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December 6, 2018

The Honorable Edward J. Markey
United States Senate
Washington, DC 20510

The Honorable Richard Blumenthal
United States Senate
Washington, DC 20510

The Honorable Ron Wyden
United States Senate
Washington, DC 20510

Dear Senators Markey, Blumenthal and Wyden:

Thank you for your letter dated November 15, 2018 in which you cite test results from the Wehe application and ask whether AT&T inappropriately throttles certain video traffic without the knowledge of our customers. We do not.

As we have explained to the developer of the Wehe application, Wehe is not an accurate barometer of whether a carrier is engaged in throttling Internet traffic for several reasons. The most critical and obvious flaw in the application is that it fails to account for customer choice. AT&T provides its mobile customers with the ability to choose data plans that provide standard-definition video in lieu of high-definition video, without compromising their streaming experience. When a mobile customer with standard-definition video runs a Wehe test, Wehe misrepresents that choice, falsely suggesting that it raises an issue of net neutrality.[1]

There are good reasons why consumers may choose to receive standard-definition over high-definition video. Streaming video in standard definition enables consumers to economize their data usage and potentially save money even as they watch more video. And for many consumers there is no downside to that choice, as the difference between standard-definition and high-definition video is likely to be imperceptible to them on most hand-held devices. That is, in part, why streaming services (including Netflix and Prime Video, as well as AT&T-affiliate DIRECTV NOW) themselves give consumers the option to limit video streaming to standard definition. Streaming video services also commonly utilize complementary technologies, such as video compression and adaptive bitrate streaming, to minimize the bandwidth required to stream video—a clear recognition of the important consumer benefits associated with such practices.

For its part, AT&T offers a range of mobile plan options to enable customers to select the services and features that best suit their needs. For example, AT&T offers numerous mobile data

[1] We shared these and other concerns with the developer of Wehe as part of our ongoing discussions with the developer. As a result of those discussions, Wehe's developer agreed to implement a messaging feed within the app to enable AT&T to clarify certain limitations of the app to AT&T customers.

plans at different price points, some of which include high-definition video as a feature, as well as some that stream video at standard-definition quality.[2] AT&T also developed Stream Saver, a feature of some plans that streams recognizable video content in standard definition and that customers have the option to toggle on and off at their discretion. Likewise, streaming services may opt out of Stream Saver, although none has chosen to do so in the nearly two years since its launch.

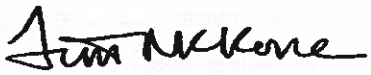
Empowering customers to choose between standard-definition and the more bandwidth intensive high-definition video is fully consistent with net neutrality principles, including the FCC's 2015 net neutrality order. In that order, the FCC stated: "Because our no-throttling rule addresses instances in which a broadband provider targets particular content, applications, services, or non-harmful devices, it does not address a practice of slowing down an end user's connection to the Internet based on a choice made by the end user." Of course, when AT&T customers choose a standard-definition video option, that choice is provider-agnostic and therefore applies to all content identifiable as streaming video, including AT&T's own video content (DIRECTV and DIRECTV NOW). AT&T is also fully transparent about the video streaming features and options available to consumers in its terms of service and on its website, including on the following pages:

- https://www.att.com/plans/wireless.html
- https://www.att.com/prepaid/index.html
- https://www.cricketwireless.com/cell-phone-plans
- https://www.att.com/offers/streamsaver.html
- https://about.att.com/sites/broadband

As AT&T has stated many times, we are committed to an open Internet. We encourage Congress to enact bipartisan legislation that applies to all Internet companies and protects the openness of the Internet without unnecessarily shackling innovation, investment, and consumer choice. We look forward to working with all of you to reach that goal.

Please contact me if you have any further questions.

Sincerely,



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2 AT&T also offers mobile service at wholesale to other retail wireless providers (i.e., mobile virtual network operators or "MVNOs"). Each individual MVNO has the option to choose whether its end users receive video in high-definition or standard-definition format.

verizon

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December 6, 2018

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Dear Senator Markey, Senator Blumenthal, and Senator Wyden:

I am writing in response to your November 15, 2018, letter to Hans Vestberg regarding how Verizon handles particular mobile broadband traffic. Thank you for your letter and the opportunity to provide additional information. Respectfully, the claims in the Wehe study you reference are inaccurate. We don't "throttle" or "inappropriately prioritize" internet traffic or video, and we don't discriminate against particular content or applications.

As we have said publicly, Verizon believes in and supports the open internet. To enable our consumer broadband customers to take advantage of all the internet has to offer, we have committed that:

- We will not block any legal internet content, applications, or services based on their source or content;
- We will not throttle or slow down any internet traffic based on its source or content;
- We will not accept payments from any company to deliver its traffic faster or sooner than other traffic on our consumer broadband service, nor will we deliver our affiliates' internet traffic faster or sooner than third parties'; and
- We will not prioritize traffic in a way that harms competition or consumers.

