

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of:	)	
Misuse of Internet Protocol (IP)	)	
Captioned Telephone Service	)	CG Docket No. 13-24
Telecommunications Relay Services and	)	CG Docket No. 03-123
Speech-to-Speech Services for Individuals	)	
with Hearing and Speech Disabilities	)	

**Reply Comments (Notice of Inquiry) of  
Hearing Loss Association of America (HLAA)  
Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI)  
National Association of the Deaf (NAD)  
Association of Late-Deafened Adults (ALDA)  
Cerebral Palsy and Deaf Organization (CPADO)  
American Association of the Deaf-Blind (AADB)  
Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN)  
Deaf/Hard of Hearing Technology Rehabilitation  
Engineering Research Center (DHH-RERC)  
Rehabilitation Engineering Research Center on Inclusive ICT (IT-RERC)**

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Samuelson-Glushko Technology Law & Policy  
Clinic (TLPC) • Colorado Law

*Counsel to TDI*

Colleen McCroskey

Corian Zacher

*Student Attorneys*

Blake E. Reid

*Director*

blake.reid@colorado.edu • 303.492.0548

**Hearing Loss Association of America (HLAA)**

Barbara Kelley, Executive Director • [bkelly@hearingloss.org](mailto:bkelly@hearingloss.org)

*Contact:* Lise Hamlin, Director of Public Policy • [LHamlin@Hearingloss.org](mailto:LHamlin@Hearingloss.org)

7910 Woodmont Avenue, Suite 1200, Bethesda, MD 20814

301.657.2248

[www.hearingloss.org](http://www.hearingloss.org)

**Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI)**

Claude Stout, Executive Director • [cstout@TDIforAccess.org](mailto:cstout@TDIforAccess.org)

PO Box 8009, Silver Spring, MD 20907

[www.TDIforAccess.org](http://www.TDIforAccess.org)

**National Association of the Deaf (NAD)**

Howard Rosenblum, Chief Executive Officer • [howard.rosenblum@nad.org](mailto:howard.rosenblum@nad.org)

*Contact:* Zainab Alkebsi, Policy Counsel

8630 Fenton Street, Suite 820, Silver Spring, MD 20910

301.587.1788

[www.nad.org](http://www.nad.org)

**Association of Late-Deafened Adults (ALDA)**

Sharaine Rawlinson Roberts, President • [ALDAPresident@alda.org](mailto:ALDAPresident@alda.org)

8038 MacIntosh Lane, Suite 2, Rockford, IL 61107

815.332.1515

[www.alda.org](http://www.alda.org)

**Cerebral Palsy and Deaf Organization (CPADO)**

Mark Hill, President • [president@cpado.org](mailto:president@cpado.org)

12025 SE Pine Street #302, Portland, Oregon 97216

503.512.5066

[www.cpado.org](http://www.cpado.org)

**American Association of the Deaf-Blind (AADB)**

“The Unstoppable” René G Pellerin, President • [renegp@comcast.net](mailto:renegp@comcast.net)

248 Rainbow Drive #14864, Livingston, TX 77399-2048

802.321.4864

[www.aadb.org](http://www.aadb.org)

**Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN)**

Zainab Alkebsi, Chair • [zainab.alkebsi@nad.org](mailto:zainab.alkebsi@nad.org)

8630 Fenton Street, Suite 820, Silver Spring, MD 20910-3803

[www.dhhcan.org](http://www.dhhcan.org)

**Rehabilitation Engineering Research Center on Technology for the Deaf and Hard of Hearing, Gallaudet University (DHH-RERC)**

Christian Vogler, PhD • christian.vogler@gallaudet.edu

800 Florida Avenue NE, TAP—SLCC 1116, Washington, DC 20002

**Rehabilitation Engineering Research Center on Inclusive ICT (IT-RERC)**

Gregg Vanderheiden, PhD, Director • greggv@umd.edu

Trace Research & Development Center • University of Maryland

4130 Campus Drive, College Park, MD 20742

## Summary

For many Americans who are hard of hearing, deaf, or DeafBlind, there is no substitute for IP CTS. IP CTS allows hundreds of thousands of people to communicate with family and friends, maintain an independent lifestyle, and remain in the workforce. Within the broader landscape of TRS, IP CTS has increasingly become an important part of the fabric of communication for people who are hard of hearing, deaf, or DeafBlind.

