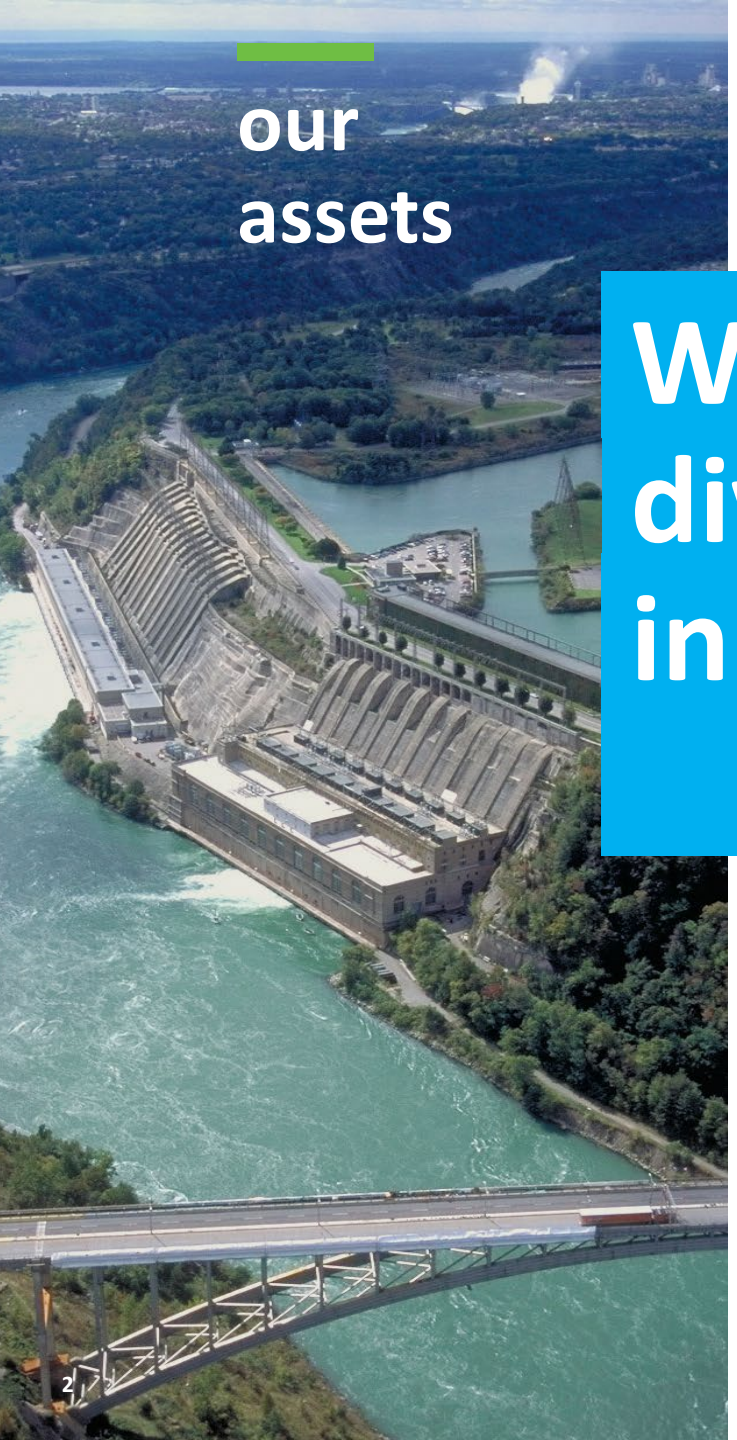

OUR
CLIMATE
CHANGE
PLAN
Our Power is Changing the World
ONTARIO POWER GENERATION
Where a brighter tomorrow begins.



our assets

We have one of the most diverse generating portfolios in North America.

18,876 MW generating capacity

66 hydro stations on 24 river systems

2 nuclear stations

2 leased nuclear stations (Bruce Power)

1 bio-mass station

1 dual-fueled oil and gas station

4 gas stations (Atura Power)

