



The LAHCF Champion Guide

Last Update — 12/8/2023

Thank you for stepping up to be a LAHCF neighborhood champion. The LAHCF community welcomes you and will support you in improving the internet infrastructure in our community. We hope your grassroots participation as a champion in bringing ultra-high-speed fiber internet to your neighborhood is a fun, engaging, and rewarding experience. It is a great way to engage with, build and get to know your neighbors and the larger community!

The goal of this guide is to help you understand the process of installing fiber in your neighborhood, describe the role of being a champion, and give you resources that will make the process easier. In this guide we ...

- Describe the process and the players involved in the process
- Define what we mean by a Neighborhood Champion
- Describe the duties and responsibilities that the most successful champions take on
- List techniques for recruiting neighbors for a LAHCF project
- List techniques and hints that will help you bring your project to a successful conclusion

A note about this guide: LAHCF and Next Level Infrastructure are still working to complete their first 10 projects (early adopters) and the installation process is still being honed to make it faster and smoother. We will keep this document up to date to the best of our ability to reflect changes in the process.

If you have any questions, please contact Jan Clayton at (650)787-8537 or info@lahcommunityfiber.org.

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The Players

The first thing that we need to do is introduce you to the players who you will work with and what their responsibilities are. Basically, people associated with these projects fall into three categories:

- LAHCF board members and volunteer “staff”
- Next Level Infrastructure staff
- You and your participating neighbors

Los Altos Hills Community Fiber (LAHCF)

LAHCF is a mutual-benefit corporation registered in California as a [501\(c\)\(12\) non-profit entity](#). It is akin to a local water district, utility district, or condo HOA group. The organization is run by Los Altos Hills resident subscribers. It is important to note that board members are not paid for their volunteer efforts and the bylaws prevent board members from profiting from the organization. In fact, no individual member or the cooperative itself may legally profit from LAHCF. (For more information about 501(c)(12) organizations, we suggest reading this [\(IRS-produced description \(PDF file\)\)](#)).

This is a fairly unique model for an Internet provider. More typically, a large telecom owns all the infrastructure and charges subscribers a monthly service charge to use their network. All of LAHCF's local assets and network operations are controlled and owned by its own members and subscribers who are residents of Los Altos Hills. In addition, LAHCF is run as a shared-cost model for both the network infrastructure and the operating service expenses.

LAHCF's build-out model is different from the legacy providers in that traditional providers do what is referred to as an overbuild. They install the infrastructure (cable, phone service, or another asset) in neighborhoods hoping that people will use their services in the future. Because LAHCF does not have the funds to install networks hoping residents will subscribe later, **LAHCF only builds fiber projects in neighborhoods where residents are willing to pay for the installation.**

LAHCF completely bypasses the local telcos (AT&T and Comcast) infrastructure for our service by installing our own set of fiber conduits and other network equipment. To connect our locally owned in-the-ground network to the Internet, we lease a middle-mile fiber circuit to connect into a data center where Internet service is provided. Our middle-mile fiber circuit can add additional capacity as needed as more homes are connected and data traffic on the network increases.

Installing our own community-owned fiber infrastructure is not cheap or easy, but the rewards are many, including

- ❖ Reduced operating cost
- ❖ More control over the service
- ❖ No inherent data caps or data-rate controls
- ❖ Faster speeds
- ❖ Avoidance of data rate controls
- ❖ [Future proof](#) — this was recently demonstrated in a test of a strand of fiber that was able to transfer 1.8 Petabits per second (approximately 200% of the world's total internet usage on a single strand of fiber)
- ❖ Complete control over the selection and management of vendors who build out and manage the network; at this point, that vendor is Next Level Solutions, however, LAHCF can choose a different vendor in the future.

Along the way, you will interact with one or more of the LAHCF board members. Typically, Jay Snable will contact you and talk with you about your project. He is an excellent person to discuss your project with and will be an advocate for your project.

There are several board members who you will encounter during your project:

- Gautam Agrawal, President (president@lahcommunityfiber.org, (614-668-6164) — Gautam handles much of the outward-facing communication and is the official liaison to

the Town of Los Altos Hills' board. He also works on marketing the LAHCF mission and has participated in a number of radio tower designs.

- Johannes Schmidt, (johannes@schmidtparty.com) — Secretary
Beyond Johannes's duties of keeping board minutes, he has worked hard to bring new LAHCF projects on board.
- Jan Clayton, (treasurer@lahcommunityfiber.org, 650-787-8537) — Treasurer.
Jan is the person who collects the funds from the participants to get the projects started. She also pays the bills and handles many of the legal agreements.
- Scott Vanderlip, (scott@inet-sciences.com, 650-793-0475)
Scott is a founding member of LAHCF. Although he has stepped away from the many activities he originally performed, he still helps out and provides advice on how to handle issues as they come up.
- Kjell Karlsson is a member at large who works on a number of technical activities.
- Hendrick Dahlkamp is a member at large and also provides technical advice.

If you want to know more about or if you are interested in serving on the LAHCF board, please contact us at lahcfboard@lahcommunityfiber.org.

INext Level Infrastructure (and their vendors)

Next Level Infrastructure (<https://netlevel.net>) is the organization that LAHCF has hired to design, configure, install, and maintain our community-owned and operated fiber-optic network. They are a small organization at this point but have many collective years working in the Telecom industry and understand the business well. Their goal is to provide 10-gigabit Internet service to those communities that the large telcos have little interest in serving.

Next Level Infrastructure provides a turnkey solution for building and operating customer-owned 10-gigabit-speed fiber networks. They enable hometown associations to drastically reduce the cost of supplying broadband, and focus on neighborhoods and municipalities that can use their tools to aggregate demand and crowdfund the construction costs of a community network.

