# yukon energy



# welcome

Yukon Energy recognizes and acknowledges that we work and live on the Traditional Territories of Yukon First Nations



# our plan for the future

We need a mix of energy projects to meet Yukoners' demand for electricity, and to build a sustainable, reliable and affordable energy future for Yukon.

The result is our future-focused portfolio, a collection of different energy projects that will support Yukon's growth.





Energy Conservation



Hydro Upgrades



Hydro Storage Enhancements



Independent Power Producers



Battery Storage



Small Hydro





# the need: more renewable winter power

In winter, when demand for electricity is at its highest, we must use liquefied natural gas (LNG) and diesel to generate electricity when water levels are low and to meet peak demands for power.

### resources used to meet electricity needs



![](_page_2_Picture_4.jpeg)

The Southern Lakes Enhanced Storage Project would help use more water to generate more renewable electricity each winter and reduce the amount of liquefied natural gas (LNG) and diesel we need to use.

![](_page_2_Picture_6.jpeg)

# southern lakes enhanced storage project

As we work to build new long-term sources of renewable electricity, we're committed to making the most of the renewable sources we have now.

![](_page_3_Picture_2.jpeg)

The Southern Lakes Enhanced Storage Project aims

![](_page_3_Picture_4.jpeg)

![](_page_3_Picture_5.jpeg)

to help us generate more renewable electricity each winter by storing more water in the Marsh, Tagish and Bennett lakes in the fall and early winter.

This would not mean raising lake levels higher than they already rise naturally in many years. Rather, the project would hold peak summer lake levels later into the fall and early winter.

![](_page_3_Picture_8.jpeg)

6.5 gigawatt hours of additional renewable electricity will be generated each winter – enough to power some 500 homes

![](_page_3_Picture_10.jpeg)

\$

Yukon's greenhouse gas emissions can be reduced by about 3,100 tonnes a year – about the same as taking 650 cars off the road for a year

Saves Yukoners about \$1 million per year (at current diesel and LNG prices)

![](_page_3_Picture_14.jpeg)

Addresses existing erosion and groundwater issues in areas of the Southern Lakes affected by the project, providing a legacy benefit to residents

![](_page_3_Picture_16.jpeg)

The lake level naturally fluctuates this much during the year

## B

Currently, Yukon Energy is licensed to control the lake level within this range

![](_page_3_Picture_21.jpeg)

We want to revise our water use license to control this much

![](_page_3_Figure_23.jpeg)

Ma Wh

Makes the most of our existing Whitehorse hydro facility

Requires no new

infrastructure

![](_page_3_Picture_27.jpeg)

# research to date

You may be understandably concerned about the effects the project would have on your Southern Lakes property. We share those concerns and have spent the past 10 years doing the research, consulting and engineering to minimize, mitigate and even eliminate potential effects.

We're confident that holding some of summer's water for an additional two to three months in fall and early winter is manageable and will help us generate more renewable electricity in winter months.

![](_page_4_Figure_3.jpeg)

![](_page_4_Picture_4.jpeg)

# what we've learned so far

Over the years, Southern Lakes residents and property owners have asked us about:

erosion

![](_page_5_Picture_3.jpeg)

![](_page_5_Figure_4.jpeg)

![](_page_5_Figure_5.jpeg)

![](_page_5_Picture_6.jpeg)

fish, wildlife, waterfowl and wetlands After consulting with you, we have confirmed the areas that would and wouldn't be affected by the proposed project and developed various mitigation solutions to address what matters to you.

### fish, wildlife, waterfowl and wetlands

In researching this potential project, studies looked at more than 200 species of plants and animals. Research has revealed the project would have minimal effects on fish, wildlife, waterfowl and wetlands in the project area.

## traditional land uses and heritage resources

We recognize the strong traditional and cultural connection between local First Nations and the Marsh, Tagish and Bennett lakes. Yukon Energy continues to have discussions with the Carcross/Tagish First Nation, Kwanlin Dün First Nation and Ta'an Kwäch'än Council to understand and mitigate any impacts of erosion or groundwater on Traditional and Settlement Lands in the project area.

![](_page_5_Picture_13.jpeg)

traditional land uses and heritage resources

![](_page_5_Picture_15.jpeg)

# shorelines at risk of additional erosion

There is already naturally occurring erosion in some areas of the Southern Lakes. This erosion will continue with or without this enhancement project. The bulk of the lakes' shorelines are resilient to erosional forces (e.g., steep and/or rocky). If the Southern Lakes Enhanced Storage Project were approved, Yukon Energy would build engineered protection along shorelines that would be affected.

![](_page_6_Picture_2.jpeg)

This project would cause increased erosion around 69 shoreline properties in six areas.

NORTH M'CLINTOCK (14)
ARMY BEACH (16)
ALASKA HWY SECTION AND S-206 (1)
JUDAS CREEK (4)
TAGISH LAKE OUTLET (6)
TAKU SUBDIVISION NORTH (28)

![](_page_6_Figure_5.jpeg)

![](_page_6_Picture_6.jpeg)

#### WHAT RESIDENTS HAVE TOLD US

- When considering mitigation options, effectiveness and durability are the most important factors.
- Judas Creek residents preferred groynes (rock structures that extend into the water to disrupt waves).
- Residents in other affected areas preferred riprap (large rocks with or without vegetation).

![](_page_6_Picture_11.jpeg)

#### ACTION PLAN

- Yukon Energy will build and maintain engineered protection along the shoreline of properties that would be affected by the project.
- Protection would be completed by "shoreline unit" (a multi-property approach); not on individual property shorefronts.
- Yukon Energy will not build shoreline protection in areas not identified with a number on the map. Research has found that this project would not increase the rate of erosion that already happens in these areas.

