TAB # XX

Session Briefing Note — Spring 2023

Yukon Energy Corporation

Yukon Energy General Overview

- Yukon Energy's mission is to provide Yukoners with sustainable, cost-effective, and reliable electricity.

- There are a number of different values which guide Yukon Energy's work, including safety, teamwork and accountability.

- Yukon Energy has historically met over 90% of the Yukon's electricity needs each year with renewable electricity, mainly due to its large supply of hydroelectricity.

- In 2022, 92% of the electricity Yukon Energy generated come from renewable resources.

- As we are all aware, we must continue to develop additional renewable electricity capacity.

- But building the projects that will provide this renewable electricity capacity takes time.

- In the meantime, Yukon Energy must use thermal resources like diesel and LNG to meet electricity demand, especially on the coldest and darkest of days.

Yukon Energy General Overview

- On the days when thermal resources are required, Yukon Energy can often meet demand with its permanent diesel and LNG units alone, without having to use its rental or temporary units.

- However, it is important these rental units are available so that they can be used when needed, or when demand surpasses what the permanent units can supply.

- When the Battery Energy Storage System and Atlin Hydro Expansion Project are complete, it will reduce our reliance on rental diesel generators and other temporary solutions to keep the lights on.

- Ideally, Yukon Energy would also add a large, pumped storage project, such as the one proposed at Moon Lake, to further reduce our reliance on diesel and LNG.

- Yukon Energy is also looking at longer-term solutions that would allow for generational growth and stability, such as connection to the BC grid.

- Ultimately, Yukon Energy is committed to working with its partners and with Yukoners to find and build renewable solutions that can provide the electricity Yukoners need, when they need it.

TAB # 1

Session Briefing Note

Spring 2023

Water levels in the Southern Lakes

Yukon Energy Corporation

Recommended response

- Yukon Energy expects to get close to Marsh Lake's low supply level this spring.
- All winter, Yukon Energy was passing maximum flows through the Lewes River Control Structure in an effort to pull Marsh Lake levels down to its historical normal levels.
- As of April 11, 2023, Marsh Lake is at the average level for this time of year.
- Yukon Energy is now running increased flows through the Lewes River Control Structure due to the potential for an early freshet.
- Yukon Energy will manage Schwatka Lake levels under normal operational circumstances and will begin to lower Schwatka at the end of April.

Additional response

About snowpack levels

- Based on April snow data, the snowpack levels in the Southern Lakes are slightly below average.
- As a result, Yukon Energy is forecasting normal summer inflows and normal summer lake levels for Marsh Lake.

About winter water levels

- On January 24, Marsh Lake was at its highest level since 1981.

- The reason for the high levels is because of the warm fall and winter we experienced.
- As a result of these warm temperatures, inflows at this time were about 25% higher than normal.

About actions taken to lower Marsh Lake in 2022

- In the spring of 2022, Yukon Energy took proactive steps to draw more water out of Marsh Lake including:
    - Opening up the gates at the Lewes River Control Structure about two months earlier than normal;
    - Lowering Schwatka Lake; and
    - Applying for an emergency amendment to Yukon Energy's water use licence to allow Marsh Lake to be pulled down below its regulated low supply level.
- By lowering Schwatka Lake, Yukon Energy was able to lower Marsh Lake's peak level by 47 centimetres last summer.
- On April 4, 2022, the Yukon Water Board approved Yukon Energy's emergency application to lower Marsh Lake up to 10 cm below its regulated low supply level.
- Yukon Energy was able to lower Marsh Lake 4 cm below the low supply level.
- Further reductions were not possible because of an early and rapid spring melt.

Context—this may be an issue because:

Session Briefing Note

Spring 2023

Water levels in the Southern Lakes

Yukon Energy Corporation

The Opposition may ask about what actions Yukon Energy took in 2022 to prevent flooding in the Southern Lakes.

Action	Date (2021)	Date (2022)
Opened all 30 gates at the Lewes River Control Structure	March 19 About 2 months earlier than normal	March 21 About 2 months earlier than normal
Applied to the Yukon Water Board (YWB)for an emergency amendment to draw Marsh Lake 10 cm lower than the permitted Low Supply Level	April 1 The YWB approved the amendment on April 28, but an early freshet prevented Yukon Energy from being able to draw down Marsh Lake this low.	March 10 The YWB approved the amendment on April 4
Gradual lowering of Schwatka Lake to near the Low Supply Level	Late April	April 25
Opened the boat lock gates at the Lewes River Control Structure	May 11 Completed as soon as ice melted off the gates	N/A
Physically removed the boat lock gates	June 29 Done because vandalism and the force of passing water forced the opened gates to shut	N/A
Removing debris from around the Lewes River Control Structure and Whitehorse Rapids Dam	July – Oct, as required	As required
Gradual raising of Schwatka Lake.	October 4 Marsh Lake was expected to fall to its FSL the next week	September 7 We waited for the lake levels on Marsh Lake to trend down consistently, and for YG to lift their high-water advisory on the Southern Lakes
Gradual lowering of Schwatka Lake		Oct 19-28

		In response to YG's high-water advisory in the Southern Lakes
Gradual raising of Schwatka Lake		October 28 In response to Southern Lakes high water advisory ending
Marsh Lake at Full Supply Level	October 11 FSL is 656.234 m Oct 11: 656.215 m	November 17
Yukon Energy starts closing gates at the Lewes River Control Structure	October 12 About 2 months later than normal	November 17

Approved by:

April 12, 2023

_____

President and CEO, Yukon Energy Date approve

Session Briefing Note

Spring 2023

Yukon Energy
Army Beach Pump

Yukon Energy Corporation

Recommended response

- Yukon Energy's pump at Army Beach was originally installed as a mitigation trial for the potential effects of the Southern Lakes Enhanced Storage Project.

- In the fall, the pump's primary purpose is to push water from the interior of the peninsula back to the lake.

- In the spring, the pump adds the benefit of accelerating the discharge of melt water into the lake.

- The pump was never intended to address water levels above the proposed full supply level of 656.53 metres.

- As the enhanced storage elements have been removed from the scope of the Whitehorse relicensing project, Yukon Energy is not planning to maintain the pump.

- Yukon Energy will work with the Government of Yukon to develop a plan for the future of the pump this spring.

Additional response

- Yukon Energy has heard from the community that they have found the pump to be an important flood prevention tool.

- Because of this, Yukon Energy is open to either the community and/or the Government of Yukon assuming operation of the pump and will assist with the transition to the extent possible.

- While the pump may serve as part of a suite of measures aimed at periodic flood response, the pumping capacity currently installed would not be sufficient for high water levels or flood conditions (water levels above 656.53 metres).

- If it is determined the pump is no longer necessary, Yukon Energy will decommission the site by removing the electrical service and pump but will leave the sump and culvert in place.

Approved by:

January 20, 2023

President and CEO, Yukon Energy

Date approved

TAB # 3

Session Briefing Note — Spring 2023

Yukon Energy Lewes River Control Structure & Boat Lock

Yukon Energy Corporation

Recommended response

- The 2021 flood caused significant damage to the Lewes River Control Structure boat lock and island, and areas of shoreline north of the structure.

Additional response

- As a result of the damages, the boat lock was out of service this past summer and was not available for boat traffic.

- Yukon Energy is currently working with experts to engineer and design a solution for the boat lock.

- As part of these repairs, Yukon Energy is exploring options for increased water conveyance through the boat lock.

- Yukon Energy is also engaging with users of the boat lock to determine what is important to them.

- Repairs to the boat lock are expected to start later next year when engineering is complete, and to take one to two years to complete.

- Yukon Energy is not exploring any changes to the Lewes River Control Structure at this time, aside from automating the gates.

Session Briefing Note

Spring 2023

Yukon Energy
Lewes River Control Structure & Boat Lock

Yukon Energy Corporation

Context—this may be an issue because:

The Opposition may ask what options are being considered for the boat lock repairs.

Background:

- Option 1:
  - Like-for-like replacement
  - Estimated cost of repair: eleven million dollars
  - Timeline to build: one summer
- Option 2:
  - Removal of the sheet pile island and addition of two gates
  - Estimated cost of repair: twenty-five million dollars
  - Timeline to build: one summer
- Option 3:
  - Removal of sheet pile island, the addition of eight gates, cutting into the slope, slope stabilization, wider boat lock, electronically controlled gates.
  - Estimate cost of repair: over fifty million dollars
  - Timeline to build: two years
- A decision on which option to proceed with will be based on public input, budget, and timeline considerations.

Approved by:

January 20, 2023

President and CEO, Yukon Energy — Date approved

Session Briefing Note

Spring 2023

2023/2024 General Rate Application

Yukon Energy Corporation

Recommended response

- To meet increasing demand for electricity, Yukon Energy must make ongoing investments into its electricity system.

- This includes new projects as well as replacing and refurbishing aging assets.

- As Yukon Energy invests more into the electricity system, electricity rates must increase to account for this.

- Rate increases must first be approved by Yukon Energy's Board of Directors.

- The Board has not made a decision regarding a future rate increase at this time.

- Once a decision is made, Yukon Energy would strive to implement the increase when other charges come off bills.

Session Briefing Note

Spring 2023

2023/2024 General Rate Application

Yukon Energy Corporation

Additional response

- The Yukon's electricity rates remain the lowest in the North.
- Yukon Energy continues to build partnerships and obtain funding to keep rates affordable for Yukoners.
- Canada is in a state of transformation, as it moves towards a sustainable energy future.
- This means electricity rates are increasing across Canada, not just in the Yukon.
- Rate increases in the Yukon will continue for the next five to ten years.

Context—this may be an issue because:

The Opposition may ask why another rate increase is needed after one was just implemented in 2021.

Background:

- With more than $500 million in investments needed over the next 10 years, Yukon Energy continues to build partnerships and obtain government funding to help keep rates affordable.
- However, these investments (that are required to create the renewable electricity future we all want) are passed on to Yukoners in the form of electricity rates.

Session Briefing Note

Spring 2023

2023/2024 General Rate Application

Yukon Energy Corporation

- Yukon Energy will not apply for a rate increase until its Board of Directors has approved it.
- Yukon Energy's 2021 General Rate Application asked for an 11.5 per cent rate increase.
- It also outlined a way for the proposed rate increase to have a nearly zero impact on Yukoners' electricity bills.
- Yukon Energy's 2021 rate increase was applied on two different dates in 2021:
    - July 1, 2021, the rate increased by 7.7 per cent (the same day that Rider F was reduced to 0)
    - December 1, 2021, the rate increased by 3.8 per cent (the same day that Yukon Energy's 2017/18 GRA True-up line item came off bills).

Approved by:

President and CEO, Yukon Energy

January 31, 2023

Date approved

Session Briefing Note — Spring 2023

Aishihik Generating Station Relicensing — Yukon Energy Corporation

Recommended response

- On December 21, 2022, Yukon Energy was issued its 5-year water use licence renewal for the Aishihik hydro facility.

- The process for obtaining this water use licence demonstrates Yukon Energy's commitment to working collaboratively with Yukon First Nations and the Government of Yukon to reach alignment and mutual understanding.

- The Yukon Water Board hearing is evidence of this, as it was completed in just one and a half days (versus the four planned).

- Yukon Energy received its short-term Fisheries Act Authorization renewal on December 20, 2022.

Additional response

About the Joint Agreements and Accord

- Yukon Energy recognizes the important relationship that Champagne and Aishihik First Nations Citizens have with the land and water.

- On July 21, 2022, Champagne and Aishihik First Nations, Yukon Energy and the Government of Yukon signed new agreements that outline a collaborative approach to the operation of the Aishihik Generating Station.

- The Accord and Agreements are a commitment to a renewed relationship and a shared path forward regarding the long-term operation of the Aishihik Generating Station.

- They represent the Parties' commitment to work together in a way that respects the Champagne and Aishihik First Nations land, water and people, while maintaining the benefits of renewable energy produced by the facility.

About compensation claims

- As part of the 5-year licence renewal process, Yukon Energy has asked individuals who believe they will be adversely affected by the ongoing operation of the facility over the 5-year licence period to identify themselves by completing and returning a Notice of Claim to the Corporation.

- Yukon Energy conducted over 120 interviews with people who submitted a Notice of Claim to better understand their concerns and to discuss potential compensation.

Context—this may be an issue because:

Questions may be raised about the development of the Joint Agreements and Accord.

Background

- On July 21, 2022, during the Champagne and Aishihik First Nations General Assembly, Yukon Energy, the Government of Yukon and Champagne and Aishihik First Nations signed agreements that outline a collaborative approach to the operation of the Aishihik Generating Station.

- Champagne and Aishihik First Nations (CAFN), the Government of Yukon and Yukon Energy have carried out a long and thorough process to reach these agreements, and they are founded on years of input and guidance from CAFN Citizens.

Accord

- The government-to-government Accord is CAFN and the Government of Yukon's commitment to collaborate on shared priorities for the Aishihik Generating Station and *Aishihik*.

- The Accord establishes a long-term relationship supported by a combination of bilateral and trilateral Agreements between CAFN, YG and YEC.

- The Accord identifies Senior Officials from both governments who are responsible for the implementation of the Accord and Agreement.

Agreements

- CAFN, YG and YEC have created a number of Agreements to guide their relationship regarding the long-term operation of the Aishihik Generating Station and bring effect to reconciliation through the implementation of shared priorities.

- The Parties have identified opportunities for community development, promoting the practice of traditions in and celebrating the cultural history of *Äshèyi (Aishihik)*,

focusing on stewardship in the area through research and monitoring, and supporting energy planning and improving energy efficient infrastructure.

