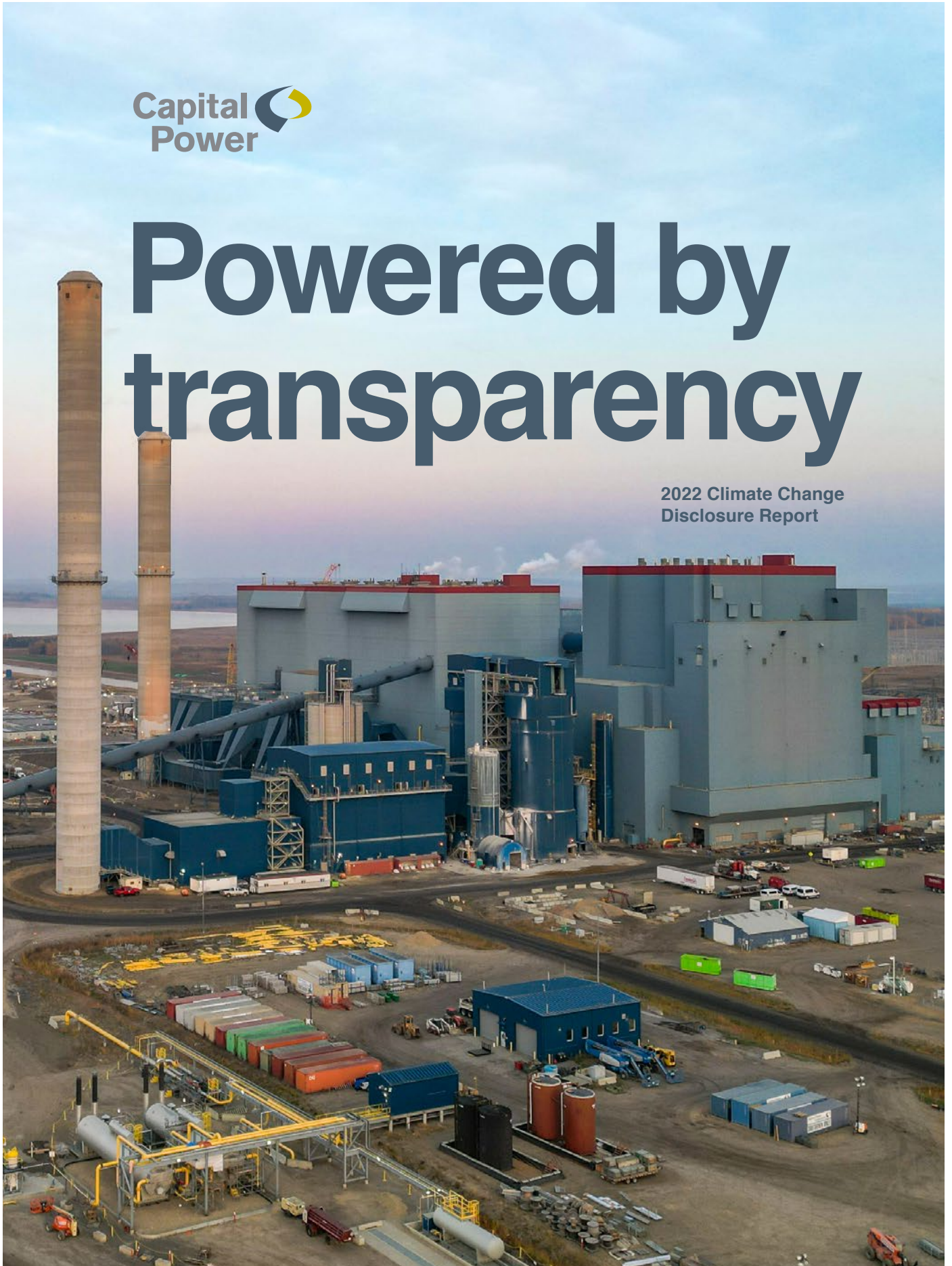
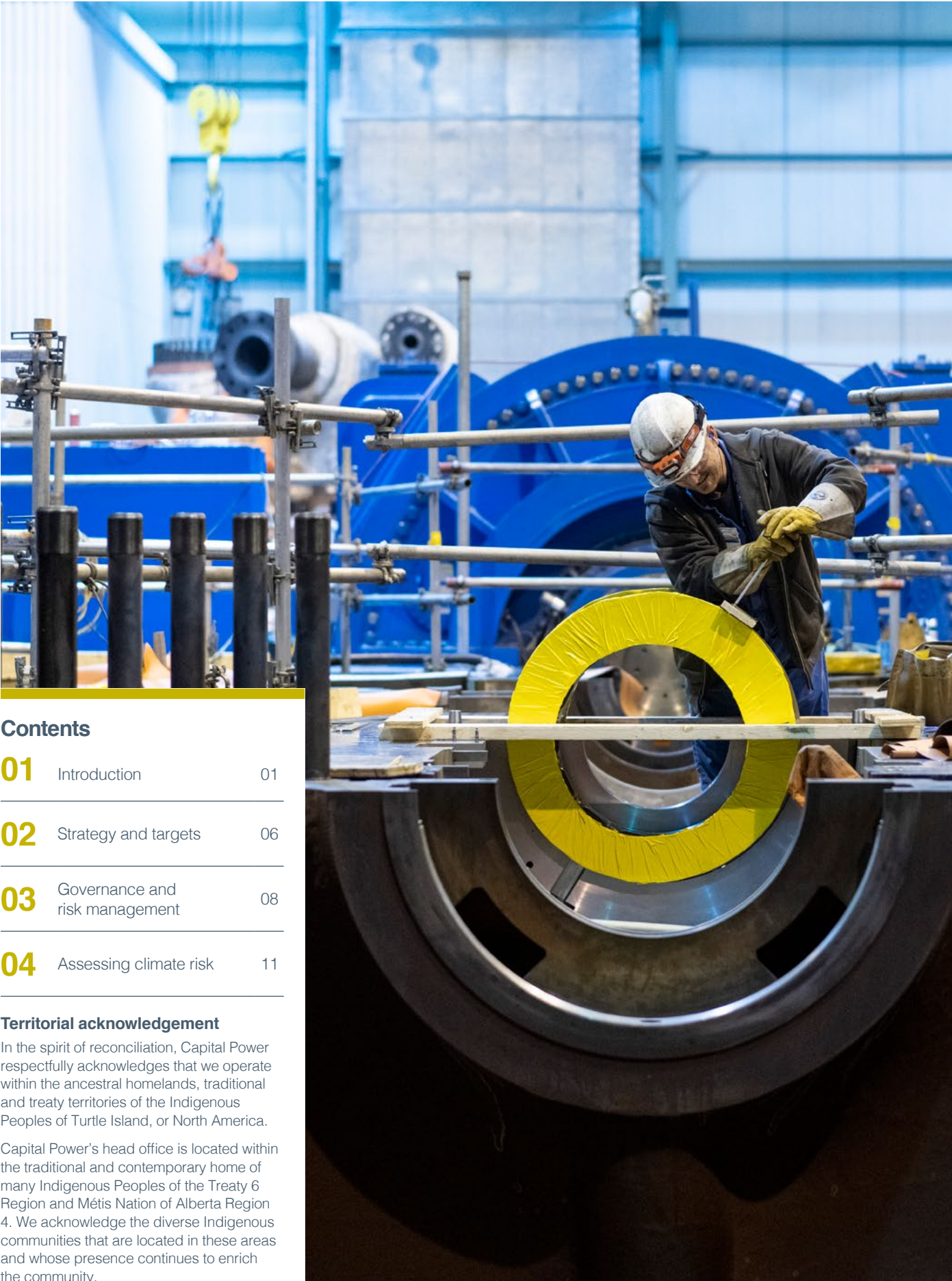




Powered by transparency

2022 Climate Change
Disclosure Report





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Territorial acknowledgement

In the spirit of reconciliation, Capital Power respectfully acknowledges that we operate within the ancestral homelands, traditional and treaty territories of the Indigenous Peoples of Turtle Island, or North America.

Capital Power’s head office is located within the traditional and contemporary home of many Indigenous Peoples of the Treaty 6 Region and Métis Nation of Alberta Region 4. We acknowledge the diverse Indigenous communities that are located in these areas and whose presence continues to enrich the community.

Chief Sustainability Officer and Chief Financial Officer letter

We're taking action against climate change to power a brighter future

Kate Chisholm

Senior Vice President, Chief Strategy
and Sustainability Officer

Sandra Haskins

Senior Vice President, Finance and Chief
Financial Officer



Capital Power is driven by its purpose – to *power a sustainable future for people and planet* – as we work each day to keep the lights on for our communities across Canada and the U.S. We're defining our pathway to net zero by 2045 and we're confident that our decarbonization strategy will get us there in a balanced manner that prioritizes sustainability, while maintaining reliability and affordability for our power systems and communities.

