

Walk Softly

Newsletter of the
Yukon Conservation Society
Winter 2021



Inside: • Mining Shenanigans • Climate Change Adaptions • Greening Whitehorse

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Cover Photo: Keno signpost, photo by Toshiba Govindaraj

Thank You Volunteers!

The staff at YCS would like to thank Jim Boyde, a long-time member, volunteer and Board member who has contributed greatly to our community.

Thanks Jim!

Thank you to all our volunteers on the various committees (Energy, Mining and Wildlife) for the work and expertise you provide to YCS.

As always, a big thank you to Tanya Handley for her amazing work on formatting and preparing *Walk Softly* for publication.

And thank you to our members, supporters and partners who make the work YCS does possible!



Soon enough, 'Tis the season!



* no cholesterol; low salt

Slightly different hours at Raven:



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Tanya Handley, Deborah Donnelly
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Editorial

We are busy preparing for winter as the cold winds begin to blow and the snow clouds gather. Staff have been busy with end of Autumn and winter preparations even shoveling the snow that arrived so early. We are also preparing for our Holiday Open House event on December 10th, expect a fire pit, hot cocoa and marshmallows for roasting; watch for more details coming soon.

I would also like to offer a warm welcome to Kirsten Reid, our new Conservation Biologist. She will be bringing her education, experience and tenacity to a new project, *Assessing the Current Research and Condition of Caribou Herds in the Yukon*. In addition, Toshibaa Govindaraj, our inaugural Helmut Grunberg Intern, continued her time with us as a co-op student to further her work on *The Cumulative effects of disturbances in the range of the Clear Creek Caribou Herd Range, Yukon*.

YCS has been particularly busy with supporting dialogue regarding the draft Dawson Regional Land Use Plan with our YCS/CPAWS-Yukon Strengthening Conservation in the Dawson Region webinars in Dawson City and Whitehorse; attending and engaging in Commission meetings and workshops; and finalizing our detailed submission. We continue to work on our new website and are looking forward to its launch in the coming weeks. The past few months have continued to be busy here with YESAB, waterboard and energy submissions. The ETS project has continued installations and monitoring as we head into the winter months. The project now has 42 participants with 30 installations.

We are continuing to collaborate with the Priority Place Initiative – Yukon South Beringia (YSB PPI) project partners to publicize the breadth of research happening in this unique region. The YSB PPI is a multi-year, multi-partner project that includes the southern half of the Beringia region. The YSB PPI involves scientific teams studying the diverse ecosystems in Tr’ondëk Hwëch’in territory, to understand how they function and how they are changing in these times of ever-increasing fluctuations of the climate.

And on a personal note, I am honoured to have been named to the Yukon Climate Leadership Council. I am looking forward to the opportunity to be involved in the critical dialogue regarding the Climate Crisis and supporting the Yukon’s progress towards *Our Clean Future*.

Welcome to the coming winter days and the beautiful Aurora nights!

Coral Voss,
YCS Executive Director

As Electricity Usage Spikes this Winter, join our ‘Beat the Peak’ Campaign

As the temperatures drop in the coming months, Yukoners will enter ‘peak season’, in which electricity demands spike at key times throughout the day. These peaks are driven by our demand for services such as heating, lighting, cooking and large appliances. Peaks typically occur during cold winter mornings and evenings, as Yukoners prepare to leave for work, and as they return home and run electricity-intensive household appliances such as electric stoves, dishwashers, and clothes dryers.

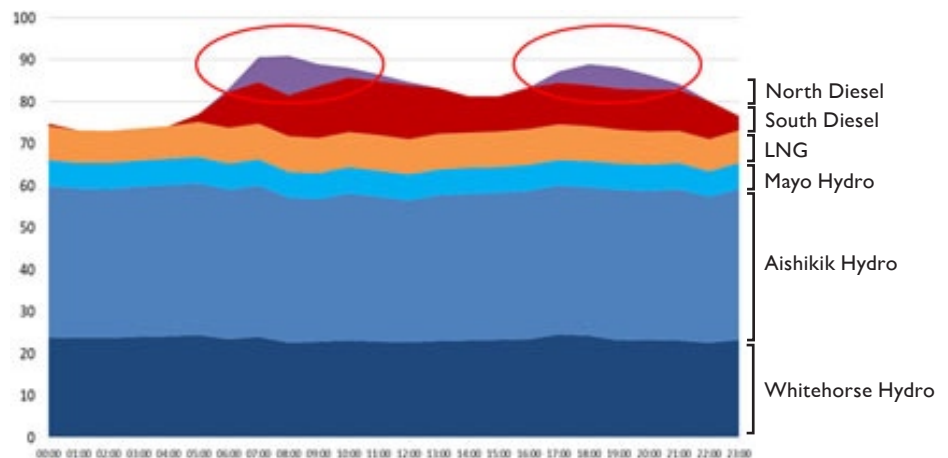
Although many regions in Canada experience a peak season, Yukon’s isolated electricity grid requires special consideration. While a large portion of Yukon’s energy is generated from hydroelectricity, diesel, and natural gas supplement this energy source, particularly in the winter months when hydroelectric output is significantly reduced. The seasonal mismatch of energy availability (in the summer months) and consumer demand (in the winter months, when our heaters are on) requires that our electricity system is prepared to accommodate short, but significant spikes in electricity demand that cannot be met with hydroelectricity. The most reliable solution at present is to rent additional diesel generators that can be dispatched to be operated at peak times. However, this solution results in a greater output of emissions and is costly. The following graph represents the territory’s power consumption over the course of 24 hours in megawatts on a cold February 5th in 2018. The morning and evening peak events are circled.

