ERIC D. SHAW
DIRECTOR

MARY DE LA MARE-SCHAEFER
DEPUTY DIRECTOR

SALT LAKE CITY CORPORATION

DEPARTMENT OF COMMUNITY & ECONOMIC DEVELOPMENT
OFFICE OF THE DIRECTOR

RALPH BECKER
MAYOR

CITY COUNCIL TRANSMITTAL

David Everitt, Chief of Staff

Date Received: 04/03/2014
Date sent to Council: 04/03/2014

TO: Salt Lake City Council
Charlie Luke, Chair

DATE: **March 28, 2014**

FROM: Eric D. Shaw, CED Director

SUBJECT: Google Fiber Feasibility Study

STAFF CONTACT: Jessica Thesing, Google Fiber Project Manager
Economic Development Division
(801)535-7159 jessica.thesing@slcgov.com

COUNCIL SPONSOR: Exempt

DOCUMENT TYPE: Briefing – information only

BUDGET IMPACT: N/A

BACKGROUND:

On February 19, 2014, Mayor Ralph Becker announced that Salt Lake City was among a short list of 34 cities working with Google to explore the possibility of bringing the ultra high-speed Google Fiber broadband network to residents. Google Fiber is currently available in Kansas City, Kansas; Kansas City, Missouri; and Provo, Utah. It will be available in Austin, Texas later this year. According to Google Fiber, the intent is to bring the service to as many participating cities as possible. To be considered for this investment by Google Fiber, Salt Lake City has been asked to provide a response to the Google Fiber City Checklist by May 1, 2014.

This transmittal will briefly discuss fiber technology, the history of Google Fiber, checklist requirements, our timeline, and Salt Lake City's strategy for responding, including public outreach and digital inclusion efforts. In addition, this document will explain how conducting

this analysis will better prepare Salt Lake City to respond proactively to large scale infrastructure improvement projects in the future.

Fiber-Optic Technology - Currently, most internet service is provided by a signal that travels through local telecommunication infrastructure built partially of copper cables, utilizing above-ground utility poles and underground conduit. Alternatively, fiber-optic cables are made of glass and use lasers to transmit information at a much faster speed. Internet speeds are measured in bits per second; meaning, the more bits that can be passed along each second, the faster the networks. Google Fiber utilizes fiber-optic technology and aims to deliver internet speeds at one gigabit per second. According to Google Fiber, this is up to 100 times faster than basic broadband.

Google Fiber History - In 2010, Google announced its "Think Big with a Gig" challenge, inviting US cities to communicate whether they would like a gigabit-speed network within their community. Over 1,100 applicants responded, including Salt Lake City, and the first cities chosen to receive Google Fiber were Kansas City, Austin, and Provo. Since 2010, Google Fiber has been busy constructing fiber-optic technology within these cities and the first customers were connected to the new fiber network in 2012 in Kansas City and 2013 in Provo.

Google Fiber Network (see Attachment A) - Google Fiber will create a fiber ring that circles the city. This will provide service access to residents in all eligible neighborhoods. The fiber ring will require the construction of fiber hut. These fiber huts are considered the "brains" of the network, and according to Google Fiber, house the infrastructure that transmits signals between home computers and the internet. Each fiber hut can serve approximately 20,000 households. Salt Lake City has approximately 80,000 households, so it is anticipated that four or five fiber huts will be proposed. In addition, telecom cabinets will be required. These cabinets house the smaller bundles of fiber that serve clusters of homes. Each telecom cabinet serves approximately 200 households; thus approximately 400 will be needed to serve all of Salt Lake City's residents. The fiber cable runs along telephone poles or underground where it then connects to each individual home through an individual fiber. It is this fiber that delivers the internet and TV service to each residence. Google Fiber has not provided the exact dimensions of the huts and cabinets, but based on what is being installed in Kansas, the approximate size of a hut is 12 feet wide by 28 feet long and a cabinet is approximately 2 feet wide by 4 feet long. Pictures are included in Attachment A.

Rocky Mountain Power controls most of the telephone poles within Salt Lake City and Google Fiber is working directly with them to map existing infrastructure. The Google Fiber management team is exploring all options and processes for both underground and above-ground fiber construction.

Expected Service Plans - In Provo, residents had been paying for a city-owned fiber infrastructure for some time. Google Fiber purchased the existing infrastructure and currently offers residents a $30 initial construction fee for basic service and guarantees seven years of free service thereafter. In Salt Lake City, initial set up construction costs may be closer to $300, which is what Kansas City residents pay. In both cases, however, the initial construction fee is waived with upgraded gigabit internet or gigabit internet plus TV subscriptions. Once

constructed, basic internet is free for up to seven years and includes five megabits per second for downloads and one gigabit per second for uploads. This is equivalent to our current level of service through providers. For a $70 per month fee, Provo residents can upgrade their service to include gigabit internet, which includes up to one gigabit per second for both downloads and uploads. In addition, Provo residents can upgrade to a package that includes gigabit + TV for $120 per month.

Salt Lake City Submittal Process - Google Fiber representatives met with City Officials on February 26, 2014 and distributed the Google Fiber City Checklist; a guide to prepare selected municipalities for the submittal process. Our deadline to respond with the required materials is May 1, 2014. Google Fiber will then review the materials submitted by each city and by the end of 2014 will select the next Google Fiber cities.

The Google Fiber Project Management Team consists of: Jessica Thesing, Small Business Manager in the Economic Development Division who has been assigned as Project Manager, Nole Walkingshaw, Manager of Institutional Engagement, and package design support from Jordan Swain, CED intern for CED. They are working with a cross-departmental team to prepare a response to the Google Fiber City Checklist. This response will include the base GIS data, as well as a discussion and outline of the development/permitting requirements necessary to prepare the city for a fiber project of this scale.

The Team is managing three content categories simultaneously for collection and analysis; they are: INFASTRUCTURE, ACCESS, and PROCESS.

Google Checklist Sections and Corresponding Department Responsibility

See Attachment B for more detail on the individual sections and requirements listed below:

- Appendix 1A-Google Fiber Data Request List
  - ✓ Key Departments: IMS, all CED
- Appendix 2A-Municipal Ordinance/Policy Analysis
  - ✓ Key Departments: Planning, Attorney's Office, Mayor's Office
- Appendix 3A-Google Fiber Permitting, Construction, and Maintenance Plan
  - ✓ Key Departments: All CED, Public Services, IMS
- Appendix 3B-Construction Constraints List
  - ✓ Key Departments: All CED, Public Services
- Appendix 3C-Google Fiber's Model Hut License Agreement
  - ✓ Key Departments: HAND, Attorney's Office

Data Management Strategy - The Google Fiber Project Management Team has been working with each division/department responsible for the requested data and has created a page within the Community and Economic Development SharePoint site for Google Fiber related material. This is the internal repository where all documents, calendars, literature and any other related material for this project will continue to be managed throughout the life of the project. In addition, a Google Drive account has been created for final uploading of submission materials. Google Fiber uses this drive to post checklist requirements and other pertinent material.