Guided by our sustainability targets, we're implementing and exploring solutions that allow us to decarbonize in a realistic and practical way that enables us to progressively meet key milestones, track performance against our targets, and remain agile while exploring emerging technologies that may make a significant impact in the fight against climate change. We're focused on increasing efficiency and abating emissions by decarbonizing our thermal generation and expanding our renewables portfolio to increase clean energy capacity for our grid.

In this report, we're proud to share the significant progress we've made to deliver on our strategy and accelerate our transition to net zero by 2045. Our 2022 Climate Change Disclosure Report is our fifth annual disclosure aligned to the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. The report outlines our analysis of climate risks and opportunities, as well as our strategy and targets to address this global challenge. As we continue to improve our reporting practices, we support the global implementation of mandatory and standardized reporting requirements aligned to the TCFD recommendations. We speak with intention, turn our ambitions into action and demonstrate accountability by openly reporting on our progress for the benefit of our stakeholders.

This report includes a detailed assessment of climate change outcomes based on three climate change scenarios from the International Energy Agency's (IEA) World Energy Outlook 2022, as well as an examination of how our current strategic direction is well-positioned to mitigate risks and capitalize on opportunities arising from each scenario. The IEA (2022) data set, used and referenced by other comparable industry partners, is publicly available, is peer reviewed and uses data sets at global, national and regional levels. Additionally, the data sets are aligned to the TCFD recommendations, enabling a better "apples-to-apples" comparison of climate-related strategies within our sector.

These scenarios illustrate the complexities of the transformation to a net zero energy system, underscoring the importance of expanding renewable power generation and a continued, critical role for natural gas to support the intermittency of renewable power sources in the medium term. Energy storage technologies will play an increasing role in managing the flexibility of the power system and be a key part of our long-term strategy. Natural gas paired with decarbonization technologies – such as CCUS, hydrogen blending and direct air capture – is also highlighted in these scenarios, which together demonstrate that our business is well-positioned to address the risks and opportunities presented by climate change.



Chief Sustainability Officer and Chief Financial Officer letter continued



Funding a sustainable future

From the top down, our Board of Directors (the Board) and business teams incorporate environmental, social and governance (ESG) considerations into their modelling and assessments, including our investment decision methodology, to ensure all our actions are consistent with our strategy and support our ability to achieve our emission reduction targets. As we work towards net zero, our experts and innovators are also prioritizing several other important sustainability initiatives – including implementing our sustainable sourcing and water management strategies.

In 2022, we further enhanced the alignment of our capital structure and our sustainability priorities by issuing the first hybrid green bond in Canada that raised \$350M to fund eligible renewable projects as outlined in our inaugural Green Financing Framework.

Protecting the planet for future generations

We're growing our business to deliver long-term value for our stakeholders while protecting our planet, and each decision we make reflects the analysis outlined in this report and is grounded in sustainability best practices. Sustainability is integral to our strategy and culture, and is the foundation upon which we're contributing to the net zero energy system required for our global wellbeing.

In 2022, we demonstrated that executing our strategy creates value, as seen by our resilient cash flows, ability to meet revised higher financial guidance, and successful financing activities completed in the year to support our growth initiatives. Most importantly, our strategy creates sustainable value for our stakeholders by enabling us to electrify the world reliably and affordably while protecting the planet for future generations.

Sincerely,

Kate Chisholm
Senior Vice President, Chief Strategy and Sustainability Officer

Sandra Haskins
Senior Vice President, Finance and Chief Financial Officer

About this report and our reporting

This fifth Climate Change Disclosure Report reviews our strategy and its resiliency in relation to climate change scenarios and is structured in accordance with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD).

The assessment includes consideration of the key tenets of our strategy and how they are expected to perform in evolving policy environments that seek to limit the impacts of climate change. This report is aligned to the four central themes of the TCFD recommendations as outlined below.

This report describes:

- **Governance:** How our climate-related risks are governed from our Board of Directors and Executive Team through the entire organization.
- **Strategy:** How climate-related risks, opportunities and mitigation are identified, assessed, and managed in accordance with our business strategy and long-term plan, which are updated and reviewed annually:
 - Our assessment of the resiliency and sustainability of our strategy relative to alternative climate change scenarios based on the 2022 IEA World Energy Outlook.
- **Risk management:** Our active management of climate-related risks through our Enterprise Risk Management (ERM) process.
- **Targets and metrics:** Our current metrics and targets describing our performance and progress in managing climate-related risks and opportunities.



Our reporting

Capital Power works to engage stakeholders and help them understand the material financial and non-financial aspects of our business through our reporting and disclosures. This includes how issues related to emissions and climate change are managed and assessed, along with other business risks.

We have regularly disclosed and reported on our environmental and climate-related risks through our past Management Discussion and Analysis (MD&A) reports, Annual Information Forms (AIFs) and Integrated Annual Reports (IARs). We report to CDP (formerly the Carbon Disclosure Project) and Electricity Canada's Sustainable Electricity reporting framework.

Capital Power will continue to advance our climate change reporting and disclosure to ensure our stakeholders understand the role we are playing to mitigate the impacts of climate change.

About Capital Power and our operations

Our purpose

To power a sustainable future for people and planet



Alongside our purpose, we are guided by our vision, mission and values.

Our vision

Electrifying the world reliably and affordably while protecting the planet for future generations

Our mission

Implementing and operating innovative energy solutions

Our values

We manage our impact on the environment to leave a healthy planet

We value equity, diversity and inclusion, listen with open minds, and treat all people with respect

We are committed to the safety and wellbeing of our people

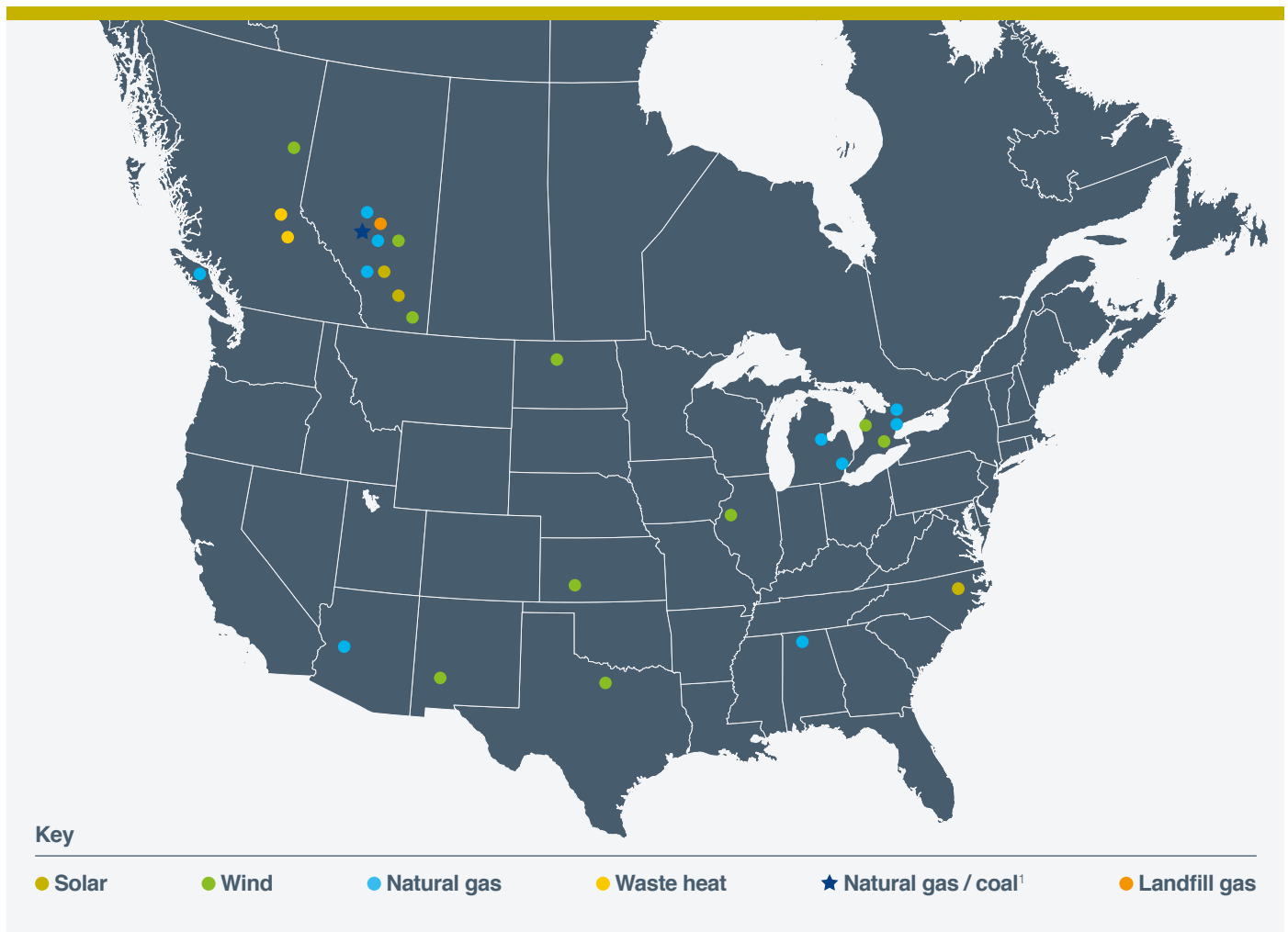
We act with integrity and take responsibility for our decisions and actions

We embrace innovation by fostering creativity and harnessing technology

About Capital Power and our operations

We are a growth-oriented, publicly traded (TSX: CPX) North American power producer headquartered in Edmonton, Alberta. We create innovative electricity solutions to electrify the world reliably and affordably while protecting the planet for future generations.