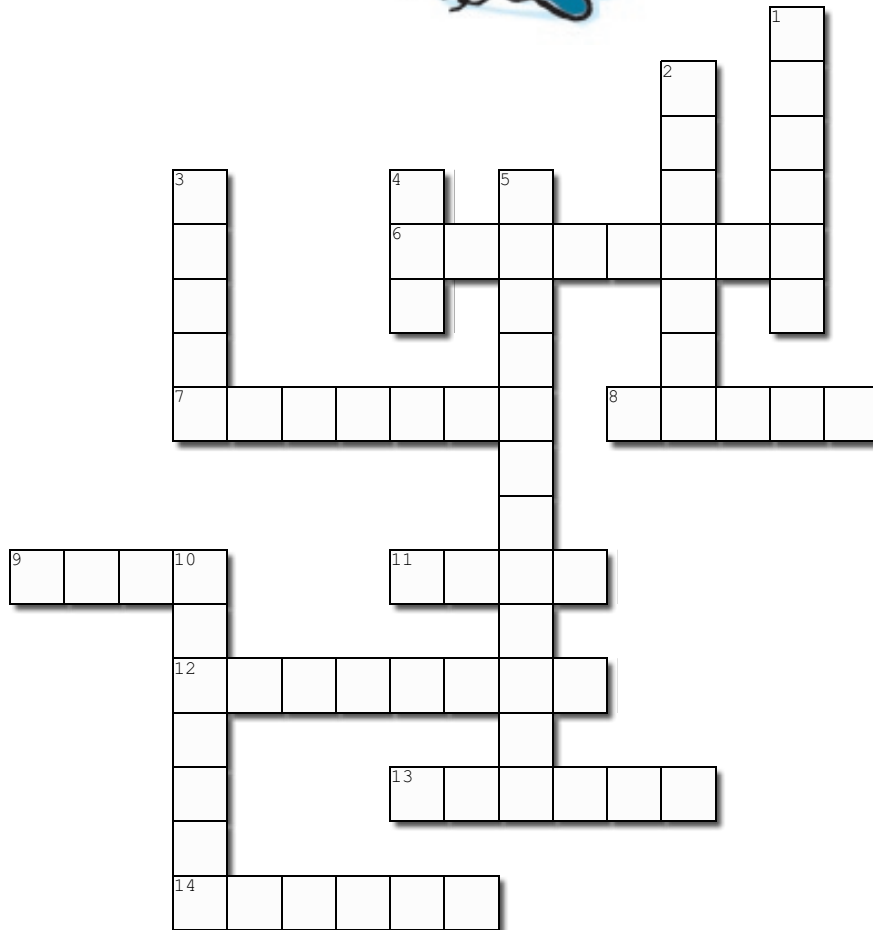
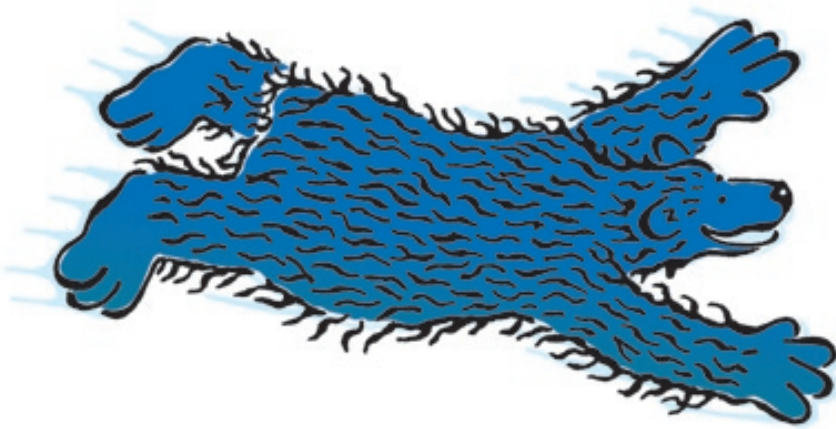
Our ‘Beat the Peak’ demand-side management campaign is an attempt to reduce electricity consumption by promoting electricity usage at non-peak times. If this campaign is successful, it could potentially be dispatched as an alternative to renting diesel generators to meet peak demands.

Our research team at Yukon University has developed a framework to encourage Whitehorse residents to participate in our ‘Beat the Peak’ initiative. This campaign was developed by conducting an extensive amount of research concerning other low-tech, socially focused demand-side management programs across North America. Our ‘Beat the Peak’ campaign will promote a Peak Notification System this winter that will alert participants through messages or e-mails when a peak is to be expected and inform them of actions that they can take to reduce their contribution to the peak. After the winter, our team will quantitatively assess the effectiveness of the program, using Yukon Energy usage data to determine whether the campaign had any significant impact upon reducing winter peaks.

