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Broadband Assessment

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Executive Summary

The overall results of services provided to Goodyear, it is apparent that existing residential areas have adequate coverage. At the same time, Goodyear exists as a duopoly with Cox Communications and Lumen Technologies currently controlling the predominance of services provided in the city. In Goodyear, along with most other cities of similar size, the comfortable duopoly of phone and cable providers have successfully kept regulators at bay allowing for the largest internet service providers to divert investments away from upgrades and infrastructure, instead allowing these funds to be utilized for stock buybacks, dividend payouts, debt reduction, and ongoing merger and acquisition activities.

As Goodyear grows and expands its current footprint into areas that are proposed for development, such as Rainbow Valley, there will be a need for coordination between existing and new areas of broadband coverage. Rainbow Valley has fixed Wireless coverage but little to no other options available to them. The coverage gap and service types between the area proposed for developed and existing developed areas are readily apparent. Neither Cox nor Lumen offer services currently. During this early stage of development, sufficient broadband service is crucial. Residential and commercial customers alike are going to begin making decisions to settle in and develop areas based upon the services that are offered. "Gaps" in service can become a severe detriment to developments and sustainability of growth.

Goodyear is in the unique and prime position to invest both in provider relationships, ensuring that future residents are entitled to the best services just as current ones are.

Scope

Cell Site Capital was the winning respondent to the city of Goodyear's Request for Proposal (RFP) Number 22-6033, Broadband Assessment – Citywide. The RFP asked the consultant to assess every address in the city of Goodyear and to provide a report summary and detailed results showing, by address:

- If broadband is available or not.
- If they have broadband what speeds are available.
- If multiple broadband providers are available, and if so, which ones.

Cell Site Capital was asked in a "Best and Final Offer" to provide the above-requested information in GIS format.

In furtherance of the city's stated goal to plan for its future and leverage technology for its existing residents and businesses, Cell Site Capital has also provided suggestions for the next steps the city of Goodyear can take to create a competitive marketplace for broadband service providers.

Methodology

Cell Site Capital accessed publicly available databases through the Federal Communications Commission (FCC), showing the general availability of broadband and the locations of wireless base stations. Additional public information was gathered from the city of Goodyear's Information Technology division, and other broadband information maps. This information provided a baseline upon which we were able to build using proprietary information. The most specific information was gathered by working with a partner that works with broadband providers nationally and provides a proprietary database showing exact mapping for all providers' networks, and the available speeds. This database allowed us to tie specific provider information to all of the addresses in Goodyear. Additional provider information on broadband speeds and available packages was obtained from the providers' individual websites.

