



OVERVIEW BOOKLET: NORTHERN ONTARIO

TECHNICAL GUIDE FOR NORTHERN HOUSING



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Cover Image: The Boreal Region, northern Ontario. According to Natural Resources Canada, “...the boreal forest is made up mostly of trees that are relatively young compared with many that grow in more temperate climates. It is regularly affected by forest fires, insects and other natural disturbances, but continually renews itself through these natural disturbances.”

<http://www.borealforestfacts.com/?s=first+nations>

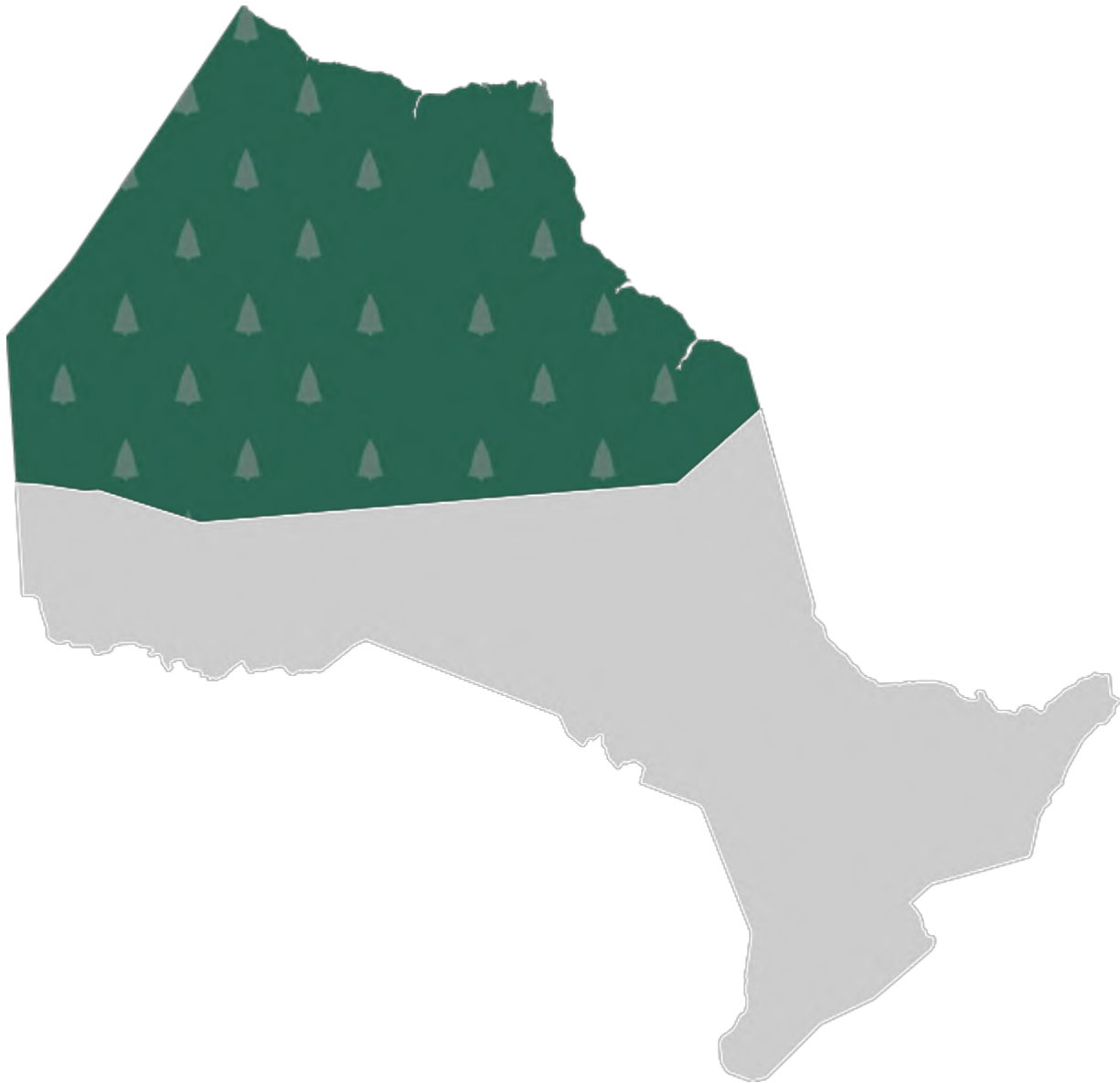
FIRST NATIONS NATIONAL BUILDING OFFICERS ASSOCIATION

The First Nations National Building Officers Association (FNNBOA) was established in 2003. The FNNBOA represents people in First Nations communities who provide residential, commercial, and institutional construction and renovation technical services. This includes plans review, inspections, recommending repairs, technical advocacy, and advisory services assisting on-reserve construction.

The Association has wide-ranging objectives in the First Nations building sector, but is primarily a professional association mandated to represent the best interests of members in the broad area of occupational development. To learn more about FNNBOA and its projects, please visit www.fnnboa.ca.

Accordingly, FNNBOA has identified key objectives which include:

- Representing individuals working as technical service providers in First Nations communities
- Establishing national occupational standards to ensure minimum core competencies
- Establishing national certification and accreditation processes
- Ensuring programs and policies for capacity development for this sector
- Advocating housing policies that will lead to better building and renovation practices and ultimately improve housing conditions in First Nations communities



This map and its borders are defined by Indigenous Services Canada and their description of Remote. Referring to Zone 3, remoteness is measured from the nearest service centre with year-round road access that is more than 350 km away. Referring to Zone 4, Special Access is where there is no year-round road access to service centres.

General Note:

The information in this Overview Booklet originates from other sources, either federal, provincial, or territorial government agencies or departments. Thus the topics and maps may vary in content, quality, and latest update. In most cases, the graphic with the better resolution was chosen. This overview is presented for “information only,” to inform the reader on the challenges that may be encountered when construction services or material supply are being considered. The overview also serves to present the type of information available for those seeking more details on the landscape, weather conditions, Indigenous peoples, transportation networks and corridors and service centres. Future editions of this *Technical Guide for Northern Houses* (TGNH) will contain additional information that is produced and necessary to facilitate the construction of houses in this subregion.

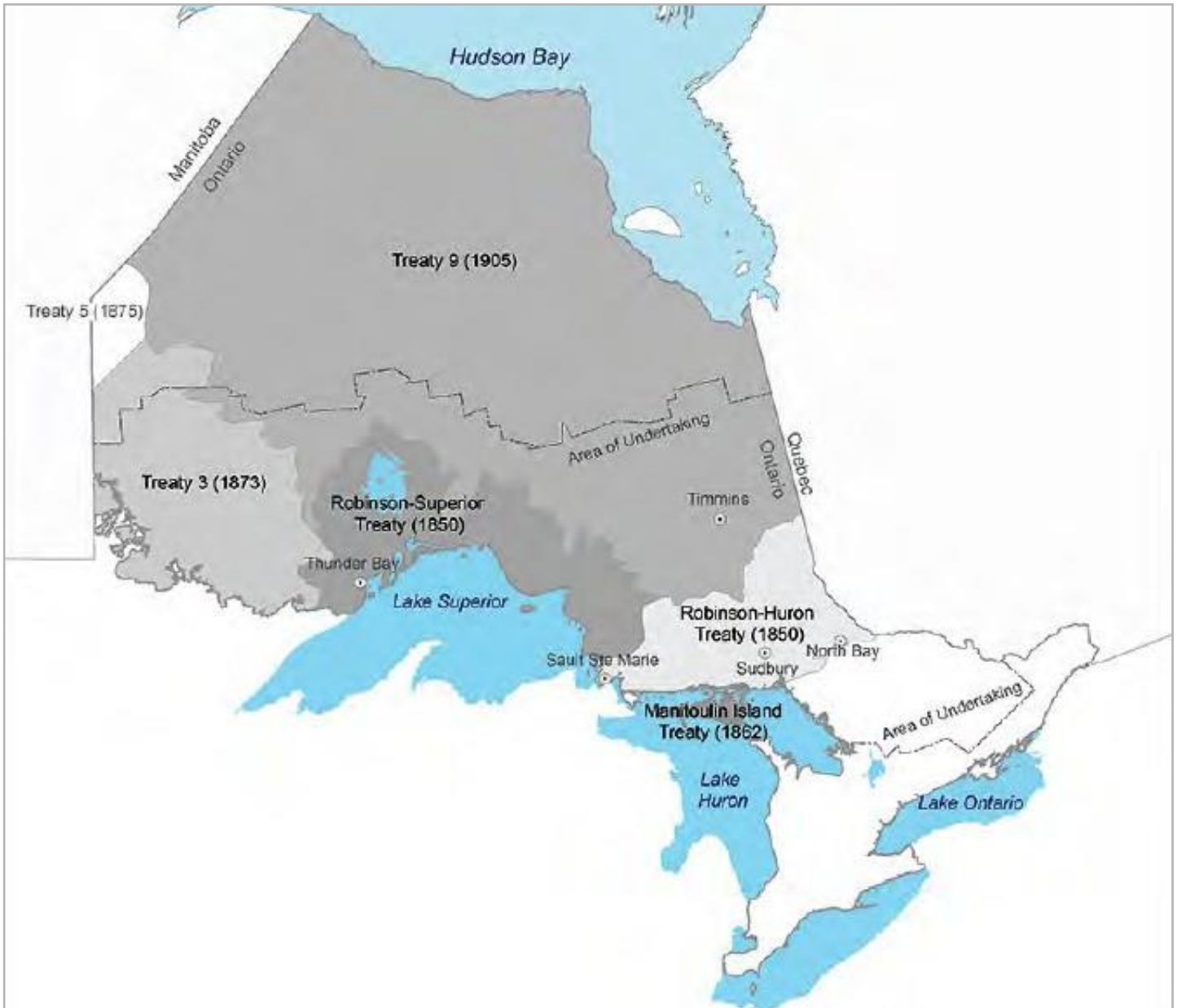
FIRST NATIONS



M. (2011). Ontario First Nations Map. Retrieved February 10, 2021, from <https://www.ontario.ca/page/ontario-first-nations-maps>

History Overview

There are 133 First Nations communities across Ontario. First Nations communities in northern Ontario fall under Treaty 9 of the *Indian Act*. This treaty was initially signed in 1929-1930 by Cree and Anishinaabe peoples. The First Nations communities include: Algonquin, Cree, Ojibway (Chippewa), Odawa, Patawatomi, Delaware, and Haudenosaunee.