If you’re interested in showing your support for this campaign, keep your eyes peeled for our peak alert advertisements on social media later this winter. These messages will include a link to register for our Peak Notification System that will provide you with guidance about when and how you can make the biggest contribution to reducing the winter peak. For this pilot project, only three peaks will be targeted over the winter, so no one will be spammed with alert messages and participants will have the opportunity to withdraw from the system at any time. Participants will be encouraged to provide feedback after the campaign so that we can refine the approach of program for future winters. The success of this project depends entirely on the public’s participation, but we are confident that social programs such as our Beat the Peak campaign have the potential to significantly reduce our reliance upon diesel generation for a fraction of the cost. We’re excited to explore how we can harness the social energy of our incredible community to reduce our collective contribution to the ‘peak’ this winter!

*Inderjeet Kaur,
Student Researcher, Northern
Energy Innovation, Yukon
University*





Created using the Crossword Maker on TheTeachersCorner.net

Across

- 6. The area around Dawson City is called the.....
- 7. A place to keep something
- 8. Canada's most western territory
- 9. Large, wide spread
- 11. A Grizzly is one
- 12. A type of power
- 13. The act of harvesting minerals
- 14. Caribou's food

Down

- 1. A season of snow
- 2. Related to Santa's reindeer
- 3. Our feathered friends
- 4. The expanse of air surrounding the earth
- 5. The act of protecting the environment
- 10. Related to heat or temperature

Find the answers on page 15.

Unleash the Kraken: The Age of the Cephalopods

Climate change, resulting from human activity, is extending its reach to some of the most remote, and seemingly unchangeable areas of the world. Heightened fossil fuel emissions have caused the oceans to absorb more carbon dioxide making them more acidic.¹ Ocean acidification increases physiological stress, hinders the ability of organisms to build shells or skeletal structures, reduces growth and survival rates during early development affecting the longevity of an entire population.¹ Moreover, the warming of the oceans has led to changes in ocean currents and stratification, expansion of oxygen-deprived zones, and an overall uncertainty for the future of our oceans.¹ These changes, on top of affecting us, have serious ramifications for the inhabitants of the oceans.¹ Most marine species are facing declines, but one class of marine invertebrates called cephalopods that include squid, octopus, cuttlefish etc. are prospering; climate change has made way for the age of the cephalopods.



Against all odds, since the 1990s, scientists have observed a steady increase in the cephalopod population ranging from open water species such as the impressive Humboldt squid, to smaller, reef-loving species such as the cuttlefish.² As other species face decline, these impressively adaptable and rapidly proliferating animals are able to exploit the gaps left in the ecosystem as a result of climate change and overfishing.³ Overfishing, which has decimated fish stocks in recent years, has effectively removed traditional predators of the cephalopods facilitating their proliferation.² In addition, cephalopods produce a lot of eggs with relatively low mortality rates and live for about 1 – 2 years allowing them to respond rapidly to a changing environment and enabling a surge in population.³ As well, the rising ocean temperatures has allowed the already fast growth rates of cephalopods to further increase.²

Some studies also indicate that ocean acidification may not be hindering octopuses and squid, as it is to other marine organisms.⁴ In a study, octopuses were observed adapting their metabolic rate in response to the pH change in the water, while squid remained unaffected by the increased dissolved carbon dioxide alluding to their indifference in the face of an acidic ocean.^{5,4} These findings, although preliminary, show that in the face of adversity and uncertainty, these impressive animals are beating the odds allowing them to thrive.

Climate change has also led to the prevalence of “dead-zones,” so-called due to their inability to sustain life.⁶ Dead, or hypoxic, zones can be found in a variety of water systems from lakes to deep ocean and are the result of organic matter filtering down from an area of high productivity to be consumed by carbon dioxide producing anaerobic bacteria creating an environment severely deprived of oxygen.^{7,6} These zones occur naturally and are often associated with warming events however, climate change and human activities, such as the use of harmful pesticides and other agricultural run-off into the oceans, is exacerbating their numbers and size.⁷

These zones, that are traditionally hindering life, are helping Humboldt squid thrive.⁷ Humboldt squid have been known to spend much of their day in these zones, and more than tolerate, they seem to be drawn to them.⁷ It is speculated that these squid feast on krill, and little fish that are adapted to the hypoxic, and relatively predator-free environment.⁷ This allows the Humboldt squid to flourish due to the abundance of food and little competition.⁷ As the numbers and size of dead zones increase, so does the population of the massive squid.⁷ The squid’s range once spanned from southern California to Northern Chile; today, they are found as far north as Alaska, and have expanded to the southern reaches of Chile.⁷

As most marine animals face drastic declines in populations, cephalopods seem to be booming—at least for now. It is unclear if the flourishing population will see an eventual crash as the effects of climate change and overfishing worsen.² But as it stands, most cephalopods, likely including the larger and more ominous colossal and giant squid, are thriving. In contrast to the stark figures and outcome projected as a result of climate change, cephalopods are changing the tides; it seems that climate change may quite possibly unleash the kraken.

