

Before the  
**FEDERAL COMMUNICATIONS COMMISSION**  
Washington, DC 20554

In the Matter of	)	
	)	
Telecommunications Relay Services and Speech-	)	CG Docket No. 03-123
to-Speech Services for Individuals with Hearing	)	
and Speech Disabilities	)	
	)	
Comment Sought on Application of VTCSecure,	)	
LLC, for Certification to Provide Internet Protocol	)	
Captioned Telephone Service	)	
	)	
Comment Sought on Application of	)	
MachineGenius, Inc., for Certification to Provide	)	
Internet Protocol Captioned Telephone Service	)	
	)	
Comment Sought on Application of Clarity	)	
Products, LLC, for Certification to Provide Internet	)	
Protocol Captioned Telephone Service	)	

**COMMENTS OF ULTRATEC, INC.**

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September 25, 2019

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**COMMENTS OF ULTRATEC, INC.**

**I. INTRODUCTION AND EXECUTIVE SUMMARY**

Ultratec, Inc. (“Ultratec”) submits these Comments in response to the Public Notices issued by the Consumer and Governmental Affairs Bureau (“CGB”) of the Federal Communications Commission (“FCC” or “Commission”) in the above-referenced proceeding.<sup>1</sup> The Public Notices request comment regarding the internet protocol captioned telephone service (“IP CTS”) certification applications filed by three applicants proposing to provide IP CTS using automated

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<sup>1</sup> *Comment Sought on Application of VTCSecure, LLC, for Certification to Provide Internet Protocol Captioned Telephone Service*, Public Notice, CG Docket No. 03-123, DA 19-818 (CGB rel. Aug. 26, 2019); *Comment Sought on Application of MachineGenius, Inc., for Certification to Provide Internet Protocol Captioned Telephone Service*, Public Notice, CG Docket No. 03-123, DA 19-819 (CGB rel. Aug. 26, 2019); *Comment Sought on Application of Clarity Products, LLC, for Certification to Provide Internet Protocol Captioned Telephone Service*, Public Notice, CG Docket No. 03-123, DA 19-820 (CGB rel. Aug. 26, 2019).

speech recognition (“ASR”) technology: Clarity Products, LLC (“Clarity”), MachineGenius, Inc. (“MachineGenius”), and VTCSecure, LLC (“VTCSecure”) (collectively “Applicants”).<sup>2</sup>

Ultratec was the original inventor and remains an active innovator of both captioned telephone services (“CTS”) provided over the public switched telephone network and IP CTS. Its affiliate, CapTel, Inc. (“CapTel”), has over 18 years of experience providing CTS in four countries. Together, Ultratec and CapTel are the most experienced CTS and IP CTS companies in the world. Ultratec continually devotes substantial, industry-leading resources to the further development and testing of IP CTS technologies, and has conducted over 20 years of research and development on the use of ASR engines and technology.

It is premature today for the Commission to grant certifications in this proceeding to the Applicants. First, unlike currently certified IP CTS providers that rely on communications assistants (“CAs”), the Applicants in this proceeding have not adequately and publicly demonstrated, consistent with the Commission’s guidance, that their proposed ASR-only services can accomplish functional equivalence. More than a decade of successful operations demonstrate the efficacy of CA-based IP CTS. By contrast, the public portions of the applications in this proceeding provide only conclusory statements regarding the adequacy of their proposed ASR-only services.

Second, the Commission should not approve ASR-only IP CTS service until the Commission has fully developed the regulatory framework that should apply to such service. This

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<sup>2</sup> See, e.g., MachineGenius, Inc., Internet-based TRS Certification Application, CG Docket No. 03-123 (filed Oct. 13, 2017) (“MachineGenius Application”) (proposing ASR-only IP CTS); VTCSecure, LLC, Internet-based TRS Certification Application, CG Docket No. 03-123 (filed May 26, 2017) (“VTCSecure Application”) (proposing to provide IP CTS solely using ASR engines on some calls but using CAs on other calls); Clarity Products, LLC, Internet-based TRS Certification Application, CG Docket No. 03-123 (filed Apr. 24, 2019) (“Clarity Application”).

includes the resolution of an outstanding petition related to the Commission’s initial determination that ASR captions can qualify as IP CTS. The Commission also should adopt IP CTS performance metrics before certifying ASR-only service. Although useful for all IP CTS technologies, such performance metrics are crucial for the evaluation of a new and unproven technology such as ASR. In addition, it is axiomatic that the Commission should adopt a compensation mechanism for ASR-only IP CTS service before certifying the service.

Ultimately, Ultratec is encouraged by the performance improvements in ASR technology and looks forward to the increasing use of ASR to assist with the provision of IP CTS. But ASR standing alone currently is not capable of ensuring accurate captions under real-world conditions that are less than ideal, cannot provide important non-verbal cues during IP CTS calls, and cannot address non-911 emergency situations that nevertheless create risks to the safety, health, and wellbeing of users. Until these obstacles are overcome, it would be premature for CGB to certify ASR-only IP CTS services, irrespective of whether the Commission provided CGB with authority to do so.