Smith, M. A. (2010). "A Reflection on First Nations and their Borwal Homelands in Ontario: Between a Rock and a Caribou." Retrieved February 10, 2021, from http://www.conservationandsociety.org/viewimage.asp?img=ConservatSoc_2015_13_1_23_161214_u1.jpg

Language

There are six main Indigenous language families; Anishinaabek, Onkwehonwe, Mushkegowuk, Lunaape, Inuktitut and Michif. From these various dialects, unique languages have developed. The majority of language speakers in northern Ontario speak Ojibway in the northwest, and Cree in the northeast.



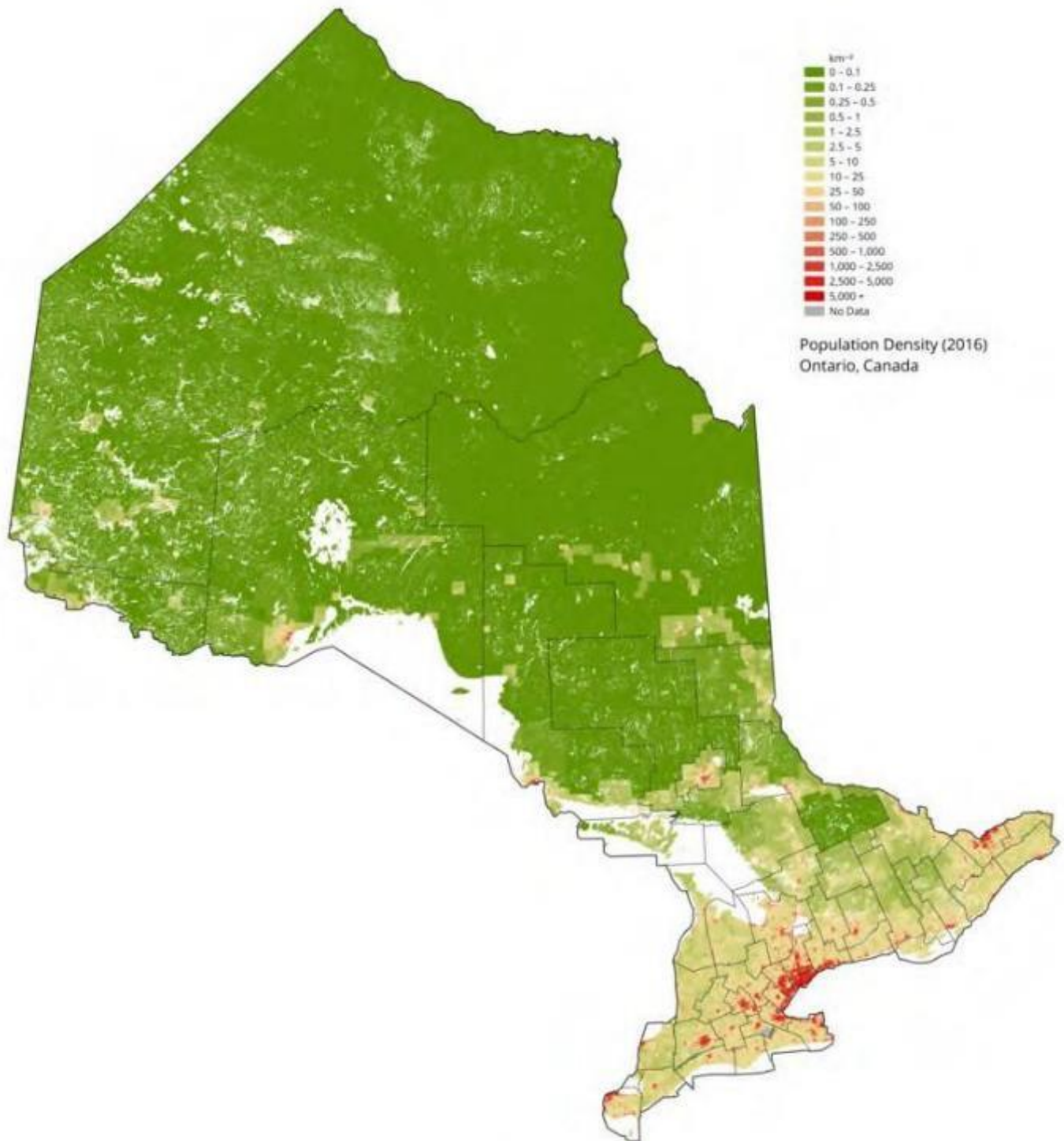
N. (2002). "Languages of Ontario." Retrieved February 11, 2021, from https://www.languagegeek.com/maps/ont/languages_of_ontario.html

Culture

The best way to understand the culture of the different First Nations is by directly communicating with the communities, or reading a website/publication created by the community. The community's culture and lifestyle must be factored into the design of housing. Through understanding ways of outdoor living, housing additions such as storage for hunting equipment, snowsuits, snowmobiles, and spaces for processing wild food need to be included in the technical requirements of constructing a house.

THE LAND

Nearly 94 per cent of the population is concentrated within southern Ontario, while northern Ontario is vast, and the six per cent of the population is dispersed.



W. (2019, July 16). [“Demographics of Ontario.” Retrieved April 26, 2022, from Wikipedia.](#)

Topography

Northern Ontario, delineated by the red line in the figure below, is known for its numerous lakes and rivers, and ranges between 0 m and 500 m above sea level. The longest Ontario border is to the west with Manitoba, defined by the southwestern point of the border with Lake of the Woods. Hudson Bay and James Bay define the most northern regions of Ontario. The waters of these bays are in the Arctic Archipelago Marine ecozone that form the southern, subarctic extent. Lake Timiskaming marks the border with Quebec running north.



N. (2002). Ontario Relief Map. Retrieved February 9, 2021, from <http://www.yellowmaps.com/map/ontario-relief-map-670.htm>

Vegetation

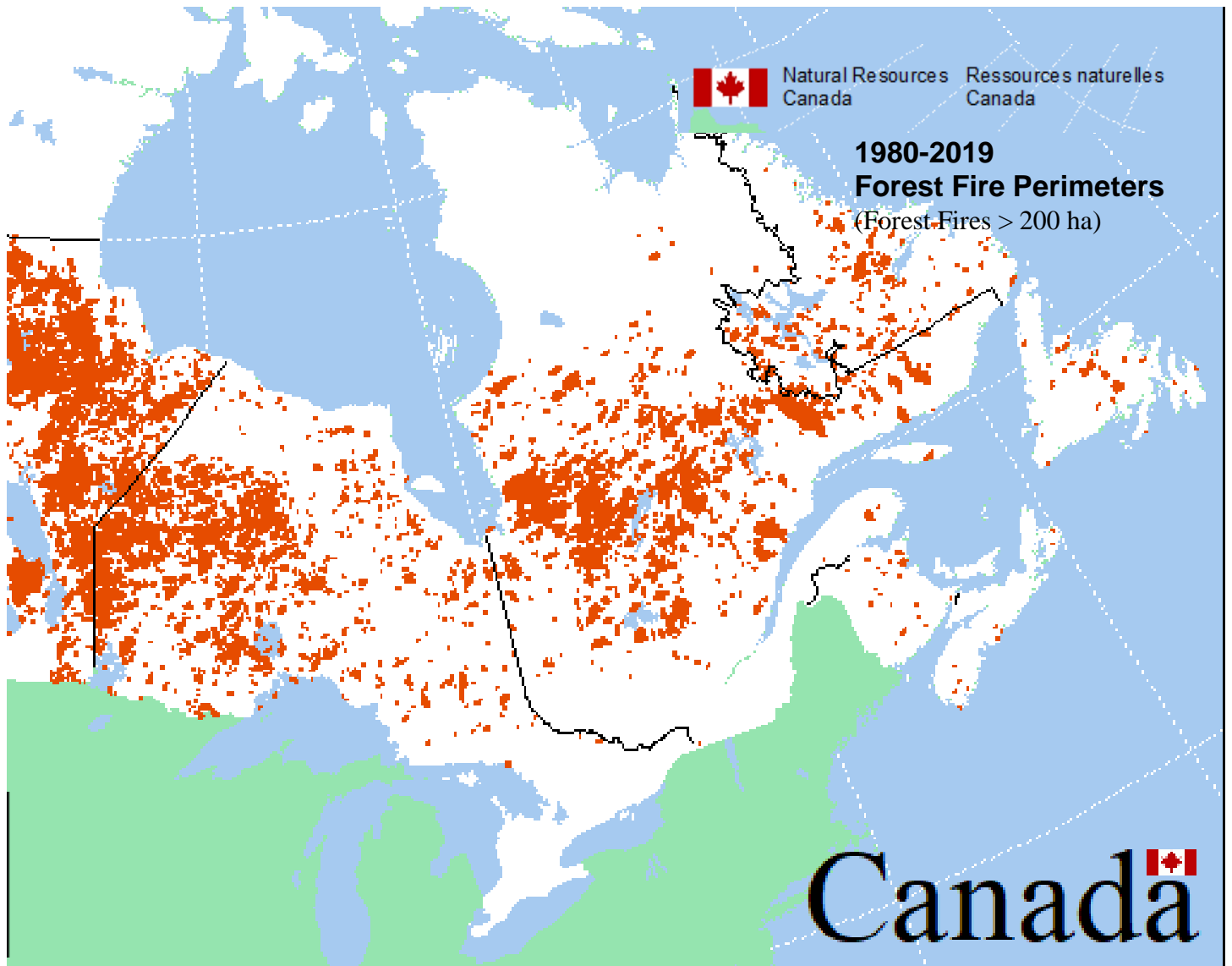
The Boreal Shield is the largest provincial ecozone. Northwestern Ontario is a part of the Midwestern Canadian Shield, containing the boreal forest that spreads through Manitoba and Saskatchewan. Northern Ontario has a multitude of physical features; The Hudson Bay Lowlands, the Ontario Shield and Mixed Wood Plains in the south.