The Google Fiber Project Management Team continues to meet with Google representatives and city staff via weekly conference calls to discuss designated topics, questions and concerns. Department designees are invited to participate in these meetings to ensure broadband acknowledgment and understanding of the submission requirements. This group has also met with the City of Provo and been in discussions with Kansas City and Austin in order to better understand the process and lessons learned.

The Salt Lake City Attorney's Office is working directly with Google Fiber legal representatives to draft a confidentiality agreement related to critical infrastructure and other proprietary city and city partner related data.

Timeline - Staff has identified the following key dates in order to stay on track for the final submission deadline of May 1, 2014:

Google Fiber conference call schedule

- Week Three - March 12 — Discussion with Google Fiber's Program Manager for Digital Inclusion
- Week Four - March 19 — Infrastructure Data and GIS-Part 1
- Week Five - March 26 — Construction, Build, and Permitting Discussion
- Week Six - April 2 — Infrastructure Access & Hut License Discussions
- Week Seven - April 9 — Detailed Q & A w/GIS and Google Fiber Outside Plant Experts
- Week Eight - April 16 — Topics TBD based on need
- Week Nine - April 23 — Topics TBD based on need
- Week Ten - April 30 — Final Discussion, if needed, prior to May 1 Submission Deadline

Key Internal (City) Dates

- March 7 — Informal Status Update with Staff (via email or phone)
- March 14 — Informal Status Update with Staff (via email or phone)
- March 21 — All material presented in SharePoint as final **draft** format
- April 4 — Draft material routed to through Administration
- April 11 — Draft material sent to graphics staff for packaging
- April 18 — Packaged draft sent through Administration
- April 28 — Draft finalized
- May 1 — Final package submitted to Google Fiber

Regulatory Process Analysis (Attachment C) - Though much of Salt Lake City's development and regulatory processes are standardized and have the capacity to meet the needs of large scale capital infused projects, staff have identified issues and concepts that may have an impact on the city's efforts to streamline the permitting process for large-scale fiber investment. The Google

Fiber deadline has presented an opportunity for the Administration to review and evaluate internal processes for adequacy. City policies and procedures are being identified that may need review by the Administration and City Council and may require budgetary and legislative consideration. Not only will this work ensure we meet the May 1, deadline presented by Google Fiber; the end product will include a guide that can be used for all future fiber installation projects in Salt Lake City.

Pending issues/solutions - The list below describes some of the processes that the Google Fiber Project Management Team is currently working through:

1. Create a streamlined system to handle permitting by larger geographic area installations. Google has asked that we create a blanket permit for the entire city, however, the concept staff has been working on may create parent permits (see diagram) to align with the Google Fiber designated "fiberhoods" which are smaller geographic designations.
2. Currently, utility boxes require Conditional Use review (administrative) and perhaps additional review by the Historic Landmark Commission. The Planning Department has been reviewing their processes regarding these requirements and has submitted a petition to the Mayor to initiate formal review. This review was in consideration long before Google Fiber selected Salt Lake City. This will require City Council action.
3. Work with Finance to set up an account for streamlined permit payment withdrawals. There will be several small permits associated with each project area.
4. Identify a Permit Coordinator to help manage submissions and permitting. We do not currently have a staff position for this role.
5. Franchise agreements, hut licenses and lease agreements with Real Estate Services and the City Attorney's Office. Google Fiber has requested that Salt Lake City determine one price per square foot for the leasing of the right-of-way for the construction of the fiber huts. Brian Roberts in the Attorney's Office is working with Ryan McFarland, Property Manager, to ensure we can comply with the Doug Short ruling that requires the city to lease city-owned property at market rate.

Public Engagement - The Google Fiber topic was posted on Open City Hall in early March. Since its initial posting, the topic has received 1,065 visitors and 347 comments. Open City Hall will continue to be the main vehicle for public engagement for the Google Fiber project until the May deadline. After that, staff will prepare a more robust public outreach strategy closely tied to our ongoing discussions with Google Fiber. In addition, staff has created the email address fiberinfo@slcgov.com to manage all fiber-related questions, in addition to Google Fiber inquiries.

Digital Inclusion - The inclusion specialist with Google Fiber met with city staff via conference call on March 12. Based on that discussion, the key message identified is that an investment in this type of technology benefits the community as a whole by removing barriers to the less advantaged or those fearful of tech, and increasing educational opportunities; thus, advancing the quality of life for the community and moving the web forward by providing higher quality program developments.

Google feels strongly that digital inclusion is an important societal need and the company is willing to invest in projects that help the community. Nationally, there appears to be a trend

towards seniors being the least connected population. Locally our feeling is that it's more of an access issue for disadvantaged populations.

The focus is to develop a Digital Inclusion Program and enter into meaningful partnerships that maximize and realize the potential of the internet to produce positive and lasting outcomes for Salt Lake City's underserved communities.

Summary - As a result of participating in this process, staff will create a guide that can be used hereafter for regulating fiber technology in Salt Lake City. After the Google Fiber submission in May, the Project Management Team will continue to work with Google Fiber through their due diligence process, as well as continuing our efforts to create design guidelines and digital inclusion programming.

The Google Fiber Project Management Team will continue to provide updates to the City Council as progress is made. In the next few months, the City Council will be asked to review the regulatory process for utility boxes in the right-of-way, which has been identified as a regulatory concern for bringing fiber technology to residents.

