

Fiber to the Home City of Atherton

Atherton Stats

- 2500 Homes
- 50 Miles of Streets
- 7000 Residents
- ~5.5 Square Miles
- ~80% Aerial Utilities (Poles)
- ~20% Underground Utilities

Service Proposal

- Private, Resident-owned Fiber Utility
 - Build, Own and Operate Fiber Plant
 - Optionally allow residents to own 4 fibers to home for upfront fee
 - Most homes/residents lease fiber – no upfront fee
 - Direct Fiber to each home
 - Combination of Aerial and Underground
 - Multiple ISPs can provide actual internet service
 - Comcast, ATT, CoastSide, Sonic, Google, etc.
- We have hired Byers Engineering to do design

Cost Analysis

- Analysis done by Byers Engineering
- Actual construction cost per home
 - Aerial \$2000, Underground \$5000
 - Atherton homes have 4-6x wider frontage
 - Cost is mostly proportional to length of fiber runs
- Reasonable monthly lease is \$25
 - Generally paid by ISP and bundled into bill
 - Replaces current ISP physical plant cost
 - Supports a cost per home of \$1000
 - Google built Kansas City for about \$1000 per home
- We needed to get creative to make this work

Financing Atherton Fiber

- Propose to offer “fiber bundles” to homeowners
 - Aerial for \$7500, Underground for \$9500
 - Homeowner owns 4 fibers (from home to central office)
 - Can use fiber for any purpose
 - Buying is optional, but need 20% of homes to make system affordable
- Rough economics of fiber build then becomes:
 - \$6.5M actual cost (2000 homes aerial; 500 homes underground)
 - less \$4.0M from pre-sold fiber bundles (20% take rate)
 - No lease fee – fiber is owned by homeowner
 - \$2.5M net capital cost of leased fiber and central offices
 - Lease at \$30/month/home
 - 5-15% return on capital invested (depending on operating costs and future CAPEX)

Homeowner View

- Choice of ISP
 - Internet, Cable/Video, Telephone, Alarm
 - Most homeowners will see one bill - from ISP
 - Competition should keep price down
- Full Gigabit bandwidth
 - Typical in Atherton now is 2-100 down/0.5-5 up (Mbps)
 - 10-500x increase for about the same price as now
 - Fiber has lots of headroom
 - 10 Gbps is available now, will be cheap in 10 years
 - Future system wide increase as technology improves
 - Higher performance available now for higher price
 - System should last 20-30 years, at least
- Available fiber/gigabit typically is reflected in home prices
 - Owned fiber should be even better

Why Gigabit Fiber?

- Current systems are congested
 - Netflix and other video providers overtax existing networks
 - Especially from 6-10pm
 - High Def (1080p) and Ultra High Def (4K) simply won't work now if widely adopted
 - E.g. 4K requires 20 Mbps now and is heavily compressed
 - Better quality 4K (UHD) will need 50-100 Mbps per stream
- Allow completely new services

Other Details

- 2 Central Offices
 - On each side of El Camino
- Homeowner is responsible for connection from street
 - Fiber Entity or ISP can help if desired
 - Most homeowners already have conduit

ISPs in the Central Offices

- ISPs can lease fiber, and space in CO
 - Shared fiber from COs to POPs
- Any ISP can offer service at fairly minimal cost
- Companies can have direct connection for employees
- Other service providers can add equipment
 - Netflix, YouTube, Amazon cache, etc.
- Very easy for homeowner to switch ISPs
 - Competition leads to much better service and cost

Structure of Fiber Entity

– Private entity

- Funded & owned by Atherton residents
 - Entirely private capital
- Small staff for operations and maintenance
- If conditions are right, expand into other areas
- City would have control over sale of entity
 - In exchange for access to city right of way

Library

- Library could provide ongoing services to Atherton residents
 - Direct services to residents
 - Computer help and education
 - In-library and in-home
 - Can be leveraged to get better prices and service from ISPs
 - Might allow free basic internet access
 - Most of ISP cost is support, both SW and HW
 - Highly visible, great outcome for residents
 - No- (or low-) cost basic internet service
 - Help desk focused on older residents
 - Could prove a good model for other communities

Other Issues

- Ties in very well with Net Neutrality
 - Fiber plant is open
 - ISPs are forced to be competitive
 - Built for the long term, with future flexibility
- Atherton could easily have the “best” fiber system in the world
 - From mediocre to great
 - 10 gigabit/s or more...