

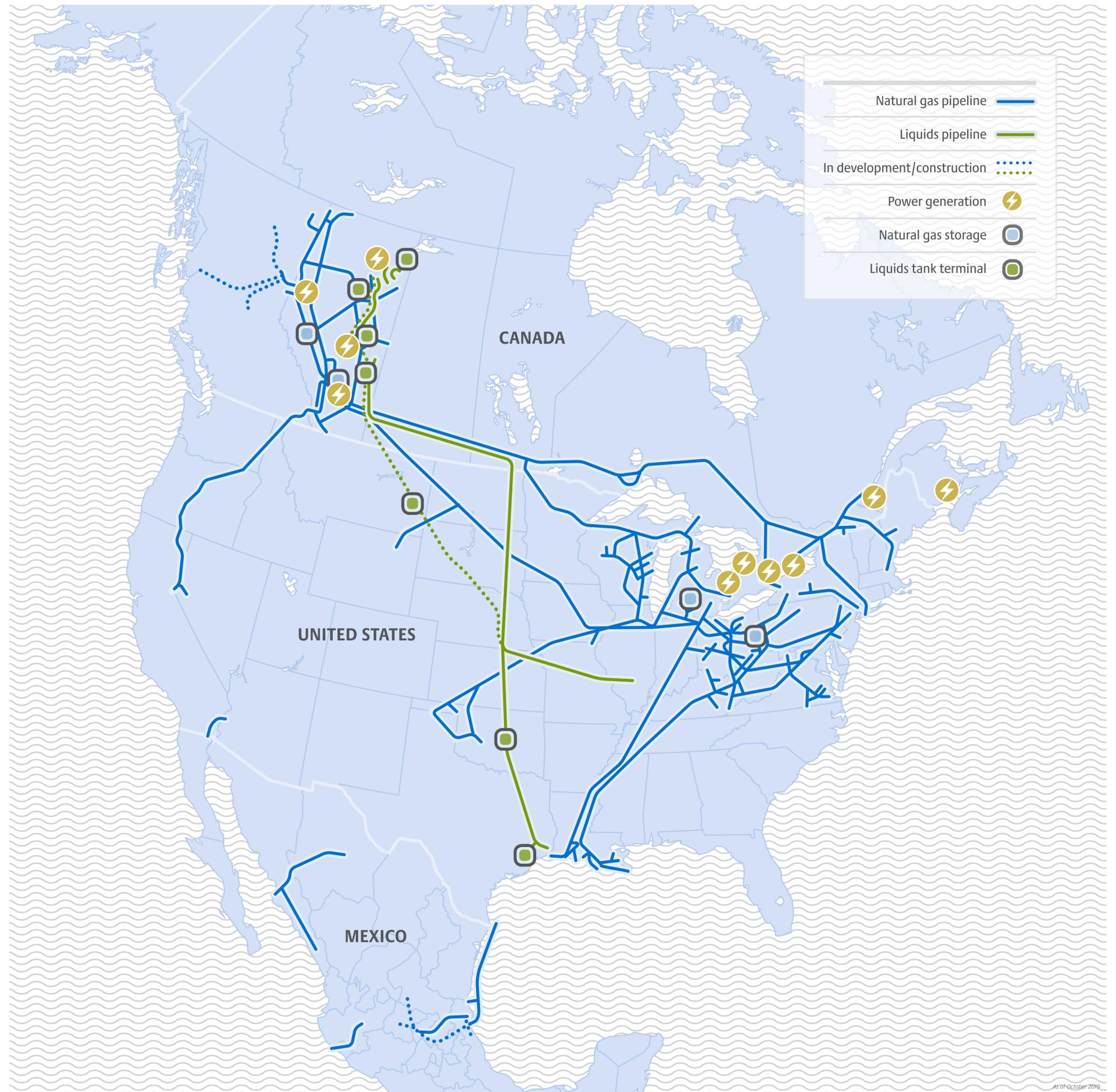
# Welcome to TC Energy's Community Information Session.

Today we are here to share information with you about the proposed Pumped Storage project and get your feedback.



# About TC Energy.

TC Energy delivers the energy millions of people rely on every day to power their lives and fuel industry. We are not only focused on what we do, but how we do it – guided by core values of **safety, responsibility, collaboration and integrity**, our more than 7,000 people are committed to sustainably developing and operating pipeline, power generation and energy storage facilities across Canada, the United States and Mexico. The company is headquartered in Calgary, Alberta and has been delivering the energy required to keep the lights on, buildings warm and society moving forward since 1951.