*Toshibaa Govindaraj,
YCS Conservation Intern*

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Climate change adaptation: Not that simple

The Climate Conference underway in Scotland (COP26) is focusing leaders, policy makers and the general public on the climate crisis - this is, we are told, the 'last best chance' to bend the curve of global heating before we pass thresholds that will land us in climates we have not experienced.

However, in many parts of the world, including the Yukon, the effects are already obvious. Nobody thinks our winters are either as long or as cold as they used to be.

When the climate changes, when reducing emissions won't solve immediate issues, we adapt.

Humans are pretty good at adapting, more accurately, we are really good at some types of adaptation, less so at others.

We are good at individual changes and not so good at institutional changes.

For example, many people have readily adapted to working remotely in response to a need to reduce contacts. But many work places resisted this change and insist on staff returning to the office simply because they are uncomfortable with such a different work model.

The warming climate has meant that the Yukon River at Dawson City does not freeze when it used to. For as long as modern records have been kept, on average, we used to know that if you were boating on the river, you needed to be ready to get off the river at any moment after the middle of October.

We could count on being able to navigate until the 13th-15th, depending on the kind of boat, but after that date, ice could form really fast, overnight, so we learned to be prepared.

The Yukon Government's Highways department uses October 15th as the date when it places the George Black Ferry on 24 hours' notice, and prepares to pull the ferry out for the winter.

But the climate has changed; it is very unlikely now that there will be ice on the river on October 15th, very unlikely that the river will be frozen by Halloween.

Yet the protocol for ending navigation season on the river has not kept up with our changing climate.

This is just one example of how institutions are far less nimble adapters than individuals; we can easily think of others. For example, we do not require new large electricity customers, such as mines, to contribute new renewable electricity to the grid, instead we do as we always have, and fire up more thermal (diesel and LNG) generation.

So, how can we address this institutional inertia? How do we make bureaucracies nimble, open and responsive? This is a problem almost as intractable as the climate crisis, and perhaps they are related...

We shall have to continue to adapt to the climate as it heats up and changes, but relying on adaptation alone will not suffice, relying on institutions to do the adapting for us won't work: we badly need to find ways to live that do not make the climate crisis worse.

*Sebastian Jones,
YCS Wildlife Analyst*



McQuesten Lake - Beaver and Stewart Rivers - August, 2021

After gathering pizzas from Mancinni's cafe in Keno we were off to find a camping spot on McQuesten Lake. Our paddling and portaging route followed an early First Nation travel route in the area coming up the McQuesten River, crossing McQuesten Lake and then continuing upstream over beaver dams to begin portaging/paddling/sliding and pulling our canoes and gear over to water heading for Clark and Scougale Lakes and onto the Beaver River.

Early Fall colour change and young Trumpeter swans announced our passage as did Arctic loons, Canada geese, Bald eagles and a lone Chinook salmon. The latter was hopefully an early arrival to scout new spawning waters and gravel on lower Scougale Creek.

Our journey troupe had grown to six tandem, hard-shell canoes. The additions had arrived at 2nd Clark Lake, awaiting our arrival. A quick run down to the Beaver River was a bit of a test for some, not knowing limbo behaviour under a fallen tree and bank push techniques.

As always at lower water levels the gravel bars of the Upper Beaver River provided great camping, with dry wood previously delivered by the water boy and even a back-country pool with slightly warmed water. Moose tracks were everywhere...and the rack?

The next day we paddled to the Rackla River mouth, expecting to see some Chinook salmon spawners but the water was cloudy and it turns out we were early. The Bald Eagles were wondering at us and no wolves vocalized as in previous years. We camped just downstream enjoying the gravel and clean river water. We were camping near to earlier First Nations homes whose members had traded at Lansing when it was established in 1902.



In the morning before leaving we honoured Jesse Germaine whose family members had been part of this group, and who had passed shortly after our journey together here several years ago. Jesse dearly loved river stones.

The Stewart River point bar where the Beaver River joins, provided a covered lunch fire spot. Hard to beat hot tea and honey on a cool, rainy day! Down river to Seven Mile Canyon and Lansing - but next day. Seven Mile Canyon is a storied place, for us it was tame, providing indelible wall views at every turn, and finally cold-water drinks from above. Lunch on Lansing porch amid tall grass, rhubarb and past days of First Nation visits to trade and "hear the news", the Wilkenson brothers, Ed and Jared and Beth and Bruce, Virginia and Sylvi - their trapline home for 30 years. Many, many stories here now among the tall grass and overgrown paths.

We headed downriver to search the logjams for a river boat, skidoo and 10 cords of wood taken by an earlier, Spring flood. We only found one piece of obviously cut wood downriver!

At Gilday's cabins, now quite far from deeper water, there was very little sign of bear interests. An older poop pile and one board ajar on the nearest a-frame showed bruin origins. At Woodpecker, bound in a solar-powered electric fence, we talked to the trail camera and kept hands in pockets. Rain was coming down again.

And what's up ahead... a herd of bull moose? No - those look like floating spruce trees, root balls and all! Our clear, blue water had changed to grey. We camped close to dry spruce this night. A bull moose did appear out of the travelling root balls here.