The record developed in response to the Commission's *NOI* reflects broad support for establishing functional equivalence as the Commission's first goal for IP CTS. The record further reflects that neither the goal of technological advances nor the goal of efficiency should outweigh the priority of functional equivalence, and demonstrates support among commenters for the Commission's proposition to establish a system by which IP CTS users can rate the quality of their calls. Additionally, commenters agree that consumer choice, efficiency, transparency, and a technology neutral framework all have a role to play in furthering the ultimate goal of providing IP CTS, but that all of these goals should be considered in light of functional equivalence.

Moreover, the record significantly reinforces our assertion that the metrics promulgated for comment in this *NOI* are insufficient and that as such the Commission must engage in further research before adopting new, better-defined metrics for comments. Regardless of how the Commission defines IP CTS metrics, it must ensure that metrics apply across providers and that an independent third-party conducts testing. The Commission also should keep consumers actively involved in the dialogue surrounding IP CTS quality by developing a system that allows users to rate the service and see ratings from other people who use the service.

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## Discussion

The Hearing Loss Association of America (HLAA), Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI), the National Association of the Deaf (NAD), the Association of Late-Deafened Adults (ALDA), the Cerebral Palsy and Deaf Organization (CPADO), the American Association of the Deaf-Blind (AADB), and the Deaf and Hard of Hearing Consumer Advocacy Network (DHHCAN) (“Consumer Groups”) and the Deaf/Hard of Hearing Technology Rehabilitation Engineering Research Center (DHH-RERC) and the Rehabilitation Engineering Research Center on Inclusive ICT (IT-RERC) respectfully reply to comments submitted in response to the Commission’s Notice of Inquiry (“NOP”) in the above-referenced docket.<sup>1</sup>

First, all IP CTS performance goals promulgated by the Commission must reflect the Commission’s statutory mandate under Section 225, and the record unanimously supports establishing functional equivalence as the first and foremost goal for IP CTS. Commenters agree that the Commission must ensure that technological advances further the primary goal of functional equivalence.<sup>2</sup> A technology neutral approach to quantifying quality metrics appropriately furthers the goal of functional equivalence. The record also shows strong support for conceiving of “efficiency,” the third goal for IP CTS, as encompassing the idea of a functionally equivalent service that will not be unduly hindered by cost concerns. Additionally, commenters agree that functional equivalence is best served by enabling consumer choice. Finally, the Commission must be transparent about provider quality metrics in order to enable consumer choice and advance the primary goal of functional equivalence more broadly.

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<sup>1</sup> *Misuse of Internet Protocol (IP) Captioned Telephone Service; Telecommunications Relay Services, and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, Report and Order, Declaratory Ruling, Further Notice of Proposed Rulemaking, and Notice of Inquiry, CG Docket Nos. 13-24, 03-123 (June 8, 2018) (“NOP”).

<sup>2</sup> Comments of Ultratec at 4 (Oct. 16, 2018), <https://www.fcc.gov/ecfs/filing/1017299092388>; Comments of MachineGenius at Performance Goals/Goal #2 (Oct. 16, 2018) (published with no numbered/lettered sections; pincited here to named section headers), <https://www.fcc.gov/ecfs/filing/101766565511>.

Next, commenters agree that the Commission should conduct more research before defining metrics. The FCC Disability Advisory Committee recommends including verbatim/accuracy, speed, and delay in IP CTS metrics.<sup>3</sup> IP CTS providers recommend adding accuracy and delay to existing quality metrics.<sup>4</sup> Neither the metric definitions proposed by the DAC nor by providers holistically addresses the concerns that people who use IP CTS have about the quality of the service. The Commission should include consumers in discussions about IP CTS quality metrics, and should be transparent by releasing the metrics achieved by providers.

