                                | Decrease in energy efficiency program investments, and regulatory constraints on RNG and dual energy | ●            | ●                           |   |   |
|   | Exposure to litigation related to GHG emissions or non-compliance with GHG emission reduction regulations | Evaluation in our quantitative corporate risk assessments  | ●            | ●                           |   |   |
| <b>Technological</b><br>       | Lesser efficiency of natural gas technologies compared to alternative energy solutions                    | Evaluation in our quantitative corporate risk assessments  | ●            | ●                           | <ul style="list-style-type: none"> <li>• Decrease in demand for fossil natural gas (resulting from the use of comparatively more efficient equipment, electro-technology and storage).</li> <li>• Stranded investment costs in technologies that do not favour the achievement of our objectives.</li> </ul>  | <ul style="list-style-type: none"> <li>• Development of complementary energy services (energy expertise, storage assets, fuel, Low-Carbon Hydrogen).</li> <li>• Increase in the offer of energy efficiency programs.</li> <li>• New clean technologies to decarbonize the energy distributed.</li> </ul>  |
|   | Technological advances that facilitate Decarbonization for customers                                      | Variations of energy efficiency programs and customer retention                                      | ●            | ●                           |   |   |
|   | Unsuccessful investments in new technology  | Stranded cost  | ●            | ●                           |   |   |
| <b>Market-related</b><br>    | Change in customer behaviour that favours energy sources with lower fossil GHG emissions                  | Adoption of dual energy and RNG and customer retention   | ●            | ●                           | <ul style="list-style-type: none"> <li>• Decrease in demand for fossil natural gas.</li> <li>• Lower share on certain markets that could have an impact on the distribution of Énergir revenue sources.</li> </ul>  | <ul style="list-style-type: none"> <li>• Dual energy offer for Quebec customers (Énergir).</li> <li>• Diversification of renewable energy sources, including solar energy from sites of varied sizes (from residential rooftops to those of larger establishments) (GMP).</li> <li>• Sharing program for peak electricity periods with customers.</li> </ul>  |
|   | Increase in supply cost   | Price of natural gas and RNG   | ●            | ●                           |   |   |
| <b>Reputational</b><br>      | Increased stakeholder concern about GHG emissions   | Evaluation in our quantitative corporate risk assessments  | ●            | ●                           | <ul style="list-style-type: none"> <li>• Reduced or more difficult access to financing (resulting from the consideration of environmental ((including GHG emissions)), social and societal criteria in the financing of projects or businesses).</li> <li>• Decrease in demand for fossil natural gas.</li> </ul>   | <ul style="list-style-type: none"> <li>• Greater demand for our low-carbon solutions.</li> </ul>  |
| <b>Acute</b><br>             | Increased severity of extreme weather events (floods, landslides, freeze/thaw cycles)                     | Evaluation in our quantitative corporate risk assessments  | ●            | ●                           | <ul style="list-style-type: none"> <li>• Lower revenues linked to a decreased energy distribution capacity (resulting, for example, from breaks in the supply chain).</li> <li>• Increased operating costs (maintenance and repairs, including labour, equipment and potential environmental damage, insurance premiums and costs related to the negative impacts on the workforce).</li> </ul> | <ul style="list-style-type: none"> <li>• Investment in network resiliency projects.</li> <li>• Zero Outages Initiative (GMP).</li> <li>• Recognition of the added value of gas assets owing to their resiliency to climate changes.</li> </ul>  |
| <b>Chronic</b><br>           | Changes in precipitation patterns and extreme variations in meteorological profiles                       | Evaluation in our quantitative enterprise risk assessments   | ●            | ●                           | <ul style="list-style-type: none"> <li>• Increase in required investments (more resilient construction or more frequent repairs).</li> <li>• Reduced insurability of assets located in "high risk" areas.</li> <li>• Changes in demand due to milder winters and hotter summers.</li> </ul>   |   |
|   | Rise in average temperatures  |  | ●            | ●                           |   |   |

# Physical risks



Electricity generation,  
transmission and distribution



Transmission and distribution  
of natural gas

## » Our approach

Énergir, GMP and VGS' assets are diversified and spread over a relatively limited geographic area (Quebec and Vermont) and are exposed to a variety of chronic and acute risks. For the gas transport and distribution assets, the network essentially consists of underground infrastructure that is less exposed to most climatic events and physical risks resulting from climate changes.

Some physical risks, including floods, landslides and forest fires, may nonetheless pose some risk to these assets.

The above-ground power generation and distribution assets are clearly more sensitive to certain risks such as storms affecting transmission lines and variations in precipitation that may also affect electricity generation. Wind, hours of sunshine and extreme cold can also impact wind and solar electricity generation.

Climatic variations will undoubtedly have an impact on peak periods and the seasonal nature of consumption. We can therefore expect a greater need for electricity for air conditioning during hot seasons, and lower volumes of natural gas for heating during milder winters.

The Corporations are implementing a pragmatic, progressive and responsive approach to the risks they are facing. In this regard, efforts are being made to prepare and proactively respond to the impacts of climate change.

The Corporations perform activities to identify the threats that require adaptations. Construction or development standards that factor in future climate fluctuations are taken into consideration prospectively.

The approach essentially encompasses the following steps, although it may differ slightly from entity to entity:

- Identifying potential threats;
- Identifying the most vulnerable assets;
- Creating a model of climate changes likely to affect assets and activities;
- Measuring potential impacts based on various scenarios;
- Developing a mitigation and adaptation strategy.

In order to better anticipate the evolution of physical risks and their impact on assets over time, a climate change modelling was prepared to assess the potential impacts of climate change on the infrastructure and activities of Énergir, GMP and VGS.

In 2022, a specialized firm was retained to model the evolution of different physical climate-related risks. Three climate scenario projections presented in the IPCC's Fifth Assessment Report were used, namely RCP 2.6, 4.5 and 8.5 Scenarios.

They help model the physical risks resulting from climate change over several horizons and thereby assess the adaptation efforts required to deal with the consequences of these risks. The physical risks assessed include two acute risks such as floods and cyclones, and four chronic risks such as drought, heat stress, forest fires and storms. This modelling identified the exposure of assets and operations in risk areas as well as the degree of severity by type of physical risk.

The results of this work therefore allow us to better understand the speed and scope of the various risks associated with climate changes, to begin to assess the potential costs and to continue defining the necessary mitigation and adaptation measures.

The approach of the specialized firm and the results are aligned with the TCFD recommendations, which are now part of the ISSB S2 standard. These results help describe the short-, medium- and long-term climate change risks and opportunities, and they fuel discussions regarding Énergir's climate disclosure in the *Strategy and Risk Management* sections.



## » Electricity generation, transmission and distribution

In addition to contributing to the reduction of its customers' GHG emissions through its electricity supply and operations, GMP has been carrying out resiliency projects for over ten years, with the aim of progressively reinforcing its system against the impacts of climate change throughout its service territory.

### » Climate context

Weather events, particularly floods and severe storms, are having an increasing impact on Vermont and its population. Vermont's northern latitude and geographic position at the eastern end of the North American continent expose it to the moderating effects of the Atlantic Ocean. Storms are increasing in magnitude, frequency and severity of damage, resulting in significantly higher than expected restoration costs.

In fact, the most damaging winter storms in GMP's history occurred over the last two years, characterized by warmer temperatures bringing heavy, wet snow that accumulated and felled trees in its service territory. During the storms of March 2023, Vermont received significant amounts of precipitation which, combined with

strong winds, made certain roads impassable and caused widespread power outages in several regions of the state. Furthermore, last July, an even greater amount of rain fell on the state, resulting in flooding that once again caused major outages on GMP's network.

In concrete terms, 50% of GMP's total costs incurred for major storms since 2013 were recorded in the last 21 months, for a total of US\$138.6 million.<sup>48</sup>

At this rate, GMP needs to accelerate its resiliency projects, not only to curb its ever-increasing storm-related costs, but also to minimize the impact of outages on the communities that depend on its services.

### » Response to the physical risks of climate change

GMP's Zero Outages Initiative proposes targeted investments aimed at significantly increasing the local resilience of its infrastructures to the impacts of storms and other weather phenomena linked to climate change.

This initiative aims to create an energy system that ideally will not cause customer failures, while reducing costs by 2030.

GMP's Zero Outages Initiative unfolds through three priority actions:

GMP will prioritize the use of each solution where it is optimal for all customers. GMP will analyze this work by zone within each circuit throughout its territory, enabling solutions to be prioritized quickly by zone.

|   |   |   |
|---|---|---|
| 1 | <b>Line reinforcement (buried, insulated wire or spacer cables, protective devices)</b> | GMP uses several criteria to decide which lines to reinforce, including the impact of investments on customers and load served, the age and condition of the assets, the number of customers served by each line, hours of outages and the expected benefits of reinforcement. Reinforcing lines helps improve the resilience of the power grid by reducing outages and maintaining connectivity for customers and communities.   |
| 2 | <b>Creation of community microgrids in targeted areas</b>                               | Microgrids are essential to GMP's Zero Outages Initiative and will continue to be a priority. Deployed according to the grading criteria developed as part of the Zero Outages Initiative, they offer several advantages over other power grid reinforcement solutions. In particular, they increase resilience in the event of extreme weather conditions and power outages, by providing continuous power to communities during emergencies. In addition, community micro grids use renewable energy sources linked to storage. Finally, these microgrids are designed and developed in partnership with local communities to meet their specific resilience needs. |
| 3 | <b>Residential Storage Deployment</b>   | Storage systems have proven their ability to deliver reliability benefits while generating savings for all customers. Residential storage has a number of benefits. First, it provides households with a backup power source in the event of power outages, ensuring continuity of supply, safety and reliability. In addition, residential storage optimizes the use of locally produced solar or wind energy by storing excess energy for future use, thereby contributing to the overall management of the power grid. Last but not least, it helps reduce electricity demand during peak periods, which in turn reduces costs for everyone.                       |

48. Total storm costs do not include routine storm costs included in base rates, which are budgeted at approximately \$8 million per year.

