November 20, 2014

Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: Notice of Oral *Ex Parte* Presentation
Protecting and Promoting the Open Internet, GN Docket No. 14-28,
Framework for Broadband Internet Service, GN Docket No. 10-127

Dear Ms. Dortch:

On November 18, 2014 Michael Calabrese of the New America Foundation's Open Technology Institute (OTI) and Andrew Afflerbach, CEO and Director of Engineering at CTC Technology and Energy (CTC) met with Priscilla Delgado Argeris and David Goldman, wireline and wireless legal advisors, respectively, to Commissioner Jessica Rosenworcel, concerning the above-referenced proceeding.

We briefed staff on two separate issues: First, on the attached engineering study, prepared by CTC, showing that LTE mobile broadband providers have the capability today to implement strong network neutrality rules that prohibit any discriminatory treatment of third-party applications or content. We asserted that the study demonstrates the fallacy of wireless industry claims that adherence to strong network neutrality protections for consumers and for edge providers is not technically feasible for mobile carrier networks. Second, OTI's representative summarized and discussed OTI's November 10 *ex parte* filing on Title III legal authority.[1]

[1] Letter from Michael Calabrese, New America's Open Technology Institute, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket Nos. 14-28, 10-127 (filed Nov. 10, 2014).

LTE Networks are Technically Capable of Adhering to Strong Net Neutrality Protections

The CTC study, commissioned by OTI, concludes that Long Term Evolution (LTE, or 4G) technology is capable of managing *moderate congestion* through prioritization protocols that are application-agnostic (e.g., user-directed prioritization) and is capable, when faced with *severe congestion*, of prioritizing delay-sensitive traffic while avoiding discrimination among like applications, content, or services and without favoring carrier-sponsored or carrier-affiliated applications, content or services.

The study acknowledges, as OTI has in its comments, that because of unpredictable and localized surges in demand, such as a major sporting event, the dynamic prioritization of delay-sensitive applications like video chat and VoIP calls can be a reasonable means of ensuring quality of service in a capacity-constrained network. Nevertheless, and contrary to the claims of mobile carriers, the study demonstrates that LTE technology has the capability now to manage even situations of severe network congestion by ***treating like applications alike, without favoring carrier-sponsored or carrier-affiliated applications, content or services.*** As an example, the study describes in detail how LTE networks could, as needed in severely congested cells or sectors, prioritize the category of VoIP applications ("OTTphone") in a manner that both treats like applications alike *and* provides third party providers essentially the same quality of service as comparable carrier-provided or carrier-affiliated applications (e.g., VoLTE).

Of course, at most times and places, the capacity of mobile broadband networks is ***not congested*** and there is little if any need to prioritize any user or use. In fact, the report observes that nearly all mobile carrier traffic today is carried on a "best effort" basis, including streaming video applications.

The study shows that ***moderate congestion*** can be handled with application-agnostic prioritization, such as by "throttling" certain categories of users, or by offering user-directed prioritization that allows consumers to choose to pay for a premium speed tier. As the FCC declared in its 2010 Open Internet Report & Order, "[u]se-agnostic discrimination (sometimes referred to as application-agnostic discrimination) is consistent with Internet openness, because it does not interfere with end users' choices about which content, applications, services, or devices to use. Nor does it distort competition among edge providers."[2] The Commission suggested "end-user control" (i.e., user-directed prioritization) as a reasonable tool to manage network capacity constraints.[3] LTE technology permits carriers to offer differentiated tiers of service to

[2] Report and Order, *In the Matter of Preserving the Open Internet*, GN Docket No. 09-191, FCC 10-201 (Dec. 23, 2010), at ¶ 73 ("Use-Agnostic Discrimination"), *available at* https://apps.fcc.gov/edocs_public/attachmatch/FCC-10-201A1.pdf (accessed Nov. 12, 2014).