Next Level Infrastructure designs and configures the networks, but hires local vendors to perform many of the construction tasks. This enables them to keep their overhead low and expand their services without hiring large numbers of staff.

Next Level Infrastructure provides a number of tools for their customers to use:

- The Champion Map enables champions and project managers to plan and track neighborhood projects.
- The Home Connect Quote Tool (associated with the Champion Map) provides a way to get estimates for the cost between a backbone and the house. It includes estimates for

costs of boring, use of existing conduit, estimated labor costs, and all the parts and equipment. More about this tool later.

- The Customer Support Portal enables active subscribers (customers) to pay their bills and get information about their subscriptions.

You and Your Neighbors

The Neighborhood Champion(s)

Your job as neighborhood champion is to **organize**, **educate**, and **coordinate** between your neighbors, LAHCF, and Next Level Infrastructure. In effect, you need to be a part-time project manager that makes sure that the project goes well for you and your neighbors. Your most important responsibilities are ...

- Educating your neighbors about the LAHCF community-owned and operated model, technology, the costs, and their responsibilities to see the project through to completion
- Signing up participants for your project and ensuring that the Membership Agreement is signed and that funds are provided to the cooperative to get the project started. In some cases, this may require picking up checks or agreements and delivering them to the treasurer of LAHCF.
- Acting as a go-between or head communicator between your neighbors and LAHCF (and Next Level) including reviewing plans to ensure that they meet the needs of your project's participants
- Ensuring that all parties involved stay on the same page throughout the project through frequent communication

Your job starts now and will continue until the project is completed and your neighbors are happy. That could take 6 months or it could take over a year depending on your project's size, complexity, and situation. Your role might even continue beyond the end of the project, for example, if you decide to entice other neighbors to connect in the future.

We would like to set your expectations about this job right now. If done well, this job will take a considerable amount of your time. Assume 1-4 hours a week for the duration of the project. For most weeks the need for your time and effort will be minimal. However, there will be other weeks when you will need to spend considerable time pushing the project forward — herding your neighbors, LAHCF, or Next Level Infrastructure. **If you can find another person participating in your project who is willing to act as a co-champion, it will help tremendously.**

The Non-Champion Participants

Beyond you, there are those non-champions who are participating in your project who will become LAHCF subscribers when the construction and installation are completed. You don't have to have any other participants in your project if you don't want to; however, typically the

more subscribers you have the cheaper the cost. We will talk more about this topic in [Step 4: Get Ball-Park Cost Estimates](#).

The **responsibilities of participants** are few, but significant:

- If your project follows a typical crowd-sourcing model (described in [The Different Funding Models](#)), they will be a significant source of funding for not only their connection but also for the fiber backbone.
- They will need to become members of LAHCF (the process is described at <https://lahcommunityfiber.org/sign-up/>)
- Potentially, they might be required to sign an easement or a license agreement that gives LAHCF access to their property for burying and maintaining the fiber backbone. This is only necessary when the backbone is buried between two properties rather than along a road.
- They will need to coordinate with Next Level Infrastructure and their vendors when it comes time to install the drop to their home.
- When the participant wants to start the service, they will need to sign up to be subscribers. Note that there are several homeowners who have been participants, but have not immediately become subscribers, for a variety of reasons. A participant can become a subscriber when it is convenient for them.

Overview of the Process (the Champion's Perspective)

The process associated with a LAHCF project, is by nature, significantly more complicated than establishing service with a telco that already has a line to your home or on a pole next to your property. A LAHCF project is in essence hiring them to bring fiber to your neighborhood and then connect you to a 10-gigabit fiber backbone. The construction is significant and, as a result, so is the process. But, this is achievable even without experience in networks, technology, or project management. Key to a successful project is oversight of build, timelines, and communication.

Below is a quick overview of the process from the perspective of a champion. Later in this guide, we describe each of these steps in detail and talk about the champion's role in each of them.

Step 1: Get established as a neighborhood champion.

Step 2: Educate yourself about the technology and the connection options for your neighborhood project.

Step 3: Determine who is going to participate in your neighborhood and what funding model you want to use.

Step 4: Work with Next Level Infrastructure to create a preliminary cost estimate and a high-level plan for the project.

Step 5: Secure commitments from the neighborhood participants so the cost per household can be solidified.

Step 6: Get all participants to become members of LAHCF and collect the funds for the project.

Step 7: Track Next Level Infrastructure's progress as they prepare detailed construction plans, get permits, order materials, and determine the need for easements or license (access) agreements.

Step 8: Track progress as Next Level Infrastructure hires vendors, as necessary, and schedules and executes the construction.

Step 9: Ensure that your participants create an account and that their service is fully activated.

Let's go through each one of these stages in detail and discuss what needs to be done. Along the way, we will provide information that will help you serve your neighborhood participants.