Table 6: Climate risks related to electricity production, transmission and distribution









| Climate risks  | Potential impacts   | Type of asset concerned   | Adaptation strategies  |
|--|---|---|--|
| <b>Acute climate risks</b>   |   |   |  |
| <b>Storms</b><br>       | <ul style="list-style-type: none"> <li>• Damage to power lines.</li> <li>• Damage to substations and power plants.</li> <li>• Impact of debris on equipment.</li> <li>• Falling poles or lines.</li> <li>• Localized flooding due to storm sewer obstruction.</li> <li>• Large hailstones causing property damage.</li> <li>• Increased risk of vehicle accidents and therefore damage to poles.</li> </ul> | <ul style="list-style-type: none"> <li>• Customer residences and businesses.</li> <li>• Distribution, transmission and substation lines.</li> <li>• Flooding of hydroelectric power station basins and downstream city facilities.</li> <li>• Inaccessibility for staff assigned to repairs and emergencies.</li> </ul> | <ul style="list-style-type: none"> <li>• Regular maintenance of vegetation.</li> <li>• Bundling and covering of cables, relocation of cross-country lines to the edge of the roads.</li> <li>• Reinforcing and strengthening of power line infrastructure.</li> <li>• Development of emergency response plans for faster repairs.</li> <li>• Replacement of aging assets, covering of conductor equipment and burial of distribution lines.</li> </ul> |
| <b>Landslides</b><br>   | <ul style="list-style-type: none"> <li>• Landslides damaging power lines and substations.</li> <li>• Disruption to the electricity supply in hilly and mountainous regions.</li> </ul>  | <ul style="list-style-type: none"> <li>• Distribution, transmission and substation lines.</li> <li>• Transportation and communication infrastructure.</li> </ul>  | <ul style="list-style-type: none"> <li>• Implementation of slope stabilization measures.</li> <li>• Regular geotechnical assessments and checks.</li> </ul>  |
| <b>Forest fires</b><br> | <ul style="list-style-type: none"> <li>• Damage to power lines, substations and transmission towers.</li> <li>• Smoke and ash affecting air quality and the operation of power plants.</li> </ul>   | <ul style="list-style-type: none"> <li>• Customer residences and businesses.</li> <li>• Distribution, transmission and substation lines.</li> <li>• Inaccessibility for staff assigned to repairs and emergencies.</li> </ul>   | <ul style="list-style-type: none"> <li>• Creation of firebreaks around critical infrastructures.</li> <li>• Development of evacuation plans and emergency response procedures.</li> <li>• Use of fire-resistant materials for equipment and structures.</li> <li>• Use of extensive air filtration systems to limit the impact of smoke particles on our facilities.</li> </ul>  |
| <b>Drought</b><br>    | <ul style="list-style-type: none"> <li>• Reduction in hydroelectric power generation and availability of water.</li> <li>• Increased risk of forest fires in dry weather.</li> <li>• Impact on ability to effectively operate facilities.</li> </ul>  | <ul style="list-style-type: none"> <li>• Customer residences and businesses.</li> <li>• Distribution, transmission and substation lines.</li> <li>• Flooding of hydroelectric power station basins and downstream city facilities.</li> <li>• Inaccessibility for staff assigned to repairs and emergencies.</li> </ul> | —  |
| <b>Floods</b><br>     | <ul style="list-style-type: none"> <li>• Limit access to water for power generation.</li> <li>• Restrict or prevent access to substations and other critical infrastructure.</li> <li>• Damage infrastructure.</li> <li>• Flood substations.</li> <li>• Damage underground cables.</li> <li>• Waterlog equipment.</li> </ul>  | <ul style="list-style-type: none"> <li>• Customer residences and businesses.</li> <li>• Distribution, transmission and substation lines.</li> <li>• Flooding of hydroelectric power station basins and downstream city facilities.</li> <li>• Inaccessibility for staff assigned to repairs and emergencies.</li> </ul> | <ul style="list-style-type: none"> <li>• Improve facility design to accommodate larger overflows.</li> <li>• Relocate critical infrastructure away from flood-prone areas.</li> <li>• Renovate infrastructure to withstand water damage.</li> <li>• Install flood barriers and levees.</li> <li>• Implement real-time flood monitoring and warning systems.</li> </ul>   |

Table 7: Chronic risks related to electricity production, transmission and distribution

| Climate risks   | Potential impacts  | Adaptation strategies  |
|---|--|--|
| Chronic risks   |  |  |
| <b>Extreme cold</b><br>  | <ul style="list-style-type: none"> <li>• Equipment malfunction and freezing of power lines during cold spells.</li> <li>• Increased energy demand for heating in cold weather, putting strain on the grid.</li> </ul>  | <ul style="list-style-type: none"> <li>• Install heating systems for critical equipment and infrastructure.</li> </ul>   |
| <b>Extreme heat</b><br>  | <ul style="list-style-type: none"> <li>• Overheating of transformers and equipment.</li> <li>• Reduced efficiency of electricity generation.</li> <li>• Increased wear and tear on equipment and cables.</li> <li>• Impact on employee health and well-being.</li> </ul> | <ul style="list-style-type: none"> <li>• Develop heat stress resiliency plans and implement early warning systems.</li> </ul>  |
| <b>Precipitation</b><br> | <ul style="list-style-type: none"> <li>• Flooding in low-lying areas.</li> <li>• Mudslides and debris flows.</li> <li>• Increased maintenance due to corrosion and vegetation.</li> </ul>  | <ul style="list-style-type: none"> <li>• Improve drainage systems to deal with increased precipitation.</li> <li>• Develop sediment control measures.</li> <li>• Regular inspection of infrastructure to detect damage.</li> </ul> |

## » Transmission and distribution of natural gas



Because the transmission and distribution assets in Quebec and Vermont are essentially an underground infrastructure, they are less exposed to weather events than the overhead power system. While not entirely immune, the associated risks and costs are lower and some adaptation measures are often an integral component of asset maintenance plans.

Certain risks, such as sea level fluctuations, droughts, storms (wind or rain) and increased precipitation, generally have little impact on natural gas assets. Chronic risks presented in the precedent table do not, according to Énergir's analysis, represent a significant risk.

However, climatic hazards can result in infrastructure access restrictions when access to public roads is reduced or interrupted (for example, the presence of trees or debris on the road following a storm), and can also have an impact on the quality of working conditions for workers, who are exposed to increasingly extreme temperatures (heat waves or cold periods), adding to the complexity of interventions.

### » Extreme Weather Conditions

In northern regions such as Quebec and the northern United States, warming is more pronounced than in other parts of the world. This rise in temperature not only increases annual precipitation and the frequency of heat waves and forest fires, but also reduces the duration of snow cover, the frequency of cold snaps and the extent of sea freeze-up. Depending on the region, it sometimes causes a drop in relative sea level, as is the case along the coasts of Hudson Bay, while in other regions, such as the Gulf of St. Lawrence, it causes a rise (Ouranos, s.d. a).

#### Floods

Exacerbated by rising spring floods, ice jams and torrential rains that swell rivers, floods are becoming increasingly frequent and can complicate gas network operations. In addition to impacting infrastructure and equipment, they also create problems of loss or limited access to facilities. In fact, water accumulation can be a safety issue (manholes, swimming pools, etc.) and a health risk for employees working on the ground to secure the network. In the event of a flood, they are called upon to secure the buildings in which the water has entered by voluntarily cutting off the natural gas supply to prevent any build-up of gas in the buildings.

#### Landslides

In addition to flooding, higher annual rainfall and rising water levels also increase coastal erosion (degradation of banks, shorelines and coasts), reduce soil resistance and trigger landslides. In fact, when the ground is saturated with water, such as after snowmelt, during freeze-thaw cycles or following intense rainfall, the water increases the pressure in the soil and reduces its resistance, leading to landslides. In concrete terms, this ground movement can damage gas network pipes by exposing or deforming them or, ultimately, rupturing them (Ouranos, s.d. b).

#### Forest fires

Climate change, and more specifically the increase in heat waves, rain-free periods, thunderstorms and strong winds, is leading to an increase in forest fires. These represent a source of risk to a natural gas distribution business, since they can cause damage and breakdowns to distribution infrastructure, interrupt supply and limit or prevent access to facilities (Government of Quebec, 2024b).

Note that since gas distribution activities are less vulnerable to certain meteorological phenomena, this section of the Report focuses on the most significant physical risks for the gas network, although in practice, all physical risks are monitored (Government of Quebec, 2024b).



» **Responding to the physical risks of climate change**




Rigorous monitoring of asset maintenance and system planning taking into account the impact of climate change can help minimize related risks. Among the preventive measures put in place are:

- **The Flood Specific Response Procedure**, which documents the monitoring plan for risk areas and the list of actions to be taken in the event of a flood affecting Énergir’s facilities (distribution lines, transmissions, substations, etc.):
  - Monitor and secure facilities;
  - Communicate to customers the steps that will be taken by the teams for the roll-up;
  - Customer roll-up and equipment replacement (regulator), as required.

Given that each event has a different scope and magnitude, the procedure also provides for different scenarios to adapt the actions to each situation.

- **Periodic analysis of the state of the conduits**, using a robot, detects anomalies in Énergir’s transmission system. This ad hoc monitoring of the network’s condition is combined with aerial patrols of easements and a round of pipe inspections, in the field, by technicians. It should be noted that studies more specific to the reality of certain pipes are also conducted with a view to continuous improvement.
- **The Forest Fire Intervention Procedure**, which establishes guidelines for intervention plans in the event of a forest fire emergency near the gas network. Key actions include monitoring the progression and strength of fires, the distance between fires and facilities, fire control by the authorities, exposure of facilities and a weather forecast watch. In short, fire monitoring and continuous monitoring of risky infrastructure that prioritizes, among other things, punctual assets (off-shore pipelines) and an emergency plan for Énergir’s buildings in the event of nearby forest fires are planned. As part of the network maintenance activities, the teams also undertake vegetation management activities to minimize the risk of fire in the servitudes and facilitate access. Given that Vermont is considered a low-risk zone for forest fires, VGS does not currently have such a procedure (FEMA, 2024).

Table 8: Climate risks related to natural gas transmission and distribution

| Climate risks   | Potential impacts   | Type of asset concerned  | Adaptation strategies  |
|---|---|--|--|
| <b>Physical risks</b>   |   |  |  |
| <b>Floods</b><br>        | <ul style="list-style-type: none"> <li>• Service interruptions for certain customers.</li> <li>• Increased maintenance, inspection or repair costs (limited access to certain zones for work).</li> <li>• Health, safety and security issues for staff.</li> </ul>              | <ul style="list-style-type: none"> <li>• Distribution and transmission lines.</li> <li>• Access barrier/control station.</li> </ul>  | <ul style="list-style-type: none"> <li>• Relocation of affected infrastructure as required.</li> <li>• Post-flood inspection programs to identify probable or potential damage.</li> <li>• Change in the design of certain equipment to accept higher water levels.</li> </ul>                                     |
| <b>Landslides</b><br>    | <ul style="list-style-type: none"> <li>• Segments of the system subject to being deformed to the point of rupture due to physical constraints.</li> <li>• Leaks.</li> <li>• Service interruptions for certain customers.</li> </ul>   | <ul style="list-style-type: none"> <li>• Pipes in dangerous zones.</li> </ul>  | <ul style="list-style-type: none"> <li>• Identify the zones most at risk and assess the need for corrective or detection measures (e.g. monitor ground movements or civil works to mitigate or eliminate the risk).</li> <li>• System inspection activities described in integrity management programs.</li> </ul> |
| <b>Forest fires</b><br> | <ul style="list-style-type: none"> <li>• Segments of the system subject to damage by intense heat.</li> <li>• Increased maintenance, inspection and repair costs (limited access to certain zones for work).</li> <li>• Service interruptions for certain customers.</li> </ul> | <ul style="list-style-type: none"> <li>• Delivery points in more remote northern regions.</li> <li>• Access barrier/control station.</li> <li>• Main line/valve terminal.</li> </ul> | <ul style="list-style-type: none"> <li>• Agreement with service providers for fire detection and emergency response for strategic infrastructure.</li> <li>• Vegetation management.</li> </ul>   |

# Metrics and Targets



## » Perspective on GHG emissions across the natural gas value chain

Énergir's Strategic Vision of Decarbonization for 2030-2050 is based on a life-cycle approach, allowing it to take action to reduce the GHGs emitted throughout its value chain by prioritizing higher-emission phases. By doing this, Énergir specifically targets the emissions generated by the use of products sold to its customers, which constitute the largest item accounting for 82% of emissions.<sup>49</sup> The production phase accounts for 14% of emissions; transportation and storage, 3%; and distribution, 1%. Énergir is directly involved in the distribution phase and partially involved in the transportation and storage phase, which are also activities of its subsidiaries, including Intragaz. This life cycle perspective reinforces the relevance of acting upstream and downstream of the natural gas value chain, which is reflected in the adoption of Scope 3 emissions targets both upstream and downstream.