- Yukon Energy has owned and operated the Aishihik hydro plant since 1987.
- In the past, the Champagne and Aishihik First Nations have expressed a desire for lake levels to return to what they were prior to the generating station being built.
- Science shows that with lake levels as they are authorized today, fish populations in the lake are healthy.
- In February 2020, Yukon Energy, Champagne and Aishihik First Nations and Yukon government began focused work on the long-term relicensing process.
- In July 2020, Yukon Energy submitted a Project Proposal for the long-term water use licence renewal to YESSA.
- On June 18, 2021, the YESAA evaluation report for the project was issued by the Haines Junction Designated Office (DO) of YESAB.
- The recommendation of the DO was for the project to proceed subject to 44 terms and conditions.
    - The DO restricted the temporal scope of its assessment from 25 years to 5 years. This limits the term of any water licence granted by the Water Board to 5 years.
    - One term and condition restricts the storage range of Aishihik Lake, which if left in place would reduce the renewable energy generation from the Aishihik facility.
    - Another term and condition sought to restrict the flow of the Aishihik River downstream of the Aishihik generating plant. If left in place, this restriction would limit the capacity of the Aishihik plant during the winter months.
- Regular consultation with the Government of Yukon, Department of Fisheries and Oceans and Champagne and Aishihik First Nations in the context of the Decision Document and the concurrent project agreements negotiations are ongoing. Yukon

government's Energy Branch and Canada's Department of Oceans and Fisheries are Decision Bodies on the project.

The Yukon Water Board and Government of Canada Department of Fisheries and Oceans must also approve a renewal of Yukon Energy's water use licence application.

Approved by:

January 23, 2023

_____ _____

President and CEO, Yukon Energy Date approved

Session Briefing Note — Spring 2023

Mayo Generating Station Relicensing

Yukon Energy Corporation

Recommended response

- The Mayo Hydro Generating Station is a critical piece of infrastructure that helps to provide Yukoners with the renewable electricity they depend on.

- Yukon Energy's water use licence for the Mayo Generating Station expires on December 31, 2025.

- Yukon Energy has had, and will continue to have, discussions with the First Nation of Na-cho Nyäk Dun to understand their interests and values in the facility and the relicensing process.

- Yukon Energy recognizes the importance of working collaboratively with its First Nations partners and is applying lessons learned from other re-licensing processes to this project.

- As part of the relicensing project, Yukon Energy is looking to put long-term processes in place that will allow it to continuously monitor and adapt to changing climate conditions, respond to community input, and minimize its impact on the environment.

Additional Response

About why the project is important

- In order for Yukon Energy to achieve its goal of generating an average of 93 per cent renewable electricity by 2030, two important strategies need to happen in parallel:
    1. Develop new sources of dependable renewable electricity to meet future demands for clean energy; AND

    2. Relicense the three hydro facilities that already exist so that they can keep generating the renewable electricity they do today.

About the Mayo Lake Enhanced Storage Project

- Yukon Energy has merged the Mayo Generating Station re-licensing process with components of the Mayo Lake Enhanced Storage Project.
- In February 2022, the Mayo Lake Enhanced Storage Project was rescoped to include only the removal of remnants of an old coffer dam at the outlet of Mayo Lake.
- A decision was also made to put the project on hold and to include it as part of discussions with the First Nation of Na-Cho Nyäk Dun about relicensing the Mayo Generation Station.
- By rescoping the project, Yukon Energy is able to address the most significant concerns of Na-cho Nyäk Dun Citizens.
- Removing the existing coffer dam remnants will provide at least 1.7 gigawatts hours of additional renewable energy on average each year.

- The assessment and any permitting for the removal of the coffer dam is now included in the Mayo Generating Station Relicensing Project.

Context—this may be an issue because:

Questions may be asked about when the existing water use licence expires and the work being done to date.

Background:

- The Mayo Generating Station is one of three hydro facilities owned by Yukon Energy.
- The Mayo Generating Station consists of two hydro plants, Mayo A and Mayo B.
- The Mayo A hydro facility has served Yukoners since 1951 and can generate five megawatts of power.
- The Mayo B hydro facility is located downstream from the Mayo A plant. Completed in 2011, it added 10 megawatts of hydro capacity to Yukon Energy's system.
- Mayo B can generate twice as much energy as Mayo A. Together the two plants can supply power for up to 7,000 non-electrically heated homes.
- The Mayo Relicensing Project is located on the Traditional Territory of the First Nation of Na-cho Nyäk Dun.
- Yukon Energy's existing water use licence for the Mayo Generating Station expires on December 31, 2025.
- The water licence renewal will require a YESAB assessment of the project, a Water Board hearing and a Fisheries Act Authorization.
- Transport Canada Approval under the *Navigable Waters Protection Act* may also be required as part of the project.

- The high-level schedule of the relicensing process includes:
    - 2023: Planning, Studies and Project Proposal (engagement, studies, work on project agreement, submission of project proposal and Fisheries Act Authorization).
    - 2024: YESAA review, submit water licence application.

- 2025: Yukon Water Board and DFO reviews.

Approved by:

January 20, 2023

President and CEO, Yukon Energy

Date approved

Session Briefing Note — Spring 2023

Mayo Rockslide & Emergency Amendments

Yukon Energy Corporation

Recommended response

- On August 27, 2022, a rockslide occurred behind Yukon Energy's Mayo A hydro plant.

- To keep its plant operators safe, Yukon Energy shut down the Mayo A plant while slope monitoring devices were installed.

- Yukon Energy re-started the Mayo A plant on November 5, 2022.

Additional response

- The rockslide was on Yukon Energy property and did not pose a risk to public safety.

- Yukon Energy was still able to provide the electricity Mayo residents and Yukoners required while Mayo A was shut down.

- If Mayo A needed to remain closed this winter (due to ground instability and safety concerns), Yukon Energy would not be able to meet the flow requirement of 5 cubic metres/second under its water use licence.

- As a precaution, Yukon Energy applied for emergency amendments to its Fisheries Act Authorization and water use licence.

- Yukon Energy received its emergency amendment from the Yukon Water Board on January 4, 2023.

Session Briefing Note — Spring 2023

Mayo Rockslide & Emergency Amendments

Yukon Energy Corporation

- The emergency amendment allows Yukon Energy to reduce flows between Mayo A and Mayo B to less than five cubic metres per second.

- Yukon Energy received its Fisheries Act emergency authorization from DFO on November 17, 2022.
    - As part of its application to DFO, Yukon Energy developed plans to ensure the fish in the affected area were protected to the extent possible, in the event Mayo A needed to remain closed.

Context—this may be an issue because:

Questions may be asked about what is being done to prevent this from happening in the future.

Background:

- Slope monitoring equipment has been installed and will provide real-time data about the slope's stability.

Approved by:

January 20, 2023

_____ _____

President and CEO, Yukon Energy — Date approved

Session Briefing Note

Spring 2023

Yukon Energy
Public Utilities Act Review

Yukon Energy Corporation

Recommended response

- One of the actions outlined in the Government of Yukon's *Our Clean Future* strategy was to review and update the *Public Utilities Act* by 2025.

- The *Public Utilities Act* is a foundational Act that defines how Yukon Energy and ATCO Electric Yukon are regulated.

- It is important to Yukon Energy that the *Public Utilities Act* ensures an efficient, cost-effective process in regulating electricity that protects the interests of Yukon ratepayers and allows Yukon Energy to deliver on its policy-related goals.

Additional response

- There are inter-relationships between the *Public Utilities Act* and proposed *Clean Energy Act* which should be considered during these updates.

Session Briefing Note

Spring 2023

Yukon Energy
Public Utilities Act Review

Yukon Energy Corporation

Context—this may be an issue because:

The Opposition may ask what Yukon Energy hopes to see updated in the Act.

Background:

- While the Government of Yukon will ultimately determine how the Act is updated, Yukon Energy will continue to advocate for a cost-effective, efficient, and goal-oriented regulatory process.

- Yukon Energy will also advocate for updates that will support the development of projects in its 10-Year Renewable Electricity Plan, to ensure the targets outlined in the *Our Clean Future* strategy can be achieved.

Approved by:

President and CEO, Yukon Energy

January 23, 2023

Date approved

Session Briefing Note

Spring 2023

Yukon Energy Corporation

Rate Changes Effective in 2023

Recommended response

- Electricity bills for some residential and business customers may have been higher in January due to several factors including:
    - Increased electricity use during the holiday season
    - Cold weather; and
    - An extended billing cycle in December due to several statutory holidays.

- Bills were also higher in January because on January 1st, the Yukon's Inflationary Relief Rebate of $50 a month was removed from bills.

- I'm pleased to share that after a brief break, the Inflation Relief Rebate that reduces electricity bills by $50 a month was reinstated this March for another three-month period.

- This monthly rebate helps to reduce monthly expenses that have risen due to inflation.

Additional response

- All utility rate changes must be first approved by the Yukon Utilities Board before they are applied to electricity bills.

- Two electricity rates changed this past winter. A rate relief rider from ATCO was applied to bills on December 1, 2022, and on January 1, 2023, Rider F, which changes to reflect market prices for LNG and diesel fuel, increased.

- The net impact of these two changes increased average residential bills by about a dollar.

Additional response

- On February 7, 2023, the Yukon Utilities Board reversed its decision to allow Yukon Energy to only earn a return of 8.2% on the investments it makes.

- The YUB has subsequently determined that a return of 8.65% is more appropriate for Yukon Energy.

- As a result of this decision, residential electricity bills increased by about $2 on March 1.

Context—this may be an issue because:

The Opposition may ask about why electricity bills were higher in January compared to December.

Session Briefing Note

Spring 2023

Yukon Energy Corporation

Rate Changes Effective in 2023

Background:

Overall bill changes effective January 1, 2023

	Monthly Bills Changes, $/month			
Rate Class	Rider F	AEY Rate Relief	YG Inflation Rebate	Net Change
Residential (850 kWh)	+$6.55	-$5.39	+$50.00	+$51.16
General Service (5kW/2000 kWh)	+$15.40	-$10.83	+$50.00	+$54.57

Overall bill changes effective March 1, 2023

	Monthly Bills Changes, $/month				
Rate Class	YEC ROE adjustment	Rider F	AEY Rate Relief	YG Inflation Rebate	Net Change
Residential (850 kWh)	+2.26	+$6.55	-$5.39	-$50.00	-46.58
General Service (5kW/2000 kWh)	+4.55	+$15.40	-$10.83	-$50.00	-40.88

Return of ATCO Electric Yukon's (AEY) Rate Case Reserve – refund to customers

- As part of AEY's 2016/17 GRA, the Yukon Utilities Board (YUB) approved the annual appropriation to the Rate Case Reserve for the company.

- The reserve was designed to collect approximately $300,000 from customers each year to pay for future regulatory proceedings that AEY expected would occur (i.e., GRAs).

- AEY's last regulatory proceeding concluded in 2017. As of December 31, 2021, the balance of AEY's Rate Case Reserve was approximately $1.3 million.

- On July 18, 2022, AEY filed a "AEY Rate Relief Application" with the YUB seeking approval to return the balance of the reserve fund to non-government residential and general service customers in Yukon over a four-month period between November 1, 2022 and February 28, 2023 (about a 5.4% decrease to bills).

- On November 7, 2022, the YUB accepted AEY's request to return the balance of the Rate Case Reserve to ratepayers, however, felt that only refunding the balance to residential and general service non-government customers would result in discrimination between customer classes as the money is collected from all customers.

- The YUB ordered AEY to return the balance of the Rate Case Reserve to all customer classes. AEY's refund will appear as a new item on bills called "AEY Temporary Rate Adjustment". It will be applied to customer bills for energy consumed between December 1, 2022 and March 31, 2023.

Increase to AEY and YEC Rider F (fuel) – charge to customers

- By regulation, electricity customers in the Yukon pay what Yukon Energy and ATCO Electric Yukon pay for fuel used to generate electricity.

- Through the general rate application (GRA) rate-setting process, rates are set based on the fuel prices at the time of GRA filing.

- After rates are set, and to the extent the actual cost of fuel burned for generation is higher or lower than the GRA rate, the utility will charge or refund customers the difference between the market price for fuel and the last fuel price approved by the Yukon Utilities Board in each respective utility's GRA. This is Rider F.

Rate Changes Effective in 2023

- On January 1, 2023, Rider F increased from a charge of 0.865 cents/kWh to 1.635 cents/kWh.

	December 1, 2022		January 1, 2023		Net Change
Rate Class	*Rider F (per kWh)*	*Rider F (per month)*	*Rider F (per kWh)*	*Rider F (per month)*	*Rider F (per month)*
Residential (850 kWh/month)	0.865 cents	$7.35	1.635 cents	$13.90	$6.55 increase
General Service (5kW/2000 kWh/month)	0.865 cents	$17.30	1.635 cents	$32.70	$15.40 increase

Increase to YEC Rider J – charge to customers

- On February 7, 2023, the Yukon Utilities Board approved Yukon Energy's 2021 GRA Rates and Variance Compliance Order filing.

- Due to the change in approved return-on-equity levels, the Yukon Utilities Board has approved Yukon Energy's compliance application.

	January 1, 2023	March 1, 2023	Change
Rate Class	*Rider J (per month)*	*Rider J (per month)*	*Rider J (per month)*
Residential (850 kWh/month)	$178.47	$180.74	$2.26

General Service (5kW/2000 kWh/month)	$363.62	$368.17	$4.55

Yukon's Inflationary Rebate

- The Government of Yukon introduced the Inflation Relief Rebate in March 2022 to reduce the impacts that inflation continues to have on Yukoners.
- The rebate was applied as a $50 credit to all non-government residential and commercial ATCO Electric Yukon and Yukon Energy electricity bills, regardless of usage.
- The rebate was applied in June, July and August, as well as October, November and December 2022.
- The rebate was removed from bills in January 2023.
- The rebate will be applied again from March to May 2023.