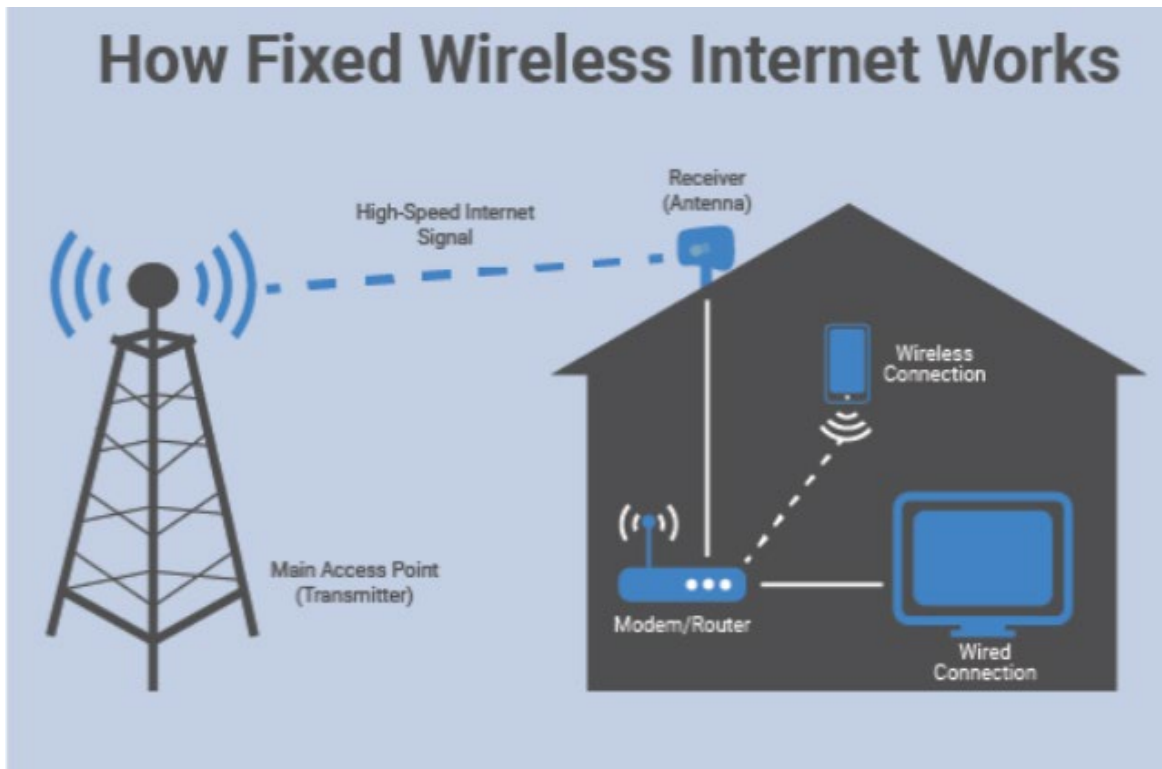
Goodyear Available Service Type Overview

The assessment of the data produced has provided clear indication that the city of Goodyear has multiple types of coverage available in existing residential areas. There are five main providers that offer services in these areas which are Cox Communications, Lumen (CenturyLink), Phoenix Internet, AireBeam and T-Mobile Home internet. Of these providers, only Cox Communications and Lumen Technologies provide services that are based on Cable, Fiber or DSL with Phoenix Internet, AireBeam and T-Mobile Home Internet providing services that are strictly delivered over Fixed Wireless.

Attached herewith as Exhibit A is a table that table indicates the plans that are available to Goodyear's residents. This information is in no way indicative of the coverages that may have been purchased by residents, but it is simply an overview of the available products within the city limits. We have included any publicly available information regarding overage costs that are attributed to these plans, but it should be noted that not all providers offer this information readily on their websites. Further, "Fixed Wireless" coverages and speeds can vary greatly depending on terrain, line of site, network usage and availability in any particular location .

