



## **BROADBAND INTERNET ACCESS SERVICE DISCLOSURES**

WaveDivision Holdings, LLC and its affiliated entities (collectively, “Wave”) provide mass-market retail broadband Internet access service (“BIAS”) which is defined by the FCC as “a service marketed and sold on a standardized basis to residential customers, small businesses and other end-user customers such as schools and libraries.” The following disclosure provides information regarding our network management practices, performance characteristics of our services and the commercial terms of our services. The disclosures pertain solely to our BIAS offerings and are intended to be relied upon by our current and prospective subscribers to our BIAS offerings as well as providers of applications, devices, services and content accessed over or connected to our BIAS service (“edge providers”).

We also provide a variety of other services, the composition of which vary from system-to-system but may include cable television, voice over Internet Protocol (VoIP) telephone service, or other specialized information or communications services. Under some of these agreements, a commercial or community establishments such as a hotel or library that may in turn offer Internet access to their visitors. These disclosures do not apply to any of these non-broadband Internet access services or to Internet access offered to visitors or customers by the owner or operator of an establishment or premises.

The information contained in this disclosure is subject to modification from time to time as Wave deems appropriate. These disclosures are in addition to the following disclosures and terms and conditions contained in the following documents:

- Wave Internet Service Acceptable Use Policy, available at <http://www.wavebroadband.com/resources/docs/Wave-Acceptable-Use-Policy.pdf>.
- Wave Data Transfer Usage Policy, available at <http://www.wavebroadband.com/support/internet/data-transfer-usage-policy/>.
- Wave Data Transfer Usage FAQs, available at <http://www.wavebroadband.com/support/internet/data-transfer-faqs/>.
- Wave Residential Services Subscriber Agreement, available at <http://www.wavebroadband.com/resources/docs/Wave-Residential-Subscriber-Agreement.pdf>.
- Wave Business Services Subscriber Agreement, available at <http://www.wavebroadband.com/resources/docs/Wave-Business-Subscriber-Agreement.pdf>.
- Wave Bandwidth Limitations and Other Important Terms of Use, available at <http://www.wavebroadband.com/resources/docs/Bandwidth-Limitations.pdf>.
- Wave Privacy Policy, available at <http://www.wavebroadband.com/resources/docs/Wave-Privacy-Policy.pdf>.

### **NETWORK PRACTICES**



**Congestion Management.** Our network and its bandwidth through which we provide broadband Internet access service are shared among all uses. This means that our customers share upstream and downstream bandwidth. To ensure all of our customers a high-quality Internet access experience, the FCC allows Wave to engage in reasonable network management practices, including congestion management practices. Active congestion management practices typically involves the use of network management tools which can cause minor and temporary impairments a user's experience.

To date, however, Wave has not determined it necessary to deploy any network management tools. Rather, Wave actively monitors its networks for utilization trends. We receive regular reports showing changes in network traffic and congestion. We use this information to plan and implement increases in available bandwidth, port additions or additional connectivity to the Internet. We expect new technologies or unforeseen developments in the future may make it necessary to implement a new or different congestion management program, and we will update these disclosures and otherwise notify our customers of the scope and specifics of any new or materially different congestion management program or should we begin use of congestion management tools.

**Data Usage Allowances.** In addition to reserving our right to manage network usage to ensure that the usage by a small number of subscribers does not degrade, inhibit or interfere with the use of our network for other subscribers, we allocate a set amount of monthly data usage (bandwidth) to each BIAS account.

We have set data usage (data transfer) allocations for each tier of our BIAS well above the monthly usage for more than 90% of our users. For each billing cycle, at least 100 GB of data transfer usage is included Wave's BIAS at no additional charge. Each service level comes with a different base data allotment or plan. That amount can be increased by subscribing to additional data plan upgrades, including double and unlimited options.

If you exceed the included data transfer amount within a billing cycle, you will be charged an additional data transfer fee. The fee is \$5 for up to the first 25 GB over the usage amount included with your service level, and \$5 more for each additional 25 GB block of usage over that amount.

