SPECTRUM GROUP

LUA Consultation Submission

Date: January 18, 2021, version 3

Sites: Ahmic Harbour, Cedar Croft, and Rosskopf

Subject: Proposed Installation of Three Internet Distribution Towers in the Ahmic Lake Area within the Municipality of Magnetawan

Spectrum Telecom Group Ltd. (Spectrum Group) proposes to construct three self-support communication tower structures in the Ahmic Lake area in the Municipality of Magnetawan. These tower locations are named as follows:

1. Ahmic Harbour,
2. Cedar Croft, and
3. Rosskopf (on the boundary between Magnetawan and Ryerson Township).

These tower structures are required to support a network that will distribute fixed wireless broadband Internet services to residential and business users in the Ahmic Lake area.

The proposed tower sites would be located on unopened municipal road allowances that likely would not be used for future development. Spectrum Group is requesting the Municipality's approval to establish these sites as a means of providing better Internet services in the area. Use of these road allowances is seen as the Municipality's contribution to the project and their use would not be a monetary expense to the community. The remainder of this submission provides pertinent information that the Municipality needs to assess this proposal and, if deemed to be in the best interests of the community, is requested to provide its consent and concurrence in the form of a resolution or bylaw.

a) **Site Requirement:** Spectrum Group currently provides ***NetSpectrum*** branded fixed wireless Internet services to users over several telecommunication towers that are located within certain rural areas of the District Parry Sound including the Municipality of Magnetawan. During the past few months, Spectrum Group applied for, and was subsequently awarded, partial funding for the expansion of fixed wireless Internet infrastructure in Municipality of Magnetawan, in particular the Ahmic Lake area. Spectrum Group wishes to proceed with this infrastructure development opportunity.

   This network expansion proposal includes the installation of three self-support tower structures in the Ahmic Lake area. Establishing these tower sites at the proposed locations will greatly improve Internet access in the area and allow potential users to subscribe to *NetSpectrum* services. The proposed sites are located on unopened municipal road allowances and setback a suitable distance so as not to interfere with existing residential subdivisions. A high-level map showing each location is included as Attachment #1. A simplified diagram of how the network connects to the user's premises is shown on Attachment #2, figure 1.

   Spectrum Group is also open to the use of the structures by the Municipality for the colocation of two-way radio equipment that might be required for the operation of Public Works and Fire services.

b) **Site Locations:** The actual site locations and heights of the three towers proposed are as follows.

Ahmic Harbour: Lat: 45.6578°, Long. -79.7732°, height 56.1 meters.
Description: Unopened road allowance section between Lot 23 Con. 8 and Lot 23 Con. 9, PIN52086-0319.

Cedar Croft: Lat: 45.6358°, Long. -79.7091°, height 56.1 meters.
Description: Unopened road allowance section between Lot 14 Con. 4 and Lot 14 Con. 5, PIN52084-0341.

Rosskopf: Lat: 45.6235°, Long. -79.6110°, height 33.5 meters.
Description: Unopened road allowance section between Lot 81 Con. B and Lot 84 Con. B, PIN52080-0571.

Detailed topographical map sections of the sites are included as Attachment #3. It should be noted that two possible site options are being considered for the Cedar Croft location. The primary site choice offers the best service coverage and will be selected if vehicular access can be obtained and a hydro line extended from the end of the privately maintained road that terminates near the eastern end of the unopened road allowance. Municipal approval is requested for both options.

c) **Site Plan**: The tower site compound will occupy an area of about 6.1 X 9.1 meters and be located to one side of the road allowance so as not to prevent use of the corridor for other activities such as snowmobiling, pedestrian passage, or off-road vehicular access to adjacent properties. The site would be secured with a locked fence to protect the site from authorized access. A sketch of a typical site layout is included as Attachment 4.

d) **Site Surveys:** The position of the site compound on the road allowance will be laid out by a OLS surveyor. The boundaries of the road allowance near the site will also be staked to ensure that there is no encroachment onto adjacent properties during construction.

e) **Tower and Shelter Profiles:** Profiles of the towers are shown on Attachment #5. The proposed towers are self-support structures (i.e. no guy wires). Radio equipment associated with the network will be installed on the towers and housed in a small secured 3X3 meter shelter located at the tower's base. An image of a typical shelter is included as figure 2 on Attachment #2.

f) **Aviation Obstruction Marking:** Spectrum Group does not plan to equip the towers with white, red, or flashing aviation obstruction lighting as the structures likely do not pose a significant hazard to aircraft navigation in the area. However, Spectrum Group will have each tower assessed and conform to any aeronautical safety requirements that may be mandated by Transport Canada or NAV Canada.

g) **Site Hydro Services:** Hydro power for the sites will be extended from existing aerial lines that pass near each location. Hydro extensions will be supported on new poles or buried as required. Line extensions will be designed by Hydro One and inspected by the Electrical Safety Authority (ESA).

h) **Site Agreements:** Site license agreements will be drafted in January or February and forwarded to the Municipality by Spectrum Group. These agreements would cover use of the road allowance and be similar to the one completed for Horn Lake that was signed in 2012.

i) **Health Canada Safety Code 6:** RF output power of the networking equipment proposed is relatively low. Consequently, the tower and its antennas will not expose the public to any harmful levels of radio frequency exposure whatsoever and will be installed and operated on an ongoing basis to comply with Health Canada's Safety Code 6, including combined effects of the local spectrum environment. At the site, at ground level, RF emissions from the sites will be less than one (1) percent of the maximum allowable level as specified in the Code and emissions will diminish exponentially with distance.

j) **Colocation Opportunities**: Spectrum Group is open to colocation and rental opportunities on most of its towers and shelters including the ones proposed. Typical collocation users on Spectrum Group's tower facilities are utilities, municipalities, and cellular service providers. Spectrum Group will seriously consider any colocation request on the proposed towers; however, the use must be compatible with the Internet services being provided from the tower and the structure itself must be able to safely support the proposed antenna load. This would be confirmed by a comprehensive structural analysis performed by a competent engineering firm.

If any further information is required to assess this proposal submission, please contact the undersigned.

Respectfully,

Wayne Lynch
Project Administrator
Spectrum Group

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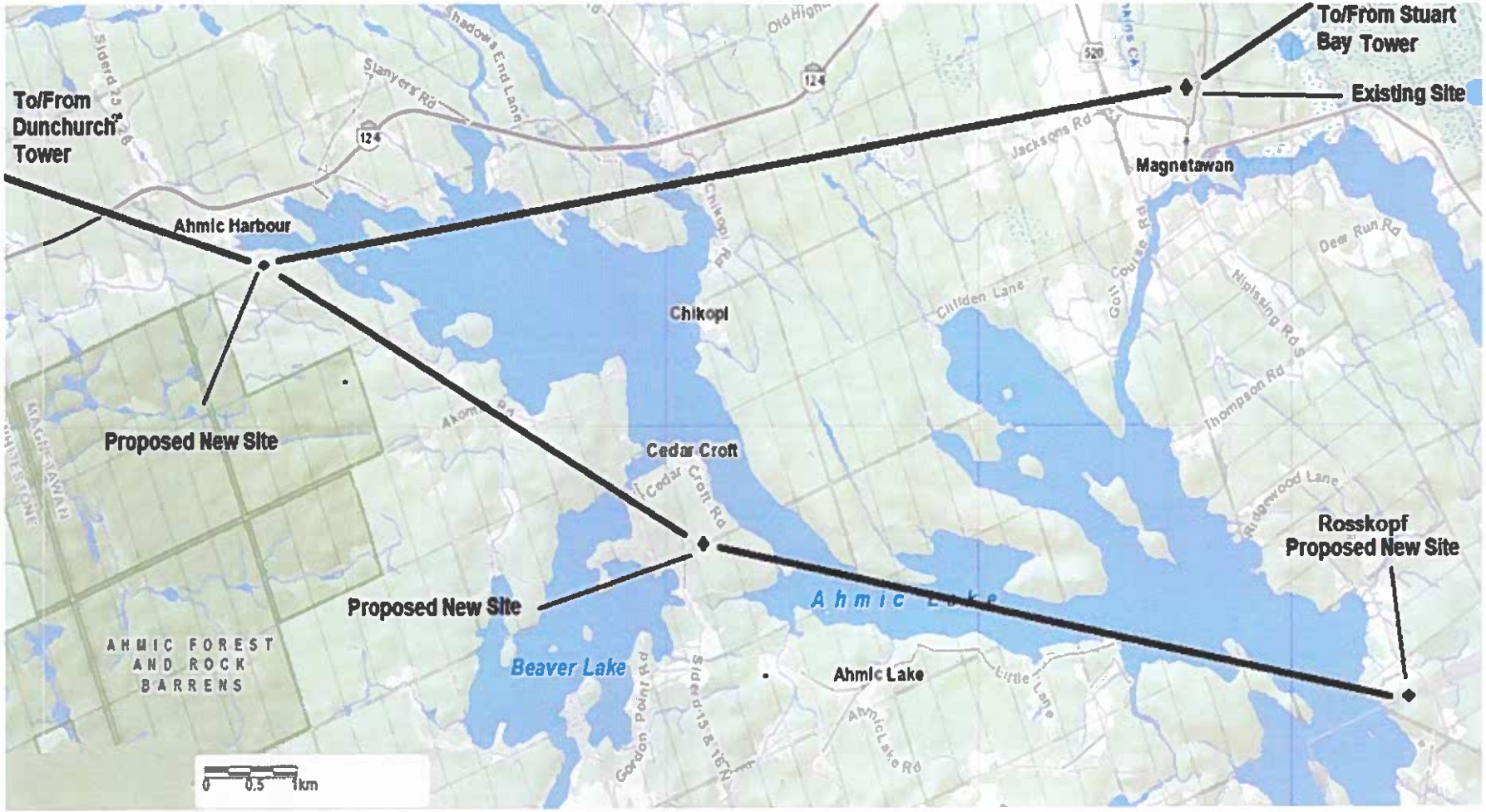
Phone: (705) 474-6368, extension 414
Mobile: (705) 491-0575