In short, our overriding commitment is to provide consumers with the high quality service and experience they expect from Verizon. To achieve this, none of our commitments precludes us

from reasonably managing our networks to ensure everyone has the broadband experience they demand and deserve.

First, I'd like to provide some background. Video is already the overwhelming majority of internet traffic, and it is forecast to grow exponentially.[1] Streaming video at higher resolutions consumes more data. For example, streaming video at standard definition (480p) can consume approximately 0.7-1GB of data per hour per user. Streaming at high definition (720p) can almost double that, consuming approximately 1-1.5GB of data per hour. And streaming at even higher levels of resolution (1080p and up) can double it yet again, consuming approximately 3GB of data per hour.[2] Because of these potentially high levels of data consumption, *content providers* often give customers the ability to manage how much data they consume. For example, Netflix offers customers four data usage settings to choose from, from "Low" or 0.3GB per hour per device through "High" or 3GB per hour for high definition and 7GB per hour for ultra-high definition.[3] For mobile users, Netflix offers users an "Automatic" setting, in which "Netflix will select a data usage setting that balances data usage with good video quality. Currently this will allow you to watch about 4 hours per GB of data."[4]

Separate from how content providers may manage the data they send, customers also make choices in their price plans as to how much data they want to purchase and how they want video to be presented on their devices. Thus, to enable our customers to choose their broadband experience and associated price, we offer them multiple options when they sign up for service. Consumers can select from a variety of plans depending on what best meets their needs. These plans are at different price points, and offer different services depending on how a consumer plans to use her mobile device. For example, some customers primarily talk and text and don't use their phones for streaming video. Other customers might want unlimited data on their mobile and want DVD quality video streaming, but don't use their phone very often as a hotspot. And still others may seek out HD-quality video streaming and cloud storage.

Offering customers the ability to stream video at different levels of resolution gives them the ability to choose what is important to them, and to manage their data and their experience accordingly. In our plans, we explain to our customers how their video traffic may be handled and at what resolution. For example, our "go unlimited" plan offers customers DVD quality streaming (480p) at a lower price.[5] Customers might also select plans such as our "beyond unlimited" and "above unlimited" that offer HD-Quality streaming video (720p on mobile

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[1] *See* Cisco Visual Networking Index (updated Nov. 28, 2018), https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-741490.html#_Toc529314172 (predicting that in the next five years, video will grow from its current 75% of internet traffic to 82%).
[2] *See*, *e.g.*, How can I control how much data Netflix uses?, Netflix Help Center, https://help.netflix.com/en/node/87.
[3] *See* Control Netflix data usage, Netflix Help Center, https://help.netflix.com/en/node/87.
[4] Control mobile data usage, Netflix Help Center, https://help.netflix.com/en/node/87.
[5] *See* https://www.verizonwireless.com/plans/unlimited/.

devices; 1080p on tablets), and additional 4G LTE data for mobile hotspot use.[6] Customers may also choose a plan that gives them a pre-set amount of data on a monthly basis with video resolution at 480p or 720p, depending on the plan.[7]

We strive to provide customers with choices about their services to enable the best experience when using our network, which is a shared resource among 100 million customers. As part of that commitment, we manage our network reasonably. And while an individual user's experience may vary depending upon many factors – including the plan they select, the network the customer is using, and their device[8] – we use non-discriminatory techniques to ensure we are delivering a good user experience for all customers. These include optimization technologies (such as video caching) that most efficiently allow available network capacity to benefit the greatest number of users. We also may optimize traffic by limiting the throughput speeds of video to result in the appropriate resolution video file being delivered to the customer.[9] We fully disclose our network management practices to customers,[10] and also advise customers that in times of and in areas experiencing congestion, users who exceed a disclosed amount of data may have temporarily slower speeds in order to make sure all users have a good experience.[11]

While we manage our network reasonably, we do not make any distinction based on the content of the video or the source website.[12] Additionally, we don't distinguish between one video provider and another, and we don't treat video differently based on, for example, whether it's coming from Amazon vs. Netflix vs. Apple vs. YouTube.

Separately, wholesale providers such as MVNOs may contract with us to resell wireless services. We negotiate directly with those providers as to how they want to handle internet traffic on the wireless service they purchase from us for their retail customers. Some wholesale providers choose options to limit the speed of all traffic (including video) as a way to control their costs; others may select different options.

