Los Altos Hills Community Fiber (LAHCF)

Solving the problem of inadequate broadband in Los Altos Hills

Community-owned broadband service
- Private fiber optic network directly connecting homes
- Member-owned non-profit organization
- Managed by professional operator

10-gigabit-speed internet service
- Up to 10,000 Mbps (down & up)

Futureproof solution
- Every home connected by a dedicated fiber optic cable
- Network easy to upgrade

Actual LAHCF Member Speed Test

PING 1 ms
DOWNLOAD 9635.50 Mbps
UPLOAD 9542.85 Mbps
Inadequate Broadband Options

Comcast has a monopoly on broadband in Los Altos Hills
- Slow speeds during periods of peak usage
- Very slow upstream
  - Limits use of security cameras, ability to work from home, online gaming, etc.
- Cost issues
  - Constant price fluctuations
  - Expensive equipment fees and other surcharges
  - Very high cost to extend network to your home if not available
- Historically poor customer service

Many homes served only by AT&T DSL
- Extremely slow...technically not even broadband

Data privacy and network neutrality concerns
- Incumbent broadband providers track your web browsing and often sell this data
- Operators can advantage their own streaming services over competitive options
Member-Owned Community Fiber Network

Community Fiber Network
Owned & financed by LAHCF
Managed by Next Level Networks

Network Uplink
to Santa Clara data center

Internet Service
provided by Next Level Networks

Internet Service
provided by Next Level Networks

Head-end Cabinet

Regional Data Center

Network Uplink Circuit

Los Altos Hills
COMMUNITY FIBER

Next Level Networks
Community-Owned Infrastructure is Common

LAHCF simply applies this approach to broadband infrastructure

- Each member contributes to the cost of construction (assessment) and shares the ongoing cost of operation

- Homeowner Association
- Private Road
- Sewer (move off septic)
- Mutual Water Company
- Microgrid Solar
How Much Does Installation Cost?

• Neighborhood Connect fee
  ▪ Cost of building your neighborhood network and connecting it to LAHCF
  ▪ Costs varies depending on participation rate, build type, lot size, etc.
  ▪ Includes contribution to existing network infrastructure

• Home Connect fee
  ▪ Extend fiber from network backbone to your home
  ▪ In-home equipment (router & Wi-Fi)

• Total cost typically ranges from $5,000 to $10,000
Funding network expansion

• New members collectively cover the cost of building the network extension into their neighborhood
  ▪ Either a group of members contributing equal amounts or one or more angels that underwrite the cost

• New members contribute $1,000 towards existing network infrastructure
  ▪ Funds are used for network infrastructure expenses not covered by new backbone construction

• Every member will pay a minimum of $4,800 for the backbone construction into their neighborhood
  ▪ In the unlikely event that a neighborhood extension costs less than $4,800 per home, the balance will be a contribution to the existing network infrastructure

Reserve contribution

• LAHCF maintains a reserve fund to cover its operational expenses and to set aside money for network maintenance and equipment refresh (typically every 8 years)

• LAHCF members initially contribute $500 towards this fund (plus a portion of their monthly service fee)
How Much Does Monthly Service Cost?

- Service fee covers...
  - Network management and internet fees
  - Pro rata share of LAHCF’s operational expenses
  - Reserve contribution for maintenance, upgrades and technical support
- As participation increases, cost sharing improves and monthly fees decrease

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Monthly per Subscriber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network management</td>
<td>$25</td>
</tr>
<tr>
<td>Internet service</td>
<td>$15</td>
</tr>
<tr>
<td>Network uplink*</td>
<td>Varies $43, $21, $14, $9</td>
</tr>
<tr>
<td>Reserves, utilities, overhead **</td>
<td>Varies $45, $38, $14, $12</td>
</tr>
<tr>
<td>Total Monthly:</td>
<td>$155***, $128, $99, $68, $61</td>
</tr>
</tbody>
</table>

* Pro rata contribution to the network uplink expense. As of 2021, this expense is $4,255/mo (and increases 1.5% per year). Next Level Networks has agreed to subsidize the cost of the network uplink until the monthly service rates naturally supports $70/mo.

** Estimate based on cost projections

*** LAHCF board has set the maximum monthly service price at to be $155/mo.

Monthly costs decrease as membership grows (adjusted quarterly)
How Does it Grow?

Neighborhoods get added when there is sufficient interest
• Members share the cost of the network extension
• The greater the participation the lower the cost for each home

Help drive participation
• Register your interest: https://lahcommunityfiber.org/contact/
• Encourage your neighbors to join
• Become a neighborhood champion

Be an angel for your neighborhood
• Provide a loan or grant to cover the cost of your neighborhood’s construction
Organizing Your Neighborhood

Sign up to become a champion for your neighborhood

Establish your extensions’ boundaries in the online tool

Next Level provides a preliminary cost estimate

Evangelize project and secure sufficient interest

Sufficient interest achieved: site surveys, develop final design and final budget