Attachments

Site Location Map



Network Infrastructure

Figure 1: Simplified Block Diagram of Typical 5 GHz Base Station AP Cluster

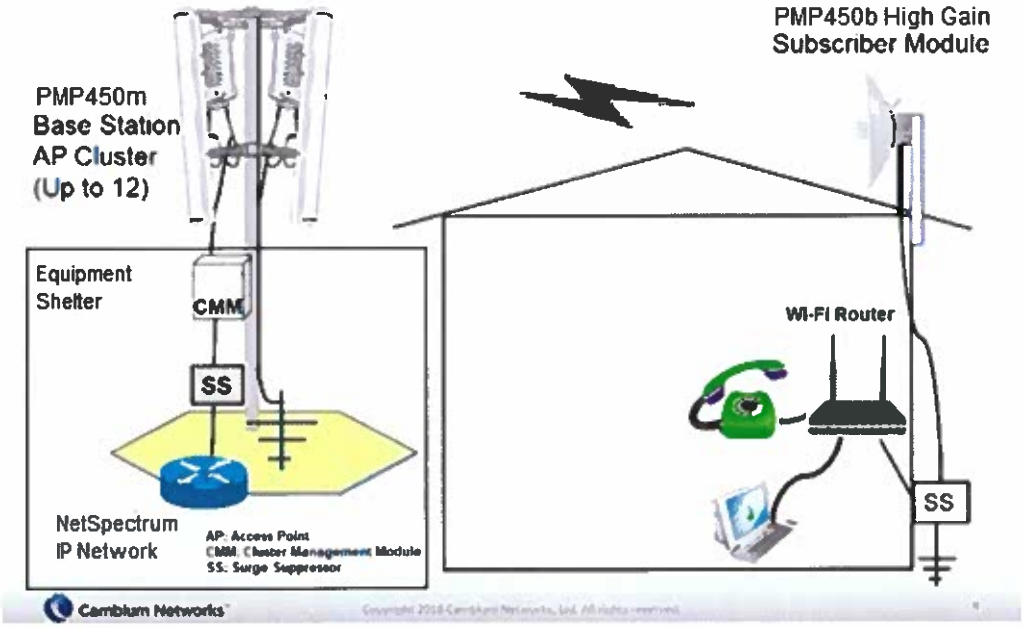
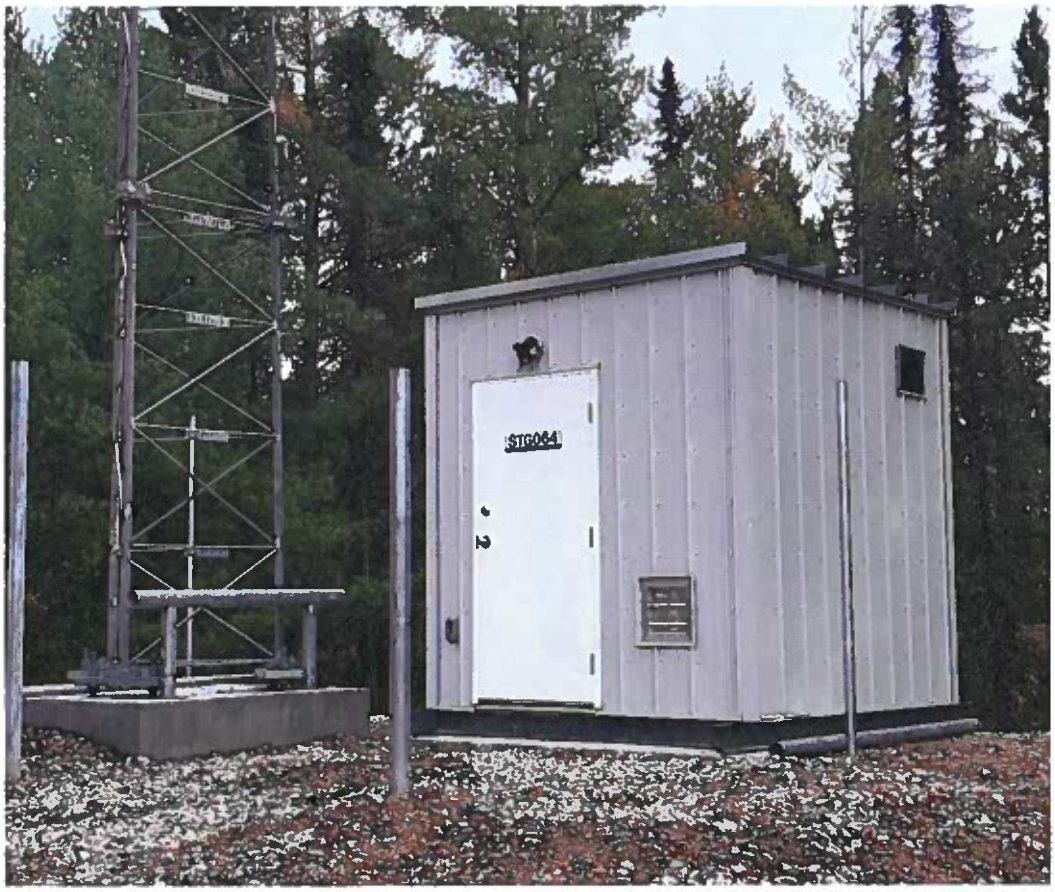