Attachments:

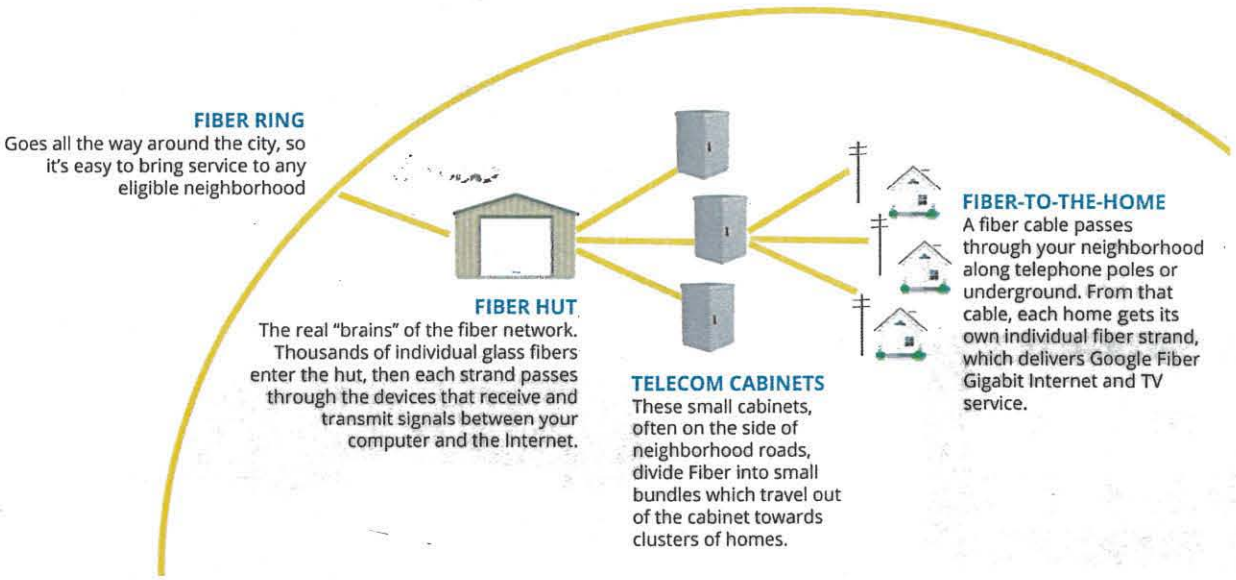
A. Attachment A, Google Fiber Network Images
B. Attachment B, Google Fiber Checklist
C. Attachment C, Permitting Process Flow Chart

ATTACHMENT A

Google Fiber Network Images

Google Fiber Network Diagram

The Google Fiber network is designed street by street. In general, you can think of it as a hub-and-spoke design:



Google Fiber Hut

Here is an example of a Google Fiber Hut in Kansas City.

Google Fiber Cabinet

Here is an example of a telecom cabinet.

Google Fiber Device Information

The information below is about Google Fiber's current in-home devices and product.

Network Box

The Network Box is a router that provides all of your internet-enabled devices with connectivity.

Storage Box

The Storage Box is the central device that stores all of your digital photos, music and videos, including your recorded TV shows.

The Nexus 7 Tablet

The Nexus 7 tablet is your new remote control. With the Google Fiber TV app on your Nexus 7, you can have an event richer TV experience.

TV Box

The TV Box is a set top box that connects to each television and provides crystal clear HDTV service.

Fiber Jack

The Fiber Jack is an optical networking unit that converts the fiber optic signal into data your computer can understand.

Remote Control

The Remote Control allows you to control your TV experience using either infrared or Bluetooh ®..

ATTACHMENT B

Google Fiber City Checklist

Updated February, 2014

Google fiber

Let's get up to speed.

Over the last few years, gigabit Internet has moved from idea to reality, with dozens of communities working hard to build networks with speeds up to 100 times faster than what most of us live with today. People are hungrier than ever for faster Internet, and as a result, cities across America are making speed a priority. Over the next few months, we'll be working with your city, and 33 others, to explore the possibility of building one of these high speed networks in your community.

This checklist document is written specifically for the cities we're currently working with. But the items on this checklist are a collection of best practices recommended by the Fiber to the Home Council, the Gig U report and the U.S. Conference of Mayors and can help any fiber provider or city that's thinking of building a new network.

These are such big jobs that advance planning goes a long way toward helping us stick to schedules and minimize disruption for residents. While your city works on completing these items, we're going to work on a detailed study of local factors that could affect construction, like topography (e.g., hills, flood zones), housing density and the condition of local infrastructure.

Additionally, we will spend time talking with you during this process about how city leaders can get residents ready for Google Fiber, particularly those who don't currently use the Internet or have it at home. We want to help make sure that everyone in the community can take advantage of this opportunity.

Google Fiber is also exploring the possibility of deploying Wi-Fi in future Google Fiber cities. Requirements related to Wi-Fi are not included in this checklist, but we will be discussing our Wi-Fi plans and related requirements with your city as we move forward with your city during this planning process.

We are excited about the possibility of bringing Google Fiber to your city and look forward to working with you over the next few months.

Key Dates

Feb. 24th - Feb. 28th	Cities meet with Google to review the checklist in detail.
Feb. 24th - May 1st	Cities review and respond to tasks and requirements on the checklist. Google and cities will hold regular calls to discuss progress and questions. Google begins detailed studies in cities.
May 1st, Midnight PT	Deadline for cities to respond to items on the checklist.
May - End of 2014	Google evaluates completion of the items on the city checklist and completes the detailed study. This process will take some time, but we hope to have updates on which cities will get Fiber by the end of the year.

Fiber Ready Checklist

Building a new network is complex, and we will work with your city to make it quicker, more efficient, and less disruptive to your community.

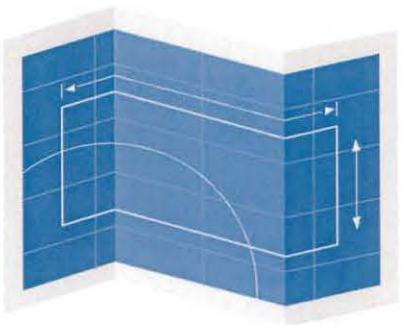
There are three core items on our fiber ready checklist.

- Provide information about existing infrastructure: We're asking your city to provide accurate information about local infrastructure like utility poles, conduit and existing water, gas and electricity lines so we'd know where to efficiently place every foot of fiber.
- Help ensure access to existing infrastructure: We're asking your city to help ensure that we, and other providers, can access and lease existing infrastructure. It would be wasteful and disruptive to put up duplicate utility poles or to dig up streets unnecessarily, when we could use existing poles or conduit.
- Help make construction speedy and predictable: We're asking your city to make sure you have efficient and predictable permit and construction processes appropriate for a project as large as a Google Fiber network build.

These three items are based on guidelines from the Fiber to the Home Council and the U.S. Conference of Mayors and clear a path for anyone willing to build a fiber network. We are not asking for any special treatment, tax incentives, or subsidies.