The Wehe app does not appear to acknowledge this wide range in how content providers and customers choose to send and receive video. Nor does it seem to adapt for the differing wireless plans consumers may choose. In short, the assertions in the study aren't accurate and don't reflect customers' actual experiences.

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[6] *Id*.
[7] https://www.verizonwireless.com/support/broadband-services/ ("Verizon seeks to transmit video downloads or streams to smartphones at 480p or 720p, depending on the plan, and to devices with larger screens at 1080p, unless a different video resolution is disclosed in the description of a particular plan.")
[8] *See* https://www.verizonwireless.com/support/broadband-services/.
[9] *Id*.
[10] *Id*.
[11] *See* https://www.verizonwireless.com/plans/unlimited/.
[12] *See* https://www.verizonwireless.com/support/broadband-services/.

We believe our customers are entitled to the best mobile broadband experience and we strive each and every day to deliver it to them. We agree with you and strongly believe that providers shouldn't "throttle" or "discriminate" based on content – and, simply stated, we don't do it.

Please contact me if you need any additional information.

Sincerely,

Robert S. Fisher

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December 6, 2018

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The Honorable Ron Wyden
United States Senate
221 Dirksen Senate Office Building
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Re: Sprint Policies, Practices, and Disclosures Relating to Handling of Internet Traffic

Dear Senators Markey, Blumenthal, and Wyden:

I am writing in response to your November 15, 2018, letter to Michel Combes in which you express concern that mobile carriers may be inappropriately throttling and prioritizing internet traffic from common mobile apps without the knowledge of their customers. You explain that your concerns are based on reports by researchers who developed and are using the app Wehe to identify instances of cellular providers allegedly throttling video and communications services. According to your letter, the researchers have claimed to show that nearly every internet provider in the US throttles at least one streaming video provider, and that tests indicate throttling on Sprint for YouTube, Netflix, Amazon Prime, and Skype video calls.

Sprint does not throttle lawful internet traffic based on content, application or service, and does not single out YouTube, Netflix, Amazon Prime, or Skype for differential treatment. Sprint supports an open internet and understands that our customers demand fair access to all the content the internet has to offer. Sprint believes ensuring consumers have real choice among competing internet providers is the best way for policymakers to achieve their open internet objectives and is committed to working with lawmakers and the FCC toward that end.

As explained in more detail below, Sprint's customers demand different plans at different price points, some of which include different performance levels and/or data allocations for certain general internet uses such as video streaming. When plans contain different performance levels and/or data allocations, Sprint clearly communicates these attributes on plan advertising and collateral and on Sprint.com so that our customers can make informed decisions about which Sprint plans best fulfill their needs.

Sprint also engages in reasonable network management with the goal of delivering the best possible mobile broadband Internet access experience to our customers. These practices are content, application, and service neutral and are explained in detail on Sprint's website at www.sprint.com/networkmanagment (Sprint's Open Internet Information web page).

The following are responses to your specific requests regarding Sprint's handling of internet traffic:

a. Please provide a list of all applications or services that are subject to traffic discrimination.

Sprint does not discriminate in the delivery of internet traffic based on application or service.

To help meet customer demand for different price points and different performance tiers, Sprint offers a variety of plans so that our customers have access to the services that best suit their needs. Some of our plans may provide different performance characteristics for general types of traffic optimized for different user experiences. For example, some plans may come with standard DVD quality video streaming at one price, while providing an HD video experience for an additional charge. Similarly, some plans may limit gaming or audio streaming to standard or high definition. In some cases, users choose plans with data allocations for specialized uses like Wi-Fi hotspot, peer to peer file sharing, Virtual Private Network (VPN), and device tethering. Customers on these plans will experience reduced speed for those uses for the remainder of the billing period after exceeding their allotments. These data allocations are administered in a content, application, and service neutral manner.

b. When did your company put into practice policies to throttle or prioritize internet traffic for consumers? What is the purpose of these policies?

Sprint does not throttle or prioritize internet traffic based on content, application, or service.

However, as part of its reasonable network management strategy, Sprint has deployed a policy to help protect against the possibility that unlimited data plan customers that use high volumes of data may occupy an unreasonable share of network resources. In October 2015, Sprint launched Quality of Service (QoS) prioritization for customers on plans that provide unlimited quantities of data. Customers subject to QoS that also use more than a certain threshold of data (currently set at 50 GB for Sprint and 35 GB for Boost Mobile and Virgin Mobile customers) during a single billing cycle are – for the remainder of that billing cycle – de-prioritized at times and places where the availability of network resources is constrained as compared to other customers.