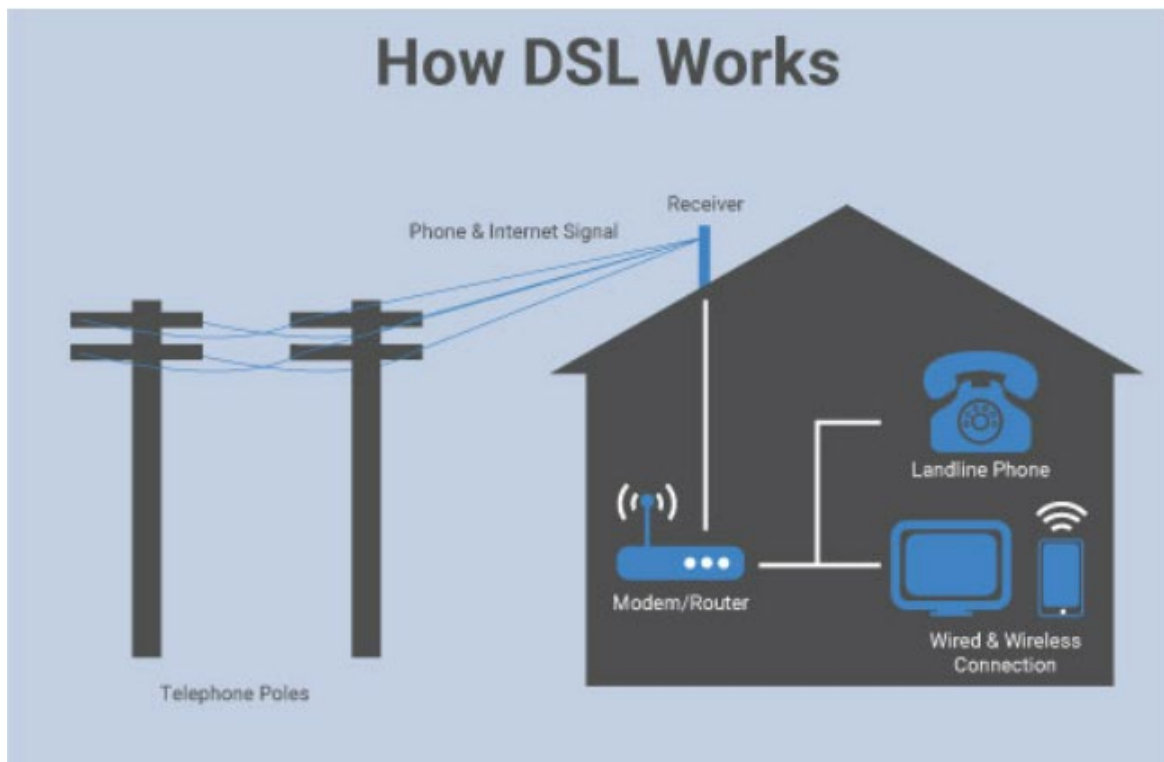
To better explain the differential in services provided by these providers, there are a few facts that should be set forth. The following descriptions and illustrations are intended to provide the basic principles and comparisons of Cable, Fiber, DSL and Fixed wireless services with the positives and negatives of all.

Fixed Wireless is an internet service predominantly found in rural or underserved areas. Internet is dispatched from the main access point to receivers/dishes installed at a home or business. All recipients of this service are limited to approximately a ten (10) mile radius per receiver and must have a line of sight with the access point.



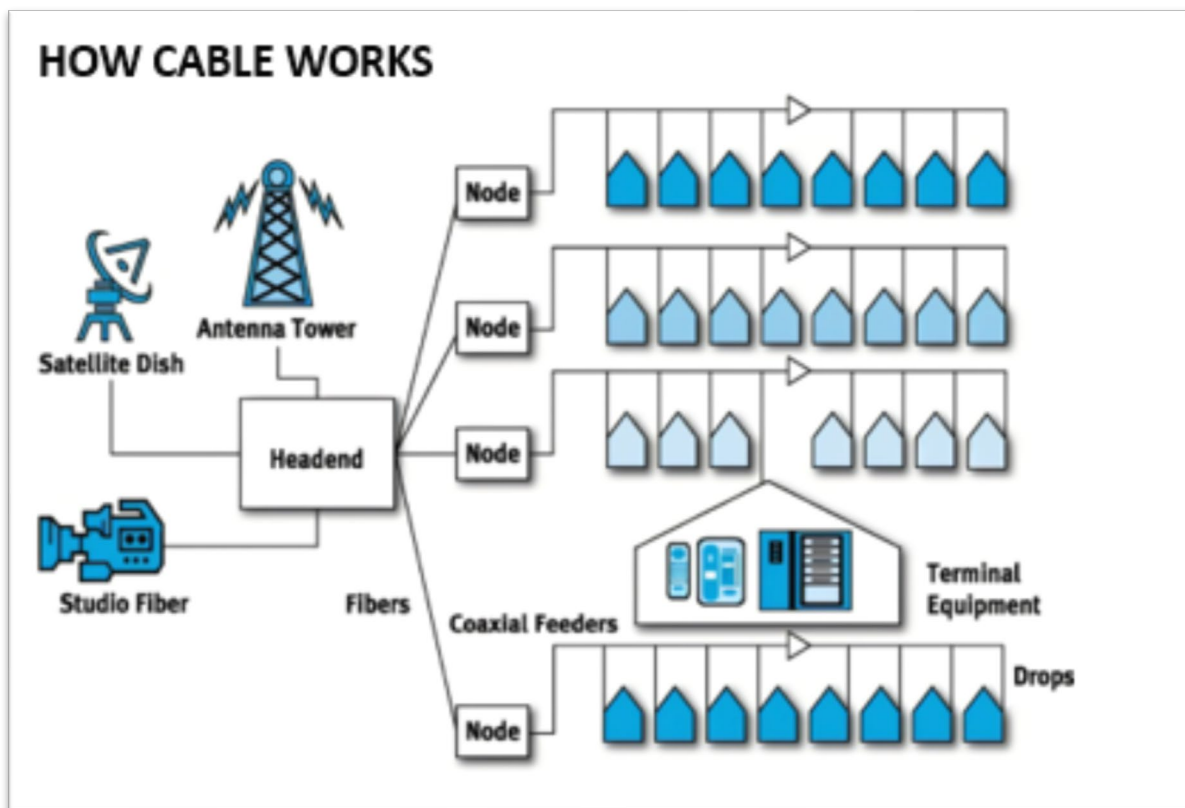
Positive	Negative
The Internet is provided over airwaves and does not require phone or cable lines.	Fixed wireless internet may be more expensive than DSL. The higher service thresholds are typically in line with cable internet costs.
Service speeds can be comparable to cable (depends on provider capabilities).	It cannot function without a line-of-sight connection with the access point and in most cases, you need to be within 10 miles of the access point. This can limit service area availability and quality of service connection.
No phone service is required.	May have data or speed limitations imposed

