Project Problem Statement

A Middle-km Broadband Problem Statement

A technology solution required to extend broadband or high-speed internet access out to a secondary Point of Presence (POP) that is 3-10 km away, for a low cost, high-capacity middle-kilometer solution.

The solution will extend broadband capacity from one part of the community to a remote site 3-10 km away such as a residential cluster, or adjacent residential community with limited or no internet access.
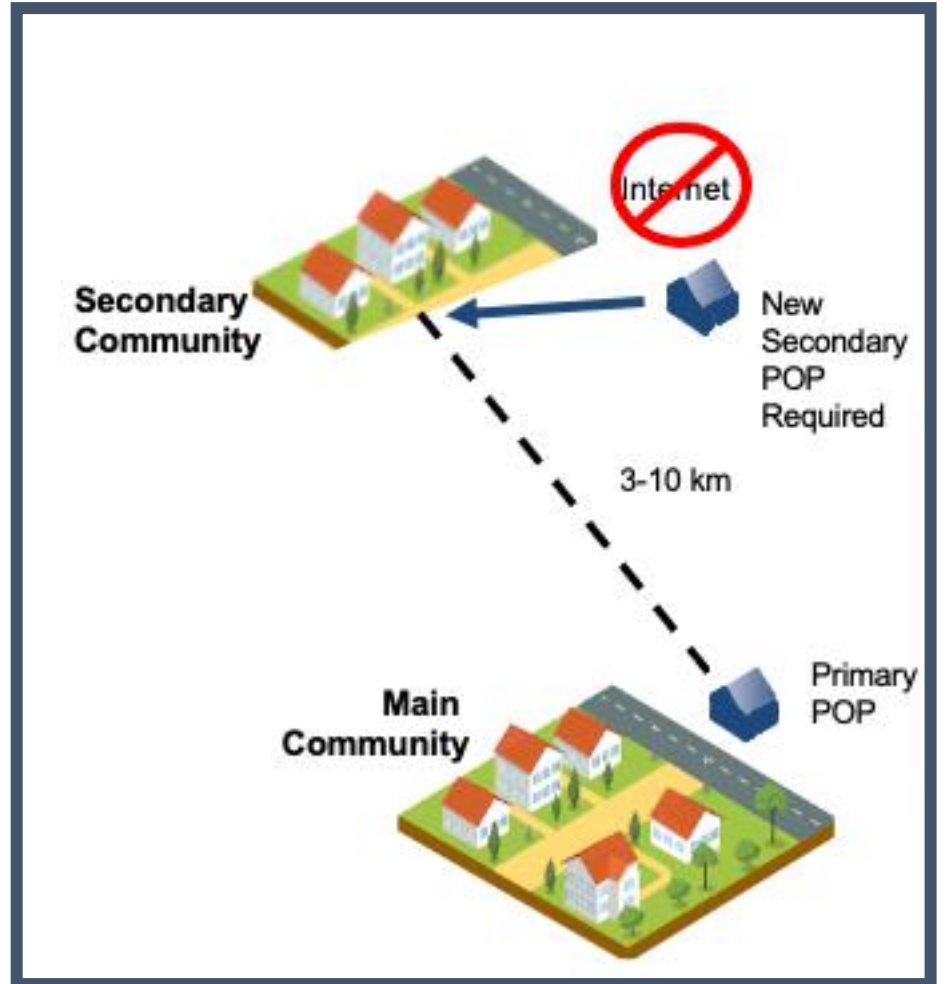
Selected Technology Partner
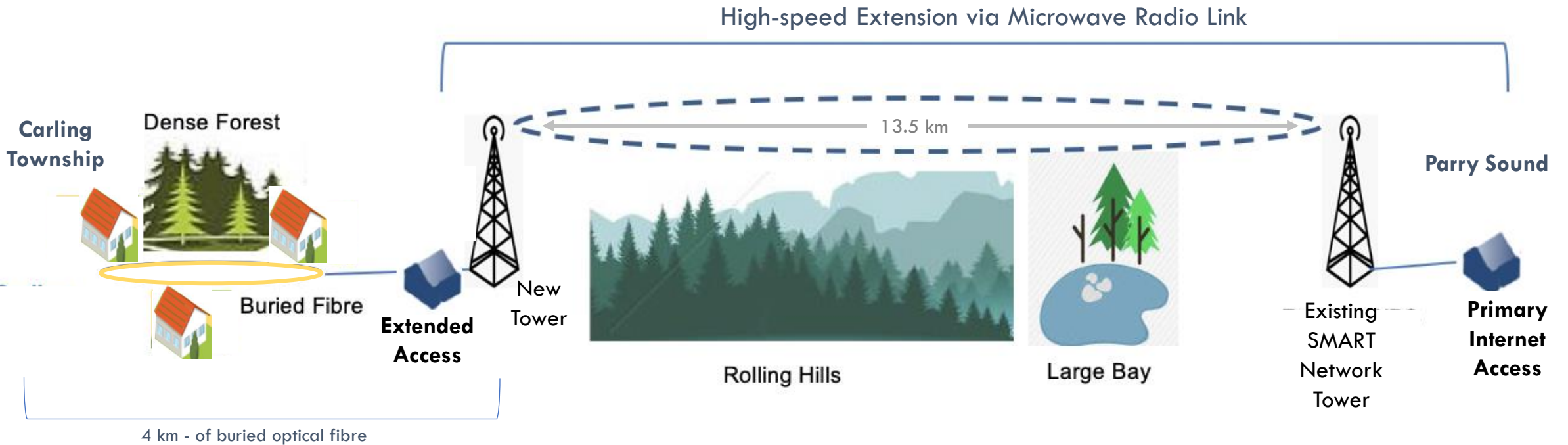
vianet