Finally, regardless of the specific metrics the Commission uses to measure IP CTS call quality, the metrics must be neutrally applied across providers. In addition to the Commission's metrics, the Commission can further the main goal of functional equivalence by developing a system that allows users to rate IP CTS calls themselves, free from the rigid constraints of metrics.

**I. Performance goals should reflect Section 225's first priority of functional equivalence.**

Rather than merely serving as an individual goal of IP CTS, all goals should be written as serving the ultimate goal of functional equivalence. Section 225 mandates functional equivalence as the standard towards which the Commission must strive, and performance goals must be predicated upon the Commission's dedication to this standard.<sup>5</sup> Specifically, commenters agree that efficiency, the proposed third goal of IP CTS, must never be allowed to outweigh the priority of functional equivalence within the service, and that technological advances, the second goal, must be predicated on functional equivalence.

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<sup>3</sup> Recommendation of the FCC Disability Advisory Committee, IP CTS Quality Standards, CG Docket Nos. 13-24 and 03-123 (Sept. 23, 2016) [https://apps.fcc.gov/edocs\\_public/attachmatch/DOC-341497A1.pdf](https://apps.fcc.gov/edocs_public/attachmatch/DOC-341497A1.pdf).

<sup>4</sup> Ex Parte Letter of CaptionCall, Hamilton Relay, InnoCaption, Sprint, and ClearCaptions, CG Docket Nos. 13-24 and 03-123 (Aug. 21, 2018), <https://www.fcc.gov/ecfs/filing/10821120113100>.

<sup>5</sup> 47 U.S.C. § 225(b)(1).

**A. The record unanimously supports setting functional equivalency as the top priority for IP CTS performance goals.**

Section 225 charges the Commission with providing functionally equivalent telecommunication services for people who are hard of hearing, deaf, and DeafBlind.<sup>6</sup> Given the charge of Section 225, functional equivalence should be the top priority for all IP CTS policy decisions adopted by the Commission.

The record reflects full support for codifying this statutory mandate as the Commission's first goal for IP CTS. No commenter disagrees with the Commission's proposal to reinforce the commitment to functional equivalence as the first priority of IP CTS performance goals.<sup>7</sup>

Multiple commenters also agree that the Commission should define functional equivalence using the language proposed in the Consumer Groups' TRS Policy Statement.<sup>8</sup> The TRS Policy statement defines functional equivalence as:

Persons receiving or making relay calls are able to participate equally in the entire conversation with the other party or parties and they experience the same activity, emotional context, purpose, operation, work, service, or role (function) within the call as if the call is between individuals who are not using relay services on any end of the call.<sup>9</sup>

Because Consumer Groups represent the people who are most familiar with IP CTS service and are best positioned to know what communication aids help them best achieve functional equivalence, the Commission should adopt this definition.

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<sup>6</sup> 47 U.S.C. § 225(b)(1).

<sup>7</sup> See 2018 NOI at ¶¶ 158, 164; MachineGenius Comments at Performance Goals/Goal #1; Comments of CaptionCall at 4-5 (Oct. 16, 2018), <https://www.fcc.gov/ecfs/filing/1016073186048>; Comments of Consumer Groups at 3-4 (Oct. 16, 2018), <https://www.fcc.gov/ecfs/filing/1016178423024>; Comments of Hamilton Relay, at 8-9 (Oct. 16, 2018), <https://www.fcc.gov/ecfs/filing/101609960665>; Ultratec Comments at 2.

<sup>8</sup> Consumer Groups' TRS Policy Statement—Functional Equivalency of Telecommunications Relay Services: Meeting the Mandate of the Americans with Disabilities Act, CG Docket Nos. 03-123 and 10-51 (April 12, 2011) ("TRS Policy Statement"), <https://www.fcc.gov/ecfs/filing/6016375701>.

<sup>9</sup> TRS Policy Statement at 1.