N. (2020). *Wild Ontario*. Retrieved February 10, 2021, from <https://www.niagaraparks.com/events/event/wild-ontario>

Forest Fires

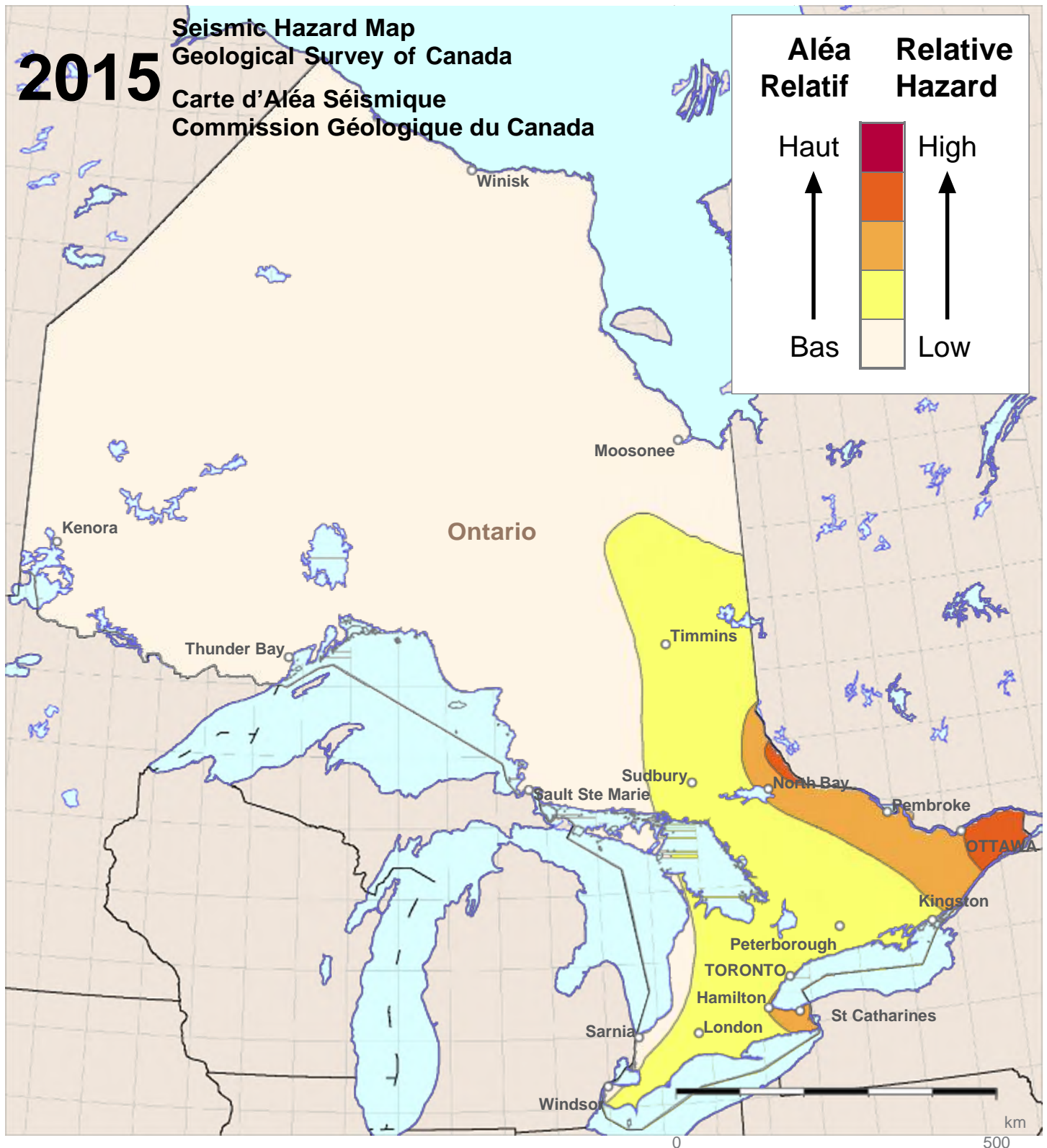
Comparing the different regions within Ontario, the northwest region is at highest risk under the fire danger classifications of Canada. Most fires have occurred in this region due to the densely forested ecozone.



N. (2019). Canadian National Fire Database (CNFDB). Retrieved February 10, 2021, from <https://cwfis.cfs.nrcan.gc.ca/ha/nfdb?wbdisable=true>

Earthquake Hazard

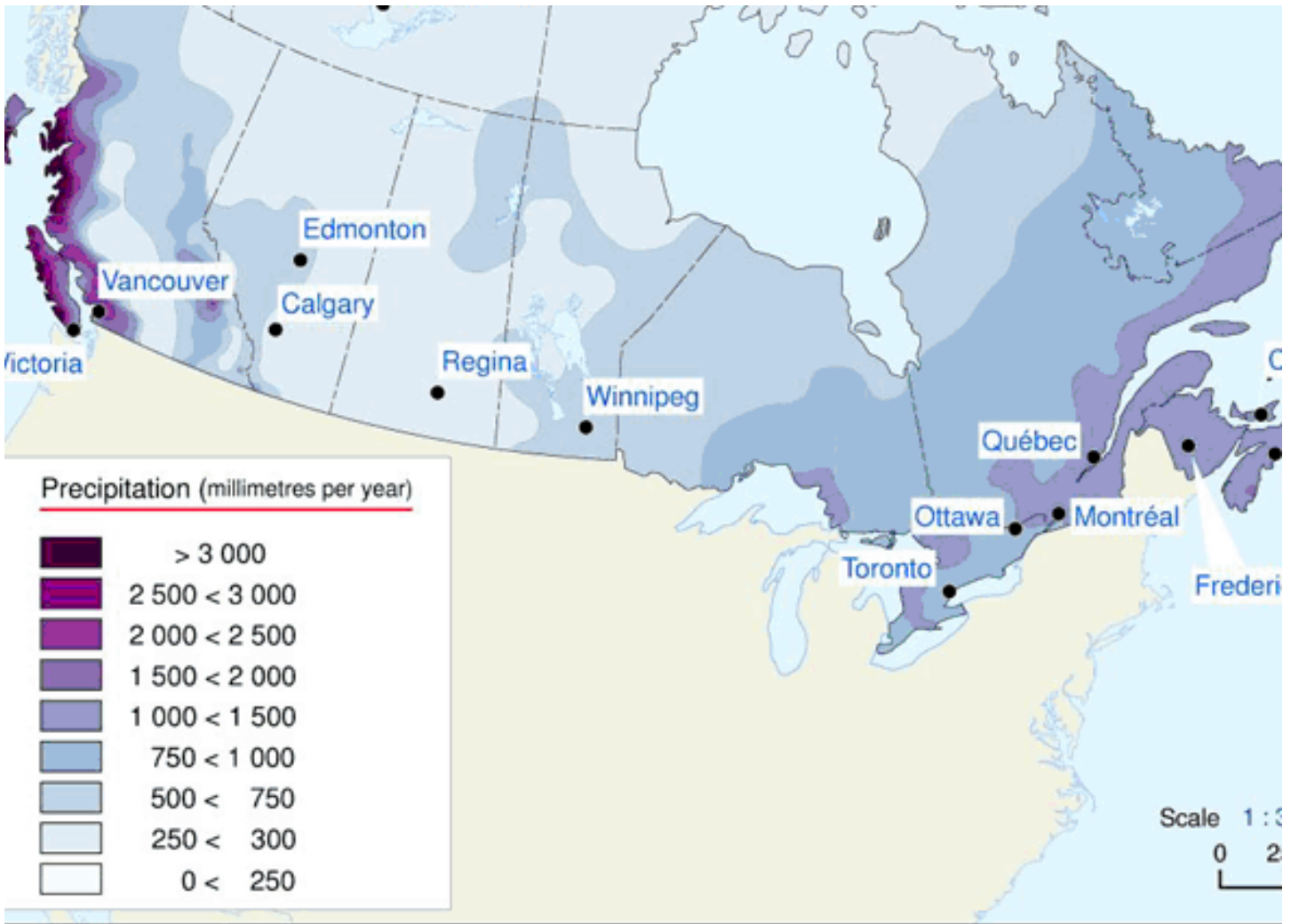
Northern Ontario has infrequent seismic activity. It is at low risk compared to the rest of the province. Nonetheless, regularly updated seismic data in Table C-3 of the *National Building Code of Canada* must be used for the earthquake design of buildings.



Government of Canada, N. (2015). *Seismic Hazard Map Geological Survey of Canada*. Retrieved February 10, 2021, from seismescanada.rncan.gc.ca/hazard-alea/zoning-zonage/images/ONsimp_NBCC2015.pdf

Precipitation (Rain and Snow)