[3] *Id.* at ¶ 71. The Commission stated: "Maximizing end-user control is a policy goal Congress recognized in Section 230(b) of the Communications Act, and end-user choice and control are touchstones in evaluating the reasonableness of discrimination. . . . [E]nabling end users to choose among different broadband offerings based on such factors as assured data rates and reliability, or to select quality-of-service enhancements on their own

subscribers that can include a "premium" service that prioritizes an individual subscriber's traffic in times of congestion. For example, earlier this year the Austrian mobile carrier Drei announced it would offer this user-directed prioritization at varying premium service tiers beginning in June 2015.[4]

Even when faced with ***severe congestion***, the study details how LTE networks have the capability to dynamically prioritize delay-sensitive applications in a completely non-discriminatory fashion that does not favor carrier-affiliated content or services. Therefore, if the FCC determines it is "reasonable network management" to prioritize delay-sensitive applications at times of severe congestion, the study shows that the Commission can also confidently determine it is unreasonable for LTE network providers to do so in a manner that does not "treat like applications alike." The study outlines an approach that can be implemented now using standards-compliant LTE technologies and which could entail the following steps and safeguards (see pp. 5-6):

1) Standards bodies or another industrywide process approved by the FCC create generic QoS profiles related to latency sensitivity or other attributes that need similar QoS treatment, and make them open to all like applications, such as toll-quality voice and video communications.

2) Mobile carriers define the type of network management each profile will receive, understanding that the management may be dynamic and complex, but that all like applications within the profile will receive the same treatment.

3) The FCC or standards bodies create a streamlined process through which edge providers can identify their content and applications to the wireless carriers for treatment according to a QoS profile, with best-effort packet inspection as the fallback for edge providers that do not affirmatively participate.

4) The FCC or an industry standards body creates a process, such as a periodic audit of active QoS rules, to transparently verify that the defined management structure is being implemented consistently. At a minimum, this should be triggered by a complaint.

5) The FCC or standards bodies approved by the Commission revisit the profiles regularly, and revisit the need for QoS and prioritization as spectrum efficiency increases and other technological improvements enter the marketplace.

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connections for traffic of their choosing, would be unlikely to violate the no unreasonable discrimination rule, provided the broadband provider's offerings were fully disclosed and were not harmful to competition or end users."

[4] "LTE-Leistungsklassen statt Drosselung?" *LTE-Anbieter.info*, October 17, 2014, http://www.lte-anbieter.info/lte-news/lte-leistungsklassen-statt-drosselung (accessed Nov. 12, 2014).

In Section 3.8, the report also explains why the Open Internet protections that apply to mobile networks should certainly be no less strict for carrier-grade Wi-Fi networks that are integrated with mobile networks, whether for data traffic offload or other purposes.[5] Section 3.9 of the report discusses the importance of transparency and outlines strategies to verify that wireless carriers are complying with the rules.

Finally, we observed that the CTC study reinforces the widespread support among comments in the record for the view that the Commission's proposed exception for reasonable network management provides sufficient flexibility to accommodate the unique constraints or challenges of any particular network technology, whether fixed or mobile.[6] The 2010 *Order* adopted a definition of "reasonable" network management that could accommodate any unique constraints faced by mobile carriers, particularly with respect to managing congestion.[7] The same fundamental principles and obligations should apply to *all* broadband ISPs, even if the resulting rules are *applied* differently based on what is reasonable network management for a particular Internet access technology. The only issue would seem to be whether *all* ISPs should be required to manage congestion *in a competitively neutral manner* and whether there is a reasonably feasible way for mobile carriers to do so.

Section 332(c) presents no barrier to regulating mobile broadband as CMRS

Concerning the separate issue of legal authority, OTI's representative explained that Section 332(c) presents no barrier to treatment of mobile broadband as a common carrier service.[8] Congress, in subsection (d) of that same statutory provision, explicitly left to the Commission's discretion the determination and definition of what qualifies as an "interconnected service," or as the "functional equivalent of a commercial mobile service." Mobile broadband is both the functional equivalent of what a commercial mobile service was in 1993 and, in addition, it is quite literally interconnected with all users of the public switched telephone network.[9]

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[5] OTI's comments and reply comments in this proceeding proposed that the Commission explicitly apply open Internet protections to commercial operations on unlicensed spectrum by *any* "broadband Internet access service" (whether primarily fixed or mobile) *and* adopt the same protections in Part 15 of the Commission's rules as a general condition of operation. At a minimum, the definitions that determine any difference in the scope of open Internet protections between different types of networks should state that a broadband connection over Wi-Fi that is integrated into a fixed *or mobile* ISP's offering is nomadic (not mobile) and should be subject to the same open Internet protections as a "fixed" service. *See* Comments of New America Foundation's Open Technology Institute, GN Docket No. 14-28, GN Docket No. 10-127 (July 17, 2014), at 53-56.