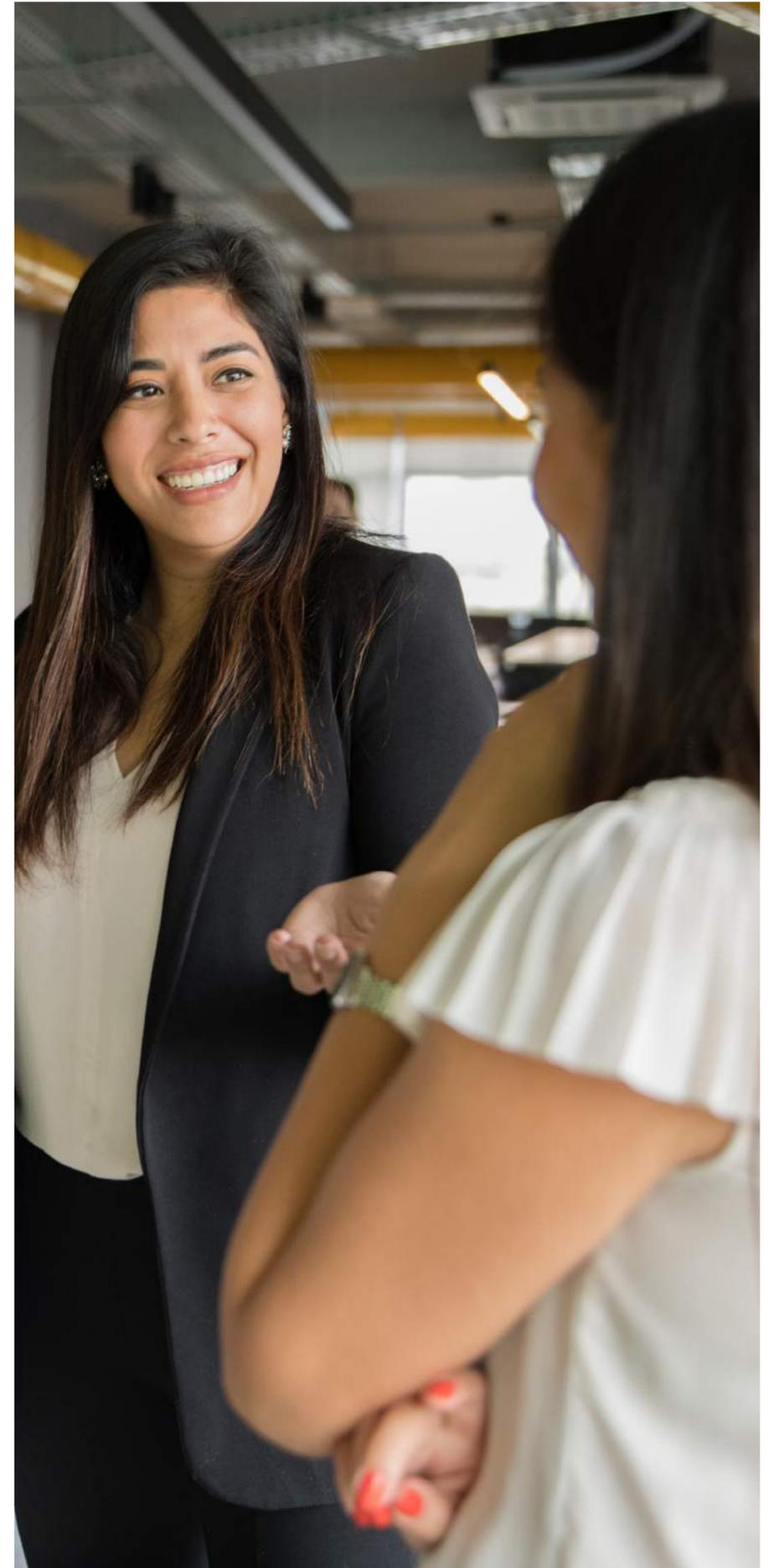
# Your input helps shape this proposed project.

We would like to share more information with you about the project and more importantly, we want to hear your questions and get your input. The feedback we receive from you will ensure we study the issues that are important to you and help us design this project in consideration of your concerns.

There will be many opportunities for you to provide input as the project progresses.

Some of the ways we will look to gather feedback from the community and work to identify potential impacts are by:

- working closely with elected leaders and staff
- hosting open houses and community information sessions
- conducting presentations with affected or interested groups
- having in-person meetings and discussions
- providing written information materials and other forms of communication to supplement our in-person outreach (fact sheets, brochures, a project website, email and toll-free telephone line)