49. In a study commissioned by Énergir in 2020, the International Research Centre for the Life Cycle Assessment and Sustainable Transition (CIRAIG) provided an overview of the emissions and other environmental impacts of the life cycle of fossil gas and RNG. The summary sheet for this study is available at [https://energir.com/files/energir\\_common/Fiche-synthese\\_ACV\\_Energir\\_Versionsiteweb.pdf](https://energir.com/files/energir_common/Fiche-synthese_ACV_Energir_Versionsiteweb.pdf) (in French only) and the complete study is available in the Sustainable Development section of Énergir's website.

## » Énergir’s GHG emissions

Énergir compiles its GHG emissions in accordance with the government reporting requirements that target the majority of direct emissions. Direct GHG emissions (Scope 1) are what must be reported under the *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere*. In addition, other sources of GHG emissions are monitored. The emissions of the fleet of vehicles and buildings are compiled, as are those resulting from the use of products sold to customers, which represent Énergir’s largest source of emissions.

To be compliant with the provincial regulations indicated above, the GHG reporting is based on the calendar year. The Scope 1 and 2 emissions presented in this Report therefore relate to calendar year 2023. All Scope 1 and 2 emissions are verified externally.

Scope 3 emissions, for their part, are presented based on fiscal year 2023-2024 and are calculated using normalized volumes.<sup>50</sup> In the calculations of Scope 3 emissions and the customers’ reduced emissions, the emission factor used was taken from the *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere*.<sup>51</sup>

**Table 9: Énergir’s GHG emissions**

| Énergir’s gross emissions <sup>52</sup>                                    | In tonnes of CO <sub>2</sub> eq |
|--|---------------------------------|
| <b>Direct emissions (Scope 1)</b>  |                                 |
| Fugitives emissions  | 28,395                          |
| Venting (purges)   | 6,902                           |
| Third party line hits  | 9,597                           |
| Flares   | 43                              |
| Combustion in stationary units   | 6,683                           |
| Fleet of vehicles  | 4,818                           |
| Buildings  | 7                               |
| <b>Indirect emissions generated by imported energy (Scope 2)</b>           |                                 |
| Electricity  | 20                              |
| <b>Total of direct and indirect emissions generated by imported energy</b> | <b>56,465</b>                   |
| <b>Other indirect emissions (Scope 3)</b>                                  |                                 |
| Use of natural gas by customers (Category 11)                              | 11.65 M                         |

**Notes to the table:**

- The following biogenic emissions have been quantified: For Scope 1 emissions, 3,203 tonnes of biogenic CO<sub>2</sub> are attributable to the combustion of RNG in the course of Énergir’s operations (combustion of stationary units, buildings and CNG fleet), while for Scope 3 emissions, Énergir evaluates that 0.24 million tonnes of biogenic CO<sub>2</sub> are attributable to the combustion of RNG by its customers (Category 11).
- As for Scope 3 emissions, Énergir has not performed an exhaustive quantification of its emissions upstream and downstream of its value chain, but the emissions associated with the use of natural gas by customers appear to be by far the largest item.

<sup>50</sup> Additional information on emissions is available online at <https://energir.metrio.net/?locale=en>.

<sup>51</sup> Tables 1-4 and 1-7 for the residential, commercial, institutional, agricultural and construction sectors.

<sup>52</sup> Direct GHG emissions (Scope 1) data include emissions that must be reported under the *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere*. To comply with this regulation, the GHG reports are based on the calendar year. This is why the Scope 1 and 2 emissions for 2023 are presented in this Report. Scope 3 data are presented based on fiscal year 2023-2024.

## » Énergir's performance in terms of its metrics and targets

Énergir uses climate metrics and targets to track the impact of its strategic Decarbonization initiatives. These metrics are also available on its Sustainability Performance Tracking Platform.<sup>53</sup>

These metrics and targets cover emissions related to its activities (Scope 1 and Scope 2), as well as some of those generated by activities throughout its value chain (Scope 3), both upstream and downstream at its customers' sites.

Table 10: Énergir's metrics and targets

| Metric   | Performance 2024  | Progress on Targets  | Énergir 2030 Targets  |
|--|---|--|---|
| <b>1 Initiative for the Measurement, monitoring and reporting regarding fossil gas supply (Scope 3, upstream)</b><br>This measure aims to ensure greater traceability of network gas supplies <sup>54</sup> by selecting producers who can demonstrate the adoption of ESG practices. The EO100™ certification was selected to meet this need. Ultimately, this initiative will help us better understand methane emissions associated with production.  | <ul style="list-style-type: none"> <li>65% of system gas was EO100™ certified.</li> </ul>   | <ul style="list-style-type: none"> <li>65% of target has been achieved.</li> </ul>   | <b>Purchase of 100%</b> of fossil system gas by Énergir as part of this initiative.   |
| <b>2 Direct emissions from Énergir's activities and indirect emissions generated by electricity consumption (Scopes 1 and 2)</b><br>Several GHG emission reduction projects have been identified for these categories of emissions by the responsible teams under the coordination of the strategic GHG committee. These projects include, for example, asset enhancement projects (such as the replacement or recommissioning of equipment), projects to improve certain work methods aiming to reduce travelling, the progressive electrification of the fleet and an ecofriendly driving program. | <ul style="list-style-type: none"> <li>29.8% reduction in GHG emission from 1990 levels.</li> </ul>   | <ul style="list-style-type: none"> <li>79% of the target has been achieved.</li> </ul>   | <b>37.5% reduction in GHG emissions</b> by 2030, from 1990 levels.  |
| <b>3 Energy efficiency (Scope 3, downstream)</b><br>The programs under Énergir's Global Energy Efficiency Plan allow customers to receive financial assistance to reduce their natural gas consumption.  | <ul style="list-style-type: none"> <li>Reduction of <b>97,008 tonnes of CO<sub>2</sub> eq.</b></li> <li><b>2,936 energy efficiency projects</b> among customers.</li> <li><b>\$46.8 million</b> paid to customers in financial assistance.</li> <li><b>50.5 Mm<sup>3</sup></b> of natural gas not consumed.</li> </ul>  | <ul style="list-style-type: none"> <li>40% of target has been achieved.</li> <li>Reduction of <b>0.4 million tonnes of CO<sub>2</sub> eq</b> between 2020 and 2024.</li> </ul>       | <b>GHG emission reduction of 1 million tonnes of CO<sub>2</sub> eq</b> between 2020 and 2030.   |
| <b>4 Complementarity/dual energy (Scope 3)</b><br>The supply of dual-energy electricity-natural gas in the residential sector was launched in June 2022, whereas in the case of the commercial and institutional sectors, it was approved in June 2023 by the Régie de l'énergie.  | <ul style="list-style-type: none"> <li>Reduction of <b>3,989 tonnes of CO<sub>2</sub> eq</b> in fiscal year 2024 (for all dual energy customers).</li> </ul>  | <ul style="list-style-type: none"> <li>2.3 % of target has been achieved.</li> <li>Reduction of <b>9,364 tonnes of CO<sub>2</sub> eq</b> on an annual basis.</li> </ul>              | Reduction of <b>0.4 million tonnes of CO<sub>2</sub> eq</b> between 2020 and 2030.  |
| <b>5 RNG (Scope 3, downstream)</b><br>Énergir has a regulatory obligation to distribute a proportion of RNG through its network (based on the average volumes distributed over the three preceding years).   | <ul style="list-style-type: none"> <li>2% distribution of RNG through the network, in accordance with the 2024 target.</li> <li><b>124 Mm<sup>3</sup></b> of RNG distributed in 2024, representing a fossil GHG emissions reduction of 0.24 million tonnes of CO<sub>2</sub> eq.</li> </ul>   | <ul style="list-style-type: none"> <li>100% of 2024 target has been achieved.</li> <li>70% of 2030 target has been achieved, considering the contractualized RNG volumes.</li> </ul> | <b>10% RNG purchased</b> by Énergir's customers, namely 567 Mm <sup>3</sup> .<br><br><b>Fossil GHG emission reduction of 1 million tonnes of CO<sub>2</sub> eq</b> by 2030. |
| <b>6 Total reduction of GHG emissions in the buildings sector (Scope 3)</b><br>In keeping with the Government of Quebec targets, Énergir has set itself a global target for the buildings sector. The programs of the Global Energy Efficiency Plan, the dual energy program and the purchase of RNG constitute the main actions for achieving that target. This indicator specifically presents the findings for this sector.   | <ul style="list-style-type: none"> <li><b>129,098 tonnes of CO<sub>2</sub> eq</b> for fiscal year 2024 for customers in the buildings sector, which corresponds to:               <ul style="list-style-type: none"> <li>34,710 tonnes of CO<sub>2</sub> eq from energy efficiency measures;</li> <li>3,989 tonnes of CO<sub>2</sub> eq relating to the offering of dual energy;</li> <li>90,399 tonnes of fossil CO<sub>2</sub> eq relating to RNG.</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>1.5% reduction in GHG emissions since fiscal year 2020 for Énergir's customers in the buildings sector.</li> </ul>                            | <b>30% of fossil GHG emission reduction</b> for Énergir's customers due to natural gas use in the buildings sector compared to 2020 levels by 2030.                         |

53. This platform is available at <https://energir.metrio.net/>.

54. System gas volumes account for approximately 40% of the gas volumes delivered by Énergir to its customers, while approximately 60% of volumes distributed are direct purchases. In this case, customers, essentially industries, purchase natural gas themselves from a supplier of their choice.

## » GMP's emissions

In accordance with its regulatory framework, GMP provides information to the State of Vermont for the preparation of the *Vermont Greenhouse Gas Emissions Inventory and Forecast reports*.

Table 11: GMP's GHG emissions

| GMP's gross emissions  | In tonnes of CO <sub>2</sub> eq |
|--|---------------------------------|
| <b>Direct emissions (Scope 1)</b>  |                                 |
| Power plants   | 19,389                          |
| Fugitives emissions (SF <sub>6</sub> and HFC)  | 771                             |
| Buildings  | 6,828                           |
| Fleet of vehicles  | 4,757                           |
| <b>Indirect emissions generated by imported energy (Scope 2)<br/>(using a market-based approach)</b> |                                 |
|  | 0                               |
| <b>Total of direct and indirect emissions generated by imported energy</b>                           | <b>31,745</b>                   |





**Note to the table:**

- GMP's data are based on the inventory produced by GMP for calendar year 2022.

# » GMP's performance in terms of its metrics and targets

GMP provides annual data on various performance metrics related to its climate change work.