Item #1 — Provide information about existing infrastructure

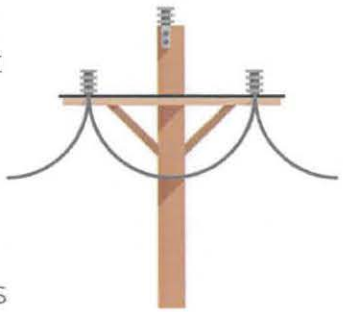
As we work through our detailed studies and network design, detailed infrastructure data helps us understand where we can safely and efficiently place the fiber.



We ask that your city:

- gather and submit all required data asset requests as outlined in the Data Request List (Appendix 1A);
- identify which infrastructure and/or data is not owned, operated or controlled by the city.

Item #2 — Help ensure access to existing infrastructure.



Fiber providers need to string fiber along utility poles or bury it underground in protective tubing called "conduit." It doesn't make sense for each provider to install duplicate poles, or to dig up streets multiple times where conduit already exists. So, we're asking for your help to ensure that providers have access to existing infrastructure. This makes the process faster, more efficient, more cost effective and significantly less disruptive.

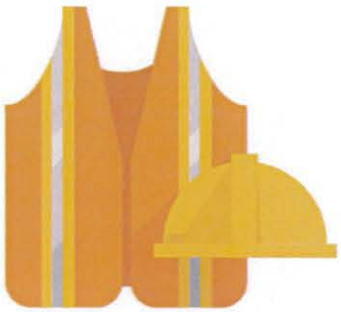
We would like to see clear, predictable rules and reasonable terms for all providers to attach fiber to any utility poles that are within the public right of way. Providers of broadband Internet services, including IPTV, should have access to existing utility poles, city-owned ducts and conduit, on nondiscriminatory terms, in exchange for reasonable payment. Ideally, these terms would be at least equivalent to the rights made available to traditional cable operators and telephone companies per the FCC's current rules.

These rights may already be covered by state law, local ordinances or other agreements with infrastructure owners. If we cannot secure such rights, we may rely on the city to provide these rights locally.

To complete this item, we ask that your city:

- provide a description of any existing state laws, local ordinances, and/or commercial agreements that satisfy the attachment and use rights described above;
- work with us, as needed, to ensure that Google and other service providers have access to these rights.

Item #3 — Help make construction speedy and predictable



The items we outline in this section will help ensure that the construction process is predictable, fast, and as minimally disruptive for your city as possible.

We'd like to discuss how your city's existing permitting and construction process aligns with the scope and pace of the construction of a Google Fiber network. With agreed upon processes and timelines, we can keep construction schedules predictable and moving along quickly while minimizing the burden on the city.

For permitting and construction, we ask that your city:

- review the Google Fiber Permitting, Construction, and Maintenance Plan (Appendix 3A) and identify if your city's current practices differ;
- if your city's current practices do differ, please explain why and outline ideas to accommodate a large network build with accelerated timelines;
- upload your existing permit application for our review;
- identify any local, city or state-wide requirements that may impact the pace of a network build (Construction Constraints List - Appendix 3B).

Another important part of network design is determining where to place Google Fiber network huts. City-owned sites generally make sense as hut locations because they are zoned appropriately and dispersed throughout the city.

We would like to complete a Hut License agreement between Google Fiber and your city. Please review the Google Fiber model Hut License (Appendix 3C) and let us know if it will work for your city. Alternatively, please provide us with a form of agreement that contains similar rights so we can discuss in more detail.

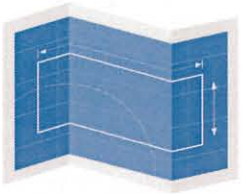
We will sign the Hut License Agreement and work together to identify locations for huts during the network design process.

By the checklist deadline, we ask that your city:

- upload the final Hut License, as agreed upon between Google Fiber and the city.

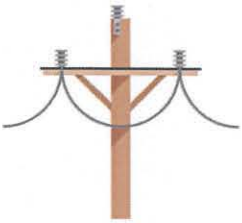
Fiber Ready Checklist

Item #1 — Provide information about existing infrastructure



- ❒ Gather and submit all required data asset requests as outlined in the Data Request List (Appendix 1A).
- ❒ Identify which infrastructure and/or data is not owned, operated or controlled by the city.

Item #2 — Help ensure access to existing infrastructure



- ❒ Provide a description of any existing state laws, local ordinances, and/or commercial agreements that satisfy the attachment and use rights described.
- ❒ Work with us, as needed, to ensure that Google and other service providers have access to these rights.

Item #3 — Make construction speedy and predictable

- ❒ Review the Google Fiber Permitting, Construction, and Maintenance Plan (Appendix 3A) and identify where your city's current practices differ.
- ❒ If your city's current practices do differ, please explain why and outline ideas to accommodate a large network build with accelerated timelines.
- ❒ Upload your existing permit application for our review.
- ❒ Identify any local, city or state-wide requirements that may impact a network build by reviewing and responding to the list of Construction Constraints List (Appendix 3B) .
- ❒ Upload the final Hut License, as agreed upon between Google Fiber and the city.

Additional Resources

Google Resources

Google Fiber - Network Overview

http://googlefiberblog.blogspot.com/2013/10/behind-scenes-with-google-fiber-how-we.html

This Google Fiber blogpost gives a behind-the-scenes look at how we actually build Google Fiber including a basic network overview.

Google Fiber Website - City Expansion FAQs

http://google.com/fiber/newcities

Our website includes a set of FAQs about this checklist and process.

Third Party Resources

CTC Technology & Energy's Gigabit Communities

http://www.ctcnet.us/wp-content/uploads/2014/01/GigabitCommunities.pdf

This white paper reviews and suggests strategies for bringing broadband to a community, including discussion of the checklist items outlined.

The Fiber to the Home Council community broadband toolkit

http://www.ftthcouncil.org/communitytoolkit

The Fiber to the Home Council has aggregated a range of resources in their community broadband toolkit.

The Fiber to the Home Council white paper on facilitating access to infrastructure

http://www.ftthcouncil.org/p/cm/ld/fid=47&tid=79&sid=1249

The FTTH Council has outlined their perspective in this short white paper: "State/Local Gov't Role in Facilitating Access to Poles, Ducts, and Conduits in Public Rights of Way."

US Conference of Mayors

http://usmayors.org/resolutions/81st_Conference/resolutions-adopted.pdf

Last year, the US Conference of Mayors passed a set of resolutions supporting increasing broadband access.

Gig.U Strategies for a Gigabit

http://www.gig-u.org/cms/assets/uploads/2012/12/GigU-Fall-2013-Update.pdf

Gig.U is working with a number of communities on gigabit networks and summarizes a number of key strategies.