1 solar facility

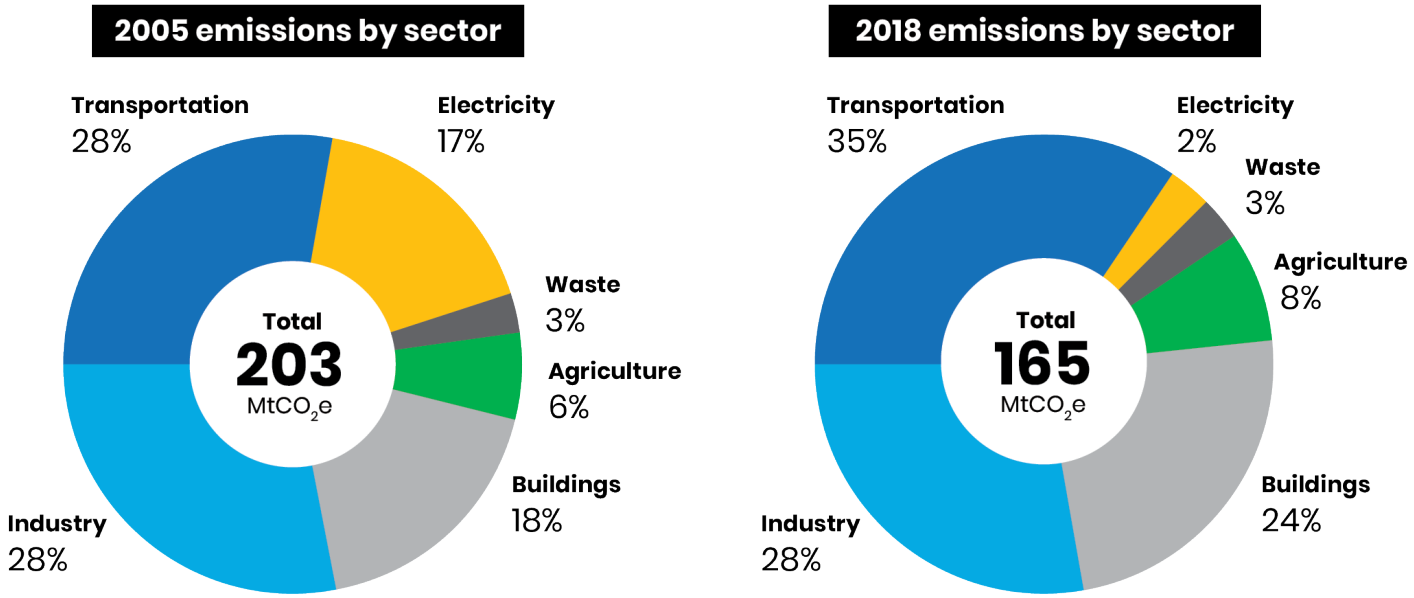
85 US hydro stations

positioned to lead

Before we closed coal, the electricity sector accounted for 17% of the province's emissions.

After we closed coal, it accounted for only 2%.

Ontario CO_2 emissions by sector



Sources:

- Greenhouse Gas Progress Report of the Environmental Commissioner of Ontario
- 2018 Canada's Official Greenhouse Gas Inventory

OUR GOALS

our climate goals

A net-zero carbon company 2040

Having delivered the world's single largest climate action to date by closing our coal stations, OPG will continue to be a climate leader by investing in and implementing CO_2 reductions and offsets to achieve net-zero carbon emissions by 2040.

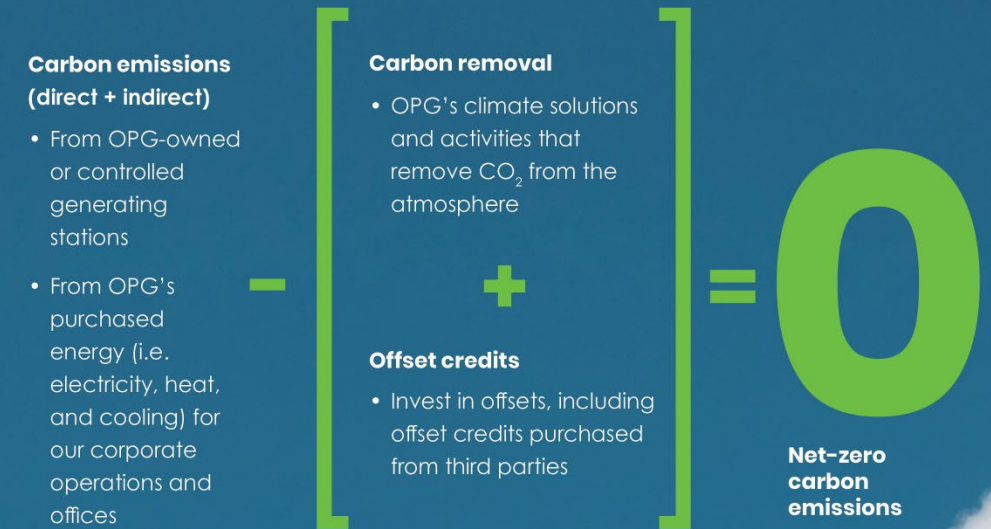
A catalyst for a net-zero carbon economy by 2050

OPG will be a leading energy innovation company, advancing clean technologies and solutions to help the markets where we operate achieve net-zero carbon economies by 2050.

DEFINING NET-ZERO

defining net-zero

‘Net-zero’ refers to achieving an overall balance between direct carbon emissions produced and carbon emissions taken out of the atmosphere.



OUR GUIDING PRINCIPLES

our guiding principles

We will **evolve.**

We will **be transparent.**

We will **follow evidence.**

We will **respect customers' interests.**

We will **engage Indigenous communities.**

We will **be accountable.**

We will **be bold.**

OUR KEY INITIATIVES

key initiatives

Development of small modular reactors.

Advancing electrification initiatives in the province.

Exploring hydrogen clean fuel applications.

Darlington Nuclear Refurbishment.

Continued investment in our hydroelectric generation.

Focus on adaptation and resiliency of our assets.

Exploring opportunities in non-hydro renewables and energy storage.