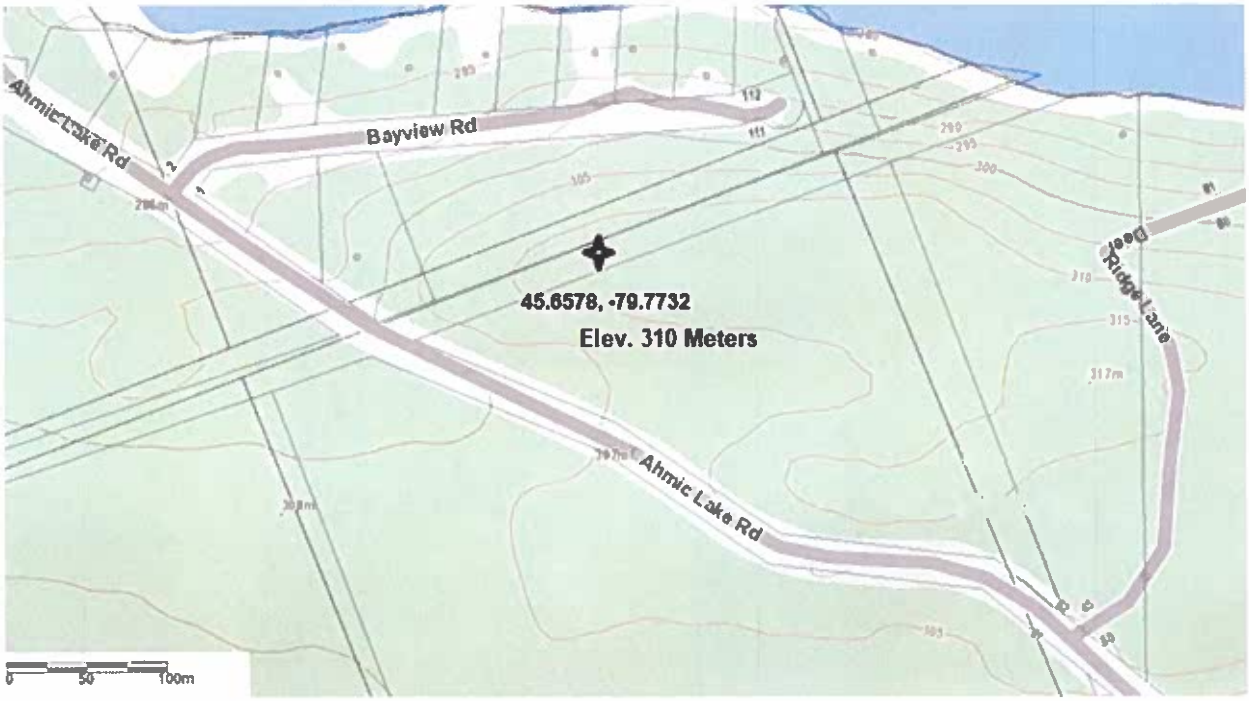
Figure 2: Image of Similar Tower Site Under Construction in 2019



