Providing Middle Km Access Over Rolling Farmland in Rural Milton – Halton Region
Project Problem Statement

A Middle-km Broadband Problem Statement

A technology solution required to provide a cost-effective, self-configuring, high-resilience, high performance solution extending internet access service distances of 5 - 10 km from the broadband POP in a host community. This high performance residential broadband solution needs to work across rolling hills of farmland with moderate tree cover.
Selected Service Provider

Headquartered in Calgary, Alberta

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<tr>
<th>Key Strengths of Mage Networks for Residents</th>
<th>Rural Ontario Community Experience</th>
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<tr>
<td>• Executive team have strong technology and business background</td>
<td>• Most experience so far is in rural Alberta</td>
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<td>• Innovative solution for difficult terrain (rolling hills and dense tree canopy)</td>
<td>• Aggressive plans to expand throughout rural Ontario</td>
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<td>• Solution is well designed and can be dynamically re-engineered as network grows</td>
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<td>• Strong business case and reasonable ROI</td>
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<td>• Detailed installation, costing and project plan defined</td>
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<td>• Feature their own R&amp;D department to offer custom optimized software solutions with commercially available products</td>
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<td>• Symmetrical speed that exceeds 50/10 requirement, up to 100Mbps</td>
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<td>• Commitment to having a local presence support and installation team</td>
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<td>• No new telecommunications towers required as solution uses utility poles and light standards</td>
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Extending Broadband for Rural Milton

- **New Meshed Technology for Dense Tree Areas**
  - Works well for dense tree residential application

- **Meshed Traffic Routing for High Throughput**
  - High-bandwidth, fixed-wireless, meshed radio network

- **Automatic Load-sharing**
  - High availability to maximum bandwidth
  - Excellent user experience

- **Symmetrical Data Capacity**
  - High performance video conferencing
  - Fast picture or image uploading
Data Pipelines eliminate the need for New Towers
- In this network, it eliminates the need for up to 7 new towers

Solution is at least 60% cheaper than Equivalent Fibre Installation

Improved Access to Customers that other Technologies Cannot Reach
- Reaching more customers through dense treed area increases ROI opportunities

Greater Customer Retention through Higher Network Reliability
- Temporary tripod installations available in emergency situations to prevent prolonged outages
- Dual internet access points and highly meshed architecture for higher reliability

High Performance and No Data Caps
- Significant improvement over existing service with low data caps
- Symmetrical service 100 Mbps up and down
MAGE Networks – High Level Proposed Network Design for 5km radius – Phase 1

**Hydro Poles & Light Standards Proposed**
- 136 Hydro poles
- 58 Light standards

**Data Pipelines**
- 247 Data Pipeline pairs
- 58 Outdoor R6 Routers
MAGE Networks – A Different Wireless Technology Approach

- No New Towers Required
- No Community Conflict over New Tower Sites
- No tower approval and build delays

- Automatic load sharing for optimal performance
- Highly meshed design offers backup routes
- Redundant internet backhaul design

Symmetrical Internet Access
- Up 100 Mbps
- Down

- Fast internet Surfing
- Great Multiple Concurrent Video Call Performance
- Very Fast Picture Upload Speeds

- Guaranteed Minimum Service Levels
- Multiple Access Service Plans
- Local Service & Support

Providing Middle Km Access Over Rolling Farmland in Rural Milton – Halton Region
Technology Innovation

✔️ Very versatile in heavily wooded, hills and valleys environments where traditional wireless is challenged
  ▪ Using short, high-capacity 60 GHz data pipes to create a mesh network

✔️ Flexible Light-weight equipment, mounted on hydro and light poles

✔️ Robust system that can recover from emergencies very quickly
  ▪ A pole can be temporarily replaced with a tripod & have it running in hours

✔️ Devices are mounted only where needed
  ▪ Avoids wastage of resources
  ▪ Skip multiple poles if no customers in-between
Pole Mounted - Data Pipeline Designs

- Hydro pole installation design
- 60GHz Data Pipe End Point
- 5GHz WiFi Access Point
- R6 Router
- Power supply

- Compact dome shaped antenna
- Light standards installation design with a dome shaped antenna
- Temporary installation on a Tripod

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Community Benefits of Project

- **High-speed Reliable Broadband Internet Services to Underserved Residents**
  - Fixed wireless access to the home (Network capacity can be easily increased as required)
  - **No data cap!!** Low monthly internet access charges.

- **Symmetrical Wireless Internet Access for Residents**
  - Excellent solution when multiple concurrent video conferences required per household
  - COVID-19 Ready solution for working from home, learning from home

- **Technology solution could be extended to the other nearby communities easily**
  - Significantly reduced incremental cost per community (eg. wider rural Milton, or rural Burlington)

- **No New Telecommunications Towers Required in Rural Milton for this Network**
  - Eliminates community conflict regarding new tower sites

- **Rapid Network Rollout and Customer Hookup**
  - Installation on hydro or lamp poles can be done at any time of the year
  - Fast rollout possible since no delay waiting for tower builds
Overall Impact of the Project

High-speed Reliable Broadband FWA Internet Services to Underserved Residents
- Current project FWA home access to up to 300 homes (within 5km radius)
- Potential expansion to over 900 homes (within a 10km radius)

Reliable Wireless Service in Difficult Geography
- Wireless access across rolling hills of farmland and moderate tree cover

Potential Spin-Off Projects for other parts of Halton Region
- Many other nearby rural areas could benefit from the design approach used for rural Milton.

300% Business Growth Opportunities for Mage Networks in the Halton Region
- Opportunity for further expansion in rural-Milton, and rural Burlington areas
- Same technology solution would also be a great solution in other nearby counties
Contacts for More Information

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