Customers can track their data transfer activity with our [Internet Account Manager](#). Additional information about the operation of our Data Transfer Usage Policy may be found at <http://residential.wavebroadband.com/support/internet/data-transfer-usage-policy/>

Although we establish a monthly data usage allowance, that does not give customers or any other users any right to any particular bandwidth or amount of bandwidth at any particular time. Unused data usage allowances do not carry over to the next month. Data transfer activity that is associated with an account is the sole responsibility of that account holder, whether or not he or she authorized the usage.



**Application-Specific Practices.** Wave does not discriminate against or prevent customers or users of our broadband Internet access service from accessing, sending or receiving lawful content or using lawful applications or services of their choice provided that the applications or services do not harm our network or the provision of our broadband Internet access service or others who use our service, or that facilitates the theft of our service. To avoid these harms, Wave has implemented hostile port blocking as part of its reasonable network management practices to prevent unwanted files, browser hacking and virus attacks. Based on internal observations and needs, the following ports are blocked for security reasons:

Port Name	Port Number
NetBIOS UDP/TCP	135-139
Slammer Worm (MS-SQL)	445
Windows RPC Vulnerability	593
UPNP	1900
Blaster Worm	4444

This list is subject to change without prior notice as determined necessary by Wave. Wave also reserves the right to, without prior notice and in compliance with applicable law, implement reasonable network management practices as Wave determines appropriate to prevent harmful or illegal activity.

**Device Attachment Rules.** We place no general restrictions on lawful devices that a customer may connect to our network, so long as the device is: (i) compatible with our network; and (ii) does not harm our network or other users. Our broadband Internet access service works with most types of PCs and laptops including Macs, and other Internet compatible devices like game systems and Internet-enabled TVs. If a wireless router is connected to our broadband Internet access service, wireless Internet compatible devices including computers, tablets, smartphones, and other devices can connect to our network. If a customer or potential customer believes it has an unusual configuration, our technical service department will attempt to help determine if there is a compatibility problem.

Our standard broadband Internet access service requires connection of a cable modem to our network. You can obtain a cable modem from us or you may purchase one from many retail electronics sellers. Only devices that have been certified by CableLabs as compliant with the DOCSIS 1.1, DOCSIS 2.0 or DOCSIS 3.0 specifications are currently compatible with our network. Information regarding compliant modems can be found at [http://www.cablelabs.com/wp-content/uploads/2013/10/Certified\\_Products.pdf](http://www.cablelabs.com/wp-content/uploads/2013/10/Certified_Products.pdf). Use of a non-compliant modem may be subject to service interruption. Wave reserves the right change any compatibility standard as it deems appropriate in the future.

**Network and End User Security.** Wave employs certain practices to maintain the security of our network and our end users from unwanted and harmful activities. These include practices designed to protect our servers against denial of service attacks and to prevent malware,



spyware, spam and identity theft. To preserve the effectiveness of our security practices, we do not publicly disclose specific information detailing the levels and types of activities that may trigger our deployment of security protection measures. When security measures are employed, they may affect performance characteristics of the service or the ability to access certain suspicious websites, but such measures are employed in a manner designed to have non-discriminatory impact on all similarly-situated customers and end-users.

We filter email traffic for virus activity and spam using industry standard virus scanning and prevention techniques. If an email message is found to contain a virus or other harmful content, the message will be deleted without notification given to either the sender or the intended recipient(s).

### **PERFORMANCE CHARACTERISTICS**

**General Service Description.** Wave offers “fixed broadband” broadband Internet access service that is designed to provide the capability to transmit data to and receive data from all or substantially all Internet endpoints. Wave offers different tiers of broadband Internet access service for residential and commercial customers. The tiers are primarily differentiated by the speed with which data is transmitted and received and, in some cases, the amount of data transfer allowance. The price of each tier varies, primarily in relation to the data transfer speed of each. Tier characteristics may affect the suitability of a specific tier of service for the way you access and use the Internet. The way that we offer broadband Internet access service, including the specific tiers of service and the characteristics of each tier are subject to change from time to time and all tiers may not be available in all areas. Details of our current offerings can be found at <http://residential.wavebroadband.com/for-home/internet/packages/>.