Attachment #3

Proposed Tower Locations

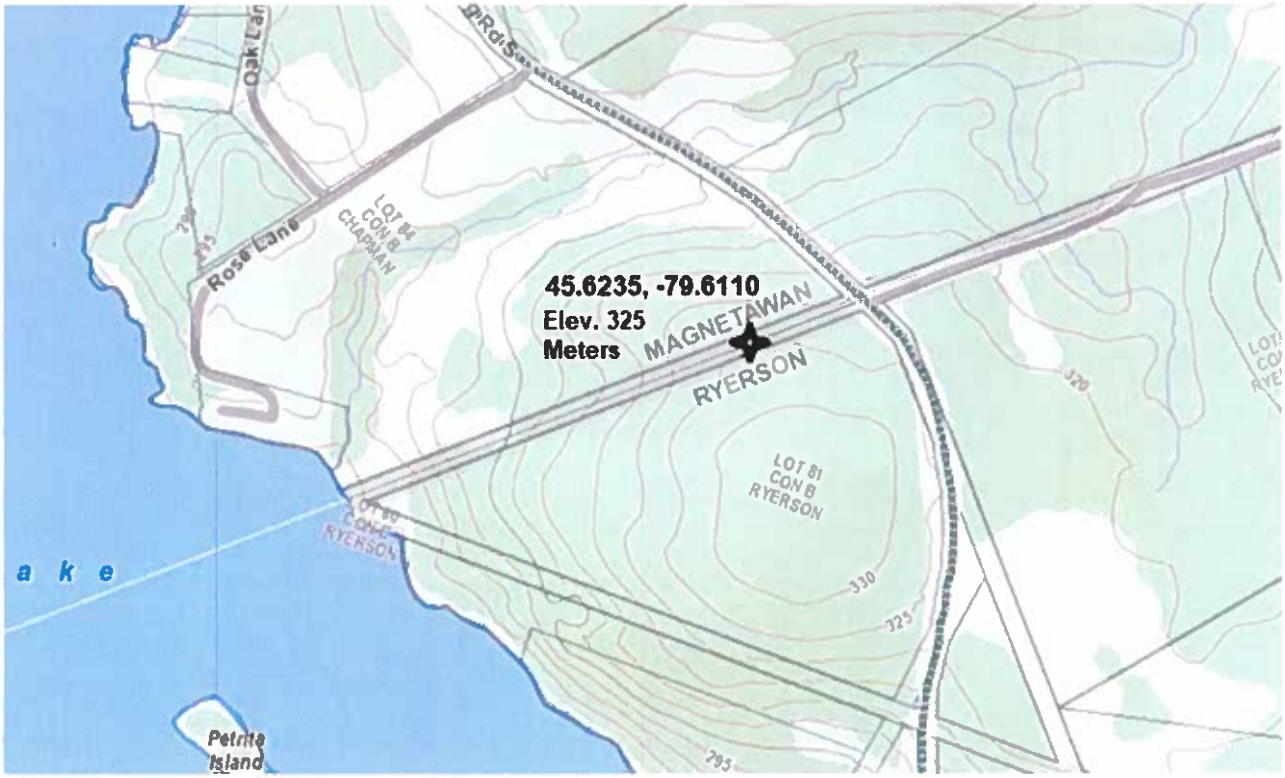
Ahmic Harbour Site, 56.1-Meter Tower



Cedar Croft Site, 56.1-Meter Tower

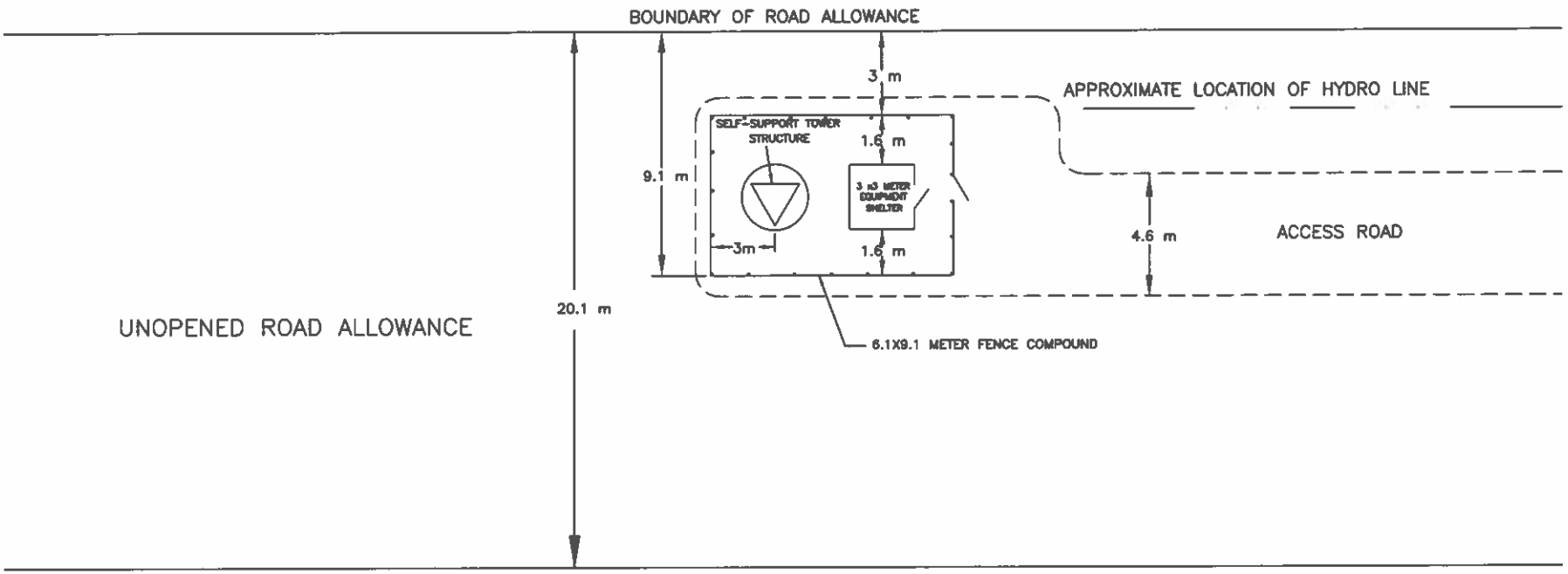
Attachment #3

Rosskopf Site, New 33.5-Meter Tower



ATTACHMENT #4

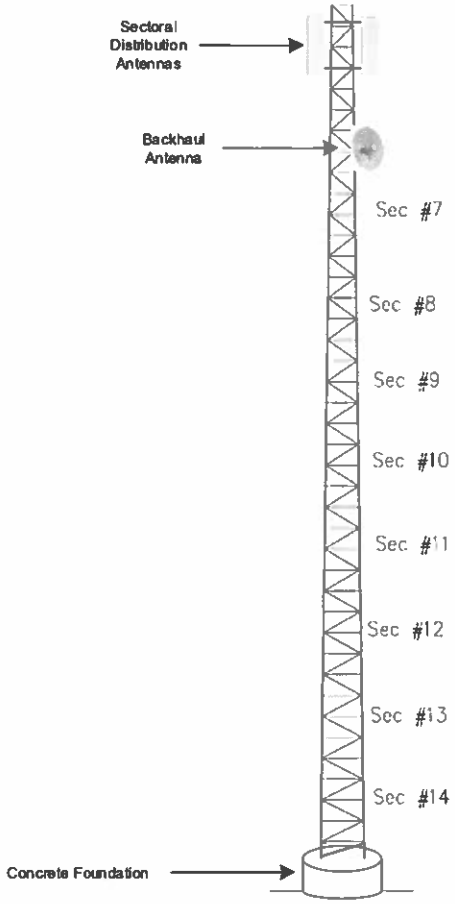
TYPICAL SITE PLAN



NOT TO SCALE.
DIMENSIONS ARE IN METERS

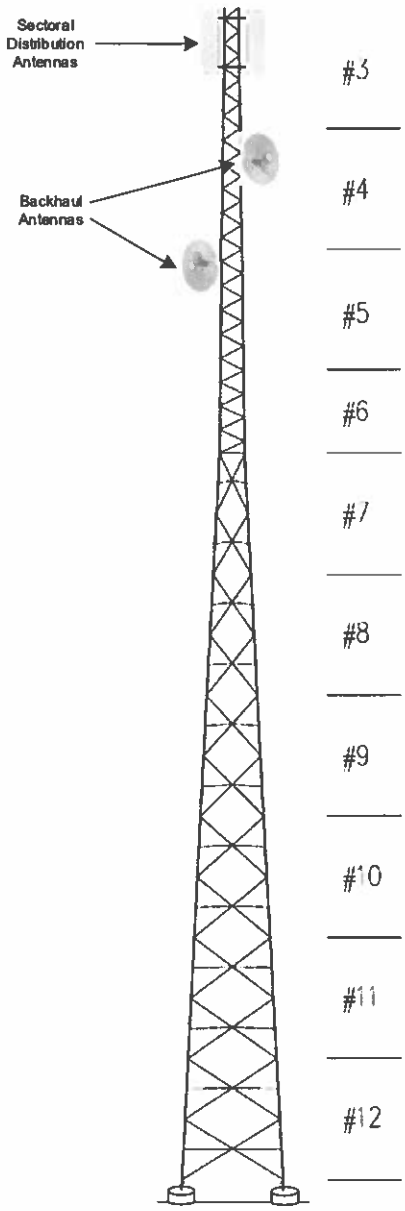
Attachment #5

Profile for
Rosskopf Tower



Super Titan WELD 110-Foot
Tower

Profile for
Ahmic Harbour and Cedar Croft
Towers



Super Titan MAX 184-Foot
Tower

Note: The configuration and mounting of antennas on the tower mast may not be exactly as shown.

Not to scale

SPECTRUM GROUP	TITLE: Proposed Tower Profiles	DRAWN BY: WPL	DATE: 10/10/20
	DESCRIPTION: Super Titan MAX and WELD Tower Profiles		

CENGN

Northern Project#3

Ahmic Harbour &
Ahmic Lake
Project Overview

January 25, 2021

CENGN Overview

CENGN Vision and Mission

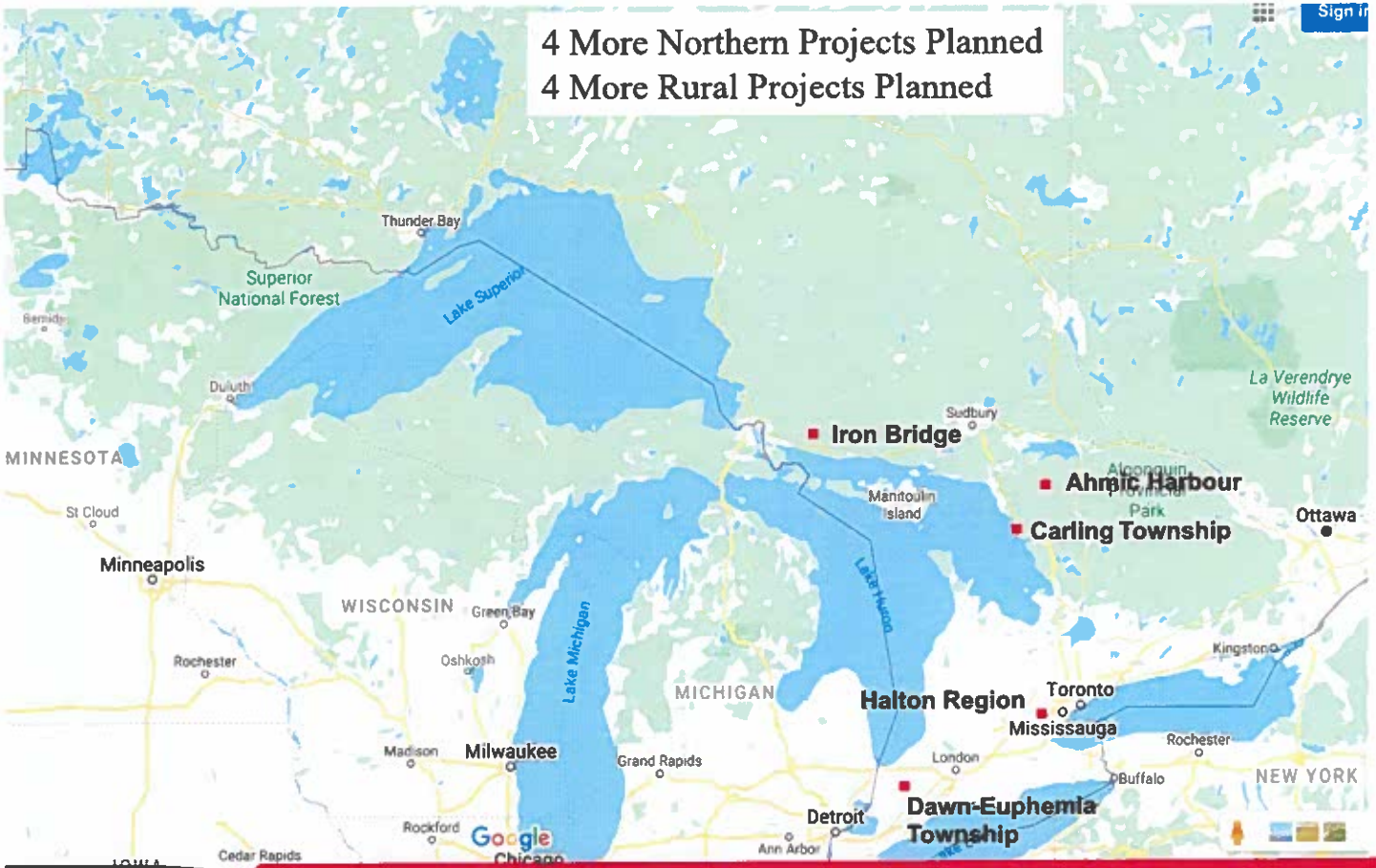
Advancing global technology innovation for the prosperity of all Canadians

CENGN drives technology innovation and industry growth through our test bed, technical expertise, talent development, and partner ecosystem

