

NERATECH



# Humboldt County Bandwidth 2014

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## Introduction

The County of Humboldt Prosperity 2012 Action Plan, Strategy E, states:

*Build an “infrastructure of connectivity” to move people goods, and information into the global marketplace.*

*E4: Develop ubiquitous telecommunications connectivity and network redundancy throughout the region.*

*E5: Develop policies to support and incentivize local buildout of broadband connectivity to the larger fiber optic lines, prioritizing areas with high concentration of Target industry businesses.*

Input from Prosperity 2012 and Industry Leader Council meetings was that there are areas where businesses cannot obtain the broadband services they need in order to grow and thrive. Mentioned in particular were medical offices clustered around St Joseph Hospital in the area of Harris and Harrison Streets in Eureka not being able to get the bandwidth they need to deal with electronic medical records and large radiology files.

This study’s goal was to:

- A. Interview and/or otherwise survey technology support businesses to determine high bandwidth users and blockages of access to high band width broadband Internet.
- B. Determine geographic areas or specific kinds of businesses needing greater broadband access.
- C. Describe kinds of businesses with high bandwidth needs.
- D. Describe how limitations or blockages are occurring, as well as how they are being overcome.
- E. Make recommendations as to actions that could be taken to remove limitations or blockages of access.

## Background

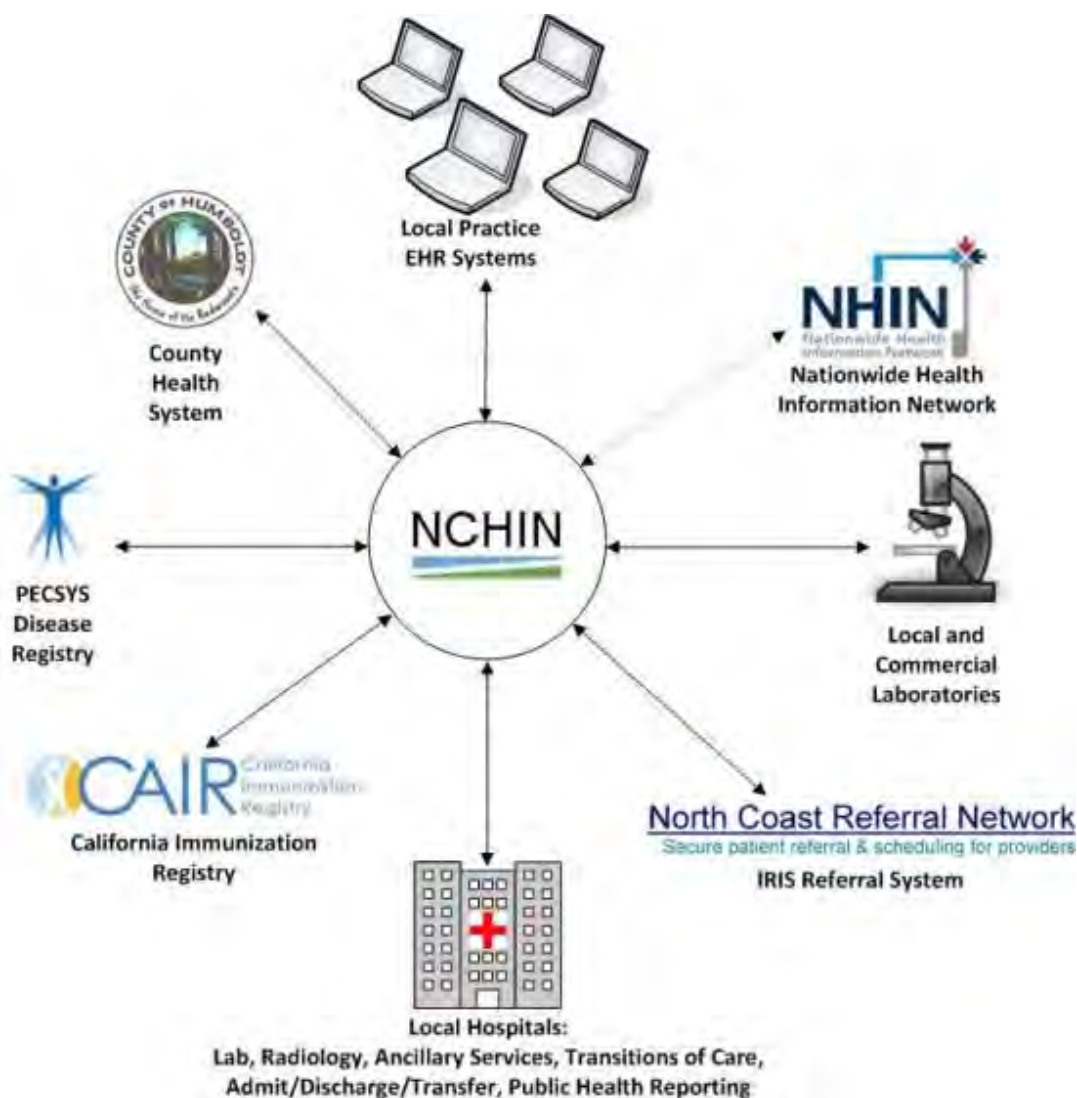
Broadband in Humboldt County has come a long way in the past 15 years, from two small pockets of Pacific Bell (now AT&T) DSL in central areas of Eureka and Arcata in 2000 to several more wireline and fixed wireless broadband providers.

In 2001, there were two overloaded microwaves that carried all voice and data traffic in and out of the region. Now, Humboldt County has multiple alternative “middle mile” routes that carry telecommunications in and out of the region via fiber and microwave. This middle mile route diversity lessens our exposure to being cut off from the rest of the world.

## Tech Support Company Interviews

The focus of these interviews was to get input from local tech support companies as well as the Humboldt-Del Norte Foundation for Medical Care and Independent Practice Association (IPA).