No Internet service provider can guarantee a specific speed at all times. The actual speed that a customer will experience while using the Internet depends upon a variety of conditions. These can include the customer’s computer, the customer’s home network configuration, including wireless router performance, congestion on our network (as discussed above), congestion on the Internet itself and/or the performance of the website visited. Wave’s goal is to ensure a connection that is as stable as possible so that customers are receiving the bandwidth they expect.

**Service technology.** We deliver our broadband Internet access service over systems that use hybrid fiber-coaxial architecture and others that use fiber-to-the-premises architecture. In our hybrid fiber-coaxial network, we use the Data Over Cable Service Interface Specification (DOCSIS) which facilitates Customer use of our service using cable modems. To connect from our network to the Internet, we use equipment called a Cable Modem Termination System (CMTS) that acts as a gateway to the Internet for our customers’ cable modems. This is a shared network, as disclosed in the congestion management section, above, which means that our customers share upstream and downstream bandwidth which can impact the performance of our network. In our fiber-to-the-premises network, we deliver fiber to the premises and use Ethernet cables to



deliver connectivity to the home. Where Ethernet cabling is not available, we use very-high-bit-rate digital subscriber line (VDSL) technology to deliver connectivity.

**Expected and actual speeds and latency.** We offer customers a variety of broadband Internet access service tiers that are primarily differentiated by the speed of data transfer. We provide a description of the expected maximum transfer speeds associated with each service level on our website, available at [http://residential.wavebroadband.com/wp-content/uploads/2017/01/Labels\\_All\\_Internet\\_Services.pdf](http://residential.wavebroadband.com/wp-content/uploads/2017/01/Labels_All_Internet_Services.pdf).

**Speed.** The speeds we identify for each broadband Internet access service level are the maximum upload and download speeds that customers are likely to experience. We provision our customers' modems and engineer our network to deliver the speeds to which our customers subscribe with an additional 10% headroom. We conduct regional testing to ensure we are delivering these speeds. However, we do not guarantee that a customer will actually achieve those speeds at all times. A variety of factors can affect upload and download speeds, including customer equipment, network equipment, congestion in our network, congestion beyond our network, performance issues with an Internet application, content, or service, and more.

**Latency.** Latency is another measurement of Internet performance. Latency is a term that refers to the time it takes for information to travel between your computer and your Internet destination. High latency, or "lag," occurs when the time it should normally take for the information to make the trip becomes abnormally long. Most applications, such as email and websites, work well despite average latency. Highly interactive applications, such as multi-player games, do not work well with higher latency. Latency is typically measured in milliseconds, and generally has no significant impact on typical everyday Internet usage. As latency varies based on any number of factors, most importantly the distance between a customer's computer and the ultimate Internet destination (as well as the number and variety of networks your packets cross), it is not possible to provide customers with a single figure that will define latency as part of a user experience. In general, Wave's average round trip latency in any of its markets is 12ms for its hybrid-coaxial network and 2ms for its fiber-to-the-premises network. Wave measures average latency from customer premise test homes in each region we serve.

**Actual speed and latency performance.** Actual speed and latency may vary depending upon network conditions and other factors. Actual performance of our broadband network in most cases will conform to national wireline broadband Internet access speed and latency levels



reported by the FCC.<sup>1</sup> The FCC has reported that customers of coaxial cable-based broadband Internet access service receive mean download speeds that are 101% of advertised speeds during non-peak hours, and 102% of advertised speeds during peak hours.<sup>2</sup> In addition, the FCC has reported that these same customers experience average latency<sup>3</sup> delays of 32 milliseconds.