Solidifying Canada's Leadership in Networking

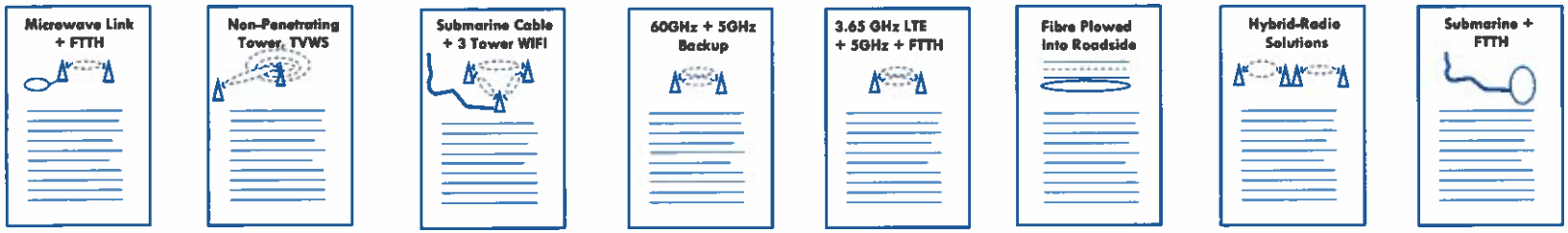
CENGN enables innovative tech solutions through its **Rural & Northern Ontario Residential Broadband Program**

Residential Broadband Projects Underway



- **Carling Township (near Parry Sound)**
  - Microwave middle km; FTTH
  - Network Operational – FTTH Installs Ongoing
  - Launch and PR issued Dec 2019
- **Iron Bridge (near Sault Ste Marie)**
  - Hybrid FWA incl. TVWS
  - Network Operational – FWA Installs Ongoing
  - Press Release issued Jun 16th, 2020
- **Dawn Euphemia Township (near Chatham-Kent)**
  - Multiple FWA: 5GHz WIFI, 24GHz MW, 3.65GHz LTE, 60GHz; FTTH in one village
  - 5GHz Service Operational, FWA installs Ongoing. Fibre Conduit Installation in progress
  - Press Release issued Aug 11th, 2020
- **Halton Region (Rural Milton Area)**
  - Hybrid FWA: 60 GHz, 5 GHz WIFI heavily meshed, distributed pole-based architecture
  - Planning underway
  - Press Release issued Nov 6th, 2020
- **Ahmic Harbour and Ahmic Lake**
  - Hybrid FWA: 5.0 GHz WIFI, 3.65 GHz LTE
  - Planning Underway
  - Funding Agreement signed
  - Press Release Issued Jan. 18th. 2021

Compile Collection of Blueprints for Broadband Innovation



Collection of Blueprints for Broadband Solutions For Small Northern and Rural Communities

High on Innovation

Low on Cost

Focusing on Micro-Projects

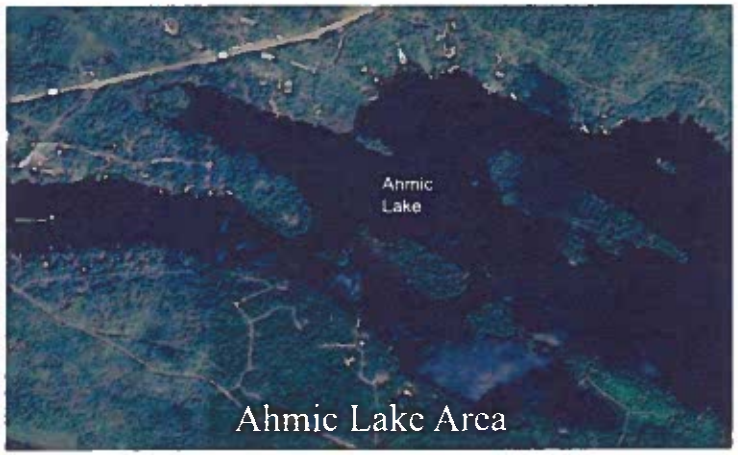
- Many small northern & rural communities only have 100-300 permanent or year-round homes within a 3-5 km radius of the centre of the hamlet or village
- Some communities double the number of users in the summer months

Key Properties of Micro-Projects

- These communities are too small to justify more than $150,000 - $500,000 Investment by WISPs
- $150,000 to $500,000 contribution by government funding can launch the project
- ROI typically can be within 2-4 years with 50% government funding
- Excellent service result for community with on-going investment by ISP
- Single committed small technology company or WISP makes sense for very small communities

Project Overview

Northern Project#3 – Problem Statement



The technology design proposed for the project must extend broadband services from an existing broadband POP in a waterfront community to nearby homes or residences, with limited or no broadband high-speed internet access, that are across and surrounding a large nearby waterbody (such as a lake, river, or extended wetland).

The required solution will extend broadband capacity directly from an existing broadband POP within the selected host northern Ontario waterfront community, or using a network of extended POPs, access the outlying waterfront and nearby homes to extend residential broadband access for homes and cottages up to 3-5 km away .

Ahmic Harbour and Ahmic Lake Area

Municipality of Magnetawan
- Ahmic Harbour/Ahmic Lake Selected

- Primary POP will be extended from the Village of Magnetawan to Ahmic Harbour
- Both communities have significant broadband deficiencies
- Second POP access in Dunchurch for Internet Backhaul
- Municipal tower, and Net Spectrum tower options exist
- Larger water body and number of homes on Ahmic Lake
- Lots of opportunities for subsequent phases to expand

Municipality of Magnetawan

Village of Ahmic Harbour

Village of Ahmic Harbour

- At least 50 homes in the village area
- 100s of homes and cottages across the lake
- Homes extend both directions down the arm and across the lake
- Opportunity as either a primary funded or secondary unfunded phase

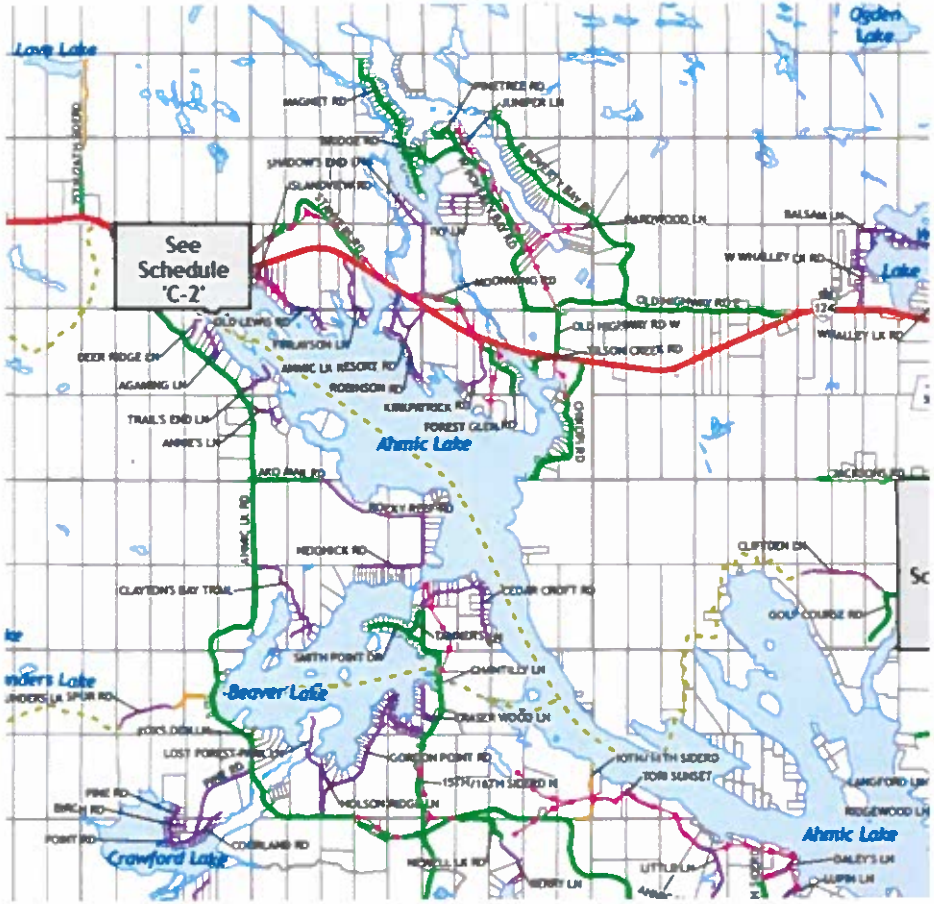
Ahmic Lake

- Large Number of homes and Cottages across and down the lake from the village

Municipality of Magnetawan

Ahmic Lake

- Large Number of homes and Cottages across and down the lake from the village
- Northern arm of Ahmic Lake north of Highway 124 also has a high number of homes and cottages
- Beaver Lake having many homes and cottages is also an expansion project option
- Many expansion phases possible down the length of the lake