Step 1: Get Established as a Champion

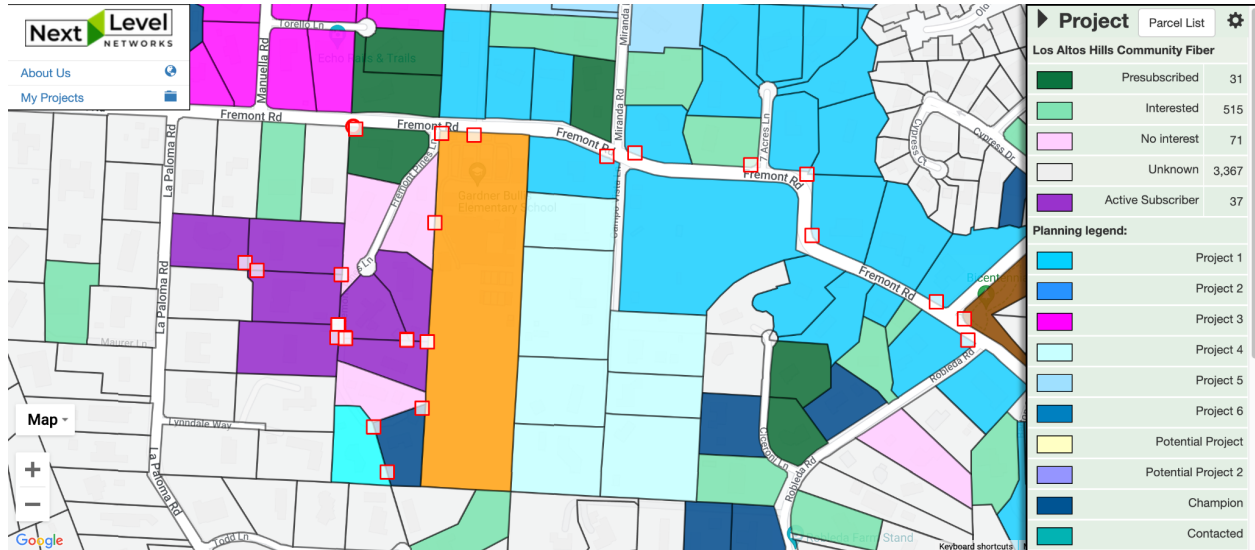
Signing Up

If you haven't done so already, there are two preliminary actions to take as a champion:

- Fill out the [Get Service form](#) from the LAHCommunityFiber.org website and indicate you want to be a champion.
- [Sign up](#) for the LAHCF newsletter. Although this isn't a necessary step to push the project forward, it will help you stay in touch with what is going on with LAHCF projects.

Getting Connected to the Next Level Champion Map

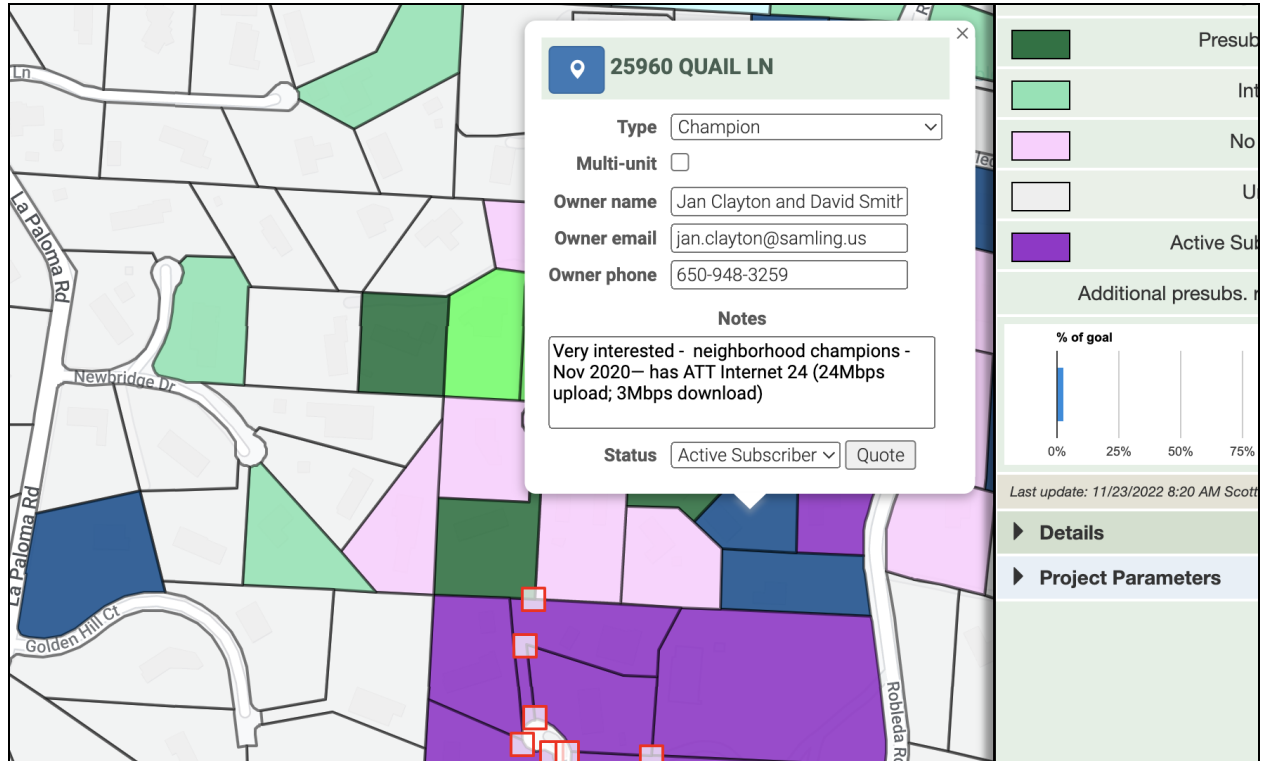
When you sign up as a champion, a LAHCF contact will send you an invitation to log in to The Next Level Champion Map portal with your email address. If you don't get that invitation, please send an email to info@lahcommunityfiber.org.



From this portal, you can gather information, track progress, and get preliminary estimates. This tool is available at: <https://app.nextlevel.net/#/project/223>

Once you are logged into the tool, you will have access to information about all the properties in Los Altos Hills, and you can keep notes about your own project. In the graphic below, we show the information that can be associated with each household. Instructions on how to use the tool can be found at:

<https://docs.google.com/document/d/1PLB6RCf9zuayg9vUrXbMGOVuldQnxcjVeXOEQY1-ujk/edit>



We strongly suggest that you become familiar with this tool early in your stint as a champion. It will be well worth the time.