# properties potentially affected by groundwater

Some property owners in the Southern Lakes already experience issues with groundwater affecting their septic fields/tanks, basements/crawlspaces, and sumps. This project would result in a slightly longer duration of seasonal high groundwater levels in some low-lying areas.

If the Southern Lakes Enhanced Storage Project were approved, Yukon Energy would cover reasonable costs to install the specific solutions needed to address groundwater concerns on affected properties.

![](_page_7_Picture_3.jpeg)

A longer duration of groundwater levels would affect 57 properties in these areas.

![](_page_7_Picture_5.jpeg)

![](_page_7_Figure_6.jpeg)

#### WHAT RESIDENTS HAVE TOLD US

• When speaking with and visiting affected residents, we determined what the specific effects to each property would be and the type of mitigation that would be needed.

![](_page_7_Picture_9.jpeg)

#### **ACTION PLAN**

- Yukon Energy will work directly with affected residents and property owners to install the specific solutions needed at each site to address groundwater concerns.
- Yukon Energy will not install solutions to address groundwater in areas not identified with a letter on the map. Research has found that this project would not increase the amount or duration of seasonal high groundwater levels that already happens in these areas to a degree that might affect subsurface infrastructure.

# monitoring program and adaptive management

![](_page_8_Picture_1.jpeg)

## monitoring program

A detailed monitoring program will be part of the implementation of this project.

#### It will focus on:

- heritage resources
- erosion mitigation effectiveness
- groundwater mitigation effectiveness
- fish and wildlife
- wetlands

#### The monitoring program will:

- provide timely results for decision-making
- involve collaboration between Yukon Energy and the affected First Nations
- use control areas to understand what effects are caused by the project and/or other factors

## adaptive management

The adaptive management program will set out the measures that Yukon Energy will take in response to positive or negative outcomes.

- Yukon Energy will work with stakeholders to develop the monitoring and adaptive management plan.
- Yukon Energy will clarify how monitoring will be done and what type of actions will be taken if there are negative outcomes from this project.
- The adaptive management plan will be as specific as possible, defining clear responses to specific outcomes.
- Reducing the water storage range would be an option, if other mitigation methods did not work to address impacts.
- Yukon Energy will consider creating a multi-stakeholder committee to evaluate concerns from the public regarding perceived project impacts and to carry out

mitigation in a transparent, evidence-based, and objective way.

![](_page_8_Picture_23.jpeg)

![](_page_8_Picture_24.jpeg)

# project timeline and next steps

### project timeline

#### 2009-2010

Concept introduced during community meetings in the Southern Lakes, interest and values identified, research program kicked off, and discussions with local First Nations begins

#### 2013-2017

Based on studies and public input received, potential impacts are analyzed and mitigation plans are developed and reviewed with potentially impacted landowners

> if the decision is to proceed then ....

#### 2017-2018

Ongoing technical review and discussions with local First Nations. Preparation for the final round of consultation to determine whether to advance the project to YESAA assessment

#### **SUMMER AND FALL 2019**

Final round of public engagement and continued discussions with Carcross/Tagish First Nation, Kwanlin Dün First Nation and Ta'an Kwäch'än Council

**SPRING 2020** Yukon Energy Board decision about the project

#### **EARLY 2020** What We Heard report released

2010-2013

Baseline studies conducted and

results shared with local First

Nations, Southern Lakes residents

and the public

![](_page_9_Picture_14.jpeg)

#### **SPRING AND SUMMER 2020**

Continued discussions with Carcross/Tagish First Nation, Kwanlin Dün First Nation and Ta'an Kwäch'än Council

#### **SPRING 2021**

#### YESAA recommendation received; application to amend water use license submitted; *Fisheries* Act Authorization application submitted

**FALL 2020** YESAA\* project proposal submitted

### **WINTER 2021**

Permits obtained

#### LATE WINTER, SPRING AND EARLY SUMMER 2022 Erosion and groundwater solutions installed

#### **FALL AND WINTER 2022**

Use of expanded storage range in Southern Lakes; more renewable electricity generated at Whitehorse Rapids every winter

![](_page_9_Picture_25.jpeg)

#### An ongoing monitoring program will be implemented to confirm effect predictions and mitigation effectiveness.

\*Yukon Environmental and Socio-economic Assessment Act

# learn more and have your say

### share your thoughts and views

Whether here or in the comfort of your home, we want to hear from you. Fill out the comment form now and drop it off at the welcome desk or complete it online at **yukonenergy.ca/southernlakes.** 

## respond to the survey

Two surveys will be used to gather feedback on this potential project. Both surveys will be run by the Yukon Bureau of Statistics and will be open from mid-October until the end of November.

Southern Lakes Property Owner Survey – This will be an online survey specifically for Southern Lakes property owners. The goal of this survey will be to understand how property owners feel about this project and the mitigation solutions being proposed.

Yukon-Wide Survey – This will be a statistically relevant

## attend an information session

#### TAGISH

**October 2, 5:30–7:30pm** Presentation at 6pm Tagish Community Centre

#### CARCROSS

#### October 7, 5:30–7:30pm

Presentation at 6pm Carcross Learning Centre, Clan Room

#### WHITEHORSE

October 15, 5:30–7:30pm Presentation at 6pm High Country Inn

#### **MARSH LAKE**

October 16, 6:30–8:30pm

phone survey, and will provide us with insight into how Yukoners generally feel about this project.

Presentation at 7pm Marsh Lake Community Centre

### what we heard report

Input from both surveys, community meetings, and any emails or phone calls we receive will be summarized in the What We Heard report.

CONTACT INFO Call: (867) 393-5333 Email: communications@yec.yk.ca For detailed studies and reports, visit

yukonenergy.ca/southernlakes

![](_page_10_Picture_24.jpeg)