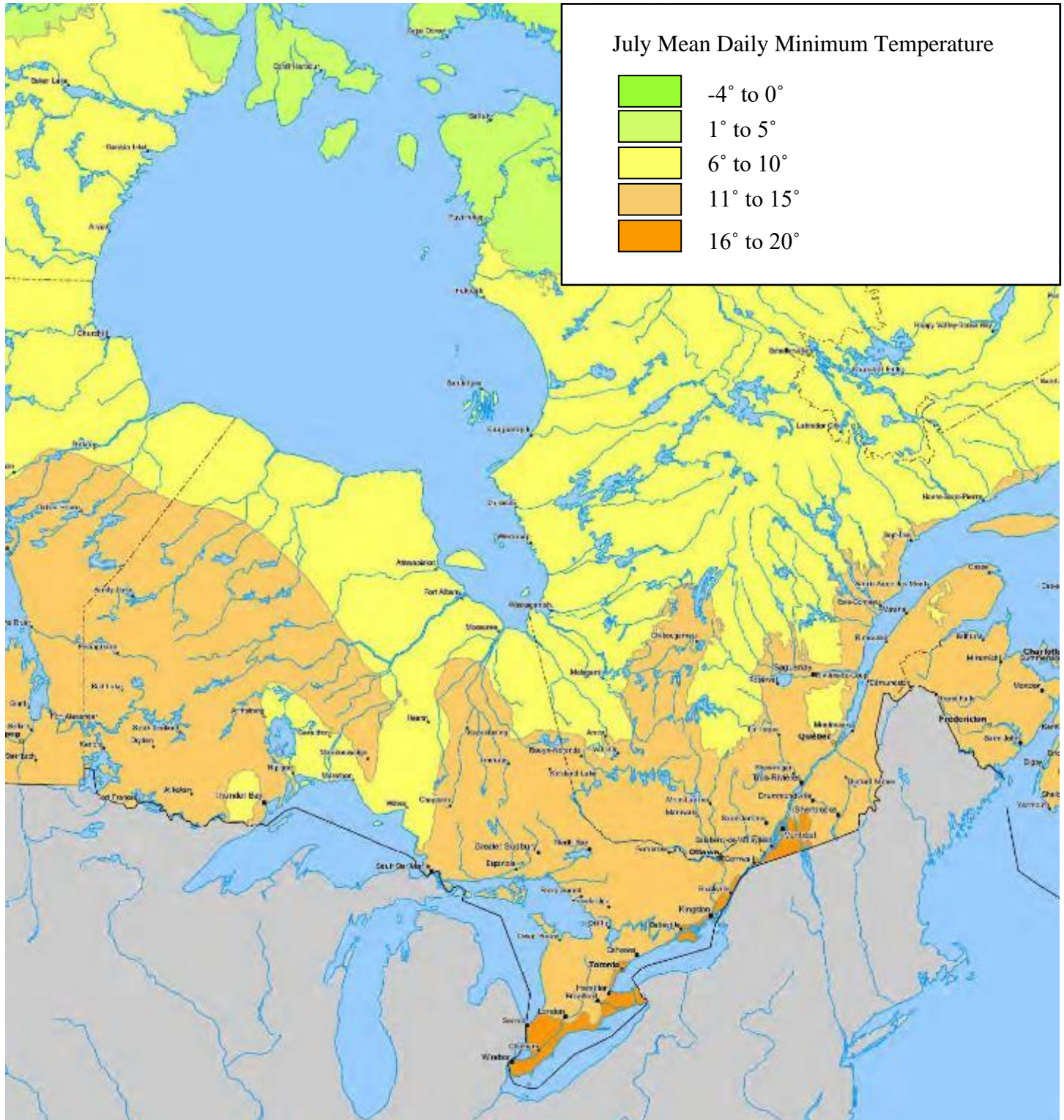
Ontario is affected by cold, dry, and arctic air from the north. Precipitation for northern Ontario ranges between 500 mm and 1000 mm. Northern Ontario experiences long, severely cold winters and short summers, with varying temperature changes in all seasons. Since there are no mountain ranges that protect from the arctic air, temperatures of -40 degrees Celsius are expected, and snow stays much longer than in other Ontario regions, sometimes lasting between October and May.



E. (2006). Human Activity and the Environment: Annual Statistics. Retrieved February 11, 2021, from <https://www150.statcan.gc.ca/n1/pub/16-201-x/2006000/4177438-eng.htm>

Summer Temperatures

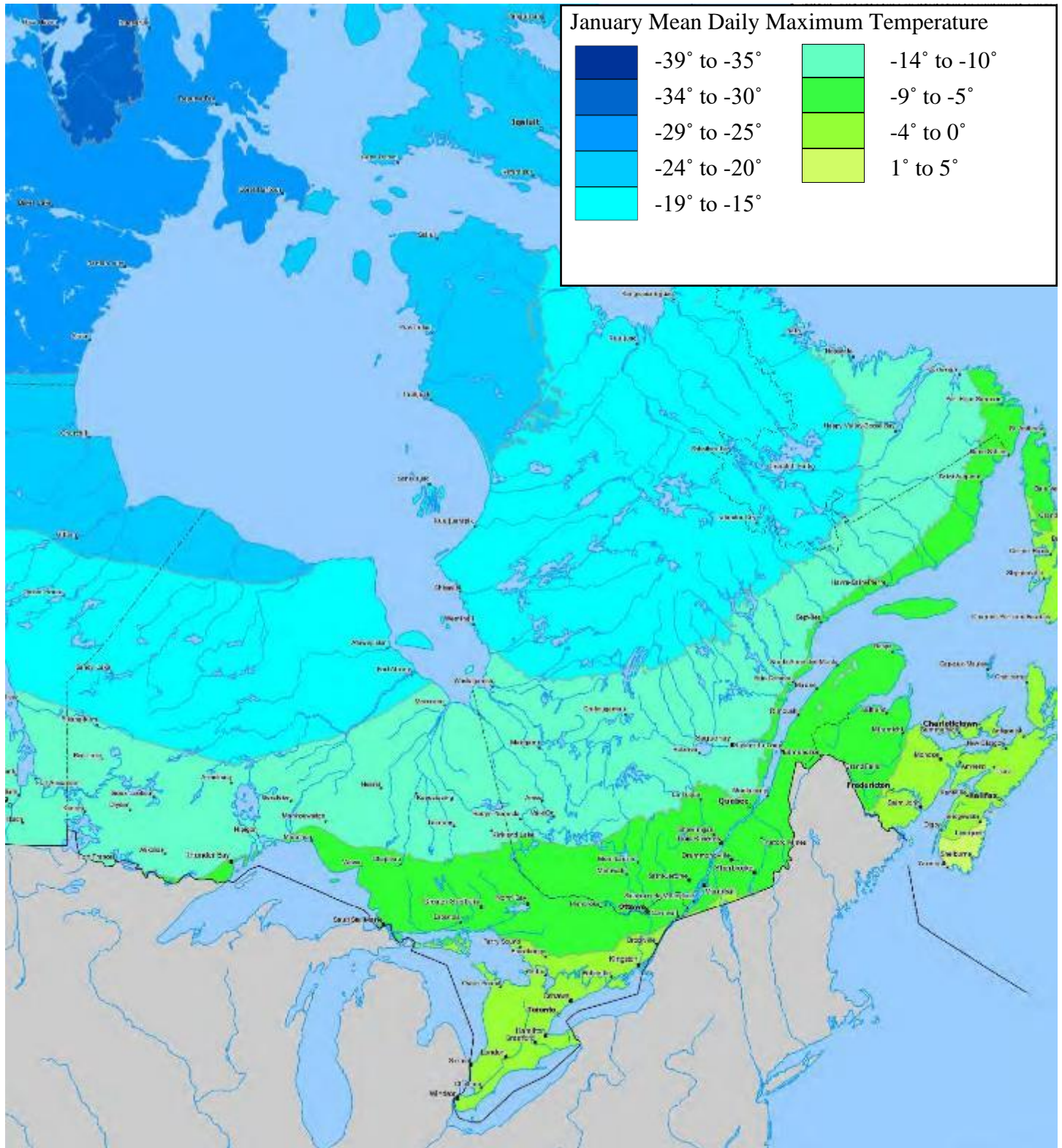
In the summer the average minimum temperature ranges from five to 10 degrees Celsius, and can reach up to the 20 degrees. In severe heat instances, it has exceeded 30 degrees Celsius from June to August at the highest. Rain in northern Ontario is common, with four to eight days of significant precipitation during the summer months. In northern Ontario, average low temperatures go to 14 degrees Celsius, and have gone down to nine degrees in July.



G. (2011). July Mean Daily Minimum Temperatures. Retrieved February 11, 2021, from <https://open.canada.ca/data/en/dataset/d9b8eca1-8893-11e0-bb22-6cf049291510>

Winter Temperatures

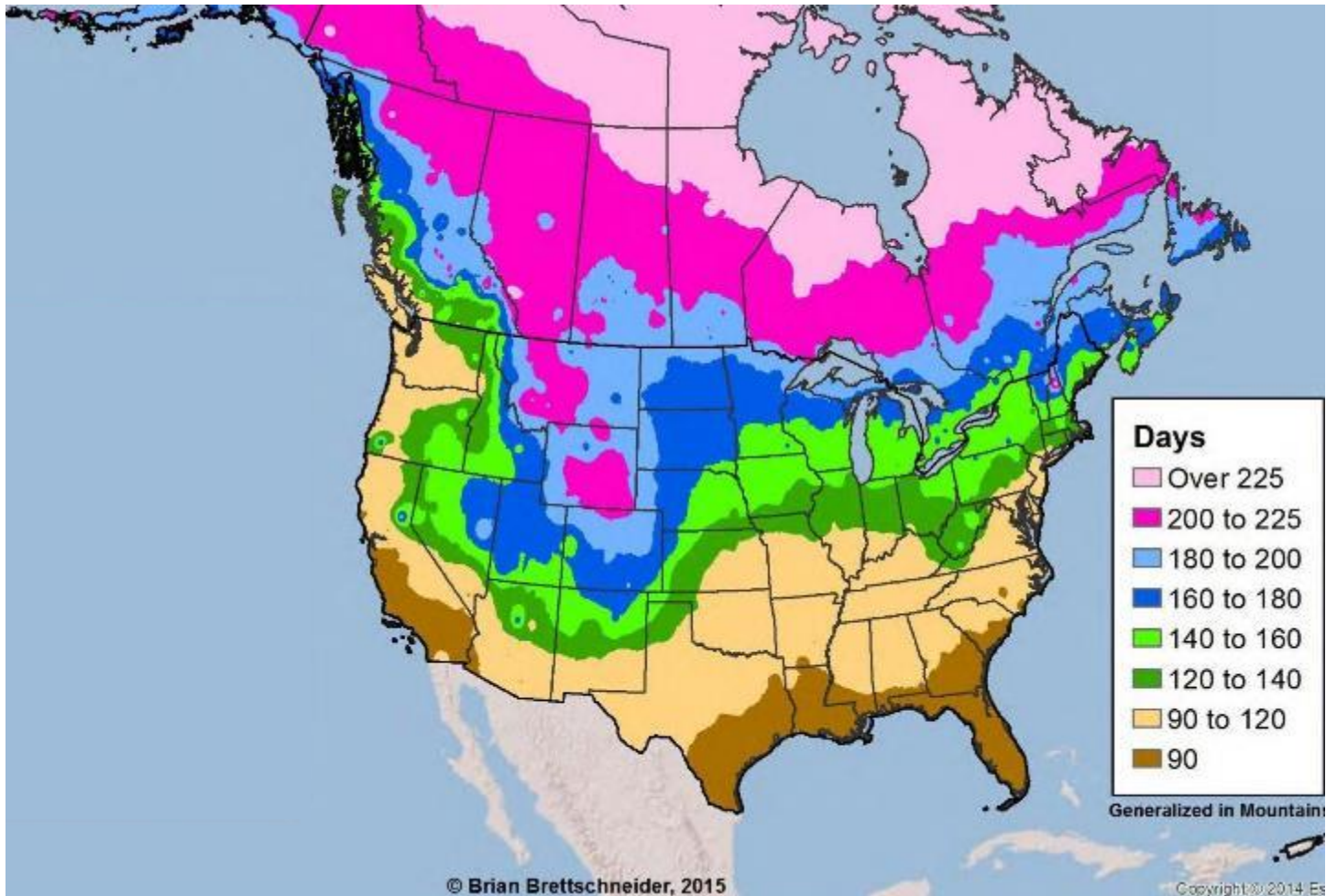
Winter temperatures vary on the number of average days a year with below 20-degree Celsius conditions. In the far northern Ontario regions, temperatures can reach -42 degrees Celsius. In the lower regions of northern Ontario, temperatures average -20 degrees Celsius.



