yukon energy's new battery storage system

HELPING MEET PEAK DEMANDS FOR POWER, DISPLACING DIESEL AND IMPROVING GRID RELIABILITY

Yukon Energy's investment in a grid-scale battery is one more way we're delivering sustainable, reliable and affordable electricity to Yukoners. The new 8 MW battery will help us to maximize the amount of renewable energy we use to meet peak demands for power, displace diesel and improve grid reliability. When complete, it will be the largest grid-connected battery in Canada's North, and one of the largest in Canada.

WHY ENERGY STORAGE?

As an isolated grid, one of the largest challenges we face is meeting peak demands for power during winter months when water levels are low. That's why we include liquefied natural gas (LNG) and diesel engines in our generation fleet. We turn to them when there's not enough water to generate the power Yukoners need.

With a grid-scale battery in our energy mix, we can store extra electricity when there's a lower demand for it and then use it when the demand for power goes up.

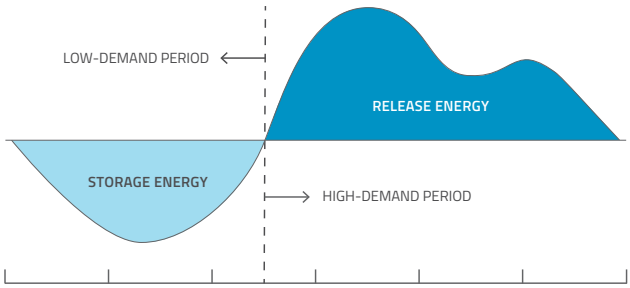

Image credit: University of Michigan

BENEFITS OF ENERGY STORAGE

- Uses more renewable energy and less diesel to meet peak demands for power
- Cuts carbon emissions. The new battery is expected to reduce carbon emissions in Yukon by more than 20,000 tonnes between 2023 and 2043
- Saves money. Running diesel engines less means less money is spent on expensive diesel fuel and maintaining diesel engines
- Improves grid reliability

WHERE WILL THE BATTERY BE LOCATED?

We're exploring four potential sites for the battery:

- Beside our Takhini substation on the North Klondike Highway
- On a parcel of Ta'an Kwach'an Council land across from our Whitehorse LNG facility
- On a parcel of Kwanlin Dün First Nation land across from our Whitehorse LNG facility
- Near our Stewart Crossing South substation on the traditional territory of the Selkirk First Nation

By installing the battery close to existing infrastructure, we can reduce the overall cost to build it and make it easier and more effective to operate.

When choosing the battery's final location, we will consider the following:

- Distance from existing generation facilities and transmission lines
- The space and technical requirements needed to operate and maintain the battery safely and efficiently
- Environmental and socio-economic factors
- Partnership opportunities with Yukon First Nations
- Stakeholder and public input

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HOW BIG WILL THE BATTERY BE?

Battery technology is quickly evolving. The physical features of grid-scale batteries such as size, shape, height and look is different from supplier to supplier. Some options look like a large enclosed building while others are modular and look more like shipping containers.

The exact footprint we'll need for the battery will be confirmed as part of the design and engineering process. At this stage, we expect to need a space about the size of a football field.

30 MW/8 MWh battery in South Australia
Photo credit: ARENA

Modular battery installation
Photo credit: GreenTech Media

WHAT TYPE OF BATTERY WILL WE USE?

There are many different battery technologies commercially available on the market today. We still need to sort through the pros and cons of lead-acid, lithium-ion and sodium metal batteries. At the moment, lithium-ion batteries are the most commercially available and proven technology. The specific technology we'll use will be determined as we design and engineer the battery.

WHEN WILL IT BE READY?

We expect the battery to be installed in late 2022 or 2023. From now until then, we'll be:

- researching, designing and sourcing the battery that best meets our specific needs and northern climate
- engaging stakeholders and the public to determine the preferred location to install it
- obtaining appropriate approvals and permits

HOW MUCH WILL IT COST?

We expect the battery to cost $25 million. Seventy-five per cent of the cost ($16.5 million) is being paid by the Government of Canada's Green Infrastructure Stream. We'll be investing the remaining 25 per cent ($8.5 million). An application to include our investment in rates will be submitted to the Yukon Utilities Board after the battery is installed and operational.

WILL THE BATTERY REPLACE THE NEED TO RENT DIESEL GENERATORS EACH YEAR?

No. The battery is only one solution that we need to meet the growing demands for electricity and to help meet peak demands for power. While the number of diesel generators we'll need to rent may decrease after the battery is installed, the battery on its own will not be large enough to supply all of the power we would need during an emergency.

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