Attending the LAHCF Champion Meeting

If possible, get engaged with the LAHCF weekly neighborhood champion meeting. Each Friday there is a Zoom meeting at 10:30 AM, typically run by Scott Vanderlip. You don't have to attend all of them, but you will learn a lot of helpful information about other champions and projects that will assist you in your efforts. It also gives you an opportunity to ask questions about the process and to ask for help, if you need it.

The Friday Champion meeting is especially important early on in the process. When your project gets close to the construction phase, you will have a dedicated weekly meeting with LAHCF and Next Level Infrastructure that will cover construction progress and issues.

LAHCF Champion Zoom Meeting Link:

<https://us02web.zoom.us/j/85206039889?pwd=RzlkNIBNTHAvQzhRdU1lVDNlcGxpZz09>

Meeting ID: 852 0603 9889

Passcode: 391871

LAHCF will likely assign you a *champion mentor*; that is, a champion who has already successfully championed a project that is completed. Please work with this person to answer your questions and help you out as needed.

Step 2: Become Educated about the Process

LAHCF does not have the resources to answer every question from every potential subscriber, so your neighbors will find it very helpful (and convenient) if you can answer most of them. Therefore, one of your very important jobs is to educate yourself about the technology and the construction/installation process.

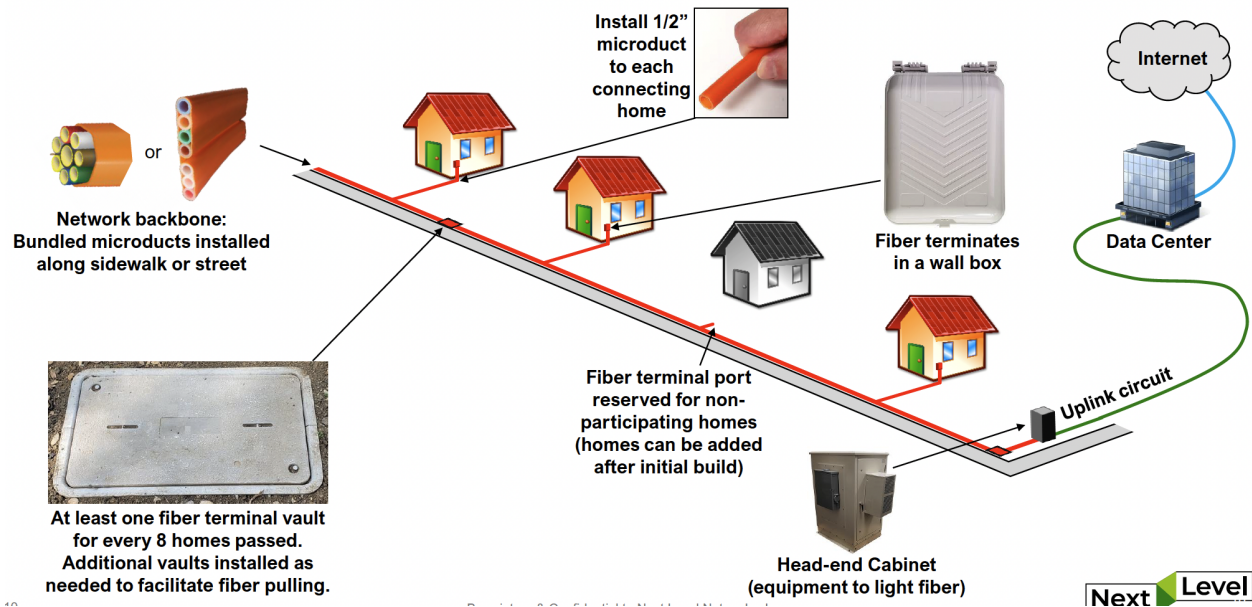
Luckily, many resources are available to help you become familiar with the details of these projects. Start with perusing the rest of this guide. Then look for other information under the Resources tab on the LAHCF website. <https://lahcommunityfiber.org/>.

- [Introduction to LAHCF](#) (April 2021) Presentation — This presentation covers the basics of the reason why gigabit fiber is so good, a description of how fiber gets from Santa Clara (or Fremont) to your home, and information about basic costs.
- [Previous newsletters](#) — Not only can you find out a lot of information in these newsletters about what is going on today, but you will also get a lot of historical information about previous projects.
- As mentioned previously, the **weekly champion meeting** that happens on Fridays at 10:30 am is a great place to learn and to get all your questions answered.

Step 3: Establish Your Neighborhood Project

Your first major goal for your project is to figure out who is going to participate in it. Your project can be very small (1-2 households) or much larger (15+ households). This part of the project is often frustrating for champions. Because participants share the cost of installing the backbone (which is the most substantial cost of the project), the more participants you have in your project, the lower the cost for each participant. On the other hand, the more participants you work to join your project, the more effort you will need to put into working with your neighbors.

Your project scope is basically what streets and exact properties you want your project to include and pass. LAHCF installs plastic conduits in the ground past those properties. Additionally, LAHCF and Next Level Infrastructure will have to figure out how to best connect your neighborhood project to the backhaul fiber connection.



The Different Funding Models

Because of this time-versus-cost-per-household dilemma, a couple of different funding models have emerged over the last few years.

The Crowd-sourcing Model

The original method is a crowd-sourcing model. It determines a group of households that are close in proximity and will share the backbone. The more participants the better for everyone involved. There are two costs, the cost of the shared backbone and the cost of installing the micro-duct fiber cable to each connecting home. So, the cost for each participant is:

$$\text{Cost per Participant} = \text{Participants Share of Backbone Construction Cost} + \text{Cost of connection from backbone to house plus equipment}$$

For example if the cost of the backbone is \$50,000 and there are 10 participants, the cost of each participant's share of the backbone would be \$5000. Let's say the cost of connecting participant A to the backbone is \$1700, the total cost for Participant A would be:

$$\$8200 = \$5000 \text{ (for backbone)} + \$1700 \text{ (for home connection)} + \$1500 \text{ (for contributions to upstream equipment and processing)}$$

When a project that uses this model is complete, new subscribers can be added with a simple cost-sharing calculation. Their share of the backbone is the total cost of the backbone by the total number of participants (including the new participant). Their total cost is the backbone cost, their home connection costs, and **an additional 10%** (of the backbone cost) for a late attachment to the backbone.