Another tool Sprint has more recently deployed to help improve the customer experience for the majority of customers is Sprint's Real Time Traffic Management System (RTTMS). When a Sprint site is resource constrained, RTTMS identifies the users consuming the most site resources, and reallocates a portion of the resources to other users engaged in less resource intensive activities. When RTTMS is activated, customers engaged in data intensive activities may experience slower speeds while users of the resource-constrained site that are not engaged in data intensive actives should expect a better experience than they would have on the site if RTTMS were not activated. Sprint's RTTMS is user, content, application, and service neutral and is intended to provide an improved experience for the majority of users when resources are constrained.

c. Do you inform customers about differentiation in the treatment of internet traffic, particularly video or communications service? If so, how? If no, why not?

Sprint communicates plan-specific attributes such as video streaming quality and high-speed or specialized-use data allocations in plan advertising and marketing collateral and on Sprint.com. For Sprint's network management practices, Sprint refers customers to Sprint's Open Internet Information web page.

d. Are consumers able to opt-in or opt-out of traffic differentiation? Does a customer's choice change the price or affect their service, such as data allocation or requiring a different plan?

As mentioned in response to ***Request a*** above, Sprint offers a variety of different plans with different data allocations and performance characteristics optimized to different user needs. To

ensure our customers have the information they need to make informed choices, Sprint communicates these attributes in plan advertising and collateral and on Sprint.com so that customers that want to purchase plans without data caps or with HD video streaming can do so.

e. Does your company implement traffic differentiation policies based on consumers' contract or the brand of service? If so, please describe which plans experience throttling or prioritization, including prepaid and lower-cost plans.

See responses to ***Requests a and d*** above for information on plan/contract specific attributes. In addition to maintaining different plans for different customer needs, Sprint also provides services through two value brands: Boost Mobile and Virgin Mobile USA. These brands are subject to the same network management practices as Sprint-branded services and Sprint does not prioritize one brand over another except that the threshold for application of QoS is 35 GB for Boost and Virgin unlimited customers as opposed to 50 GB for Sprint customers. As with Sprint-branded services, both Boost and Virgin offer a variety of plans optimized for different user needs. Boost and Virgin communicate the data allocation or performance characteristics offered with each plan on plan advertising and collateral and on their respective websites.

f. How do you determine which network traffic receives faster or slower treatment? Is it based on content, behavior, or IP address?

Sprint does not throttle or prioritize internet traffic based on content, application, or service.

To determine whether internet traffic may be subject to plan-based data allocations or a general performance tier such as SD video streaming, Sprint employs a leading, internationally-recognized vendor to identify the type of traffic on Sprint's network. The vendor provides Sprint with regular updates, which Sprint processes, to ensure traffic is appropriately managed.

g. Are applications or services provided notice regarding the throttling of their customers using your network? Does your company provide such companies the ability to avoid traffic discrimination, and if so, under what financial and operational conditions?

Sprint does not throttle or discriminate against internet traffic based on content, application, or service. Accordingly, Sprint does not have a process for notifying application or service providers or for contracting with edge providers to avoid throttling or discrimination.

h. How does your company engage in throttling or prioritization of services for subscribers of Mobile Virtual Network Operators (MVNOs) that use your company's network? Are these MVNOs aware of such throttling or prioritization?

Sprint does not distinguish between MVNO customers and Sprint customers in the delivery of internet traffic on the Sprint network.

Please do not hesitate to contact me if you have any questions.

Sincerely,

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December 6, 2018

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The Honorable Ron Wyden
221 Dirksen Senate Office Building
Washington, DC 20510

Re: November 15, 2018 Letter

Dear Senators Blumenthal, Markey, and Wyden:

Thank you for the opportunity to respond to your November 15 letter to John Legere, Chief Executive Officer of T-Mobile US, Inc. ("T-Mobile"), regarding T-Mobile's mobile broadband network management practices. T-Mobile is a long-standing supporter of Internet openness, and our practices comport with net neutrality principles. To resolve once and for all the rules of the road regarding net neutrality, T-Mobile also continues to support the adoption of federal legislation that would codify sensible, uniform net neutrality principles, while also placing consumer choice at the center of any net neutrality framework.

The centerpiece of T-Mobile's business is its pro-consumer "Un-carrier" approach to the mobile marketplace. The Un-carrier strategy has allowed T-Mobile to differentiate itself and win market share, expanding competition and innovation and reducing customer "pain points."

T-Mobile does not block, impair, or degrade lawful Internet traffic, nor does it improperly favor or disfavor any type of traffic *vis-à-vis* other types of traffic. Rather, T-Mobile implements accepted forms of reasonable network management that benefit consumers by expanding their access to all forms of content, preserving network resources for their use, and ensuring the best service for all customers on the network. The types of network management utilized by T-Mobile have been in place for years, and these practices have always been deemed permissible – not only under the light-touch

transparency-based regime set out in the Federal Communications Commission ("FCC's") 2018 *Restoring Internet Freedom Order*,[1] but also under the previous, more prescriptive rules the FCC adopted in 2015.