DSL or Digital Subscriber Lines use telephone lines to transmit internet signals. The use of phone lines has allowed DSL to become one of the more readily available internet service types.



Positive	Negative
DSL costs are sometimes cheaper than other internet services offered by providers.	DSL service is often provided by the phone company, which likely means you will be required to have phone services as well.
There are minimal or no new wires needed for service because DSL runs over standard phone lines.	DLS speeds are dependent on your proximity to the DSL main distribution point. The closer you are the faster your service will be. Your speed will slow down the farther you get from the main distribution point.
Newer iterations of DSL are increasing in speeds but often fall behind cable and fixed wireless internet services offered in the same area.	DSL providers often implement data caps, and/or speed implementations. .

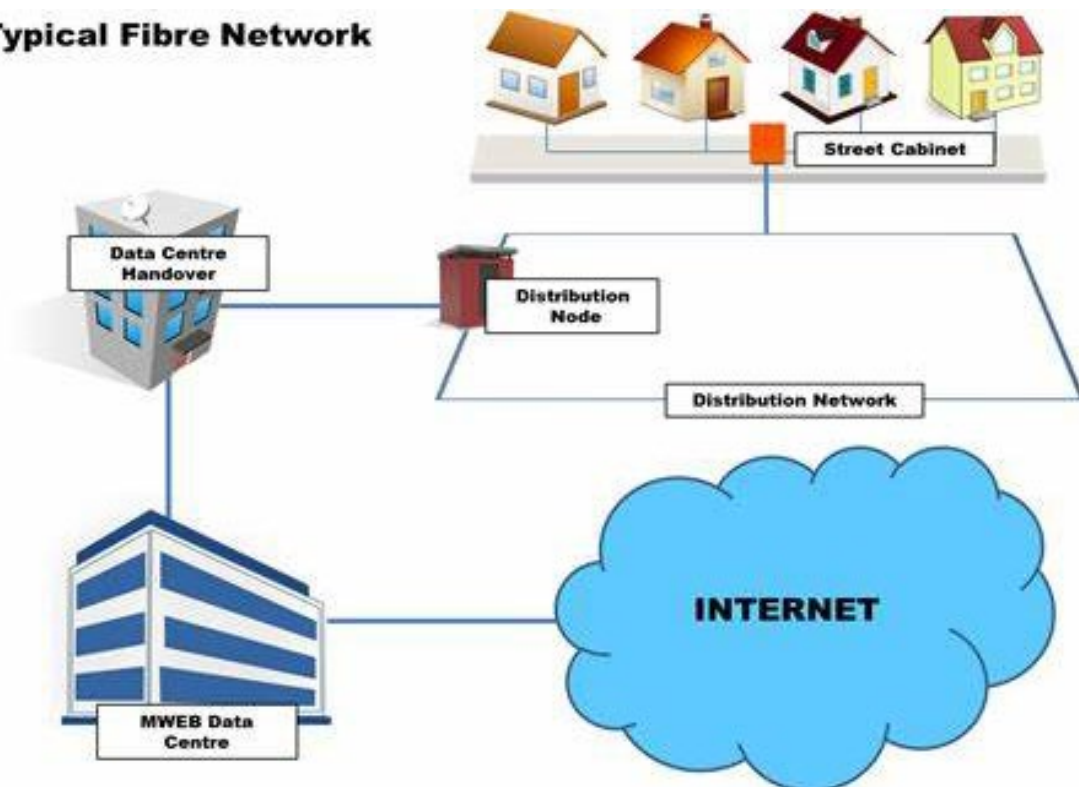
Cable internet uses the same coaxial cable network as cable TV to provide homes with internet. The internet service provider sends a data signal through the coax cable to the residence and connects it to their modem. The modem then uses Ethernet cables to connect to the router, which is what gives the access to high-speed internet and allows the resident to broadcast a Wi-Fi signal throughout their residence.