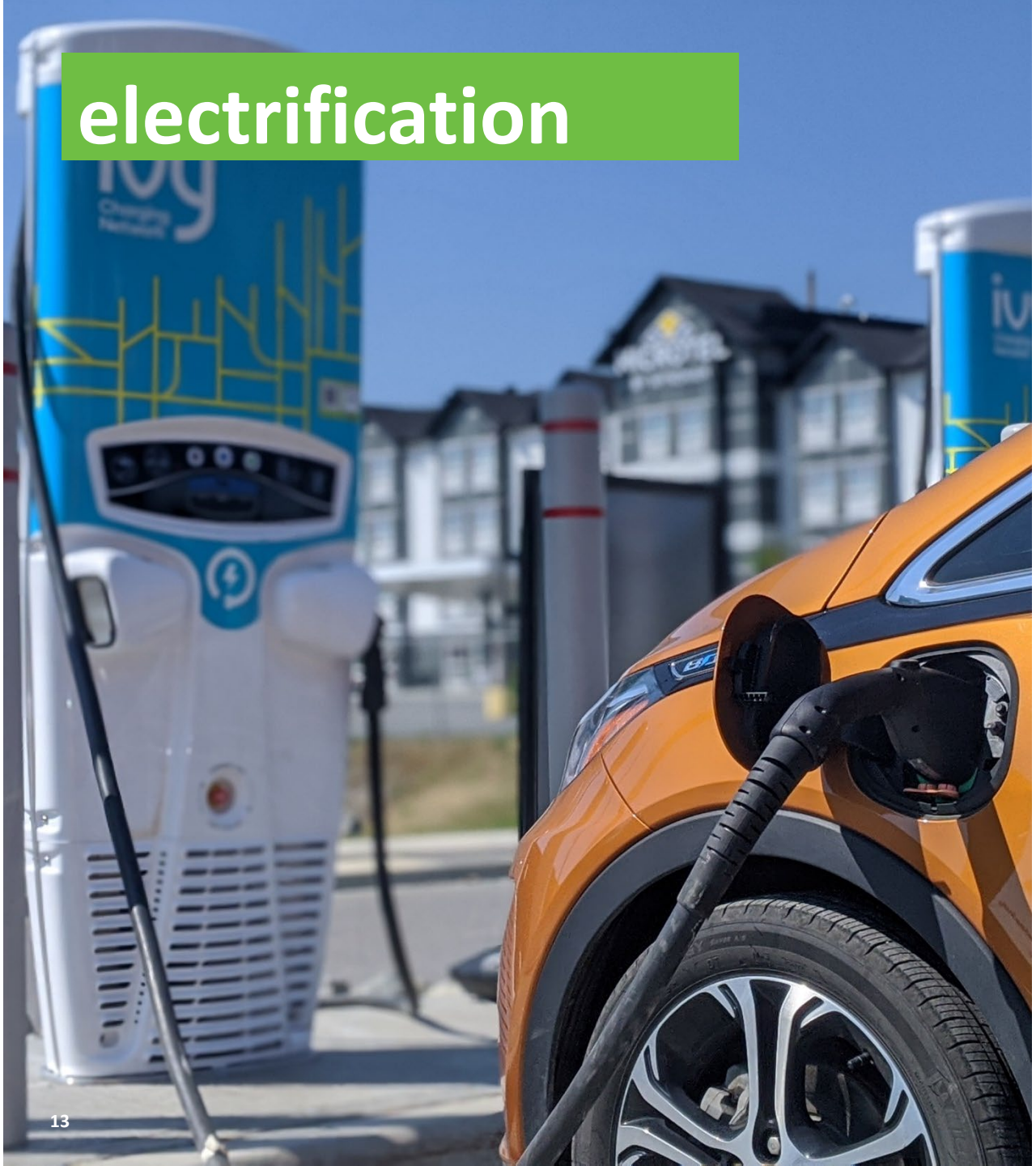
Investigating negative emissions technologies.

Supporting nature-based solutions and biodiversity initiatives.

small modular reactors

- **Smaller than traditional reactors.**
  - Range from community scale (<1 MW) to on-grid scale (~300 MW).
- **First utility with ownership stake in a Micro Modular Reactor™.**
  - Joint venture with Global First Power and Ultra Safe Nuclear Corporation for SMR at Chalk River.
- **We're advancing engineering and design work with three grid-scale SMR developers.**
  - GE Hitachi, Terrestrial Energy and X-energy.
- **Planning for a new nuclear build to host a grid-size SMR at Darlington by as early as 2028.**
  - Pending regulatory approvals and licensing.

electrification



- **Decarbonizing other sectors through electrification makes the most economic sense and is the least costly.**

- **Transportation provides the best opportunities, including:**
  - Personal EV charging
  - Ferries
  - Transit

- **OPG partnered with Hydro One to build Ontario's largest, most connected EV fast-charger network, Ivy.**
  - Connecting north to south, east to west
  - 160 chargers
  - 60+ sites