What happens to their share of the backbone payment that was already paid by the initial participants? Their backbone share is distributed among the original participants of the project. This is similar to the LAH sewer district model.

The Angel-Funded Model

There have been several LAHCF projects that have used a different funding model. At times, one or a couple of households have wanted to get the project started quickly, and they didn't have the time or desire to recruit neighbors to share the initial cost of the backbone. The most obvious one is the Fremont Road → Burke Road extension. Three “angel funders” paid for the entire backbone down Fremont to Burke Road, and only those three were connected initially. Despite the fact that the backbone was paid for by three people, the backbone down this route is set up to serve all the homes along its path (over 30 homes).

In this case, the angel funders and LAHCF determine a “pro-rata connection fee” for all subscribers that get added to this section of the backbone. So, instead of taking the entire angel-funded amount and dividing it by the new number of participants to determine the backbone connection cost, there is a predetermined cost to join the backbone that is quite reasonable.

Model	Pros	Cons
Crowd-sourced Model	<ul style="list-style-type: none"> Initial cost of attaching to backbone per household is lower 	<ul style="list-style-type: none"> There is a lot of work to do to rally neighbors to join the project and pay the construction costs
Angel-funded Model	<ul style="list-style-type: none"> Much faster to get the project started Less wrangling of neighbors 	<ul style="list-style-type: none"> There is a large investment (often \$50K or more) to “underwrite” the backbone

Which model is best for you? It depends on whether you have the time or inclination to work with your neighbors or whether you prefer to “fund” LAHCF’s fiber backbone and its mission.

Neighborhood Outreach Documents

Unless you have decided to fund the backbone by yourself, you will likely need to talk with your neighbors. LAHCF has several educational and outreach documents online to help with your neighborhood outreach. These documents can be sent via email or customized and printed and distributed to your neighbors with your contact information for follow-up. You can find them at: <https://lahcommunityfiber.org/champion-resources/> . LAHCF board members are also willing to attend a meeting and answer questions.

Recruiting Neighborhood Participants

Your first job is to figure out who your neighbors are and how to contact them. This isn't always easy. These days we are more isolated than ever. However, use the Next Level Champion Map to figure out what addresses you want to focus on, and then use your neighbors to help you figure out names, phone numbers, and email addresses. (Note that initially only addresses are listed on the Champion Map. Either champions or LAHCF typically adds additional information such as contact information.

Once you have a list of people you want to target, you need to get them educated about LAHCF and the benefits of fiber. The presentation [Introduction to LAHCF](#) should have all the information that you need.

There are several common models for contacting neighbors: email blasts to the group, one-on-one discussions, and a gathering of the group. All work, but you might be more comfortable with one versus the other.

Note that it is our experience that although email is a great way to pass project status information to people, it isn't very effective to get people educated or signed up. We found that the personal touch is much more effective.

As mentioned above, education is your primary job. Here is what we suggest you need to tell your neighbors about:

- Who is LAHCF and what is their operational /funding model?
- What are the broadband issues that most LAH residents have and how LAHCF addresses those issues? See <https://lahcommunityfiber.org/lahcf-speed-tests/> for a great comparison between the options.
- Talk about the installation process and how it will affect them.
- You could also create your own virtual neighborhood meeting to discuss the fiber project. Next Level or LAHCF can participate in organized neighborhood meetings if desired.

While you are educating your neighbors, it will also be beneficial to collect information from them:

- Find out their current Internet needs and connectivity issues.
- Figure out if they are early adopters of technology or risk-averse with respect to technology.
- Get an idea of how they feel about spending \$10K for upgrading their broadband infrastructure. (Note that the cost per household with the crowd-funded method starts at about \$7K, but the average is closer to \$10K. If your neighbor is averse to \$10K then they are likely not a good candidate. Take a note.)

As a result of your discussion with neighbors, we suggest that you ...

- Update the crowd-sourcing tool with contact information and notes about the neighbors' interests. **Note:** When writing your notes, keep in mind that all champions, LAHCF board members, and Next Level Network staff members can see the information.
- Create your own spreadsheet of neighbor contacts and notes about the neighbors you have contacted. (This is a better place to keep notes that you don't want the rest of the world to see.)
- You will likely want to create email lists that enable you to easily send information to all of your neighborhood LAHCF-interested neighbors.

Categorizing Your Neighbors' Interests

You never know who is going to participate until it is time for all participants to write the checks for construction. However, we found it extremely helpful to categorize our neighbors into a couple of categories:

- **Definitely in.** They have said that they will write the check as soon as it is time.
- **Very interested.** They haven't made a commitment, but the signs are very positive.
- **Interested, but hesitant.** They have spent some time getting educated and seem interested in the project, but they have balked at the price or the timing, and you doubt that they will join the project at this time.
- **Not interested.** They have said that they have no interest in participating in the project.

Step 4: Get Ball-park Cost Estimates

Once you have categorized your neighbors, you can give Next Level Infrastructure the addresses of those neighbors who are **definitely in** and **very interested** so they can start planning your project.