Table 12: GMP's metrics and targets

| Metric   | 2024 Performance   | GMP Targets   |
|--|--|---|
| <p><b>1</b> Carbon-free electricity supply (Scope 3)</p> | <p> <b>100% carbon neutral by 2025</b><br/>(achieved in fiscal year 2021).</p> <p>Percentage of GMP's power supply portfolio that is:</p> <ol style="list-style-type: none"> <li>1) carbon neutral; and</li> <li>2) made up of renewable energy, in accordance with the RES.</li> </ol> <p><b>GMP's power supply portfolio is 100% carbon neutral and made up of 82% renewable energy.</b></p> <p>In calendar year 2023, GMP's power supply portfolio was 0 kg of CO<sub>2</sub> eq per MWh on an annualized basis.</p> | <p><b>100% renewable energy</b> by 2030 (100% renewable with 20% decentralized generation by 2032 [RES]).</p>   |
| <p><b>2</b> Customers – electric vehicles (Scope 3)</p>  | <p> <b>Target exceeded</b><br/><b>3,244 customers</b> currently subscribing to electric vehicle charging rates (where applicable) or other incentive programs by means of rates, pilot projects or other.</p>   | <p>Fiscal Year 2024: 800 customers subscribed to GMP's program for home electric vehicle charging programs, either controlled or self-directed.</p>                             |
| <p><b>3</b> Heat pumps (Scope 3)</p>                     | <p> <b>Target exceeded</b><br/><b>8,817 heat pumps deployed.</b></p>  | <p>Fiscal Year 2024: 5,000 heat pumps deployed.</p>   |
| <p><b>4</b> Tier III<sup>55</sup> (Scope 3)</p>          | <p> <b>Target exceeded</b><br/>For fiscal 2024, GMP achieved <b>7.2% i.e. 578,439 MWh of renewable energy</b> and exceeded its annual target.</p>   | <p>The substitution of fossil fuels in terms of % of retail sales in kWh must reach 12% by 2033. The target for calendar year 2023 was 6.00%, and for 2024 is <b>6.67%</b>.</p> |

55. Tier III is part of the RES standards for Vermont. This level requires utilities to replace their fossil fuel use with increased electrification equivalent to 2% of annual sales every year by 2032, by implementing measures reviewed and approved by a group of the state's technical specialists.

## » VGS's emissions

VGS provides annual data on various performance metrics related to its climate change work. According to its regulatory framework, VGS provides information to the State of Vermont for the preparation of the *Vermont Greenhouse Gas Emissions Inventory and Forecast*. In 2023 and 2024, VGS has been participating in the development of rules with the State of Vermont during the regulatory proceeding to create a Clean Heat Standard under Act 18. Under the Act, VGS and other obligated parties will need to annually report information to the VPUC and undergo regulatory review to determine annual obligations.

Table 13: VGS's GHG emissions

| Gross emissions   | In tonnes of CO <sub>2</sub> eq |
|---|---------------------------------|
| <b>Direct emissions (Scope 1)</b>   |                                 |
| Fugitive emissions  | 2,676                           |
| Venting (purges)  | 70                              |
| Third party line hits   | 143                             |
| Flares  | 0                               |
| Emissions of installed equipment  | 866                             |
| Buildings   | 6                               |
| Fleet of vehicles   | 665                             |
| <b>Indirect emissions generated by imported energy (Scope 2)</b><br>(using a market-based approach) | 0                               |
| <b>Total of direct and indirect emissions generated by imported energy</b>                          | <b>4,425</b>                    |

**Note to the table:**

- 921 tonnes of biogenic CO<sub>2</sub> emissions from RNG are associated with buildings.

## » VGS's performance in terms of its metrics and targets

Regarding Metric 1, the GHG impact metrics are calculated based on current information available from certifying organizations. In FY2024, VGS purchased 117.1 Mm<sup>3</sup> that was MiQ certified and 64.9 Mm<sup>3</sup> that was Equitable Origin certified.

Table 14: VGS's metrics and targets

| Metric  | 2024 Performance  | VGS 2030 Targets  |
|---|---|---|
| <b>1</b><br><b>Certified natural gas procurement initiative (Scope 3, upstream)</b><br>The MiQ, Trustwell or Equitable Origin certifications are recognized in the context of this initiative.  | <ul style="list-style-type: none"> <li>• <b>59%</b> of system gas was certified.</li> <li>• <b>182 Mm<sup>3</sup></b> of certified gas through the procurement tender process.</li> </ul>   | <b>100% of certified gas</b> under this gas procurement initiative.   |
| <b>2</b><br><b>Direct emissions from VGS (Scope 1)</b><br>In 2022, VGS established a plan to meet the objective for public service operations (vehicle fleet and corporate buildings), and in 2023 and 2024, VGS started executing this plan. | <ul style="list-style-type: none"> <li>• In 2023, VGS started executing this plan and currently owns seven electric vehicles, three plug-in hybrid vehicles, and eight regenerative hybrid vehicles in a total fleet of 74 vehicles.</li> </ul>   | <b>GHG emission reduction of 50%</b> by 2030, compared to 2020 levels, for utilities operations (fleet and buildings).  |
| <b>3</b><br><b>Energy efficiency (Scope 3)</b>  | <ul style="list-style-type: none"> <li>• Additional annual savings of 2.57 Mm<sup>3</sup>.</li> <li>• <b>41%</b> of the 2030 target has been achieved, given the cumulative GHG emission reduction of 17,544 tonnes of CO<sub>2</sub> eq (8.97 Mm<sup>3</sup> of natural gas not consumed thanks to the programs).</li> </ul> | <b>GHG emission reduction of 43,000 tonnes by 2030 compared to 2021.</b>  |
| <b>4</b><br><b>Renewable energy (Scope 3)</b>   | <ul style="list-style-type: none"> <li>• Volumes purchased by customers in 2024: 9.16 Mm<sup>3</sup> (3.38% of retail sales).</li> <li>• GHG emission reduction of 17,917 tonnes of CO<sub>2</sub> eq.</li> <li>• Long-term supply agreement to bring RNG consumption portion up to 13% by 2030.</li> </ul>                   | <b>Average carbon intensity</b> across the retail gas supply portfolio of 72 g CO <sub>2</sub> eq/MJ from an assumed baseline of 79,21 g CO <sub>2</sub> eq/MJ by 2030. <sup>56</sup> |
| <b>5</b><br><b>Home energy innovation (Scope 3)</b>   | <ul style="list-style-type: none"> <li>• Launch of the electric heat pump water heater program in fiscal year 2022.</li> <li>• Launch of a centrally ducted heat pump product in fiscal year 2023.</li> <li>• Launch of a mini-split heat pump product in fiscal year 2024.</li> </ul>  | <b>2,500 hybrid electrification devices</b> installed by 2030 with 75% controllable. <sup>57</sup>  |

56. This target was modified from the prior year's Climate Resiliency Report to reflect the Company's increased focus on the overall carbon intensity of retail supply provided to customers, rather than a volumetric amount of RNG to include in overall portfolio. This new focus is consistent with how the VPUC and Vermont Department of Public Service are considering the value of alternative supply, as evidenced in the VPUC's approval of VGS's RNG contract with Archaea Energy Marketing LLC.

57. This target was modified from the prior year's Climate Resiliency Report to align with the Company's initiatives under its Strategic Plan.



# Appendices

# Appendix 1

## Operational context – GHG emissions

Although several international agreements have been adopted in recent years to limit GHG emissions, Énergir, GMP and VGS's activities are more directly impacted by policies and regulations adopted at the national, regional and municipal levels. The commitments that national, regional or municipal authorities may make in international agreements have an influence on the context in which these authorities adopt their policies and regulations. Canada, Quebec and Vermont have therefore adopted policies and regulations to limit GHG emissions and combat climate change. The main relevant policies and regulations are briefly described in the table below.

| Jurisdiction                   |                          | Policy and commitments  | Objectives  |
|--------------------------------|--------------------------|---|---|
| Canada                         | Policies and regulations | National contribution – Paris Agreement   | Reduce GHG emissions by <b>40 to 45% vs. 2005 levels</b> by 2030.   |
|                                |                          | <i>Canadian Net-Zero Emissions Accountability Act</i>   | Establish a national GHG emissions target for 2035, 2040 and 2045 to achieve Carbon Neutrality by 2050.   |
|                                |                          | 2030 Emissions Reduction Plan (2030 ERP): Canada's Next Steps for Clean Air and a Strong Economy (PDF)    | 2030 Emissions Reduction Plan (2030 ERP): Canada's Next Steps for Clean Air and a Strong Economy (PDF).   |
|                                |                          | Canadian Green Buildings Strategy   | Stems from the 2030 Emissions Reduction Plan. Present the sector-by-sector steps to be taken to allow Canada to achieve its climate goals by 2030.  |
|                                |                          | <i>Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds</i>  | Reduce methane emissions in the oil and gas sector by 40% to 45% vs. 2012 levels by 2025.   |
|                                |                          | <i>Clean Fuel Regulations</i>   | Require that individuals reduce the carbon intensity of the fuel and diesel they produce or import for use in Canada. The regulations set forth compliance measures that may promote a rise in the number of incentive measures favouring the development and adoption of clean fuels and technologies.   |
|                                |                          | Carbon pollution pricing (carbon tax)   | Put a price on carbon pollution to reduce GHG emissions while stimulating innovation by implementing a duty on fuel and the Output-Based Pricing System in provinces that do not already have such a system. It is important to specify that the Government of Canada believes Quebec's carbon market meets the strict requirements of the federal model. This regulation therefore does not apply in Quebec, and Énergir is therefore not subject thereto.   |
|                                |                          | Draft of the <i>Clean Fuel Regulations</i>  | Draft regulations that stem from Canada's 2030 Emissions Reduction Plan the goal of which is to achieve Carbon Neutrality by 2050.  |
| Québec                         | Policies and regulations | 2030 GHG emission reduction objectives  | <b>Reduce GHG emissions by 37.5%</b> under 1990 levels.   |
|                                |                          | 2030 Plan for a Green Economy   | Quebec's framework policy for the fight against climate change. Its 2024-2029 implementation plan has three focal points: <ul style="list-style-type: none"> <li>Reduce GHG emissions (Quebec has undertaken to reduce its GHG emissions by 37.5% versus 1990 levels, and 50% by 2030 in the buildings sector);</li> <li>Adapt to the impacts of climate change;</li> <li>Support the transformation of society and the economy.</li> </ul>   |
|                                |                          | <i>Regulation respecting the cap-and-trade system for greenhouse gas emission allowances (CATS)</i>       | Coverage, by the targeted emitters, of the GHG emissions they reported and verified. According to Énergir, the GHG emissions to be covered are: <ul style="list-style-type: none"> <li>GHG emissions resulting from the operation of its network, including third party line hits;</li> <li>GHG emissions of its customers resulting from natural gas, excluding customer emissions already subject to CATS.</li> </ul> Coverage consists of surrendering, to the Government of Québec, a number of emission allowances equal to the reported and verified emissions (one emission allowance corresponds to one tonne of CO <sub>2</sub> eq). |
|                                |                          | <i>Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere</i> | Report and have verified by a verifying organization the GHG emissions of certain emitters in Quebec, including Énergir.  |
|                                |                          | <i>Regulation respecting the quantity of gas from renewable sources to be delivered by a distributor</i>  | Set the minimum quantity of RNG to be delivered by a natural gas distributor at 1% of the total quantity of natural gas it delivers as of its fiscal year beginning in 2020, at 2% in 2023, at 5% in 2025, at 7% in 2028 and at 10% in 2030.  |
|                                |                          | <i>Act respecting the ministère du Développement durable, de l'Environnement et des Parcs</i>             | Payment of an annual contribution to the Minister of the Environment, the Fight Against Climate Change, Wildlife and Parks to help support the energy transition measures arising from the implementation of the 2030 Plan for a Green Economy.   |
|                                |                          | 2024-2029 Implementation Plan of the 2030 Plan for a Green Economy  | Greater reliance on a sparing and efficient use of energy to maximize the achievement of Quebec's global GHG emission reduction targets. This plan contains an energy efficiency roadmap. To achieve the energy targets set out in the plan, more than \$12.7 billion in investments are planned by 2026.   |
|                                |                          | <i>Act respecting the environmental performance of buildings</i>  | Act aiming to accelerate the Decarbonization of the buildings sector by granting the Minister of the Environment, the Fight Against Climate Change, Wildlife and Parks, among others, the power to establish standards relating to the reporting and rating of the environmental performance of buildings.  |
|                                |                          | By-law prohibiting the installation of gas systems in new residences, in Ville de Prévost                 | In October of 2023, Prévost became the first city in Quebec to prohibit the installation of natural gas or RNG systems in new buildings within its territory, barring certain exceptions. The continued use, in an existing building (for which a building permit was issued prior to October 2, 2023) of natural gas equipment is permitted, however, until that equipment's end of life, after which it must be replaced by RNG or dual energy.   |
|                                | Political commitments    | Under2 Coalition  | <b>Reduce GHG emissions by 80% by 2050</b> in order to limit global warming to under 2°C.   |
| Montréal                       | Policies and regulations | Montréal Climate Plan   | Commitment to reduce Ville de Montréal's GHG emissions by 55% by 2030, with a view to achieving Carbon Neutrality in 2050.  |
|                                |                          | Roadmap for zero-emission buildings in Montréal   | New buildings: Impose a zero-emission performance threshold for new building permit applications as early as 2024 for buildings under 2,000 square meters, and as early as 2025 for permit applications for buildings of 2,000 square meters and above.<br>Existing buildings: Buildings of 2,000 square meters and above will be powered 100% by renewable energy by 2040. For buildings less than 2,000 square meters, starting in 2023, it will be mandatory to declare all heating appliances using fossil fuel (oil or natural gas).   |
|                                |                          | <i>Règlement sur les émissions de GES des nouveaux bâtiments</i> (in French only)                         | Prohibits devices that emit GHGs attributable to combustion in the new construction of small buildings (i.e. under 600 m <sup>2</sup> and three floors or less) in the residential, commercial and institutional sectors located in the nineteen boroughs of Ville de Montréal. It will come into force in two phases on October 1 in both 2024 and 2025.   |
| Other municipalities in Quebec | Policies and regulations | Various municipal by-laws   | A few municipalities in Quebec have adopted regulations restricting the use of natural gas in their territory. However, since the <i>Act respecting the environmental performance of buildings</i> came into force on March 27, 2024, such by-laws adopted by municipalities that may have an impact on the ability of energy distributors to adequately meet the energy needs of consumers will have to be approved by the Minister of Natural Resources and Wildlife.   |
| Vermont                        | Policies and regulations | <i>Global Warming Solutions Act of 2020</i>   | Reduce Vermont's GHG emissions by at least <b>26% below 2005 levels by 2025</b> , at least 40% below 1990 levels by 2030, and at least 80% below 1990 levels by 2050.   |
|                                |                          | Comprehensive Energy Plan   | Ensure that <b>90% of Vermont's energy needs are met by renewable sources</b> by 2050.  |
|                                |                          | <i>Vermont Renewable Energy Law</i>   | Require a minimum amount of renewable electricity in supply portfolios of power suppliers; require power suppliers to support relatively small (less than 5 MW) new renewable energy projects connected to Vermont's network; and invest in projects aimed at reducing the use of fossil fuels for heating and transportation.  |
|                                | Political commitments    | Regional Greenhouse Gas Initiative  | Reduce regional GHG emissions by <b>30% vs. 2020 levels by 2030</b> of electric facilities powered by fossil fuels that have a capacity of 25 megawatts or more. <sup>58</sup>  |