Martin Love and Joe Burkett of Humboldt-Del Norte IPA were interviewed. The IPA provides tech support and data interfaces to local medical practices, hospitals, commercial labs, CA immunization registry, claims processing, and more. Because of these services, they have a good sense of what is working and what is not in terms of telecommunications for medical providers. Some of the local medical practices have “hosted” medical records systems, but many have local servers. The IPA’s sense is that bandwidth is available and is not the issue unless practices want to pay less and make do with DSL or cable modem service.



Local tech support companies interviewed about their business customers were:

NYLEX

NMS

Infinite

Biztech

Overwhelmingly, the consensus was that access to business broadband is not an issue any more, except in the most remote areas of the county where satellite is the only option. Redwood Capital Bank was also interviewed, and they are able to get the bandwidth they need in Eureka, Fortuna, and (soon) Arcata branches. Streamguys, a high bandwidth usage company in Bayside, has been able to get the bandwidth they need.

Themes from the tech support companies, also echoed by Humboldt-Del Norte IPA, were:

- Companies wanting bandwidth “on the cheap” are getting what they pay for and may not be happy with services.
- Symmetrical dedicated bandwidth (same speeds up/down) customers are happier with their services.
- Serious businesses have higher bandwidth dedicated symmetrical services from AT&T, Suddenlink, or 101Netlink.
- Knowledgeable tech support staff knows what telecommunications services are available, what works best for any given situation, and how to order and implement those services.
- Pricing is competitive on the higher end services, whether from phone companies, cable companies, or fixed wireless companies. California Teleconnect Fund provides discounts for those eligible. Some providers have non-profit rates.
- Customers wanting fiber have generally not had trouble getting it.
- VoIP customers have better quality with higher dedicated bandwidth.
- DSL and cable modem may not work well for offices with more than a few computers.
- Some areas do not have a choice of multiple providers.
- Fixed wireless providers have bandwidth caps, which is a challenge for some businesses. Pandora usage was mentioned by more than one tech support company as contributing to excessive bandwidth usage.
- Businesses need to do more contingency planning for emergencies. Few companies have business continuity plans, hot sites, or alternative bandwidth.
- Cost of bandwidth is a consideration for smaller businesses.
- Many local businesses cannot afford to purchase backup bandwidth in case of disasters.
- Complacency has increased about the need to install backup bandwidth now that there are multiple middle mile routes out of the region.
- More businesses are using backup in the “cloud” or having virtual servers in the “cloud”.

## Telecommunications Companies

There are a number of telecommunications companies in Humboldt County. Not all of them provide broadband in the County. For purposes of this report, the companies are grouped into phone companies, cable companies, fixed wireless companies, and tribal entities. There are also mobile wireless data services (e.g. AT&T, Verizon Wireless, US Cellular, Sprint), but their data offerings are not business-class services. Note that there are other companies that resell services, but the interviews for this report were of companies that own last mile infrastructure. See Appendix I for a list of communities and their telecom providers. It should be noted that provider services may not be available in all areas of each community listed. Appendix IV contains marketing materials of some of the companies. Pricing is not included in this report.

**Phone Companies** in Humboldt are:

- AT&T – [www.att.com](http://www.att.com) - Central and Northern Humboldt
- Frontier – [www.frontier.com](http://www.frontier.com) - Ferndale, Petrolia, Honeydew (networked/administered out of Central Valley)
- Frontier – [www.frontier.com](http://www.frontier.com) - Orick (networked/administered out of Oregon, formerly Verizon West Coast)
- Verizon California – [www.verizon.com](http://www.verizon.com) - Eastern Humboldt and Southern Humboldt

See Appendix II for a map of phone company territories. Note that Verizon provides no broadband in Humboldt County, and Frontier does not provide broadband in Orick.

**AT&T** provides broadband in many Humboldt communities in their territory (see Appendix I). They can provide DSL on the low end all the way up to high bandwidth dedicated services from 2mbps to 1gbps over fiber with a redundant backbone, including Ethernet services for businesses with multiple local locations. At the current time, they will provide conduit and electrical work for fiber installations.

**Frontier (Ferndale/Mattole)** has been providing DSL in Ferndale, Petrolia, and Honeydew for years, one of the first phone companies to provide DSL to remote rural communities. They have been at capacity in Petrolia and Honeydew for the past three years, so bandwidth for customers is very limited. The schools in Mattole Valley are not able to get the bandwidth they need. Frontier has plans to upgrade their microwave to Petrolia and Honeydew this summer if all goes well, but that's only a stopgap solution. They are in discussions with the Redwood Coast Connect consortium about the possibility of fiber backhaul to the Mattole Valley.

**Frontier (Orick)** does not provide broadband. Orick will be served by the **Karuk Tribe** project, which is in process.

**Verizon** does not provide broadband in Humboldt County and state that they have no plans to do so.

**Cable Companies** in Humboldt are:

- Suddenlink – [www.suddenlink.com](http://www.suddenlink.com) - Central and Northern Humboldt, from Scotia in the south to Big Lagoon in the north and east to Blue Lake, Fieldbrook, and Carlotta
- Wave Broadband – [www.wavebroadband.com](http://www.wavebroadband.com) - Garberville, Redway, and Benbow

**Suddenlink** offers multiple levels of broadband to its business customers, from 768kbps down/256kbps up cable modem service on the lower end on up to 1gbps dedicated Internet access and 1gbps multi-location Ethernet service on their fiber backbone. They advertise a fully redundant backbone.

**Wave Broadband** advertises online that they provide 10mbps-1gbps speeds in Garberville and Redway, but there is fine print that says “speed varies by service area”. In calling their service center, the rep checked with his supervisor, who confirmed the fastest service they offer in Southern Humboldt is 1.5mbps downstream.