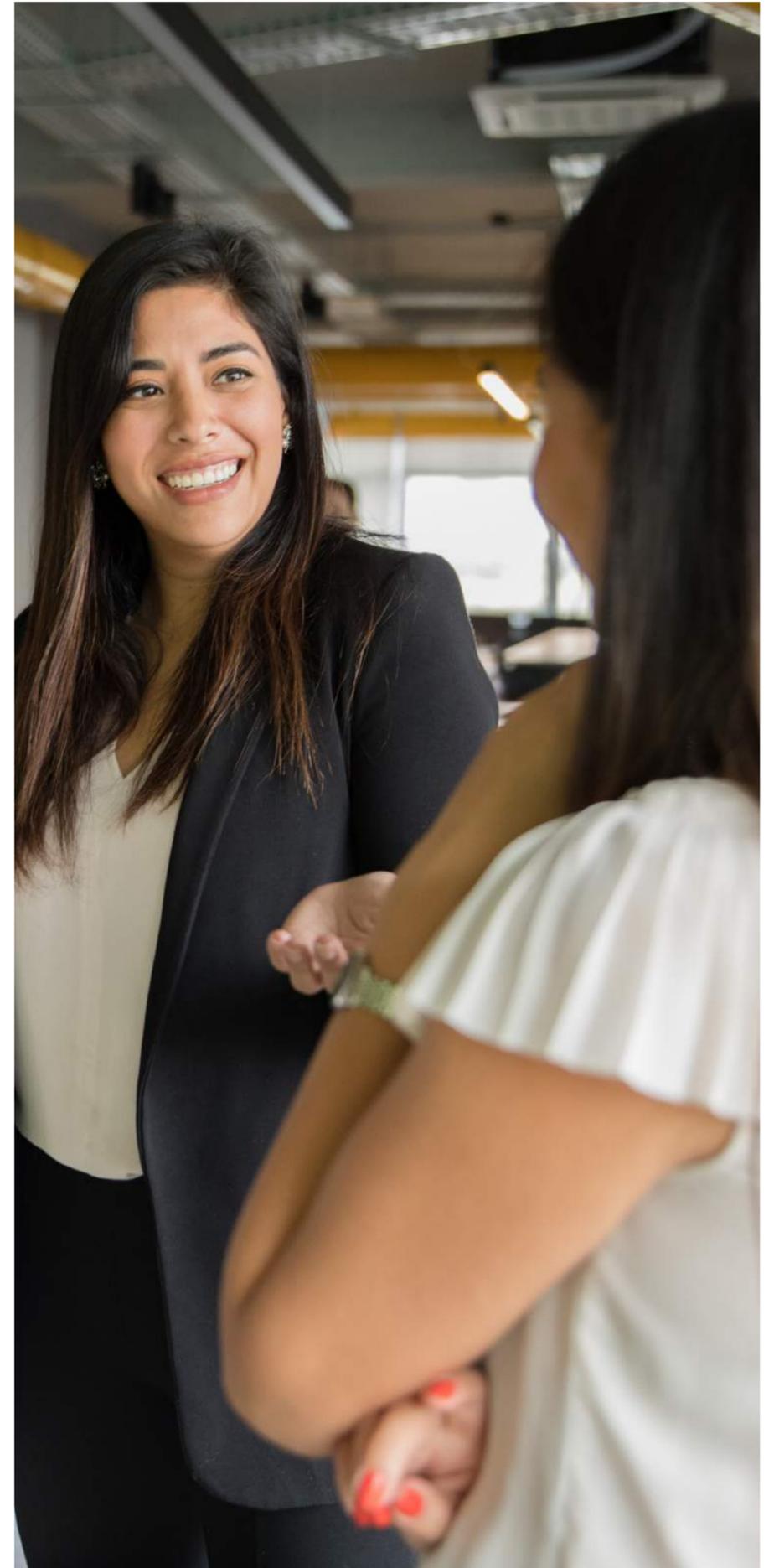
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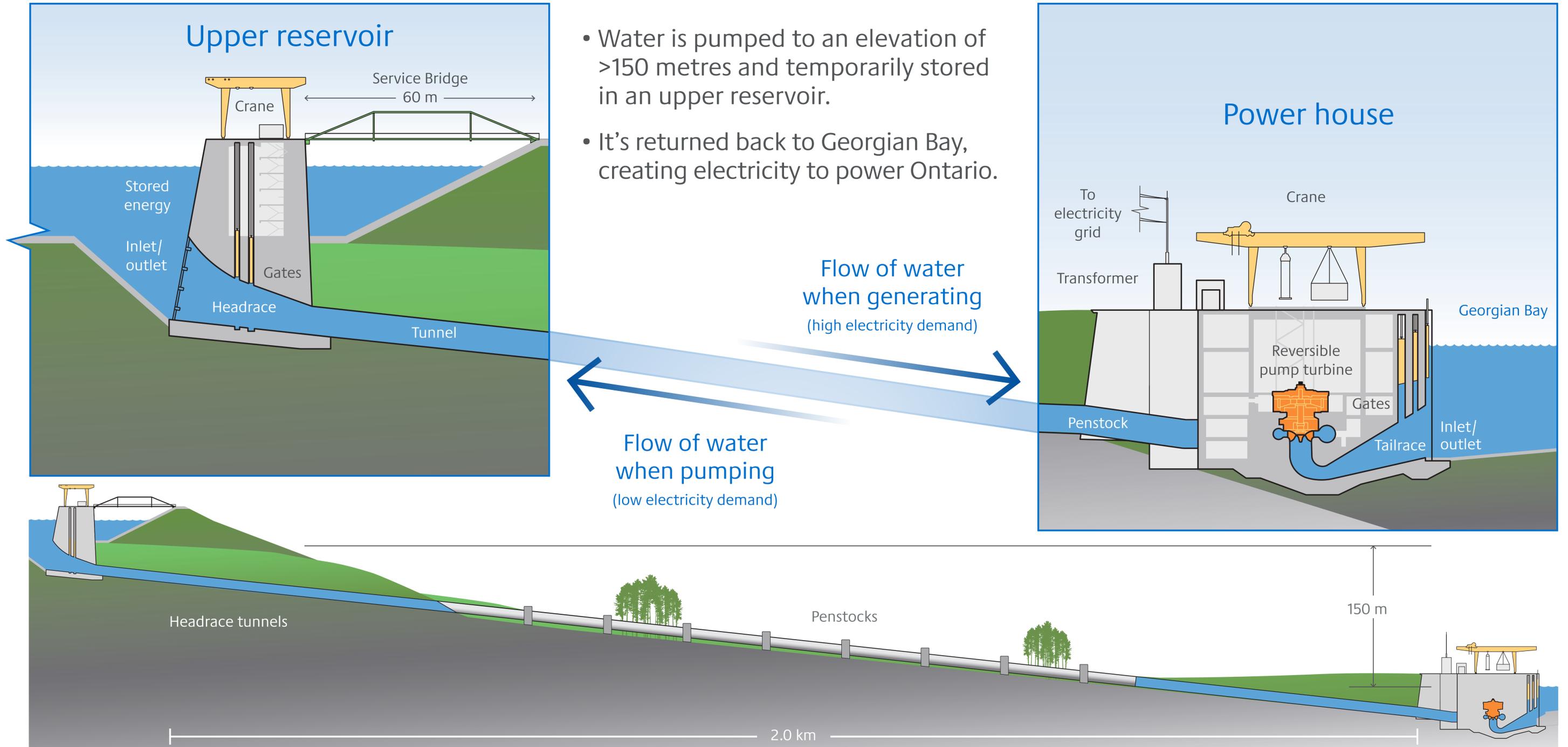
# Proposed project.

TC Energy is proposing development of a pumped storage facility that would provide 1,000 megawatts of flexible, clean energy to Ontario's electricity system. The facility is proposed to be located at the 4th Canadian Division Training Centre in the Municipality of Meaford.



*This drawing is for illustrative purposes only and is subject to change.*

# How it works.



*This diagram is for illustrative purposes only and is subject to change.*

# Why does Ontario need pumped storage?

**Energy storage enables electricity to be saved for a time when it is most needed.**

In Ontario, a large pumped storage facility would:

- **Lower electricity costs for consumers:** Capturing excess power that would otherwise be wasted
- **Reduce environmental impacts:** Storing clean electricity and avoiding gas generation at peak hours
- **Improve power system reliability and resilience:** Providing backup power during grid disruptions
- **Better integrate existing resources:** Optimize existing clean/intermittent resources



# Why this proposed location?

**The 4<sup>th</sup> Canadian Division Training Centre's property is uniquely positioned for a pumped storage facility. Here's why:**

- The property is close to population centres and electrical demand in southern Ontario.
- The proposed location is adjacent to Georgian Bay which serves as a water source and is elevated by the escarpment.
- The proposed project footprint is less than 500 acres (~3% of the base). It is located outside of active training areas and on lands that are not accessible to the public.
- The proposed location is close in proximity to a robust electrical grid connection.