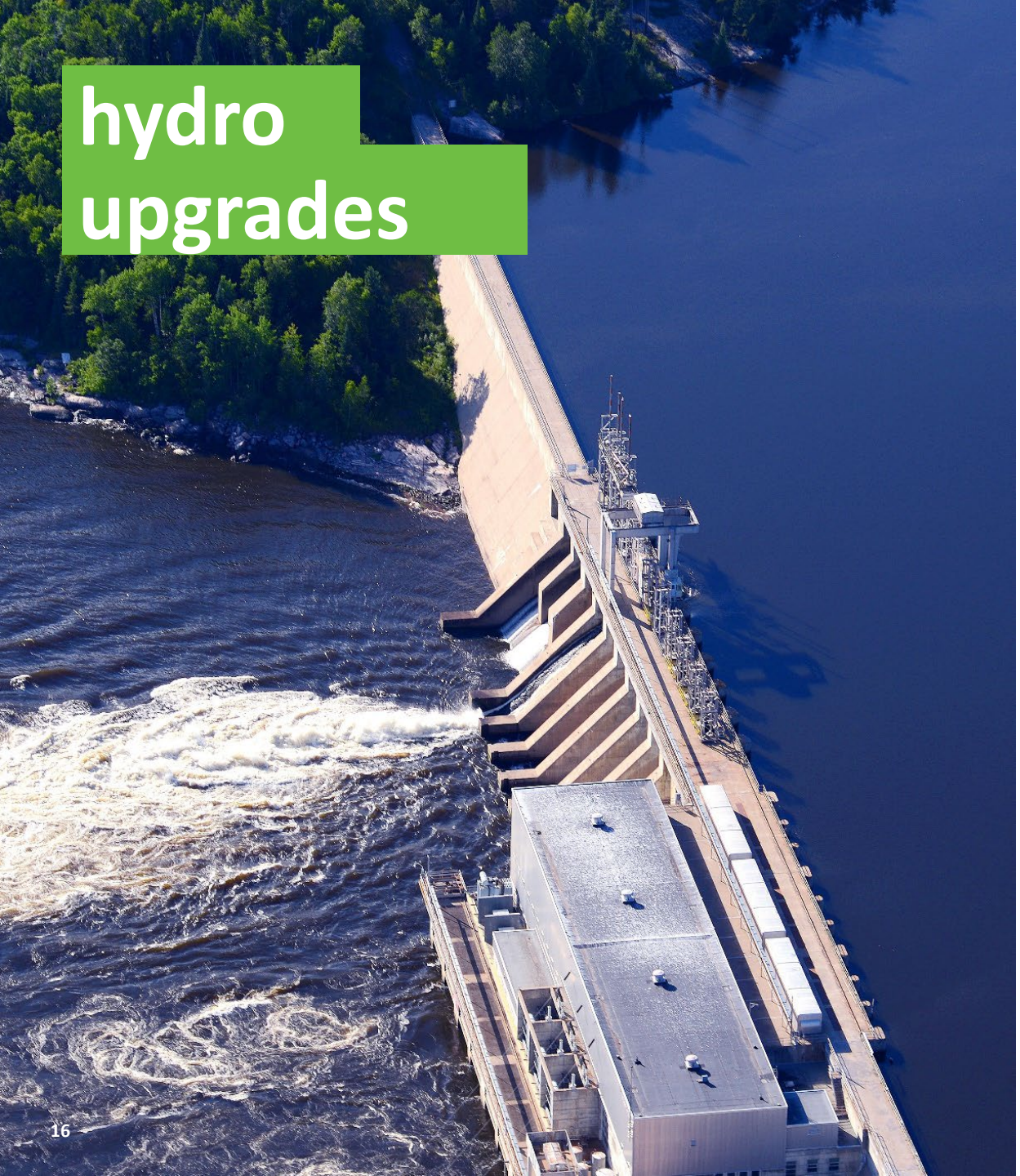
- **Electrification also has the potential to lower electricity rates by spreading fixed system costs over greater energy volume.**

hydrogen

- **To reduce Ontario's reliance on fossil fuels, hydrogen is a clean fuel technology which OPG is actively exploring.**
- **Electrolysis produced hydrogen, using OPG's low-carbon electricity, is an opportunity to leverage our clean energy assets to produce low-carbon hydrogen.**
- **There are three promising applications of this technology to help meet Canada's 2050 net-zero carbon target:**
  - Long-haul transportation (i.e. trucks, trains etc.)
  - Industry which requires onsite fuel burning (i.e. steel, cement etc.)
  - Blending with natural gas
- **As the world prepares for the hydrogen future, OPG is committed to helping develop a long-term, self-sustaining and economically viable hydrogen economy for Ontario.**