**Fixed Wireless Companies** in Humboldt are:

- 101Netlink – [www.101netlink.com](http://www.101netlink.com) - Southern Humboldt north to McKinleyville, east into Trinity County and south into Mendocino County
- Tsunami Wireless – [www.tsunami-wireless.com](http://www.tsunami-wireless.com) - Blue Lake and east along Highway 299 into western Trinity County
- Velocity Technology – [www.velotech.net](http://www.velotech.net) - Hoopa

**101Netlink** is the largest fixed wireless company in Humboldt County, based in Southern Humboldt. They provide business and residential services from 1.5mbps down/500kbps up on the lower end up to dedicated symmetrical services of 100mbps and above. They provide middle mile backhaul services as well and have a redundant network of both fiber and microwave. Some of their services have metered data usage. Their service footprint is very large in Humboldt County, serving the most rural communities as well as larger population centers of Northern Humboldt.

**Tsunami Wireless** is a relatively new fixed wireless company that serves the Highway 299 corridor, including Blue Lake, Korbel, Willow Creek, Lord Ellis Summit, Redwood Valley, Berry Summit, Horse Mountain, and east into Trinity County. Month-to-month residential and business service options are 3Mbps down/1Mbps up or 6.5Mbps down / 1.6 Mbps up. They serve County, Tribal, Caltrans, and USFS facilities as well as businesses. Their services have metered data usage. Tsunami has plans to serve Fieldbrook and possibly Trinidad in the future.

**Velocity Technology** is a Weaverville company providing services in Hoopa and is starting to provide services in Willow Creek. Historically, there have been issues with getting enough bandwidth for backhaul from Verizon in Hoopa.

**Tribes** are playing a role in implementing broadband to the reservations and the remotest communities of Humboldt County. This is where the most “footprint” expansion is happening in the County.

**Karuk Tribe** is in the process of building broadband infrastructure in Eastern and Northern Humboldt County. In collaboration with its project partner, the **Yurok Tribe**, funding was obtained from the California Advanced Services Fund (CASF) to support implementation of broadband to underserved and unserved communities in Humboldt, Del Norte, and Siskiyou Counties. Two USDA Community Connect Grants are also funding this project. Last mile service will be implemented via fixed wireless.

Their first project focuses on Orleans. As of 5/20/14, this project is waiting on final approval from the funder before construction begins.

The second project, the Klamath River Rural Broadband Initiative, will connect fiber with Sisqtel in Somes Bar and build the fiber down Highway 96 through Orleans and Weitchpec to Route 169 to Highway 101 at Orick and connect in with Suddenlink at Patrick’s Point. The **Yurok** and **Karuk** tribes are currently in the environmental and permitting phases. They have completed some of the engineering, and are starting the process of reaching out to all Federal, State, County, Local, and Tribal agencies that must issue permits or approvals before they can reach the construction phase.

See Appendix IV for maps of projects. Discussions are also underway for providing backhaul services to the **Hoopa Tribe** so they can implement services in the Hoopa Valley.

**Yurok Tribe** provides broadband service to the entire reservation using fixed wireless, though there are small hard-to-reach pockets still unserved. Until the Karuk/Yurok fiber project is completed and provides backhaul, their highest speeds are 2.5mbps down/500kbps up. They do not have data caps on their service. There are about 140 customers.

**Hoopa Tribe** will be seeking Community Connect grants to provide service to the Hoopa Valley.

## Conclusions

This report gives the County of Humboldt an update on the state of broadband in 2014. There's been a lot of progress over the years. Findings are:

- Businesses (and residents) have access to broadband offerings throughout much of the County, though bandwidth/speeds vary by location.
- In the most populated areas of the County, there are multiple providers with high bandwidth offerings, particularly AT&T, Suddenlink, and 101Netlink.
- There are still pockets of more remote areas in the County that are unserved or underserved, though progress is being made to serve these communities by tribal projects, 101Netlink, Frontier, and Tsunami Wireless.

## Recommendations

Efforts recommended going forward are:

**Tribal projects:** Continue to support the Karuk, Yurok, and Hoopa projects as they implement over the next few years. Make sure the unserved pockets of communities get service in this project and do outreach to residents when service is available.

**Frontier** needs our support and encouragement to improve service to Ferndale and the Mattole Valley.

Support any future **Highway 299** fiber project. This adds another alternate middle mile route out of the County and brings the possibility of higher bandwidth services to Eastern Humboldt communities.

Lack of **business disaster planning/business continuity planning** was a common theme mentioned by tech support providers. Educate and encourage businesses to implement good data backup procedures, to consider hot sites, and to consider backup bandwidth. We focus a lot on personal safety in times of disaster in this County, but not so much on keeping businesses going.