Headquartered in
Sudbury, Ontario

Company Overview	Northern Ontario Community Experience
- Telecommunications Company offering high-speed internet, television, and telephone services. - In business for 31 years, 175 employees throughout Ontario - Operate 170 Tower Sites - Built over 900 km of fibre in more than 12 communities - Own their own Horizontal Directional Drilling firm. - In-house aerial fibre optic capabilities (Capacity to build over 200 km of fibre annually). - Offer broadband service via cable, DSL, fixed wireless, and optical.	- City of Sudbury (250 km fibre, servicing 700 business customers, passing 5000 homes triple-play) - City of Parry Sound (FTTH 900 homes passed) - Municipality of Chapleau (1100 homes, 70% penetration) - Small fibre builds in Huntsville, Bracebridge, Sturgeon Falls, Gravenhurst, and Timmins - Wireless Network Experience in Manitoulin Island, Sudbury, Gore Bay, and Elliot Lake - Offices in Timmins, North Bay, Sault Ste Marie, Fort Frances, Pembroke, Huntsville, Midland, Barrie, Peterborough, and Schomberg

Extending Broadband to Carling Township

High-speed Extension via Microwave Radio Link

Carling Township

Dense Forest

13.5 km

Parry Sound

Buried Fibre

Extended Access

New Tower

Rolling Hills

Large Bay

Existing SMART Network Tower

Primary Internet Access

4 km - of buried optical fibre

✅ FTTH - Future-Proof Last-kilometer Solution
- Cost-limited 4 km buried optical fibre ring

✅ Low-cost Solution to get Bandwidth to Carling
- High-bandwidth, fixed-wireless, microwave radio link

✅ Avoided Fixed-Wireless Challenges
- Towers ensure Line of Sight above dense tree canopy, large water bodies, & hills of rock/forests
- Buried optical fibre in gravel shoulder of roads means dense tree cover for last km not an issue

Cost Innovation

Fixed Wireless POP Extension, with FTTH loop in Carling Township

<u>Significant Last Km Cost Reduction</u>

✅ **No Last Km Pole Costs** - road shoulder plowing and horizontal drilling for fibre

<u>Very Large Middle Km Cost Reduction</u> ➡️ **$1.2 Million Cost Saving**

✅ **Very Large Reduction in Middle Km POP Extension Costs** - reduced by 85%

✅ **No Middle Km Pole Costs** — no poles required, no pole replacements, no pole engineering

✅ **No Middle Km Fibre Costs** — no fibre required for middle km

Upgraded SMART Network Tower

This is the existing 200' tower near the old Forest Fire Watch Tower in Parry Sound and was formerly an MNR tower. This tower was purchased by the "Township of the Archipelago". The tower is now part of the West Parry Sound SMART Community Network.