Darlington refurbishment

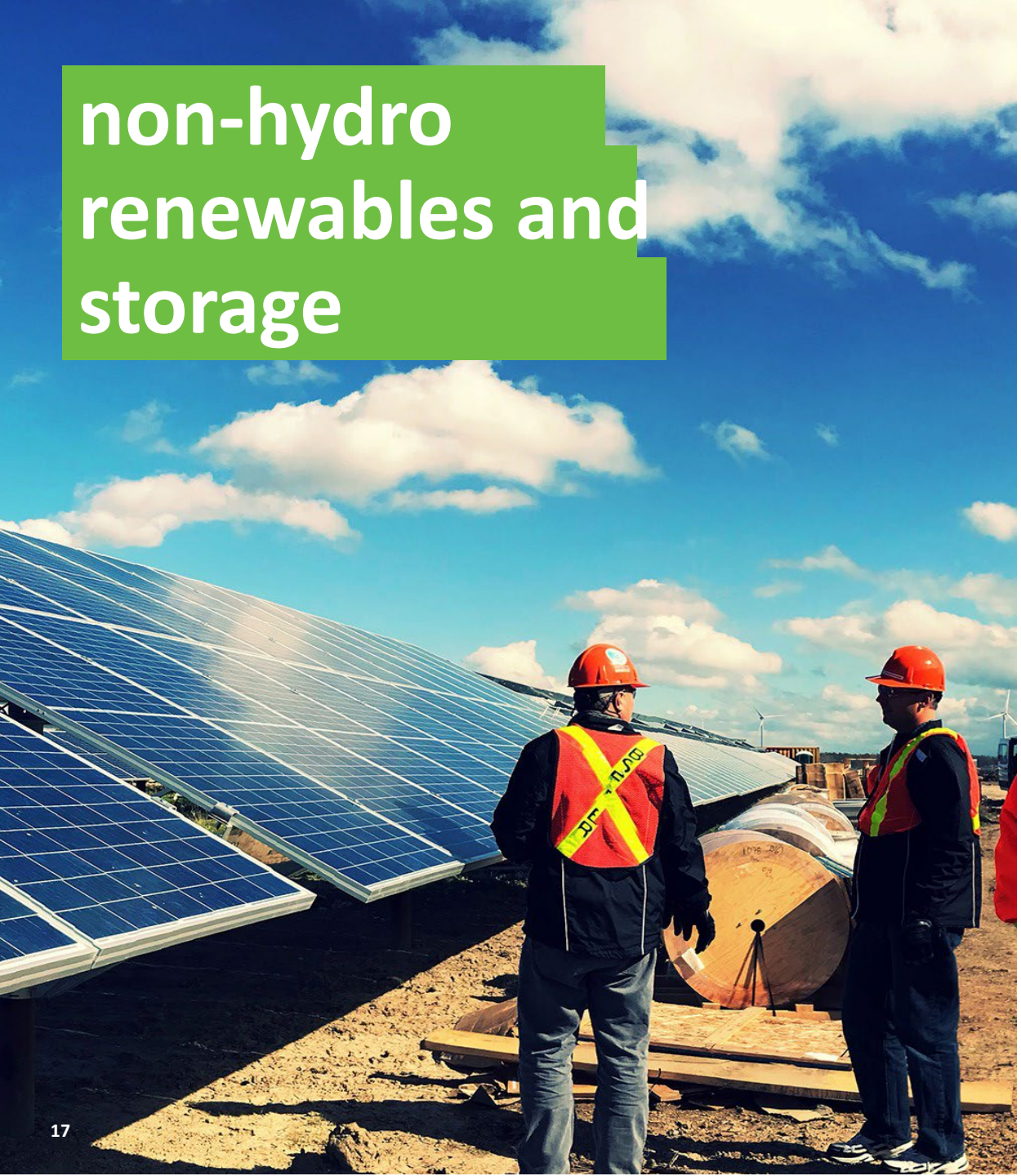
- **Darlington Nuclear Generation Station provides 20% of Ontario's power.**
- **The Darlington Refurbishment project is one of Canada's largest clean energy projects.**
- **The continued operation of the refurbished Darlington station will reduce carbon emissions by an estimated 297 million tonnes = the equivalent of removing 2 million cars per year from Ontario's roads.**
- **Will also provide a $89.9 billion boost to Ontario's GDP.**



hydro upgrades

- **Our 66 hydro stations in Ontario provide clean, renewable, reliable low-cost power.**
  - Our hydro fleet provides over 7,400 MW of capacity, includes baseload and peaking roles.
- **Produce over 30 billion kilowatt hours of power per year - more than one-third of OPG's electricity production.**
- **Investing in our hydro fleet to sustain and, where possible, increase generation is an important part of our plan.**