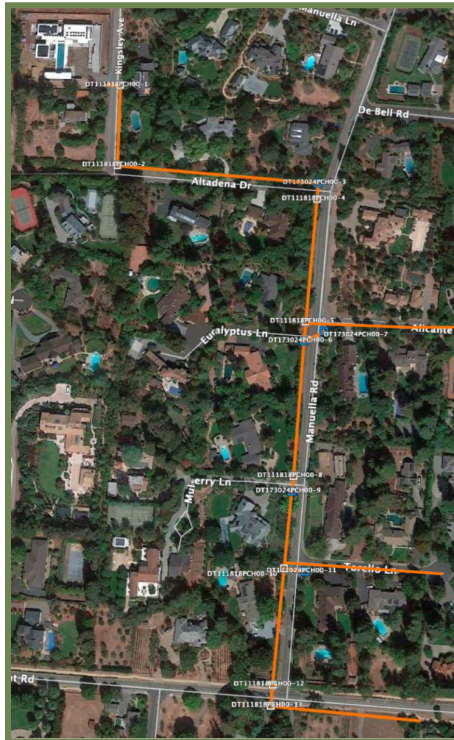
Getting an Initial Plan

Next Level will spend a few weeks reviewing the situation on the ground in your neighborhood. This includes getting initial information about home connections and whether boring needs to happen under a street or driveway. They determine where the backbone should go, where vaults should be placed, and how the home connects should likely be done.

Next Level Infrastructure will give you a customized presentation for your project with significant information. The two most important things are the map with the fiber design and the cost estimates.

Note: Next Level Infrastructure designs the backbone so that **any household along the path of the backbone will be able to connect in the future**. This methodology adds a small cost to the initial construction of the backbone; however, it creates huge savings when neighbors join

after the initial construction. There is no need to add vaults or capacity along the route at a later date.



Head-End Cabinet

- Existing LAHCF head-end cabinet at Fremont Pines Ln

Network backbone

- 3,538' backbone (2" diameter, 8-way duct)
- 5 medium vaults (30" x 17" x 24"D)
- 8 small vaults (18" x 11" x 18"D)
- 5 fiber terminals

Network drops to homes

- ½" diameter, 12.7/10 microduct
- Use existing duct entrance if available
 - Requires proofing & pull string
- Dedicated strand of fiber connects each home to head-end cabinet

The map (above) shows the backbone (in orange). The route is described from the cabinet to the end of the backbone. It describes the ducts that will be used and also lists the vaults that will be installed along with the type of value.

Fiber terminal vaults are vaults into which the home connect lines are spliced. There are terminuses for all fibers. In this case, there are 5 fiber terminals.

Access vaults (medium or small values) are there for access to pull fiber to home connections. Splicing to the backbone does not occur in these values; however, home conduits enter into these vaults allowing the fiber to come out of the backbone to a home.

The Initial Cost Estimates

There is a dilemma that occurs during this stage—you can't get people to sign up without knowing what the cost is going to be and you can't know what the cost is going to be until you know how many people will sign up. That is why an initial estimate is done. Next Level Infrastructure will estimate the costs for a range of participants, as shown in the example below.

Participation			
Participating Homes (out of 60 passed)	20	40	60
Participation	33%	66%	100%

Backbone Installation	
Equipment	\$0
Materials	\$28,963
Installation	\$102,715
Engineering	\$15,514
Project management	\$12,929
Surety bond	\$4,732
Total Backbone Installation	\$164,853

Per Member One-Time Costs			
Backbone Installation (Pro Rata) *	\$9,444	\$4,722	\$3,148
Home Connection**	Example: ~\$1,500		
LAHCF Membership Fees***	\$1,500		
Total Cost Per-Member	\$12,444	\$7,722	\$6,148

There are a few things associated with this estimate we would like to point out:

- The top part of this estimate is the cost of the backbone. It remains the same no matter how many households are connected.
- Right below the **Per Member One-time Costs** heading, the **Backbone Installation (Pro Rata)** takes the total backbone cost (\$164,853) and divides it by three potential numbers for **Participating Homes** (in this case 20, 40, and 60).
- An average cost for a **Home Connection** (\$1,500) is listed here. This line includes the ducting to the house, the fiber, the equipment in the house, and the labor costs of installation. \$1500 is a relatively good estimate for most homes; however, if the connection requires boring under a driveway or installing a very long conduit, the cost could be much higher.
- There is a standard LAHCF Membership fee (\$1,500) that covers operating costs for the organization and it also funds equipment upgrades and repairs.

Step 5: Get Participants to Make a Commitment

Now that you have the plans and you feel confident that they will serve your neighbors, you need to present the plan and secure the participants. This step has a few substeps:

1. Make sure that you understand the details of the plan and the costs associated with it. We guarantee that your neighbors will ask a lot of questions, so be prepared for them.

Don't be afraid to ask the Next Level Infrastructure employee who sent you the design for clarification.

2. Send the plan off to your neighbors and set up a time to discuss the plan. We did this using Zoom. In-person discussions are great if you can get people to your house. Or, you can talk to people one-on-one.
3. Let people know what their next steps are and **when you need them done by**:
 - Make a decision
 - Write the check out to Los Altos Hills Community Fiber
 - Sign a Licensing (access) agreement or easement for the backbone? One of these agreements is likely required when the backbone goes between two properties rather than along a public road.
4. In your final discussions with neighbors, you might identify that some adjustments need to be made to the plan. That is OK. Just make sure that you contact the Next Level Infrastructure project manager as soon as possible.

A few hints to make the process go better ...

Getting commitments from your neighbors will be hard for at least a few of your neighbors. Here are a few techniques that have worked for other champions:

- Give people a deadline. If you don't, you will wait for years for people to make up their minds and hand over their checks.
- Let the interested parties know who else is participating or considering participating. We were amazed that in several instances a neighbor's decision was based upon the decision of another neighbor.
- Be neighborly. Ask what you could do to help make the decision easier for them. They might tell you something very important that will affect the project for not only them but for other neighbors also.