Technology Overview

Technology Overview

Combination of 3.65 GHz and 5.0 GHz Wireless Solution Proposed

- Combination of wireless technology for distribution/last km
- Prepared to use an optical POP location in a community and extend the POP out to the community using wireless network
- Building 3 towers on both sides of Ahmic Lake

Using Hybrid Radio Solutions

- Proposed mix of radio technology to deal with unique community conditions
- 25/5 service using LTE internet access
- 50/10 service using 5.0GHz internet access

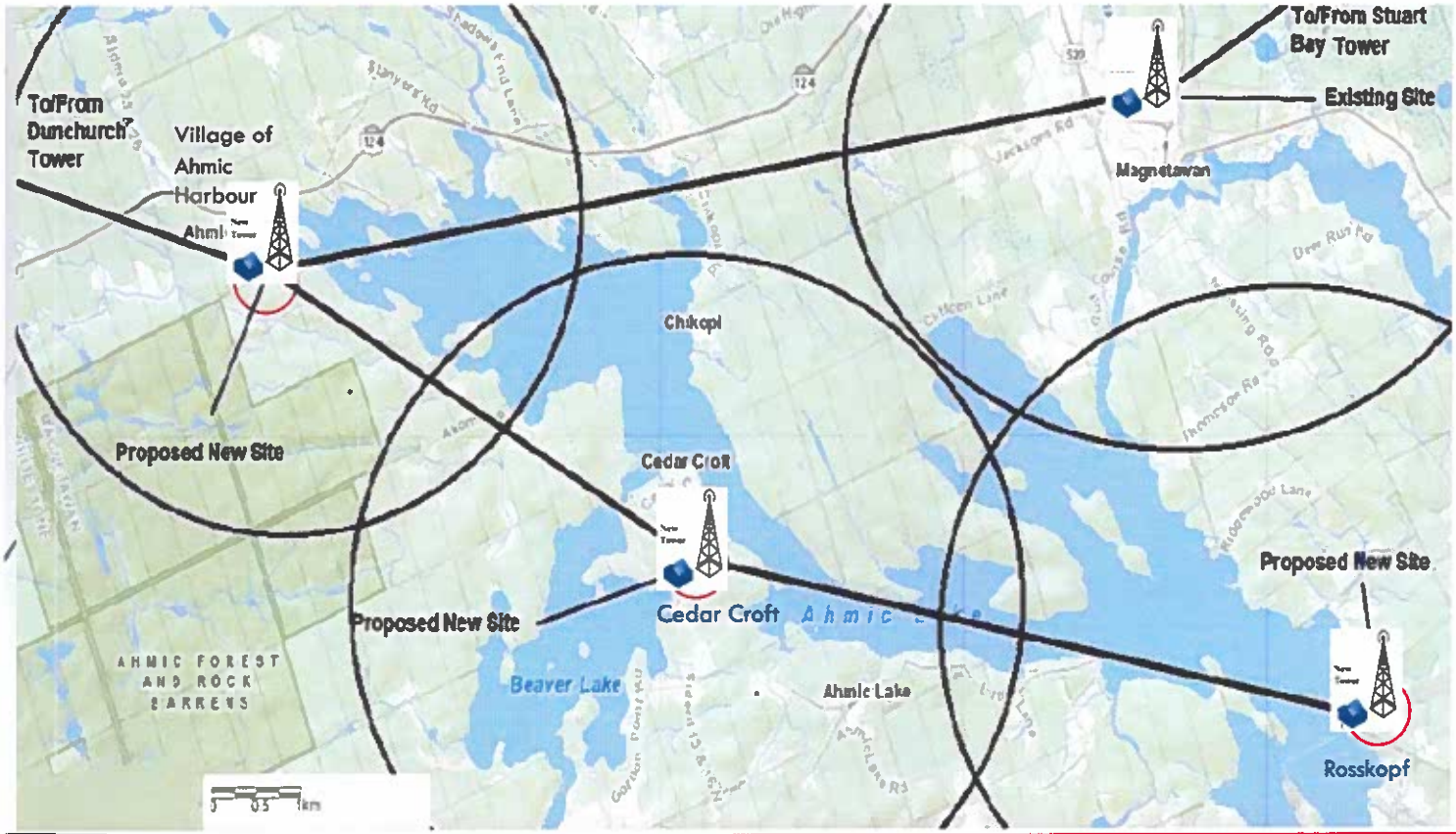
Self-supporting Tower Design Proposed

- Well suited to unused road allowance sites along the lake cottage-access roads

Strengths of Spectrum Telecom

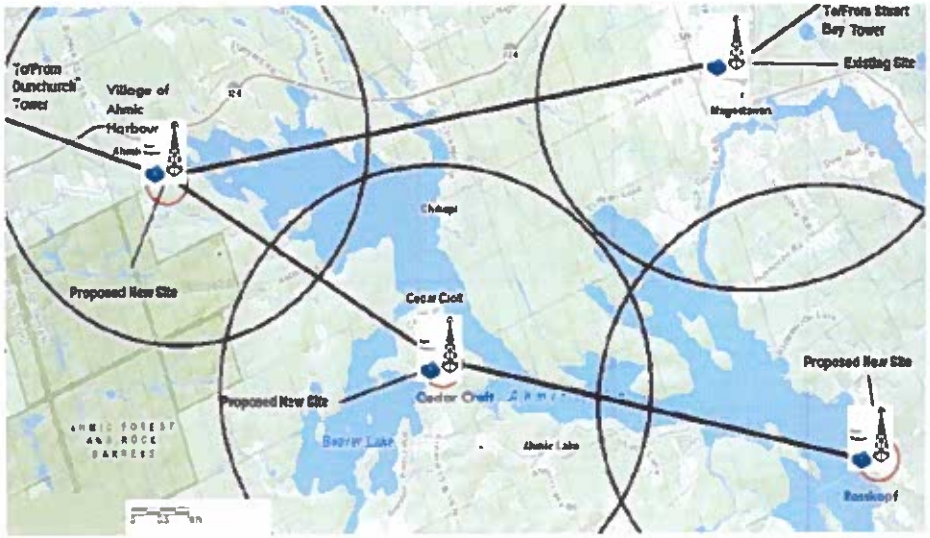
- Local ISP
- Well Established and Experienced
  - 130 towers across northern Ontario
- Northern Ontario Experience
  - Many communities across northern Ontario
- Head Office in Sudbury. Branch offices in North Bay, Timmons, Sault Ste. Marie, Thunder Bay, and Kenora.
- Detailed understanding of municipal permitting, ISED licensing, tower approvals, and hydro pole access requirements.
- Innovative targeted approach for large lake coverage and narrow road allowance tower sites.
- In-house tower site acquisition department

Spectrum Telecom – Network Design



- 3 new tower sites proposed
- Overlapping radio coverage to reduce radio shadows
- 2nd Tower will also extend coverage to Beaver Lake
- Coverage will extend across entire Ahmic Lake territory
- Upgrades to the existing site in Village of Magnetawan will also increase services there to 50/10
- Dual internet back-haul points, from Magnetawan and Dunchurch

Advantages of Multi-Tower Radio Design

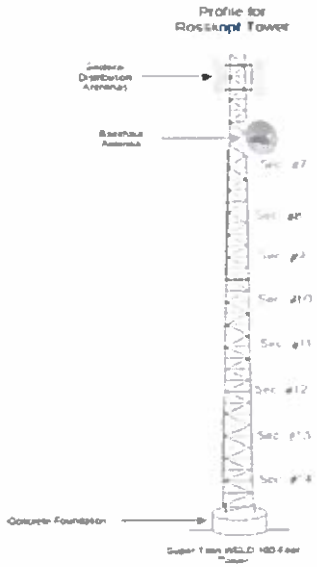


- **Interconnection of Sites for Higher Reliability**
- **Radio Signals from Different Directions** to reduce or eliminate radio shadows, more reliable service
- **Options for Redundant Internet Backhaul** to improve reliability and do load sharing
- **Higher bandwidth internet access** because stronger signals are available for internet access.
- **Much wider coverage down each arm of Ahmic Lake** will improve coverage for both seasonal and permanent residents.