58. The oil-fired turbine in Berlin, Vermont, is the only GMP power facility currently subject to compliance with the Regional Greenhouse Gas Initiative.

## Appendix 2

# Additional information on the other affiliates

While Énergir's Climate Resiliency Report focuses on the Énergir, GMP and VGS entities, this appendix provides additional information on the other Énergir affiliates by distinguishing whether Énergir controls them or not.

| Subsidiary activities (controlled by Énergir)   |  |
|---|--|
| <b>Énergir Urban Heating and Cooling, L.P. (EUHC)</b>   | <p>EUHC is a Quebec-based company that operates a thermal heat distribution center and one of the largest urban networks in Canada. Founded in 1947, EUHC has been running, on an uninterrupted basis, three separate underground hot water, steam and chilled water networks that serve nearly two million square metres of building space, the equivalent of a city with a population of around 35,000.</p> <p>In the spring of 2024, EUHC received confirmation from the Government of Quebec of a nearly \$10 million grant for a project totalling approximately \$24 million. Among other things, this project includes the installation of two electric boilers and a heat recovery and conversion system that are expected to reduce GHG emissions by nearly 10,000 tonnes per year, starting in 2027. This project will allow for the Decarbonization of a large part of downtown Montréal, without impacting energy peaks. For the 2023 calendar year, EUHC reported Scope 1 GHG emissions of 30,115 tonnes of CO<sub>2</sub> pursuant to the RMRCECA.</p>                         |
| <b>Intragaz, Limited Partnership (Intragaz)</b>   | <p>Intragaz is a business whose operations focus on the underground storage of natural gas. It operates the only two underground natural gas storage sites in Quebec. The uniqueness of these sites has enabled it to develop technical, economic and regulatory expertise in natural gas storage.</p> <p>In December of 2023, Intragaz modernized the equipment at one of its sites by installing an electric compressor in replacement of a compressor powered by natural gas. This change should reduce Intragaz's GHG emissions by 50% per year. Starting in calendar year 2024, Intragaz has integrated RNG into its gas supply portfolio, which will help further reduce its fossil CO<sub>2</sub> emissions in its next report pursuant to the RMRCECA. Intragaz's Scope 1 GHG emissions have been reduced from 10,266 tonnes of CO<sub>2</sub> eq in 2022 to 7,260 tonnes of CO<sub>2</sub> eq in 2023 pursuant to the RMRCECA. The reduction in emissions is explained by a decrease in the use of compressors.</p>   |
| <b>Gaz Métro LNG, L.P., Gaz Métro Transport Solutions, L.P.</b>   | <p>Gaz Métro LNG, L.P. (<b>GM LNG</b>) is a company involved in the development of liquefied natural gas (LNG) production and marketing activities (<b>LNG</b>). It ensures the marketing of LNG produced using its liquefaction facility and Énergir's infrastructure. The energy needs of several sectors can be met by LNG: heavy transportation, maritime transportation as well as industrial and mining facilities in remote areas not served by the gas network. In 2023, the Scope 1 GHG emissions of GM LNG reported pursuant to the RMRCECA stood at 15,385 tonnes of CO<sub>2</sub> eq.</p> <p>Gaz Métro Transport Solutions, L.P. (<b>GMTS</b>) offers integrated LNG refueling services to the industrial, road, rail and maritime sectors. It is the operational arm of GM LNG and handles logistics for LNG distribution and maintenance of GM LNG storage and vaporization sites at its' customers' sites. GMTS's direct emissions are low, since GMTS mainly provides logistics services and is therefore not required to report its emissions pursuant to the RMRCECA.</p> |
| <b>Champion Pipe Line Corporation Limited (Champion)</b>  | <p>Champion operates two gas pipelines totalling approximately 100 km that cross the Ontario border and supply Énergir's distribution network in northwestern Quebec. The activities of Champion are regulated by the Canada Energy Regulator with respect to revenue determination, tolls, construction and operation of its network. This subsidiary's direct emissions are around 1,300 tonnes of CO<sub>2</sub> eq, and it is not required to report these emissions pursuant to the RMRCECA.</p>  |
| Activities of other affiliates not controlled by Énergir  |  |
| In addition to the subsidiaries presented above, there are also the activities and emissions of the following entities: |  |
| <b>Seigneurie de Beaupré Wind Farms 2 and 3 General Partnership</b>   | <p>Seigneurie de Beaupré Wind Farms 2 and 3 General Partnership (50% of which is indirectly owned by Énergir affiliates), which owns two wind farms with an installed capacity of 272 MW on the private lands of the Seigneurie de Beaupré belonging to the Séminaire de Québec, namely Wind Farms 2 and 3. All the electricity produced is sold to Hydro-Québec under 20-year contracts.</p>  |
| <b>Seigneurie de Beaupré Wind Farm 4 General Partnership</b>  | <p>Seigneurie de Beaupré Wind Farm 4 General Partnership (50% of which is indirectly owned by Énergir affiliates), which owns a wind farm with an installed capacity of 68 MW on the private lands of the Seigneurie de Beaupré belonging to the Séminaire de Québec, namely Wind Farm 4. All the electricity produced is sold to Hydro-Québec under a 20-year contract with Énergir.</p> <p>The direct GHG emissions of these wind farms are very low.</p>  |
| <b>Énergir Development Inc. (EDI)</b>   | <p>Énergir Development Inc. (EDI) is an affiliate and limited partner of Énergir that essentially develops energy solutions that have little direct emissions. EDI strives to find low-carbon energy solutions that are relevant to the energy transition. The development of growth vectors constituting the 4th pillar of Énergir's decarbonization vision should involve EDI.</p>   |
| <b>Gazoduc Trans Québec &amp; Maritimes Inc.<sup>59</sup> (TQM)</b>   | <p>Gazoduc Trans Québec &amp; Maritimes Inc. (TQM) is a company in which Énergir holds a 50% indirect interest, which operates a 650-km gas pipeline in Quebec. TQM's activities are regulated by the Canada Energy Regulator. Pursuant to the RMRCECA, TQM reported emissions of 18,215 tonnes of CO<sub>2</sub> eq for 2023.</p>   |

59. Acting as the representative of TQM Pipeline and Company, Limited Partnership.

# Appendix 3

# Key definitions and hypotheses of the scenarios used

|   |  |  |  |  |
|---|--|--|--|--|
| <p><b>Scenario Status Quo</b> <b>1</b></p> <p>The Status Quo Scenario (Bank of Canada, 2020) is aligned with the IPCC RCP 4.5 Scenario. This scenario represents a future where little action is taken to limit global warming. The physical risks of this scenario are therefore greater in the second half of this century than those of the other scenarios described opposite, because no additional action is taken to reduce GHG emissions.</p> | <p><b>Scenario NDC</b> <b>2</b></p> <p>NDCs embody the commitments of each Paris Agreement signatory country to reduce its national GHG emissions and adapt to the effects of climate change.</p> <p>Each country that is a signatory to the Agreement is required to establish, communicate and update, on a five-year basis, the successive NDCs that it plans to achieve at the national level. As a signatory to the Paris Agreement, Canada submitted an NDC plan that went into effect in 2016, which was revised in 2017 and again in 2021. The United States submitted its NDC plan in April 2021. Thus, this scenario evolves as new NDCs are announced by individual countries over time. To date, the commitments to reduce GHG emissions by 2050 through NDCs are not sufficient to contain global warming to 2°C or less relative to the pre-industrial era. However, this scenario is closer to the 2°C scenarios compared to when Énergir’s 2020 Climate Resiliency Report was released, reflecting global commitments. It is in 2025, at the 30th annual United Nations Climate Change Conference (also known as COP30), that the signatory countries to the Paris Agreement will update their NDCs, which must be more ambitious as set out in the Agreement.</p> | <p><b>Scenario Announced Pledges</b> <b>3</b></p> <p>The Announced Pledges Scenario represents a stabilization of energy demand despite economic and population growth. This stabilization is supported by significant and internationally coordinated efforts to increase energy efficiency and shift away from fossil fuel for energy production. The fossil fuel substitution and sustained efforts for Decarbonization in this scenario are consistent with a world where global warming is estimated at 2.1°C relative to the pre-industrial era.</p> | <p><b>Scenario Delayed Action</b> <b>4</b></p> <p>The Delayed Action Scenario represents a future where countries fail to meet their NDC commitments between 2020 and 2030 and subsequently take stronger mitigation actions to restrict the level of GHG emissions and limit global warming to 2°C or less relative to the pre-industrial era. Actions lag until 2030 and require significant catch-up between 2030 and 2050. Therefore, GHG emission reductions after 2030 and the associated transition risks are much higher in this scenario.</p> | <p><b>Scenario Net Zero Emissions</b> <b>5</b></p> <p>The Net Zero Emissions Scenario represents a transformation of the world’s energy system to achieve global Carbon Neutrality by 2050 and limit the global temperature rise to 1.5°C or less relative to the pre-industrial era. It also maintains economic growth.</p> <p>In this scenario, lower final energy demand, rapid deployment of more energy efficient technologies, electrification, and rapid growth of renewable energy play a central role in reducing GHG emissions in all sectors. Fuels and emerging technologies, such as hydrogen and hydrogen-based fuels, bioenergy, and CO<sub>2</sub> capture and storage, also play a major role, particularly in those sectors where emissions are often the most difficult to reduce. This scenario excludes any new oil and gas fields beyond those projects already approved at the time the Net Zero Emissions by 2050 Scenario was published by the IEA in May 2021.</p> <p>Current and announced policies so far do not allow the realization of the Net Zero Emissions Scenario.</p> |
|---|--|--|--|--|