Sunlight Foundation Open Data Guidelines

http://sunlightfoundation.com/opendataguidelines/

The Sunlight Foundation lists some suggestions that may be of use as you think through data updating and potential open data initiatives.

KC Digital Drive Playbook

http://www.kcdigitaldrive.com

In anticipation of Google Fiber coming to Kansas City, MO and Kansas City, KS, the cities created a 'playbook' for making the most of this opportunity.

Government Resources

Federal Communications Commission (FCC) documentation

http://www.ecfr.gov/ (CFR Title 47, Chapter 1, Subchapter C, Part 76, Subpart J)

The FCC has set up rules regarding equipment attachment. While the federal laws were not drafted with today's broadband providers in mind, they are a good model of how to determine reasonable terms and clear schedules for pole attachment process.

Federal Communications Commission's National Broadband Plan

http://www.broadband.gov/plan/

In its National Broadband Plan, the FCC estimated that the expense of obtaining infrastructure permits and leasing pole attachments and rights-of-way can total 20% of the entire cost of a fiber-optic network.

FCC's Broadband Acceleration Initiative

https://www.fcc.gov/encyclopedia/broadband-acceleration

The FCC has an ongoing Broadband Acceleration Initiative that is considering a range of reforms at the national level.

Appendix

Item #1 -- Provide information about existing infrastructure

1A: Google Fiber's Data Request List

Item #2 -- Help ensure access to existing infrastructure

2A: Examples of Existing Municipal Ordinances

Item #3 -- Make construction speedy and predictable

3A: Google Fiber Permitting, Construction, and Maintenance Plan

3B: Construction Constraints List

3C: Google Fiber's Model Hut License Agreement

Appendix 1A
Google Fiber Data Request List

Network Design & Fiber Route Planning

The data outlined below helps us determine how to most efficiently design our network and where our fiber routes would go. This data also helps us identify any areas that may require special consideration during our planning or construction process.

Addresses

- Feature Type: geospatial point; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Physical Address (i.e. Street Name, Street Suffix/Prefix, Street #, Unit # (if applicable) Zip Code, City Name)
    - include multi-dwelling unit data with individual unit numbers where possible
  - Address Type:
    - (i.e. Apartment, Duplex, Triplex, Quadplex, Condo, Large Commercial Unit, Small Business Unit, Office Building, Restaurant, Single Family Unit, Church, Government, Vacant)

Streets

- Feature Type: geospatially correct polyline; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Street Name

Right of Way and Easements

- Feature Type: polygon; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Geo-reference
  - Type of Right of Way or Easement

City Boundaries

- Feature Type: polygon; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Jurisdiction name

Parcels or Lot Lines

- Feature Type: polygon; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Physical Address
  - Parcel Type (i.e. government, school, park, etc)
  - Easements (i.e. water, sewer, power, communications, etc)
  - Rights of Way

Poles: city owned, operated or controlled

- Feature Type: point; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Pole function (i.e. communications and/or utility)
  - Pole type (i.e. wood, concrete, steel, etc - or decorative)
  - Pole height and class
  - Pole ID
  - Operating entity (i.e. traffic, water, power department, etc)

Streetlights

- Feature Type: point; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Owner
  - Pole height
  - Pole ID
  - Photocell: indicate y/n
  - Bank-switched: indicate y/n

Overhead Strand (Guys and Anchors): city owned, operated or controlled

- Feature Type: polyline; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Type (ie: primary, secondary, service, etc)

Existing Underground Utility Routes

- Feature Type: polyline; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Type (i.e. primary, secondary, service, water, gas, other as available)

Manholes

- Feature Type: point; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Type (ie: sewer, water, utility)
  - Depth
  - Size
  - Operating entity (i.e. traffic, water, power department, etc)

Pavement Condition Index Score by Street (ASTM D6433)

- Feature Type: shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed
  - City criteria for road repair in appropriate format
  - Score by street OR streets with scores that trigger extensive restoration

Zoning

- Feature Type: polygon; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Zoning type
  - Type description

Building Footprint

- Feature Type: polygon; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Physical Address

Minimize Disruption

The data below helps us minimize disruption during our construction process, as we would like to avoid unnecessary digging. Where possible, we will lease existing spare conduit or dark fiber and also try to coordinate with known construction projects. We

ask for potential hut sites to explore options ideally suited for minimal impact on the community.

Existing Spare Conduit Available for Lease

- Feature Type: polyline; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Location of existing conduit, preferably geospatially accurate data
  - Size and number

Existing Dark Fiber Available for Lease

- Feature Type: polyline; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Type (i.e. 288ct, 144ct, etc)
  - Fiber quality tests

Infrastructure Maintenance Plan (road and power)

- Feature Type: shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Street maintenance locations with extents and schedule
  - Pole maintenance areas and schedule

Potential Hut Site Locations by Address

- Feature Type: point; shapefile (.shp) or geodatabase (.gdb)
- Attributes Needed:
  - Type (i.e. fire station, police station, city property, substation, library, school, pump station, water tank, etc)
  - *Note: we would need space to set a 12'x30' precast one-story aggregation non-occupied building with surrounding space; approximate total 1400 sq ft.*

Appendix 2A
Examples of Existing Municipal Ordinances

Here are a few examples of local ordinances that have helped ensure access to existing infrastructure for all providers.

Lee County, FL:

"To enhance the public convenience and to minimize the placement of poles and wire holding structures within public ways, the franchisee shall enter into agreements for the joint or common use of poles or other wire holding structures where poles or other wire holding structures already exist for the use in serving the county or serving the public convenience. Where reasonable terms and conditions cannot be negotiated with the owners of such poles and wire holding structures, the franchisee shall demonstrate the unreasonableness of the negotiations and terms, to the county administrator's satisfaction, and request waiver of this provision." Ch. 20, § 22-70.13(h)(1)

Anacortes, WA:

"A franchisee erecting or maintaining poles shall allow anyone constructing under the authority of this chapter and the city, joint use of its poles upon payment of a reasonable proportion of the cost of such poles installed and shall obey any order issued by the city's director of public works relative to the joint use of poles." Title 5, Ch. 5.44, § 5.44.190(D)

Norfolk, VA:

"The director of public works shall have the right to designate a pole for the joint use of the owner of such pole and other proprietors of lines, and to assign to each such joint user a certain section thereof on such terms as may be agreed upon. In the event of failure to reach such agreement, such director shall have the right to determine such terms, and to revoke the permit for such pole, unless such determination is accepted by the owner or proprietor thereof." Ch. 42, § 42-92(a)