No Gold is on the left side, just above 5 Mile rapid, now among taller willows and grass. Few people visit anymore. Some years ago, Betty Lucas and several sons were still living here, as were the Randolfs. A late afternoon motor boat came up river to tell us that supper was on. I was still teaching the ACES Grade 10 program in those days, and had seven canoes paddling with me. A rainy, mid September evening found us eating a supper of Chinook salmon, still abundant in those days, with local potatoes and a salad - all local. When the rain persisted, Betty insisted we sleep inside - girls upstairs, boys down. Syrup-laden pancakes got us back on the river in the morning, past Five Mile and Three Mile and the portage.

Our next paddle day would take us into Mayo. We visited Betty in Mayo after our most recent Beaver River adventure and she still exudes the same love for life at No Gold.

Five Mile and Three Mile rapids were bank full with few alternatives for our hard-shell canoes this time down. Long-lining was our only option along the right shore at both. The big back eddy just below Three Mile provided a wood filled haven for camping - a seldomly camped reclude.

Big Spruce, old now, rested above us, lifted ashore by even higher waters, waiting.

Entrance to the portage trail around Fraser Fall was difficult to see, but eventually we all made it and passed below where many others had gone before both upriver and down. Little evidence of previous travellers and traders exist now, though many stories abound. Hopefully Chinook salmon still find the strength to pass, up and down, these cascading waters. Long after First Nations families initially came into this area from Fort Good Hope, at the behest of traders Braine and Nash, to establish Lansing, or community hunters passed through, placer miners came upriver and searched the entire watershed for gold. But as Robert Service writes "it's the land, have you seen it?" For now, the old timers are gone but the land and waters are abundant in value to wildlife and fish and birdlife, and those who revere their place.

Jim Boyde

Changes at Parnell House

YCS has been around for over 50 years and in that time the home of YCS (Parnell House) has had many changes. This past year was another time of change for us.

In the early spring, YCS joined a growing list of participants in the Electric Thermal Storage (ETS) Project. This means we replaced our aging furnace with a new one that will keep us warm this winter. It will also serve as a source of education for those interested in how an ETS furnace works.

With the large quantity of snow last winter, we sadly lost our wall tent as it collapsed under its weight. So, when things warmed up in the spring we had a staff work day to remove it and clean up the area. This included removing part of our fence which was in poor condition. This has really opened up the back yard at YCS and given us extra space, enabling us to spread out during our summer BBQ.

But this also gave better access to the raspberry bushes that had been hiding behind the wall tent. Many of us enjoyed this added bonus.

We have also had some repairs done on the exterior of the Ted Parnell house.

Due to water damage some of the siding needed replacing. Thankfully the damage was only on the surface and has been fixed before it could go deeper into the wall.

While change may sometimes appear to be a negative thing, like the loss of the wall tent, one cannot have growth without change, and growth is often positive, like the raspberries.

*Joan Norberg,
YCS Administrative Manager*



Mining Shenanigans

There has been some unusual openness by the Yukon department of Energy Mines and Resources when it comes pointing out environmental issues of concern at major mines.

EMR has taken to posting the reports of their mining inspectors on the Yukon Water Board website! The Department of Environment has also taken to submitting their examinations of some of the Yukon major mine sites to the Water Board. Add on top of that the various Spill Reports or, as some of the mining companies refer to them as, Spill Occurrences, and it is now possible for anyone to get a comprehensive picture of how the mining industry is meeting (or more accurately, not meeting) the conditions of their Quartz Mining Licences and Water Licences.

It does take a bit of data mining to actually get the reports. First, go the Yukon Water Board website at www.yukonwaterboard.ca. Click on the Waterline button, and enter as a guest. One can then search for companies and water licences. Now this is where it gets tricky. For example, looking for reports from the Keno area requires a bit of understanding about the companies that operate there.

Type Elsa into the search engine, and the license numbered QZ17-076 for the Elsa Reclamation and Development Company will be visible. Click on the licence number, then look for the reports tab. This is where the various spills and environmental reports will be filed.

However, if you want the reports associated with the Keno mines operated by Alexco, type in Alexco or Keno. There has been a bunch of licences issued over the years, so make sure it's the most recent one. In this particular case it will be QZ18-044.

One of the quirks of the system is that the water licences are filed by whatever company or applicant submitted them. So the Faro mine site, which currently does not have a valid water licence but still submits reports, is best found by searching for the original bankruptcy custodian, Deloitte (as in Deloitte and Touche). For some reason typing Faro into the search engine won't show licence QZ06-075-1 (expired). Click on this licence and then the report tab, and all the Faro water monitoring data reports will be available for review.

Hey, the system is far from perfect but at least there is a system where the mining inspector and spill reports can be accessed online.

This level of openness and transparency was virtually unheard of in the past, and the Yukon Conservation Society would like to commend the Yukon Water Board, the Yukon Government and even the mining companies for taking this initiative and making their various reports available.

Discharge pipe at Galkeno 300 patched with rubber gloves. Patch job is failing and water is seeping through this pipe. Seems like this need to be patched properly to prevent an unauthorized discharge point.



Now what these reports are saying at some of the Yukon's major mines is disturbing. Spills, leaks, unauthorized construction, water contamination, it is a long liturgy of environmental woe and sorrow. Here are some of the highlights the staff at YCS have noticed in the past month or so from these reports.