Commenters support the idea that consumers are best positioned to define functional equivalence. As Hamilton Relay explains, “the April 2011 Consumer Groups’ explanation of the term ‘functionally equivalent’ accurately articulates [the goal of functional equivalence]. Under no circumstances should the Commission attempt to settle for a lesser standard than functional equivalence by prioritizing other goals.”<sup>10</sup> No commenters disagree with the proposal to adopt the definition of functional equivalence as stated in the Consumer Groups’ 2011 Policy Statement, and the record reflects that this definition should be codified as the Commission adopts functional equivalence as the primary IP CTS goal.<sup>11</sup>

**B. The record reflects that technological advances should be considered only if they provide functionally equivalent service.**

While technological advances may provide higher quality and lower-cost service in the future, Section 225 mandates, and commenters agree, that the Commission should not approve the deployment of new technologies for IP CTS use until they provide the same or better functional equivalence than existing technology.<sup>12</sup> Ultratec, for example, states:

[T]he Commission’s technology mandates aimed at promoting efficiency may undermine the functional equivalence objectives of IP CTS if the required technologies are not best suited to achieve these objectives for all users under real-world, nonideal conditions and in a transparent manner.<sup>13</sup>

The Commission must predicate the goal of technological advancement on functional equivalence, and only consider technological advances when they have been proven to meet this first goal.

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<sup>10</sup> Hamilton Relay Comments at 9.

<sup>11</sup> *Id.* at 9; Consumer Group Comments at 3-4.

<sup>12</sup> *See* Ultratec Comments at 4; MachineGenius Comments at Performance Goals/Goal #2 (agreeing with the second goal of technological advancement).

<sup>13</sup> Ultratec Comments at 4.

**C. Establishing a technology neutral framework for IP CTS is the best way to ensure functional equivalence.**

We agree with commenters who contend that the Commission should adopt a technology neutral framework for pursuing functional equivalence within IP CTS.<sup>14</sup> As the Commission promulgates rules regulating IP CTS providers, it must ensure that rules apply uniformly across provider technologies.

We agree with CaptionCall that “[t]o evaluate service quality, the Commission should adopt a common set of performance metrics and standards that are technology neutral and require providers to deliver the requisite level of service whether they rely on CAs, ASR, some combination of the two, or altogether different technology.”<sup>15</sup> As CaptionCall suggests, technology-neutral metrics anticipate the future of IP CTS. For example, if the Commission adopts separate metrics for CAs and ASR, these disparate metrics will cause problems as new technology develops and providers deploy hybrid solutions that reimagine the relationship between technology and human capital.

Section 225 contemplates IP CTS regulation as holistic, considering the user’s ability to communicate, rather than focusing on the technology used to provide the service.<sup>16</sup> A technology neutral approach is consistent with Section 225’s charge of functional equivalence because it acknowledges the end goal of IP CTS provision: providing the most functionally equivalent telephone service possible for people who need it.<sup>17</sup> As Sprint’s Petition for Reconsideration highlights, the record does not support the proposition that ASR is capable of providing functionally equivalent IP CTS service at this time to the same extent as CA-assisted IP CTS.<sup>18</sup>

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<sup>14</sup> Hamilton Relay Comments at 5; CaptionCall Comments at 6.

<sup>15</sup> CaptionCall Comments at 6.

<sup>16</sup> *See* 47 U.S.C. § 225.

<sup>17</sup> *Id.*

<sup>18</sup> Petition for Reconsideration of Sprint Corporation, CG Docket Nos. 13-24 and 03-123 (July 9, 2018), <https://www.fcc.gov/ecfs/filing/107091809005003>.

Taking these considerations into account, the Commission must set metrics consistent with Section 225 by articulating metrics in technology-neutral terms.