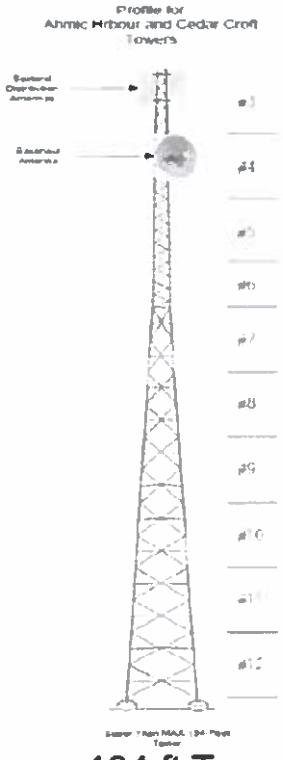
Self-Supporting Towers Proposed

Ahmic Harbour and Cedar Croft Tower Design

Rosskopf Tower Design



100 ft Tower

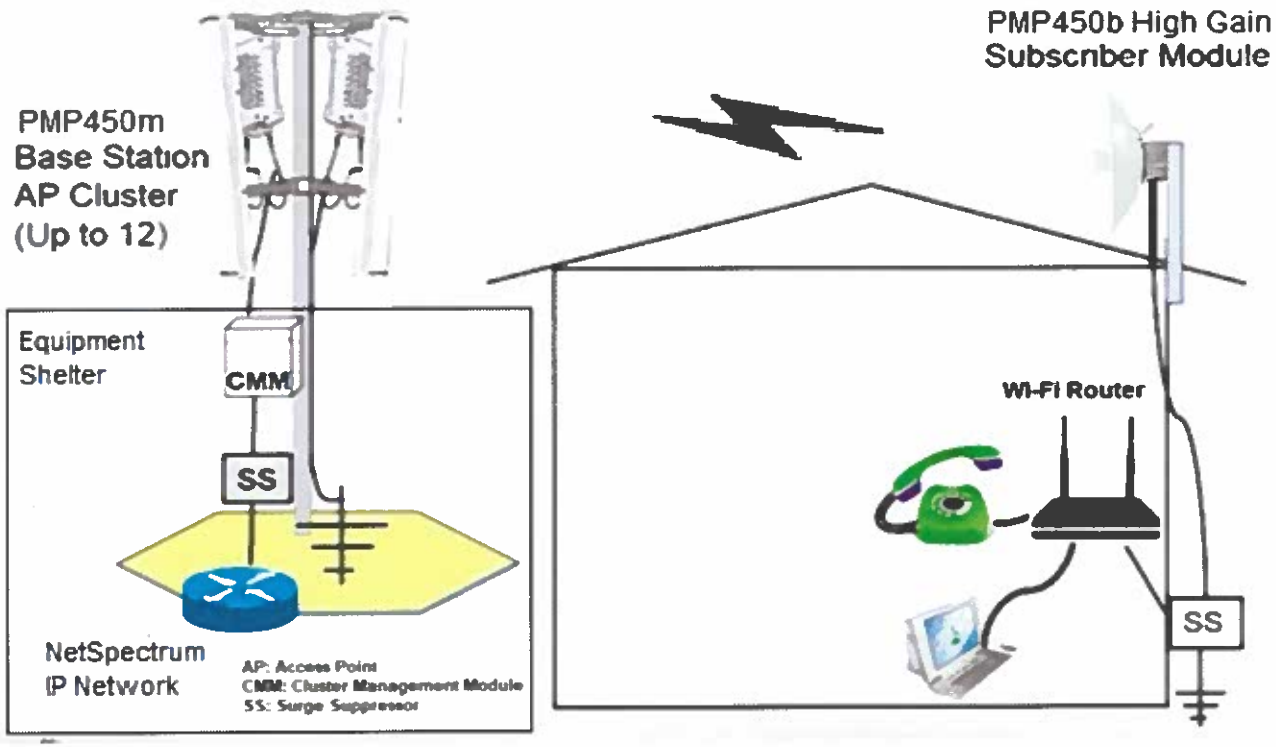


184 ft Tower

- Higher cost but significantly smaller footprint
- Towers fit on narrow unused road allowances where guyed towers would not fit
- Spacious secure climate-controlled equipment shed for each tower

- Will also use existing 300 ft. guyed tower in village of Magnetawan

Radio Equipment to be Deployed



- Hybrid fixed wireless solution
- Supports 5.0 GHz Unlicensed and 3.65 GHz Licensed services
- Range of services offered
  - 1.5 Mbps – 10 Mbps internet access
  - **25/5** LTE internet access
  - New **50/10** internet access

Cambium Networks Equipment Proposed

Technology Innovation

Multi-tower Placement on Both Sides of Ahmic Lake

- Ensure wider coverage of entire lake shores and minimizes radio shadow impacts at shorelines

Self-supporting Tower Design to Minimize Tower Footprint

- Small tower footprint allows tower to fit on unused road allowances

4 Tower Design Offers Ability to Mesh and Triangulate for High Resiliency

Dual Internet Backhaul for High Availability and Load-sharing

- Access to dual internet gateways in Sudbury, and 3rd internet gateway in North Bay

50/10 Access Point Support with Low Latency

- Support for up to 238 subscribers per Access Point sector
- Low latency (10ms is typical)
- Encrypted Links
- Multi-user MIMO

New Service Connections

Your Local Community ISP Spectrum Telecom

NETSPECTRUM.ca INTERNET SOLUTIONS

Headquartered in Sudbury, Ontario

Local wireless Internet Service Provider (ISP) for Magnetawan area, committed to provide high quality, high bandwidth, and affordably priced internet access.

- **Experienced wireless residential and commercial Internet Service Provider** (ISP)
- **Multiple wireless options** to maximize service quality, download speeds and customer satisfaction.
- **High quality protected network design** to ensure your access to the internet stays up
- **Affordably priced high-performance broadband access** – **no data cap**, **low prices**, **no contract**
- **Great customer support and service** – based in Sudbury, with local support staff in the area

New Service Details for the Three Communities

New Internet Access Services for the Community

Residential Broadband Internet Packages

- **Existing Wireless Residential Internet Access**
  - 1.5 Mbps Download / 0.5 Mbps Upload (Unlimited Data) — **$ 49.95 per Month**
  - 3 Mbps Download / 0.6 Mbps Upload (Unlimited Data) — **$ 62.95 per Month**
  - 5 Mbps Download / 1 Mbps Upload (Unlimited Data) — **$ 94.95 per Month**
  - 10 Mbps Download / 2 Mbps Upload (Unlimited Data) — **$ 125.95 per Month**