Vianet connected a fibre optic back-haul ink from a nearby high-capacity POP in Parry Sound to the Smart Tower as part of this project.

Upgraded existing 200 ' SMART Tower

The radio base station equipment, UPS, and other supporting equipment was also upgraded as part of this project.

Old radio equipment was removed as part of the project, replaced with 15Gbps microwave radios to connect to the new Carling Township tower 13 km away.

Installation of New Tower & Fibre Optic Ring in Carling Township

New 200 ' Telecommunications Tower

4 km of Fibre Optic Cable Installed to reach up to 300 homes

June 04 - 06 2020

Completed End of August 2020

CENGN

Solving a Broadband POP Extension Requirement in Carling Township

Carling Township Fibre Installation

Current Project

- Over 250 residences nearby

As part of the CENGN project, optical fibre has been installed along Bayview Drive and Rockcliffe Drive to provide fibre to the home, to support high speed broadband access to residents.

New Spin-off Projects Underway (from New Tower)

- New Tower for Parry Sound Industrial Park

- New Internet Service for Shawanaga First Nation

- New Tower for Community of Pointe au Baril

Legend

Existing roads

New Optical Fibre Loop for Broadband

Community Benefits of Project

✓ **High-speed Reliable Broadband Internet Services to Underserved Residents**
  - Fibre to the home access by up to 300 residents

✓ **Future-proof Fibre Access for Residents**
  - Use of fibre to the home ensures even higher speed services could be offered in the future

✓ **This technology solution could be extended to the other 6 communities easily**
  - Significantly reduced incremental cost per community (4 other projects underway using this blueprint)

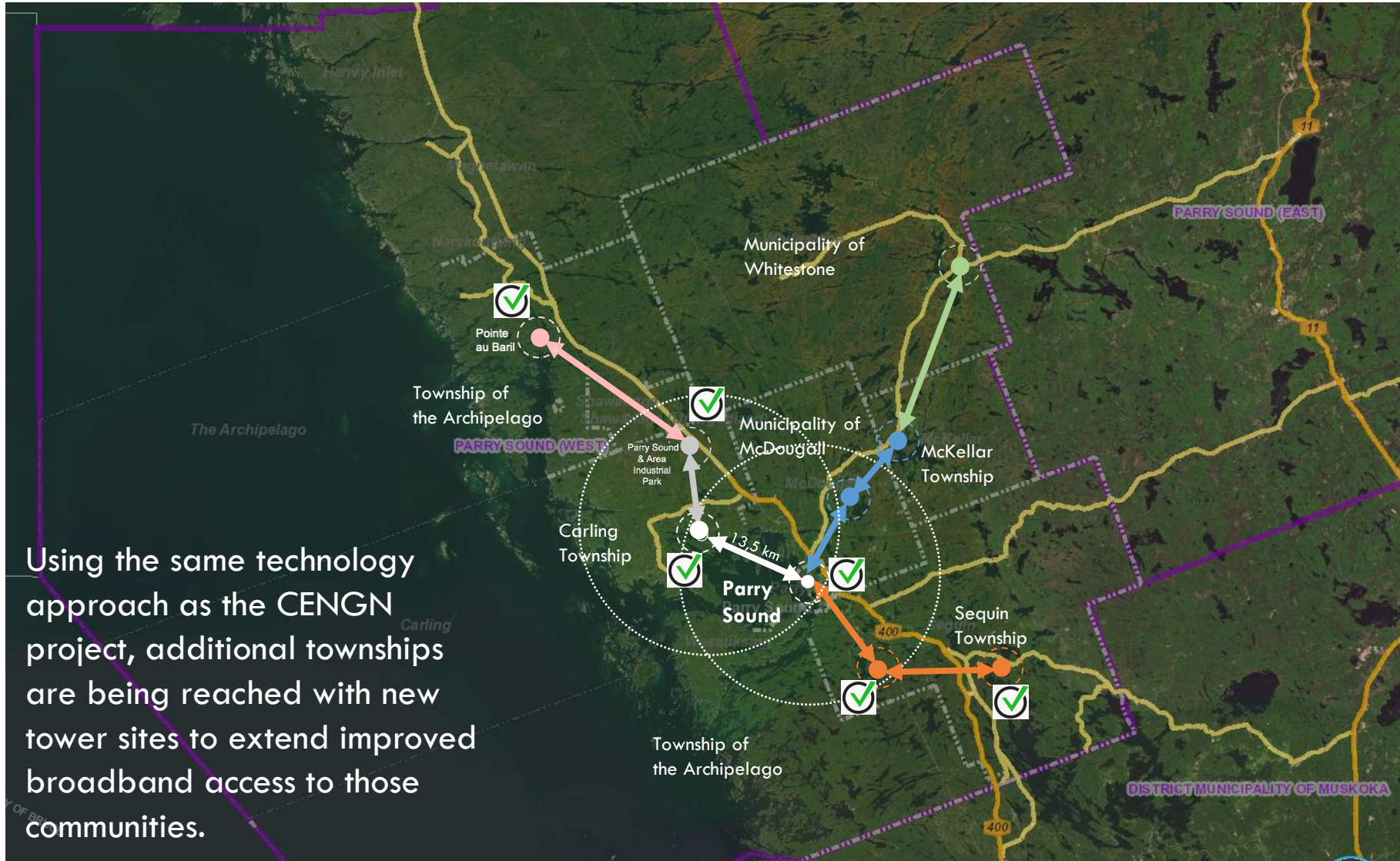✓ **This technology solution is being extended to the nearby Industrial Park**
  - Access will be extended from this new Carling tower if a new tower being built in the Industrial park