Mobile, AL

"It shall be the duty of the city electrician to so direct the placing, stringing and attaching of wires upon poles erected in the streets and alleys of the city that the same shall cause as little obstruction, either to travel in the streets or to the use and enjoyment of private property, as possible, and to compel the joint use of poles wherever practicable. In case the joint users of any such pole are unable to agree on such joint use or the rental to be paid the owner of such pole for such use, the city electrician shall fix such rate, which shall be binding upon the parties and companies interested; provided, that either party may appeal from the decision of the city electrician as to such joint use or the amount of rental to be paid for the use of such pole for the privilege of attaching wires thereto, to the city council." Ch. 19, § 19-37

Port Townsend, WA

"A franchisee erecting or maintaining poles shall allow anyone constructing under the authority of this master ordinance and the city, joint use of its poles upon payment of a reasonable proportion of the cost of such poles installed and shall obey any order issued by the public works director relative to the joint use of poles." Ch. 5.14, § 5.14.120(D)

Appendix 3A

Google Fiber Permitting, Construction, and Maintenance Plan

This document details the ideal permit application, construction, and maintenance processes for Google Fiber. We've found that this approach to permitting and construction works well for a network build of this size.

As part of the checklist, we ask that your city review each of these items. In cases where your city has different processes and requirements from those outlined, please provide detailed notes on what the city's existing requirements or process are, so our engineering teams can work collaboratively to create a process that will work at scale.

Permitting Process

Google Fiber's Process and Standards:

- We plan to submit all permit application material to you electronically.
- For underground construction, we plan on submitting plan view only.
- All responses, including approvals, should be sent back to Google Fiber electronically.
- Permit applications will include the applicable area and the duration of at least one hundred and eighty (180) days to complete the proposed installation.
- We would like the applicable area to be as large as possible, ideally covering the entire city. If not, the applicable area should be a minimum of either:
  - twenty-thousand (20,000) households
  - three-hundred (300) route miles of underground installation.
- We are looking for a response within ten (10) days of submitting the permit application.
- If a permit application is not approved, we need to receive a detailed list of alterations needed to get the permit approved.
- The city should provide Permit Application communication through a single point of contact.

For Discussion:

- Do your city's process or standards differ from what is outlined? If so, please provide detailed notes on your alternative requirements or process.
- Do you have any ideas or suggestions to improve efficiency, speed and predictability of the permitting process with your city?

Uploads Requested:

- Please upload a standard form of permit application document that Google Fiber will be expected to use.
- Please upload your city's standard Conditions of Permit Approval.

Construction Process

Google Fiber's Process and Standards:

- The prefered installation method may be shown on the plan view of the permit, but will be determined by field conditions at the time of construction.
- Google Fiber will implement the city's standard traffic control plan at the time of installation of the Google Fiber network.
- The underground construction methods may include but are not limited to micro-trench, plow, open trench, directional bore and pneumatic bore.
- Twenty-four inch (24") horizontal separation from existing facilities will be maintained during installation, except where existing obstructions, underground congestion, or other reasons necessitate a lesser separation.
- Twelve inch (12") vertical separation from existing facilities will be maintained during installation, except where existing obstructions, underground congestion, or other reasons necessitate a lesser separation.
- Twenty-four (24") depth below existing grade will be maintained during installation, except where existing obstructions, underground congestion, or other reasons necessitate a shallower depth.
- When an open trench is utilized for construction in concrete or asphalt, a T-Cut method will be utilized for restoration, except where this method is not practicable.
- A single, full sidewalk panel will be replaced when any portion of a sidewalk panel is impacted, except by potholing.
- Pothole restoration will be limited to the circular area directly impacted by potholing activity, including in sidewalk areas.

- We plan to maintain an as-built description of changes required during the course of installation due to conditions on the ground. For proprietary reasons, Google Fiber will provide a PDF version of the plan view as-builts of the underground installation when required.

For Discussion:

- Do your city's process or standards differ from what is outlined? If so, please provide detailed notes on your alternative requirements or process.
- Is there anything else we should know about your city as far as installation of infrastructure goes?

Uploads Requested:

- Please upload your standard traffic control plan.
- Please upload other applicable specifications, for example those regarding:
  - Utility System Engineering Design Manual
  - Utility System Construction Standards
  - Line-clearing and Tree-Trimming Service
  - Arborist requirements for working around trees
- Please upload building code specifications. This is helpful as we plan for multiple dwelling unit designs. Specifications requested:
  - Fire Safety
  - Electrical/Telecommunications Wiring
  - Grounding
  - Utilities

Maintenance

Google Fiber's Process and Standards:

- For Google Fiber maintenance work activities, Google Fiber will provide forty-eight (48) hours' electronic notice to the Right-of-Way Operator's maintenance department before commencing planned work.
- Service wire to the home (drops) installation will be considered a maintenance activity.

For Discussion:

- Do your city's process or standards differ from what is outlined? If so, please provide detailed notes on your alternative requirements or process.

Uploads Requested:

Please upload documents setting out your standard maintenance notice requirements and any other relevant documents regarding maintenance process or timing.

Appendix 3B
Construction Constraints List

We'd like your help in identifying and determining ways to address any possible local, city or state-wide rules or regulations that would slow or otherwise impact construction. Please review and respond to the questions listed below.

Are there any rules or regulations regarding when work can be performed throughout the year?

Please upload your tree-trimming regulations and outline any other information relevant to tree-trimming.

Are there historical site regulations?

Are there landscaping requirements for new structures?

Are there any underground construction requirements beyond NESC standards?

Are there any other environmental factors?

Anything else that may impede or slow construction within your city?

Appendix 3C

Google Fiber's Model Hut License Agreement

NETWORK HUT LICENSE AGREEMENT

This Equipment Housing License Agreement ("Agreement") is entered into by the municipal entity ("City") and the Google Fiber company ("Licensee") identified on the signature page of this Agreement. City and Licensee agree to the terms and conditions set forth below.

1. **Purpose.** Licensee needs rights to occupy and use various real property sites that may be owned by the City. The sites will be used for the purpose of constructing structures that will house network equipment and fiber that are part of Licensee's fiber optic network ("Network Hut"). The construction of each Network Hut will be based on the specifications described in Exhibit A to this Agreement, which may be amended by Licensee.

2. **Location of Sites for Network Huts.** Licensee will identify and propose to the City the location of various City owned sites. Licensee and City will work together to agree upon each site to be used for each Network Hut. When Licensee and City agree upon specific sites, the parties will complete and sign the form attached as Exhibit B to this Agreement ("Site Terms") for each site ("Network Hut Site"). The Site Terms include a legal description of the Network Hut Site, the fees to be paid for use of the site and any other special terms or requirements applicable to the Network Hut Site. Licensee's occupancy and use of each Network Hut Site will be subject to this Agreement, including the terms set forth in the applicable Site Terms.