# Pumped storage vs. batteries.

- Pumped storage stores power, similar to a battery, until it is needed. However, pumped storage is on a much larger scale than batteries and can charge or discharge for much longer durations, providing enough power to balance most renewable power swings across Ontario.
- Unlike lithium ion batteries, which degrade with repeated use and age, pumped storage stores energy in an elevated reservoir in the form of water. The water is released through turbines that generate power as needed during peak power demands.
- This facility could operate for up to 8 hours and provide electricity to Ontarians when they need it most. At this duration and size, pumped storage is more economic than other available storage technologies.

# A climate change initiative.

## Climate change is at the forefront of all our minds.

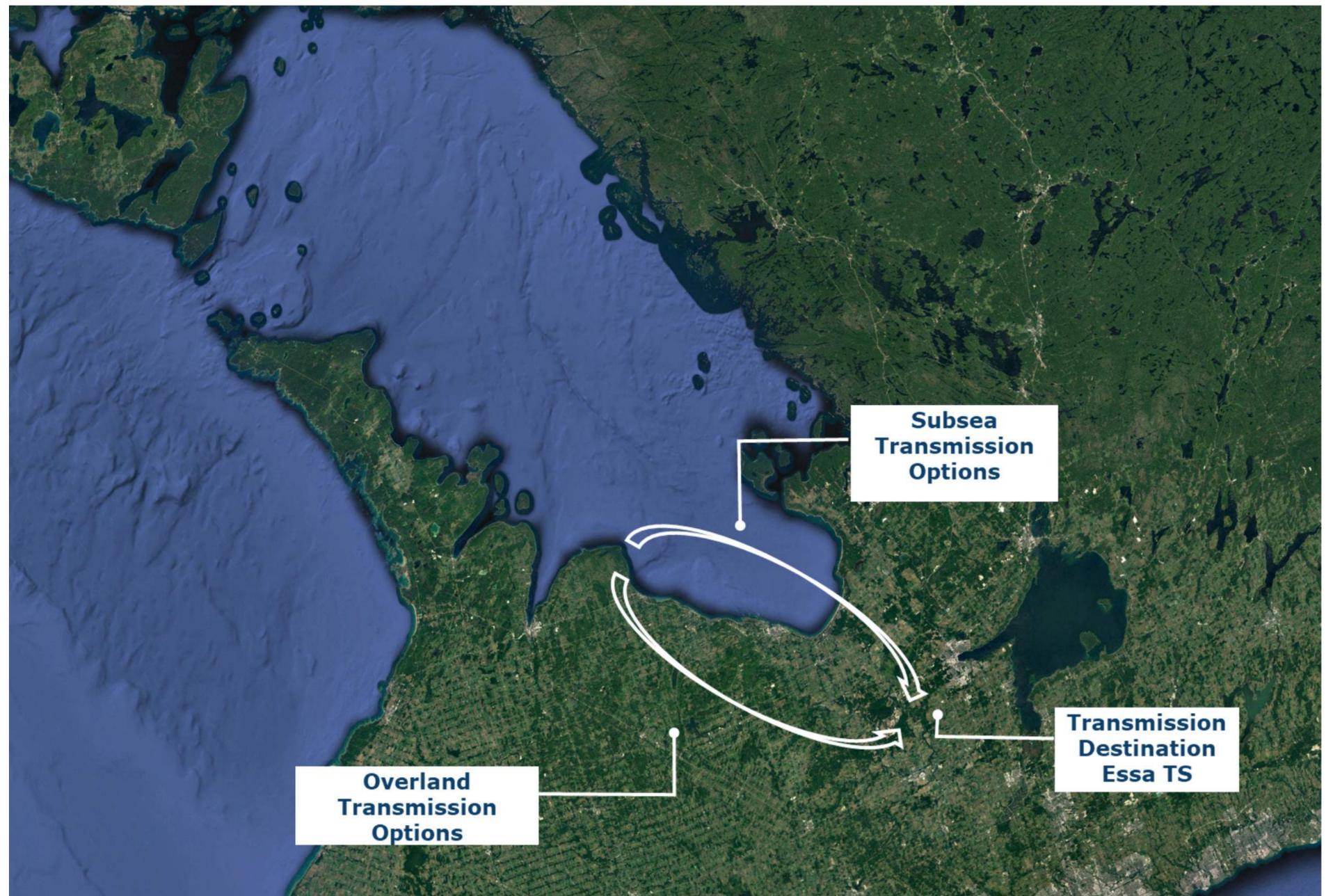
The proposed project is one of the largest climate change initiatives in Canada – it will **reduce CO<sub>2</sub> emissions by nearly 500,000 tonnes/year** which is the equivalent of **removing 150,000 cars from Ontario roads**.

In addition to reducing the effects of climate change, the proposed project builds resiliency into our power system. This project enables us to withstand the events caused by climate change as it can be used as an emergency generator that could be called upon in the event of a power interruption.



# How will this proposed project be connected to Ontario's grid?

- An electrical connection is required to plug the proposed project into the Ontario grid
- Hydro One's Essa Transmission Station has been identified as a connection point
- Land and subsea transmission options will be evaluated and reviewed
- We will be seeking input and feedback from communities and stakeholders with respect to these options



# Will the proposed facility use electricity?

The proposed pumped storage project will use electricity and store it for future use.

Most of this electricity would come from existing wind, hydro or nuclear power, generated during low-demand periods. Typically this electricity is exported at a loss or entirely wasted.

When water is released from the upper reservoir, the facility will generate electricity for Ontario's consumers.



# Will I be able to hear the proposed facility?

- We anticipate that the project would generate sound while in operation, but expect that the sound would be limited to the immediate area of the proposed pumped storage facility, which would be isolated within the restricted area of the military base.
- We are required to meet provincial noise standards. To ensure we are compliant with the noise regulations, site specific studies and noise modeling would be a component of the environmental assessment process.
- Proven technologies would be used to effectively reduce sound that might be emitted.