Moreover, as detailed below, T-Mobile is highly transparent regarding its open Internet and network management practices, which it discloses to current and prospective customers in numerous ways. These transparency practices provide the pro-consumer and pro-competition protections required under the FCC's *Restoring Internet Freedom Order* and prior iterations of the FCC's transparency rule. They ensure that consumers in the competitive mobile marketplace have information to make informed decisions regarding their broadband services. And these required disclosures also ensure that that the Federal Trade Commission can hold companies accountable for their public commitments.

Before answering your specific questions, we think it would be helpful to clarify several key terms used in your letter. First, your letter raises questions regarding "throttling." While T-Mobile continues to support the FCC's current light-touch regulatory approach, and continues to promote federal legislation addressing this topic, it is worth noting that even under the FCC's aggressive 2015 regime, "throttling" referred only to activities that degraded or impaired lawful Internet content, and did not encompass practices dictated by and consistent with consumer choice or reasonable network management.[2] T-Mobile does not do this – *i.e.*, it does not throttle traffic.

Second, your letter uses the terms "prioritization" and "discrimination." We understand your use of these terms to refer to favoring or preferring certain traffic associated with specific content, applications, or services over other content, applications, or services of the same type. T-Mobile does not engage in such activities. Nor does it engage in paid prioritization. With that said, mobile broadband providers, including T-Mobile, engage in some forms of prioritization pursuant to reasonable network management practices. Indeed, prioritization is built into the LTE standard to help ensure that customers' needs are satisfied. This type of "prioritization" has always been recognized as a lawful and reasonable.

It is also important to note at the outset that statements in the Wehe-based "Executive Summary," which your letter references, reflect some fundamental misunderstandings regarding the operation of wireless networks.[3] The summary fails to acknowledge that wireless providers must actively manage their networks to ensure the

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[1] *See generally Restoring Internet Freedom*, Declaratory Ruling, Report and Order, and Order, 33 FCC Rcd 311 (2018)

[2] *Protecting and Promoting the Open Internet*, Report and Order on Remand, Declaratory Ruling, and Order, 30 FCC Rcd 5601, 5652 ¶ 122 (2015).

[3] The Executive Summary purports to reflect research conducted by professors at Northeastern University and the University of Massachusetts. The underlying report itself has not, to T-Mobile's knowledge, been released.

highest-quality service for their customers. The fact that mobile providers engage in these practices is common knowledge, and such management has uniformly been found to be necessary, desirable, and lawful. Further, the Summary fails to acknowledge that content providers *themselves* also manage the rates at which their content is transmitted.[4] Rather, the Summary criticizes the ISP for any variation in network throughput, and wrongly assumes that any variation is illegitimate.

The Executive Summary also misstates the scope of the term "throttling," mistakenly asserting that it encompasses any type of traffic optimization, no matter whether it is selected by the customer or is associated with reasonable network management. As noted above, this is wrong. And the allegation concerning what the study calls "Boosting" on the T-Mobile network is likewise incorrect. What the Summary describes is simply a practice designed to ensure that the user experiences consistently high quality of service, which operates by allowing the user's device to quickly buffer video when the user first accesses the content.

In short, the Wehe results do not provide a valid basis for evaluating today's mobile data plans – and importantly do not support any claim that T-Mobile's operations are inconsistent with its commitment to supporting an open Internet.

Here are responses to the specific questions posed in your letter.

a. Please provide a list of all applications or services that are subject to traffic discrimination.

As discussed above, T-Mobile does not discriminate between or among different types of traffic on its network. T-Mobile engages in reasonable network management, including optimization of streaming video traffic. Optimization has been one of T-Mobile's most popular customer-friendly innovations. Video optimization in fact allowed T-Mobile to revolutionize the mobile wireless market by encouraging customers to stream video at will, without negative effect on the viewer's experience or pocketbook, and also without negative network impacts. The results speak for themselves: use of streaming video on the T-Mobile network has exploded, with customers viewing more content than ever.

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[4] Netflix, for example, optimized video for Verizon's and AT&T's mobile customers, limiting video traffic to 360p (well *below* the resolution provided under T-Mobile's optimization program) – and did so for more than *five years* before it was even noticed. Ryan Knutson & Shalini Rahachandran, *Netflix Throttles Its Own Videos on AT&T, Verizon Networks*, WALL ST. J. (Mar. 24, 2016, 10:55 PM), http://www.wsj.com/articles/netflix-throttles-its-videos-on-at-t-verizon-phones-1458857424 ("The popular video service said Thursday that for more than five years it has limited its video speeds to most wireless carriers across the globe"); *see also* Mike Snider, *Netflix Throttling Video for AT&T, Verizon Users*, USA TODAY (Mar. 25, 2016, 6:01 PM), http://www.usatoday.com/story/tech/news/2016/03/25/netflix-throttling-video-t-verizon-users/82248762/.