Rubber Gloves Used to Patch A Leak: yes, that's right. A leaky pipe was patched with rubber gloves in the Keno region.

Burning Plastic: once again in the Keno region, mining landfills (that's dumps used by the mining companies, and not the local communities) have been used to burn waste plastic. This is a big no-no, given that it releases toxins into the atmosphere and that most plastics are recyclable.

Water Quality: there are persistent reports that water quality being released or processed at mine sites fails to meet the standards stated in water licences. Often these exceedances are not great, but it does point out to mining companies not being able to meet the water standards they stated in their designs. It also raises questions over what else they have been unable to do in regards to environmental protection as per their original mine designs.

Unlicensed Placer Mining: a placer mining operation was fined a total of \$30,000 for mining without a Mining Land Use Approval nor a Water License. Thanks to a YCS supporter who dug up the documents and forwarded them to us. The placer mine in question is in the Livingstone Creek area, northeast of Whitehorse.

If any YCS supporter out there hears or knows of similar activity happening at a Yukon mine site please contact the YCS Mining Coordinator at [mining@yukonconservation.org](mailto: mining@yukonconservation.org). We are always interested in this sort of thing and it helps us when intervening in YESAB or Water Licence applications.

*Lewis Rifkind,
YCS Mining Analyst*

Introducing our new Conservation Biologist

We would like to introduce our newest staff member, Kirsten Reid. She is our Conservation Biologist who will be doing some caribou research for YCS.

Kirsten has been researching in the North for the past eight years and is passionate about conserving the large and important landscapes of the region. Kirsten completed her MSc at Wilfrid Laurier University, studying the effects of forest fires on vegetation communities in the Northwest Territories. She is in the final year of her PhD (Geography, Memorial University), studying the response of Yukon's biodiversity to climate change. When she's not working, Kirsten can be found skiing, road biking, or reading a good book.

Assessing current research and the condition of Yukon caribou herds

I started my role as Conservation Biologist at YCS in mid-October. I'm very excited about this new role and hopeful about the contributions that we can make to caribou conservation in the Yukon.

Caribou are a species of high importance for many cultural, social, and ecological reasons. They also face numerous threats from anthropogenic climate change, industrial activities, and human land use. The goal of this project is to review and synthesize existing research, data, and knowledge of caribou herds in the Yukon. By synthesizing the current state of all caribou herds in the Yukon, we aim to produce a detailed understanding of the status of each herd and the major threats that they face. By engaging with researchers and stakeholders from institutions, government agencies, ENGOs, and First Nations, our goal is to create a database of caribou research, documentation, data, and literature to be used in current and future land use planning processes, and resource extraction projects. Ultimately, we want to create a resource that will contribute to strong environmental assessment policy in the Yukon.

In addition to my work at YCS, I am also completing my PhD (Memorial University), studying the effect of climate change on northern ecosystems. I have spent the past several summers exploring the landscapes along the Dempster Highway to understand the environmental drivers of community composition and how these may change under continued climate warming.

*Kirsten Reid,
YCS Conservation Biologist*



Energy Saving Tips for your home this winter

We all love to save energy in our homes, because that means saving money and conserving resources. Retrofitting your home to be more energy efficient allows for energy savings while keeping the occupants comfortable during the cooler months.

Though this might sound self-explanatory, the motivation behind retrofitting to keep the heat in can come from any of the following:

- Energy efficiency • Comfort and health
- Protect the environment • Durability • Cost

By making your home more energy efficient, you are reducing your homes' carbon footprint, because you are helping to reduce the peak demand on the Yukon grid. Peaks in the winter months can be met by thermal generation, namely diesel and liquified-natural gas (LNG), therefore by reducing the overall energy usage of your home you are helping to minimize the usage of LNG and diesel during these peak events.

A variety of actions ranging from simple DIY tips to contractor's intervention can help you improve your daily energy consumption. This article is intended as a guide to lay out some of the recommended options.

Whether you are pursuing renovations or simply curious as to the state of your home, an energy assessment provided by the Energy Branch¹ is a powerful tool to inform your decision. It is separated into two documents:

- *The Homeowner Information Sheet (HOIS)*, contains insight of the current state of your home.
- *The Renovation Upgrade Report (RUR)*, focuses on action you could take to improve your home's efficiency.

Once completed, the report allows you to apply to an array of housing rebates. Most of these work on an improvement basis, meaning the assessor will evaluate the house before and after renovation to quantify the energy savings. The rebate will be based on the quantity of energy saved in the process. The energy assessment is also the time to mention to the assessor if you have an interest in solar panels as it can make you eligible for further options and rebates.

With an energy assessment, you can access a variety of rebate programs available at both the territorial and federal levels. Territorially, there is the Energy Branch's Good Energy program² and the Yukon Housing Corporation's home renovation loan program.³ Federally, there's the diverse Canada Greener Homes program.⁵

Once in your hands, the energy assessment report may look a bit obscure, feel free to reach out to the Energy Branch⁵ or to our Energy Analyst at YCS, Scott Pressnail⁶, for more personalized information.