Approved by:

President and CEO, Yukon Energy

February 23, 2023

Date approved

TAB # 10

Session Briefing Note — Spring 2023

Whitehorse Rapids Generating Station Relicensing Project

Yukon Energy Corporation

Recommended response

- The Whitehorse Rapids Hydro Generating Station is a critical piece of infrastructure in the Yukon. Today, it generates about 80 per cent of the electricity Yukoners use in the summer and about 25 per cent of the electricity needed during the winter.

- Yukon Energy's water use licence for the Whitehorse hydro facility expires on May 31, 2025.

- With this timeline in mind, Yukon Energy continues to have discussions with First Nations in the project area about their interests and values in the facility and the relicensing process.

- These discussions have included the investigation of mutually beneficial solutions like consideration in regulatory applications or non-regulatory agreements.

- Yukon Energy is working in collaboration with First Nations in the project area and the Government of Yukon on assessment activities and plans to submit a proposal to YESAB in November 2023.

- Yukon Energy also continues to engage with the public and will be hosting additional open houses in March 2023.

Additional response

About the assessment of the fish ladder and hatchery

- As part of the re-licensing process, Yukon Energy will also assess the fish ladder.

- While the hatchery falls under a separate water licence, the working group will review the hatchery to ensure it is doing the best it can for wild Chinook.

- The Whitehorse Rapids Fish Ladder/Hatchery Technical Working Group has been formed with representatives from Yukon Energy, government of Carcross/Tagish First Nation, Ta'an Kwäch'än Council and the Kwanlin Dün First Nation.

- This working group will help to advance both scientific and cultural studies on the fish ladder and hatchery to determine how they can be improved.

About why the project is important

- In order for Yukon Energy to achieve its goal of generating an average of 93 per cent renewable electricity by 2030, two important strategies need to happen in parallel:

    1. Develop new sources of dependable renewable electricity to meet future demands for clean energy; AND

2. Relicense the three hydro facilities that already exist so that they can keep generating the renewable electricity they do today.

About the Southern Lakes Enhanced Storage Project

- This Southern Lakes Enhanced Storage Project is on hold while Yukon Energy engages Carcross/Tagish First Nation, Kwanlin Dün First Nation and Ta'an Kwäch'än Council on the relicensing of the Whitehorse hydro facility.
- Information about the future of the Southern Lakes Enhanced Storage Project will be shared with Southern Lakes residents when a path forward has been confirmed with First Nations governments in the project area.

Context—this may be an issue because:

Questions may be asked about when the existing water use licence expires and the work being done to date.

Background:

- The Whitehorse Rapids Generation Station is one of three hydro facilities owned by Yukon Energy.
- During the summer, the facility supplies about 80% of the electricity Yukoners use. Its summer capacity is 40 megawatts.
- During the winter, the facility supplies about 25% of the electricity Yukoners need. Its winter capacity is 27 megawatts.
- The Whitehorse Relicensing Project is located on the Traditional Territories of four First Nations:
    - Ta'an Kwäch'än Council,
    - Kwanlin Dün First Nation
    - Carcross/Tagish First Nation
    - Taku River Tlingit First Nation.

Session Briefing Note — Spring 2023

Whitehorse Rapids Generating Station Relicensing Project

Yukon Energy Corporation

- Yukon Energy's existing water use licence for the Whitehorse Rapids Hydro Generation Station expires on May 31, 2025.
- The water licence renewal will require a YESAB assessment of the project, a Water Board hearing and a Fisheries Act Authorization.
- The scope of the relicensing project will include items that can and cannot be enforced by regulatory authorities (i.e., Yukon Water Board and Canada's Department of Oceans and Fisheries).
- Items that can be enforced by regulatory bodies include:
    - Operating conditions of the Whitehorse Rapids Hydro Generating Station, the Whitehorse Fish Ladder (and associated interpretive centre), the Lewes Control Structure, and the Whitehorse Fish Hatchery.
    - Mitigation and monitoring programs.
    - Compensation as outlined in the Yukon Water Board.
- Items that cannot be enforced by regulatory bodies include areas of specific interest to First Nations such as reconciliation and project benefits. These interests must be addressed and managed by Yukon Energy and the key governments involved, particularly the First Nation governments and the Yukon government.
- The high-level schedule of the relicensing process includes:
    - 2023: Studies and Project Proposal (engagement, studies, work on project agreement, submission of project proposal and Fisheries Act Authorization)
    - 2024: YESAA review, submit water licence application
    - 2025: Yukon Water Board and DFO reviews

Approved by:

President and CEO, Yukon Energy

February 23, 2023
Date approved

Session Briefing Note

Spring 2023

Yukon Energy
Whitehorse Thermal Permitting Project

Yukon Energy Corporation

Recommended response

- Yukon Energy's current Whitehorse air emissions permit is set to expire at the end of 2024.

- Yukon Energy needs an air emissions permit to run its diesel and liquefied natural gas (LNG) generators at the Whitehorse Rapids Generating Station on Robert Service Way.

- In 2023, Yukon Energy will be submitting a proposal to renew its existing air emissions permit in Whitehorse.

- While Yukon Energy uses LNG and diesel to produce less than 10% of the power Yukoners use each year.

- These thermal resources are critical to helping Yukon Energy keep the lights on and houses warm during the winter, when demand for electricity is high.

Additional response

- As part of the permit renewal, Yukon Energy is looking for permission to generate the same amount of LNG and diesel as it has done in the past in Whitehorse.

- The Whitehorse air emissions permit allows Yukon Energy to produce 16 megawatts of electricity from diesel generators, and 13.2 megawatts from LNG generators in Whitehorse.

- In the past, the permit has also authorized Yukon Energy to generate up to an additional 12 megawatts of diesel if needed during emergencies.

About sound levels

- There is no noise regulation in the Yukon that is applicable to the Whitehorse Rapids Generating Station.

- The British Columbia Oil and Gas Commission's Noise Control Best Practices Guideline is commonly used in the Yukon.

- In 2020, Hemmera conducted sound monitoring for Yukon Energy.

- Since then, Yukon Energy has also collected ongoing sound level data at its substation on Nistutlin Drive.

- This data has showed that while sound levels at the substation are typically lower than permissible levels, there are instances when levels exceed the BC Oil and Gas guidelines.

- The data has also shown that sound levels from Yukon Energy's permanent rental diesels are generally louder than the rental units.

- Yukon Energy is exploring potential sound mitigation options like mufflers for intake and exhaust air as part of this project.

- Ongoing noise monitoring data for the Whitehorse Rapids Generating Station will be used to complete a noise impact assessment to support the YESAA project proposal.

About the credibility of the Hemmera report from 2020

- Yukon Energy is committed to using objective methods and contractors to collect data for all of its projects.

- The 2020 Hemmera report was completed in response to public concerns about noise from the diesel generators in April 2020.

- In April 2020, Yukon Energy had to run its permanent diesel units because of low water levels and because one of the LNG generators was out of service.

- The Hemmera study found that sound levels at Yukon Energy's Riverside substation were higher than levels permitted by the British Columbia Oil and Gas Commission.

- The study also found that sound levels near homes on Bell Crescent were lower than the BC guidelines.

- In response to the study, Yukon Energy set up a permanent sound monitoring device at its Riverside substation.

- Yukon Energy is also exploring potential sound mitigation options like mufflers for intake and exhaust air as part of this project.

About air emissions

- Yukon Energy has modelled eight different configurations of generator types, capacities and fuel sources at the Whitehorse Rapids Generating Station.

- Preliminary results indicate that all scenarios meet the previous Yukon Ambient Air Quality Standards.

- Permissible levels under the Yukon Ambient Air Quality Standards are expected to decrease in 2025.

- Yukon Energy is exploring options as to how it can reduce its air emissions in Whitehorse to comply with new standards.

- Results from its air modelling will also inform a human health risk assessment that is currently underway.

- To reduce air emissions, Yukon Energy is reviewing best-in-class emissions management technologies for its permanent and mobile generators.

- Yukon Energy also limits the use of older, less-clean diesel units to emergency situations.

About public engagement

- First Nations governments, stakeholder and public feedback will be considered during the development of Yukon Energy's proposal to YESAB.

- Yukon Energy has contacted the Ta'an Kwäch'än Council and Kwanlin Dün First Nation governments to discuss the project.

- Yukon Energy rescheduled its community meetings to March, so that it can share up-to-date project information with the public.

- The meetings have been rescheduled to March 27 and March 29.

Context—this may be an issue because:

The opposition may ask why we are not building a permanent thermal facility.

- Yukon Energy shares Yukoners' desire to reduce the use of diesel and LNG to generate electricity.
- Building a new, permanent diesel facility would be a direct contradiction of this.
- Yukon Energy continues to work towards renewable energy projects, as evidenced in our 10-Year Renewable Electricity Plan.

It might also be asked why we need electricity generated from thermal sources.

- While we are not looking to add more thermal capacity, as an isolated grid, there will always be a small but critical role for diesel and LNG to play.
- The Yukon is experiencing growing demand for electricity, with higher and more frequent periods of peak demand.

- During these periods of peak demand, Yukon Energy's hydro units cannot generate all the electricity we need.
- Yukon Energy's existing diesel and LNG generators ensure Yukoners have reliable electricity service during winter peaks, emergencies, and whenever renewable resources aren't available.

Approved by:

March 28, 2023

President and CEO, Yukon Energy — Date approved

Session Briefing Note — Spring 2023

Atlin Hydro Expansion Project — Yukon Energy Corporation

Recommended response

- The Atlin Hydro Expansion Project is a necessary project to meet growing demand for electricity.

- It provides clean renewable power to Yukoners at 13.5 cents per kilowatt hour—a price cheaper than LNG and diesel and what is paid under the Yukon's independent power production program right now.

- The project also provides Yukoners with a clean renewable source of dependable capacity in the winter.

About project cost and funding

- Currently, the total project cost is $330 million.

- This increase is the result of a $20 million contingency that has been added to the project cost to account for future contract price increases.

- The project has generally experienced an escalation in costs based on the difference between estimates and actual supplier and contractor quotes, as well as supply chain disruptions, inflation, commodity price volatility and the price of oil.

- The federal, BC and Yukon governments have committed a total of $254 million dollars in funding towards the project thus far.

- Therefore, there is currently a 76-million-dollar funding gap.

- Yukon Energy and the Tlingit Homeland Energy LP have asked that the Government of Canada allocate up to 106 million dollars in its 2023 budget for the project.

- While the project has a current funding gap of 76 million dollars, 106 million dollars has been requested to account for the impact of the rising Canada Infrastructure Bank interest rate, as every one per cent increase will result in a 15 million dollar increase in grant requirement.

About the differing project costs in the 10-Year Plan

- Different cost estimates for the project are included in Yukon Energy's 10-Year Renewable Electricity Plan to show the difference between:
  - cost estimates in 2016 versus 2019, and
  - three different project scopes.

- The three different project scopes considered were:
  - the Atlin plant only ;
  - the Atlin plant + Atlin to Jakes Corner transmission; and
  - the Atlin plant + Atlin to Jakes Corner transmission + engineering and contingency (2019 estimate only)

- An apples-to-apples comparison cannot be made between the estimate for the Atlin project in the 10-Year Plan versus estimates for the project today. Reasons for this include:

- In the 10-year plan, estimates were only provided for 6 megawatt project; today, the plant will have a capacity of 8.75 megawatts.
- Inflationary pressures that have increased prices for labour and materials in recent years were not included in estimates provided in the 10-Year Plan back in 2019.

About timelines

- The project is expected to be completed by October 1, 2025.

- Delays in the project's timeline are a result of changes to the project's design that will help to increase energy and capacity output.

- The new project design will also provide more flexibility for Yukon Energy to use water from Atlin to displace more LNG and diesel each winter.

- The timeline has also been extended to allow for additional time to close the funding gap and to engage with Taku River Tlingit Citizens about the project.

About why the CPs have been extended

- The Conditions Precedent have been extended to allow for new management to come onboard and review existing documentation.

- They also have been extended as a result of the change in project design and to allow time for environmental assessments.

About the YUB Decision

- In its report, the Yukon Utilities Board agrees that the Atlin project is needed to help meet growing demand for electricity.

About the 50% CPI escalation

- The 50% CPI escalation in the EPA, that was agreed upon by THELP and Yukon Energy, is the same as the price escalation provided to other proponents of community-based renewable energy projects.

- In other words, Yukon Energy is not treating the Atlin proponent any differently than other community-based renewable energy proponents.

About why Yukon Energy did not proceed with the 20 MW thermal plant

- Yukon Energy has heard from Yukoners that they want more renewable electricity.

- The Atlin Hydro Expansion Project will deliver clean energy to the Yukon and help reduce emissions while ensuring electricity rates remain low for Yukoners.

- Funding from the Yukon government, BC government, and federal government for the Atlin project demonstrates collective support for clean energy initiatives and Canada's commitment to meet climate change objectives.

About impact to ratepayers

- The price Yukoners will pay for clean energy from Atlin is intended to be equal or less than what Yukon Energy would otherwise pay for power generated using fossil fuels.

- The cost to build the Atlin Hydro Expansion Project will not be included in electricity rates.

