Comm-Tract Corp

Southeastern Regional Planning and Economic Development District

Broadband Study Committee

Informational Working Session

6-11-19
Agenda

• Introductions
• Review of SRPEDD Broadband Study Committee Objectives/Topics
• Fairhaven Fiber Optic Municipal Area Network (FMAN) as a potential foundation for a Fiber to the Home (FTTH) Network?
• Fairhaven FMAN
• Why Massachusetts municipalities invest in FTTH Networks
• FTTH Budgeting for Fairhaven
• FTTH Architecture and Capabilities
• General Discussion – Q+A
• Next Steps/Action Items
Overview of the Fairhaven Fiber Optic Municipal Area Network

- **Private Fiber Network:**
  - Schools
  - Town departments
  - Police
  - Fire
  - Emergency Services
  - Public Works
  - Library
  - Other locations such as public safety communications towers, parks, recreation facilities, and other municipal agencies
  - Expected to be utilized for surveillance cameras in the near future.
  - 19 Sites and 2 RF Towers

- **Designed and Deployed for Municipal Use:**
  - Supports all communications needs of Fairhaven and exclusively used only for municipal applications
  - Now completing installation (June 2019) and owned by the Town of Fairhaven
Overview of the Fairhaven Fiber Optic Municipal Area Network

- Municipal Applications Supported:
  - Data applications
    - MUNIS and other financial systems, tax systems, student management systems, water and sewer systems, surveillance systems, email systems, domain systems, VLANS of any type, data storage systems, access layer security systems, other data applications, and high speed access to the internet
  - Voice applications
    - IP Telephony or VoIP of any type (centralized or distributed), legacy digital and analog PBX systems, stand alone phone systems, and multi megabit (10mbps, 40 mbps, 100mbps and up) voice access to carriers.
  - PEG TV
    - Connects all production and distribution sites for the municipal cable TV studio, and remote sites. Provides access to cable companies such as Comcast, Verizon, Time Warner, Charter and others for distribution to the public
  - Security and other Video applications
    - Provides high bandwidth transport of all video applications for security cameras, traffic control cameras, and other secured video requirements.
Overview of the Fairhaven Fiber Optic Municipal Area Network

- **Municipal Applications Supported:**
  - **SCADA applications**
    - Monitoring of reservoirs, water supplies, and other secured access to municipal owned sites
  - **Smart Grid applications**
    - The network supports all manner of smart grid applications that are often provided by the independent utility for the city or town. Optimization of electrical power needs for the community, meter reading and controls, and centralized management of the utility systems for diagnostics and repairs to the system.
  - **Wireless applications**
    - High speed network backbone that supports radio dispatch and radio traffic for police and fire departments
    - Broadband delivery of video, and surveillance traffic to emergency response vehicles
    - Provides network backbone and infrastructure for other wireless applications like traffic cameras, wireless coverage for public Wi-Fi, DAS and other wireless edge applications.
Technological Advantages of the Fairhaven Network

• **Unlimited Bandwidth**
  - Dependent only on the switching and/or electronics deployed at the end point buildings or sites
  - Typical municipal networks today operate at a minimum of 1gbps at each site with standard GBIC interface to Cisco/HP/and other switching platforms
  - Will start at 10mbps and can easily move up to 100gbps per fiber strand with change in SFP’s on the switches.
  - Speeds in excess of 100gbps are also attainable with optical transport and switching

• **Reliability and Quality**
  - Fiber Optics is the preferred transmission medium for all communications worldwide today
  - All major carriers (Verizon, ATT, Sprint, etc.) use similar fiber optic networks for Cellular and other applications
  - High quality glass (SMF OS2) and 25 Year Full Warranty
  - Figure 8, ADSS, Strand types of OS2 Single Mode Fiber
Technological Advantages of the Fairhaven Network

• Carries all Telecommunications Securely
  – Switching and/or electronics deployed at the end point buildings control network
  – Any and all types of telecommunications data, voice and video traffic is integrated on the network
  – Physically separate fibers by department and secured

• Ring Topology for Redundancy
  – Designed as a physical ring topology with redundancy of fiber pathways in the architecture
  – A disaster which would damage a fiber cable is protected as all the traffic interrupted would travel on a secondary/redundant path.

• Long Term Investment
  – All Fiber materials and workmanship is covered under a 25 year warranty from the manufacturer.
  – Life span well in excess of 35 – 40 years
Why do Municipalities invest in an FTTH Network?

- Community is underserved by the cable company or carrier.
  - Community is unhappy with service and costs
  - Community is looking for an alternative Internet Service Provider (ISP)
  - Higher Speed – Higher Bandwidth alternative at lower cost
  - Better Services, Better Customer Service, and higher Value to the Community
  - Attract commercial entities – improve local economy and tax base

- How far does the municipality go into the business?
  - MLP’s are all in: Transport, ISP, Voice, Content offerings
  - Communities MLP in name only: Transport only

- Fiber Infrastructure – some Hybrid Networks
  - Unlimited bandwidth - determined by design, architecture and electronics
  - Any and all types of telecommunications data, voice, video, etc. can be integrated on same path
  - Secure Network

- Resiliency and Redundancy
  - Most networks deployed are designed with redundancy of fiber pathways in the architecture
  - A disaster which would damage a fiber cable is protected by designing the network to carry all the traffic interrupted on a secondary and redundant path.

- Long Term Investment and Economic Return
Building an FTTH Network

- Fiber Construction
  - Aerial and Underground
  - Drop Cables to Homes
  - Pedestals in Neighborhoods
GPON Architecture

Comm-Tract
Voice/Data/Video Networks
Inside the Home

Fibre Termination Point (TP) → Optical Modem → Wi-Fi Router

Optical Fibre Cable

Network Cable
Comm-Tract Overview

- Serving New England Region since 1980
- High quality Telecommunications Infrastructure solutions for 38 years.
- Installed base of over 4800 separate projects
- Over 1600 Customers
- Over 34 million feet of fiber installed
- Over 150 fiber municipal area networks deployed
- Over 2.5 million ports of data/voice/video
- 45 Employees
- Private and profitable company
- Specializing in Government, Education, Enterprise, Medical, Finance and Service Provider markets.
- No Debt or Venture Capital
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