# Anticipated project benefits.

- **Economic Impact:** \$3.3 billion private sector investment over 4 years
- **Lower electricity rates:** The project would reduce costs of electricity for Ontario consumers. Annual consumer savings of approx. \$250M representing billions of savings while increasing reliability and reducing future GHG emissions
- **Jobs:** Over 800 construction jobs over four years
- **Purchase of Local Goods and Services:** Food and accommodations, fuel, hardware, equipment parts, gravel, etc.
- **Community Investment:** we support important community needs and strengthen environmental stewardship and sustainability through local and regional investments. In 2018, we invested more than \$22.5 million across 744 communities

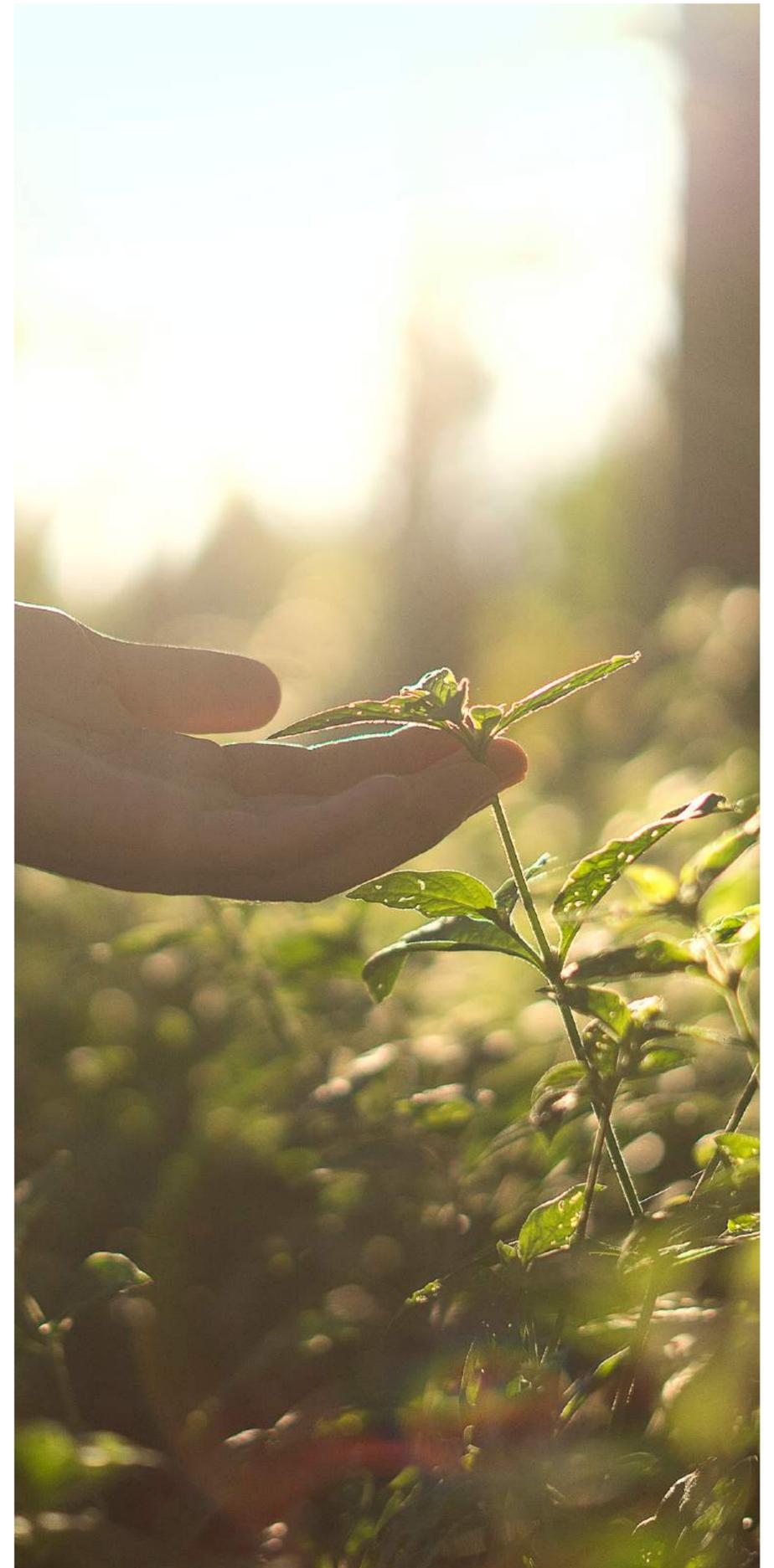


# Environmental protection.

TC Energy collects and analyzes data on a number of environmental elements including, but not limited to:

- Fish and fish habitat
- Water resources
- Wildlife
- Terrain and soils
- Vegetation and wetlands
- Archaeology
- Hydrology and hydrogeology
- Noise

We use this information to determine risks and effects, inform the design of the facility to avoid effects to the degree possible, and to develop mitigation measures to further minimize potential negative effects. If necessary, measures to offset any residual effects will also be developed and implemented.