**D. Commenters agree that “efficiency” must serve as a subordinate goal to functional equivalency.**

As our comments explained, to the extent that the Commission wants to promote efficiency as a goal for IP CTS, it must serve the primary goal of functional equivalence.<sup>19</sup> While the Commission should strive to reduce waste and pursue functionally equivalent communications technology at the lowest cost, commenters agree that efficiency alone cannot be the primary goal of the IP CTS program and must not be allowed to outweigh the pursuance of functional equivalence, especially if efficiency is defined solely as cost reduction.<sup>20</sup>

There is no room in Section 225 for services that are cheaper but provide less useful telephone service for people who are hard of hearing, deaf, or DeafBlind. As CaptionCall states, “[i]f practical obstacles prevent or impede access to or use of assistive technologies, then the Commission **cannot** rely on those alternatives to satisfy its obligation [under Section 225].”<sup>21</sup> Hamilton Relay also agrees that “under no circumstances should the Commission attempt to settle for a lesser standard than functional equivalence by prioritizing other goals, such as . . . an efficiency standard based on monetary considerations,” and Ultratec comments that “it would not be worth the cost to [people who are hard of hearing, deaf, or DeafBlind] to sacrifice functional equivalence in order to gain efficiency.”<sup>22</sup>

The Commission cannot allow for a tradeoff between efficiency and functionally equivalent service.<sup>23</sup> The Commission must promulgate goals for IP CTS that reflect the record, and the record

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<sup>19</sup> Consumer Group Comments at 7.

<sup>20</sup> CaptionCall Comments at 23-25; Hamilton Relay Comments at 8-11; Ultratec Comments at 6-7.

<sup>21</sup> CaptionCall Comments at 23 (emphasis added); 47 U.S.C. § 225(b)(1).

<sup>22</sup> Ultratec Comments at 6-7.

<sup>23</sup> *But see* MachineGenius Comments at Performance Goals/Goal #3 (the only commenter to make this erroneous assertion).

demonstrates stakeholders in agreement that efficiency cannot outweigh functional equivalence as a goal for IP CTS.

**E. Commenters agree the Commission should support consumer choice within the IP CTS system.**

The record supports that the Commission must codify consumer choice as a goal for IP CTS and that facilitating consumer choice will further the goal of functional equivalence. Transparency is critical to providing consumer choice; when consumers have access to information about IP CTS provider quality, they can choose the service that provides the most functionally equivalent option.

We agree with commenters, including CaptionCall, that the Commission should facilitate the goal of consumer choice.<sup>24</sup> The NOI explicitly mentions the importance of consumer choice when discussing the benefits of setting performance goals and metrics and making the data transparent.<sup>25</sup> As MachineGenius asserts, consumer choice “encourages innovation... and improvements in functional equivalence.”<sup>26</sup>

Some commenters argue that providers are best suited to choose technology that provides functional equivalence.<sup>27</sup> This assertion is only partially correct. Of course, we agree that IP CTS providers typically have a good understanding of how the technology they offer will serve their customer base because they work regularly with the consumers that use their services.

However, the Commission must continue to allow consumers to determine which technology they wish to use for IP CTS in service of functional equivalence. Consumers who depend on IP CTS to communicate are inherently better-suited to determine which technology provides them with the most functionally equivalent communications service, and are the primary stakeholder in this proceeding whose interests are fully aligned with the goal of functional equivalence. The

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<sup>24</sup> CaptionCall Comments at 16.

<sup>25</sup> NOI at 155.

<sup>26</sup> MachineGenius Comments at Performance Goals/Goal #4.

<sup>27</sup> Ultratec Comments at 4 (commenting that “IP CTS providers solely should determine what technologies to utilize to provide IP CTS” because “providers are better positioned than the Commission to accurately understand the advantages and disadvantages of particular technologies and the effect of such technologies on users.”).

Commission must consider the record and further functional equivalency by supporting consumer choice within IP CTS.

**F. Commenters agree that transparency furthers consumer choice.**

Transparency is a critical element to providing consumer choice. When consumers have access to information about IP CTS provider quality, consumers can choose the service that provides the most functionally equivalent option. The Commission must ensure provider transparency that enables consumers to make the best choices possible.