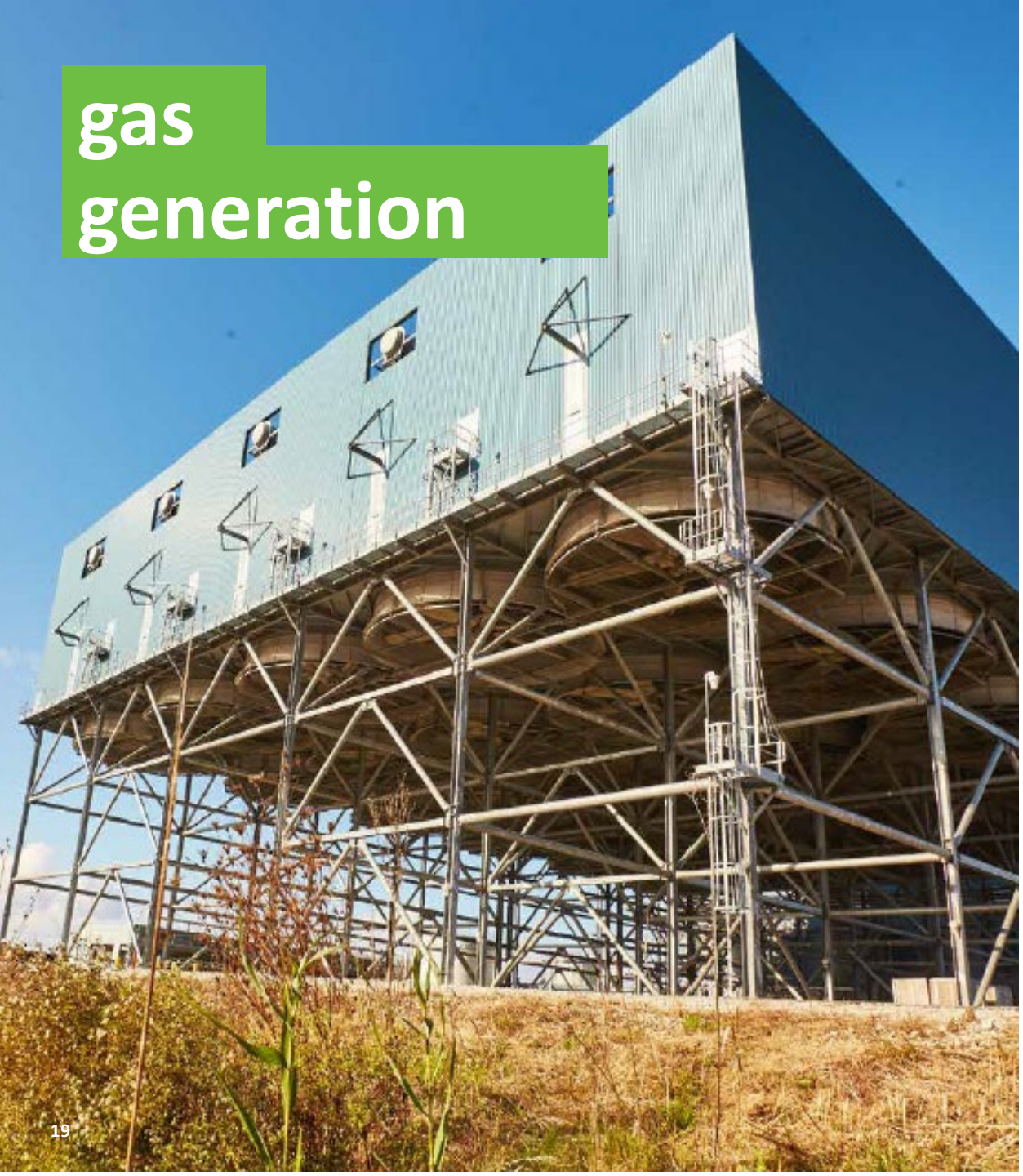
non-hydro renewables and storage



- OPG has expertise in solar and storage development.
- Recently converted the coal-fired Nanticoke Generating Station site into a 44 MW solar facility in partnership with Six Nations of the Grand River and the Mississaugas of the Credit First Nation.
- Helped develop an off-grid solar and storage micro grid for the Gull Bay First Nation community.
- Developed two other energy storage facilities that manage industrial companies' peak energy consumption.