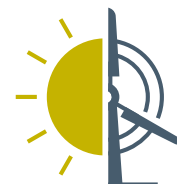
We develop, acquire, operate and optimize high quality, large-scale generation facilities to provide sustainable energy solutions. We then optimize and market our energy outputs to maximize the financial value from our activities. We also recognize our role in society and the communities in which we operate. We look to influence the wider energy debate, helping inform policy and regulations while also working closely with local leaders to ensure our activities have a positive impact on communities and limit our environmental impact.



29
Facilities



7,500MW
Approximate generation capacity



20%
from renewables

¹ Representing Genesee Generating Station Units 1, 2 and 3. Off-coal in 2023.



Our strategy

Our strategy to achieve net zero by 2045 is to transition off-coal by the end of 2023, accelerate growth in renewable projects and make strategic investments to abate the emissions from our natural gas assets. We will accomplish this through purposeful investment in our people, evolution of our core technologies and collaboration with stakeholders to decarbonize our fleet. Our resilient strategy positions Capital Power to remain competitive as we *power a sustainable future for people and planet*.

Capital Power has embedded climate change considerations into our strategy and decision-making processes and has effective governance and mitigation processes in place to monitor and address climate-related risks and capitalize on opportunities. The IEA scenarios highlight the continued role and importance that natural gas and renewables will have in the North American energy system. They also support our focus on these technologies and our ongoing efforts to optimize performance and reduce emissions at our thermal facilities. We are confident that carbon capture, utilization and storage (CCUS) technologies, low-carbon fuels, and Direct Air Capture (DAC) will be essential to achieving global carbon-reduction objectives.

Our geographic diversification, combined with our insurance and risk management initiatives, position us well to manage physical risks arising from climate change under the different scenarios. We understand the importance of continually tracking and refining key metrics that influence the strength and resilience of our business, recognizing that there is great uncertainty as to how the future will unfold.

Our sustainability targets

Our sustainability targets, which prioritize our pathway to decarbonization, increase the resiliency of our strategy relative to alternative climate change scenarios.

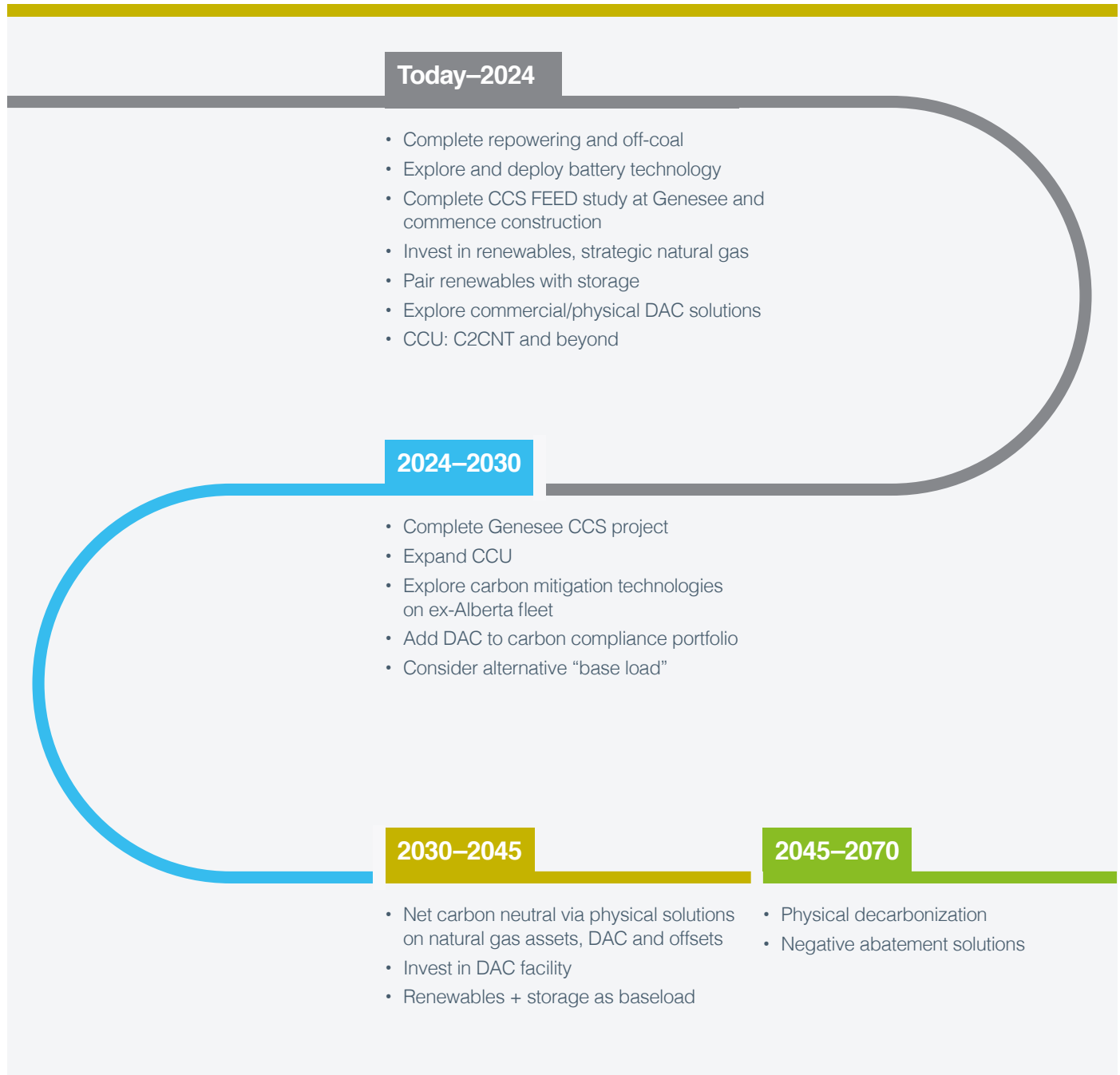
	On track
Achieve net zero by 2045	✓
Construct all new natural gas generation units to be carbon capture and/or hydrogen ready	✓
Reduce Scope 1 CO ₂ emissions at Genesee by 50% by 2030 from 2005 levels	✓
Reduce Scope 1 CO ₂ emissions by 10% by 2030 from 2005 levels, based on our 2019 fleet	✓
Reduce Scope 1 CO ₂ emission intensity by 65% by 2030 from 2005 levels	✓
Invest in CCUS technology to help us achieve net carbon by 2045	✓
Progress Genesee Carbon Conversion Centre	✓

→ See our Executive Team and leadership short-term and long-term linked sustainability targets in our Annual Information Form





Our pathway to net zero 2045





Board oversight

Capital Power is committed to responsible corporate governance as being critical to long-term performance and investor confidence. Our governance practices promote accountability, transparency and resiliency, and support sound decision making in the interest of all our stakeholders. Our Board oversees the creation and execution of Capital Power's strategy and long-term plan¹, and the identification, management and mitigation of risks to the strategy through our Enterprise Risk Management (ERM) system.

In addition, the Board's strategic mandate expressly includes the obligation to consider "the opportunities, risks and sustainability of the business" and to receive reports from management "on matters relating to, among others, ethical conduct, human rights, diversity and inclusion, and other sustainability matters", which includes climate change.

The Board reviews the corporate risk register biannually, conducts site visits and consults regularly with shareholders for first-hand perspectives on their topics of interest. The Board and the CEO set the tone for management in driving the behaviours and attitudes needed to support corporate-wide alignment on a strong sustainability culture.