Just as consumer choice within IP CTS will benefit the goal of functional equivalence, transparency will facilitate consumer choice. The record supports the Commission's proposition to publish the metrics achieved by providers so that consumers may be fully informed when making the important choice about which provider to use.<sup>28</sup> CaptionCall, for example, claims that "[t]o enable consumers to make more informed decisions, increased transparency about providers' relative performance could be helpful."<sup>29</sup> Providing transparent data is crucial for consumers choosing a provider, and the Commission should heed the record on the importance of transparency and adopt its proposition to publish provider metrics.

**II. The record reinforces that the Commission must complete more research and propose more specified performance metrics.**

As our comments explained, the performance metrics proposed in the Commission's NOI as potential measurements of IP CTS quality and accuracy lack definitional specificity.<sup>30</sup> We urged the Commission to engage in further research to articulate more fully fleshed out and defined metrics for comment.<sup>31</sup>

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<sup>28</sup> See CaptionCall Comments at 17; Ultratec Comments at 4.

<sup>29</sup> CaptionCall Comments at 6.

<sup>30</sup> Consumer Groups Comments at 4-5.

<sup>31</sup> *Id.*

The record reflects the need for more developed, better defined performance metrics. For example, MachineGenius agrees that the performance metrics proposed by the Commission are not sufficient metrics by which to gauge the functional equivalence of IP CTS.<sup>32</sup> CaptionCall discusses at length the insufficiency of the quantitative performance standards the Commission has proposed to measure accuracy and latency, noting that “[q]uantitative performance standards hold great promise, but only if they are set through close collaboration between relevant stakeholders and through a process with sufficient safeguards.”<sup>33</sup> CaptionCall also urges the Commission to undertake further testing and research before setting any such standards.<sup>34</sup>

The record makes clear that stakeholders in the development of these metrics believe they are insufficient in their current form. We again urge the Commission to complete more research and testing in a timely fashion to develop new, better defined metrics for comment. Regardless of the metrics the Commission ultimately adopts, it must apply metrics uniformly across IP CTS providers and continue including consumers in the discussion when defining metrics.

### **III. The record reflects support neutrally applying third party-tested metrics and developing a user rating system for all IP CTS providers.**

Commenters agree that a neutrally applied system for IP CTS provider metrics furthers Section 225’s goal of functional equivalence, but that the Commission’s proposed metrics do not adequately reflect important measures of IP CTS quality.<sup>35</sup> As a result, the Commission should develop a uniform system that allows IP CTS users to rate their provider and view ratings made by other users. Additionally, once the Commission does more research, it should adopt metrics that allow a third party to measure provider quality and make provider quality data available to consumers, and should include consumers who depend on IP CTS in discussions about quality metrics.

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<sup>32</sup> MachineGenius Comments at Performance Measures/Functional Equivalence.

<sup>33</sup> CaptionCall Comments at 16-17.

<sup>34</sup> *Id.*

<sup>35</sup> CaptionCall Comments at 7; Hamilton Relay Comments at 4-5; Ultratec Comments at 7.

**A. The record reflects support for adopting metrics that apply across all IP CTS calls and conducting quality tests by an independent third party.**

Consumers rely on IP CTS marketing information to make informed decisions. However, not all providers collect data on their service, and those that do measure data do so based on internal standards, rather than standards that apply across the industry. The lack of data about IP CTS quality leaves consumers without a common point of comparison for evaluating providers.

As MachineGenius suggests, the metrics the Commission proposes do not appropriately measure the functional equivalence of IP CTS.<sup>36</sup> Ultratec similarly notes that “[a]ny expediency that may be obtained from adopting new performance measures in the short term are likely to be undermined by flaws in such metrics.”<sup>37</sup> While it is imperative that the Commission set metrics so consumers have the opportunity to make an informed choice about their IP CTS provider, none of the proposed metrics fully reflect all the information consumers need to make that determination.

Consumers cannot make decisions about which provider they prefer if they do not have a common baseline for comparison. Commenters agree that an industry-wide standard is an appropriate way to apply metrics.<sup>38</sup> Rather than the disconnected way providers currently measure quality, the Commission should establish a uniform set of metrics that providers can use to evaluate their service.<sup>39</sup> The results of this information should be available in a transparent way that consumers can easily access.

