Beresford Municipal Telephone
Fiber to the Premises Project

- **Why Fiber?**
    - Only fiber to the premises will be able to meet the exploding demand for bandwidth and deliver next-generation services.
    - Fiber is less expensive to maintain and operate.
    - Can deliver broadband services for medicine, education, home-based businesses, home automation, video and games.
    - Fiber to the home positions communities for tomorrow's jobs and economic growth.
    - Services are requiring higher upstream bandwidth which most DSL cannot provide.
    - Broadband over fiber is the utility that owners and renters especially value. Fiber connected homes are easier to sell and to rent.
- **Broadband and Bandwidth**
    - Bandwidth is the ability to carry information. The more bandwidth a network has, the more bits of information it can carry in a given amount of time.
    - Worldwide internet traffic roughly doubles every 2 years and has increased even faster lately because of smartphone use along with internet based streaming video products.
    - By the end of 2013, network equipment vendor Cisco noted that traffic had reached levels not expected until 2020, seven years ahead of schedule.
    - Video formats are becoming more bandwidth-intensive with the resolution of HD, 3D, and now 4K (Ultra HD) which requires 16 to 32 Mbps even with the best compression technology.
    - Other drivers of bandwidth demand: cloud storage, health care images, business and science, voice-activated searches, and self-driving vehicles.
    - Download is the information that is coming in such as streaming videos to your TV and upload would be information that is going out such as sending information to the Cloud. Fiber is far better suited to support faster upload than any other medium.
    - Copper can support high bandwidth although the longer a signal has to travel the lower the bandwidth. Typically 50Mbps download will travel 1800' before it starts to degrade under ideal conditions.
- **The Light Fantastic**
    - All modern communications systems are based on fiber optic cable.
    - Uses hair-thin strands of glass that carry information by using pulses of light usually created by lasers that are turned on and off very quickly.
    - Lasers can travel long distances approx... 40 miles or more without degrading or need for refreshing.
    - Fiber is very rugged unlike copper which can corrode and be affected by water. Copper is conductive and can be affected by lightning and fiber is not.
- **Why we'll always need more bandwidth**
    - On the internet, bandwidth drives innovation, and innovation drives bandwidth demand.
    - Devices currently driving demand: smartphones and tablets, smart TVs, video streaming devices, home security, thermostats, broadcast alerts, video images to our phones, smart watches, fitness trackers, music devices, video/voice conferencing for businesses, just to name a few.
- **Gigabit (and more) To the Home**
    - A gigabit (1Gbps or 1,000 Mbps) is about 100 times higher than the average downstream internet speed in the U.S. and many times higher than the average upstream.
    - Gigabit subscribers typically are on the internet an average of 8 hours a day, have multiple network devices connected and have the need for rapid file transfers.

- **Vital For Education**
  - Students need access to media-rich digital learning materials
  - Video conference of online high school classes with teachers and courses that are available in other districts.
  - Video conference of online college classes for people pursuing continuing education.
- **Smart Cities, Smart Farms**
  - Security cameras for protection of lives and properties used by both local governments and property owners.
  - Meters that can read electric and water consumption, Street lights that adapt to movement by pedestrians, cyclists and cars, trash cans that alert sanitation workers when they need to be emptied, and parking lots that tell drivers which spaces are open.
  - Commute farmer who uses broadband to monitor and prevent theft of livestock and expensive equipment, sensors on grain bins to monitor temperature and humidity, sensors on fuel tanks to also prevent theft.
- **Broadband, Property Values and Economic Growth**
  - FTTH Council Americas found that access to fiber increases a home's value by up to 3.1 percent.
  - Studies conclude that lack of broadband access is responsible for at least a quarter and probably half of all rural job loss.
  - Survey showed that, although residents rank good broadband as the top amenity they desire in a new dwelling, building owners and property managers (who tend to be older) rank it lower.
- **FTTH for Communities**
  - Fiber connectivity encourages businesses to stay, helps businesses grow and become more productive, attracts new businesses, particularly in high-tech industries.
  - It makes a community more attractive – especially for young people – which can stem the population loss that many small communities experience.
  - FTTH is only one component of an overall economic development strategy, but it's a vitally important one.
  - Companies have lessened the cost of a fiber project by preparing and installing ducts whenever past repairs or new services were preformed.
- **Is FTTH Too Expensive**
  - Usually, FTTH in not more expensive than other technologies.
- **Community Success Stories**
  - Communities without robust broadband pay a price of losing jobs and residents.
  - Communities use the fiber network for several smart-grid applications including its automated metering infrastructure (AMI) systems which reads electric and water meters and uses the fiber backbone to backhaul information from wireless collectors.
- **Builders, Real Estate Developers and FTTH**
  - Fiber builds do require engineering.
  - All the usual building codes for cabling do apply.
  - Expect users to desire broadband connections in virtually any room (bedrooms, office-dens, kitchens, and family rooms) and all others.
  - Currently a few internet connected devices include: telephones, televisions, set-top boxes, thermostats, security sensors, surveillance systems, cell phones, streaming video devices, and more.
  - As the IoT (Internet of Things) develops, even more appliances will be Internet enabled.