The Board considers climate change-related issues when reviewing and annually approving the long-term plan, which contains strategies relating to decarbonization, technology and the pursuit of renewable generation. The Board recognizes that to be sustainable, Capital Power must evolve with the power market. This means that, in addition to maintaining reliability and affordability, an increasing focus on decarbonization is imperative.

The Board conducts its work through three accountable governing committees: Audit Committee, People, Culture and Governance Committee, and Health, Safety and Environment Committee. All committee members are independent.



¹ Capital Power's Long-Term Plan is an internal document that provides a 10-year outlook that is updated annually to ensure it remains current. The current plan provides a 10-year outlook from 2022. For competitiveness reasons, this document is not public.



Management oversight

Under the Board's oversight the CEO is responsible for acting on climate-related issues. The Executive Team as a whole is responsible for addressing climate change-related issues, assessing implications, risks and opportunities for Capital Power, and ensuring our strategy is sustainable.

Climate change-related issues are a key consideration of Capital Power's strategy and long-term plan and are broadly and consistently considered in all current operational decisions and future investments and developments. Direct management responsibility for climate-related issues lies with the CEO because climate-related issues are constantly monitored and considered in all major strategic decisions and all aspects of the business. The annual corporate planning and strategy process is completed with extensive direction and input from the Executive based on their understanding of climate change risks, impacts and opportunities for our business.

Climate related risks are monitored and managed by the CEO with specific input from the CSO and the rest of the Executive Team.



The Board reviews and approves the Company's risk tolerances, ERM Policy, and risk management processes and accountabilities annually. A comprehensive ERM review is provided to the Board at least twice a year. Ultimately, the President and CEO is accountable for managing our risks, including climate change-related risks, and approving the ERM framework.

- Executive risk owners are accountable for the treatment of the risks which have been assigned to them as part of the risk assessment process. They are responsible for providing updates on risk management action plans under their control.

Bottom in



Overview of 2022 IEA scenarios and the resilience of our strategy

Scenarios analysis

Capital Power's strategy is established through rigorous review of the Company's competitive advantages as well as market fundamentals, changing public policies and evolving long-term dynamics that are shaping the power sector. Through regular assessments, we test and review our strategy to ensure resiliency. This process includes Board oversight and extensive management review to ensure Capital Power's strategy and tactics are adjusted as the competitive environments in which we operate continue to change.

To support this process, Capital Power uses extensive modelling and scenario analysis that evaluates opportunities, risks and the resiliency of our strategy under varying climate change scenarios, including the IEA scenarios and underlying assumptions. As we evaluate the risks and opportunities that may arise in these scenarios, our analysis focuses on the material risks that are relevant to our business.

IEA scenarios

The IEA scenarios make assumptions about technology advancement, policy, CO₂ prices, fuel prices, socio-economic drivers, including population and GDP, and consider global trends toward increasing net zero commitments by governments and corporations.

The IEA scenarios simulate the interactions among supply and demand fundamentals and generate the resulting energy flows, CO₂ emissions and investments to 2050.

Note: The IEA's 2022 World Energy Outlook Report provides a framework for thinking about the future of global energy. It does not make predictions about the future. Instead, it sets out what the future could look like based on different scenarios or pathways, with the aim of providing insights to inform decision making by governments, companies and others concerned with energy.

The following includes a summary of each of the three main scenarios from the 2022 IEA report used in Capital Power's analysis:

- **Stated Policies Scenario** (STEPS) assumes that existing and announced policy is implemented by governments. The cumulative contributions that result are material, however not sufficient to achieve the sustainable development goals or limit the worst effects of climate change.
- **Announced Pledges Scenario** (APS) assumes that climate-related commitments made by governments and implemented through Nationally Determined Contributions (NDCs) will be met in full and on time.
- **Net Zero Emissions by 2050 case** (NZE) sets out the pathway for the global energy sector to achieve the ambition of net zero CO₂ emissions by 2050.





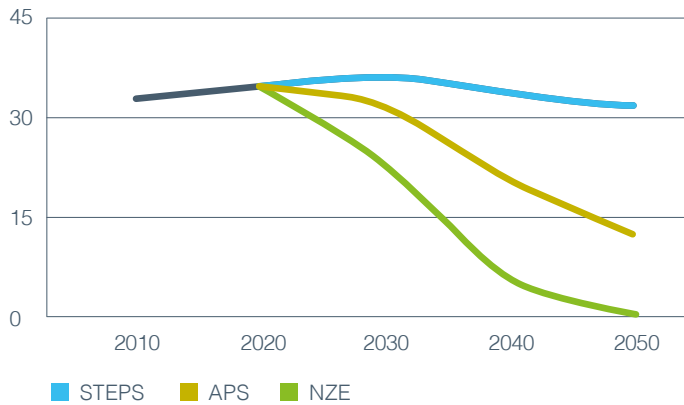
Overview of 2022 IEA scenarios and the resilience of our strategy

The 2022 IEA scenarios are focused on the critical steps required to achieve net zero commitments and limit the effects of climate change.

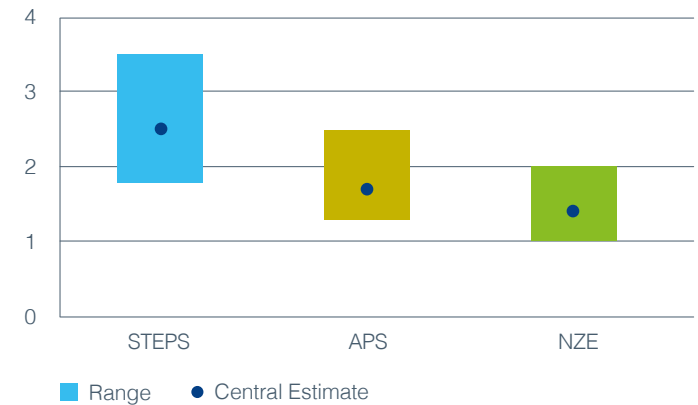
The following provides an overview of key assumptions and insights that are directly relevant to the power sector and the expected resiliency of Capital Power's strategy under different climate-related scenarios.

CO₂ emissions and temperature rise

CO₂ emissions
(gtCO₂)



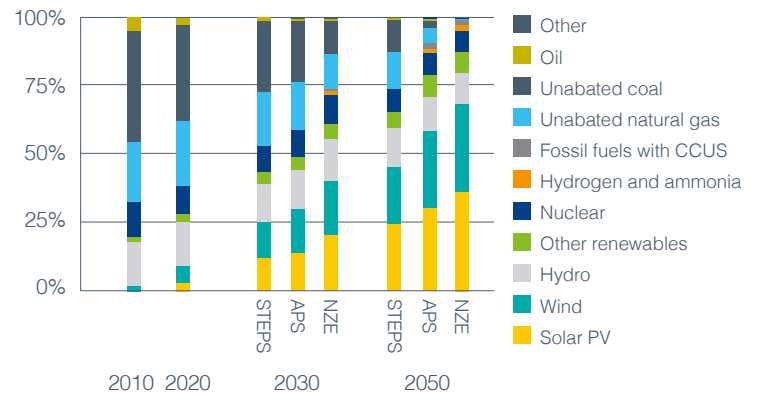
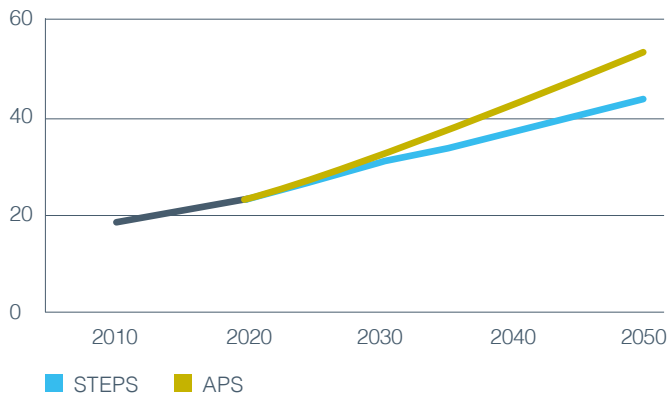
Temperature rise in 2100
(°C)



Strategy resiliency

The science is clear: we must limit global warming. We are working to align our actions with the objective of limiting global temperature rise to well below 2 degrees Celsius. To achieve net zero emissions, carbon abatement must not wait. Contributions to emissions reductions by 2030 will rely heavily on technologies in the market today and new emerging technologies becoming viable over time. Capital Power is advancing the development of emission-reduction technologies to contribute to a low carbon future. Carbon capture, utilization and storage (CCUS), hydrogen and direct air capture will be essential components of our strategy and ensure our long-term resiliency.