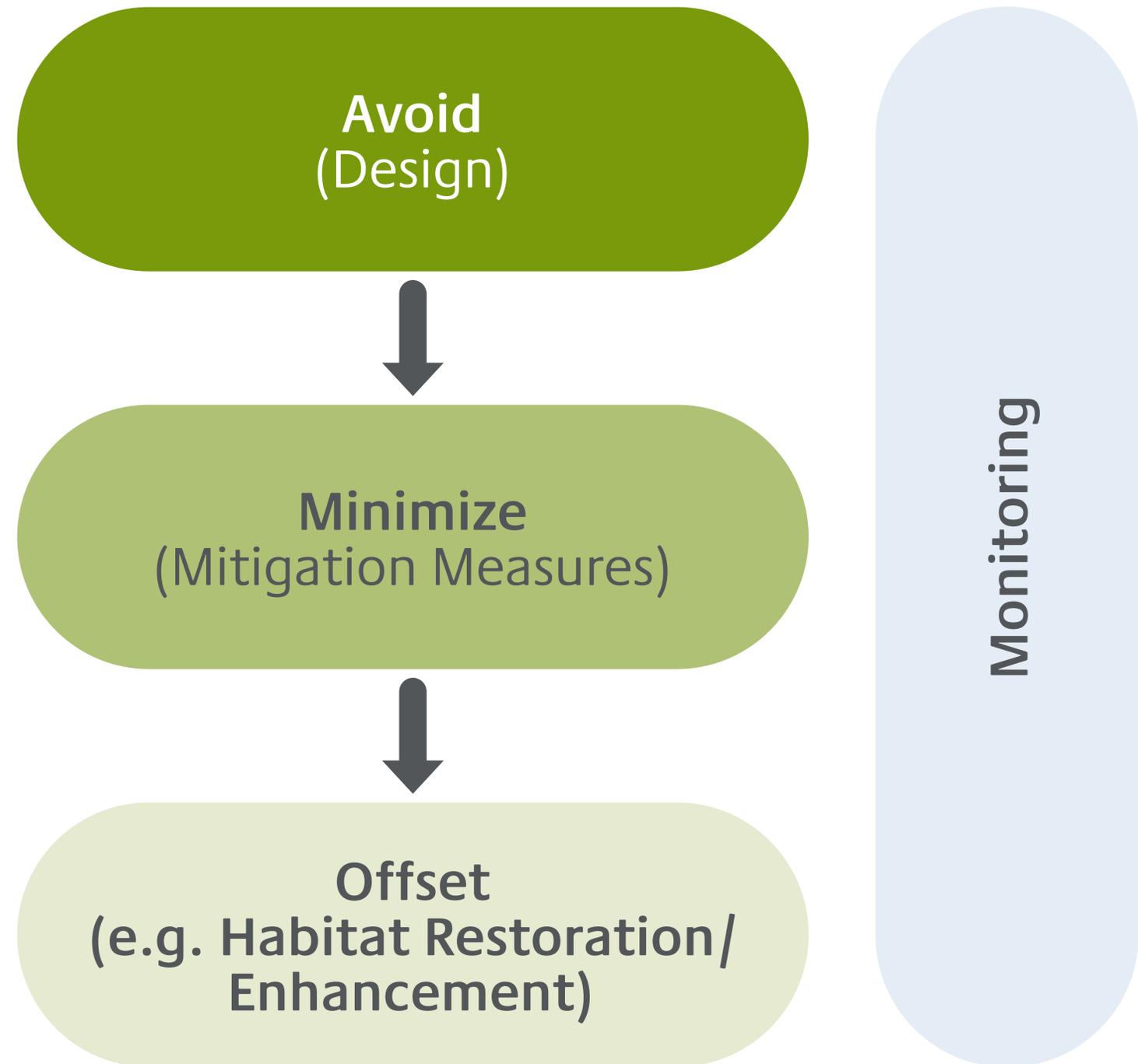
# Fish and fish habitat.

The sustainability of fisheries and the habitat they rely on is important to us.

We start by collecting site-specific data to understand the species that are present, their habitat, and how that habitat is used across seasons and throughout their life cycles.

Baseline data will be used to understand site specific conditions for fish and fish habitat to inform project design and to minimize potential negative effects.

Regulatory approval for the proposed project is needed under both the federal *Impact Assessment Act* and provincial *Environmental Assessment Act*. Specifically for fish and fish habitat, we will also need to be compliant with the federal *Fisheries Act*.



# Water.

## **We are committed to protecting this vital resource.**

Baseline data will be collected to understand current conditions of water in Georgian Bay, as well as groundwater and surface water such as nearby streams:

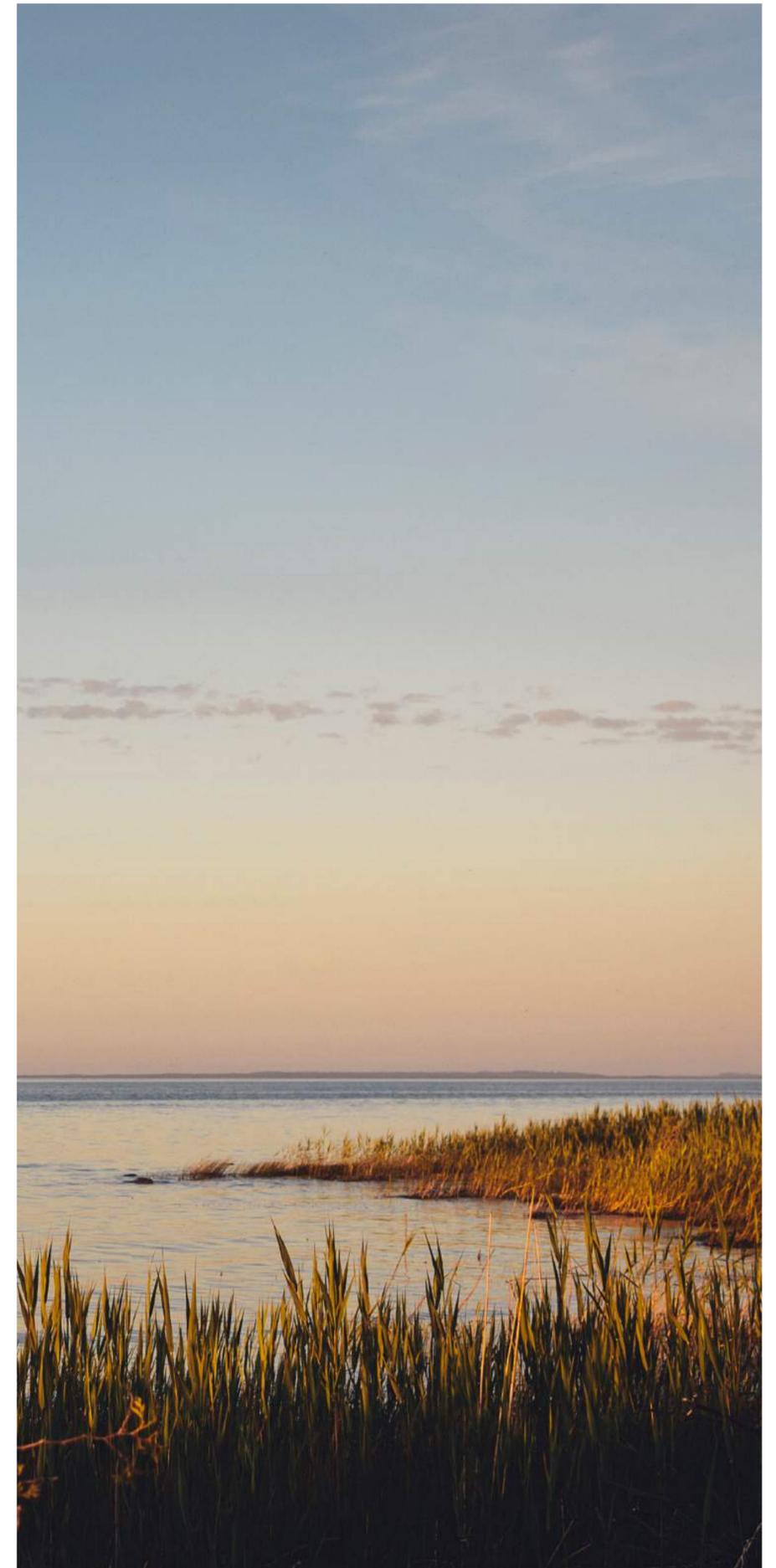
- water quality/quantity
- water flows and currents
- water table and groundwater movement
- temperature and nutrients