Step 6: Get the Project Officially Started

The construction phase of your project (even ordering of the materials) doesn't start until all the money is turned in and all the necessary agreements have been signed. So, there are three things that need to happen.

1. Get participants to join LAHCF.

Every participant needs to sign and turn in a [LAHCF Membership Agreement](#). They can turn them in themselves; however, we found it easier to have our neighbors drop their signed agreements at our house and we turned them in.

2. Get the checks from all participants and turn them in.

The checks always come last. Just continue to remind people that you are waiting on them before the project can start. Be nice, but be persistent. Again, they can turn them in themselves, but we found it much easier for people to drop them off at our house. Please give the checks to the LAHCF Treasurer, currently:

LAHCF Treasurer — Jan Clayton
25960 Quail Lane
Los Altos Hills, CA 94022

3. Turn in any outstanding easement agreements or Licensing Agreements (for the backbone access).

Next Level Infrastructure cannot start work until these agreements have been signed and turned in. You will expedite the project a great deal if you take responsibility for this. Some neighbors don't take this seriously. We suggest connecting them with David Barron at Next Level Infrastructure. He can very clearly explain the agreement, the ramifications for the person signing it, and why it is so important for the project. He can also explain the Los Altos Hills politics that makes it necessary.

Most properties will not need a fiber easement. LAHCF has been granted a "Master Access Agreement" with the Town of Los Altos Hills allowing us to install our fiber assets in the ground near roadways, whether private or public.

4. Send your final participant list off to Next Level Infrastructure.

Your final list of participants contains those people who signed the paperwork and wrote out the checks. We stopped taking checks on our drop dead date; however, there was a significant delay before construction started (due to supply-chain issues), so right before construction started we reached out to a few people who showed interest but didn't sign up to tell them that there was a small window where they could sign up. No one did, by the way.

Send the final list of participants to Next Level Infrastructure. You should include ...

- Name of the best person to contact, address, phone number, and email address.
- If you know anything special about this neighbor that might affect the project, let them know, including that there is a dog loose in the yard, they travel a lot, times to best get in touch with them, or sensitive issues for that person.

The Weekly Project Meeting

When you become an official project, you will be asked to participate in a weekly project meeting with Next Level Infrastructure and LAHCF. This meeting will likely last 15-30 minutes each week to track the progress of your project.

Step 7: Track Progress on Preparation for Construction

There is a rather extended period where Next Level Infrastructure performs a number of activities in preparation for the construction phase. These activities include ...

- ❖ Preparing detailed construction plans
- ❖ Getting permits from the Town of Los Altos Hills
- ❖ Ordering materials
- ❖ Determining the need for easements or access agreements (Licensing Agreement)

Your role in this phase is to:

- ❖ Keep track of what is going on and make sure that things don't get stalled. Now, if they do get stalled there might not be anything you can do about it other than let people know that you are paying attention.
- ❖ Review the detailed plans to ensure that they are in alignment with your expectations. If not, figure out why not.
- ❖ Communicate with your participants about progress and any issues that arise during this phase.

Step 8: Track the Construction Process

Your role during the construction phase is to track what is going on with the project. We suggest that you ...

- ❖ Make sure that the project doesn't get stalled at any point in the process.
- ❖ Make sure that all the participants in your project are being served adequately.
- ❖ Communicate relatively frequently with your participating neighbors about what is going on and what the next steps are. We suggest that you reach out to your neighbors each time a new phase of the construction is started, at a minimum.

Once you get to the home connection phase, it is likely that the connections for all your neighbors *will not be synchronized*. If this happens, we suggest that you connect with each neighbor individually as they progress through each of the substeps during construction.

- ❖ Communicate with your ***non-participating neighbors*** when construction equipment might draw notice or temporarily cause road blockages (especially while they are boring and installing the backbone conduit).
- ❖ Keep track of any outstanding issues and remind Next Level Infrastructure and LAHCF that the issue has not been resolved.

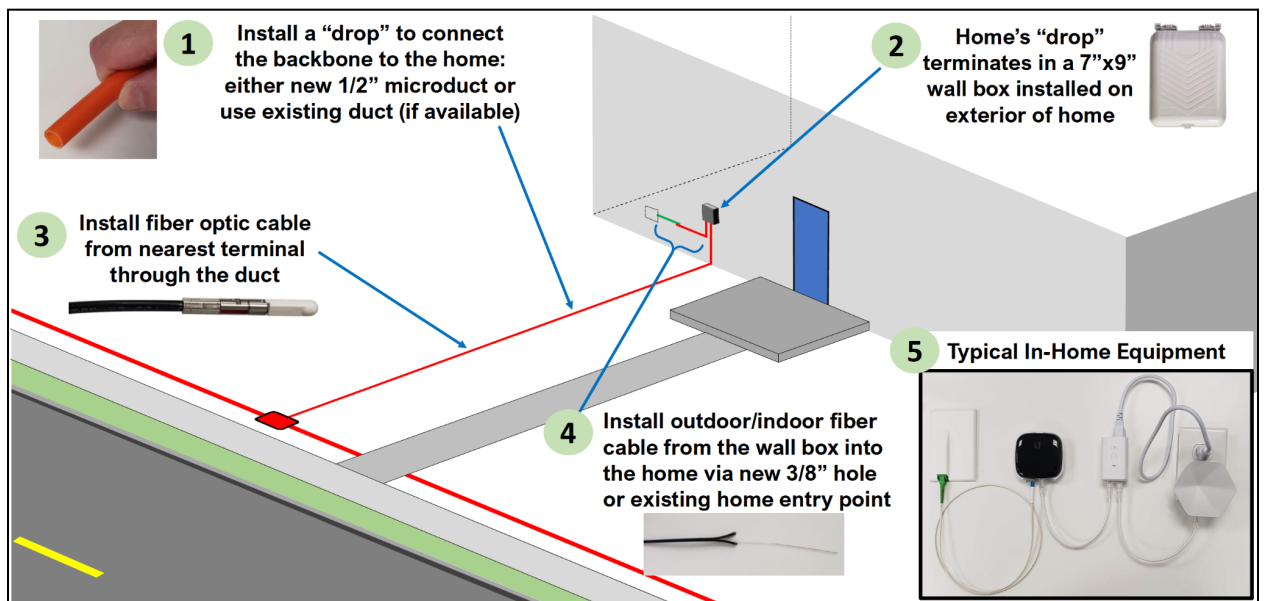
- ❖ Help support the construction crew and installers, if help is needed or if it would speed up the process.