- Ratepayers will only pay what Yukon Energy pays for the renewable capacity and energy it buys from the Atlin project.

About higher energy cost for energy in the EPA

- In the amended electricity purchase agreement, the energy price Yukoners will pay is 13.5 cents per kilowatt hour. This is 1 cent more than the original agreement, and still about 5 cents cheaper than the blended cost of LNG and diesel.

- The price Yukoners will pay for dependable capacity from Atlin does not change in the amended EPA.

Context—this may be an issue because:

Questions may be posed about the reasons for the amended and reinstated EPA.

Background:

- On April 19, 2022, an amended Electricity Purchase Agreement between Yukon Energy and Tlingit Homeland Energy LP was filed.

Session Briefing Note — Spring 2023

Atlin Hydro Expansion Project — Yukon Energy Corporation

- On October 18, 2022, the Yukon Utilities Board issued its report to the Yukon government's Minister of Justice.
- A 2.1 megawatt hydro facility already exists in Atlin, BC.
- The existing hydro facility in Atlin is owned by Xeitl LP, a company owned by the Taku River Tlingit First Nation.
- Community consultation, permitting and construction of the Atlin expansion project is the sole responsibility of Tlingit Homeland Energy Limited.
- THELP has submitted their BC permitting application to the BC authorities. THELP has also submitted a project proposal to YESAB for the transmission connection from Atlin to Jakes Corner.

Condition Precedent	Updated Due Date
2.1(d)(i) AEY/YEC/THELP sign an Interconnection Agreement	April 30, 2023
2.1(d)(ii) YEC/THELP agree on costs for AEY System Upgrade costs after AEY received bids for labour costs	April 30, 2023
2.1(d)(iii) THELP submits funding plan to YEC and third-party estimates to build the Atlin Plant	April 30, 2023
2.1(d)(iii) YEC notifies THELP of satisfaction re: financial viability	April 30, 2023
2.1(d)(iv) THELP receives Clean Energy Development Plan authorization for the Atlin Plant in BC	April 30, 2023

2.1(d)(iv) THELP receives YESAA Decision Document for components of the project in Yukon on Terms & Conditions satisfactory to YEC/THELP	April 30, 2023
2.1(d)(v) YEC receives approvals of the EPA from Governmental Authorities on Terms & Conditions satisfactory to YEC/THELP	April 30, 2023
2.1(d)(vi) THELP receives approval of EPA from Taku River Tlingit First Nation by way of Clan Directive or a Joint Clan Meeting Mandate	April 30, 2023
2.1(d)(vii) THELP obtains consents from BC Hydro and Canada Life Assurance Company of Canada to enter into the EPA	April 30, 2023
2.1(d)(viii) THELP/YEC agree on allocation of Environmental Attributes based upon requirements of funding contributed to THELP's Plant by Yukon, BC and Canada governments	April 30, 2023
2.1(d)(ix) YEC and AEY Implementation agreement signed	April 30, 2023

Capacity	8.75 MW
Annual Winter Energy	34 GWh (2800 homes)
Long-term Average Thermal Displacement (annual)	24.18 GWh
Completion	October 2025
Capacity (Dec 2023 base price)	$200 per kilowatt year

Non-summer Energy Price(2024$/kWh) *2024 Load Forecast*	$0.135
Non-summer Energy Price(2024$/kWh) *2035 Load Forecast*	$0.097

Approved by:

President and CEO, Yukon Energy

February 23, 2023
Date approved

TAB # 13

Session Briefing Note

Spring 2023

Battery Storage

Yukon Energy Corporation

Recommended response

- The new grid-scale battery is a critical investment in Yukon Energy's ability to meet growing demands for electricity in the Yukon.

- The project is also an excellent example of how Yukon Energy is working with First Nations governments to displace diesel and secure Yukon's clean energy future.

- The Yukon Utilities Board has also stated that the battery is a preferred alternative to rental diesels and building a new diesel plant.

- When complete, the 20 megawatt/40 megawatt-hour battery project will replace the need for four rental diesel generators each winter.

Additional responses

<u>*About cost*</u>

- In its Part 3 application submitted to the Yukon Utilities Board in January 2021, Yukon Energy provided a cost estimate for the battery project of between 22 and 41 million dollars.

- Today, the battery is expected to cost 35 million – a price well within that 2021 estimate.

<u>*About ratepayer impact*</u>

- Based on today's estimate of 35 million dollars, Yukon Energy anticipates investing 18.5 million into the battery project.

- In that application, Yukon Energy highlighted that even at a cost of 41 million, the battery still provides savings to ratepayers when compared to the alternative of rental diesels.

- Yukon Energy will apply to have its investment in the battery included in rates after the battery project is complete

About the delay in timeline

- While good progress has been made on the battery project so far, there has been a delay in the project's timeline.

- Batteries are becoming increasingly popular, which has resulted in an increase in demand and a delay in manufacturing and shipping.

- It is also a result of general supply chain delays that are being seen across Canada.

- The battery is expected to be in service by summer 2024.

Lease agreements and contractors

Session Briefing Note

Spring 2023

Battery Storage

Yukon Energy Corporation

- The battery vendor for the BESS project is SunGrid Solutions, with a contract value of $27,333,595.
- The battery is located on Kwanlin Dun First Nations settlement land. The lease agreement with the Kwanlin Dun First Nations is for 25 years and costs $1 million.
- The lot grading is done by Little River Construction, a family-run business by First Nation citizens. The contract totaled $373,488.

Approved by:

January 20, 2023

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President and CEO, Yukon Energy | Date approved

Session Briefing Note — Spring 2023

Demand-Side Management

Yukon Energy Corporation

Recommended response

- Yukon Energy is currently developing a new, permanent demand-side management program that it plans to launch in fall 2023.
- Participants will be offered smart thermostats and/or hot water tank controllers at no cost.
- Future phases of the program are to include smart home charging for electric vehicles.

Additional response

About Peak Smart

- As a result of the CaSa thermostat issues some Peak Smart participants experienced, Yukon Energy is currently offering participants new, smart thermostats.
- This initiative is not a part of Yukon Energy's new demand-side management program.
- Yukon Energy will replace the old, CaSA thermostats with new, Sinopé thermostats, free of charge.
- Participants can also choose to have their CaSA thermostats replaced with their original thermostats or a new, basic thermostat. This offer is only for past Peak Smart participants.

- By replacing participants' CaSA thermostats now, Yukon Energy is proactively addressing participants' concerns about the thermostats and gaining additional experience that will help the full-scale program launch to go smoothly.

- Participants do not need to sign up for Yukon Energy's new demand-side management program to receive a new thermostat.

About what else is being done to reduce peaks

- Yukon Energy is a partner in Yukon University's annual Beat the Peak campaign that using social media alerts and personal notifications to encourage Yukoners to shift electricity usage away from peak times.

Context—this may be an issue because:

Questions may be asked about the cost to replace the thermostats for Peak Smart participants and if this was really necessary.

Background:

- The forecasted cost to replace Peak Smart participant's CaSA thermostats with Sinope or basic thermostats is $150,000.
- This investment demonstrates to participants that Yukon Energy values their participation, which will ideally lead to participation in future demand-side management programs.
- Ultimately, participation in demand-side management programs will result in long-term benefits for the entire territory.
- The total cost of the Peak Smart Pilot Program was 1.3 million dollars.

Session Briefing Note — Spring 2023

Demand-Side Management

Yukon Energy Corporation

- Nearly 70 per cent of the Peak Smart Pilot Program was funded by the federal and Yukon governments:
    - Natural Resources Canada's Smart Grid Program contributed 650,000 dollars to the pilot project.
    - Yukon government contributed 250,000 dollars.
    - ATCO Electric Yukon contributed 300,000 dollars.
    - Yukon Energy is contributed 100,000 dollars.
    - The utilities' contribution to the program will be included in rates proposed to the Yukon Utilities Board in a future General Rate Application. No changes can be made to electricity rates unless approved by the YUB.

Approved by:

January 31, 2023

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President and CEO, Yukon Energy — Date approved

Session Briefing Note — Spring 2023

Independent Power Producers (IPPs)

Yukon Energy Corporation

Recommended response

- Everyone has a role to play in helping build Yukon's sustainable energy future.

- One of the ways local companies and governments can participate is through the construction of community-based renewable electricity projects.

- These community-based projects, or independent power producers, play an important role in the Yukon's electricity make-up and directly contribute to the success of Yukon Energy's 10-Year Renewable Electricity Plan.

Additional response

- In addition to the three independent power producers already connected to the grid, and four more in development, studies and approvals are underway for another five community projects.

About connecting IPPs to the grid

- The success of the Independent Power Producer Standing Offer Program is evidenced by the program's general popularity and uptake.

- Today, the Standing Offer Program queue of prospective projects is essentially full.

- Under the rules of the Independent Power Production Standing Offer Program, developers of IPP projects are responsible for all costs incurred by them and the utilities to connect their project to the grid.

- These rules exist to protect electricity ratepayers by ensuring that the costs to build and connect these types of projects do not increase electricity rates.

- Costs incurred by Yukon Energy to connect an IPP project to the grid are charged back to the IPP developer based on actual cost.

About Yukon Energy's management of IPP projects

- The Yukon's electricity system is built according to a number of industry-wide and industry-specific electrical and safety codes that ensure Yukoners are provided with a dependable supply of safe and reliable electricity.

- IPP projects, in turn, should be viewed as mini power plants used to supply additional renewable electricity to Yukoners.

- As such, it is important that Yukon Energy approve the technical specifications of IPP projects that will be connected to the Yukon grid and to be involved in their connection to Yukon's power system.

About schedule of IPP projects

- The time it takes for an IPP developer to connect to the grid is based on a number of factors including the size and scope of the project, the time it takes to get permits, financing and materials, and of course, our short construction season in the Yukon.

- For the first two IPP developers in the Standing Offer Program, it took about 18 months from the time they signed an Electricity Purchase Agreement with Yukon Energy to the time they were able to connect their project to the Yukon grid.

- For the third IPP developer, it took only about 9 months to get connected to the grid after their electricity purchase agreement was signed.

About improvements to the IPP policy and SOP

- Since November 2021, we've been fortunate to see three early adopters of the IPP Standing Offer Program be connected to the Yukon grid.

- Like any new program, there are always lessons to be learned from these early days.

- Based on the feedback received from IPP proponents to date, Yukon government, Yukon Energy and ATCO Electric Yukon are currently working to update program materials that better outline the IPP

connection process, estimated costs and timelines, and the information needed from IPPs at each stage of the process.

Context—this may be an issue because:

The Opposition may ask about the status of IPP projects in Yukon and the costs Yukon Energy charges IPP developers.

Background:

- Yukon Energy has signed Electricity Purchase Agreements with seven independent power producers:

Proponent	Type	Community	Installed Capacity (MW)	Annual Energy (MWh)	Equivalent Energy (# of homes)	Date EPA Signed with YEC	IPP Connection Date
Solvest	Solar	Whitehorse	1.0	1,840	153	June 5, 2020	November 16, 2021
Nomad	Solar	Whitehorse	0.15	270	22	August 28, 2020	January 19, 2022
KDO	Solar	Dawson City	0.20	279	23	August 23, 2021	February, 2022
Sunergy	Solar	Haines Junction	2.0	3,032	250	August 3, 2022	Summer 2023
Takhini Power Corp	Solar	Whitehorse	2.0	4,093	340	August 3, 2022	Summer 2023

EHELP	Wind	Whitehorse	2.0	4,205	350	December 7, 2022	Fall 2023
EHELP	Wind	Whitehorse	2.0	3,995	333	December 7, 2022	Fall 2023

- The IPP Policy sets the following aspirational targets:
    - Ten percent of new electrical demand is to be met by Independent Power Production; and
    - At least 50 per cent of IPP projects are to have a Yukon First Nation ownership component.
- The price for purchasing power is set at the marginal cost of thermal generation, which should be ratepayer neutral assuming the IPP-generated power replaces thermal energy that would otherwise have been generated by the utilities.
- The Standing Offer Price was initially set at 15.84 cents/kWh.
- A new IPP energy rate of 18.37 cents/kWh was approved by the Yukon Utilities Board on July 12, 2022 as part of their approval of Yukon Energy's 2021 GRA Compliance Filing.
- The new rate came into effect on August 1, 2022.
- Yukon Energy charges IPPs covers a range of work including:
    - The completion of system impact and interconnection studies which identify the upgrades needed to the Yukon grid to allow the safe connection of the IPP's facility, and the ongoing delivery of reliable electricity to Yukoners;
    - Legal fees to adapt the template Electricity Purchase Agreement and accompanying operating and interconnection agreements to each IPP's specific project;
    - Project management and engineering fees to oversee the connection of the IPP's project to the Yukon grid, and to review and approve the project's

technical components, designed electrical protection and controls, and other safety components; and

- Material and labour costs incurred to safely connect the IPP to the grid.

Approved by:

January 23, 2023

President and CEO, Yukon Energy — Date approved

Session Briefing Note

Spring 2023

Carbon Credits from IPPs

Yukon Energy Corporation

Recommended response

- Community-based renewable electricity projects play an important role in helping the Yukon achieve its emission reduction targets.

- The renewable electricity being supplied by these projects is being used by Yukoners and Yukoners alone.

- For this reason, it only makes sense that Yukoners and the territory be the ones to directly benefit from the carbon credits from these projects.

Additional responses

When asked if transferring carbon credits are presenting an obstacle to the development of projects

- To date, evidence seems to suggest that the transfer of carbon credits from IPP developers to Yukon Energy poses no risk to the development of local renewable electricity projects in Yukon.