We will also engage with communities to understand traditional, recreational and commercial water use, including boating.

This data will be used to understand how the proposed project may interact with water, including potential effects on:

- turbidity
- temperature
- water quality
- water availability for ecological and human uses
- water movement
- navigation

Engineering design and mitigation measures employed during construction and operations will be developed to avoid or minimize potential negative effects of the project.



# Summary of key regulatory milestones\*

- Legend:**
- ▶ TC Energy
  - ▶ Impact Assessment Agency
  - ▶ Ministry of the Environment, Conservation and Parks
  - ▶ Minister's Decision
  - ☆ Public Input



\*Simplified for presentation purposes

# Our approach to engaging with you.

We believe that engaging early and often with you is critical.

We are committed to sharing our information about this proposed project and to ensuring that your questions are answered. We will listen to and understand comments that you voice and then work together to address them through design changes or measures that avoid, reduce or mitigate impacts.

We are also committed to creating positive opportunities through this project that support your communities through education and training, scholarships, employment, contracting, and community investment.

We want this project to make a net-positive contribution to your communities while providing benefits to all Canadians.



# Understanding preliminary socio-economic characteristics.

We are currently conducting a preliminary socio-economic study to examine characteristics of the region and how the project would impact the local economy. Here's what we are studying:

- Labour Force Characteristics
- Employment and Business Activity
- Local and Regional Economic Benefits of Project Construction and Operations

- Local Infrastructure
- Emergency and Protective Services
- Housing and Accommodations
- Health, Recreation and Education Services
- Education and Training

Once completed, the study will be available on the project website.

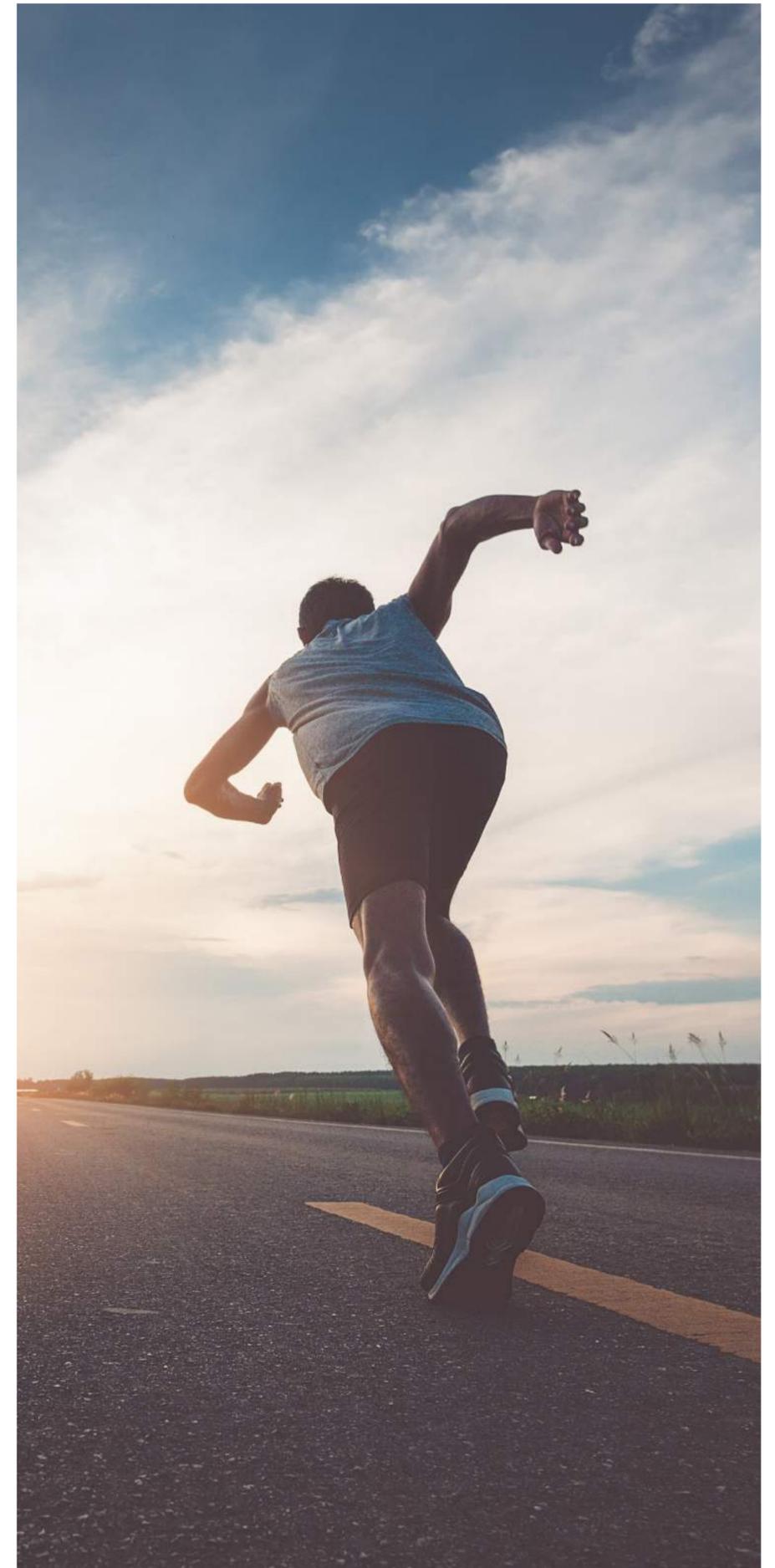


# What we know.

- Climate change benefits
- Community investment opportunities
- Economic benefits
- Employment opportunities
- Local and regional investment
- Lower electricity rates
- Opportunities for Indigenous participation
- Skills training and apprenticeship opportunities