G. (2011). January Mean Daily Maximum Temperature. Retrieved February 11, 2021, from <https://open.canada.ca/data/en/dataset/d9afebf0-8893-11e0-b577-6cf049291510>

Snow Cover

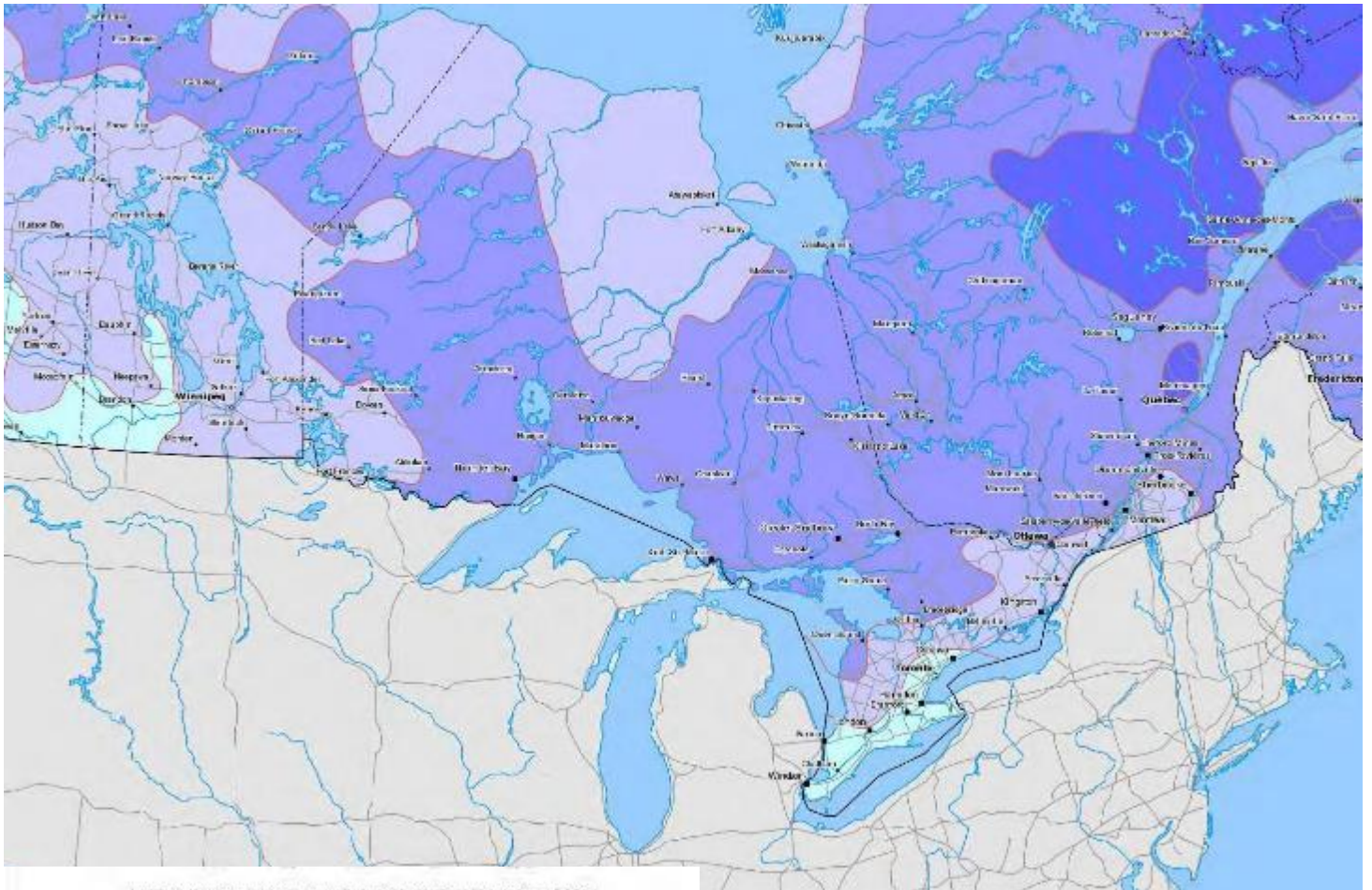
The average length of winter days can be over 225 for far northern Ontario regions, and 200 to 225 for northern Ontario regions.



Brettschneider, B. (2015). Average Length of Winter in Days: 1980-2014. Retrieved February 10, 2021.

Snowfall

On average, the ground gets covered with snow at the end of October for northern Ontario. Melting occurs in mid-March or May. The maximum snow depth is typically 30 to 49 cm in the far north of Ontario. Some regions also have 50 to 99 cm of snow coverage.



Lambert Conformal Conic Projection, Standard Parallels 49°N and 77°N



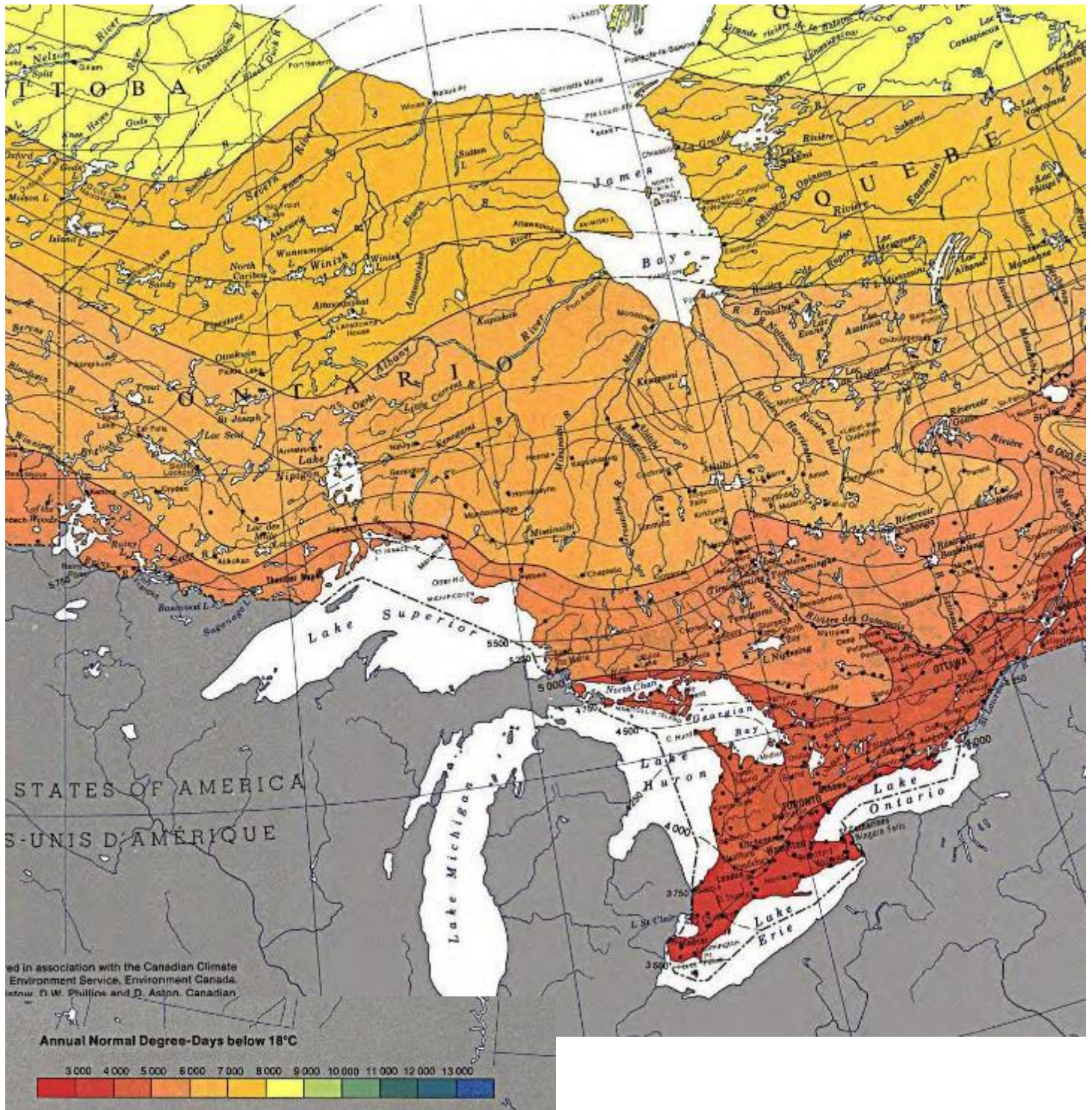
Source(s):
Average Maximum Snow Depth
 This average maximum snow depth (in centimetres) was generated by computing maximum annual snow depths at each point for the 0.25 degree latitude/longitude grid over a period of 18 snow seasons (1978/79 to 1996/97). Meteorological Service of Canada, Environment Canada.

© 2009, Her Majesty the Queen in Right of Canada, Natural Resources Canada.