Such optimization conserves network resources while preserving a highly satisfying viewing experience and giving more choices to customers, improving overall network efficiency and performance, and also enhancing the service experience for all customers. Thus, T-Mobile data plans transmit video content at rates optimized for the smaller screens of mobile devices. A customer using a plan subject to video optimization has freely chosen that plan, with the benefit of public disclosures regarding the plan's particulars. Optimization on T-Mobile's network is also content-agnostic, applying equally to all detected video streams. Indeed, as noted above, leading video providers *themselves* optimize video by reducing resolution to accommodate throughput – often without the robust disclosures provided by T-Mobile. Video optimization has always been permitted under federal law and regulation.

In addition, T-Mobile prioritizes traffic for certain T-Mobile-branded plans before the data of customers on non-T-Mobile-branded services, and users who have consumed more than 50 GB in a single billing cycle (35 GB for Metro by Mobile customers) will have their data usage prioritized below the data usage of other customers at times and at locations where there are competing customer demands for network resources during the reminder of that cycle, which may result in slower data speeds. Where the network is lightly loaded in relation to available capacity, a customer whose data is prioritized higher than other traffic will notice little, if any, effect from having higher priority. This will be the case in the vast majority of times and locations. Customers may notice reduced speeds in comparison to customers with a higher priority during times/places of network resource contention. Again, these are accepted reasonable network management practices – and again, these practices are publicly disclosed.[5]

b. When did your company put into practice policies to throttle or prioritize internet traffic for consumers? What is the purpose of these policies?

As discussed above, T-Mobile does not engage in such practices. T-Mobile does engage in transparent and publicly disclosed reasonable network management, which has always been permitted under federal law and regulation.

c. Do you inform customers about differentiation in the treatment of internet traffic, particularly of video or communications services? If so, how? If no, why not?

T-Mobile is committed to transparency and disclosure. It informs customers and content providers regarding its terms and conditions of service,[6] its practices and how it

[5] This type of "prioritization" does not favor or prefer any type of content, application, or service over any other. Rather, it is a form of reasonable network management that has always been understood to be reasonable and lawful.

[6] All T-Mobile customers are asked to review and agree to these terms and conditions when they sign up for service.

manages its broadband network.[7] We have included examples in the attached Appendix. As these excerpts make clear, T-Mobile discloses its practices in depth, and in multiple ways.

d. Are customers able to opt-in or opt-out of traffic differentiation? Does a customer's choice change the price or affect the service, such as data allocation or requiring a different plan?

Customer choice has always been central to T-Mobile's Un-carrier approach which puts such choice at the forefront of its customer relationships. Video optimization on T-Mobile's network is customer-selected. In addition, T-Mobile pioneered the elimination of long-term service contracts and early termination fees, so customers are free to terminate or switch plans (or even providers) without penalty should they decide they prefer different features or functions. In the highly competitive wireless marketplace, T-Mobile must fully satisfy its customers to win and keep them.

e. Does your company implement traffic differentiation policies based on a consumer's contract or the brand of service? If so, please describe which plans experience throttling or prioritization, including prepaid and lower-cost plans.

T-Mobile ended use of long-term service contracts in 2013, another industry-changing initiative. T-Mobile does not throttle or otherwise improperly discriminate between or among traffic streams. As described above,[8] customers may experience video optimization or other network management practices in different contexts on different plans. As also discussed above, T-Mobile clearly discloses its plans' features and network management practices to consumers. T-Mobile's plans therefore are all premised on consumer choice. They have, moreover, proven extremely popular.

f. How do you determine which network traffic receives faster or slower treatment? Is it based on content, behavior, or IP address?

As discussed above, T-Mobile does not impair or degrade traffic on its network, nor does it improperly favor or disfavor specific types of traffic. T-Mobile optimizes streaming video traffic. Optimization on T-Mobile's network is content-agnostic. Again, this optimization does not impair or degrade the experience of a consumer viewing streaming video on a mobile device. Rather, it is an accepted reasonable network management practice that has always been deemed lawful and has been extremely popular with our customers.

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[7] For further details, please see the Appendix, *infra*.

[8] *See* Response to Question a.

T-Mobile

g. Are applications or services provided notice regarding the throttling of their customers using your network? Does your company provide such companies the ability to avoid traffic discrimination, and if so, under what financial and operational conditions?