Global electricity demand and generation mix by scenario
(Thousand Terrawatt-hours (TWh))



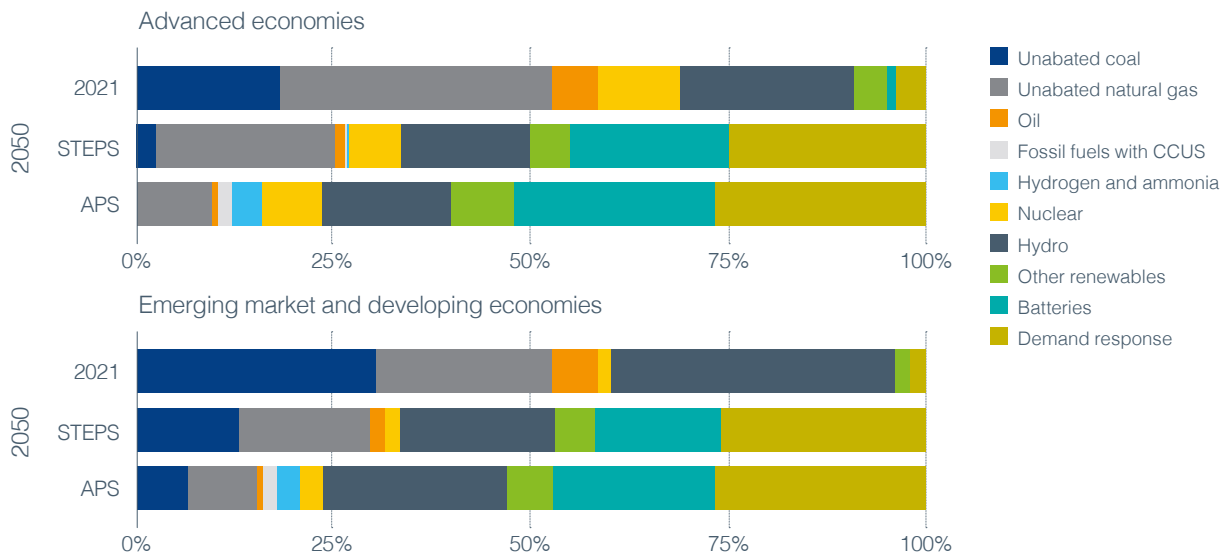
Overview of 2022 IEA scenarios and the resilience of our strategy

Strategy resiliency

As global electricity demand grows, a mix of low carbon energy sources will be needed to power the global economy. Capital Power's strategic focus on renewable energy development will be resilient in all future scenarios. Our thermal generation will undergo an accelerated transformation in scenarios with greater emission reduction efforts. A transition in thermal generation from unabated generation towards combustion of low carbon fuels and operations paired with decarbonization technologies will be essential to long-term resiliency. The pace at which this transition occurs will vary by scenario.



Flexibility supply by source, region and scenario, 2021 and 2050



Note: the IEA data represents the contribution of different resource types to managing power system flexibility, which is the hour-to-hour ramping requirements after removing wind and solar production from electricity demand.

Strategy resiliency

Increased penetration of intermittent generation will significantly increase the need for flexible sources of supply to maintain reliability. This need grows as ambition towards reducing emissions increases. Natural gas will continue to play an integral role in meeting this need as we progress towards the goal of net zero emissions. As net zero objectives are pursued, energy storage is increasingly used along with abated natural gas generation and low-carbon fuels to maintain reliability and is expected to be an important source of growth in our strategy.



Source: International Energy Agency (2022), World Energy Outlook 2022, IEA, Paris.



Risks and opportunities tables

Risks and opportunities

We use our ERM Program to identify, assess, categorize, respond to, monitor and report on key risks that may affect the achievement of our strategic and related business objectives. Key risks are identified in a risk register and assessed in terms of their residual scoring based on probability, velocity and potential impact, and mitigating controls which is updated twice per year. We use various controls and procedures for reducing controllable risks to acceptable levels and to identify appropriate actions in cases of risks outside of management's control.

The top sustainability risk ranked from our 2022 ERM process remains to be climate change transitional risk. The potential impact to our natural gas portfolio could be significant should deep decarbonization policies and regulations for GHG emissions and water usage outpace either CCS's ability to economically comply with them, or Capital Power's ability to incorporate hydrogen blending, DAC and other technological advancements.

Transitional risks and opportunities

The tables below identify short-term (0–3 years) and long-term (4 years and beyond) transitional risks that may materialize in scenarios where increasing measures are taken to mitigate the impacts of climate change. Similarly, transitional opportunities that may arise in these scenarios are evaluated over the short- and long-term.

Markets, policy and regulatory

Key assumptions	<ul style="list-style-type: none">Carbon pricing remains a central mechanism of climate policy in Canada; prices rise over time while performance benchmarks are increased; complementary pricing and regulatory mechanisms are implemented and strengthened.Carbon pricing is gradually adopted and expanded across the United States; pricing is implemented in the long-term with material escalation of prices.Stimulus spending by governments is increasingly focused on energy and green infrastructure.Demand growth accelerates globally from recent levels due to increasing levels of electrification in industry as a way to reduce emissions.Carbon markets continue to expand across North America.
Risks	<div>Short-term<ul style="list-style-type: none">Changes in governments create uncertainty with respect to future climate change-related policy.Current portfolio is exposed to carbon pricing; as prices rise this may result in higher compliance obligations and reduced margins for existing facilities.Unexpected variation in carbon prices and regulation may lead to material variances compared to expectations.</div> <div>Mitigation<ul style="list-style-type: none">Capital Power actively participates in industry groups to monitor and engage with government officials on emerging policy development relating to climate change and carbon pricing.Carbon costs are passed through to counterparties on select power purchase agreements and are also partly reflected in wholesale merchant power market prices thereby minimizing exposure to carbon price.Capital Power actively manages compliance costs through participation in environmental commodity markets and through continuous investments in operational efficiencies and enhancements to reduce emissions at our generating facilities.Scenarios and sensitivity analysis relating to carbon prices and regulation is embedded in all commercial decision making and due diligence to ensure appropriate consideration of climate change-related risks.</div> <div>Long-term<ul style="list-style-type: none">Accelerated decarbonization of the power sector is being considered by governments in Canada and the United States.Adoption and escalation in carbon prices continues in response to increasing pressure to reduce emissions through market mechanisms; prices rise well-above current levels, while performance benchmarks are made more stringent.</div>



Risks and opportunities tables

Markets, policy and regulatory continued

Risks continued

Mitigation

- Unmitigated thermal assets are increasingly expensive to operate; we actively pursue CCUS, direct air capture (DAC), and hydrogen blending to minimize exposure to carbon pricing, with a target of being net zero by 2045.
- Capital Power continues to actively manage compliance costs through participation in carbon markets and investments in operational efficiencies and enhancements that reduce emissions at our facilities.
- Over the longer term, Capital Power will pursue abatement at source, where feasible, and negative abatement where emissions cannot be reduced at source.
- Carbon costs are passed through to counterparties on select power purchase agreements, minimizing exposure to carbon price.
- The costs and risks associated with emissions abatement from thermal assets are considered in all commercial decision making and due diligence; capital allocation decisions may favour assets and technologies that minimize potential exposure.

Opportunities

Short-term

- Rising carbon prices may lead to increases in the wholesale price of power where generators are able to flow-through costs to consumers.
- Expansion of carbon markets continues across North America.

Response

- Where Capital Power's portfolio has exposure to wholesale power prices, the Company may realize increased margins on assets as prices rise.
- Expertise in carbon markets leads to reduced compliance costs through hedging and origination of lower-cost credits; trading activity increases in environmental markets.

Long-term

- Demand growth accelerates as industries are increasingly using electrification to reduce emissions.
- Emission-intensive assets with limited opportunities for abatement retire as rising carbon costs limit the economic viability of the assets.

Response

- Rising demand for power and the retirement of emission-intensive assets results in an increase in investment opportunities for Capital Power.

Renewable energy development

Key assumptions

- Investment in renewables is pursued to decarbonize electricity grids and mitigate the impacts of climate change.
- The cost of renewable technologies continues to decline; capacity values of renewables increase with technological improvements, expanded regional diversity and co-location with storage assets.
- Penetration of renewables continues to increase as demand grows and retirement of existing assets continues.
- Intermittency remains a concern for grid reliability; natural gas and storage are essential to integration in the long-term.
- New transmission development is required to expand the capacity of renewable generation.

Risks

Short-term

- Increasing penetration of intermittent renewable energy affects the profile of supply fundamentals.

Mitigation

- Capital Power operates a diverse fleet of assets that includes baseload and peaking units well-suited to varying market conditions.



Risks and opportunities tables

Renewable energy development continued

Risks continued

Long-term

- Long-term declines in the cost of renewables, as well as reduced intermittency through the addition of storage, increases the relative competitiveness of these assets and result in increased development.
- Capital Power's existing fleet of thermal assets may be affected by this increased penetration. This may result in reduced operating hours for certain thermal assets or increased cycling, which results in higher operational expenses.