Positive	Negative
No phone lines are required, and connection to the internet is continuous.	Speeds are not as fast as fiber-optic internet and depend on how many people the area are connected to the Internet at the same time. The connection may be noticeably slower during peak hours.
Substantially faster than other types of broadband connections such as fixed wireless and DSL, which allows transfer of data at high speeds (i.e. photos, music, movies, and videos).	Initial connection fees can often be quite high and need a technician to initially install the equipment.
Supports data-heavy activities such as online gaming.	Not available in all areas.

Fiber internet works by sending photon signals through tiny strands of glass or plastic. Miles of these fiber-optic cables are buried underground from the internet provider's servers to the area. At the home, the cable connects to an optical network terminal (ONT), giving the resident internet access. These cables have a high capacity for carrying data, so they can give the resident a fast internet connection with a much lower chance of slowdowns or outages.

A Typical Fibre Network



Positive	Negative
Quality connections are a must for a business and residents looking for high-speed internet.	Fiber is lighter and thinner than metal wiring and is prone to physical damage. Fiber optic cables are easy to cut causing outages.
Fiber optic internet allows the recipient to get the quality that they need to telecommute, home school and stream internet at high speeds.	The costs of fiber optics are lower over the long term, but they are still expensive to install.
Highly secure, fiber optics do not give off any signals guaranteeing your data will be secure because there is no way to listen in on the light pulses as they transmit.	Not available in all areas.

What does this mean for Goodyear?

As we looked at the overall results of services available to the citizens of Goodyear, it is apparent that most existing residential areas have the ability to obtain broadband internet services. The FCC Form 477 Maps provide an overall picture indicating that the more developed and populous portions of Goodyear served by three or more providers. Once you delve more deeply into the information, it becomes clear that these areas are predominantly served by Cox Communications and CenturyLink (Lumen) which essentially creates a duopoly (two providers that discourage competition and investment by new internet providers).

We need to recognize that the FCC receives information from each of the ISP providers on a semi-annual self-reporting system from the providers inclusive of coverage areas, speeds available without requiring costs to be provided for those services. The FCC reporting is completed by census blocks which tends to be very misleading.

What does that really mean?

