Ultra-Broadband Feasibility Study
Executive Summary

In late 2013, the Vision 2020 Community Wide Technology Committee partnered with CCG Consulting and Dain International to conduct a feasibility study to determine the best practices, most promising technologies and business models to provide "state-of-the-art technology" to the community.

Study Parameters

- Austin is defined as the geographical borders of the Austin Public School District.
- Technology must provide up to 1 gigabit per second (Gbps) data transfer speeds.
- Each premises (home, business, government building, school, hospital, etc.) must have access to technology.

Study Results

- Ultra-broadband IS FEASIBLE in Austin and further exploration is recommended.
- It is unlikely that private business or government will build an ultra-broadband network in Austin.
- Fiber optic cable is the best choice of technology for the project—
    - Fastest data transfer speeds
    - Most reliable
    - Future-proof: as head-end technology improves it will send more and more data over the same fiber
    - Signal travels long distances without degradation
    - Does not corrode
    - Does not generate heat
    - Isn't damaged by lightning
    - Not easily affected by water
- Ultra-broadband service could be provided in Austin by non-profit, cooperative or for-profit organizations. Governance and ownership will be determined as the project develops.
- Customer penetration rates of 40-50% will be needed for success. It is reasonable to plan for those rates based on results in similar communities.
- Quantifying expected penetration rate in Austin is the key next step in confirming the feasibility of the project.
- Capital costs for a fiber-to-the-premises (FTTP) project build-out are estimated to be $35 million.
- Funds for capital may be available from federal grants, state grants, non-profit grants, institutional investments, partner investments as well as various forms of financing. Local tax dollars are not being considered for this project at this time.

Study Funding

Ag Star Financial, the Blandin Foundation and the Hormel Foundation funded the feasibility study.

GLOSSARY

Ultra-Broadband: Generally, it refers to technology supporting data transfer speeds of 50 Megabit per second (Mbps) and above. For the purposes of the Austin study, Ultra-Broadband refers to data transfer speeds of 1 gigabit per second (Gbps).

Data Transfer Speed: Describes how fast data moves as it comes to any given device (computer or phone) and is generally indicated by bits per second (bps) or Megabits per second (Mbps).

A typical phone line delivers 64,000 bits per second (bps). A T1 line delivers 1.5 million bps (1.5 Megabit). A typical DSL connection delivers 10 to 20 million bps (10-20 Megabit). A wireless connection can deliver up to 40 million bps (40 Megabit). A cable connection can deliver up to 300 million bps (300 Megabit). A fiber optic cable connection can deliver up to **one billion**—1,000,000,000—bps (1 Gig) and would be scalable to higher speeds in the future.

The best residential speeds offered within the Austin area today are 60 Megabits per second—or 60 million bits per second.

Fiber optic cable: A fiber optic cable is a glass cable containing one or more optical fibers that are used to carry light. The optical fiber elements are typically individually coated with plastic layers and contained in a protective tube suitable for the environment where the cable will be deployed. Cable can be buried or installed on poles.

Data is transmitted by light signals transmitted over the fiber. The equipment used to send the light signals keeps getting better and better. Equipping an existing fiber network with new electronics and with lasers that pulse light faster can vastly increase available bandwidth without changing the fiber itself.


A multi-fiber cable

Fiber-to-the-premises (FTTP): Fiber-to-the-premises infrastructure provides broadband data connections (e.g. for Internet access) to homes, businesses and other structures directly with optical fibers. Projects not including businesses or other structures are known as Fiber-to-the-home or FTTH.

Customer Penetration Rates: The rate of customers within a given geographical area subscribing to a given data service organization. For example: Company A has a penetration rate of 60%. Company B and Company C split the remaining customers with 28% and 12% rates.