Ready to proceed: new members join LAHCF and pay their assessment

Preparation: permits, order material, schedule installation

Construction

Service activation
Fast Broadband Is a Highly Desired Amenity

FTTH is Important to Single Family Home Purchase

- Laundry room: 92%
- Very high speed/reliable broadband: 88%
- Energy star windows: 86%
- Great room: 85%
- Walk in closet - Master: 78%
- Bathroom linen closet: 74%
- Front porch: 72%
- 2-3 car garage: 67%
- Programmable thermostat: 67%
- Central island in kitchen: 65%
- Granite countertop in kitchen: 56%
- 9 foot ceiling height first floor: 45%
- Media room: 36%
- Outdoor fireplace: 25%

* FTTH = Fiber to the Home
Gigabit Internet Improves Home Value

In a national study of 520,000 homes with a median price of $175,000... *

Homes with **gigabit internet** had a transaction price **over 7% more** than similar homes that have 25 Mbps or less

- Median home value in Los Altos Hills is $4.3 million**
- Even a 1% increase in value would be significantly more than investment in LAHCF network

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* National study of 520,000 homes with a median price of $175,000 showed a transaction price improvement of 7%.

** Zillow: Los Altos Hills CA Home Prices & Home Values, Jul 2019 (www.zillow.com/los-altos-hills-ca/home-values/)
LAHCF Provides Superior Broadband

Alternative to Comcast & AT&T’s aging infrastructure
• Locally controlled community-owned fiber optic network
• Cost transparency
• Respects privacy and Network Neutrality

Next-generation, futureproof solution
• 10-gigabit capability and dedicated fiber for each home
• Dramatic improvement in upstream bandwidth

Improve your property value
• Highly desired amenity
• Home value increase likely far greater than install cost

Support your community
• Member-owned non-profit cooperative
• Greater participation reduces costs for everyone
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Appendix
Connecting from Backbone to Homes

1. Install a “drop” to connect the backbone to the home: either new 1/2” microduct or use existing duct (if available).
2. Home’s “drop” terminates in a 7”x9” wall box installed on exterior of home.
3. Install a fiber optic cable from nearest terminal through the duct.
4. Install outdoor/indoor fiber cable from the wall box into the home via new 3/8” hole or existing home entry point.
5. Typical In-Home Equipment.
**Home Connect Installation Cost**

<table>
<thead>
<tr>
<th>Home Drop Detail</th>
<th>Up to 500’</th>
<th>500’ to 1000’</th>
<th>&gt;1000’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Equipment</td>
<td></td>
<td>$184</td>
<td></td>
</tr>
<tr>
<td>Customer Material</td>
<td>$517</td>
<td>$752</td>
<td>Plus $100 per 100’</td>
</tr>
<tr>
<td>Home Install*</td>
<td></td>
<td>$257</td>
<td></td>
</tr>
<tr>
<td>Network “Drop” Install</td>
<td>Varies**</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$958 + TBD</td>
<td>$1,193 + TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

* Includes 2 hours of labor and up to 50’ of fiber extension to reach home’s MPOE (“Minimum Point of Entry”)

** Cost to install microduct and fiber across a property can vary widely
- Duct should be buried at least 6” deep
  - Assumes no extra depth requirements due to local ordinance
- Local contractors charge as much as $10/ft to bury duct and $25/ft to horizontal bore
- Installation costs for very long drops can be particularly expensive
  - Increased likelihood that boring will be required
  - Increased manpower to pull fiber through duct
- Opportunities to reduce cost:
  - Leverage existing duct if available (fee to “proof” the duct and install a pull string)
  - Option for property owner to bury their own duct to reduce cost
  - Grouping of home installs can reduce installation expense
- Site survey can be performed to determine the cost (fee required)
TV Service Options

Keep existing satellite or cable TV service

Install satellite TV service such as DirecTV

Stream TV via set-top box or Smart TV

• Choose from an array of “over-the-top” TV providers:

  YouTube TV  AT&T TV NOW  sling TV
  PlayStation Vue  hulu  fubo TV
Telephone Options

• Keep existing landline service from AT&T
• Voice service from voice-over-internet providers such as Ooma or Vonage

Privacy
• The most advanced call blocking features available
• One-touch Do Not Disturb

Mobility
• Multi-Ring to Cell Phone OR Mobile App
• Call Forwarding
• Unlimited Mobile app calling

Home Office
• Three-way Conferencing
• Second Phone Number
• Premier Fax Mode

Smart Home
• Integrate phone line with Nest, Amazon Echo, Dropbox, etc.

Voicemail
• Voicemail to Email
• Voice-to-Text (transcription)
LAHCF is Managed by a Professional Operator

• Next Level Networks provides residential and commercial services
• Turnkey solution for building and operating community-owned broadband services
• Led by a team of highly experienced telecom executives
• Headquartered in Silicon Valley
“We’re paying rent essentially as a country to a handful of companies that are selling second-rate, extraordinarily expensive internet access.”

SUSAN CRAWFORD
HARVARD LAW SCHOOL PROFESSOR & TELECOMMUNICATION EXPERT
AUTHOR, “FIBER: THE COMING TECH REVOLUTION—AND WHY AMERICA MIGHT MISS IT.”