



Off Road Thinking – How local production can reduce dependence on winter roads

Most communities in northern Ontario rely on winter roads to receive goods and supplies. Warmer winters and changes in spring and fall weather are challenging winter road systems. As the climate continues to change, one way that communities can prepare is by becoming less dependent on goods shipped from other places.

How is climate change impacting winter roads?

Climate change is expected to bring higher temperatures in every season, but temperature changes in winter are predicted to be the most dramatic of all. Winter temperatures in the far north are predicted to be as much as 5°C to 9°C higher in the 2050s as compared to the average for 1985-2005.

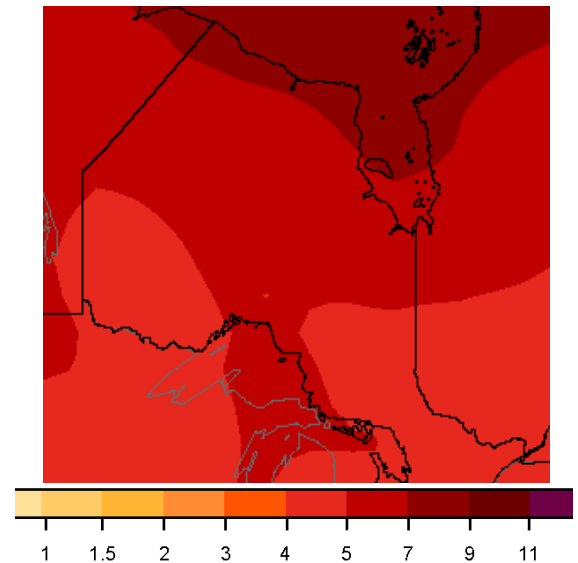
Snowfall, which can play a big part in winter road construction, is also predicted to change. The amount of winter precipitation an area can expect, when it falls, and whether it falls as rain or snow, can all impact winter road construction, quality, and lifespan.

For winter roads, these changes in climate can mean:

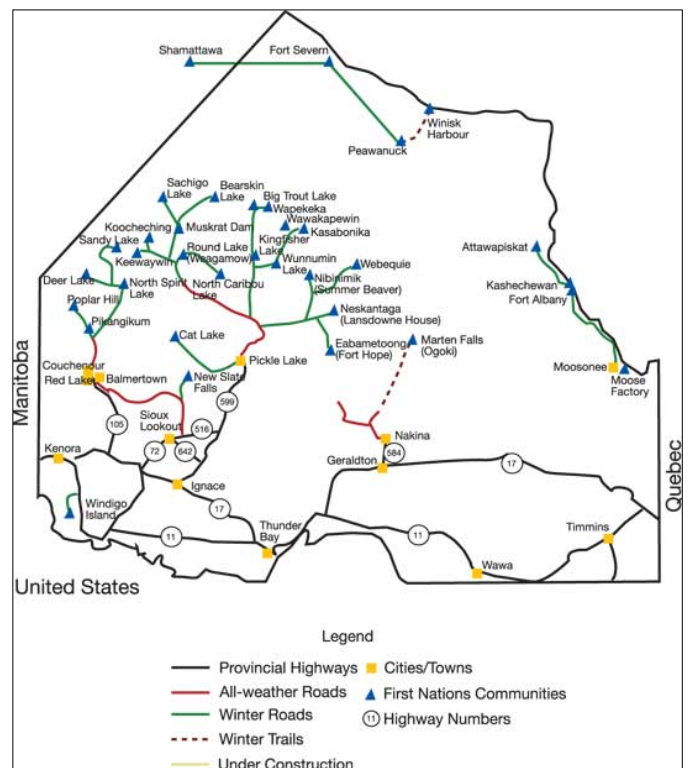
- Delays in opening dates
- Earlier closing dates
- Weaker, thinner ice
- Rivers freezing later or not at all
- Rivers break-up earlier and ice melts faster
- More slush
- Poor quality roads
- Melting of underlying permafrost
- Muskeg no longer freezes well

What are people noticing?

In First Nations communities across Ontario people agree that the winter road season has gotten shorter. In some communities, people say that this shorter season has meant a shortage of goods and supplies, as fewer trucks can arrive or loads need to be lighter. Many people also have concerns with the safety of their winter road, saying they now limit their travel to February since January and March conditions are too unpredictable.



Predicted changes in winter temperatures (°C) by the 2050s compared to the average for 1985-2005 (RCP8.5, 75th percentile)
From <http://climate-scenarios.canada.ca/?page=download-cmip5>



Map from <https://www.nrcan.gc.ca/environment/resources/publications/i/mpacts-adaptation/reports/assessments/2008/ch6/10363>

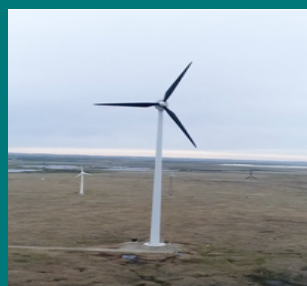


How can communities become less dependent on goods shipped over winter roads?

Less diesel, more green energy

Fuel for the diesel generators that power many remote communities is a big portion of the goods hauled over winter roads. When winter road seasons are short or the road quality only allows for partial loads, communities can face fuel shortages and are often forced to fly in fuel at much higher costs.

Adding green energy technology, such as solar and wind power, to the existing power grid can help communities reduce their use of diesel fuel. Not only does this lessen the need for costly fuel and fuel delivery, but it also reduces the community's overall greenhouse gas emissions and can improve air quality. As green technologies continue to improve, so does the potential for these energy sources to replace traditional, non-renewable energy!



Kotzebue Alaska

<https://www.youtube.com/watch?v=4xna4-PSIUU>

A remote community in northern Alaska installed its first turbine in 1997 and has since integrated a wind farm into the diesel generating system. Since 2015, excess wind energy is captured to heat the water in a boiler for the local hospital. In 2016, a bank of lithium ion batteries was installed.



Kiashke Zaaging Anishinaabek

<https://montreal.ctvnews.ca/from-shore-to-sky-a-reconciliation-story>

In August of 2019, the diesel generators that powered the community of KZA in Ontario for 60 years were turned off and the community's new solar powered micro grid was turned on. Since its launch, solar power in the community has saved over 20,000 litres of diesel fuel!

Local food production

Food is an important good shipped into remote communities on winter roads. Shortening of the winter road season can have a big impact on food security in the north. Growing food locally is one way to reduce dependence on outside supplies and improve access to food.

Berries and vegetables can be grown in outdoor gardens planted by individuals or by community members in shared community. Community gardens can help ensure that all community members have access to healthy foods, without the price tag that comes from shipping costs and retail markup. Greenhouses can extend the growing season even further and can be built fairly inexpensively. Hydroponics (using water instead of soil to grow plants) and aquaponics (growing fish for the waste they provide for growing plants) can be used to grow food indoors year-round or outdoors in summer in areas with poor soil.

FROM THIS:



TO THIS:



Aquaponics

Community Garden

Greenhouse

Although the changing climate threatens the longevity of winter roads, communities can prepare by reducing their reliance on shipping goods like food and supplies like diesel. Green energy and local gardening may be the answer. In fact, thanks to climate change, a longer growing season in northern Ontario will make it possible to grow a wider variety of berries and vegetables.