## Appendix I

### Humboldt County Broadband Providers

4/28/2014

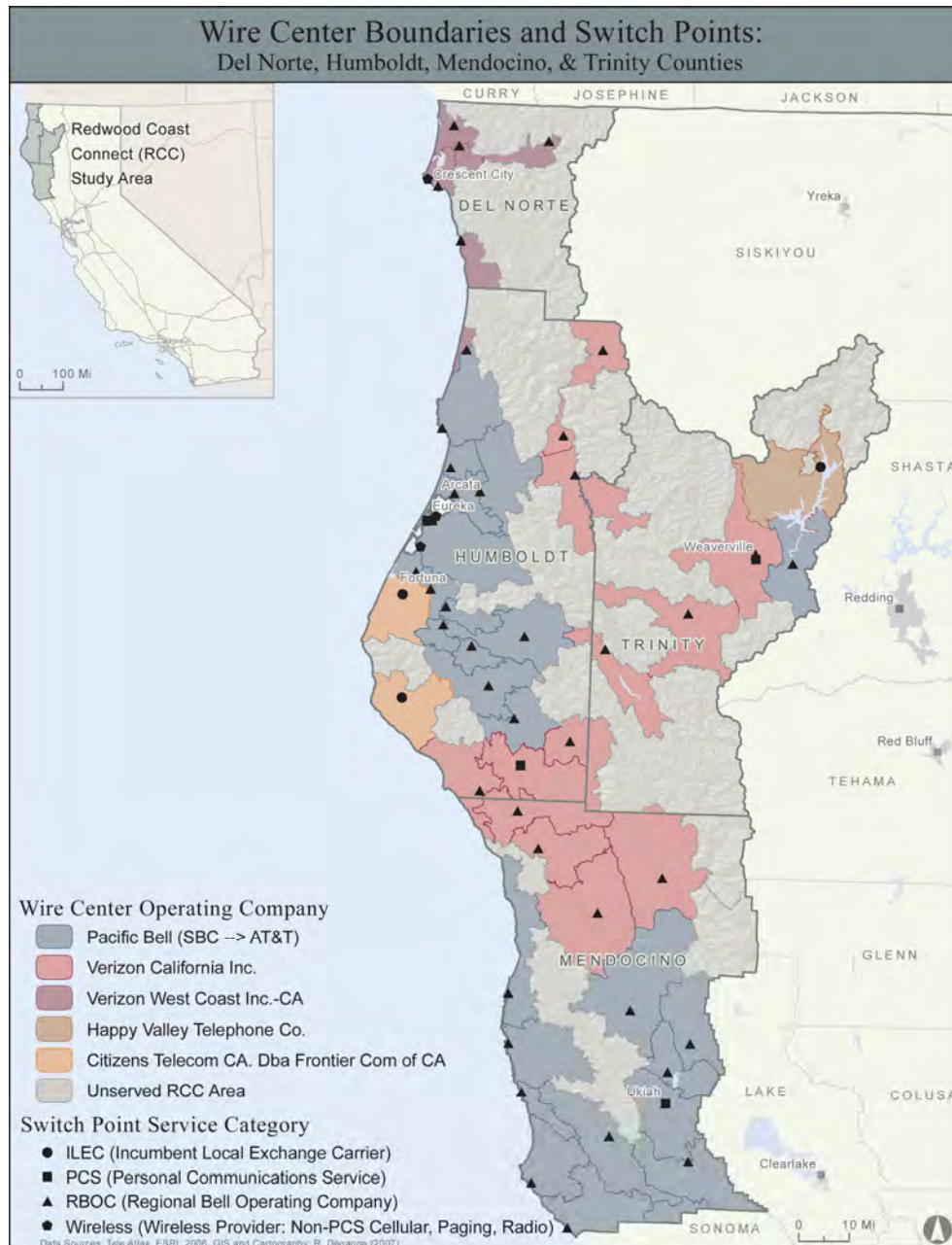
Alderpoint	101Netlink
Alton	101Netlink
Arcata	101Netlink, AT&T, Suddenlink
Bayside	101Netlink, Suddenlink
Benbow	101Netlink, Wave
Berry Summit	Tsunami Wireless
Blocksburg	101Netlink
Blue Lake	Suddenlink, Tsunami Wireless
Briceland	101Netlink
Bridgeville	101Netlink
Carlotta	101Netlink, Suddenlink
Confusion Hill	101Netlink
Crannell	unserved
Cutten	101Netlink, AT&T, Suddenlink
Dinsmore	101Netlink
Eel Rock	unserved (2014 101Netlink plans)
Elk River	101Netlink, Suddenlink
Ettersburg	101Netlink
Eureka	101Netlink, AT&T, Suddenlink
Fernbridge	101Netlink, Suddenlink
Ferndale	101Netlink, Frontier, Suddenlink
Fickle Hill	101Netlink
Fieldbrook	Suddenlink
Fields Landing	101Netlink, Suddenlink
Fort Seward	unserved
Fruitland Ridge	101Netlink
Fortuna	101Netlink, AT&T, Suddenlink
Garberville	101Netlink, Wave
Golden Gate/Bridgeville	101Netlink
Greenwood Heights	101Netlink
Harris	101Netlink
Holmes	101Netlink
Honeydew	Frontier
Hoopa	Velocity Technology (also tribal project being planned 2014)
Horse Mountain	Tsunami Wireless
Humboldt Hill	101Netlink, Suddenlink
Ka Pel	Yurok Tribe
Hydesville	101Netlink, Suddenlink

Johnson	Yurok Tribe
King Salmon	101Netlink, Suddenlink
Kneeland	101Netlink, AT&T
Korbel	Tsunami Wireless
Larabee Valley	101Netlink
Loleta	101Netlink, AT&T, Suddenlink
Lord Ellis Summit	Tsunami Wireless
Manila	101Netlink, Suddenlink
McKinleyville	101Netlink, AT&T, Suddenlink
Miranda	AT&T, 101Netlink
Myers Flat	101Netlink
Myrtle town	101Netlink, AT&T, Suddenlink
New Village (between Orleans & Weitchpec	unserved (Karuk project in process)
Orick	unserved (Karuk project in process)
Orleans	unserved (Karuk project in process)
Pecwan	Yurok Tribe
Pepperwood	unserved
Petrolia	Frontier
Phillipsville	101Netlink
Redcrest	101Netlink
Redway	101Netlink, Wave
Redwood Valley	Tsunami Wireless
Reed Mountain	101Netlink
Richardson Grove	unserved
Rio Dell	101Netlink, AT&T, Suddenlink
Rohnerville	101Netlink, Suddenlink
Salmon Creek	101Netlink
Samoa	101Netlink, Suddenlink
Shelter Cove	101Netlink
Shively	unserved
Scotia	101Netlink, AT&T, Suddenlink
Stafford	101Netlink
Swain's Flat	101Netlink
Trinidad	Suddenlink
Tully Creek	Yurok Tribe
Weott	AT&T
Weitchpec	Yurok Tribe
Whitethorn	101Netlink
Willow Creek	Tsunami Wireless

## Appendix II

Note that there are four phone companies in Humboldt:

1. AT&T – Central and Northern Humboldt
2. Frontier – Ferndale, Petrolia, Honeydew (administered out of Central Valley)
3. Frontier – Orick (administered out of Oregon, formerly Verizon West Coast)
4. Verizon California – Eastern Humboldt and Southern Humboldt



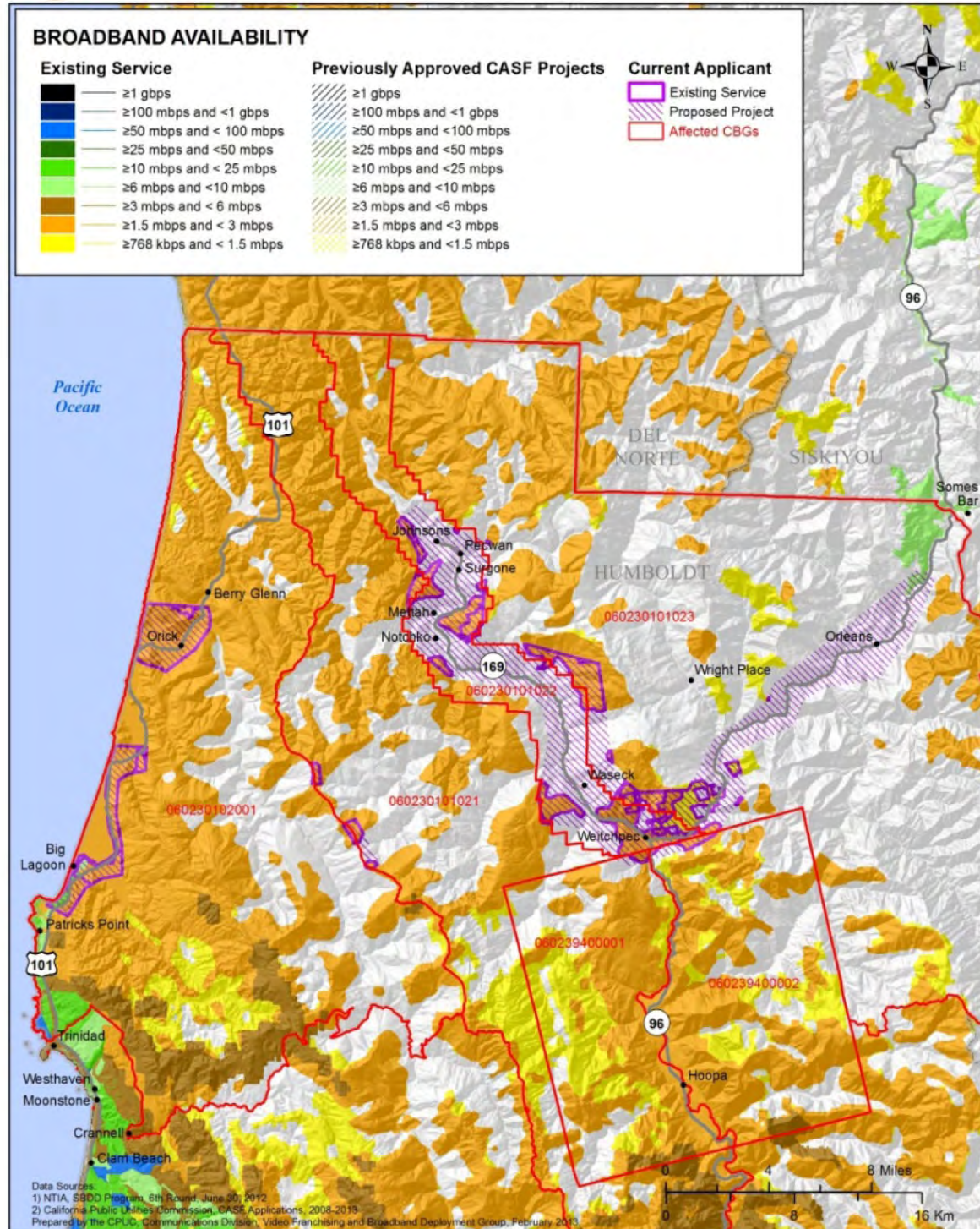


## Appendix III

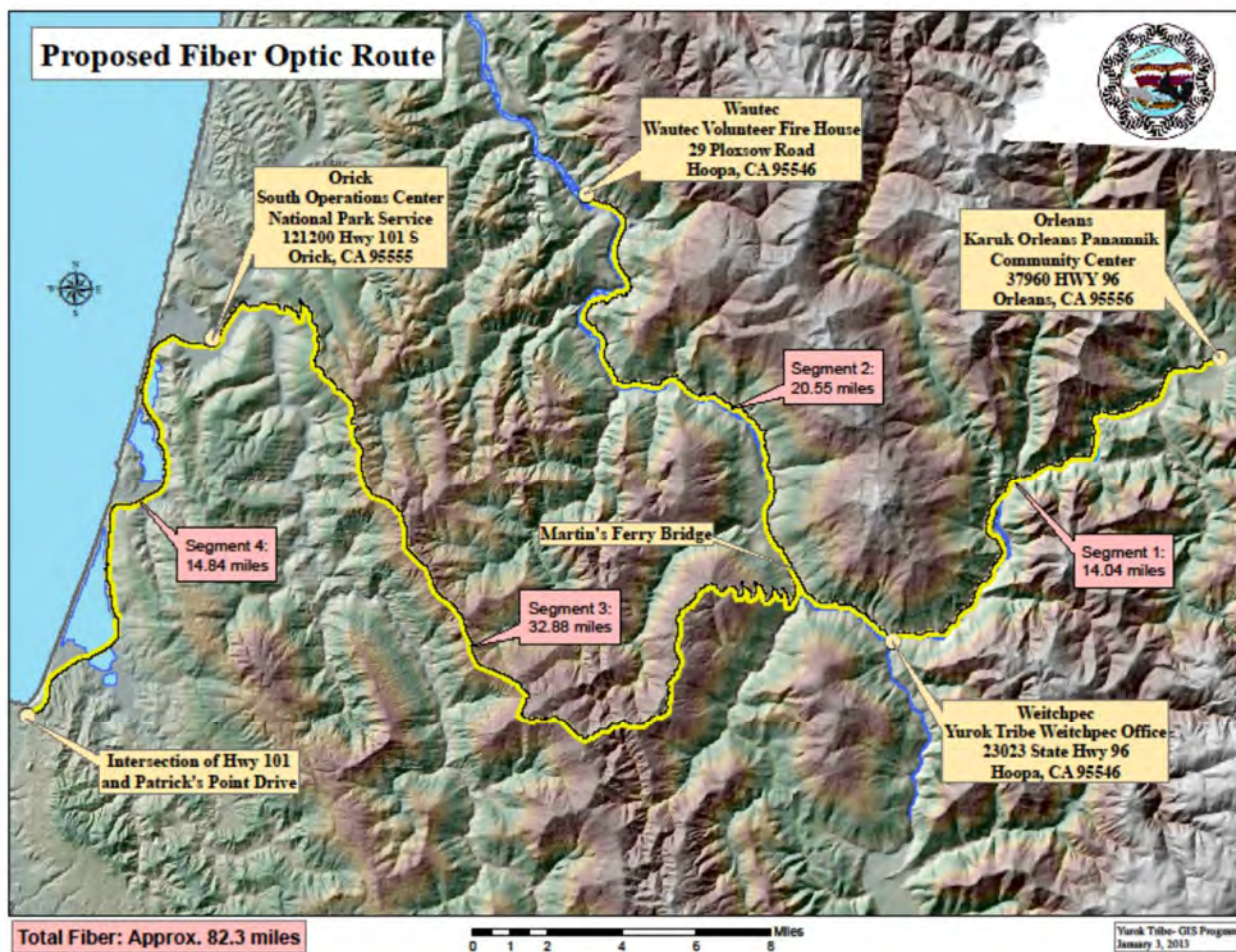
### Karuk Tribe project maps



## CASF UNDERSERVED APPLICATION - FEBRUARY 1, 2013 Karuk Tribe - Klamath River Rural Broadband Initiative







## **Appendix IV**

High bandwidth marketing flyers from AT&T and Suddenlink are included on the following pages.

# Ethernet Services from AT&T

## Leverage What You Have Today to Build Tomorrow's Network

What would it mean if you had the ability to design a network that will grow with you and had the true flexibility to run large, diverse applications across town, across the state or even globally? That capability can be leveraged right from your Ethernet Local Area Network (LAN) to seamlessly connect your business together as if there was no distance between you and another office whether they are 5 or 500 or even 5,000 miles away.

### Meeting Your Networking Needs

You require faster data speeds but also need to access the Internet and have other locations with different application requirements. The versatility of Ethernet can solve that by providing the high speed, on-time performance you demand while acting as the on-ramp to both the Internet and your IP VPN network. Ethernet can transport your information so you can focus on your core business.

Build on your existing architecture, use Ethernet as a back-up network or simply use it for a new, more reliable way to communicate. You may have highly sensitive data and need the full control that Ethernet provides. Security, continuity and efficiency are realized as your IT staff will set the traffic routes, insert data encryption and police content without expensive outsourcing to do this.