[6] *See* Reply Comments of New America Foundation's Open Technology Institute, GN Docket No. 14-28, GN Docket No. 10-127 (Sept. 15, 2014), at 32.

[7] *See 2010 Open Internet Order* at ¶ 82 ("A network management practice is reasonable if it is appropriate and tailored to achieving a legitimate network management purpose, taking into account the particular network architecture and technology of the broadband internet access service").

[8] Letter from Michael Calabrese, New America's Open Technology Institute, to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket Nos. 14-28, 10-127 (filed Nov. 10, 2014).

[9] *See id.* at 3.

Verizon and CTIA insist that mobile broadband Internet access does not meet the statutory definition of CMRS and is therefore immune from common carrier regulation.[10] Mobile providers argue that Congress intended to forever limit the services defined as CMRS to services "interconnected with the public switched network (as such terms are determined by regulation by the Commission)"[11] and limited to interconnection with the "public switched *telephone* network."[12]

Even in 1993, early in the era of dial-up Internet access, it would have been extraordinarily shortsighted if Congress had tied the Commission's hands to such a degree that only wireless services directly interconnected with the telephone system and using the North American Numbering Plan (NANP) could be regulated as a common carrier for any purpose. Fortunately, Congress was not so nearsighted. The OTI representative explained why the Verizon and CTIA arguments misinterpret both the statute and the legislative history in three ways that all support the Commission's authority to regulate mobile broadband Internet access services as CMRS.

First, and most importantly, Congress expressly authorized the Commission to determine if wireless services are "***the functional equivalent of a commercial mobile service, as specified by regulation by the Commission***."[13] This "functional equivalent" language was added in Conference, along with one example directing the Commission to consider whether the wireless service is offered broadly to the public over a broad geographic area.[14]

There can be little doubt that today – and increasingly – mobile broadband Internet access service is "the functional equivalent" of what a "commercial mobile service" was in 1993. Like mobile voice, mobile broadband service is functionally an "interconnected service" that simply uses a different, more global numbering system (IP addressing) "that gives its customers the

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[10] *See, e.g.*, CTIA Reply Comments at 41.

[11] 47 U.S.C. § 332(8)(d)(2). Section 332(8)(d) provides, in part:

> For purposes of this section-
> (1) the term "commercial mobile service" means any mobile service (as defined in section 153 of this title) that is provided for profit and makes interconnected service available (A) to the public or (B) to such classes of eligible users as to be effectively available to a substantial portion of the public, as specified by regulation by the Commission;
> (2) the term "interconnected service" means service that is interconnected with the public switched network (as such terms are defined by regulation by the Commission) or service for which a request for interconnection is pending pursuant to subsection (c)(1)(B) of this section.

[12] Verizon Legal Analysis at 13 (emphasis in original).

[13] 47 U.S.C. § 332(d)(3) (emphasis added). Section 332(d)(3) defines "private mobile service" as "any mobile service (as defined in section 153 of this title) that is not a commercial mobile service or the functional equivalent of a commercial mobile service, as specified by regulation by the Commission."

[14] *See* Conference Report, Omnibus Budget and Reconciliation Act of 1993, H.R. Rep. 103-213, 103d Congress, 1st Session (Aug. 4, 1993), at 496 ("1993 Conference Report"). The Conference Report stated:

> Further, the definition of "private mobile service" is amended to make clear that the term includes neither a commercial mobile service nor the functional equivalent of a commercial mobile service, as specified by regulation by the Commission.

capability to communicate to or receive communications from all other users"[15] of the Internet, as well as all other users of the "public switched *telephone* network" through the use of VoIP applications that interconnect with the telephone system and NANP. Subscribers can connect with all other subscribers – whether using the NANP, or using the public IP addressing system.

In addition, mobile *phone* providers, such as Verizon, are increasingly integrating their traditional CMRS telephone service with their mobile broadband service, with voice traffic sharing network capacity with all other Internet traffic, and VoLTE functioning (at least from a consumer perspective), as just another data application on the mobile network. Increasingly carriers such as AT&T are not even charging separately for voice minutes – or for a voice service – but offering a single integrated data plan (e.g., AT&T's Family Share Plan).