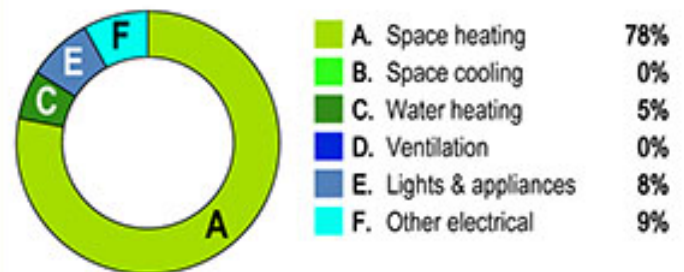
The HOIS report includes two pie charts demonstrating the breakdown of energy usage and heat loss (Figure 1). This will help to illustrate your homes' current condition. It is important to read the two graphs in parallel as they influence each other. For example, if a high percentage of the energy is dedicated to space heating it does not necessarily mean that the heating system is not efficient, the cause could be air leakage or poor insulation.

The actual data about insulation and air leakage are presented in the house details section. It compiles all of the information of your existing ceiling, exterior walls, windows, exterior doors, basement and finally air tightness. The design heating load under the space heating section reflects the amount of heat needed to keep the house at 20C when it is -40C outside. It is based on your house at the time of the assessment, the smaller the number the less energy you need to consume to warm your house.

Figure 1:

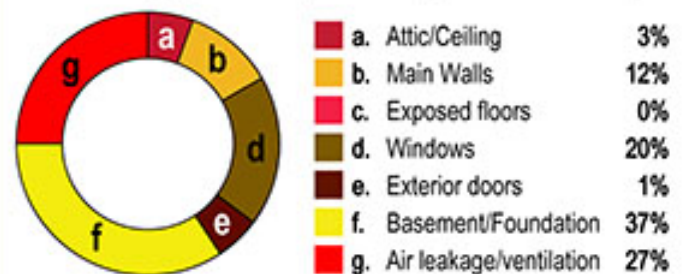
HOW YOUR RATED ENERGY IS USED:

The chart below represents the breakdown of rated annual energy consumption in your home under standard operating conditions. You can use these figures as a guide to help identify where you can lower home energy costs through proper home maintenance, efficient home operation, energy efficiency renovations or equipment replacement.



WHERE YOUR HOME LOSES HEAT:

Houses lose heat through their exterior shell, or building envelope. The chart below shows where and how your home loses heat. The quality and upkeep of your home can have a major impact on the amount of energy your heating and cooling systems use annually.



The RUR report contains possible actions to improve your home, separated into categories (air sealing, insulation, upgrading heating system, etc.) and clearly shows the quantitative improvement that can be achieved with each renovation tip. If you are considering increasing the insulation in your home, the attic is typically the first place to start with as it can be the most accessible. You can check if your attic is already insulated and check for air sealing. Air leaks throughout the attic can lead to a substantial heat loss through cracks and penetrations in the roof. Some tips for inspecting your attic are listed below.

- Some attics are more accessible than others, so make a judgement call before going to ensure that it is safe and accessible.
- Check during the winter months for condensation, because it will appear as frost.
- Check the attic during or after a rain event to help locate leaks, this will help you determine whether moisture problems are generated by interior or exterior sources.

Though they may not be as accessible as the attic, it is important to note that basements and uninsulated walls lose more heat than the standard attic.⁷ Often overlooked, the basement and walls can both account for about 20 percent of a home's total heat loss.⁷ Water and air leakage can appear in the foundation walls. Checking for damp spots, anomalies in the paint, cracks or an unusual smell - inside and outside - can be indicative of infiltration. Improving the insulation can be done either from the inside or from outside. It is generally recognised that insulating from the outside is best, but this is subject to diverse factors such as accessibility, presence of moisture, your DIY capacity, time of year, etc.

Finally, windows and doors can account for up to 25 percent of a home's heat loss due to poor insulation, low-efficiency or old caulking. Choosing the correct windows can be a daunting task because of all of the features available:

- Double-, triple- or even quadruple-glazing.
- Low-emissivity (low-E) glass.
- Inert gas, such as argon or krypton in the sealed unit.
- Low conductivity or warm-edge spacer bars.
- Insulated frames and sashes.
- Air tightness.
- Operating types.

Each feature will have a specific impact but they can be reduced to four specific properties to compare windows:

- **U-value:** The U-value measures the heat transfer rate. The lower the U-value, the slower the heat is transferred from the warm side to the cold side of a window or door, so the lower the value, the better
- **Solar Heat Gain Coefficient (SHGC):** This metric is a measure of the heat gained from sunlight through the window glass. Higher numbers indicate more passive solar heat gain, and are desirable in cold climates as it means free heat for your home from the sun.

References:

- [1] <https://yukon.ca/en/energy-assessment>
- [2] <https://yukon.ca/en/good-energy-rebates>
- [3] <https://yukon.ca/en/apply-funding-repair-home>
- [4] <https://www.nrcan.gc.ca/energy-efficiency/homes/canada-greener-homes-grant/start-your-energy-efficient-retrofits/grants-for-canadian-homeowners-living-the-north-and-grid-communities/grants-for-canadian-homeowners-living-the>
- [5] energy@yukon.ca
- [6] energy@yukonconservation.org
- [7] <https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/canmetenergy/pdf/housing/KeepingtheHeatIn.pdf>

- **Air tightness:** This metric measures the air flow through a fenestration product at a pressure difference between one side and the other. The higher the flow, the less airtight the window or door is, and the more energy is lost escaping outside in winter or finding its way inside in summer.
- **Energy Rating (ER):** Probably the most popular value used to rate windows, the ER system balances a product's U-value with its solar heat gain coefficient and airtightness. A higher energy rating indicates a more energy-efficient product.