Again, T-Mobile does not throttle traffic on its network, and does not improperly discriminate between or among different types of traffic on its network. As detailed above and in the attached Appendix, T-Mobile publicly discloses its terms and conditions of service and its network management practices to consumers and edge providers on its website and elsewhere.

h. Does your company engage in throttling or prioritization of services for subscribers of Mobile Virtual Network Operators (MVNOs) that use your company's network? Are these MVNOs aware of such throttling or prioritization?

MVNOs that rely on T-Mobile's network have entered into confidential enterprise contracts with T-Mobile, which reflect bargained-for agreements between the parties. Network management practices can vary from MVNO to MVNO, but are generally of the same type as those that T-Mobile publicly discloses in connection with its various brands and service offerings. We note, moreover, that even before the FCC's prescriptive 2015 rules were repealed, they addressed only mass-market services provided by ISPs to their end users, not commercial business relationships.

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Thank you again for the opportunity to address these issues.

Sincerely,

Tony Russo

Anthony Russo
Vice President, Federal Legislative Affairs
T-Mobile US, Inc.

T-Mobile

Appendix: Examples of T-Mobile's Network Management Disclosures

- All advertisements for T-Mobile rate plans (distributed through TV, radio, print, etc.) disclose that video typically streams at DVD quality (480p), that T-Mobile prioritizes traffic for certain T-Mobile-branded plans before the data of customers on non-T-Mobile-branded services, and that users who have consumed more than 50 GB in a billing cycle will have their data usage prioritized below the data usage of other customers at times and at locations where there are competing customer demands for network resources, which may result in slower data speeds.

- T-Mobile's "Plans" page, one click away from www.t-mobile.com, states that T-Mobile's offerings allow customers to "Stream unlimited entertainment," with "[v]ideo at DVD-quality, 480p."[A1]

- T-Mobile's "Open Internet" web page, also one click from T-Mobile's homepage, states:

  > Many of our plans include video optimization features which, when connected to the cellular network, deliver a DVD quality (typically 480p) video experience at up to 1.5Mbps with minimal buffering while streaming. Customers may choose a plan where this feature is always enabled (T-Mobile ONE), with the option to add on a native-resolution video feature for an additional charge, disabling optimization on device ("HD Day Pass") or on device and via tethering (T-Mobile ONE Plus™). Customers may also have plans that offer video optimization as a customer-controlled feature that can be disabled or enabled at any time ('Binge On'), so that when enabled, their high-speed data lasts longer.

  It further provides that "T-Mobile-branded plans except T-Mobile Essentials are prioritized before the data of customers on non-T-Mobile-branded services such as Metro by T-Mobile" and that users who have consumed more than 50 GB in a billing cycle "will have their data usage prioritized below the data usage (including tethering) of other customers at times and at locations where there are competing customer demands for network resources, which may result in slower data speeds."[A2]

- T-Mobile's "Open Internet" page further explains the effects of prioritization:

  > Where the network is lightly loaded in relation to available capacity, a customer whose data is prioritized higher than other traffic will notice little, if any, effect from having higher priority. This will be the case in the vast majority of times and locations. Customers may notice reduced speeds in comparison to customers with a higher priority during network congestion. At times and at locations where the

[A1] T-Mobile, *Bring Your Family to T-Mobile*, https://www.t-mobile.com/cell-phone-plans (last visited Dec. 5, 2018).

[A2] T-Mobile, *Policies: Open Internet*, https://www.t-mobile.com/responsibility/consumer-info/policies/internet-service (last visited Dec. 5, 2018).

> network is heavily loaded in relation to available capacity, these customers will likely see significant reductions in data speeds, especially if they are engaged in data-intensive activities. Customers should be aware that these practices may occasionally result in speeds below those typically experienced on our LTE networks, including a greater likelihood of reduced speeds in the lower end of the speed ranges. Depending on the extent of network congestion, these customers may notice more frequent impacts to some video streaming, file downloads, and other high-bandwidth activities.[A3]

- Counter signage in T-Mobile retail stores provides similar disclosures concerning video streaming optimization and prioritization to those found on T-Mobile's Open Internet page.

- T-Mobile's "terms and conditions," which are provided both online and in paper copies available to all consumers, state:

> We deploy streaming video optimization technology in our network as a feature on qualifying Rate Plans, which also helps to ensure that available network capacity can be utilized to provide a good service experience for the maximum number of customers. The optimization technology is intended to manage data usage on the network, reduce the risk of streaming video stalling and buffering on mobile devices, and reduce the amount of data consumed for streaming video, making room for other users to enjoy higher speeds and a better network experience overall. Video optimization occurs only to data streams that are identified by our packet-core network as video or where the video provider has chosen to establish protocols to self-optimize their video. While many changes to streaming video files are likely to be indiscernible, the optimization process may impact the appearance of the streaming video as displayed on a user's Device. Customers may have Rate Plans where this feature is always enabled (e.g., "T-Mobile ONE"), with the ability to add a feature disabling optimization to foster native-resolution video capability. Alternatively, customers may choose Rate Plans that offer video optimization as a customer-controlled feature (e.g., "Binge On"). When this feature is enabled, on-device video is typically delivered at DVD quality (up to 1.5 Mbps speeds, generally 480p).