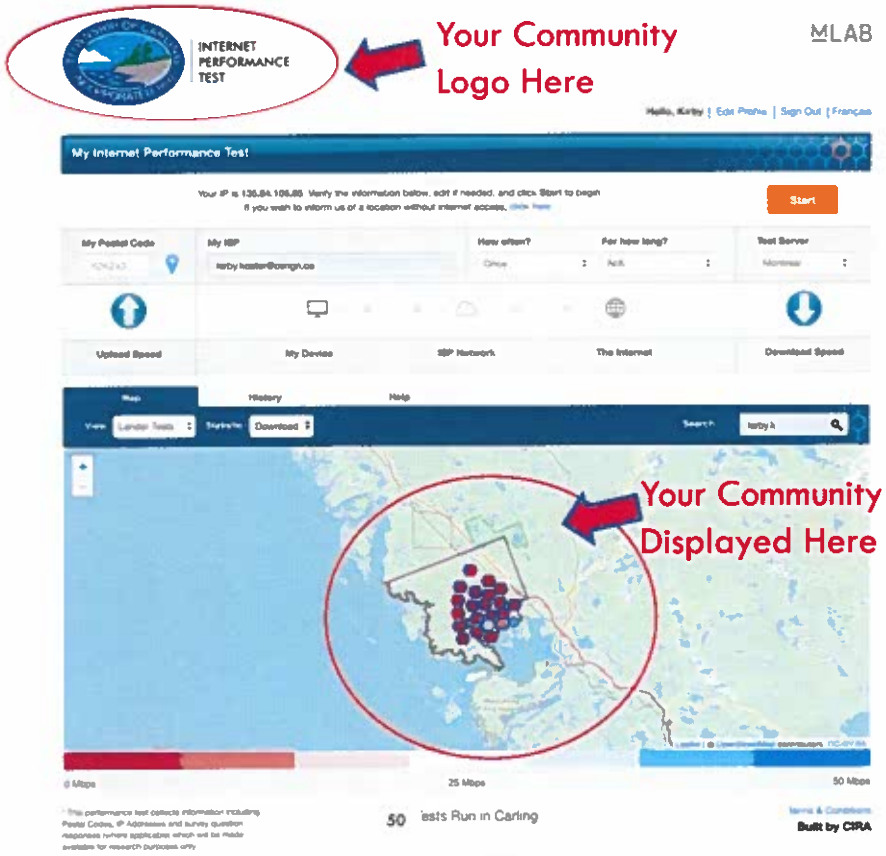
- **New Wireless Residential Internet Access**
  - 25 Mbps Download / 5 Mbps Upload (Unlimited Data) — **$ 99.95 per Month**
  - 50 Mbps Download / 10 Mbps Upload (Unlimited Data) — **$ 125.95 per Month**

Schedule Overview

Deployment Schedule Overview

Project Milestones	Start Date	End Date
Municipal Coordination	January 04, 2021	March 31, 2021
Engineering	December 01, 2021	June 31, 2021
Construction	March 31, 2021	July 31, 2021
Network Deployment	July 05, 2021	September 30,2021

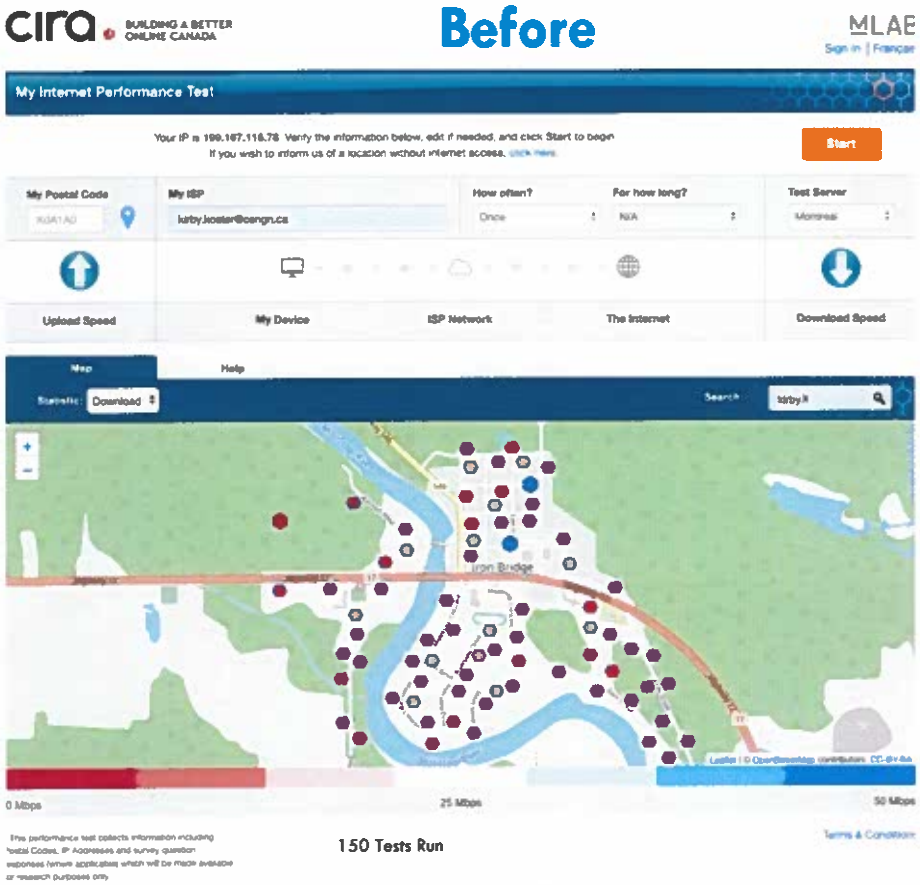
Testing Your Internet Access Performance in Ahmic Harbour and Ahmic Lake



- CENGN will be paying for an Internet Performance Tool customized for Magnetawan, Ahmic Lake, and Ahmic Harbour
- Offers visual representation of how the existing service is performing for the community
- Allows tracking of improvement as more residents get connected to the new services
- Monitors connection for up to a year after installation
- No charge to use the tool for residents
- No charge to use the tool for the community

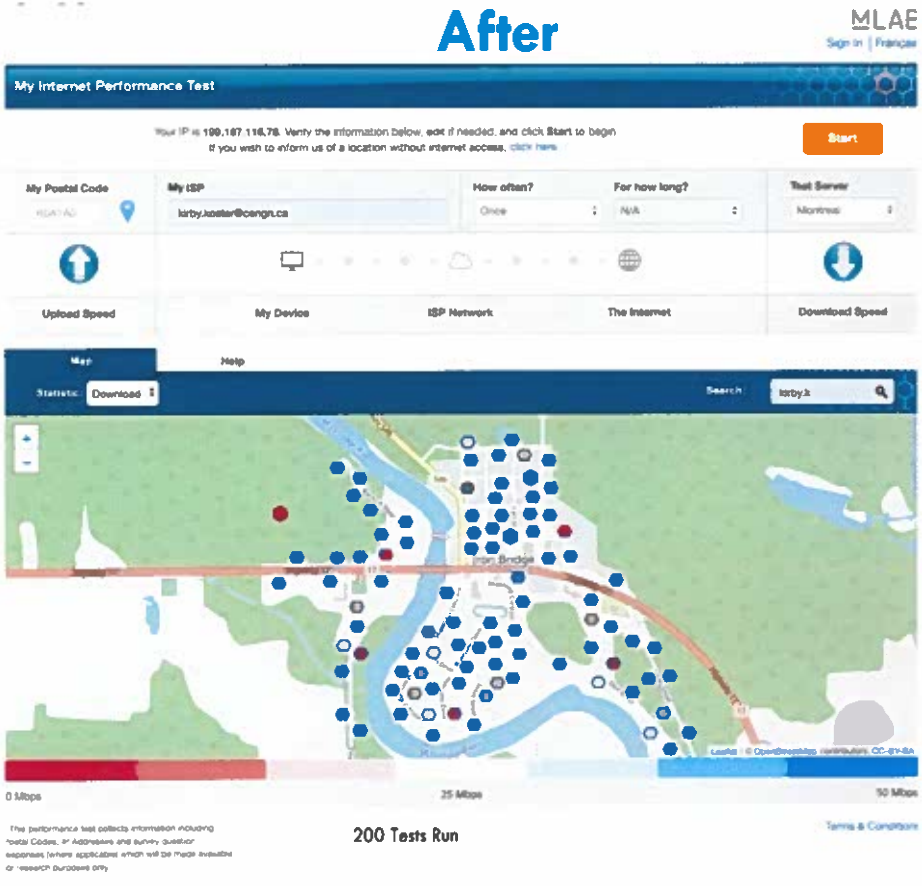
Visualizing Your Internet Access Performance Improvements

Before



150 Tests Run

After



200 Tests Run

Community Benefits of Project

High-speed Reliable Broadband Internet Services to Underserved Residents

- Fixed wireless access to the home for up to residents
- No data cap!! Range of internet access charges.

Multiple Wireless Options for Access to Residents

- Choice of technology depending on speed of access desired

This technology solution could be extended to the other nearby communities easily

- Significantly reduced incremental cost per community

New 25/5 and 50/10 Internet Access Services for Village of Ahmic Harbour and Ahmic Lake Area

- No data cap

New 25/5 and 50/10 Internet Access Services for Village of Magnetawan

- No data cap

CENGN

THANK YOU!

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