If replacing windows is not an option, it is possible to install a storm window. Doable either from the inside or the outside, this solution usually costs a third of a new window while presenting energy saving, noise reduction and air sealant capacities.

The options presented so far can be expensive and often require a contractor to perform the work. The renovation upgrade report from your energy assessment is a great guidance tool to reduce your energy consumption through more substantial projects. For the homeowner or renter considering improvements at a cost-effective price point, the energy branch offers 'Quick Start Home Energy' kits. Some items included in this kit include, outlet switch sealers, LED light bulbs, window film, foam weather stripping, and Teflon tape. These kits are available to renters and homeowners and can be picked up at the Energy Branch (206A Lowe Street EMR206, Whitehorse, YT Y1A 1W6).

*Scott Pressnail,
YCS Energy Analyst
and Clement Richard,
ETS Project Assistant*

Now Begins the Hard Work

Congratulations to all those who got elected as mayors and councillors in the recent Yukon municipal elections. Now, as the saying goes, begins the hard work. From an environmental perspective here is a few ideas that the City of Whitehorse and perhaps other Yukon communities in certain cases could get working on.

Riverdale Bridge

There is concern that the Riverdale bridge gets too crowded during rush minute. This does not mean that an additional bridge to Riverdale is required. Rather, reduce the number of vehicles crossing that bridge during that particular time. It can be accomplished a variety of ways. Talk to the major employers in town (I'm looking at you, Yukon Government) and allow their employees the flexibility to start and leave work at different times. Not everyone needs to start exactly at 8:30am. If some of those who work in the YTG Admin Building and who live in Riverdale were given the choice of starting work at 8:10, 8:20, 8:30, 8:40, and 8:50 (and thus leaving work at a corresponding staggered time as well) some of the rush minute pressure would be taken off the bridge.

Thanks to startling urban bad planning (once again let us cast our gaze at the Yukon Government) there are way more schools in Riverdale than the suburb's population warrants. The stretch of schools running from the Bridge into Riverdale generates a lot of traffic. This traffic is of the worst kind, as it can consist of parents dropping their offspring at the school, then the parents heading back over the bridge to get to work. So both directions get heavy vehicle use within a span of a few minutes.

A possible solution to this is to use the SS Klondike parking lot. Instead of driving into Riverdale, have parents drop their progeny off in the SS Klondike parking lot. The children can then walk across the bridge to the school. The parking lot is accessible via the South Access Road roundabout, and sees little to no use by tourists early in the morning and later in the afternoon during the school year.

Bike Paths

Whitehorse has an interesting approach to building bike paths. Some are physically separated from vehicular traffic, some are not, and they do not interconnect well. Try biking down Two Mile Hill and then getting over to the Waterfront trail. It isn't easy nor is it always safe if you are on a bike. That being said, there are at least separated bike paths on Two Mile Hill and along the Waterfront.

A concentrated effort must be made by the City to connect the existing bits of good bike paths so that there is a coherent whole. There must also be an emphasis on maintaining the paths in winter. The rise in winter biking (whether fat-tired or electric, or even both) and the use of the bike paths in winter by walkers, runners, and kicksledders, demands that the City maintain these paths with the same frequency that most main roads are done.



Bringing Highways to Heel

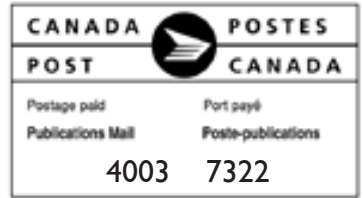
The Yukon Department of Highways has to be brought to heel when it comes to designing and maintaining highways through the City of Whitehorse. Exhibit A is, of course, the stretch from the Airport heading north to the intersection of Hamilton Boulevard. While this road is excellent for large trucks traveling at highway speeds, it doesn't reflect the reality that it is now interrupted by traffic light controlled intersections and numerous pedestrians, bicyclists, and others have to cross it at a variety of spots.

While Highways had incorporated bicycle paths into the design of this particular stretch of road, due to a quirk of responsibility they do not maintain it in the winter. This falls to the City. So Highways is building all this infrastructure, handing it off to the City to snow plough, yet not providing any funding for this to happen. This has got to end. If Highways builds the bike path, they should plough it in the winter or provide the funds for the City to do it.

Empty Lots

There are a lot of empty lots around, especially in the Downtown area. These lots make a mockery of urban densification. Densification has many positive environmental benefits. These range from avoiding urban sprawl, making use of existing infrastructure, allowing for efficiencies in such things as transit, and so on.

The City can nudge developers to actually build something on them (hopefully housing) through punitive land taxes. The longer a lot sits empty, the higher the taxes go. The stick doesn't always have to be applied. The City already has positive tax incentives in place for certain type of housing structures. These should be promoted, and if appropriate, reviewed and improved.



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