- The success of the Independent Power Producer Standing Offer Program is evidenced by the program's general popularity and uptake.

- Today, the Standing Offer Program queue is essentially full.

The cost of environmental attributes (carbon credits)

Session Briefing Note

Spring 2023

Carbon Credits from IPPs

Yukon Energy Corporation

- Yukon Energy does not pay Independent Power Producers for their carbon credits for two key reasons:

1. The price Yukon Energy pays IPPs for the renewable electricity they export to the grid is fixed. This price is based on the last cost approved by the Yukon Utilities Board for Yukon Energy's thermal generation.

2. Yukon Energy is not subject to a carbon tax for the fuel it burns. Paying IPPs for their carbon credits would increase the price Yukon Energy pays for renewable electricity and put upward pressure on electricity rates.

Carbon credit accounting

- For now, Yukon Energy measures the amount of renewable electricity each IPP exports to the Yukon grid.

- This information is then used by Yukon Energy to determine the environmental attributes it receives from each IPP each year.

Context—this may be an issue because:

- The Opposition may ask if allowing IPPs to sell their carbon credits on the open market would increase the availability and viability of renewable projects in Yukon.

Background:

Session Briefing Note

Spring 2023

Carbon Credits from IPPs

Yukon Energy Corporation

- The Electricity Purchase Agreement (EPA) between Yukon Energy and a Standing Offer Program (SOP) Independent Power Producer (IPP) outlines the terms and conditions in which Yukon Energy will purchase electricity from the IPP.
- A standard EPA is signed with all SOP IPPs. This standard agreement is available to the public and prospective IPPs on Yukon government and Yukon Energy's websites.
- In addition to other definitions, the EPA defines an "Environmental Attribute" as "any credit, reduction right, off-set, allowance, allocated pollution right, certificate or other unit of any kind whatsoever whether or not tradeable resulting from or otherwise related to the reduction, removal, or sequestration of emissions at or from the Seller's Plant"
- Section 4.5 of the EPA speaks to Exclusivity. Section 4.5 (a) states "Seller (IPP) will not at any time during the Term commit, sell or deliver any Energy (or related Environmental Attributes) to any Person other than Buyer under this EPA.
- Section 6.1 of the EPA speaks to Environmental Attributes. It states "Seller hereby transfers, assigns and sets over to Buyer all right, title and interest in and to the Environmental Attributes."

Approved by:

_____ **January 23, 2023**

President and CEO, Yukon Energy — Date approved

Session Briefing Note — Spring 2023

Electric Vehicles and Fast Charging Stations

Yukon Energy Corporation

Recommended response

- Yukon Energy is aligned with the Government of Yukon's goal of reducing the environmental footprint of energy in the Yukon.

- Yukon Energy is also committed to providing safe, sustainable, reliable and affordable electricity service to Yukoners.

- As such, Yukon Energy supports the use of electric vehicles, or EVs, as one way to reduce greenhouse gas emissions in the Yukon's transportation sector.

- It also supports ATCO and Yukon Energy ownership of Level 3 Fast Charging Stations in the Yukon.

- Yukon Energy is currently working with the Government of Yukon on a long-term plan to transfer ownership of these charging stations from the Government of Yukon to the utilities.

Additional responses

About the Yukon University EV study

- Yukon University's electric vehicles and smart heating research project will explore the potential effects that electric vehicles and smart heating units may have on the electrical distribution networks in the Yukon and Northwest Territories and offer solutions to address these challenges.

Session Briefing Note

Spring 2023

Electric Vehicles and Fast Charging Stations

Yukon Energy Corporation

- Yukon Energy is working with Yukon University's Northern Energy Innovation team and ATCO Electric Yukon to model the Yukon's distribution network to identify areas of the system that could be vulnerable to an uptake in electric vehicle fast chargers or smart heating units.

Context—this may be an issue because:

The opposition may ask about Yukon Energy's position on the potential amendments to the Public Utilities Act.

Background:

- Yukon Energy understands that possible amendments to the Public Utilities Act are being considered.
- Yukon Energy looks forward to reviewing any potential legislation, so that it may offer feedback on how these amendments may affect the Yukon grid.

Approved by:

President and CEO, Yukon Energy

January 23, 2023

Date approved

TAB # 18

Session Briefing Note

Spring 2023

Moon Lake Pumped Storage

Yukon Energy Corporation

Recommended response

- Building a pumped storage facility on Moon Lake is a key project in Yukon Energy's 10-Year Renewable Electricity Plan and essential to Yukon Energy's ability to supply an average of 97 per cent renewable electricity to Yukoners by 2030.

- The project will increase the amount of dependable winter capacity available in Yukon by almost 40 per cent and allow Yukon Energy to store surplus renewable electricity in the summer for use in the winter when it's needed the most.

- Planning for this project is in the very early stages.

- Yukon Energy continues to have discussions with the Taku River Tlingit First Nation, Carcross/Tagish First Nation, and the federal government about the project.

- Government to government collaboration will be key to this project's success.

Additional response

- Federal funding for the Moon Lake pumped storage project is critical to keeping Yukon electricity rates affordable.

- The Moon Lake site is world-class for pumped storage. The elevation difference between Moon Lake and Tutshi Lake is about 400 metres; no pumped storage sites in the Yukon compare.

- Given current load forecasts, it's expected that when the Moon Lake pumped storage facility is built, Yukon Energy will no longer need to rent diesel generators each winter to protect against emergency situations.

- The amount of diesel and liquefied natural gas used to generate electricity will also decrease.

About why there has not been more project progress

- Like all large energy projects, building a pumped storage facility is a highly technical and complex project that requires collaboration with multiple governments and stakeholders.

- Yukon Energy continues to have discussions with the Taku River Tlingit First Nation, Carcross/Tagish First Nation, and the federal government about the project, and will advance those discussions in a manner that respects these governments' timelines, resource availability and other priorities.

Session Briefing Note

Spring 2023

Moon Lake Pumped Storage

Yukon Energy Corporation

Context—this may be an issue because:

The Opposition may ask the project and why pumped storage is needed.

Background:

- The Moon Lake Pumped Storage project will add the much-needed capacity that is required to meet demand during the winter and in emergencies.
- The project also provides a way to store excess renewable electricity in the summer to decrease dependency on fossil fuels during the winter.
- Yukon Energy proposes to build the Moon Lake pumped storage project in two phases:
    - Phase 1: a 35 megawatt storage facility with a target completion of 2029.
    - Phase 2 (if required): another 10 megawatts of storage to be completed by 2031.
- The 35 megawatt pumped storage facility on Moon Lake is expected to cost approximately $300 million.
- Given Yukon's small population, Federal funding for the Moon Lake pumped storage project is key to keeping electricity rates affordable after the project is built.
- Planning for this project is in very early stages.
- The proposed project is on the overlapping Traditional Territories of the Taku River Tlingit First Nation and Carcross/Tagish First Nation. Yukon Energy has started conversations with both First Nations about the project.

Session Briefing Note

Spring 2023

Moon Lake Pumped Storage

Yukon Energy Corporation

- Ownership models, First Nations partnerships and benefits, community consultation and all the technical and environmental studies needed to permit the project in BC and Yukon will be addressed in due course.

Approved by:

President and CEO, Yukon Energy

January 20, 2023

Date approved

Session Briefing Note — Spring 2023

Selling Renewable Electricity to Skagway

Yukon Energy Corporation

Recommended response

- Selling surplus summer energy to Skagway is still in the early planning stages.

- Collaboration with the Taku River Tlingit First Nation, Carcross/Tagish First Nation, the Municipality of Skagway, and the Alaska and federal governments are key to the project's success.

- Yukon Energy will advance discussions with each of these governments in a manner that respects their timelines, resource availability and other priorities.

Additional response

About the project

- The Yukon has more renewable electricity than we need during the summer.

- Selling this surplus renewable electricity to Skagway is a win-win situation for both the Yukon and Skagway.

- It creates new economic opportunities and revenue streams for the Yukon and provides Skagway with a clean energy solution for cruise ships who dock in their port.

Session Briefing Note — Spring 2023

Selling Renewable Electricity to Skagway — Yukon Energy Corporation

About the impact to the Moon Lake Project

- Selling surplus renewable electricity to Skagway and the Moon Lake pumped storage facility are separate and independent projects – one doesn't need to happen for the other to move forward.

- With that said, by building Moon Lake first, much of the transmission line to Skagway would already be built, and Yukon's surplus summer electricity would first be stored for use by Yukoners.

About First Nations consultation

- Yukon Energy will be looking to use existing transmission or highway rights-of-way where possible to minimize the impacts of the new transmission project.

- Discussions with the Taku River Tlingit First Nation, Carcross/Tagish First Nation, the Municipality of Skagway, and the Alaska and federal governments about this project are ongoing.

Context—this may be an issue because:

Questions may be raised about why Yukon would explore selling electricity to Skagway.

Background:

- The concept of supplying electricity to Skagway has been discussed and studied previously.
- Yukon Energy had a Memorandum of Understanding (MOU) in place with the Municipality of Skagway from June 11, 2012 to March 31, 2016 to share information

and explore opportunities for regional projects such as electricity generation and/or intertie.

- In October of 2013, the governments of Yukon and Alaska signed a new Memorandum of Understanding (MOU) to assess the feasibility of developing electrical and telecommunication connections between Yukon and southeast Alaska. This resulted in the Yukon government commissioning an Economic Corridor Study which included the potential to sell electricity to Skagway.

- The 10-Year Renewable Electricity Plan was a catalyst to take a fresh look at the Skagway opportunity given the proximity of the Moon Lake project and forecast availability of surplus energy in the summer.

- In January 2022, Yukon Energy and the Municipality of Skagway signed a Memorandum of Understanding to assess the market potential for electricity sales, the amount of summer energy available, and the potential costs and timeline of the project.

- Yukon Energy and the Municipality of Skagway are both contributing 100 thousand dollars to the feasibility study.

- The business plan to supply electricity to Skagway will look 10 years into the future and quantify both the supply and demand for electricity.

Approved by:

President and CEO, Yukon Energy

January 20, 2023

Date approved

TAB # 20

Session Briefing Note — Spring 2023

Southern Lakes Enhanced Storage Project

Yukon Energy Corporation

Recommended response

- Yukon Energy recognizes that there continues to be mixed feelings about the proposed Southern Lakes Enhanced Storage project – especially given the high water levels in the area during the last two summers.

- This project is on hold while Yukon Energy engages Carcross/Tagish First Nation, Kwanlin Dün First Nation and Ta'an Kwäch'än Council on the relicensing of the Whitehorse hydro facility.

- Any changes to the Southern Lakes' water levels first requires the support of these First Nations governments and must be included in a future water use licence.

- Information about the future of the Southern Lakes Enhanced Storage Project will be shared with Southern Lakes residents when a path forward has been confirmed with First Nations governments in the project area.

Additional response

- Water levels on the Southern Lakes last summer were still 0.45 metres higher than what Yukon Energy is proposing as part of the enhanced storage project.

- One benefit of the storage project, should it to be approved and implemented, is that Yukon Energy would install the permanent

solutions needed to protect shorelines and properties directly affected by the project from increased erosion and groundwater, alleviating the pressure and cost to do this from homeowners.

Context—this may be an issue because:

Questions may be raised about the future of the project given the high water in the Southern Lakes last summer.

Background:

- The Southern Lakes Enhanced Storage Project proposes to:
  - Raise Marsh Lake's Full Supply Level by 30 cm (from 656.234 m to 656.534 m); and
  - Lower the Low Supply Level by 10 cm (from 653.796 m to 653.696 m).
- The storage concept would:
  - Generate about an additional 6.5 gigawatt hours of renewable energy each winter - equivalent to the power requirements of about 500 homes.
  - Cut emissions by about 3,100 tonnes per year – about the same as taking 650 cars off the road for a year.
  - Save Yukoners about $1 million a year in LNG and diesel costs.
  - Require no new dams.
- The Kwanlin Dün First Nation and Carcross/Tagish First Nation are expected to be Decision Bodies for any YESAA assessment of the concept. A framework for compensation for non-natural inundation has yet to be negotiated.
- Since 2009, Yukon Energy has completed numerous scientific studies and three rounds of public engagement on the project.
- Research shows that the proposed Southern Lakes Enhanced Storage project would have minimal effects on fish, wildlife, waterfowl and wetlands in the project area.

Session Briefing Note — Spring 2023

Southern Lakes Enhanced Storage Project — Yukon Energy Corporation

- Yukon Energy's last round of public engagement on the project also showed that while there is some obvious opposition to the proposed project, there is also a strong level of support for the project as well.
- In June 2020, Yukon Energy's Board of Directors passed a resolution to prepare a YESAA proposal for the project. This decision was publicly announced in December 2020 after Yukon Energy was able to discuss the Board's decision with First Nations governments whose traditional territories the project is located on, specifically the Carcross/Tagish First Nation, Kwanlin Dün First Nation and Ta'an Kwäch'än Council.
- In the December 2020 announcement, Yukon Energy outlined its intention to submit the YESAA project proposal in the summer of 2021. The Corporation also outlined its commitment to:
    - Meet with Southern Lakes property owners expected to be directly affected by the project to review its erosion and groundwater mitigation plans.
    - Work with Carcross/Tagish First Nation, Kwanlin Dün First Nation and Ta'an Kwäch'än Council to develop a Monitoring and Adaptive Management Plan.
    - Complete fieldwork for the Heritage Resources Impact Assessment.
    - Negotiate draft project agreements with affected First Nations.
    - Plan for a third-party adjudication process.
- Work to fulfill these commitments was planned for spring and summer 2021 but was delayed due to high water levels in the Southern Lakes.