Technology is changing rapidly and with that comes higher demands on your network while pushing bandwidth requirements to its limits. Ethernet solutions from AT&T can scale as your business grows and can expand geographically to accommodate that growth. You need a service that has a variety of bandwidth and configuration options that include switched, dedicated or point-to-point. A solution that can be changed with ease to meet your business applications needs.

### An Ethernet Arrangement For You

- Switched Ethernet for many sites. Your business may have two or more locations and may need a Point to Point, Hub and Spoke or fully meshed network design. With switched Ethernet, you can grow from one to many sites and you choose which sites will communicate with each other. Switched Ethernet is a shared network arrangement which provides a low cost easy to build solution.
- Dedicated Ethernet for concentrated heavy bandwidth use. If your business has heavy bandwidth between two locations, like Data Center to Data Center File transfers or two large sites (Sales Distribution Center to Accounting), you may require a high bandwidth, reliable, highly secure and cost effective Point to Point link.
- Hybrid – networks that work together. Your business may have hundreds or even thousands of locations, so it may not be practical to have a single network like Ethernet. That's where a Hybrid network solution is the answer. Both Ethernet and IP VPN services offer you a range of choices and benefits that fill the need to run multiple applications at remote locations, branch offices and heavy bandwidth sites.
- Ethernet access is the fastest growing access technology available today. While Ethernet is a technology and a network in itself, it's also the gateway to your IP VPN or the Internet.
- Copper solution to minimize construction Costs. This is great news if your business is in an area that is not fiber rich such as a rural area. For bandwidth speeds of 10 Mbps or below, Ethernet may be provided over the same copper pairs used for your telephone service. This saves on expensive costs to install fiber.