**Packet loss.** Packet loss is defined as the percentage of packets that are dropped between the customer premise demarcation where service is provided to the nearest interconnection location. Like latency, packet loss varies based on a number of factors. In general, Wave's packet delivery is 99.9%, with less than 0.1% loss, as measured at Wave's interconnection locations. If a customer is experiencing packet loss, Wave considers this a service issue, and encourages the customer to call in to our technical support team to troubleshoot the issue at 866-928-3123.

**Customer Speed Test.** We provide an online speed test for our customers, available [here](#). Please note: Most performance issues can be addressed simply by shutting down background Internet programs and bypassing additional network equipment.

**Suitability of the Service for Real-time Applications.** Our broadband Internet access service is suitable for typical real-time applications including messaging, voice applications, video chat applications, gaming, and Internet video. If customers, users or developers have questions about particular real-time applications, please contact us at 866-928-3123.

**Non-Broadband Internet Access Data Services.** We also provide a variety of other services, the composition of which vary from system-to-system but may include cable television, voice over Internet Protocol (VoIP) telephone service, or other specialized information or communications services. Our provision of these other non-broadband Internet access services has no effect on the availability or performance of our broadband Internet access service.

## **COMMERCIAL TERMS**

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<sup>1</sup> See FCC's Office of Engineering and Technology and Consumer Affairs Bureau, *2014 Measuring Broadband America Fixed Broadband Report, A Report on Consumer Fixed Broadband Performance in the U.S.*, pp. 14-18 (June 18, 2014) (available at <http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf>).

<sup>2</sup> The FCC has defined peak hours measured during "busy hour" as weeknights between 7:00 pm and 11:00 pm local time.

<sup>3</sup> The FCC has defined latency is the total length of time it takes a signal to travel from an origination point to the nearest server, plus the time for an acknowledgement of receipt to travel back to the origination point. The nearest server is the server providing the minimum round trip time.



**Prices.** We offer different levels of broadband Internet access services. We also may offer, from time to time, promotional offers to new, upgraded or other customers. The current monthly prices and any additional related fees, such as installation fees, and other terms for our levels of offerings and for promotional offers currently being are available on our website at:

<http://residential.wavebroadband.com/for-home/internet/packages/>

or by calling us at 866-928-3123. The pricing and other commercial terms of our broadband Internet access services are subject to change and the information contained herein, via telephone inquiry or on the listed websites will not supersede the existing terms and conditions of any customer.

Our standard broadband Internet access service requires a cable modem (our fiber to the premises service does not). You can buy your own modem at many retail electronics stores that meets our compatibility requirements as discussed in more detail in the "Device Attachment Rules" section of this notice or you can also visit our website to view the current requirements [here](#). If you order both broadband Internet access service and phone service from Wave, you will need a multimedia Modem. Wave currently offers a wireless home networking package that provides you with a cable or multi-media modem (as applicable), wireless router and home network set-up, plus equipment replacement and support \$10 per month.

**Fees for early termination.** Wave does not require customers to subscribe for a stipulated duration. Accordingly, Wave does not charge a fee for early termination.

**Privacy Policies.** Personal information that we collect about you is governed by our Privacy Policy, a current copy of which can be viewed at:

<http://residential.wavebroadband.com/resources/docs/Wave-Privacy-Policy.pdf>

and is subject to change from time to time. We use your personal information primarily to provide a customized experience as you use Wave's services. We generally do not disclose your personal information to third parties. Wave reserves the right, as permitted or required by law, to provide elements of your personal information to third parties and to cooperate with law enforcement or in the investigation of any criminal or civil matter. This may include monitoring your use of our network and services.

**Redress Options.** We welcome questions about our broadband Internet access service. This section discloses redress options for end users and edge providers. Customers or edge providers with complaints or questions relating to our broadband Internet access service or these disclosures can contact us at 866-928-3123. You may also email us via email at [customerservice@wavebroadband.com](mailto:customerservice@wavebroadband.com). The FCC has established procedures for addressing informal and formal complaints relating to its "Open Internet" rules. For information concerning these formal and informal complaint procedures, please refer to the FCC's website at <https://www.fcc.gov/guides/getting-broadband>.