In other words, mobile broadband is "the functional equivalent" of CMRS (as an "interconnected" and "public switched network," using IP addressing) and, in addition, is literally interconnected with the traditional PSTN. On a mobile broadband connection, a consumer today can call any telephone number using the NANP. It shouldn't matter that a bit of software enables this interconnection (a VoIP application) any more than the fact that a handset or switching protocols in the carrier network have always been required to connect a mobile telephone call.

An additional virtue of this approach to updating the classification of mobile broadband Internet access is that the Commission's decision would be an interpretive ruling that applies Section 332(d)(3) to determine if in 2014 mobile broadband is the "functional equivalent" of CMRS. It would not be promulgating a new rule and therefore no further notice or comment is required. As Public Knowledge recently observed, just as the Commission originally found without notice or comment that mobile broadband did not meet the CMRS definition in its 2007 Wireless Declaratory Order, "to clarify the application of a statutory term is the essence of an 'interpretive' rather than a 'legislative' rule, requiring no notice or comment."[16] Moreover, the NPRM in this proceeding did provide clear notice and request comment on the option of reclassifying mobile broadband Internet access services as a telecommunications service under Title II as well as legal authority under Title III.[17]

Second, in Section 332(d)(2) Congress expressly provided that ***the terms "interconnected service" and "interconnected with the public switched network" are to be "defined by***

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[15] Declaratory Ruling, *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Wireless Networks*, 22 FCC Rcd 5901, ¶ 45 (2007) ("Wireless Declaratory Order").

[16] Notice of *Ex Parte* Communication, Public Knowledge, *Protecting and Promoting the Open Internet*, GN Docket Nos. 14-28, 10-127 (Nov. 7, 2014), at 5.

[17] *See Ex Parte* Letter of Marvin Ammori, *Protecting and Promoting the Open Internet*, GN Docket Nos. 14-28, 10-127 (Sept. 25, 2014) ("Marvin Ammori *Ex Parte*"), at 2-3, which includes several relevant excerpts from the NPRM, including specific references to Title III and to Section 332(c)(1).

regulation by the Commission." The Conference Report adopted the Senate definitions and noted that unlike the House version, "the Senate definition expressly recognizes the Commission's authority to define the terms used in defining 'commercial mobile service.'"[18]

Third, Congress implicitly reinforced the Commission's discretion to update the statutory definition of "interconnected with the public switched network" ***by expressly deleting the word "telephone" from Section 332's references to "public switched network."*** Contrary to CTIA's assertion in at least one *ex parte* filing, the 1993 Conference Report does not suggest that "the term 'public switched network' [is] interchangeable with the term 'public switched telephone network' (PSTN)."[19] Quite the opposite is true. The Conference Report suggests that Congress was anticipating *advanced* networks that would also provide data and Internet access services and wanted to give the expert agency discretion to update the definitions and classifications in the future. The House version used the term "public switched *telephone* network."[20] However, as noted above, the Conference adopted the Senate version, which deleted the word "telephone." The Conference Report states that "[t]he Senate Amendment defines 'interconnected service' as a service that is interconnected with the public switched network . . . ."[21]

When it implemented the 1993 law, the Commission defined the term "public switched network" to mean "[a]ny common carrier switched network . . . that uses the North American Numbering Plan in connection with the provision of switched services."[22] This is true as far as it goes – and continues to be relevant to the plain old telephone service. Nonetheless, it does not preclude the Commission from using its statutory authority under Section 332(d)(2) to expand on the definition to reflect current realities. As at least one commenter has proposed, the Commission can choose to update its regulatory definition of "interconnected service" to "include Internet Protocol addresses as an alternative numbering scheme."[23] As noted above, since the statute does not limit the Commission's definition of "public switched network" to one

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[18] 1993 Conference Report at 496.

[19] *Ex Parte* Letter for Meeting with Jonathan Sallet, et al., CTIA, *Protecting and Promoting the Open Internet*, GN Docket Nos. 14-28, 10-127 (Oct. 17, 2014), at 2. Verizon makes precisely the same claim in its recent legal white paper, incorrectly stating that the Conference Report, at 496, specifically references the "public switched *telephone* network." *See* Verizon Legal Analysis at 13 (emphasis in original). As explained just below, the Conference adopted the Senate Amendment, which drops the word "telephone' from "public switched network." *See* 1993 Conference Report at 496. Verizon then erroneously claims that the House language (which was dropped in Conference) derived from Rep. Rick Boucher's H.R. 1312, "The Local Exchange Infrastructure Modernization Act," which Boucher said at the time was "designed to ensure the broad availability of an advanced *telephone* network." Verizon Legal Analysis at 14 [citation omitted]. However, Rep. Boucher's H.R. 1312 was strictly a wireline bill containing no provision or language that presages or tracks any provision or language in Section 332.