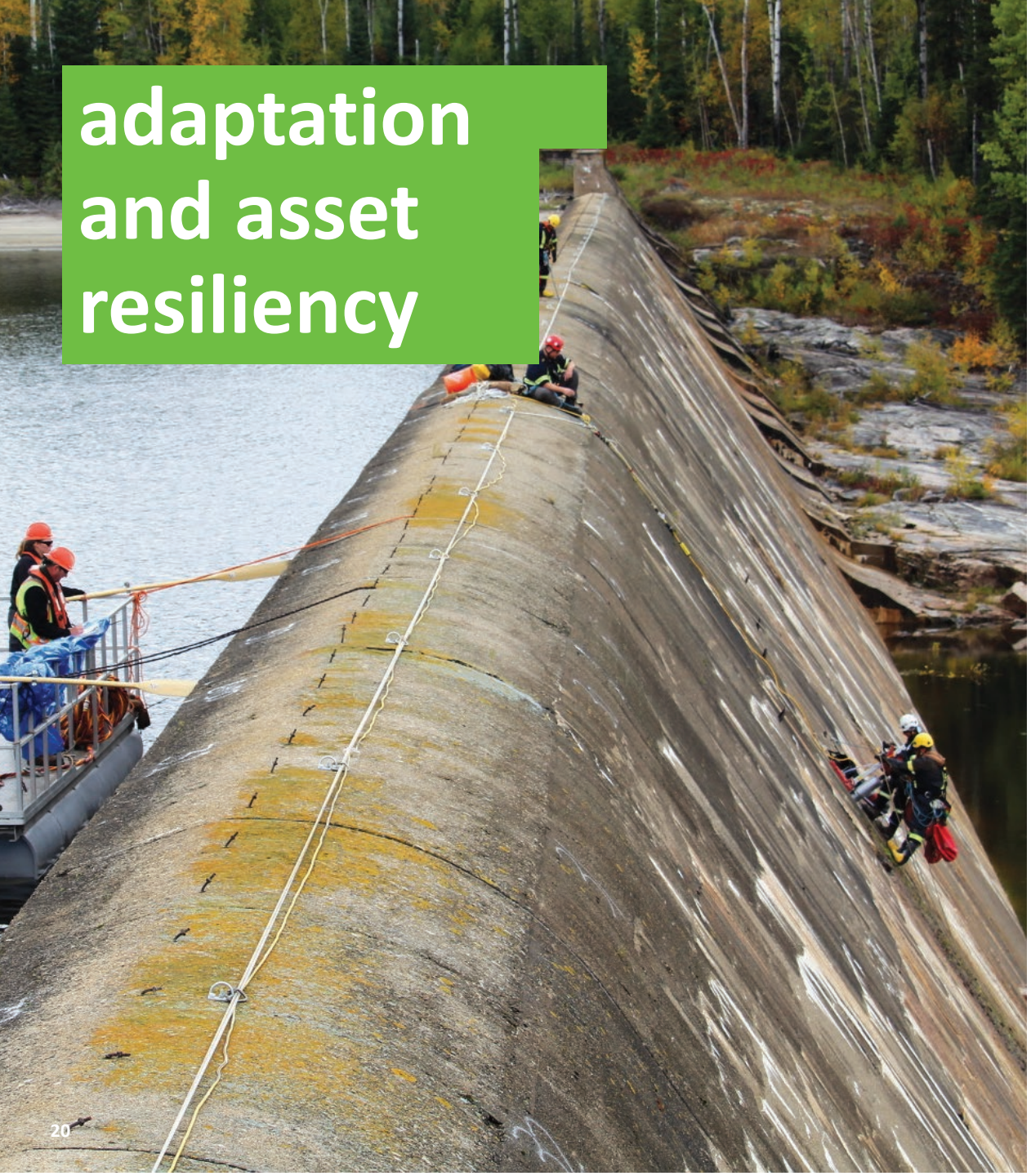
negative emissions technologies

- We believe technologies that remove and sequester carbon from the environment will be a key part of overall climate solution.
- Includes Carbon Capture and Storage (CCS) – capturing emissions at source and storing underground in suitable geological formations.
- Partnership with the MaRS Discovery District provides us access to emerging clean technology companies for collaboration.
- In the future, we may apply CCS at our gas generating stations when it becomes technically and economically viable.



gas generation

- **Natural gas generation is critical to our electricity system where supply and demand must be balanced every moment.**
- **Renewable sources of energy like wind and solar are intermittent and therefore not reliable.**
- **Flexible natural gas generating stations fill this gap.**
  - They're ready whenever they're needed to meet demand.
- **In the future, breakthroughs in energy storage may reduce the need for a natural gas backup to renewable energy.**



adaptation and asset resiliency

- **Adaptation starts with strengthening our assets and operations against climate related impacts.**
- **Also reduce the impacts on our host communities across the province.**
- **Currently exploring nature-based protection measures at our sites.**
  - Like building wetlands to mitigate extreme events like flooding and wildfires.
- **Also integrating climate science and modelling into our investment decision and engineering processes.**
- **Getting ahead of Ontario's climate risks will strengthen the electricity grid's resiliency.**

our assumptions

5 Mt CO_2

We assume that following the closure of Pickering Nuclear that the system will need to rely more on natural gas as SMRs and other generating capacity is being developed, and that our emissions will be approximately 5 Mt CO_2 /year.

policies & legislation

We assume that policies and legislation will be developed to support the decarbonization of the economy by 2050.

increased demand

We assume that increased electrification will result in additional demand for electricity, which will require deployment of new clean generation such as additional hydro power and SMRs.

technological advancements

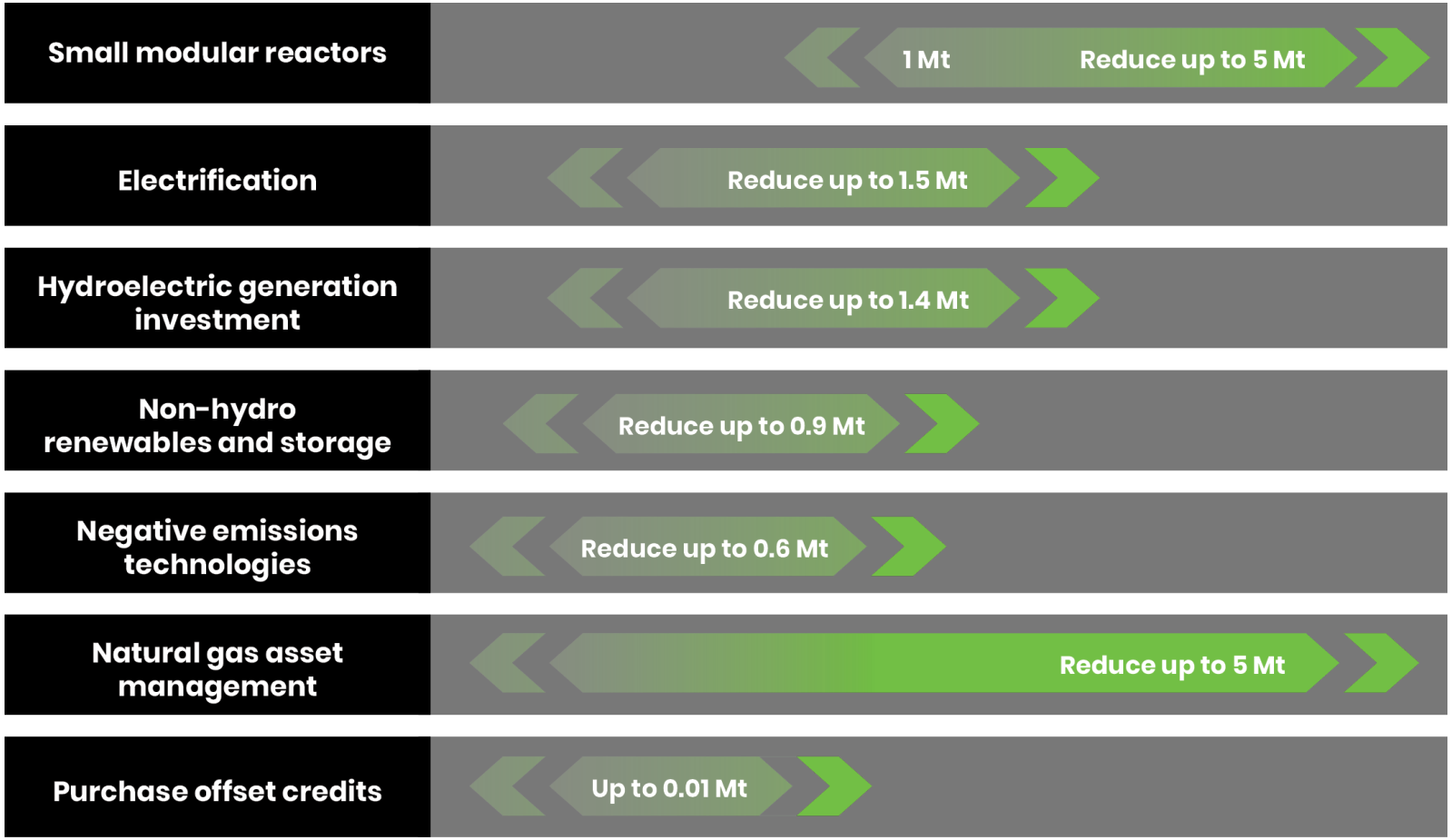
We assume that substantial advancements will be made in the area of negative emissions technologies. Carbon Capture and Storage (CCS) technology will be commercially available by 2040.