N. (2009). Snow Distribution. Retrieved February 11, 2021, from <https://ccin.ca/ccw/snow/overview/distribution>

Heating Degree Days (HDD)

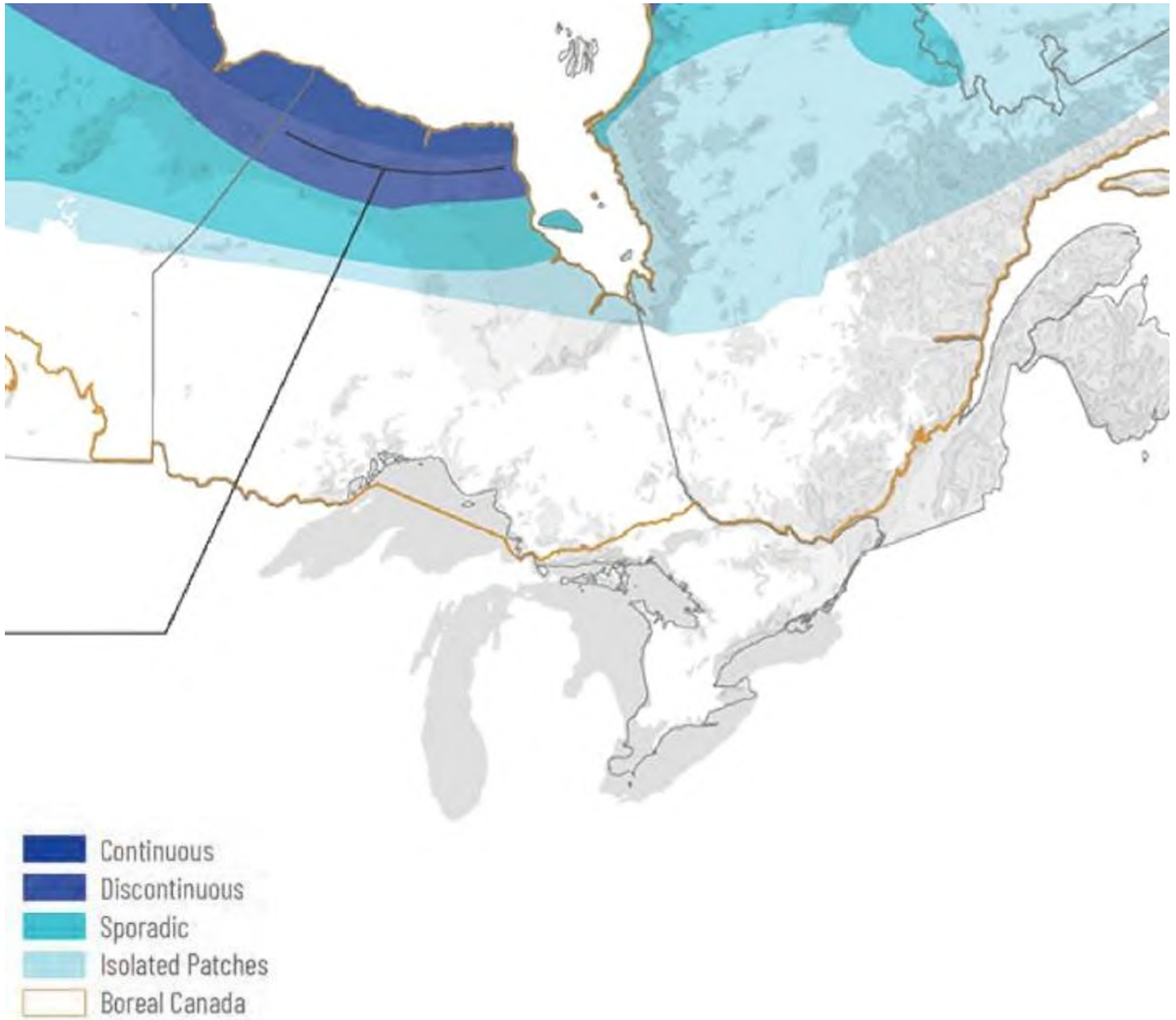
Heating degree ranges from 5,000 HDD to 8,000 HDD in the majority of the province. Most northern communities in Ontario fall in the 6,000 HDD to 7,000 HDD range. For house design, Table C-2 Climatic Data of the *National Building Code* must be used.



H. (2000). Maps Canada. Retrieved February 11, 2021, from https://ftp.maps.canada.ca/pub/nrcan_mcan/raster/atlas_5_ed/eng/environ/ment/climate/mcr4033.jpg

Permafrost

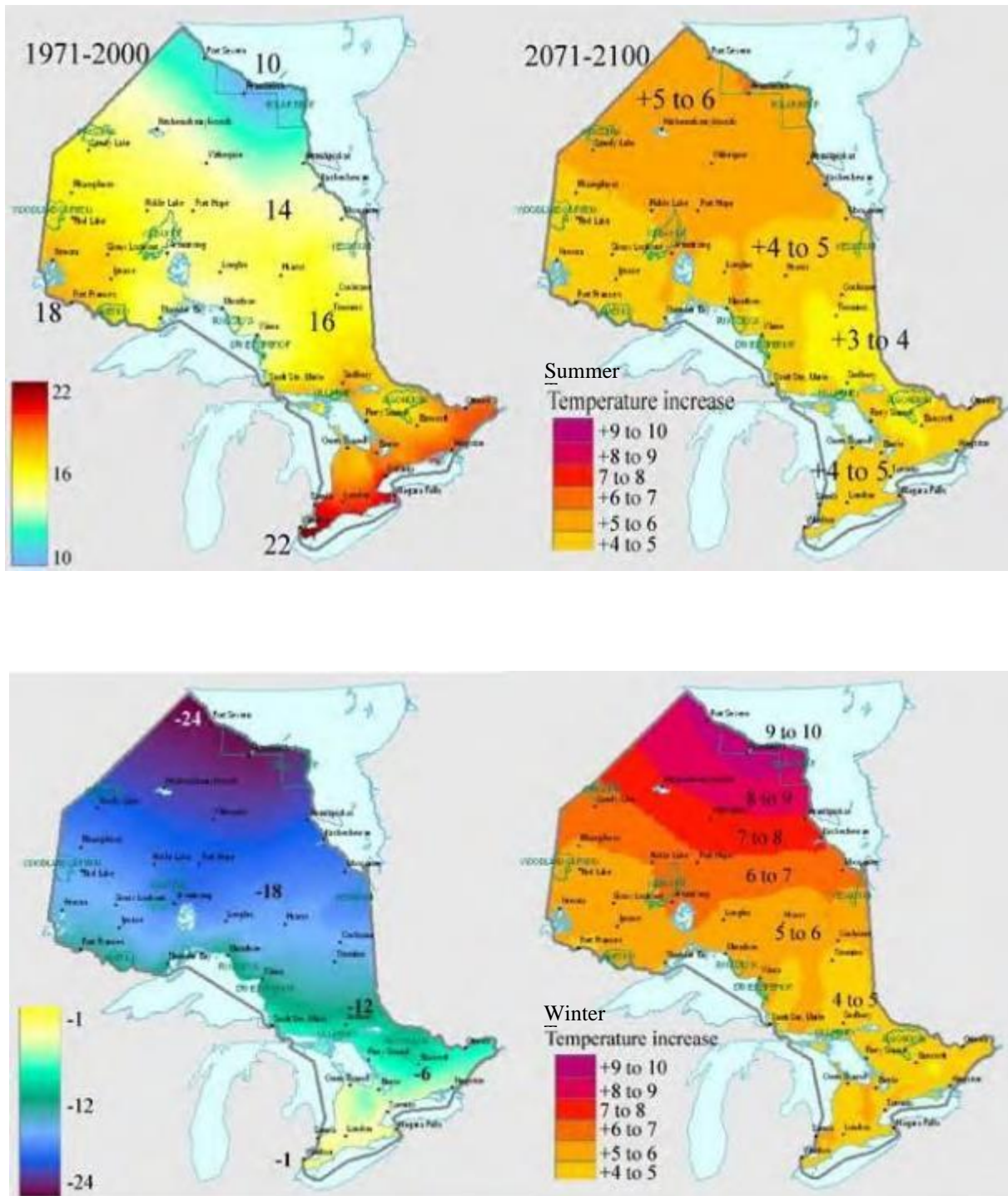
Permafrost is continuous in the far north along the Hudson Bay coast, and becomes discontinuous and sporadic further inland. Isolated patches continue further inland until it reaches the boreal.



Wallace, K. (2019, May 27). "Why developing Ontario's far north is risky business": *The Star*. Retrieved April 26, 2022, from <https://projects.thestar.com/climate-change-canada/ontario-ring-of-fire/>

Climate Change Impact

Climate change is leading to late freeze-up, and early thaw of rivers is making the ice-road delivery of goods to boreal-region communities more challenging. The figures below show the predicted impact of climate change on temperatures.