## Key assumptions of the scenarios used

The table of technical assumptions underlying the scenarios was updated for the following scenarios:

### » Net Zero Emissions Scenario:

Published for the first time in 2021 by the IEA, the scenario has since been updated annually in the IEA's World Energy Outlook. The 2024 update includes a number of modifications. Global emissions in 2030 are 3% higher than forecast in the 2023 edition. The IEA does not provide any explanation for this, but it could be due to a delay in GHG reductions in recent years, which would lead to an increase in global emissions forecast for the medium term. By 2050, this scenario still aims to achieve Carbon Neutrality for energy sector emissions.

### » Announced Pledges Scenario:

Announced Pledges Scenario of the IEA that replaces the IEA's Sustainable Development Scenario (SDS), which has not been updated in the World Energy Outlook since 2022. The IEA uses three main scenarios to assess future pathways for the energy sector: the Stated Policies Scenario (STEPS), the Announced Pledges Scenario (APS) and the Net Zero Emissions Scenario (NZE).

The Announced Pledges Scenario is designed to reflect additional climate and energy commitments made by governments, over and above policies already implemented, but not yet translated into concrete action. This scenario includes recent announcements linked to Decarbonization and long-term objectives aimed at achieving carbon neutrality, and is associated with global warming of 2.1°C in 2100 (based on CAT data) compared to pre-industrial levels.

Although the Announced Pledges and Sustainable Development Scenarios show different pathways at the global level, they present identical curves once scaled up for Quebec and Vermont. This is the result of applying the Under2 Coalition scale methodology to these scenarios.

### » NDC Scenario:

Data from the CAT has been used to develop and update the NDC Scenario since the publication of Énergir's first Climate Resiliency Report. Specifically, the CAT previously presented a *Pledges and Targets* scenario that aimed to represent the impacts of current climate pledges including the NDCs and longer-term targets and objectives announced by countries not included in the NDCs (e.g. net zero emissions in 2050 target).

This CAT *Pledges & Targets* pathway was used by Dunsky to produce Énergir's NDC Scenario to represent global climate targets. However, CAT now distinguishes between NDCs and *Pledges & targets* by publishing a *2030 targets-only* scenario. The latter, based solely on NDCs, leads to global warming of 2.5°C in 2100, whereas the *Pledges & targets scenario* leads to warming of 2.1°C in 2100.

The NDC Scenario scaling for Quebec and Vermont is identical to last year's up to 2030. They differ from 2030 onwards, given the absence of pledges beyond 2030 in the Canadian and U.S. NDCs. The NDC curve (see graph showing both global scenarios and scaled graphs for Quebec and Vermont) is closer to the status quo curve.

| Scenario   | Price of Carbon   | Impact of the Price of Carbon on the price of natural gas (Increase in the cost of natural gas associated with the Price of Carbon)  | Capture and Sequestration  | Technologies   | Energy Consumption  | Natural Gas Consumption   | RCP                      | Temperature rises associated with the 2100 scenario relative to the pre-industrial era |
|--|---|--|--|--|---|---|--------------------------|--|
| <b>Status Quo (Dunsky, 2021)</b> <sup>60</sup>             | <ul style="list-style-type: none"> <li>2030: 120 USD/tonne</li> <li>2050: 462 USD/tonne<sup>61</sup></li> </ul>   | <ul style="list-style-type: none"> <li>2030: 6.3 USD (2020)/MBtu – 0.23 USD/m<sup>3</sup></li> <li>2050: 24.3 USD (2020)/MBtu – 0.87 USD/m<sup>3</sup></li> </ul>  | <ul style="list-style-type: none"> <li>2050: practically no capture and sequestration</li> </ul>                             | <ul style="list-style-type: none"> <li>CCUS: future technologies</li> </ul>  | <ul style="list-style-type: none"> <li>2030: 5% less compared to 2020</li> <li>2040: 3% less compared to 2020</li> <li>2050: 5% less compared to 2020</li> </ul>    | Quebec: <ul style="list-style-type: none"> <li>2030: 22% less NG compared to 2020</li> <li>2050: 77% less NG compared to 2020</li> </ul>  | 4.5                      | 2.7°C (2.2 to 3.4°C)   |
| <b>NDC</b> <sup>62</sup>                                   | Canada 2030: <ul style="list-style-type: none"> <li>135 USD (2020)/tonne</li> </ul> Global in 2050: <ul style="list-style-type: none"> <li>200 USD/tonne (IEA, 2024b)<sup>63</sup></li> </ul> | <ul style="list-style-type: none"> <li>2030: 7.1 USD (2020)/MBtu – 0.26 USD/m<sup>3</sup></li> <li>2050: 10.5 USD (2020)/MBtu – 0.38 USD/m<sup>3</sup></li> <li>Effect of demand: Reduction in demand that coincides with an increase due to the transition from coal to NG and rise in the Price of Carbon</li> </ul>   | <ul style="list-style-type: none"> <li>2030: 0.35 Gt/year</li> <li>2035: 2.5 Gt/year</li> <li>2050: 3.8 Gt/year</li> </ul>   | <ul style="list-style-type: none"> <li>Hydrogen electrolysis, CCUS whose technologies are to come.</li> <li>CCUS 4 times lower than in the Net Zero Emissions Scenario. More than 90% of CCUS projects in advanced economies.</li> </ul> | <ul style="list-style-type: none"> <li>2030: 15% more compared to 2020</li> <li>2040: 16% more compared to 2020</li> <li>2050: 16% more compared to 2020</li> </ul> | <ul style="list-style-type: none"> <li>2030: 9% more NG compared to 2020</li> <li>2040: 1% more NG compared to 2020</li> <li>2050: 8% less NG compared to 2020</li> <li>All new buildings reach zero carbon emissions in 2030.</li> </ul>   | 4.5                      | 2.5°C (2.0 to 3.0°C)   |
| <b>Announced Pledges (IEA, 2024b)</b> <sup>64</sup>        | <ul style="list-style-type: none"> <li>2030 : 135 USD (2023)/tonne</li> <li>2050 : 200 USD (2023)/tonne</li> </ul>  | <ul style="list-style-type: none"> <li>2030: 7.1 USD (2023)/MBtu – 0.26 USD/m<sup>3</sup></li> <li>2050: 10.5 USD (2023)/MBtu – 0.38 USD/m<sup>3</sup></li> <li>Effect of demand: Drop in price in 2030 due to a more significant reduction of the demand for NG from major importers and emerging countries.</li> </ul>   | <ul style="list-style-type: none"> <li>2030: 0.53 Gt/year</li> <li>2035: 1.58 Gt/year</li> <li>2050: 4.52 Gt/year</li> </ul> | <ul style="list-style-type: none"> <li>CCUS: A significant portion of captured emissions are from technologies expected to be available by 2030</li> </ul>   | <ul style="list-style-type: none"> <li>2030: 11% more compared to 2020</li> <li>2040: 7% more compared to 2020</li> <li>2050: 5% less compared to 2020</li> </ul>   | <ul style="list-style-type: none"> <li>2030: 3% more NG compared to 2020</li> <li>2040: 19% less NG compared to 2020</li> <li>2050: 34% less NG compared to 2020</li> </ul>   | 2.6                      | 2.1°C (1.7 to 2.6°C)   |
| <b>Delayed Action (Bank of Canada, 2022)</b> <sup>65</sup> | <ul style="list-style-type: none"> <li>2035 : 80 USD (2020)/tonne</li> <li>2050 : 1,200 USD (2020)/tonne</li> </ul>   | <ul style="list-style-type: none"> <li>2030: 9 USD (2020)/MBtu – 0.32 USD/m<sup>3</sup></li> <li>2050: 63.5 USD (2020)/MBtu – 2.2 USD/m<sup>3</sup></li> </ul>   | N.A.   | <ul style="list-style-type: none"> <li>Moderate rate of technological evolution</li> <li>Limited availability of carbon dioxide removal (CDR) technologies</li> </ul>  | N.A.  | <ul style="list-style-type: none"> <li>2030: global status quo (increase around 21%)</li> <li>2050: 87% less production of NG compared to the global status quo</li> </ul>  | 4.5 (2030)<br>2.6 (2050) | 2°C or less  |
| <b>Net Zero Emissions (IEA, 2024b)</b> <sup>66</sup>       | <ul style="list-style-type: none"> <li>2030 : 140 USD (2023)/tonne</li> <li>2050 : 250 USD (2023)/tonne</li> </ul>  | <ul style="list-style-type: none"> <li>2030: 7.4 USD (2023)/MBtu – 0.26 USD/m<sup>3</sup></li> <li>2050: 13.1 USD (2023)/MBtu – 0.47 USD/m<sup>3</sup></li> <li>Reduction in natural gas consumption is quicker, although further investments are necessary to compensate for Russian supplies. In the short term, prices drop to the marginal cost of existing projects.</li> </ul> | <ul style="list-style-type: none"> <li>2030: 1.27 Gt/year</li> <li>2035: 3.21 Gt/year</li> <li>2050: 7.72 Gt/year</li> </ul> | <ul style="list-style-type: none"> <li>2050: 65% of reductions stemming from existing technologies</li> <li>85% carbon-neutral buildings in 2050</li> </ul>  | <ul style="list-style-type: none"> <li>2030: 1% more compared to 2020</li> <li>2040: 13% less compared to 2020</li> <li>2050: 17% less compared to 2020</li> </ul>  | <ul style="list-style-type: none"> <li>Demand for fossil fuels met by continued investments in existing assets, but no new conventional projects.</li> <li>2030: 15% less NG compared to 2020</li> <li>2040: 56% less NG compared to 2020</li> <li>2050: 775% less NG compared to 2022</li> </ul> | 1.9                      | 1.5°C  |

60. Unlike the other scenarios, which reflect global assumptions, the information presented for the Status Quo Scenario is based on Quebec-wide assumptions. The Status Quo Scenario used is not a scaling of a global Status Quo pathway, but consists of pathways modeled specifically for Quebec and Vermont respectively.

61. Modelling undertaken internally based on the annual increase of 5% plus inflation of the price of CATS observed since 2013.

62. The assumptions of the IEA STEPS Scenario are used because they include NDCs, and the IEA publishes all the assumptions and the pathway of the STEPS Scenario is very similar to that of the NDCs.