- Goodyear broadband services are looked at in the same manner as a “census block” is.
 - The denser the population, the smaller the block and the larger likelihood that multiple broadband services are offered
 - The larger less populous areas, the larger the block and the less likely of having multiple broadband providers with higher likelihood of alternative types of service being present
- ISP’s self-report to the FCC and there is no specific mechanism present to validate the reported information
- If one person has coverage in a census block, then the FCC deems that whole census block deemed as served
 - The speeds ISP provides are their advertised maximum speeds which are often unavailable
 - Pricing for plans is not shared
- FCC reporting includes data on areas that could “receive” broadband services within 10 business days of a request, not areas that are currently served
- The reality of services that are available/unavailable are not apparent until begin to look at the mapping with the unavailable services removed often leaving poor or no coverage available at all

In 2018, the State of Arizona produced a Broadband Strategic Plan that assessed Broadband availability throughout the state. The findings that State of Arizona set forth in their report are very similar to the findings that CSC made as they researched the service

providers and available coverage plans throughout the City of Goodyear. The goals set forth in this report were more ambitious than the broadband minimums of 25 Mbps download and 3 Mbps upload speeds set forth by the government with a much more (Revised in February 2022) ambitious goal of 100 Mbps download and 20 Mbps upload speeds or higher.

As Goodyear grows and expands its current footprint into areas that are slated for development, such as Rainbow Valley, there will be a need for coordination between existing and new broadband service providers. Rainbow Valley has fixed Wireless coverage but little to no other options available to them. The coverage gap and service types between the area proposed for developed and existing developed areas are readily apparent. Neither Cox nor Lumen offer services currently. During these early stages of development, sufficient broadband service is crucial. Residential and commercial customers alike are going to begin making decisions to settle in and develop areas based upon the services that are offered. “Gaps” in service can become a severe detriment to developments and sustainability of growth.

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Summary of Findings

- Goodyear has two broadband ISP providers capable of delivering speeds over the ACA recommendations in its Broadband Strategic Plan
- Goodyear has limited fiber south of MC 85 with only one provider
- Goodyear has few consumer options for wired broadband which creates a less than ideal healthy and competitive market
- Goodyear explore investing in open access broadband infrastructure

We look forward to discussing additional details on these findings with you at your convenience.

Exhibit A

Provider	Medium	Delivery Speed	Cost	Plan Details and Overage Costs
Cox Communications	Cable	25 Mbps/ 3 Mbps	\$29.99/mo. Year 1 \$44.99/mo. Year 2	1.25 TB (1280 GB) data included Excess usage is \$10 per additional 50 GB block \$10 for each 50 GB block (max overage charge of \$100 per month)
	Cable	150 Mbps/ 10 Mbps	\$59.99/mo. Year 1 \$87.99/mo. Year 2	1.25 TB (1280 GB) data included Excess usage is \$10 per additional 50 GB block \$10 for each 50 GB block (max overage charge of \$100 per month)
	Cable	500 Mbps/ 10 Mbps	\$79.99/mo. Year 1 \$99.99/mo. Year 2	1.25 TB (1280 GB) data included Excess usage is \$10 per additional 50 GB block \$10 for each 50 GB block (max overage charge of \$100 per month)
	Cable	940 Mbps/ 35 Mbps	\$99.99/mo. Year 1 \$119.99/mo. Year 2	1.25 TB (1280 GB) data included Excess usage is \$10 per additional 50 GB block \$10 for each 50 GB block (max overage charge of \$100 per month)
CenturyLink	DSL	100 Mbps	\$50/mo.	Capped at a maximum speed of up to 100 Mbps. Equipment cost \$15/mo. or \$200 up front. If install requires copper bury \$300 or aerial delivery \$150 or higher. 1.0 terabyte (TB) monthly data usage limit. \$15 per month router fee, up to \$300 for install.
	Fiber	100 Mbps/ 100 Mbps	\$50/mo.	Capped at a maximum speed of up to 140 Mbps. Equipment cost \$15/mo. or \$200 up front. If install requires copper bury \$300 or aerial delivery \$150 or higher. 1.0 terabyte (TB) monthly data usage limit. \$15 per month router fee, up to \$300 for install.
	Fiber	940 Mbps/ 940 Mbps	\$65/mo.	Capped at a maximum speed of up to 940 Mbps. Free modem and installation. Fiber to curb and wired connection to residence to obtain promised speed. Not available in all areas. \$15 per month router fee, up to \$300 for install. fiber service usually means 100% fiber-optic network to your residence, in limited circumstances CenturyLink may need to deploy alternative technologies coupled with a non-fiber connection from a certain point (usually the curb) to your location in order to provide the advertised download speeds. Customer speed experiences will vary, particularly when accessing the Internet wirelessly from various devices. Maximum download/upload speeds are up to 940 megabits per second via a wired connection due to overhead capacity reserved to deliver the data. Internet speeds are not guaranteed due to conditions outside of network control, including customer location, devices, equipment, and access through a wired or wireless connection.
Phoenix Internet	Fixed Wireless	7 Mbps/ 3 Mbps	\$50/mo.	Does not meet FCC Broadband guidelines, no apparent data or speed restrictions. \$99.99 install fee and Router \$9.99 monthly rental fee
	Fixed Wireless	15 Mbps/ 3 Mbps	\$60/mo.	Does not meet FCC Broadband guidelines, no apparent data or speed restrictions. \$99.99 install fee and Router \$9.99 monthly rental fee
	Fixed Wireless	25 Mbps/ 5 Mbps	\$70/mo.	Meets FCC Broadband guidelines, no apparent data or speed restrictions. \$99.99 install fee and Router \$9.99 monthly rental fee
	Fixed Wireless	50 Mbps/ 10 Mbps	\$90/mo.	Meets FCC Broadband guidelines, no apparent data or speed restrictions. \$99.99 install fee and Router \$9.99 monthly rental fee