✓ **New Tower also offers Lower Cost Wireless Broadband Services**
  - Vianet is also offer lower cost internet access services via wireless 5GHz services

Subsequent Area Spin-off Expansion Projects

The "West Parry Sound SMART Community Network" group of volunteers were key advocates and facilitators working closely with Vianet, CENGN, and the respective communities. They succeeded in getting 5 new projects funded within 2 years.

Legend

○ CENGN Project#1 Service Areas

●—● CENGN Project#1 Tower Sites

☑ New or Upgraded Tower Sites

Active Expansion Prospects

Possible Expansion Prospects

Using the same technology approach as the CENGN project, additional townships are being reached with new tower sites to extend improved broadband access to those communities.
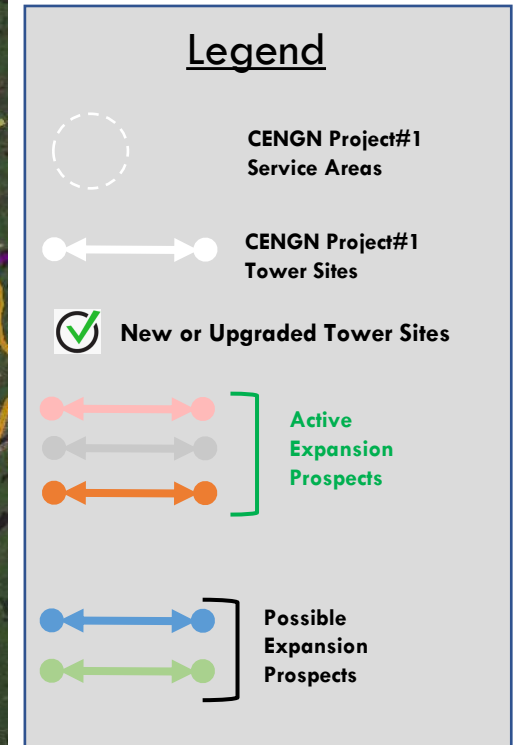
Overall Impact of the Project

✓ **High-speed Reliable Broadband FTTH Internet Services to Underserved Residents**
  - Fibre to the home access by up to 300 residents

✓ **High-speed Reliable Broadband FWA Internet Services to Underserved Residents**
  - Wireless access for up to 500 additional residents

✓ **Approximately $250,000 CENGN Investment resulted in over $1,200,000 Investment**
  - Vianet and Surrounding Communities invested almost $1,000,000 into broadband in this and 4 other spin-off projects using the same technology solution blueprint used for this project

✓ **4 Other Spin-Off Projects for West Parry Sound Area**
  - New broadband service expansion to Parry Sound Area business park, Sequin Township, and Point au Barel

✓ **500% Business Growth for Vianet in the West Parry Sound Area**
  - Vianet is also offering lower cost internet access services via wireless 5GHz services

Contacts for More Information

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