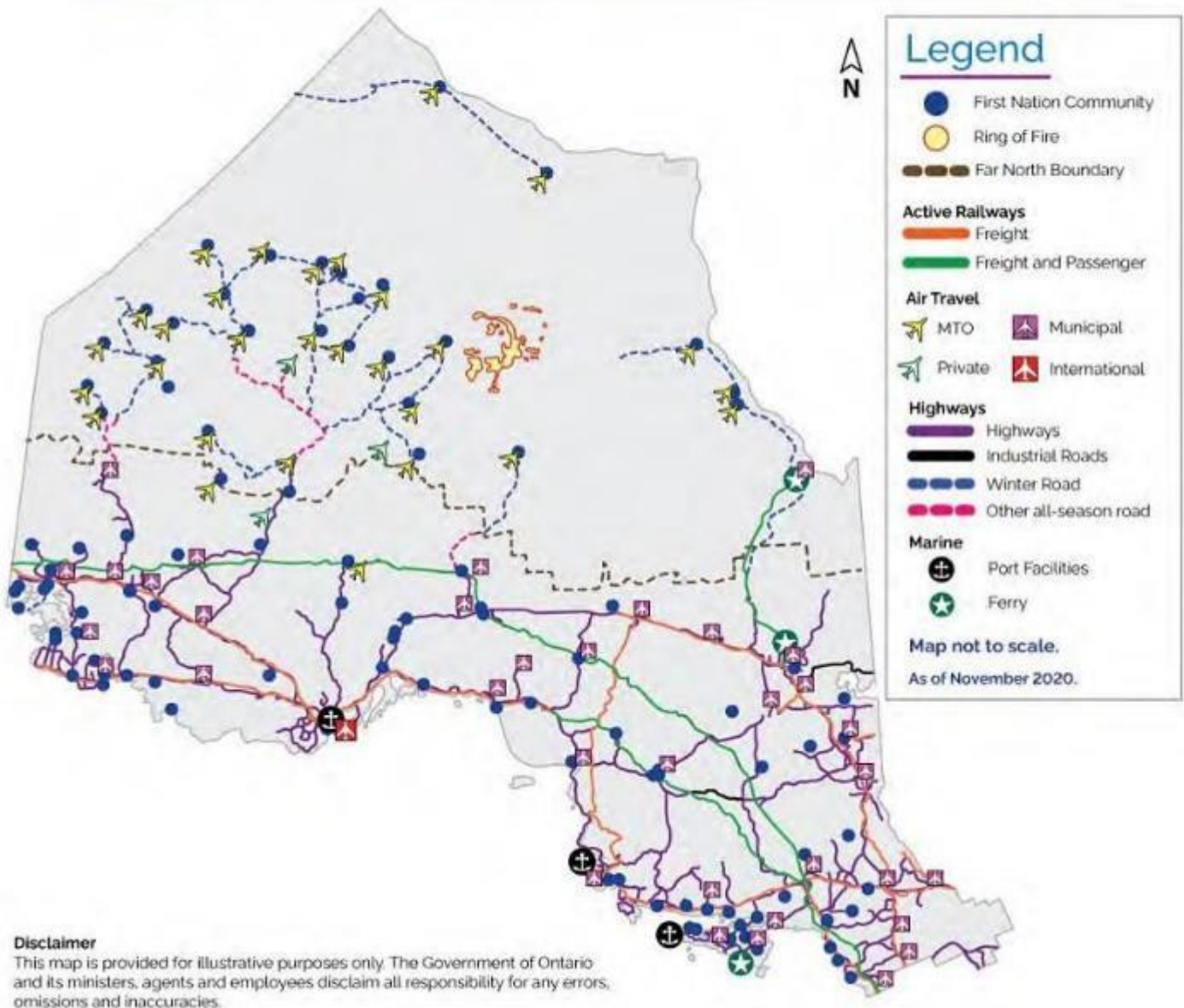


Colombo, S. (2008, January 01). Ontario's forests and forestry in a changing climate. Retrieved February 11, 2021, from <https://www.semanticscholar.org/paper/Ontario's-forests-and-forestry-in-a-changing-Colombo/a17a44f3b7dfaf11d917ac0fa3cfdcf5bb192c27>

INFRASTRUCTURE

The majority of northern Ontario communities are accessible by winter roads for only a few months of the year. In the warmer months, communities are disconnected from the lower parts of Ontario, relying on access through air travel. The furthest communities include Fort Severn and Peawanuck along the coast of Hudson Bay, which can be accessed by air travel.

Figure 1: Northern Ontario's Transportation Infrastructure



T. (2020, November). Connecting the North: A Draft Transportation Plan for Northern Ontario. Retrieved February 11, 2021, from <https://www.ontario.ca/page/connecting-north-draft-transportation-plan-northern-ontario>

Service Centres

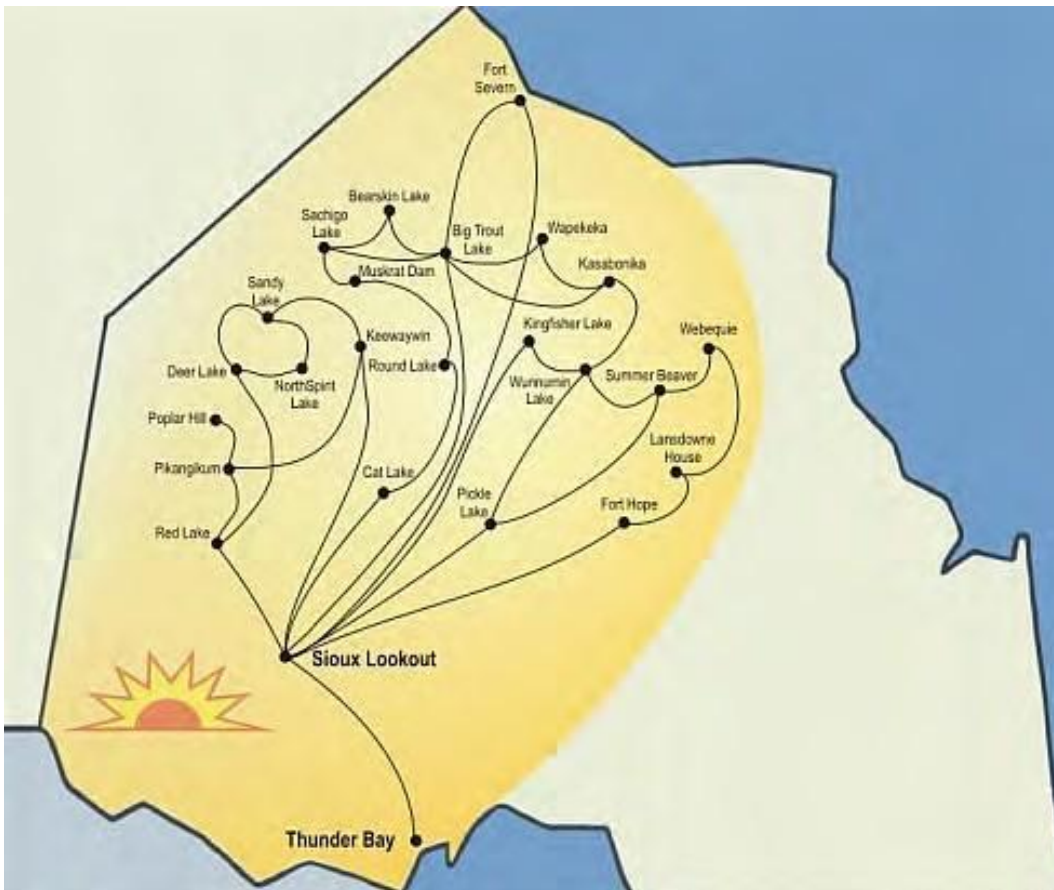
Approximately 811,000 residents are dispersed across almost 90 per cent of Ontario's landmass. Service centres are more commonly located along the lower northwest Ontario region. The furthest north service centre connected to the south is in Moosonee, considered to be the gateway to the arctic. It is only accessible by train or plane. The Northern Store is a well-recognized grocery and general merchandiser that services remote communities, with the furthest store in Fort Severn. Products are delivered through the winter road network in the winter, and must be delivered by air during the summer.



Modified by author. G. (2018, January 23). Prosperity and Growth Strategy for Northern Ontario. Retrieved February 11, 2021, from <http://fednor.gc.ca/eic/site/fednor-fednor.nsf/eng/fn04481.html>

Air Access

Flights for freight are scheduled regularly. Three airlines that travel to northern Ontario First Nations communities include Wasaya, North Star Air, and Air Creebec. Air Creebec has flights between Quebec and James Bay in Ontario. There are other small air services that also travel to remote communities.



Murray, J. (2010, October 07). Wasaya announces Fleet Expansion. Retrieved February 12, 2021, from <http://www.netnewsledger.com/2010/10/07/wasaya-announces-fleet-expansion/>

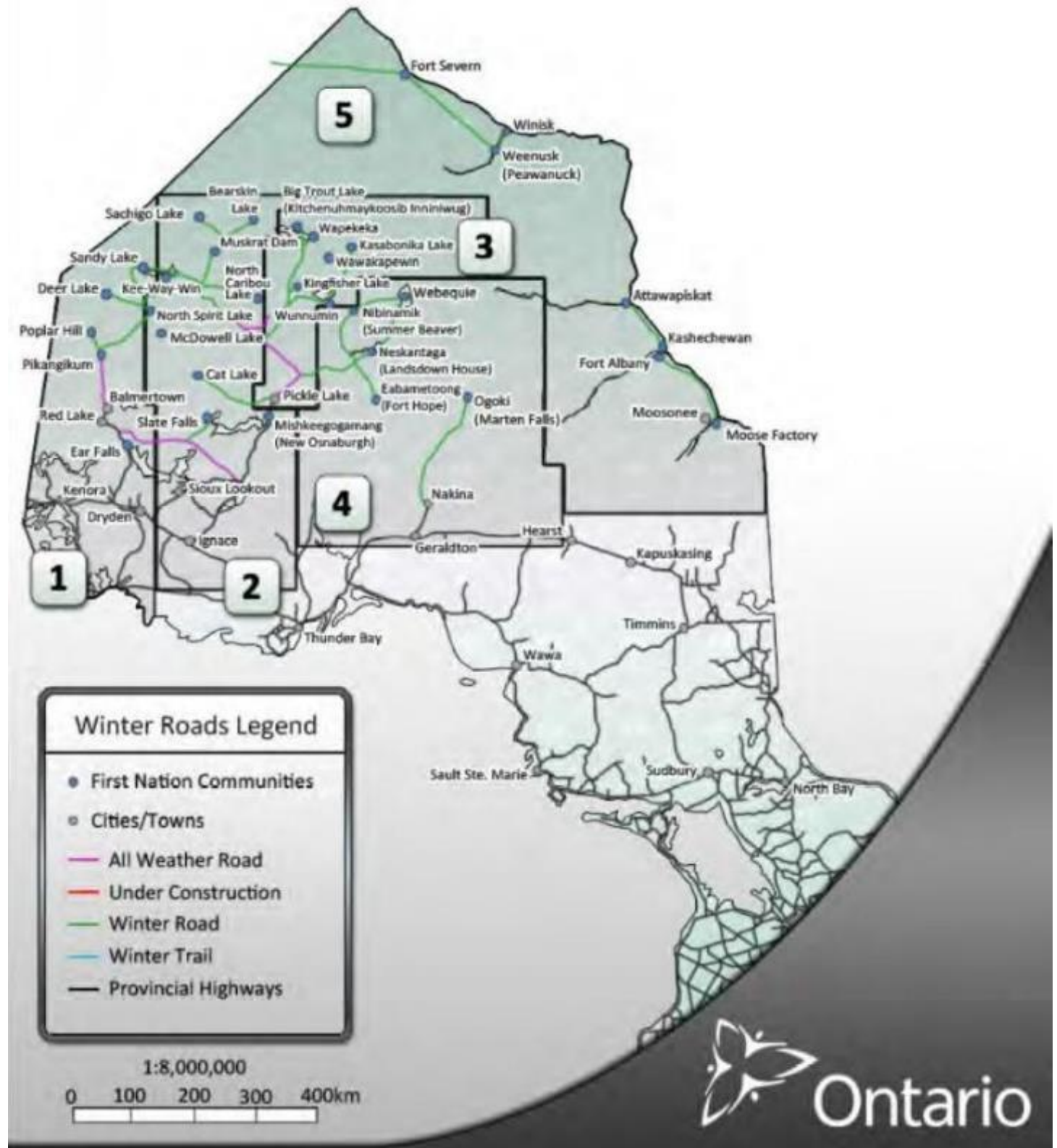


N. (n.d.). Cargo Locations. Retrieved February 11, 2021, from <http://www.northstarair.ca/article/cargo-locations-3200.asp>