# What we need to know\*.

- Fish and fish habitat
- Housing/accommodation
- Labour availability
- Light
- Noise
- Pressure on infrastructure
- Property values
- Tourism
- Traffic
- Water quality



# What you've told us today matters.

We encourage you to complete one of our open house feedback forms.

Please contact us anytime at [energy\\_storage@tcenergy.com](mailto:energy_storage@tcenergy.com) or at 1-844-551-0055 with your questions and comments.

We will be hosting additional open houses at the Meaford Community Centre on the following days:

- **Thursday, January 16, 2020**
- **Thursday, January 23, 2020**

Project information including open house materials are available at:

[www.tcenergy.com/pumpedstorage](http://www.tcenergy.com/pumpedstorage)



# Ontario's Electricity Market.

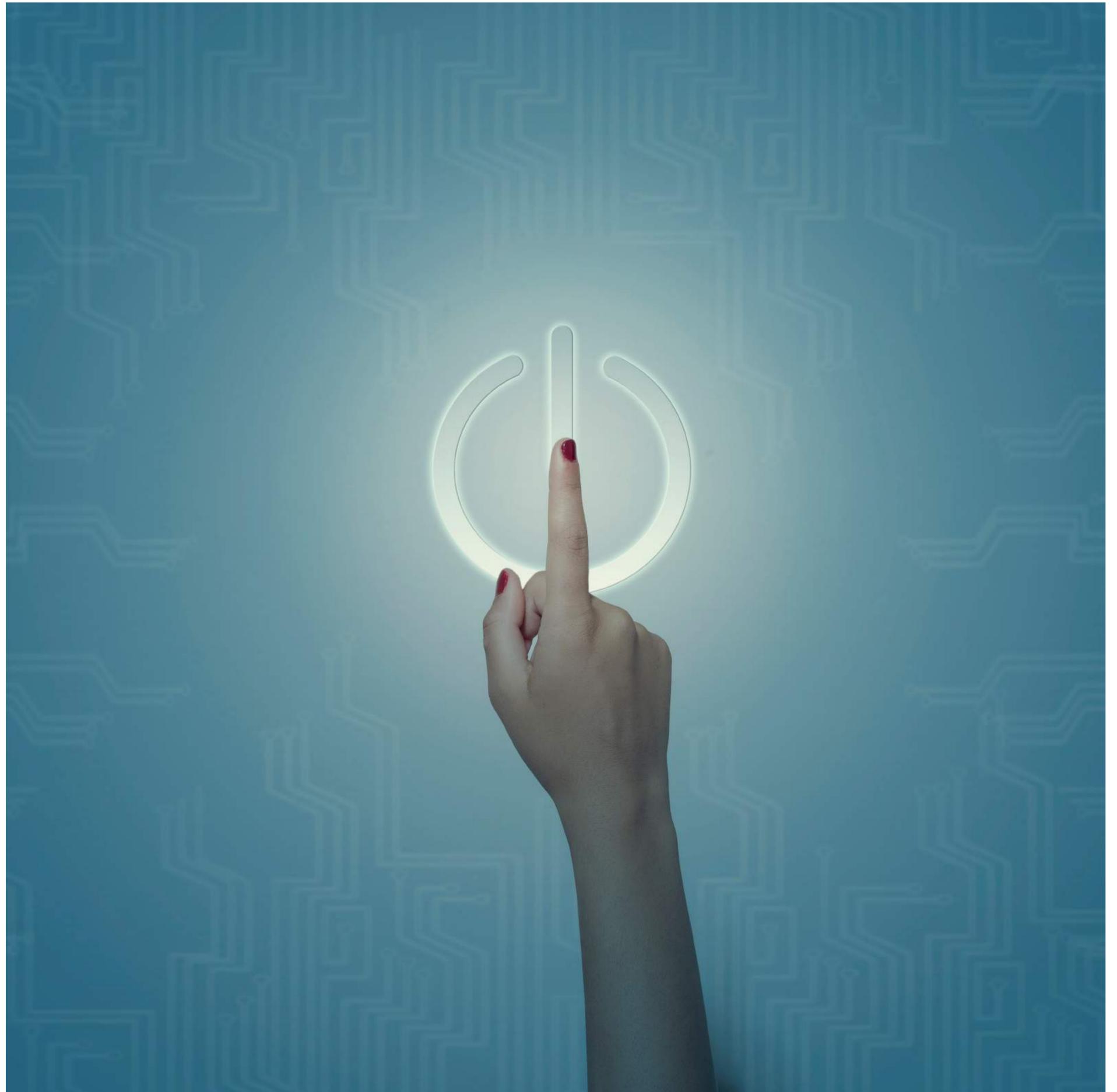
How do energy markets work?

How does the market set the price of energy?

What is the difference between capacity  
and energy?

What is surplus base load generation?

What does it take to keep the lights on?



# Living our values.

**Our goal is for our facilities to operate safely every day. Safety is, and always will be, our number one value.**

Our commitment to safety isn't just a mantra – it's how we work 24/7, 365 days of the year across our entire organization. If it isn't safe, we won't do it. By reinforcing a disciplined set of rules and providing rigorous training, we approach every day with our goal of a zero-incident workplace.

From design and construction to operation and maintenance, safety is an integral part of everything we do.



# Anticipated project timeline.