Provider	Medium	Delivery Speed	Cost	Plan Details and Overage Costs
AireBeam	Fixed Wireless	10 Mbps - 5 Mbps	\$45/mo.	Does not meet FCC Broadband guidelines, ability to achieve the advertised speeds is dependent upon many variables, PC configuration, type of connection (wireless or wired connection), the time of day, the amount of traffic on the public Internet, priority queuing and more. May require mounting on an out-building with cable run to home in a customer dug trench and supplying and installing a small tower or extended length (20-40') pole.
	Fixed Wireless	20 Mbps - 10 Mbps	\$60/mo.	Does not meet FCC Broadband guidelines, ability to achieve the advertised speeds is dependent upon many variables, PC configuration, type of connection (wireless or wired connection), the time of day, the amount of traffic on the public Internet, priority queuing and more. May require mounting on an out-building with cable run to home in a customer dug trench and supplying and installing a small tower or extended length (20-40') pole.
	Fixed Wireless	30 Mbps - 15 Mbps	\$80/mo.	Meets FCC Broadband guidelines, ability to achieve the advertised speeds is dependent upon many variables, PC configuration, type of connection (wireless or wired connection), the time of day, the amount of traffic on the public Internet, priority queuing and more. May require mounting on an out-building with cable run to home in a customer dug trench and supplying and installing a small tower or extended length (20-40') pole.
	Fixed Wireless	40 Mbps - 20 Mbps	\$100/mo.	Meets FCC Broadband guidelines, ability to achieve the advertised speeds is dependent upon many variables, PC configuration, type of connection (wireless or wired connection), the time of day, the amount of traffic on the public Internet, priority queuing and more. May require mounting on an out-building with cable run to home in a customer dug trench and supplying and installing a small tower or extended length (20-40') pole.
	Fixed Wireless	50 Mbps - 25 Mbps	\$120/mo.	Meets FCC Broadband guidelines, ability to achieve the advertised speeds is dependent upon many variables, PC configuration, type of connection (wireless or wired connection), the time of day, the amount of traffic on the public Internet, priority queuing and more. May require mounting on an out-building with cable run to home in a customer dug trench and supplying and installing a small tower or extended length (20-40') pole.
T-Mobile Home Internet	Fixed Wireless	37-115 Mbps - 8-24Mbps	\$55/mo.	Meets FCC Broadband guidelines, achieved speeds are reliant upon location and type of equipment, no data cap. May not be compatible with all streaming services. Reserve the right to slow services