Mitigation

- Capital Power invests strategically in assets that are expected to remain competitive with increasing levels of renewable penetration and that have future storage co-location potential.
- As the long-term competitiveness of renewables improves relative to gas, Capital Power would rebalance the Company's portfolio of assets and consider shifting capital allocation to increase development of renewables.

Opportunities

Short-term

- There are expanded opportunities in renewables across North America as costs decline, and policy supports new development and growing corporate decarbonization commitments.
- Intermittent renewable generation increases the volatility of power prices and creates a need for flexible capacity to support integration.

Response

- Capital Power actively pursues development opportunities in renewables, including wind and solar; a growing portfolio of renewable assets reduces the overall emissions intensity of our fleet and provides competitive returns.
- Capital Power operates flexible natural gas assets that provide critical reliability services to the grid. These assets will be compensated for the services they provide, which are increasingly valuable as renewable penetration increases.

Long-term

- Long-term declines in the costs of renewables increase the relative competitiveness of these assets and results in increased development.

Response

- Capital Power is well-positioned to pursue development opportunities for new renewable assets. This growth would positively affect Capital Power's overall fleet emissions intensity and financial position especially when it is feasible to co-locate with storage.



Risks and opportunities tables

Natural gas competitiveness and decarbonization

Key assumptions

- Natural gas remains part of the supply mix long-term; regulation of carbon emissions is gradually increased to limit the intensity and absolute emissions from thermal assets.
- Decarbonization of the fuel mix through hydrogen blending and post-combustion capture through CCUS are expanded through policy and funding that supports innovation and deployment.
- Operating profiles of thermal assets change as they increasingly are used to meet the net demand from intermittent renewables; flexible assets in strategic locations remain competitive.

Risks

Short-term

- Policy and regulation directed at reducing carbon emissions from thermal assets may increase operating costs and may reduce margins on certain assets.
- Increasing competitiveness of renewables and other low-emission sources of electricity may reduce market share for natural gas generation and limit the dispatch of assets.

Mitigation

- Capital Power invests in mid-life thermal assets that provide critical services to support grid reliability and renewable integration; these assets are expected to remain competitive under increasingly stringent carbon regulations, and are at reduced risk due to their shorter operating life relative to new gas assets.
- Economic assessment of development of new gas assets assumes shorter asset lives to account for long-term uncertainty.
- Capital Power invests in assets with existing contracts and pursues additional off-take agreements and extensions; the Company seeks to mitigate exposure with provisions that flow through costs to counterparties.
- Capital Power invests in operational efficiencies and enhancements that lower carbon emissions and ensure assets remain competitively situated in the merit order.

Long-term

- Policy that limits the use of natural gas as a fuel source for electricity generation poses a risk to long-term viability of new and existing thermal assets; regulation of this nature would affect Capital Power's strategy, financial position and capital allocation decisions.

Mitigation

- Capital Power actively engages with policymakers and industry associations to ensure there is a long-term role for low emitting natural gas generation in the supply mix to support renewable integration and maintain reliability.
- Capital Power actively pursues decarbonization of fuel through hydrogen production and blending, with targets to achieve net zero across the Company's portfolio by 2045.
- Capital Power actively pursues advocacy to ensure policy support and wide-scale adoption of technologies that support decarbonization; post-combustion emissions are reduced through wide-scale deployment of CCUS and DAC technologies.
- Where policy and market forces limit the opportunity for long-term value creation with natural gas assets, Capital Power may redirect capital to non-emitting sources of generation. Capital Power would rebalance the Company's portfolio of assets accordingly as fundamentals evolve.

Risks and opportunities tables

Natural gas competitiveness and decarbonization

Opportunities	<p>Short-term</p> <ul style="list-style-type: none"> Policy and regulation directed at carbon emissions from thermal assets affect supply fundamentals and, in certain jurisdictions, may increase the wholesale price of power. Increasing penetration of intermittent sources of energy increases the need for flexible assets. <p>Response</p> <ul style="list-style-type: none"> Investment in operational efficiencies and enhancements that improve emissions performance allow assets to realize increased margins through reduced compliance costs and improved competitiveness. Capital Power allocates capital to flexible natural gas assets situated at strategic locations on the grid; these assets realize increased margins as flexibility services are in higher demand. <p>Long-term</p> <ul style="list-style-type: none"> Uncertainty over long-term opportunities in natural gas assets limits competition for acquisitions. <p>Response</p> <ul style="list-style-type: none"> Capital Power pursues acquisitions of mid-life natural gas assets where their services are critical to reliability and integration of renewables. Capital Power's commitment to net zero and track record of operational excellence mitigates long-term risks through deployment of technologies that achieve decarbonization, including hydrogen blending and post-combustion CCUS and DAC technologies. In jurisdictions where competitiveness of natural gas is significantly reduced, Capital Power may shift capital allocation to alternative assets including renewables and storage. Capital Power would rebalance the portfolio of assets accordingly as fundamentals evolve.
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Disruptive technology and energy transition

Key assumptions	<ul style="list-style-type: none"> Climate change will drive significant innovation and transformation of the power sector. Awareness and concern among end-use consumers of their contribution to climate change will drive behavioural changes in energy consumption. Decarbonization, decentralization and digitalization will drive transformation of energy production and consumption. Use of technologies for emissions abatement is increasingly deployed across the power sector; CCUS is commercially viable in the long-term with increasing carbon prices.
Risks	<p>Short-term</p> <ul style="list-style-type: none"> A trend toward decentralized sources of non-emitting energy, including demand response, reduces overall rates of growth; the reduced levels of growth may decrease wholesale prices and result in reduced revenues. New sources of competition for dispatchable natural gas emerge from non-emitting resources and demand response; this may reduce competitiveness of natural gas generation. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power actively monitors policy and market fundamentals that may drive investment in disruptive technologies that could affect asset competitiveness and financials. Due diligence assessments identify site-specific impacts that may arise from trends in decentralization and decarbonization. <p>Long-term</p> <ul style="list-style-type: none"> Development and improved competitiveness of non-emitting technologies that fall outside of Capital Power's current core competencies may affect strategy and capital allocation. Competition among emission abatement technologies may reduce viability of hydrogen and CCUS as mechanisms to extend the useful life of strategic natural gas assets; technological breakthroughs in direct air capture or other technologies may reduce policy support and deployment of CCUS technologies. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power monitors emerging technologies and evaluates their potential economic impact. Capital Power actively monitors emission abatement technologies and assesses opportunities to expand our portfolio of technologies that may have direct application in reducing emissions in natural gas generating assets.



Risks and opportunities tables

Disruptive technology and energy transition

Opportunities	<p>Short-term</p> <ul style="list-style-type: none">Commercial-scale deployment of emissions abatement technology is supported through policy and regulation; public funding is available to encourage adoption.Policy support for early-stage development of emission abatement technology encourages the pursuit of new innovations and pilot-scale technology deployment. <p>Response</p> <ul style="list-style-type: none">Capital Power actively pursues technologies that are assessed to be commercially deployable at scale in the power sector to reduce emissions from natural gas generation, including CCUS, hydrogen and direct air capture applications; Capital Power seeks funding for projects to reduce emissions in line with the Company's strategies to achieve net zero.Capital Power establishes partnerships to advance innovations and early-stage emissions abatement technologies. <p>Long-term</p> <ul style="list-style-type: none">Technological advancement and digitalization allow greater control of energy generation and consumption by demand-side market participants; this expands opportunities for new sources of revenue for Capital Power.Emission abatement technologies that support long-term viability of natural gas proliferate thereby expanding development opportunities. <p>Response</p> <ul style="list-style-type: none">Capital Power is actively developing expertise in energy management and associated services to support evolving customer needs and compete in new markets that may emerge.Capital Power actively pursues partnerships with a portfolio of companies that are pursuing technologies that have high likelihood of commercial deployment in electricity generation for emissions abatement.
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Risks and opportunities tables