offset credit market

Finally, we assume that an offset credit market will be available in 2040 to meet the balance of OPG's carbon commitments not met by direct actions.

our levers to achieve targets

The potential range of annual carbon reduction achievable to reach our goals using today's available measures (Mt, million tonnes)



OUR ACTION PLAN

we commit to take climate change action in these four areas

mitigate.

We will reduce carbon emissions from our operations, and help the markets where we operate do the same.

adapt.

We will ensure our operations are resilient to the impacts of a changing climate and our host communities are safe.

innovate.

We will develop and deploy new technologies to speed Ontario's energy transformation.

lead.

We will work with others to lead the decarbonization of Ontario's economy, and share our province's lessons with the world.

We've launched… So what's next?

We have a **lot** of work to do…

External

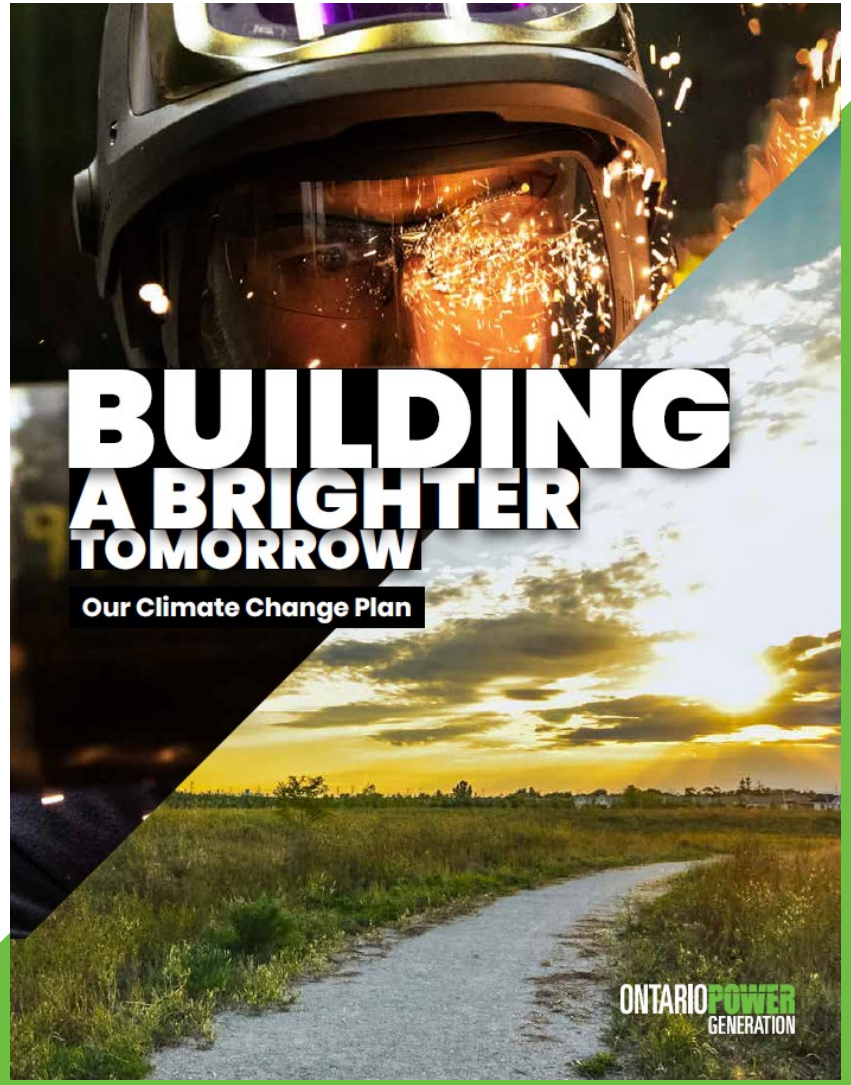
- Monitor everything – international, federal, provincial, municipal
- Stakeholder – share with various sectors (energy/financial/government)
- Reporting – ESG/TCFD/GRI/Sustainability report, etc.

Internal

- Governance – roles/responsibilities/spocs
- Reporting – how often, and to whom
- Employee messaging – what level, and to whom
- Employee engagement - what's the plan, and how you get involved

visit opg.com/climatechange

to download and read the full plan.



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