63. Tables: 2.3, A.2a, A.4a, B.2, p. 145.

64. Tables: 2.3, A.2b, A.4b, B.2, p. 145.

65. Graphs 2 and 3.

66. Tables: 2.3, A.2c, A.4c, B.2, p. 145.

# Appendix 4

## Scenarios and scaling

Different possible pathways based on global climate change scenarios are scaled up in Quebec to assess their local scope.

To do so, the Corporations have chosen the global scenarios and scaling methodologies described in the table.

| Scenario   | Description of global scenario  | Scaling methodology used for Quebec and Vermont   |
|--|---|---|
| <b>Status Quo</b>                                    | The Status Quo Scenario represents a future in which emissions continue to increase since no additional action is taken to limit global warming.  | The scenarios used for the Status Quo Scenario for all of Quebec come from the report carried out by Dunskey Energy Consulting for Quebec (Dunskey, 2021), and are based on a modelling of the NATEM energy optimization model.<br><br>This scenario was developed on a Quebec-wide basis and is consistent with a global Status Quo Scenario. Only the actions and policies already in place or planned in the short term are included in this scenario.   |
| <b>NDC – Proportional method</b>                     | The NDCs are the contributions to which the signatory nations of the Paris Agreement have committed through an NDC submission to the secretariat of the United Nations Framework Convention on Climate Change. The Paris Agreement provides that the signatory countries must submit new contributions every five years. <sup>67</sup><br><br>The scenario used for global NDC commitments is the one that was assessed by the Bank of Canada. It assumes that as of 2020, all countries act in accordance with their NDC submission, and assumes continuous action after 2030, by an implicit trend in emissions changes (Bank of Canada, 2020). | The methodology for scaling proportionally consists of transposing the percentage of emission reductions at the global level to the jurisdiction of interest. This methodology was used to scale the NDC Scenario to the Quebec and Vermont contexts.   |
| <b>Announced Pledges Scenario – Under2 Coalition</b> | The IEA scenarios are transition scenarios. They are widely used to describe the transition to a low-carbon economy and are particularly oriented towards the energy industry.<br><br>The Announced Pledges Scenario, which replaces the Sustainable Development Scenario, represents stabilizing demand despite economic growth and a growing population. The substitution of combustion fuels and the sustained Decarbonization efforts in this scenario are consistent with a world where global warming is at 2.1°C by 2100 compared to pre-industrial levels.  | The Under2 Coalition brings together infranational governments that are committed to reducing GHG emissions in their jurisdictions. This coalition was created before the Conference of Parties (COP) which led to the Paris Agreement.<br><br>The signatories to the Under2 Coalition then committed to reducing their GHG emissions by 80% to 95% with respect to 1990 levels, or at least by 2 metric tonnes per person, by 2050. Quebec and Vermont are both signatories to the Under2 Coalition and their respective GHG emission reduction target is aligned with the Under2 Coalition targets. |
| <b>Delayed Action – Under2 Coalition</b>             | The Delayed Action Scenario represents a future where countries fail to meet their NDC commitments between 2020 and 2030, and then implement more stringent mitigation measures for global warming to stand at 2°C by 2100 compared to pre-industrial levels.<br><br>The scenario used for global delayed action is the one that was assessed by the Bank of Canada.  | To scale up the Delayed Action Scenario, the Under2 Coalition methodology was used and is described above.  |
| <b>Net Zero Emissions – Proportional method</b>      | The Net Zero Emissions Scenario represents a transformation of the world’s energy system to achieve global Carbon Neutrality by 2050, while limiting the increase in global temperatures to 1.5°C or less by 2100, compared to pre-industrial levels. This scenario also maintains economic growth.<br><br>In this scenario, declining final energy demand, the rapid deployment of more energy-efficient technologies, electrification and the rapid growth of renewable energy play a central role in reducing GHG emissions across all sectors.  | To scale up the Net Zero Emissions Scenario, the proportional scaling methodology described above was used.   |

67. Further information on NDCs may be found on the secretariat website of the United Nations Framework Convention on Climate Change (United Nations Framework Convention on Climate Change, s.d.).

# Appendix 5

## Impact of the climate scenarios on the activities of Énergir, GMP and VGS

| Scenarios  | Description of the impact  |  |   |
|--|--|--|---|
|  | Énergir  | GMP  | VGS   |
| <b>Status Quo</b><br>The increase in global temperatures could reach 3.4°C compared to pre-industrial levels.  | According to the Status Quo Scenario developed for Quebec, natural gas volumes distributed by Énergir are set to decrease between now and 2030 and until 2050, being strongly linked to the Price of Carbon, which will increase significantly until 2050. It is expected that climate change would further affect Énergir’s physical assets.  | Distributed volume would remain relatively stable beyond 2030. Climate change would be likely to affect certain physical assets such as hydroelectric assets (increase in water level and volume, especially during very intense rainfall events), transmission and distribution (accelerated vegetation growth rates, stress on trees resulting from rising temperatures, isolated flooding episodes) of GMP or VGS assets.   |   |
| <b>NDC</b><br>This scenario assumes global warming above 2°C compared to pre-industrial levels.  | Compliance with GHG emission reduction policies and achievement of GHG emission reduction targets would result in significant changes to Énergir’s traditional business model. Some of Énergir’s markets are expected to be significantly impacted, specifically building heating, where lower GHG emitting alternatives are available.  | Compliance with Vermont’s GHG emission reduction policies and achievement of GHG emission reduction targets would result in significant changes to the current traditional business model of GMP and VGS. Because physical impacts of climate change over the next decade are driven by past GHG emissions, at least some of their above-mentioned physical effects would be felt even if the NDC Scenario materializes. The global warming would have significant physical repercussions. |   |
|  | Because physical impacts of climate change over the next decade are driven by past emissions, some of the physical effects of climate change would be felt without reaching the significant impacts of the Status Quo Scenario. The global warming would result in significant physical impacts.   | Some markets would be affected, such as building heating and transportation, for which less emissive alternatives are available through electrification. These changes would benefit GMP customers by increasing the load and reducing the pressure on rates.  | Some markets would be affected, such as building heating and transportation, for which less emissive alternatives are available through electrification.  |
| <b>Announced Pledges and Delayed Action</b><br>These scenarios are consistent with limiting temperature rise to 2°C or less by 2100 compared to pre-industrial levels. | The physical impacts of climate change would be the same for these two scenarios, but they are expected to affect Énergir at different times and in a more or less significant way. Énergir should therefore be less affected by the physical impacts of climate change after 2040.  | The physical impacts of climate change would be the same, but they are expected to affect GMP and VGS customers at different times and in a more or less severe way. In both scenarios, global warming is limited to 2°C or less by 2100 and therefore the assets and customers of GMP and VGS would be less disrupted by climate change after 2040.   |   |
|  | In the Announced Pledges Scenario, the energy transition would already be underway and continuing gradually through to 2030 and 2050. In this scenario, Énergir would have to continuously deal with sustained transition risks. Note that Quebec’s targets are aligned with the pathway presented in this scenario.   | In the Announced Pledges Scenario, the energy transition is underway and is faster, but stable by the 2030 and 2050 horizons. GMP would benefit from this.   | In the Announced Pledges Scenario, the energy transition is underway and is faster, but stable by 2030 and 2050. VGS is expected to continually deal with sustained transition risks.   |
|  | In the Delayed Action Scenario, the possibility of a shock (an abrupt change in policies after 2030 affecting Énergir directly or its customers’ activities) is foreseeable. In this case, the adaptation of Énergir’s business model in order to manage the risks associated with this transition could represent a considerable challenge.   | In the Delayed Action Scenario, the actions needed to limit global warming to 2°C do not occur until a sharp change in policies after 2030. In this case, managing GMP’s portfolio and operating activities to maintain a clean, cost-effective and reliable energy system would be key to helping its customers.  | In the Delayed Action Scenario, there is a possibility of a shock (a sharp change in policies after 2030 affecting VGS directly or its customers’ activities). In this case, adapting VGS’s business model to control the risks associated with this transition could represent a considerable challenge.   |
| <b>Net Zero Emissions</b><br>Temperature increase would be limited to 1.5°C relative to the pre-industrial era.  | Énergir will have to deal continuously with sustained short-term transition risks. While the Decarbonization effort will be major for all sectors of the economy by 2030 to limit temperature to 1.5°C compared to pre-industrial levels, this scenario imposes increased transition risks for Énergir but creates conditions conducive to the implementation of its Decarbonization solutions. Despite limiting temperature increases, physical risks are still expected, but are mitigated by prompt and concerted action. | Despite limiting temperature increases, physical risks are still expected, but are mitigated by prompt and concerted action. The current and announced policies so far do not allow for the realization of the Net Zero Emissions Scenario.  |   |
|  | The current and announced policies so far do not allow the realization of the Net Zero Emissions Scenario.   | GMP customers would reap maximum benefits from the Net Zero Emissions Scenario through greater load growth, thus reducing pressure on rates. While the Decarbonization effort will be major for all sectors of the economy by 2030 to limit the temperature to 1.5°C relative to the pre-industrial era, this scenario imposes increased transition risks, but creates very favourable conditions for the implementation of its Decarbonization solutions.                                 | In the Net Zero Emissions Scenario, VGS has to continually deal with sustained transition risks in the short term. While the Decarbonization effort will be major for all sectors of the economy by 2030 to limit the temperature to 1.5°C relative to the pre-industrial era, this scenario imposes increased transition risks for the gas distributor, but creates favourable conditions for the implementation of its Decarbonization solutions. |

# References

**ACEEE. (2021).** *Demand-Side Solutions to Winter Peaks and Constraints*. Washington, DC. Taken from <https://www.aceee.org/research-report/u2101>

**ArcelorMittal Produits longs Canada. (2022).** ArcelorMittal successfully tests partial replacement of natural gas with green hydrogen to produce DRI (direct-reduced iron). Taken from <https://www.newswire.ca/news-releases/arcelormittal-successfully-tests-partial-replacement-of-natural-gas-with-green-hydrogen-to-produce-dri-899349954.html>

**Bank of Canada. (2020).** Scenario Analysis and the Economic and Financial Risks from Climate Change. Staff Discussion Paper 2020-3 Taken from [https://www.bankofcanada.ca/2020/05/staff-discussion-paper-2020-3/?page\\_moved=1](https://www.bankofcanada.ca/2020/05/staff-discussion-paper-2020-3/?page_moved=1)

**Bank of Canada. (2022).** *Climate transition scenario data*. Taken from <https://www.bankofcanada.ca/2022/01/climate-transition-scenario-data/>

**BloombergNEF. (2022).** *New Energy Outlook 2022*. Taken from <https://about.bnef.com/new-energy-outlook-series/>

**Canada Energy Regulator. (2023).** *Market Snapshot: Two decades of Growth in Renewable Natural Gas in Canada*. Taken from <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/market-snapshots/2023/05/market-snapshot-two-decades-growth-renewable-natural-gas-canada.html>

**Cement Association of Canada. (s.d.).** *Concrete Zero: Canada's cement and concrete industry action plan to net-zero*. Taken from <https://cement.ca/sustainability/concrete-zero/>

**CIRAIG. (2020).** *Environmental profile of natural gas in Quebec*, prepared for Énergir. Taken from [https://ciraig.org/wp-content/uploads/CIRAIG\\_Energir\\_rapport\\_final.pdf](https://ciraig.org/wp-content/uploads/CIRAIG_Energir_rapport_final.pdf) (in French only)

**Copernicus Climate Change Service. (2023).** *ERA5 hourly data on single levels from 1940 to present*. Taken from <https://cds.climate.copernicus.eu/datasets/reanalysis-era5-single-levels?tab=overview>