Drum, B. (2019, May 14). "Air Creebec to suspend the Timmins and Rouyn-Noranda to Montreal route." Retrieved February 10, 2021, from <https://worldairlinenews.com/category/air-creebec/>

Winter Road Access

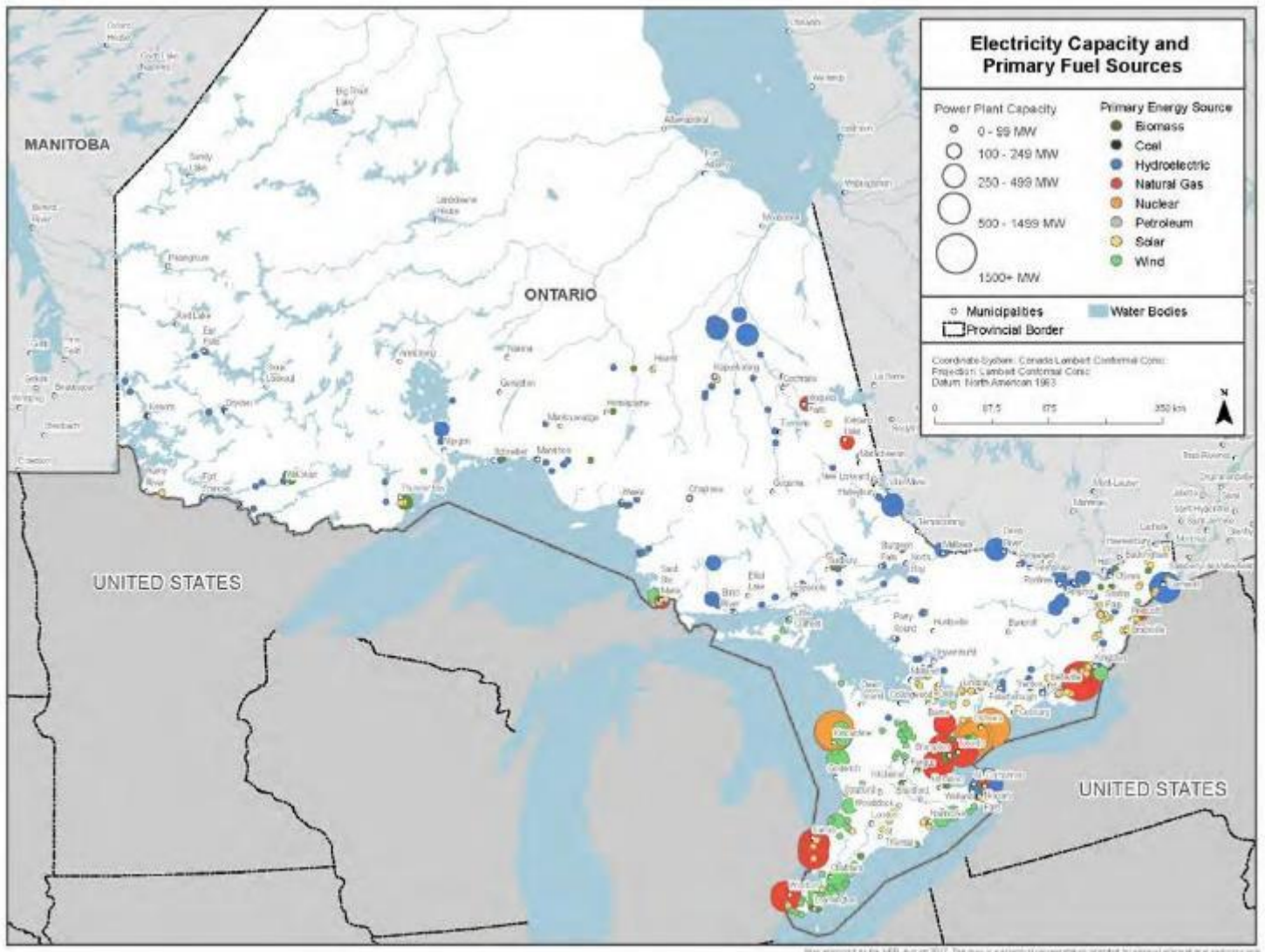
There are two main northeastern Ontario winter roads. The first from Manitoba connects with Fort Severn to Winisk and Weenusk. The second connects Moose Factory to Moosonee, Fort Albany, Kashechewan, and Attawapiskat. In the northwest of Ontario, various winter roads exist. The most central connect Nakina to Ogoki. The highest point connects Sachigo Lake through to Eabametoong.



G. (n.d.). Northern Ontario Winter Roads Map. Retrieved February 11, 2021, from http://www.mndm.gov.on.ca/sites/default/files/northern_ontario_winter_roads_map.pdf

Energy sources

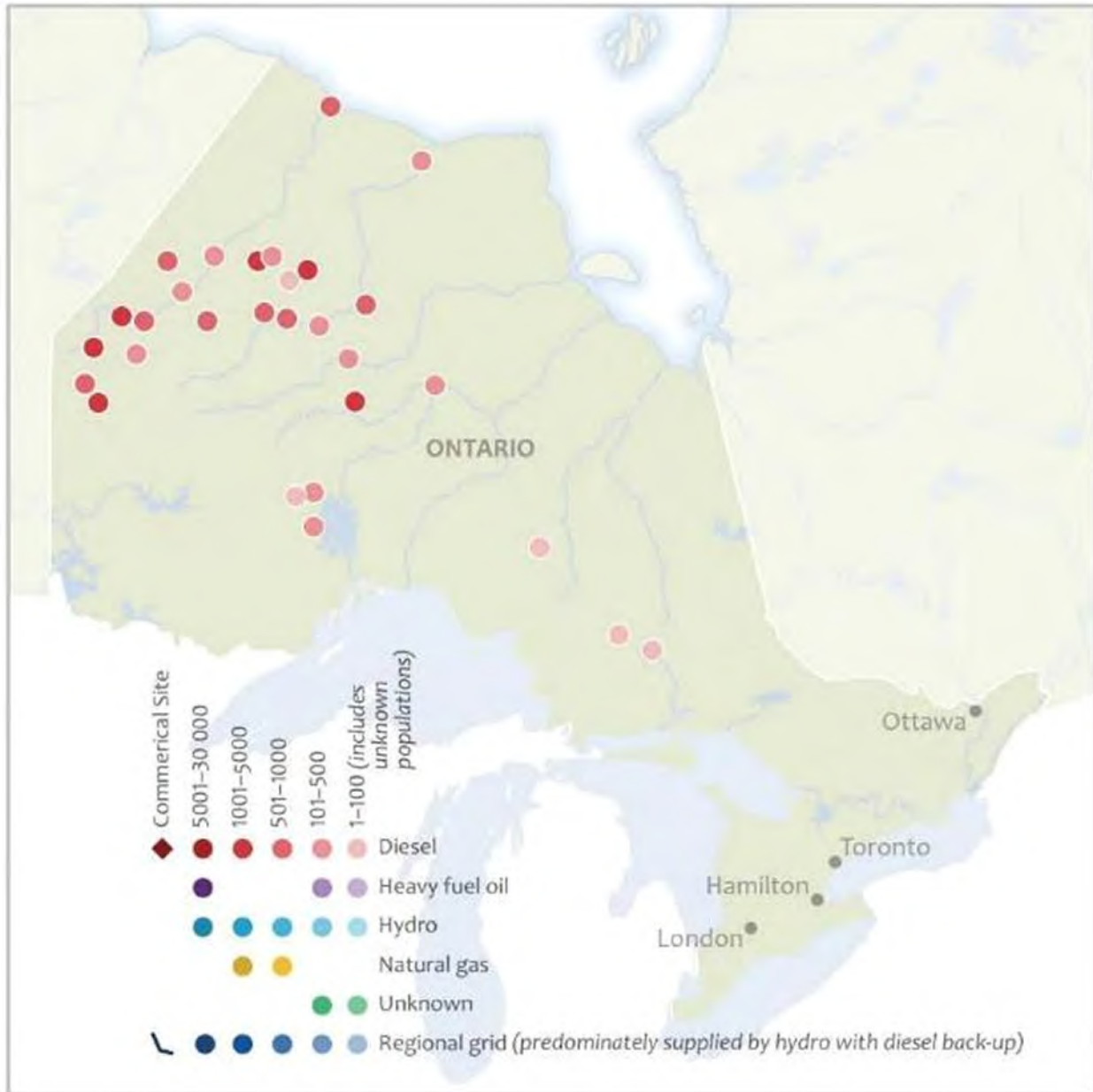
As many First Nations communities in northern Ontario do not have access to alternative energy sources, the primary choice is to import diesel for a generator to power basic utilities and essential services. Other alternatives are wind power with back-up generators and also hydro operations.



Government of Canada, C. (2017, August). Canada Energy Regulator. Retrieved February 10, 2021, from <https://www.cer-rec.gc.ca/en/data-analysis/energy-markets/provincial-territorial-energy-profiles/provincial-territorial-energy-profiles-nunavut.html>

Diesel Dependent Communities

Diesel-dependent and off-grid populations that rely on the resource include 500 to 1,500 populations highlighted in dark pink in the figure below for most of northwestern Ontario, and in light pink for populations of less than 500.



Rejba, A. (2020, May 28). Where is the Best Place to Live off the Grid in Canada. Retrieved February 11, 2021, from <https://www.thesmart-survivalist.com/where-is-the-best-place-to-live-off-the-grid-in-canada/>