Approved by:

	January 20, 2023
President and CEO, Yukon Energy	Date approved

Session Briefing Note — Spring 2023

Southern Lakes Transmission Expansion

Yukon Energy Corporation

Recommended response

- Expanding and upgrading the Southern Lakes transmission network is key to making renewable electricity supplied by Atlin, Moon Lake and other community-based projects in the Southern Lakes available to all Yukoners.

- The first piece of this project will be completed when the transmission line between Whitehorse and Jakes Corner is upgraded to connect the Atlin hydro expansion project to the grid.

- Future upgrades to the transmission network will be completed as Moon Lake and other renewable electricity projects in the Southern Lakes area are developed.

Additional response

- Increasing the supply of renewable electricity does very little to reduce carbon emissions unless there is the transmission network to deliver that clean electricity to Yukoners.

- This project also serves as a catalyst to open new economic opportunities and revenue streams for Yukon – specifically potential opportunities for the future sale of excess renewable summer electricity in Yukon to Skagway.

- Yukon Energy will be looking to use existing transmission or highway rights-of-way where possible to minimize the impacts of the new transmission project.

Context—this may be an issue because:

Questions about why a transmission project is included in Yukon Energy's 10-Year Renewable Electricity Plan.

Background:

- A 34-kilovolt transmission line exists between Whitehorse, Carcross and Tagish, and between Whitehorse and Teslin. There is no transmission connection between Tagish and Jakes Corner.

- Upgrading and expanding the Southern Lakes Transmission Network is needed to provide for the long-term connection of both Atlin and Moon Lake, plus other potential community-based renewable electricity projects in the Southern Lakes region.

- Yukon Energy proposes to build the transmission project in two stages:
  - Stage 1: Building the Whitehorse -> Carcross -> Jakes Corner -> Moon Lake sections of the line to connect the Atlin and Moon Lake projects to the grid.

  - Stage 2: Extending the line from Moon Lake to Skagway if Yukon Energy secures summer energy sales to Skagway for the purposes of providing shore-side power to cruise ships.

- Stage 1 of the project is expected to cost about 100 million dollars; Stage 2 will cost about another 60 million dollars.

Session Briefing Note — Spring 2023

Southern Lakes Transmission Expansion

Yukon Energy Corporation

- Federal funding of this project is needed to keep Yukon electricity rates affordable.

Approved by:

January 20, 2023

President and CEO, Yukon Energy — Date approved

Session Briefing Note — Spring 2023

Rental Diesels

Yukon Energy Corporation

Recommended response

- Renting diesel generators each winter is necessary to ensure we can meet growing peak demand for electricity.

- On December 20, 2022, a new system generation peak of 118.5 megawatts was recorded.

- This winter, Yukon Energy rented 17 diesel generators.

    - Like last winter, 10 of the rental diesels are located in Yukon Energy's parking lot in Whitehorse. The other 7 are located at Yukon Energy's diesel plant in Faro.

- Looking to the winter of 2023/24, Yukon Energy will rent an additional five generators, for a total of 22 diesel generators.

Additional response

About the additional units for next winter

- More rental diesel generators are needed for the winter of 2023/24 because of:
    - delays to Yukon Energy's diesel replacement project in Faro as a result of supply chain issues; and
    - a change in the peak design temperature that Yukon Energy's N-1 capacity load forecast is based on.

- The N-1 criterion is used to ensure there is available generation to meet peak, non-industrial demand, daily and seasonally, in the event the Aishihik hydro plant is unavailable.

- While a reduction in rental diesel generators was also anticipated, this has been pushed back to account for delays in Yukon Energy's battery project.

- Renting more diesel generators is the only feasible way to meet peak demand for power and protect against emergency situations next winter.

About location of the additional units

- There is no space for the additional five units in Whitehorse or Faro. A third site will be set-up near Yukon Energy's Mayo A hydro plant.

- Yukon Energy is proposing to locate the additional rental units near its Mayo A hydro plant because of its:
    - Proximity to existing infrastructure. An existing substation with transformer capacity is nearby.
    - Accessibility. Yukon Energy staff live and work in Mayo.
    - Distance away from residences.
- Site preparation is scheduled for this summer.

About permitting requirements

- A YESAA assessment is required to permit the Mayo site for the addition of the diesel generators.

- Yukon Energy is planning to submit a proposal to YESAB in April.

- After the assessment, Yukon Energy will apply for an Air Emission Permit through the Department of Environment.

About usage

- As outlined in its contract with its supplier, Yukon Energy rents its diesel generators between December 1 and April 30.

- During this time, Yukon Energy uses the rental diesel generators when there is not enough hydroelectricity and LNG to meet electricity demand, which is typically during very cold weather.

- The rentals are also sometimes used, between December 1 and April 30, as a resource to restore power outages quickly.

- Yukon Energy maintains a stacking order for all its generation units; the stacking order informs the order in which sources of electricity are used.

- The stacking order typically is:
    1. Hydro

2. LNG
3. Rental diesel generators
4. Permanent diesel generators

- Yukon Energy uses its rental diesel generators before its permanent diesel generators because:
    - It is more cost-effective. The rental units and hours are already paid for through the annual contract.
    - The rental units produce less emissions than the permanent units.

- Each of the rental diesel generators comes with 500 hours of operating time as part of Yukon Energy's contract with the supplier each winter. After 500 hours, Yukon Energy is charged a maintenance fee for additional hours used.

- This means that for the 2022/23 winter season, Yukon Energy had 8500 hours of budgeted use time, or 21 days per unit.

- Between December 1 and April 5, 2023, Yukon Energy has run its rental diesel generators for approximately 3600 hours.

About cost

- Yukon Energy pays a base rental fee per month for each generator unit and related equipment.

- The cost to rent the 17 units this winter was 3.6 million dollars.

- This does not include the cost of fuel. Fuel costs are variable and based on the market prices and the amount of fuel that is needed throughout the winter.
- This also does not include the site set-up costs.

- The levelized cost of capacity (LCOC) measures discounted lifetime costs per unit of dependable capacity and used as an economic metric to evaluate Yukon Energy's projects.

- The LCOC for the rental diesel generators in 2022 was $211/kilowatt.

- The LCOC for a greenfield diesel plant in Whitehorse in 2022 was $242/kilowatt.

- Therefore, renting diesel generators was the most cost-effective thermal generation option when this analysis was completed.

- Yukon Energy is reviewing this analysis this year and will update it as required.

About rental units' availability

- Reliability remains a challenge with any diesel engine that is expected to cold start.

- Recognizing this, Yukon Energy is exploring different strategies to improve its rental diesel generators' performance, which includes

considering modifications to Yukon Energy's contracts with suppliers and to the rental diesels themselves.

About noise from the rentals

- Yukon Energy recognizes that diesel generators can be loud.

- In Whitehorse, Yukon Energy has set up permanent sound monitoring equipment at the Riverside substation across the Whitehorse diesel plant to monitor sound levels.

- Yukon Energy will be exploring sound mitigation options as part of its Whitehorse Thermal Permitting Project.

- In Faro, Yukon Energy recognizes that there are some concerns about the sound levels of the rentals in the community.

- Yukon Energy is taking the following steps to reduce noise in Faro:
    - Replacing FD1 with newer, quieter units which will include reducing the rental generators from seven to five;
    - Installing an acoustic barrier for one of the unit's cooling system;
    - Relocating three of the five generators; and
    - Exploring the feasibility of additional sound mitigation options.

About the value of rental diesels

- Electricity generated by the rental diesels represents only a small fraction of all the electricity Yukoners use each year.

- However, not having the rentals puts Yukoners at risk of prolonged power outages during the winter months.

Context—this may be an issue because:

The Opposition may inquire about the cost of renting diesel generators this winter and next.

Background:

- Costs for each year's rental diesel generators are covered by Yukon Energy's operating budgets.
- Yukon Energy's Board of Directors specifically approves the supply contract for the rental units each year.
- The rental diesels are available in emergency situations, for example should there be a loss of the Aishihik hydro plant or the Aishihik transmission line, and to meet daily peaks.
- During the winter of 2022/23, Yukon Energy has rented 17 diesel generators to protect against extended outages and emergencies.
  - 9 units + 1 spare in Whitehorse
  - 6 units + 1 spare in Faro
- During the winter of 2023/24, Yukon Energy will rent 22 diesel generators to meet increasing demand and to account for project delays.
  - 9 units + 1 spare in Whitehorse
  - 7 units + 0 spare in Faro
  - 4 units + 1 spare in Mayo

N-1 Capacity Planning

Session Briefing Note — Spring 2023

Rental Diesels

Yukon Energy Corporation

- Yukon Energy models its capacity load forecast on a number of assumptions.
- Yukon Energy's approach to modelling is a transparent process that has been reviewed by Yukon Energy's regulators and is consistent with industry best practices.
- The following assumptions have been updated and provide rationale as to why Yukon Energy needs additional rental diesel units next winter.
    - Peak Design temperature of -39 degrees Celsius.
    - The retirement of one of the diesel generators in Faro (FD1) in summer 2023.
- Other assumptions include:
    - The retirement of two diesel generators in Dawson (DD2 and DD5) in summer 2024.
    - The thermal replacement project (12.5 MW) online by December 1, 2024.
    - The battery online by December 1, 2024.
    - The Atlin hydro expansion project online by December 1, 2026.
    - The Moon Lake project online by December 1, 2031.
    - Compound electric vehicle growth to target 6300 EVs by 2030.
    - Our Clean Future policy targets around building upgrades and heat pumps.
    - Demand-side management program implementation.
- The table below illustrates the total shortfall each year, in an N-1 scenario, and the number of diesel units required to make up for this shortfall.

	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/2031
Total shortfall (MW)	35.3	28.6	23.7	17.5	19.4	22.0	25.7	30.5

# of temp diesel units	20	16	14	10	11	13	15	17
# of spare temp diesel units	2	2	2	1	1	2	2	2
Total # of temp diesel units	22	18	16	11	12	15	17	19

Session Briefing Note

Spring 2023

Rental Diesels

Yukon Energy Corporation

Rental Diesels –Figures at a Glance

Item	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24 estimated
# Units	4 units	6 units	9 units	17 units	17 units	17 units	22 units
Rental Cost, including transportation to and from Yukon Energy (approximate)	$700,000	$1.2M	$2.0M	$4.1M	$3.6M[2]	$3.6M[4]	$5.5M[5] (see footnote below)
Set-up Cost (approximate)	Undetermined at the time of request.	$300,000	$400,000	$2.4M	$80,000	$45,000[3]	TBD[6]
Fuel Cost (approximate)	Insignificant; generators operated minimally.	$220,000	$1.9M	$2.1M[1]	$2.4M	$1.1M	Based on the amount of fuel needed and market prices.
Total Cost (approximate)	$700,000	$1.72M	$4.37M	$8.6M	$6.1M	$4.7M	

Session Briefing Note

Spring 2023

Rental Diesels

Yukon Energy Corporation

TABLE FOOTNOTES

1. Higher actual fuel cost due to unplanned outage of one Whitehorse LNG unit, which caused a greater need for diesel generation.
2. Costs were lower than the winter of 2020/21 because of lower transportation and commissioning costs.
3. This winter's start-up costs were lower than last winter because seven units remained in Faro through the offseason and 8 units remained in Whitehorse.
4. The total cost for Faro rentals in 2022/2023 is overall less than what was contemplated in the 2021/2022 agreement. The total cost for the Whitehorse rentals in 2022/2023 is higher than what was contemplated in the 2021/2022 agreement.
5. This is an estimate as Yukon Energy has not yet negotiated a contract for the 23/24 season. It is based on contract pricing from last year.
6. Material capital investments will be required to connect the additional units to the grid. Engineering design is ongoing and costs are not known at this time.

Approved by:

President and CEO, Yukon Energy

April 12, 2023

Date approved

Session Briefing Note — Spring 2023

Diesel Replacement Project

Yukon Energy Corporation

Recommended response

- Yukon Energy is replacing its diesel generators that have either already retired, or are expected to reach end-of-life in the next five years in Faro, Dawson and Whitehorse.

- No additional diesel capacity is being added to the grid that hasn't already existed.

- The replacement diesel generators in Faro are expected to be in service by mid-2024.

    - The reason for this likely delay (previously expected to be in-service late 2023) is because of general supply chain issues and the lack of parts required for the construction of the units.

- The new generators in Whitehorse and Dawson are expected to be in service in the summer of 2024.

- When the diesel replacement project is complete, two fewer rental diesels will be needed each winter to meet peak demands for power.

Additional response

About cost and rental displacement

- At this time, the project to replace end-of-life diesel generators in Whitehorse, Dawson and Faro is expected to cost about 49 million dollars.

- The project's budget has increased by about 4 million since last year – due primarily to inflationary increases seen in industries across Canada.

- However, the project still remains within the last year's cost estimate range of minus 30 per cent to plus 50 per cent.

About the need to replace end-of-life diesel units

- Diesel plays a small but important role in Yukon's electricity mix.

- Available at the flip of a switch, diesel helps keep Yukoners' lights on when demand for electricity is high, and during hydro and transmission line maintenance.

- Diesel also helps Yukon Energy restore power outages quickly for Yukoners.

About engagement

- Last fall, residents in Dawson City were informed about Yukon Energy's plans to replace two end-of-life diesel generators at the downtown power plant with one new diesel engine at the Callison substation.

Session Briefing Note — Spring 2023

Diesel Replacement Project

Yukon Energy Corporation

- Information about the Faro and Whitehorse diesel replacements will be shared with area residents as the projects advance.