**Dunsky. (2021).** Trajectoires de réduction d'émissions de GES du Québec – Horizons 2030 et 2050 (mise à jour 2021). Prepared for the Ministère de l'Environnement et de la Lutte contre les changements climatiques. Taken from [https://www.dunsky.com/wp-content/uploads/Rapport\\_Final\\_Trajectoires\\_QC\\_2021.pdf](https://www.dunsky.com/wp-content/uploads/Rapport_Final_Trajectoires_QC_2021.pdf) (in French only)

**FEMA. (2024).** *Expected Annual Loss: Wildfire. National Risk Index*. Taken from <https://hazards.fema.gov/nri/wildfire>

**GMP. (2023).** *Annual Energy Mix*. Taken from <https://greenmountainpower.com/energy-mix/>

**Government of Canada. (2021).** *Canadian Net-Zero Emissions Accountability Act*. S.C. c. 22. Taken from <https://laws-lois.justice.gc.ca/eng/acts/c-19.3/FullText.html>

**Government of Canada. (2022).** *Clean Fuel Regulations*. (SOR/2022-140). Taken from <https://laws-lois.justice.gc.ca/eng/regulations/SOR-2022-140/index.html>

**Government of Quebec. (2020).** Plan pour une économie verte 2030: Politique-cadre d'électrification et de lutte contre les changements climatiques. Taken from <https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/environnement/publications-adm/plan-economie-verte/plan-economie-verte-2030.pdf> (in French only)

**Government of Quebec. (2022).** *Rapport sur l'atteinte de la cible de réduction des émissions de gaz à effet de serre du Québec pour l'année 2020*. Taken from <https://www.environnement.gouv.qc.ca/changementsclimatiques/trajectoires-emissions-ges.pdf> (in French only)



**Government of Quebec. (2024a).** *Liste des projets de GNR soutenus*. Updated March 31, 2024. Taken from [https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/economie/contenu/programmes/LI\\_PSPGNR\\_projets\\_soutenus.pdf](https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/economie/contenu/programmes/LI_PSPGNR_projets_soutenus.pdf) (in French only)

**Government of Quebec. (2024b).** *Adapting to climate change*. Taken from <https://www.quebec.ca/en/government/policies-orientations/plan-green-economy/initiatives-fight-climate-change/adapting-climate-change>

**Government of Quebec. (Q-2,r. 15).** *Regulation respecting mandatory reporting of certain emissions of contaminants into the atmosphere*. Taken from <https://www.legisquebec.gouv.qc.ca/en/document/cr/Q-2,%20r.%2015>

**Guidehouse Inc. (2023).** *Thermal Gasification. A key technology to decarbonize Europe and improve energy security*. Taken from <https://guidehouse.com/insights/energy/2023/thermal-gasification>

**Hydro-Québec. (2024).** *État d'avancement 2024 du Plan d'approvisionnement 2023-2032*. Taken from [https://www.regie-energie.qc.ca/storage/app/media/Suivis/Suivi%20D-2023-109/20241101\\_Etat-davancement\\_2024.pdf](https://www.regie-energie.qc.ca/storage/app/media/Suivis/Suivi%20D-2023-109/20241101_Etat-davancement_2024.pdf) (in French only)

**ICF. (2019).** *Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment. An American Gas Foundation Study*. Taken from <https://www.gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf>

**IEA. (2020).** *Outlook for biogas and biomethane: Prospects for organic growth, An introduction to biogas and biomethane*. Taken from <https://www.iea.org/reports/outlook-for-biogas-and-biomethane-prospects-for-organic-growth/an-introduction-to-biogas-and-biomethane>

**IEA. (2021a).** *Is carbon capture too expensive?* Taken from <https://www.iea.org/commentaries/is-carbon-capture-too-expensive>

**IEA. (2021b).** *Net Zero by 2050. A Roadmap for the Global Energy Sector*. Taken from <https://www.iea.org/reports/net-zero-by-2050>

**IEA. (2023a).** *Energy Efficiency*. Taken from <https://iea.blob.core.windows.net/assets/dfd9134f-12eb-4045-9789-9d6ab8d9fbf4/EnergyEfficiency2023.pdf>

**IEA. (2023b).** *Net Zero Roadmap: A Global Pathway to Keep the 1.5 °C Goal in Reach*. Taken from [https://iea.blob.core.windows.net/assets/9a698da4-4002-4e53-8ef3-631d8971bf84/NetZeroRoadmap\\_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf](https://iea.blob.core.windows.net/assets/9a698da4-4002-4e53-8ef3-631d8971bf84/NetZeroRoadmap_AGlobalPathwaytoKeepthe1.5CGoalinReach-2023Update.pdf)

**IEA. (2023c).** *Managing Seasonal and Interannual Variability of Renewables*. Taken from <https://iea.blob.core.windows.net/assets/bfe623d2-f44e-49cb-ae25-90add42d750c/ManagingSeasonalandInterannualVariabilityofRenewables.pdf>

**IEA. (2024a).** *E-methane: a new gas for a net-zero future? (webinar)*. Taken from 2024c: [https://iea.blob.core.windows.net/assets/9b86ac2a-2055-4eac-9f93-6ab379554d6d/IEA\\_E-methaneanewgasforanet-zerofuture.pdf](https://iea.blob.core.windows.net/assets/9b86ac2a-2055-4eac-9f93-6ab379554d6d/IEA_E-methaneanewgasforanet-zerofuture.pdf)

**IEA. (2024b).** *World Energy Outlook 2024*. Taken from <https://www.iea.org/reports/world-energy-outlook-2024>

**IEA. (2022).** *Energy Efficiency 2022*. Taken from <https://www.iea.org/reports/energy-efficiency-2022/>

**IPCC. (2022).** *Sixth Assessment Report: Working Group III report on Mitigation of Climate Change (AR6)*.

**IPCC. (2023).** *AR6 Synthesis Report Climate Change*. Taken from <https://www.ipcc.ch/report/ar6/syr/>

**IRENA. (2020).** *Reaching Zero with Renewables. Eliminating CO2 emissions from industry and transport in line with the 1.5 °C climate goal*. Summary. Abu Dhabi. Taken from [https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Sep/IRENA\\_ReachingZero\\_Summary\\_2020.pdf?la=en&hash=7FD100C3C26E161D6C1217B88C1FB7E847D7F08F](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2020/Sep/IRENA_ReachingZero_Summary_2020.pdf?la=en&hash=7FD100C3C26E161D6C1217B88C1FB7E847D7F08F)

**IRENA. (2023).** *World Energy Transitions Outlook 2023 Volume 1*. Taken from <https://www.irena.org/Digital-Report/World-Energy-Transitions-Outlook-2023>

**Lafarge. (s.d.).** *Project CO2ment*. Taken from <https://www.lafarge.ca/en/project-co2ment>

**Minister of Economy, Innovation and Energy. (2024).** *Bill 69, An Act to ensure the responsible governance of energy resources and to amend various legislative provisions*. Introduced during the 43<sup>rd</sup> Legislature, 1<sup>st</sup> Session.

**Ministère de l'Environnement et de la Lutte contre les changements climatiques. (2020).** *Stratégie de valorisation de la matière organique*. Taken from <https://www.environnement.gouv.qc.ca/matieres/organique/strategie-valorisation-matiere-organique.pdf> (in French only)

**Ouranos. (s.d. a).** *Understanding climate change*. Taken from <https://www.ouranos.ca/en/science-du-climat-changements-quebec>

**Ouranos. (s.d. b).** *Landslides*. Taken from <https://www.ouranos.ca/en/climate-phenomena/landslides-background-background>

**Régie de l'énergie. (2023).** *Décision D-2023-024. Demandes de révision partielle de la décision D-2022-061 rendue dans le dossier R-416-2021 (Phase 1)*. Taken from [https://www.regie-energie.qc.ca/fr/participants/dossiers/R-4195-2022/doc/R-4195-2022-A-0018-Dec-Dec-2023\\_02\\_22.pdf](https://www.regie-energie.qc.ca/fr/participants/dossiers/R-4195-2022/doc/R-4195-2022-A-0018-Dec-Dec-2023_02_22.pdf) (in French only)

**Superior Court of Quebec. (2024).** *Hydro-Québec c. Régie de l'énergie*. QCCS 718. Taken from [https://www.regie-energie.qc.ca/fr/participants/dossiers/R-4233-2023/doc/R-4233-2023-B-0040-Audi-Autorit%C3%A9s-2024\\_03\\_27.pdf](https://www.regie-energie.qc.ca/fr/participants/dossiers/R-4233-2023/doc/R-4233-2023-B-0040-Audi-Autorit%C3%A9s-2024_03_27.pdf) (in French only)

**Systems, V. G. (2024).** *Integrated Resource Plan*. Taken from <https://vgsvt.com/wp-content/uploads/2024/02/VGS-2024-Integrated-Resource-Plan.pdf>

**Thema, M., Bauer, F., & Sterner, M. (2019).** Power-to-Gas: Electrolysis and methanation status review. *Renewable and Sustainable Energy Reviews*, 112, pp. 775-787. <https://doi.org/10.1016/j.rser.2019.06.030>

**TorchLight Bioresources. (2020).** *Renewable Natural Gas (Biomethane) Feedstock Potential in Canada. Funded by Natural Resources Canada*. Ottawa. Taken from [https://www.enbridge.com/~media/Enb/Documents/Media%20Center/RNG-Canadian-Feedstock-Potential-2020%20\(1\).pdf](https://www.enbridge.com/~media/Enb/Documents/Media%20Center/RNG-Canadian-Feedstock-Potential-2020%20(1).pdf)

**United Nations Framework Convention on Climate Change. (s.d.).** *Nationally Determined Contributions (NDCs)*. Taken from <https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs>

**van Leeuwen, C., & Zauner, A. (2018).** *Innovative large-scale energy storage, D8.3. Report on the costs involved with PtG*. Taken from [https://erig.eu/wp-content/uploads/2023/02/20180424\\_STOREandGO\\_D8.3\\_RUG\\_accepted.pdf](https://erig.eu/wp-content/uploads/2023/02/20180424_STOREandGO_D8.3_RUG_accepted.pdf)

**WRI. (2023).** *7 Things to Know About Carbon Capture, Utilization and Sequestration*. Taken from <https://www.wri.org/insights/carbon-capture-technology>

**WSP Canada Inc. (2021).** *Inventaire de la biomasse disponible pour produire de la bioénergie et portrait de la production de la bioénergie sur le territoire québécois. Rapport réalisé par WSP Canada Inc., pour le compte du Ministère de l'Énergie*. Taken from <https://cdn-contenu.quebec.ca/cdn-contenu/adm/min/economie/publications-adm/rapport/ED-inventaire-biomasse-bioenergies-WSP-2021-MEIE.pdf> (in French only)



## Special Thanks

Énergir would like to thank the external stakeholders who have contributed to this climate reporting approach for being generous with their ideas and suggestions to help us improve our practices. We would also like to thank the firm Dunsy Energy Consulting for their invaluable advice and their expertise, which helped improve our thinking and analyses, especially as regards the definition, quantification and scaling of scenarios and strategic analysis.

Énergir would also like to thank the internal collaborators involved in our approach to sustainability, the steering committee of this Report on climate resilience, and the disclosure committee for their commitment and involvement in this project. Finally, Énergir would like to thank all its employees. We wouldn't be here without them because this Report truly is a collective effort.



imagine  
energy  
differently