3. **Licensee Rights and Obligations.** City grants to Licensee the right to access, enter, occupy and use each Network Hut Site at any time for the purpose of constructing, operating and maintaining each Network Hut. City grants these rights solely to the extent it has such rights, title and interest in to the Network Hut Site, without any express or implied warranties. Licensee will obtain all applicable licenses, permits and other authorizations required to construct, operate and maintain the Network Hut and offer Licensee's services. Licensee will construct the Network Hut in accordance with all applicable laws and permitting requirements. Licensee will use and maintain the Network Hut Site in accordance with all applicable laws and reasonable requirements and will keep the site secure (based on applicable standards) and reasonably free from debris, litter and graffiti.

4. **Effective Date and Term.** This Agreement is effective on the last date it has been signed by both parties ("Effective Date"). The initial term of the Agreement is twenty (20) years from the Effective Date. Following the initial term, this Agreement shall renew for successive two (2) year periods unless City provides Licensee with written notice that it does wish to renew the Agreement. City must provide such written notice at least ninety (90) days prior to any renewal date of the Agreement.

5. **Termination of Agreement or Site Terms.** Licensee may terminate this Agreement or the Site Terms for a specific Network Hut Site at any time with thirty (30) days written notice to the City. City may terminate this Agreement in the event of a material breach of this Agreement by Licensee and Licensee fails to cure the breach within sixty (60) days of receipt of notice from City. City may also terminate the Site Terms for a Network Hut Site by providing a minimum of one hundred eighty (180) days written notice to Licensee if the City determines that the applicable Network Hut Site is needed for a compelling public purpose. Following such written notice, City agrees to use its best efforts to find an alternative City owned site that Licensee may use as a replacement. Upon any termination or expiration of this Agreement, in whole or in relation to a particular Network Hut Site, Licensee will vacate premises and return site to its

original condition other than removal of any concrete foundations.

6. **Fees and Costs.** Licensee agrees to pay to City the fees set forth in the Site Terms for each Network Hut Site. The fees shall be paid on an annual basis for each Network Hut Site. Licensee shall be responsible for all its costs associated with construction, operation and maintenance of the Network Hut and Network Hut Site. Payments shall be delivered by Licensee within forty-five (45) days of the payment due date agreed upon by the parties.

7. **Indemnification.** Licensee will defend and indemnify City, its officers, elected representatives, and employees from any claims and liabilities related to any third party claim for property damage, personal injury or death to the extent caused by Licensee or its contractors. Licensee will have the right to control the defense of any such claim. If, in City's reasonable judgment, a conflict exists between the interests of City and Licensee in such a claim, City may retain its own counsel whose reasonable fees will be paid by Licensee.

8. **Limitation of Liability.** NEITHER PARTY WILL BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH THIS AGREEMENT. THE PARTIES ACKNOWLEDGE THAT THIS LIMITATION SHALL BE SUBJECT TO AND MAY BE LIMITED BY APPLICABLE STATE LAW.

9. **Insurance**. Licensee will carry and maintain general liability, workers compensation and other customary types of insurance applicable to the use of Network Hut Sites. The insurance coverage amounts shall be reasonably adequate based on the use of the Network Hut Sites and shall be issued by insurers duly qualified to offer and bind coverage within the state where the Network Hut Site is located.

10. **Notice**. All notices related to this Agreement will be in writing and sent to the address set forth in each signature block to this Agreement. Notices are effective (a) when delivered in person, (b) upon confirmation of a receipt when transmitted by facsimile transmission or by electronic mail, (c) upon receipt after dispatch by registered or certified mail, postage prepaid, (d) on the next business day if transmitted by overnight courier (with confirmation of delivery), or (e) three (3) days after the date of mailing, whichever is earlier.

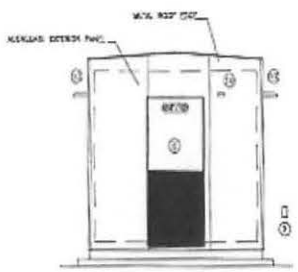
11. **General Provisions.** This Agreement is governed by the laws of the state where the Network Huts are located. City and Licensee agree that City shall make the entirety of the rights and terms set forth in this Agreement available to other service providers in a non-discriminatory manner. Neither party will be liable for failure or delay in performance to the extent caused by circumstances beyond its reasonable control. This Agreement may not be assigned by Licensee without the consent of City except for assignments to Licensee's affiliates or in connection with a merger, acquisition, sale of network assets or similar transactions. This Agreement sets out all terms agreed between the parties and supersedes all previous or contemporaneous agreements between the parties relating to its subject matter. This Agreement, including any exhibits, constitutes the entire Agreement between the parties related to this subject matter, and any change to its terms must be in writing and signed by the parties. The parties may execute this Agreement in counterparts, including facsimile, PDF, and other electronic copies, which taken together will constitute one instrument. Each party to this Agreement agrees to: (a) use electronic signatures; and (b) be subject to the provisions of the U.S. E-SIGN Act (i.e., the Electronic Signatures in Global and National Commerce Act (ESIGN, Pub.L. 106-229, 14 Stat. 464, enacted June 30, 2000, 15 U.S.C. ch.96).

LICENSEE:_____	**CITY:**_____
(Authorized Signature)	**(Authorized Signature)**
(Name)	**(Name)**
(Title)	**(Title)**
Address: 1600 Amphitheatre Parkway Mountain View, CA 94043	**Address:**
Date:	**Date:**