[20] 1993 Conference Report at 495.

[21] *Id.* at 496.

[22] 47 C.F.R. § 20.3.

[23] Comments of Vonage, *Protecting and Promoting the Open Internet*, GN Docket Nos. 14-28, 10-127 (July 15, 2014), at 43-44.

that uses the NANP, an update could add the rather self-evident notion that in 2014 (unlike 1993) the Internet and its IP addressing system is now the predominant network that gives subscribers the ability to communicate with all other users including, increasingly, for telephony.

The three statutory points above all indicate Congressional intent to give the Commission considerable discretion to define, assess and update the meaning of "commercial mobile service." This is further reinforced by the fact that the authors of Section 332 were at the time thinking of the telephone system, and the optical fiber that could supersede it in the coming decades, as the platform for "advanced" networks that would also offer high-speed Internet access (and not just telephone service). It is important to recall that in 1993, Internet access was via dial-up modems and phone lines, which at that time considered foundational elements for what the Clinton Administration called the emerging "information superhighway."

In short, although mobile broadband Internet access was unknown at the time, Congress in 1993 was keenly aware of the need to extend the utility of the "public switched network" beyond telephony to high-speed Internet access, which accounts for the several changes in the 1993 Conference Report that expanded the discretion of the Commission to define, assess and update the appropriate classification of wireless networks.

Finally, if the Commission does reclassify broadband Internet access services as telecommunications, an interpretive ruling that finds mobile broadband is the "functional equivalent of a commercial mobile service" under Section 332 would also remedy the potential statutory contradiction that the Commission identified in its 2007 Wireless Declaratory Order. The Order explained that "Congress noted that the definition of 'telecommunications service' was intended to include commercial mobile service."[24] In other words, if mobile broadband is a "telecommunications service," then it must also be CMRS or a statutory contradiction results. This is true because while Section 3 of the Act *requires* common carrier treatment of a telecommunications service, Section 332(c)(2) *prohibits* common carrier treatment unless the wireless service satisfies the definition of "commercial mobile service" in Section 332(d)(1).[25]

In its forthcoming Open Internet order, the Commission can avoid this potential statutory contradiction – and maintain consistent regulatory treatment – by reclassifying mobile broadband Internet access as a "telecommunications service" and also find it to be an "interconnected service" under Section 332(d)(1) and/or the "functional equivalent of a commercial mobile service" under Section 332(d)(3). As the Wireless Declaratory Order concluded, the telecommunications service and CMRS classifications can and must go hand in hand to avoid a

[24] Wireless Declaratory Order at ¶ 40, citing H.R. Conference Report 104-458.
[25] *Id.* at ¶ 50. The Order concluded that even if mobile broadband services were an "interconnected service" for purposes of Section 332, "we find it would be unreasonable to classify mobile wireless broadband Internet access service as commercial mobile service because that would result in an internal contradiction within the statutory scheme." *Id.* at ¶ 41.

"contradiction in the statutory framework arising from classifying mobile wireless broadband Internet access service" as a telecommunications service but not as a commercial mobile service.[26]

OTI's comments and reply comments have described at length major changes in the broadband ecosystem over the past five years that make it increasingly incoherent and unworkable to maintain two separate regulatory frameworks for fixed and mobile Internet access.[27] We hope that the CTC technical report and legal authority filing we reviewed with staff will help to clarify remaining issues and enable a common regulatory framework for strong Open Internet rules.

Respectfully submitted,

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[26] *Id.* at ¶ 49. *See also* Marvin Ammori *Ex Parte*, at 1.
[27] Comments of Open Technology Institute at the New America Foundation and Benton Foundation, *Protecting and Promoting the Open Internet*, GN Docket Nos. 14-28, 10-127 (July 17, 2014), at 27-62. Reply Comments of Open Technology Institute at New America, *Protecting and Promoting the Open Internet*, GN Docket Nos. 14-28, 10-127 (Sept. 15, 2014), at 22-41.