- Like all other new energy projects, YESAA proposals will be submitted for this project. Yukoners can share their views about this project as part of that process.

Context—this may be an issue because:

The Opposition may ask why Yukon Energy is installing more diesel.

Background

- The 10-Year Renewable Electricity Plan included the replacement of 12.5 MW of retiring diesel units.

Location	Diesel capacity retired/retiring	Diesel capacity being installed	Forecast in-service date
Faro	5.1 MW (upcoming retirement)	5 MW	Q2 2024
Whitehorse Rapids Diesel Plant	5 MW (previously retired)	5 MW	Late Q2 or early Q3 2024
Dawson City	2.5 MW (upcoming retirement)	2.5 MW (relocated to Callison substation)	Q2 2024

- The dependable capacity from these projects helps to address the existing and forecast capacity shortfall under the N-1 planning criterion.

Session Briefing Note — Spring 2023

Diesel Replacement Project

Yukon Energy Corporation

- Yukon Energy conducted a feasibility study for the option to replace end-of-life diesel generators in Whitehorse with natural gas engines, however, the study found that the capital costs of the natural gas engines were higher than the diesel engine solution.

Approved by:

January 20, 2023

President and CEO, Yukon Energy — Date approved

Noise and Air Quality in Faro

Recommended response

- Yukon Energy's rental diesel generators help Yukon Energy to keep the lights on and our homes warm, especially during the Yukon's cold and dark winters when demand for electricity is at its highest.

- The cold snap in December 2022 and the new record for electricity demand reinforced the need for these diesel generators, until Yukon Energy can build new sources of dependable capacity.

- This winter, Yukon Energy rented 17 portable diesel generators, seven of which were installed at its diesel power plant in Faro.

Additional response

Noise

- Yukon Energy has measured ambient sound levels in Faro in both the winter of 2019/2020 and the winter of 2021/2022.

- Test results have found that noise levels are lower than daytime levels permitted in the BC Noise Control Best Practices Guidelines.

- However, Yukon Energy recognizes that the sound from the generators can still be disruptive.

- To find ways to reduce sound at the Faro Generating Station, Yukon Energy has committed to the following:
    - Conducting acoustic modelling for a series of operational configurations at the Faro Generating Station.
    - Adopting the best available technology for the replacement of one of its diesel generators (FD1), which has reached the end of its service life (as part of Yukon Energy's Thermal Replacement Project).
        - The replacement of FD1 (~5 MW) with two new diesel generators (each 2.5 MW) will produce less air and sound emissions compared to the existing units at the station.
        - The new units are expected to be in-service in Q4 2023.
    - The inclusion of an acoustic barrier for one of the unit's cooling system.
        - This would result in a 3.1 dB sound level reduction.
    - Reducing the number of mobile diesel generators on site from seven to five and relocating three of those five units in such a way that reduces sound emissions.
        - The fifth rental unit is on site only as a spare in case of failure of another unit on site.

- Yukon Energy predicts that under the maximum operating scenario, sound levels may be reduced by 20%-30% with these changes.

- Yukon Energy is also exploring the feasibility of additional sound mitigation options.

- As operating conditions permit, Yukon Energy works to minimize the need for generating activities at the Faro Generating Station.

- When necessary, Yukon Energy will try to operate the enclosed unit as well as the quieter, new units before engaging the mobile diesel generators.

Air quality

- Yukon Energy regularly assesses the potential effects of the air quality around all of its diesel power plants.

- Since 2008, the Faro plant has been assessed three times.

- Each time, the assessment found operations at the power plant not likely to have significant adverse effects on the environment or human health.

- Yukon Energy is in the process of conducting another round of air quality monitoring in Faro.

- To do this, Yukon Energy is installing air quality monitoring equipment near the centre of Faro to measure nitrous oxide concentrations.

- A sound monitoring device will also be included with this equipment so that Yukon Energy can continue to accurately monitor sound levels in Faro.

- If results from Yukon Energy's air quality monitoring are found to exceed the permissible levels outlined in the Yukon Ambient Air Quality Standards, and if these exceedances can be attributed to Yukon Energy's electricity generating activities (as opposed to forest fires, home heating wood smoke, etc.), Yukon Energy will be required to develop an air quality management plan.

- This plan would be reviewed and approved by the Government of Yukon.

- Yukon Energy will share the results from both its sound and air quality monitoring with the public when they are available in late 2023.

<u>Diesel generators' location</u>

- The diesel plant in Faro was the best location for the rental diesel generators for a few reasons:
    - there was enough room to install the generators within the fence line on Yukon Energy property;
    - there was room in Yukon Energy's yard to build the new substation needed to connect the generators to the Yukon grid; and
    - there was an existing fuel storage tank on site and room to add the extra temporary fuel tanks required.

- Additionally, studies showed that keeping all seven of the rentals together was the most cost-effective option and the best way to meet peak demands for electricity across the Yukon grid while minimizing the impact on electricity rates.

- When researching this project, Yukon Energy also looked at adding the rental generators to its existing diesel plants in Dawson and Mayo. It ruled out those options because there wasn't enough room at the Dawson and Mayo plants to add the extra rental units, fuel, and electrical equipment.

- Given these reasons, it would be both costly and challenging to find a better location for the rental diesel generators at this time.

<u>Amended air emissions permit</u>

- In May 2022, Yukon Energy was granted an amendment to its air emissions permit in Faro.

- The new air emissions permit allows Yukon Energy to increase the operational capacity of the Faro Generating Station from 10.6 megawatts to 15.5 megawatts.
- The new air emissions permit was granted subject to three terms and conditions:
    - That Yukon Environment complete a technical review of Yukon Energy's air emissions permit application.
    - That Yukon Energy establish a Complaint Management System to collect concerns and complaints about the Faro Generating Station, and that these concerns be shared with Yukon Environment each year.
    - That Yukon Energy ensure that noise control measures for each rental generator are installed and in good working condition.

- Yukon Energy's Complaint Management System includes:
  - The installation of an exterior sign at the Faro Generating Station with information about who to contact in the event people have concerns about noise
  - Comment form on the YEC website
  - Dispute resolution process
    - Yukon Energy will engage in a timely and responsive manner once it receives a complaint. If complainants are not satisfied with Yukon Energy's response, Yukon Energy will recommend the complainant pursue their concern with YG Environment.
  - Reporting process
    - Yukon Energy will notify an environmental protection officer within one week upon receipt of any complaints regarding sound.
    -

Context—this may be an issue because:

The Opposition may ask further questions about sound levels.

Background:

- The Yukon does not have noise regulations that are applicable to the Faro Generating Station (FGS).
- As a result, the British Columbia Oil and Gas Commission (BCOGC) BC Noise Control Best Practices Guideline (referred to as the BC Guideline) are commonly used within the Yukon.

- The BC Guideline is a receptor-based system that establishes permissible sound levels at residences based on the proximity to transportation noise sources and dwelling density.
- For the Town of Faro, the applicable nighttime permissible sound level is 43 dB and the daytime permissible sound level is ~53 dB.

Sound monitoring results (2021)

	R2 130 Dawson Dr	R3 RCMP office	R4 146 Kitza Ave.	R5 356 Campbell St.	R6 504 Douglas St.	R7 502 Ladue Dr.
Ambient nighttime	23.6	25.4				
Ambient daytime	35.4	33.9				
FD1, FD7, 3 rental units (10.6 MW)	44.1	53.6	50.5	44.5	41.4	45.4

The numbers in red indicate exceedances for nighttime levels.

Sound modelling results

	R2 130 Dawson Dr	R3 RCMP office	R4 146 Kitza Ave.	R5 356 Campbell St.	R6 504 Douglas St.	R7 502 Ladue Dr.
Ambient nighttime	23.6	25.4				
Ambient daytime	35.4	33.9				
Proposed new configuration (15.5 MW)	45	50.3	46.8	39.7	40.1	42.3

Noise and Air Quality in Faro

Yukon Energy Corporation

- Yukon Energy is aware there are instances where nighttime permissible levels are exceeded and is taking steps to mitigate noise to the extent possible.
- These include:
    - Replacing FD1 with newer, quieter units which will include reducing the rental generators from seven to five;
    - Installing an acoustic barrier for one of the unit's cooling system;
    - Relocating three of the five generators; and
    - Exploring the feasibility of additional sound mitigation options.

Approved by:

President and CEO, Yukon Energy

January 31, 2023

Date approved

Session Briefing Note

Spring 2023

Record Peak for Electricity Demand

Yukon Energy Corporation

Recommended response

- A new system generation peak of 118.5 megawatts was recorded on December 20, 2022.

- Before this, a new record was set on December 19, 2022, of 117.1 megawatts.

- Previous to December 19 and 20th, the system generation peak was 116 megawatts, recorded on January 6, 2022.

Additional response

- This winter, Yukon Energy's generation capacity is approximately 136.5 megawatts.

- If an emergency event were to have occurred during the peak hours, Yukon Energy would have temporarily disconnected all mines from the grid.

- This action would have freed up the electricity being used by the mines at the time and rerouted to serve residents and businesses across the Yukon.

- During peak demand periods, Yukon Energy can use ATCO's Fish Lake hydro and diesel engines, as well as its industrial customers' diesel generators, as additional sources of capacity.

- Yukon Energy is also having discussions with high-use customers to determine if they'd be able to use their own back-up generation sources, or stop electricity use all together, during restoration in an outage.

About rental units being unavailable

- This winter, Yukon Energy rented 17 portable diesel generators.

- Rental diesels, by their nature, are less reliable than Yukon Energy's fleet of permanent diesel engines.

- Recognizing this, Yukon Energy is exploring different strategies to improve reliability, which includes considering modifications to Yukon Energy's contracts with suppliers and to the rental diesels themselves.

About factors increasing demand

- A number of factors contribute to growing demands for electricity in the Yukon including growth in the Yukon's population and economy, the increased use of electric heat in buildings, and cold temperatures.

- By 2030, Yukon Energy expects demand for electricity to be at about 140 megawatts.

- This growth in electricity demand is one reason why it's critical that projects that provide sources of dependable capacity during the winter - like Yukon Energy's grid-scale battery and Moon Lake

pumped storage facility, and the Atlin hydro expansion project be supported both with financial and social capital now and in the future.

About Yukon Energy's ability to meet future peaks

- Rental diesel units each winter is a short-term solution to meet peak demands for electricity and protect against emergency events until new sources of dependable renewable capacity can be built.

- A number of these types of projects are already underway, including:
  - The grid-scale battery in Whitehorse; and
  - Purchasing hydro power from Atlin.

About ways to reduce system peaks

- System generation peaks tend to happen on weekdays when it's really cold outside; usually between 7 and 9 o'clock in the morning, and between 5 and 7 o'clock in the evening when Yukoners tend to use the most electricity.

- Yukoners can help reduce winter peaks by:
  - Delaying the use of major appliances to off-peak hours;
  - Turning down the thermostat by 2 to 3 degrees during the peak; and
  - Using block heater timers.

- By reducing system peaks, Yukoners can help reduce the amount of diesel used to generate electricity during peak times.

Session Briefing Note — Spring 2023

Record Peak for Electricity Demand

Yukon Energy Corporation

Context—this may be an issue because:

- The Opposition may ask about how electricity was supplied during the record peak set in December 2022.

Background:

- During the peak, residential and commercial customers accounted for approximately 91% of the load; industrial customers accounted for the remaining 9%.

- During the peak on December 20th, a combination of the following system generation assets were used to meet demand:
  - Yukon Energy hydro, LNG and diesel (both rental and permanent) engines; and
  - ATCO's Fish Lake hydro and diesel engines

- Yukon Energy's generating capacity during the winter (without rentals) is 109.5 megawatts. This is caused by a lower supply of hydro resources during the winter.

- This winter (2022/23), Yukon Energy rented 17 diesel generators to help meet peak demands for electricity and to protect Yukoners against a prolonged outage during an emergency. 15 of the 17 rental units are installed; the other two are spares.

- With the rentals, Yukon Energy's total installed capacity during the winter is 136.5 megawatts.

Approved by:

President and CEO, Yukon Energy

January 31, 2023

Date approved

Session Briefing Note

Spring 2023

Riverside Substation Upgrades

Yukon Energy Corporation

Recommended response

- Yukon Energy is upgrading the Riverside substation in Riverdale to connect Yukoners to new sources of electricity that will be coming online in the next couple of years.

- These new sources of electricity include the new grid-scale battery that will be in service next year, the replacement of the end-of-life diesel generators in Whitehorse, and hydro power from Atlin.

Additional responses:

About cost and schedule

- Upgrades at the Riverside substation are expected to be complete by the fall of next year and are still expected to cost approximately 13 million dollars.

- The project completion date has shifted from the end of 2022 to fall 2023 because of the additional time needed to achieve key milestones in the grid-scale battery project.

- Delays are also a result of choosing the more cost-effective option to stop work for the winter and resume in the spring.

- Once the project is complete, Yukon Energy will apply for these project costs to be recovered through rates.

- The process to do that is for the project costs to be included in a future Yukon Energy general rate application.

About engagement

- Yukon Energy continues to share information and updates about this project with Riverdale residents and businesses.

- Yukon Energy has generally received support for the project.

- The Corporation also heard that noise, tree removal and the environment were important considerations that local residents wanted Yukon Energy to keep top-of-mind during construction.

- Yukon Energy is moving ahead with the project with those considerations in mind.

About closing a section of Millennium Trail

- In all of Yukon Energy's projects, public and employee safety is always a top priority.