Commenters also agree that the best way to measure compliance with performance metrics is through independent, neutral third-party testers.<sup>40</sup> We agree that independent testing should be used regardless of the method the Commission uses to evaluate transcription quality. As Ultratec notes,

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<sup>36</sup> MachineGenius Comments at Performance Measures/Functional Equivalence.

<sup>37</sup> UltraTec Comments at 7-8.

<sup>38</sup> Hamilton Relay Comments at 7.

<sup>39</sup> *See id.*

<sup>40</sup> Ultratec Comments at 10; Hamilton Relay Comments at 8; CaptionCall Comments at 13-15; MachineGenius Comments at Performance Measures/Readability.

testing must reflect a range of call conditions that IP CTS users encounter; ideal, typical, and most importantly, adverse conditions.<sup>41</sup>

**B. The Commission should develop a uniform system that allows users to rate providers.**

Commenters agree that each IP CTS user experiences the service differently, which means that regardless of the metrics the commission adopts, some IP CTS quality information will be omitted.<sup>42</sup> The Commission should address this concern by developing a system that allows users to rate providers based on their experience with the service and making that information available to other users. The Commission can implement an industry-wide rating system that allows users the opportunity to provide feedback after each call, similar to Innocaption's current process.<sup>43</sup>

One goal of quantifying metrics is providing transparent information to users about IP CTS providers. Adopting a uniform rating system that allows users to rate and view other users' ratings furthers this goal and should be utilized as complimentary with any additional metrics the Commission considers. As MachineGenius argues, "a user's answer to 'How satisfied are you that the solution has offered you functional equivalence?' is of more value than any technical measure of performance, and is possibly the only thing that matters. . . . [U]ser feedback can capture hard-to-quantify aspects of performance, can help discover unknown factors impacting performance, and offers a chance to correlate underlying technical measures with top-down holistic assessments."<sup>44</sup> User feedback allows the Commission and the public to look at aspects of IP CTS service that cannot be fully explicated by metrics alone. While metrics correctly impose quality categories for

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<sup>41</sup> Ultratec Comments at 11.

<sup>42</sup> Ultratec Comments at 3; MachineGenius Comments at Performance Measures/Functional Equivalence.

<sup>43</sup> See Innocaption: User Manual for iPhone, Mezmo Corp. at 23 (May 2017) (showing that Innocaption's current process allows users to rate call quality at the end of each call) <https://www.innocaption.com/mywp/documents/InnoCaptionUserManualForIPHONE.pdf>.

<sup>44</sup> MachineGenius Comments at Performance Measures/Functional Equivalence.



rating providers using a quantitative measure, user feedback provides qualitative commentary that considers the relationship between quality categories, and the user's perception of service quality.

**C. The Commission should include consumers in the discussion about quality metrics.**

Providers propose their own recommendations for quality metrics.<sup>45</sup> Providers have made an effort to include consumers in dialogues about quality metrics, and the FCC should similarly include consumers in discussions about quality metrics. As articulated in our initial comments, the Commission must reflect consumer perspectives in quality metrics definitions.<sup>46</sup>

Hamilton Relay states that “[o]nly IP CTS providers, the sole entities with substantial, real-world experience providing IP CTS, have the understanding of the service needed to develop accurate and useful performance measures.”<sup>47</sup> However, the argument that the Commission should rely solely on provider recommendations for developing performance measures must be predicated at a minimum on substantial review processes with consumers and consumer groups to whom quality service is the most important.<sup>48</sup> Consumers can provide feedback about quality that is not influenced by competitive advantage interests. Additionally, consumers can help the Commission identify areas where quality is lacking because they are most familiar through their extensive experience with the ways the service does or does not meet their communication needs.

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<sup>45</sup> Hamilton Relay Comments at 4; Ultratec Comments at 7.

<sup>46</sup> Consumer Groups Comments at 1-2.

<sup>47</sup> Ultratec Comments at 7.

<sup>48</sup> Ultratec Comments at 8.