What is the construction process?

You likely have a good understanding of the construction process, but let us outline it very clearly here:

1. **The main backbone conduit is buried** along roads or property lines. This is typically done using a boring machine that installs the conduit in segments of up to 500 feet. The boring machine enables the installation of the fiber without digging up existing roadways or harming existing infrastructure.
2. **Vaults are installed** at the backbone junctions. As mentioned before, there are two kinds of vaults: terminal vaults and access vaults. Your plan should have them clearly labeled.
3. **Fiber is pulled in the backbone** from the connection to the cabinet to the end of the backbone (the final terminal vault).

At this point, the fiber needs to be connected to the house. All the following steps are associated with installing the household “drop” and the equipment that makes the connection functional.



4. **The best method for each household fiber connection is determined and constructed.** Note that there are several options for construction for the home drops.

Each of these options has a different process. The selection of the method for connection is typically a joint discussion between the homeowner and Next Level Infrastructure (or its vendor). In general, the decision is based on the cost, amount of disruption, and ease of construction. Those three factors don't necessarily support the same solution.

Using existing conduit — At times, the drop to the home can be done in an existing conduit (such as AT&T or CATV). In this case, the first step is to “proof” the conduit. That is, someone needs to ensure that there is no obstruction in the conduit that will keep a team from successfully pulling the fiber through the conduit. When a conduit is “proofed” a string is put in the conduit to facilitate pulling the fiber duct.

This is no doubt the easiest and least expensive way to pull the fiber to the house; however, just because there is an existing conduit, does not mean that it can be used. In our project, several existing conduits were crushed or had blockages in them. We were eventually able to repair most of them, but for one, we gave up and put in a new conduit.

Putting in new conduit — This is the most commonly used option. Conduit can be installed by the homeowner or by one of Next Level Network's vendors. If possible, it should be a 1-inch electrical conduit with as few sweep Ls as possible. It should be buried at a minimum of 6” underground, but 18” is preferred.

5. The fiber is installed from a terminal vault on the backbone to each household.

Once the home drop conduits have been proofed and a pull-string is installed, a single strand of fiber is pulled to the house. Please note, this pull is not from the *closest access vault* to the house, **it is from the closest terminal vault to the house**. The closest terminal vault can be as much as 400 feet away from the closest access vault.

6. The installers splice the fiber in the backbone to the fiber that goes to the house.

At this point, one or more splices need to be made. The first splice is at the terminal vault. A splice at the house might also need to be made, depending on the situation.

7. Install equipment inside the house and test the connection.

At the house, the equipment is installed. This equipment typically includes ...

- 7-inch x 9-inch wall box installed next to the egress of the fiber from the conduit at the house. This box is usually installed on the outside of the home; however, on some occasions, this box is installed inside a garage or a basement.
- Fiber from the wall box to the desired location inside the home
- Fiber wall plate to receive the end of the fiber
- Media Converter to translate the fiber signal to one that a router can use
- Power Supply for the media converter

- 1-gigabit Plume router. This router replaces any telco/CATV modem/router that was used with a previous connection. This specialized router helps Next Level Infrastructure diagnose issues with your LAN.

One other thing to note, the default media converter and routers installed by Next Level Infrastructure are 1-gigabit devices. If the participant wants faster speeds, they will need to discuss their needs with Next Level Infrastructure to upgrade the SFP, and then purchase a faster router on their own. Currently, a 10-gigabit router configuration can be quite expensive. A few of LAHCF's subscribers are running 10-gigabit configurations; however, LAHCF only recommends them for those who are technically proficient and who truly need the bandwidth. In the future, LAHCF plans to provide consumer-priced, 10-gigabit equipment as the default installation.

Some of these steps can potentially be completed in one day; however, they are often spread out due to installer availability. In particular, steps 6 and 7 were completed at my house in one day, but for 3 of my participants, they were completed over several weeks.

Note: The connection for and activation of your participants will likely not be synchronized. Due to difficulties with using existing conduits for home drops, the home connections for our seven participants were spread out over several months. It is important to continue communicating with your neighbors while they are patiently waiting for the connection to happen to their home.

Step 9: Ensure Successful Activation for All Participants

Once the fiber drop is installed into a new subscriber's home, Next Level Infrastructure will run tests to ensure connectivity and speed. Next Level's installers will make sure that the subscriber's home network is talking correctly to LAHCF's equipment before leaving the subscriber's premises.

As soon as the Next Level Infrastructure is sure that connectivity has been established, it will activate the subscriber's account. An email will automatically be sent to the subscriber that will enable them to create a subscriber account and set up a payment method.

Payment occurs at the beginning of each month to cover that month. The first partial month of a subscription is billed at the end of the month. So, a new subscriber gets billed for the partial month that just passed and the next month on the same day.

The Next Level System sends out a receipt of payment when the payment is made.

For the most part, you don't have to do anything for all this to happen seamlessly. We suggest that you check to see if your participants are ...

- Activated successfully and are happy with the connection
- Successful in setting up their subscriber account and specifying their payment method

Comments? Question?

Please send your comments to questions to Jan Clayton or call 650-787-8537.