### Benefits

- Ethernet is universal technology with a familiar look and feel that makes it easier to connect and run
- You're in control as you route, manage and prioritize applications
- No special provisioning is needed for most applications you run
- Well suited for bandwidth intensive applications like Voice over IP, Video, storage and data center consolidation
- Affordability and familiarity makes Ethernet the perfect fit for your business
- You get network coverage where ever you do business, whether it's domestic or globally
- Use Ethernet to access the internet or your IP VPN network for better coverage and bandwidth options

### Features

- Ethernet can be configured as a private line connecting two locations or a meshed network connecting hundreds of sites
- Whether you require small or large bandwidth you get the speed tiers of 2 Mbps to 10 Gbps
- You'll have stringent service level agreements that will help support your critical applications
- Ethernet works and feels the same in the LAN, MAN or WAN so it's familiar and easy to deploy
- Use Ethernet by itself or as access to the internet and your VPN network for better cost and coverage
- Ensure critical information is delivered with diversity and redundancy options

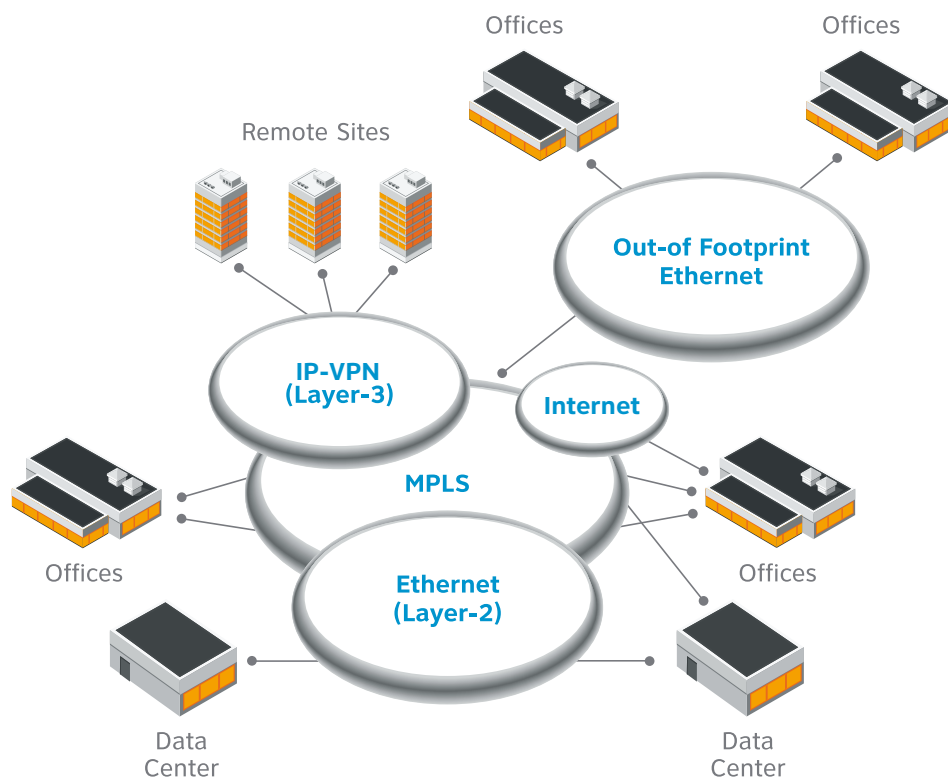


### Performance, Agility and Control

AT&T Ethernet services deliver simplicity and connectivity to new and existing services, for ease of integration with your emerging applications.

- **Performance.** AT&T offers 24 hours a day, 7 days a week, monitoring and management of your network to help ensure maximum performance of your applications.
- **Agility.** Ethernet is extended from your Local Area Network to the Metropolitan Area Network and across the Wide Area Network; allowing for simplified Networking solutions around the globe.
- **Control.** With committed Ethernet data rates you have virtually seamless control of VoIP and IP Telephony services and other networking applications with a simple and consistent transport technology across the Local, Metropolitan or Wide Area Network.

### Ethernet Hybrid Network



**For more information about what Ethernet can do for you and choosing the right solution, contact your AT&T Representative, or visit us on the web at [www.att.com](http://www.att.com).**



# Dedicated Internet Access

**Reliable Advanced Technology  
With Connections You Can  
Count On.**

## Overview and Benefits:

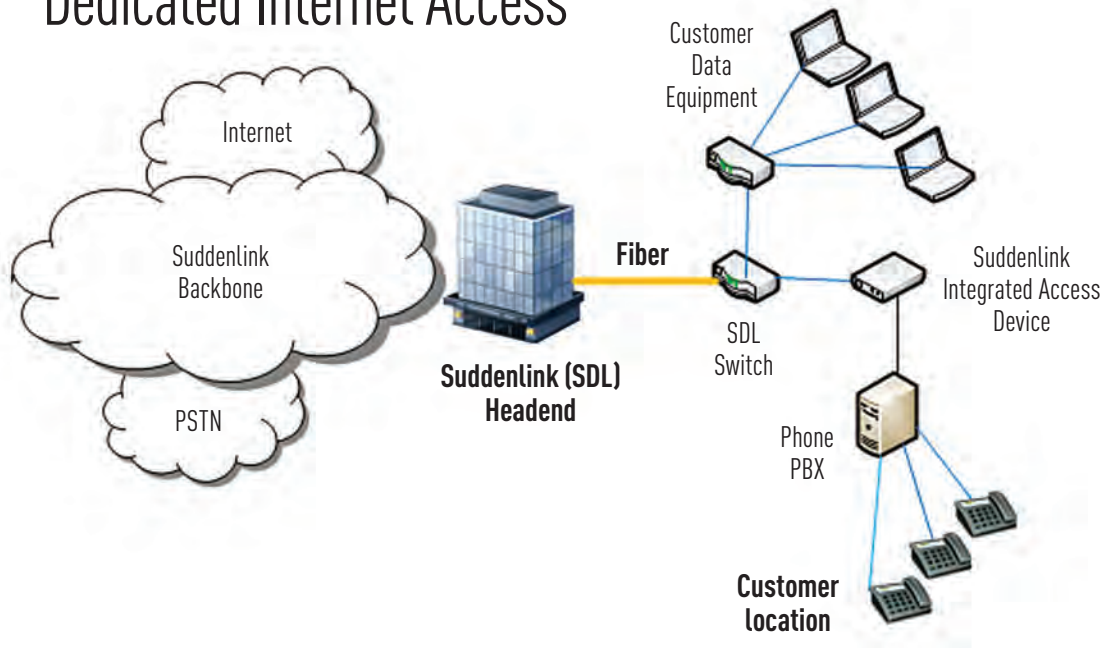
- DIA is provided to our customers over our fully redundant optical fiber backbone
- Top of the line customer care with complete proactive network monitoring 24/7
- Flexible solutions offer options of scalable speeds and services to meet your business need
- Highly redundant and scalable backbone architecture
- Dedicated resources that constantly monitor backbone traffic
- Customers directly connected to Suddenlink Fiber Network
  - Fast Ethernet 100 Mbps
  - Gigabit Ethernet 200-1,000 Mbps
- Flexible service that easily scales to your ever-growing needs, without disrupting your business or customers
- Online reporting services available to help monitor speeds and performance
- Reliable connectivity over our advanced fiber-based broadband network for constant secure connections
- WAN (Wide Area Network) solutions that make doing business seamless
- Network availability 99.99% guaranteed by our industry leading SLA (Service Level Agreement)
- 24/7 Suddenlink Network Operations Center for reporting service troubles, outages or service interruption