- With heavy equipment on site during construction, Yukon Energy is taking every precaution to keep everyone safe.

- Last summer, Yukon Energy temporarily closed a section of the Millennium Trail between the Rotary Centennial Bridge and the fish

ladder as a safety precaution to keep trail users a safe distance away from heavy equipment at the substation.

Context—this may be an issue because:

Questions may be asked about construction activities at the Riverside substation, cost, public engagement activities and duration.

Background:

- The Riverside substation was built in 1984. It is located on Nisutlin drive near Chadburn Lake Road in Riverdale.

- Demand for electricity is expected to grow by 40% in the next 10 years. A number of projects in Yukon Energy's 10-Year Renewable Electricity Plan have been identified to increase the capacity of the Yukon grid.

- Upgrading the Riverside substation is necessary to connect the additional electricity made available by these new capacity projects to the Yukon grid and Yukoners.

- The Riverside substation was selected for these upgrades because it is the only Yukon Energy substation beside the Whitehorse Rapids Generating Station with space for the additional equipment that is needed.

- The scope of the upgrades includes:
    - Expanding the substation fence line to add new equipment; and
    - Upgrading an existing transmission between the substation and the Whitehorse Rapids Generating Station

- Yukon Energy contacted Riverdale residents, businesses and MLAs, the City of Whitehorse, Yukon government and other electricity interest groups last summer to gather feedback on the proposed project.

Session Briefing Note

Spring 2023

Riverside Substation Upgrades

Yukon Energy Corporation

- There was general support for the project. Noise, tree removal and the environment were considerations area residents asked Yukon Energy to keep top-of-mind during construction.

- Upgrades to the Riverside substation were outlined in the project proposal Yukon Energy submitted to YESAB in 2021 for the battery (as it will connect the battery to the grid).

- YESAB and the Decision Bodies (YG and KDFN) both recommended the project to proceed. Accessory authorizations were also provided by Nav Canada/Transport Canada and the City of Whitehorse.

- Upgrades are scheduled to be complete by February 2023 and to cost approximately 13 million dollars.

Approved by:

January 20, 2023

_____ _____

President and CEO, Yukon Energy — Date approved

TAB # 27

Session Briefing Note

Spring 2023

December 2022 Outages

Yukon Energy Corporation

Recommended response

- Yukon Energy works hard to ensure reliable service for all Yukoners. But like any jurisdiction in Canada, power outages happen.

- Outages in the Yukon are generally much shorter than outages in southern Canada, which can last several days.

- Outages can be a result of a problem on the generation or transmission side (Yukon Energy's assets) as well as on the distribution side (ATCO Electric Yukon (AEY)'s equipment in AEY's service territory; YEC equipment in YEC service territory).

- The outage on December 19, 2022, in Whitehorse was the result of a transmission issue.

- The outage on December 22 and 23, 2022 in Dawson City was the result of a distribution issue.

- Both December outages were <u>not</u> a result of loss of electricity supply.

Additional response

December 19, 2022 Outage in Whitehorse

- The outage began at 5:30pm and power was restored to all customers at 9:49pm.

- The outage affected 3,361 ATCO customers. This included customers in:
  - Whistle Bend
  - Crestview
  - Laberge
  - Kulan
  - Parts of Takhini and Range Road
  - Alaska Highway West
  - Klondike Highway North

- The cause of the outage was an overloaded breaker at the Takhini substation that tripped because of protection settings.

- Yukon Energy reset the transformer's settings quickly, however the remaining restoration by ATCO took time in the cold weather (the temperature was around -40 degrees Celsius).

- Yukon Energy has since reviewed and adjusted the settings at all of its transformers to prevent future outages.

- Due to the cold weather conditions at the time of the outage, Yukon Energy notified Yukon government Emergency Measures Organization (EMO) and the City of Whitehorse Fire Chief at around 7pm.

Session Briefing Note

Spring 2023

December 2022 Outages

Yukon Energy Corporation

December 22/23, 2022 Outage in Dawson City

- The outage began at 5:47pm on December 22 and was restored to all customers at 7:25am on December 23.

- Power was restored to 95% of customers by 4:15am.

- The outage affected roughly 450 Yukon Energy customers. This included:
  - About 1/2 of customers in downtown Dawson City; and
  - About 1/3 of all customers in Dawson City.

- The cause of the outage was a damaged power line, a section of which failed in the cold temperatures (around -45 degrees Celsius).

- Restoration took as long as it did because of the cold weather.

- While Yukon Energy works hard to ensure reliable service, equipment can and does fail in extremely low temperatures.

- Due to the cold weather conditions at the time of the outage, Yukon Energy notified EMO and the Dawson City Fire Chief of the outage at around 7:30 pm on December 22.

- Representatives from the Tr'ondëk Hwëch'in government were also informed of the outage and assisted in providing lifts to residents to the designated warming centres.
- The Dawson City Arena and Robert Service School were used as warming centres.

Communication between EMO, YEC and the City of Whitehorse

- On January 12, representatives from Yukon Energy and ATCO Electric Yukon met with EMO and the City of Whitehorse Fire Chief to discuss the December 19th outage and procedures to keep Yukoners safe and informed during extended outages.
- As a result of this meeting, Yukon Energy and ATCO are updating their communications procedures to ensure the appropriate utility advises EMO during extended outages and that frequent updates are provided.

Reliability of suppliers

- Yukon Energy relies on suppliers for its LNG and diesel fuel.
- Yukon Energy has determined alternate routes for its suppliers, in the event one of the highways is closed.
- Yukon Energy also has contracts with local suppliers.
- Before cold weather sets in, Yukon Energy proactively contacts its suppliers to ensure they will still be able to provide their services.
- Yukon Energy continues to have holiday and cold weather availability discussions with its suppliers.
- Yukon Energy is also exploring options for diesel and LNG fuel storage in Whitehorse in future RFPs.

Context—this may be an issue because:

The Opposition may ask what Yukon Energy is doing to ensure prolonged outages do not become a regular occurrence.

Background:

- Yukon Energy recognizes that demand for electricity is growing and is expected to increase by 40% over the next 10 years.

- Yukon Energy has plans in place to ensure there is enough electricity in the worst-case scenario.

- This worst-case scenario accounts for Yukon Energy's largest generation source, the Aishihik hydro facility, being unavailable.

- In this scenario, to address the capacity shortfall, Yukon Energy could:
    - use its portable diesel generators;
    - use ATCO's hydro and diesel assets; and/or
    - disconnect the industrial load (i.e. the mines) from the Yukon grid.

- Yukon Energy is also in conversation with high load users to determine if they could use back-up generation sources when Yukon Energy is in the process of restoring power.
    - This would help to expedite the time it takes for Yukon Energy to restore power, especially in cold temperatures.

- Yukon Energy continues to build and explore sources of dependable capacity, particularly sources of capacity that are available during the winter.

- It is critical that projects like Yukon Energy's grid-scale battery, Moon Lake pumped storage and the Atlin hydro expansion project are supported both with financial and social capital now and in the future.

Session Briefing Note

Spring 2023

December 2022 Outages

Yukon Energy Corporation

Approved by:

January 20, 2023

_____ _____

President and CEO, Yukon Energy | Date approved

TAB # 28

Session Briefing Note — Spring 2023

Electricity Supply and Demand

Yukon Energy Corporation

Recommended response

- In 2022, 92% of the electricity Yukon Energy generated come from renewable resources.
    - Eight per cent came from thermal resources, of which:
        - Approximately 5% was LNG
        - Approximately 3% was diesel

- These thermal resources were used primarily during the winter months to fill the gap between the amount of electricity Yukoners needed and what couldn't be supplied using hydro resources alone.

- Over the last 25 years, Yukon Energy generated an average of 96% renewable electricity.

Additional response

About the peak

- A new system generation peak of 118.5 megawatts was recorded on December 20, 2022.

About factors that contribute to growing demand

- Several factors contribute to growing demands for electricity in the Yukon including growth in the Yukon's population and economy, the increased use of electric heat in buildings, and cold temperatures.

- By 2030, Yukon Energy expects demand for electricity to be at about 140 megawatts.

Session Briefing Note — Spring 2023

Electricity Supply and Demand

Yukon Energy Corporation

About Yukon's mines and how much of Yukon Energy's load they represent

- In 2022, the mines connected to the Yukon grid represented about 16 per cent of Yukon Energy's summer load and about 8 per cent of Yukon's winter load.

- By 2025, the forecasted mines connected to the Yukon grid will represent about 33 per cent of Yukon Energy's summer load and about 25 per cent of Yukon's winter load

- During emergencies, the mines are the first to be disconnected from the grid so that Yukon Energy can supply the necessary electricity to Yukoners.

Context—this may be an issue because:

The Opposition may ask about what Yukon Energy is doing to meet growing demand.

- Yukon Energy continues to build and explore sources of dependable capacity, particularly sources of capacity that are available during the winter.
- It is critical that projects like Yukon Energy's grid-scale battery, Moon Lake pumped storage and the Atlin hydro expansion project are supported both with financial and social capital now and in the future.

Session Briefing Note

Spring 2023

Electricity Supply and Demand

Yukon Energy Corporation

Background:

Historical Percentage Renewable

2017	2018	2019	2020	2021	**5-Year Average**	**25-Year Average**
97%	92%	84%	86%	92%	**90%**	**96%**

In 2019 and 2020, lower-than-average renewable generation was caused by low water levels and drought conditions across of Yukon.

Approved by:

January 20, 2023

_____ _____

President and CEO, Yukon Energy — Date approved

Session Briefing Note — Spring 2023

10-Year Renewable Electricity Plan

Yukon Energy Corporation

Recommended response

- Yukon Energy's 10-Year Renewable Electricity Plan sets the Yukon up to be a Canadian leader in sustainable electricity by 2030.

- Projects in the plan are needed to meet growing demand for electricity in the Yukon and to support this government's actions to reduce carbon emissions in the territory.

- Now three years into the plan, while these projects are still technically feasible, social and economic support remain critical to the projects' success.

- To gain the social and economic support required to complete these projects, we must continue to work collaboratively with First Nations governments and development corporations, source federal funding, and engage with Yukoners.

Additional response

- The Atlin Hydro Expansion Project, the Moon Lake Pumped Storage Project and expanding and upgrading the transmission network to connect these projects to the Yukon grid are critical pieces of the plan.

- The Atlin Hydro Project is expected to be complete by October 2025. A large pumped storage project is expected to advance through

planning stages in the coming years. The Battery Energy Storage Solution project will be commissioned in late 2023.

- Once complete, projects in the plan will help the Yukon meet its goal of 93 per cent renewable electricity to Yukoners connected to the grid by 2030.

Context—this may be an issue because:

The Opposition may question if the projects outlined in the plan will still provide enough capacity for our growing population.

Background:

- Once complete, the projects outlined in Yukon Energy's plan will provide the capacity required to meet the Yukon's growing demand.
- It is important to recognize that these projects need to be implemented in a specific sequence to provide the electricity Yukoners require.
- Economic and social support are critical to these projects' completion.
- Yukon Energy first released its draft 10-Year Renewable Electricity Plan on January 29, 2020.
- After hosting more than 35 meetings with First Nations governments, electricity stakeholders and the public to gather feedback on the plan, Yukon Energy released a final version of the 10-Year Renewable Electricity Plan in December 2020.
- Yukon Energy built the renewable electricity plan to:
    - Address growing demands for electricity in Yukon, and
    - Support Yukon government's actions to reduce carbon emissions in the territory, specifically by electrifying Yukon's transportation and heating industries.

- The plan also builds on the Corporation's decision in 2019 not to build a new 20-megawatt diesel or liquefied natural gas power plant.
- Yukon Energy's plan also includes new supply projects already being planned by the Corporation including battery storage, hydro upgrades and storage enhancements, the connection of Independent Power Producers and Micro-Generation participants, demand-side management programs, and the replacement of end-of-life diesel generation.
- Until the projects outlined in the plan are complete, Yukon Energy must continue to rent diesel generators each winter so that it can continue to provide reliable electricity to Yukoners.
- Local wind, solar and hydro projects have an important role in Yukon Energy's renewable electricity plan. Excess renewable electricity generated by these Independent Power Producers during summer months will be stored by Yukon Energy through a pumped storage project and battery storage and used to displace diesel power generation in the winter.

Approved by:

February 23, 2023

_____ _____

President and CEO, Yukon Energy Date approved

Session Briefing Note

Spring 2023

AEY and YEC Rate Rebasing

Yukon Energy Corporation

Recommended response

- After Yukon Energy's 2021 General Rate Application, the Yukon Utilities Board directed Yukon Energy and ATCO Electric Yukon to develop a proposal to simplify electricity bills, so they are easier for customers to understand.

- In response, the utilities reviewed different options and have proposed the following to the YUB:

    - roll the Yukon Energy Revenue Shortfall Rider and AEY Rate Adjustment Rider into the energy charge on electricity bills.

Additional response

- This exercise does not change the rate people pay for electricity. It is about simplifying electricity bills.

- The Yukon Energy Revenue Shortfall Rider and AEY Rate Adjustment Rider that currently appear on bills reflect each utility's rate increases since 2011.

- The utilities are proposing these riders would be included in the energy charge line item that people see on their bills, instead of being listed as separate line items.

Session Briefing Note — Spring 2023

AEY and YEC Rate Rebasing

Yukon Energy Corporation

- Since filing their proposal on January 9, 2023, the utilities expect a decision from the Yukon Utilities Board in the next month.

Approved by:	
Chris Milner	**March 21, 2023**
President and CEO, Yukon Energy	Date approved