  It also notes that, "[t]o provide the best possible experience for the most possible customers on T-Mobile branded plans, we prioritize the data usage of a small percentage of our heavy data users, specifically those using more than 50GB of data in a billing cycle below that of other customers" and that "[w]e also prioritize the data of customers who choose certain rate plans after the data for other T-Mobile branded rate plans, but before customers using more

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[A3] *Id.* As noted above, this type of "prioritization" differs from the "prioritization" to which your letter refers. T-Mobile does not favor or prefer any type of content, application, or service over other types. Rather, the forms of prioritization described here operate only during times of network contention, and are invoked based on the customer's specific service plan and whether the customer has used more than 50 GB of data during the billing period at issue.

than 50GB of data in a billing cycle." [A4]

- T-Mobile's online broadband consumer "label" informs consumers:

  > T-Mobile utilizes streaming video optimization technology, which improves overall data usage management of the network, resulting in greater network speeds and throughput for other customers using data because less network payload is dedicated to video. For video that is not self-optimized by the video provider, T-Mobile adjusts the delivery rate for streaming video to up to 1.5Mbps, which causes the video to lower resolutions and use less data.[A5]

- Metro by T-Mobile's Network Disclosures – part of the company's readily available Terms and Conditions[A6] – make clear that "Metro by T-Mobile utilizes streaming video optimization technology," specifically noting that "we adjust delivery rate for streaming video up to 1.5 Mbps, which causes the video to be delivered in lower resolution and to use less data."[A7] The disclosures further explain how Metro "mange[s] the flow of data on its network" (including via use of "network management practices" that "do not discriminate" and operate "on a content-agnostic basis, such as caching less data and prioritizing data usage"). It also discloses that "[h]eavy data users, specifically Metro by T-Mobile customers who use more than 35GB of data in a month will have their data usage prioritized below the data usage (including tethering) of other customers at times and at locations where there are competing customer demands for network resources, which may result in slower data speeds."

- Metro by T-Mobile's online broadband consumer "label" also informs consumers: "Metro by T-Mobile utilizes streaming video optimization technology throughout its network, which improves overall data usage management of the network, resulting in greater network speeds and throughput for other customers using data because less network payload is dedicated to video. Metro by T-Mobile optimizes data by defaulting the delivery rate for streaming video to up to 1.5Mbps, which causes the video to lower resolutions and use less data."[A8]

- All advertisements for Metro by T-Mobile rate plans (distributed through TV, radio, print, etc.) disclose that video typically streams at DVD quality (480p), and that users who have

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[A4] T-Mobile, *T-Mobile Terms & Conditions Effective as of August 22, 2018*, https://www.t-mobile.com/templates/popup.aspx?PAsset=Ftr_Ftr_TermsAndConditions (last visited Dec. 5, 2018); *see also supra* note 5 (discussion regarding the use of the term "prioritize").

[A5] T-Mobile, *Broadband Facts: Mobile Broadband Consumer Disclosure*, https://www.t-mobile.com/content/dam/t-mobile/assets/pdf/T-Mobile_Broadband_Disclosure_Label_August_2018.pdf (last visited Dec. 5, 2018).

[A6] Metro by T-Mobile, *Terms and Conditions – Network Disclosure*, https://www.metropcs.com/content/metro/en/desktop/metro/terms-conditions/network-disclosure.html (last visited Dec. 5, 2018).

[A7] *Id.*

[A8] Metro by T-Mobile, *Broadband Facts: Mobile Broadband Consumer Disclosure*, https://www.metropcs.com/content/dam/mpcs/pdf/MetroBroadband-Label.pdf (last visited Dec. 5, 2018).

consumed more than 35 GB in a billing cycle will have their data usage prioritized below the data usage of other customers at times and at locations where there are competing customer demands for network resources, which may result in slower data speeds. In addition, Metro by T-Mobile discloses in advertising that Metro by T-Mobile customers may notice reduced speeds versus T-Mobile customers due to data prioritization.

- Counter signage in Metro by T-Mobile retail stores provides similar disclosures concerning video optimization and prioritization to those found on Metro by T-Mobile's Network Disclosures.

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