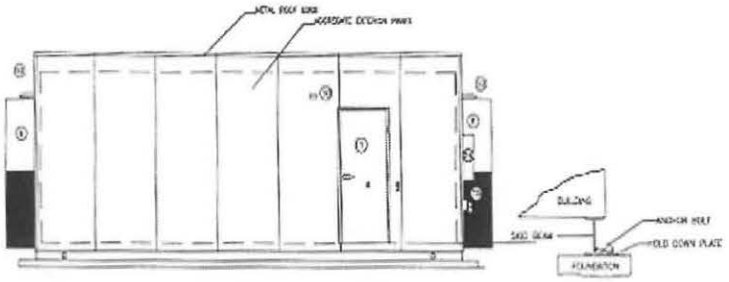
EXHIBIT A

NETWORK HUT SPECIFICATIONS

EXHIBIT B

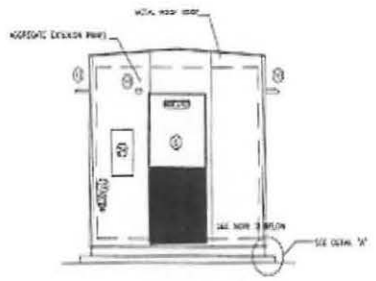


LEFT ELEVATION

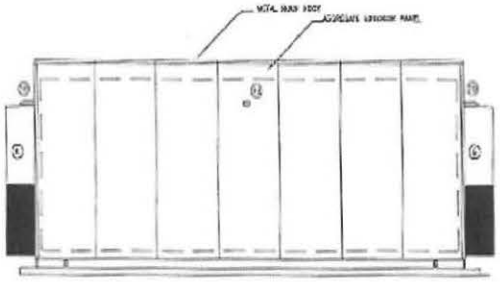


FRONT ELEVATION

DETAIL "A"



RIGHT ELEVATION



REAR ELEVATION

1. NO TAGS OR ANY MARKING IS TO BE SHOWN ON THE EXTERIOR OF THE BUILDING OR DOORS. INSTALL 8"X8" ALUMINUM PLATE ON THE INTERIOR OF THE BUILDING FOR ALL TAGS AND INSIGNIAS.
2. ADD AN EXTENSION TO EACH AIR CONDITIONER DRAIN TUBE TO DRAIN WATER AWAY FROM THE FOUNDATION.

PROJECT
COOGLE FIBER

THERMOBOND BUILDINGS

Scale: 3/16" = 1'
Date: 7/24/12
Drawn By: DRL
Approved By:
Title: EXTERIOR LAYOUT FOR 11'-6"W. X 28'L. X 9'H. BLDG.
Project Number:
Rev. Date: 8/12/14
Drawing Number: A088581
Page 8 OF 15

EXHIBIT B

NETWORK HUT SITE TERMS

1. **Legal Description of Network Hut Site Location (describe below or attach legal description).**

2. **Annual Fees:**

3. **Other terms or requirements applicable to Network Hut Site.**

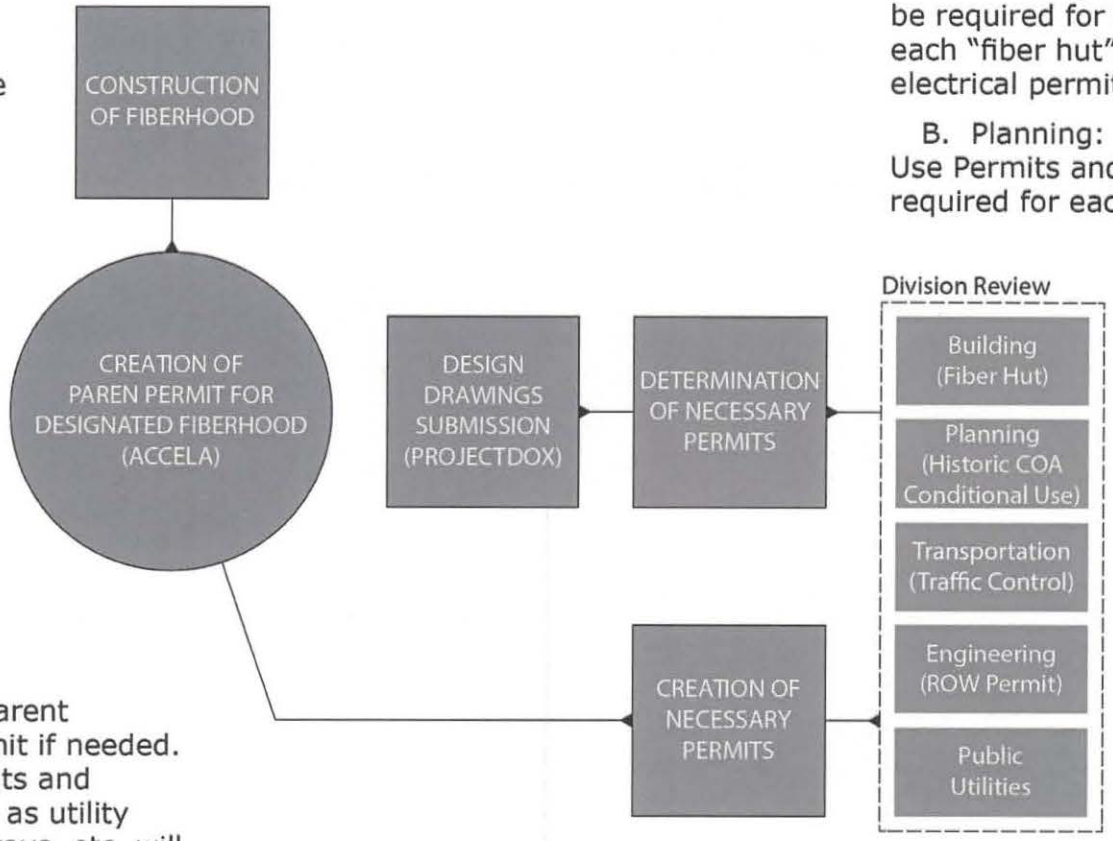
LICENSEE:_____	**CITY:**_____
(Authorized Signature)	**(Authorized Signature)**
_____	_____
(Name)	**(Name)**
_____	_____
(Title)	**(Title)**
Address: 1600 Amphitheatre Parkway Mountain View, CA 94043	**Address:**
Date:	**Date:**

Google fiber

Visit us at google.com/fiber

1. A parent permit will be created to coordinate the related permits for the "fiber hood".

2. Design drawings will be submitted into ProjectDox. These drawings will be reviewed in a Development Review Meeting, where necessary permits will be identified and routed through the respective department process(es). Additional drawings may be required and drawings may be copied from the parent record to the specific permit if needed. All submission requirements and resource information such as utility locations, protected roadways, etc. will be uploaded into the project.



3. Permit Types

A. Building: A building permit will be required for the construction of each "fiber hut". This will also entail an electrical permit.

B. Planning: Individual Conditional Use Permits and HLC Certificates will be required for each ground-mounted utility box. The Planning Division is currently working to initiate a petition to review the Conditional Use requirements.

C. Transportation: A Traffic Control Plan will be necessary for any construction that might potentially disrupt traffic.

D. Engineering: A Right of Way Permit will be required.

4. Once the necessary permits have been created construction of the "fiber hood" may commence. As-built drawings will be submitted by Google after construction.