Reputational

Key assumptions	<ul style="list-style-type: none"> Climate change creates material reputational risks for Capital Power; we actively manage our exposure and transparently report on the risks and mitigation.
Risks	<p>Short-term</p> <ul style="list-style-type: none"> Debt and equity investors are increasingly averse to investments that exhibit higher risks from exposure to climate change; Capital Power's cost of capital rises due to changing investor sentiment. Stakeholders are increasingly focused on our exposure to the impacts of climate change, creating public opinion risks related to Capital Power's portfolio, which includes carbon-intensive assets. Attracting and retaining employees becomes more challenging as preferences for employment favour companies with reduced exposure to climate change and fewer or no carbon-intensive assets. Contract counter parties and off-takers favour generators with lower exposure to climate change. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power is achieving ambitious climate change-related targets, including reduced emissions intensity across our fleet and pursuing net zero by 2045. Capital Power is pursuing opportunities to tie our environmental performance to our financing activities to demonstrate our commitment and leadership in achieving our corporate objectives. We released a Green Financing Framework in 2022 focused on funding clean energy technology to power a sustainable future for people and planet. Coal-fired generation and solid fuels will be phased out in 2023, with investments in repowering at the Genesee 1 and 2 facility, investments in making the Genesee 3 facility 100% natural gas capable, and retirement of our Southport and Roxboro facilities; this removes the highest-emitting resources from Capital Power's portfolio of assets. ESG criteria is integrated into our investment decisions to ensure appropriate consideration of climate change-related risks. Capital Power is committed to transparent reporting and disclosure to help address concerns and risks among investors and stakeholders. <p>Long-term</p> <ul style="list-style-type: none"> Increasing frequency and severity of climate change-related events may affect company assets and create reputational and investor risk. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power is committed to transparent reporting and disclosure to help address concerns and risks among investors and stakeholders. Dedicated subject matter expertise is retained in areas related to disaster management, risk management, regulatory compliance and community engagement to proactively manage the impacts of climate change-related events on the Company's physical assets, financial position and reputation. Capital Power may consider changes to capital allocation where long-term reputational risks arising from climate change cannot be mitigated with decarbonization strategies. Capital Power's portfolio of assets would be rebalanced accordingly as fundamentals evolve.



Risks and opportunities tables

Reputational

Opportunities	<p>Short-term</p> <ul style="list-style-type: none">• Climate change-related impacts that affect operations may also affect Capital Power’s reputation as a reliable power generator in the communities where we operate.• The pursuit of credible decarbonization strategies demonstrates leadership that builds trust with investors and stakeholders. <p>Response</p> <ul style="list-style-type: none">• Capital Power has demonstrated leadership in responsible construction, operation and maintenance of power generating facilities that ensures resiliency from increasing climate change-related risks that could negatively affect the Company’s reputation.• Capital Power provides transparent communication and reporting of progress toward the deployment of decarbonization strategies that aim to achieve long-term commitments to lower emissions across the Company’s portfolio of assets. <p>Long-term</p> <ul style="list-style-type: none">• Companies that actively manage their exposure to climate change-related risks are expected to outperform those that do not adequately address the risks.• Achieving ambitious reductions in emissions through aggressive pursuit of decarbonization strategies helps to ensure long-term sustainability of the Company. <p>Response</p> <ul style="list-style-type: none">• Capital Power sets ambitious targets, provides transparent reporting and achieves measurable progress toward being net zero by 2045 through aggressive deployment of decarbonization strategies.
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Risks and opportunities tables

Physical risks and opportunities

The following tables assess physical risks and opportunities that may be realized in scenarios where the impacts of climate change are increasingly observed in the power sector.

Acute

Key assumptions	<ul style="list-style-type: none"> Climate change will cause an increase in extreme weather affecting Capital Power's current and future assets; extreme weather events will become increasingly frequent and severe.
Risks	<p>Short-term</p> <ul style="list-style-type: none"> Extreme weather events caused by climate change (e.g., tornadoes, hurricanes, floods, droughts and ice storms) could have an impact on our operations and critical infrastructure and trigger increased insurance costs and potential liabilities. <p>Mitigation</p> <ul style="list-style-type: none"> Given the geographical areas in which our facilities operate, increases in extreme weather are included in our risk assessment process. Capital Power actively monitors the insurance market for material changes to policies that may affect our ability to seek coverage for high-risk assets; Capital Power's insurance program ensures adequate coverage is in place. Emergency Preparedness and Response plans are in place for our facilities; we ensure our responses are tested through simulated disasters in tabletop exercises; continuous improvement processes ensure learnings are incorporated in future responses. Sustaining capital is directed to enhancements that mitigate risk. We have dedicated subject matter expertise such as market forecasters, trades specialists, crisis and disaster management specialists, and engineers who complete assessments of our assets and assist in implementing solutions and managing key issues related to reducing the impact of acute and chronic physical risks. Examples of enhancements that mitigate the physical risk of extreme weather include: <ul style="list-style-type: none"> - Weather protection of electrical components at Arlington Valley to prevent reliability issues that might be caused by heavy rain and wind. - Lightning mitigation protection at our US wind facilities. Our talent recruitment and development strategy ensures that we attract appropriate competencies when positions become available and that the skills of our current workforce are up to date. Capital Power assesses climate change-related physical risk in the due-diligence process for new acquisitions; where physical risk is too high, capital allocation will be directed to lower-risk assets. <p>Long-term</p> <ul style="list-style-type: none"> A persistent and material increase over time in the frequency and severity of extreme weather events caused by climate change may affect insurance costs and the ability to secure coverage on specific high-risk assets. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power actively monitors the insurance market for material changes to policies that may affect our ability to seek coverage for high-risk assets. Capital Power assesses climate change-related physical risk in the due-diligence process for new acquisitions; where physical risk is too high, capital allocation will be directed to lower-risk assets.



Risks and opportunities tables

Acute

Opportunities	<p>Short-term</p> <ul style="list-style-type: none"> Increasing frequency and severity of acute climate impacts may affect delivery of energy through wire infrastructure from assets situated on remote parts of the transmission system and that are at risk due to single points of failure thereby creating an opportunity for assets situated in locations that are less exposed to acute climate impacts. <p>Response</p> <ul style="list-style-type: none"> Capital Power invests in strategically located assets that minimize the risks related to energy delivery that may arise from acute climate change-related events; the value of these assets may increase as they are increasingly used to maintain grid reliability. <p>Long-term</p> <ul style="list-style-type: none"> Increasing frequency and severity of acute climate impacts may affect delivery of energy through wire infrastructure from assets situated on remote parts of the transmission system and that are at risk due to single points of failure thereby creating an opportunity for assets situated in locations that are less exposed to acute climate impacts. <p>Response</p> <ul style="list-style-type: none"> Capital Power invests in strategically located assets that minimize the risks related to energy delivery that may arise from acute climate change-related events; the value of these assets may increase as they are increasingly used to maintain grid reliability.
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Chronic

Key assumptions	<ul style="list-style-type: none"> Water resources are increasingly affected by climate change (impacts vary by jurisdiction); water conservation and use are increasingly scrutinized and subject to more stringent regulation. Long-term changes in weather patterns will affect the design and operation of new and existing renewable assets.
Risks	<p>Short-term</p> <ul style="list-style-type: none"> Water use and conservation efforts are increasingly scrutinized, and requirements are strengthened to mitigate the chronic impacts of climate change on water resources. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power has approved and is executing a Water Management Strategy that will mitigate risks associated with increasing scarcity of water resources. Actions to be off-coal will reduce Capital Power's overall water consumption. Capital Power monitors developments in policy and regulatory frameworks that address management of water resources. Risks relating to the regulation and management of water are identified and mitigated in due-diligence processes. <p>Long-term</p> <ul style="list-style-type: none"> Risks associated with climate change, such as changing wind patterns and extreme weather, may reduce the capacity factor of renewable assets. Water use and conservation requirements may limit physical access to water resources; additional investments may be required to manage cooling requirements; operations may be limited due to restrictions on water use. <p>Mitigation</p> <ul style="list-style-type: none"> We actively seek opportunities to optimize production from our wind assets, including strategies for optimizing operations and maintenance activities; assessing turbine production; revising OEM contracts to support reliable operations; and implementing upgrades to turbine blades with aerodynamic enhancements and turbine-control software. Capital Power actively monitors water use and implements strategies consistent with our Water Management Strategy to reduce consumption at our facilities, which may result in new capital investments and operational costs; where long-term risk cannot be mitigated, capital allocation may be directed away from high-risk assets and jurisdictions.