[www.suddenlinkbusiness.com](http://www.suddenlinkbusiness.com)

suddenlink<sup>®</sup>  
business™

# Dedicated Internet Access



## Partnering for Your Success

Suddenlink Business offers the experience and the advanced solutions to help your business maximize security, improve employee efficiency, and help establish a competitive advantage – all while minimizing your costs. And we stand behind you and our services with expert, local support to ensure you remain up and running.

## Learn More

Contact one of our local Account Executives to discover how our Dedicated Internet Access (DIA) solutions can help you do more – for less.

**Suddenlink Business. One call. One company. Easy.**

[www.suddenlinkbusiness.com](http://www.suddenlinkbusiness.com)



Services and features not available in all areas. Multiple public IP addresses subject to the Suddenlink IP address Assignment Policy. BGP routing subject to the Suddenlink BGP peering requirements. All business locations must be located within the Suddenlink footprint. Specific support and equipment repair and replacement obligations may vary depending on terms and conditions of applicable service agreement. Other restrictions may apply.

# Advanced Data Solutions

## Multi-location Ethernet Service You Can Rely On

Whether you have two locations or 20 locations, Suddenlink Business can cost effectively connect them and you with a robust converged data platform. Building on our advanced Ethernet backbone, you can eliminate communication silos and seamlessly extend your LAN to all your locations, improving collaboration, productivity and success.

## Powerful Business Benefits

### Simplicity

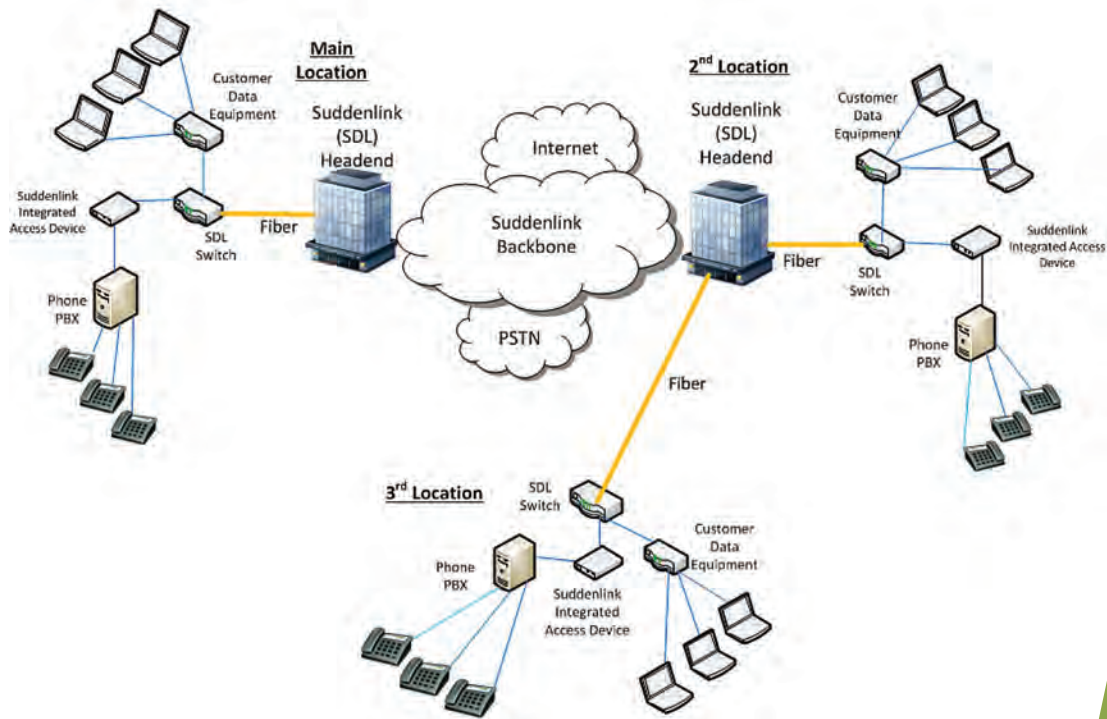
- Multiple locations and extended LAN over Ethernet
- Shared IP-based applications to even your smallest locations

### Scalability

- Easily added bandwidth and new locations
- Less complexity and cost compared to older technologies such as T1, frame relay and ATM
- Speeds up to 1 Gbs or more over local metro and inter-metro connections



## Multi Site Voice and Data Solution



### Reliability

- Suddenlink Business advanced optical fiber network monitored 24/7 by our national and regional operations centers

### Support

- Expert business-class installation, maintenance and service
- Local support teams available 24/7

### Expertise

- The leader in your area for providing Ethernet-based network services
- Experience providing advanced communication services to businesses of all sizes and industries

## Why wait

Discover how Suddenlink Business advanced data solutions can reliably and cost effectively connect all your locations to help your business reach new levels of productivity, efficiency and success!

[www.suddenlinkbusiness.com](http://www.suddenlinkbusiness.com)