Risks and opportunities tables

Chronic

Opportunities	<p>Short-term</p> <ul style="list-style-type: none">• Potential changes in wind patterns and wind regimes may impact operations at our wind facilities and may enable us to generate wind power more efficiently and deliver more renewable energy.• Costs associated with increasing water management requirements may affect supply fundamentals. <p>Response</p> <ul style="list-style-type: none">• Capital Power incorporates climate change-related risk mitigation in the engineering, design and operation of our assets. Capital Power's Data Operations Centre (DOC) optimizes the energy output and financial performance of our wind assets by increasing our remote monitoring and analytics capabilities.• Capital Power proactively manages water resources in line with our Water Management Strategy to ensure we remain competitive in jurisdictions where increasing costs may limit dispatch and competitiveness. <p>Long-term</p> <ul style="list-style-type: none">• Technological advancements in renewables will allow for improved operations in response to persistent changes in climate and weather conditions.• Where long-term changes in climate reduce potential energy output from certain types of assets, there may be increasing value attributed to dispatchable assets with secure fuel sources. <p>Response</p> <ul style="list-style-type: none">• Capital Power monitors and invests in operational efficiencies and enhancements that capture additional revenues or mitigate risks that arise from long-term climate-related changes in weather patterns.• Investments in strategically located natural gas assets that are critical to renewable integration and grid support are pursued; Capital Power is pursuing strategies to ensure these assets remain competitive with decarbonization through deployment of CCUS technologies, hydrogen blending and direct air capture.
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Risks and opportunities tables

Upstream

Key assumptions	<ul style="list-style-type: none">Climate change will affect Capital Power’s upstream operations and financial results through changing availability and security of fuel sources.Disruptions to supply chains will become more frequent due to climate change-related events.
Risks	<p>Short-term</p> <ul style="list-style-type: none">Increased compliance costs attributed to coal and natural gas use could negatively affect competitiveness of assets and decrease profitability.Increasing stringency of methane regulation could increase costs of production for natural gas and reduce access to reliable fuel sources.Disruption of supply chains due to climate change-related impacts may result in development, operational or financial impacts to Capital Power. <p>Mitigation</p> <ul style="list-style-type: none">Capital Power continuously invests in operational efficiencies and enhancements of existing assets to mitigate the risk of increasing compliance costs; conversions and repowering of coal plants will reduce exposure to increasing compliance costs associated with coal use.Capital Power monitors regulatory developments relating to fugitive methane emissions to assess risks to fuel supply and costs.Capital Power has approved and is implementing a Sustainable Sourcing Strategy that will support the resiliency and sustainability of our operations. Disruptions to supply chains are managed through contractual provisions for liquidated damages. Alternative supply routes and delivery points are considered to mitigate delivery risk. Local sourcing is used where possible. <p>Long-term</p> <ul style="list-style-type: none">Long-term changes that affect production of natural gas may reduce security of supply and increase cost of fuel; development of new pipeline infrastructure may be limited due to regulatory delays and reduced social acceptance.Changes to wind regimes and solar resources may reduce the revenues and competitiveness of existing resources. <p>Mitigation</p> <ul style="list-style-type: none">Capital Power will direct capital to optimal locations for renewable development; this may result in a changing development footprint in the long-term.



Risks and opportunities tables

Upstream

Opportunities	<p>Short-term</p> <ul style="list-style-type: none"> • Pursuing digitalization and artificial intelligence technologies will allow companies to capitalize on upstream physical and commercial opportunities associated with climate change and improve adaptation or reduce vulnerability to climate change events. • Development and expansion of markets for products derived from carbon emissions may improve the economics and deployment of CCUS and direct air capture technologies. • Securing and optimizing supply chains may mitigate upstream climate risk and improve competitiveness of Capital Power's assets. <p>Response</p> <ul style="list-style-type: none"> • Capital Power optimizes the engineering, design and operation of our assets through the deployment of artificial intelligences strategies at our sites. • Capital Power is committed to operational excellence and strives for asset optimization through innovation efforts such as our Genesee Performance Standard and Ops 2030 programs. • We are exploring advanced pattern recognition to use data and artificial intelligence to detect patterns that can lead to more advanced maintenance strategies. • Capital Power's Genesee Carbon Conversion Centre, which is currently in development, will reduce emissions at the facility and create marketable products from captured carbon in the flue-gas stream. • Capital Power adopts measures that ensure self-reliance in critical components and consumables; improvements in reliability and competitiveness are realized through more secure supply chain management. • Local sourcing is used where possible, positively affecting the communities in which we operate through increased economic opportunities. Benefits are realized through reduced travel times for supplies and lower environmental impacts of transportation and delivery. <p>Long-term</p> <ul style="list-style-type: none"> • Low-carbon fuels are increasingly adopted as an alternative fuel source for new and existing thermal assets. • Sequestration associated with post-combustion capture or direct air capture mitigates the risks of long-term use of natural gas. <p>Response</p> <ul style="list-style-type: none"> • Capital Power is developing strategies to assess and integrate low-carbon fuels, such as hydrogen, as a fuel source at existing facilities through production and blending. • Capital Power continues to advance CCUS strategies where low-carbon fuels may not achieve decarbonization of the fuel source.
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Risks and opportunities tables

Downstream

Key assumptions	<ul style="list-style-type: none"> Downstream risks from climate change will affect delivery of energy with operational and financial impacts to the power industry. Corporate entities will increasingly look to procure power from low-emitting sources; the market for corporate power purchase agreements will expand. Electrification of end-use sectors will support long-term decarbonization.
Risks	<p>Short-term</p> <ul style="list-style-type: none"> Outages on downstream electricity grids from climate change-related events may cause disruptions to operations, resulting in negative financial impacts to Capital Power. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power actively manages delivery risks and ensures contingency plans are in place to manage shut-down and short-term cessation of operations as a result of outages on the grid that affect energy delivery. Strategically located assets are well-suited to supply critical services for restoration events. <p>Long-term</p> <ul style="list-style-type: none"> Increased downstream risks due to changing social behaviours over the long-term could result in increased costs of generation and compliance. Markets and operating environments may become more difficult to forecast due to changing climate-driven regulations and policies, which could, in turn, increase volatility of Capital Power's operations and financial results. <p>Mitigation</p> <ul style="list-style-type: none"> Capital Power has dedicated subject matter expertise, including energy traders, origination specialists, market forecasters, and regulatory and commercial managers who assist in stewarding key issues related to downstream physical risks.
Opportunities	<p>Short-term</p> <ul style="list-style-type: none"> Increasing investment by corporate entities to secure contracted sources of renewable power to meet their own demand requirements increases the opportunities for development of renewable assets. <p>Response</p> <ul style="list-style-type: none"> Capital Power actively pursues contracting opportunities with corporate off-takers to secure the output of new and existing assets. <p>Long-term</p> <ul style="list-style-type: none"> Decarbonization through increased electrification will support long-term emission reduction objectives, including net zero commitments. <p>Response</p> <ul style="list-style-type: none"> Development opportunities will grow as electrification of end-use sectors grows; Capital Power is well-positioned to pursue new development opportunities to meet this growing demand.



TCFD alignment tables

TCFD theme	TCFD recommendations	Alignment to Capital Power/reference
Governance	a. Describe the Board's oversight on climate-related risks and opportunities.	<ul style="list-style-type: none"> • See Board oversight, page 08 • See Who we are > Corporate governance (www.capitalpower.com)
	b. Describe management's role in assessing and managing climate-related risks and opportunities.	<ul style="list-style-type: none"> • See Management oversight, page 09
Strategy	a. Describe the climate related risks and opportunities the organization has identified over the short, medium and long-term.	<ul style="list-style-type: none"> • See Risks and opportunities tables, pages 14-27
	b. Describe the impact of climate-related risks on the organizations business strategy and financial planning.	<ul style="list-style-type: none"> • See Risks and opportunities tables, pages 14-27
	c. Describe the resilience of the organization's strategy taking into consideration different climate-related scenarios including a 2°C or lower.	<ul style="list-style-type: none"> • See Overview of 2022 IEA scenarios and the resilience of our strategy, page 13 • See Risks and opportunities tables, pages 14-27
Risk management	a. Describe the organization's process for identifying and assessing climate-related risks.	<ul style="list-style-type: none"> • See Risk management, page 10 • See Risks and opportunities, page 14
	b. Describe the organization's process for managing climate-related risks.	<ul style="list-style-type: none"> • See Risk management, page 10 • See Risks and opportunities, page 14
	c. Describe how processes for identifying, assessing and managing climate related risks are integrated into the company's overall risk management.	<ul style="list-style-type: none"> • See Our strategy, page 06 • See Risk management, page 10
Metrics and targets	a. Disclose metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	<ul style="list-style-type: none"> • See Our sustainability targets, page 06 • See 2022 Integrated Annual Report
	b. Disclose Scope 1,2 and if appropriate, Scope 3 GHG emissions and the related risks.	<ul style="list-style-type: none"> • See 2022 Integrated Annual Report, page 29 • See 2022 GRI and SASB Index, pages 197-201
	c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	<ul style="list-style-type: none"> • See Our sustainability targets, page 06

Advancing our carbon disclosure efforts

As we completed our assessment, we noted variation across scenarios and within sources depending on which assumptions one makes. This increased the complexity of assessing the overall resilience of our business. It is important to note that the climate change scenarios and their implications for Capital Power are inherently speculative and future events are subject to change. We believe that this report, taken together with our 2022 Integrated Annual Report, is an important step in furthering our disclosure efforts with respect to climate-related risks and opportunities. We will build on this effort in the future.



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