## **II. THE APPLICANTS SHOULD BE REQUIRED TO DEMONSTRATE THAT ASR-ONLY IP CTS IS CAPABLE OF PROVIDING FUNCTIONAL EQUIVALENCE TO ALL USERS**

To be eligible for compensation from the Interstate Telecommunications Relay Services (“TRS”) Fund, TRS providers are required by law to offer service that provides functional equivalence. CA-based CTS and IP CTS providers have a long history of doing so. By contrast, there currently is no adequate evidence to verify that ASR-only IP CTS can provide functional equivalence to all users under real-world conditions. As explained below, conversations that take place in the real world can be degraded by background noise or poor phone or VoIP connections or equipment, and further may be affected by a speaker’s accent, volume, and speech pattern. Further, real-world conversations might involve highly specialized vocabulary, especially if they

involve medical, legal, or technical matters. Ultratec has extensively evaluated ASR-only IP CTS, and these tests consistently have shown that ASR technology is not yet capable of providing adequate, functionally equivalent captioning under these and other real-world circumstances.<sup>3</sup> For these same reasons, the World Federation of the Deaf and the International Federation of Hard of Hearing People concluded in their *Joint Statement: Automatic Speech Recognition in Telephone Relay Services and in Captioning Services* that ASR has significant limitations:

1. ASR for a telephone service has difficulty in providing consistently good recognition accuracy, due to poor sound quality of telephony in certain areas as well as to poor environmental conditions such as noise and an unspecified number of speakers.
2. In addition, some words, such as proper nouns and technical terms that are unknown to the ASR system, are hard to learn beforehand, and it is still difficult to always ensure reliable recognition.<sup>4</sup>

Because ASR-only IP CTS is a new captioning technology that is unproven, applicants proposing to rely exclusively on ASR to provide IP CTS should be required to publicly demonstrate the efficacy of their service, rather than merely stating in a conclusory manner in their IP CTS certification applications that their services are capable of functional equivalence.

Section 225 of the Communications Act, as amended, requires the Commission “to make available to *all individuals* in the United States a rapid, efficient nationwide communication service, and to increase the utility of the telephone system of the Nation” by ensuring “that interstate and intrastate *telecommunications relay services* are available, to the extent possible and

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<sup>3</sup> See Letter from David A. O’Connor, Counsel to Hamilton Relay, Inc., to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 13-24, 03-123 (filed Dec. 19, 2018) (describing Ultratec’s evaluation of the use of ASR to provide IP CTS) (“Hamilton Letter”).

<sup>4</sup> World Federation of the Deaf and International Federation of Hard of Hearing People, *WFD and IFHOH Joint Statement: Automatic Speech Recognition in Telephone Relay Services and in Captioning Services*, at 1 (Mar. 29, 2019), <https://www.deafcouncil.org.uk/wp/wp-content/uploads/2019/05/IFHoHWFD.pdf> (“WFD/IFHOH Statement”).

in the most efficient manner, to hearing-impaired and speech-impaired individuals in the United States.”<sup>5</sup> In turn, Section 225 defines the term “telecommunications relay service” to mean telephone transmission services delivered “in a manner that is functionally equivalent.”<sup>6</sup> Thus, to ensure that functionally equivalent TRS, including IP CTS, is available to “all individuals,” it must be useable by TRS users with the greatest need under non-ideal, real-world conditions. Consequently, the Commission should ensure that IP CTS meets the needs of *all* deaf and hard-of-hearing users, including those with profound deafness or multiple health challenges, under *all* conditions that they face in their daily lives, including the adverse conditions under which IP CTS calls frequently are made.<sup>7</sup>

Current IP CTS providers that utilize CAs have a long, real-world track record demonstrating that CAs provide functionally equivalent captioning. Importantly, prior to the Commission’s recognition of IP CTS and CTS as compensable forms of TRS, and therefore prior to the Commission’s certification of any IP CTS provider, Ultratec and CapTel completed real-world trials involving over 2000 deaf and hard-of-hearing users in thirteen states. These trials

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<sup>5</sup> 47 U.S.C. § 225(b)(1) (emphasis added).

<sup>6</sup> 47 U.S.C. § 225(a)(3) (“The term ‘telecommunications relay services’ means telephone transmission services that provide the ability for an individual who is deaf, hard of hearing, deaf-blind, or who has a speech disability to engage in communication by wire or radio with one or more individuals, in a manner that is functionally equivalent to the ability of a hearing individual who does not have a speech disability to communicate using voice communication services by wire or radio.”); *see also* Comments of Hearing Loss Association of America, et al., CG Docket Nos. 13-24 & 03-123, at 3-4 (filed Oct. 16, 2018) (observing that “‘functional equivalence’ occurs when: 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>7</sup> *See generally*, Comments of Ultratec, Inc., CG Docket Nos. 13-24 & 03-123, at 2 (filed Oct. 16, 2018) (“Ultratec NOI Comments”).

demonstrated the functional equivalence of CA-based captioning.<sup>8</sup> Moreover, IP CTS providers have been offering, and IP CTS users have been utilizing, CA-based IP CTS for over a decade, and the functionally similar CA-based CTS has been available for much longer. During this time, CA-based IP CTS and CTS have vastly improved access to telephone communications by the deaf and hard-of-hearing community, especially by people who were accustomed to using off-the-shelf telephones prior to losing their hearing. No such extensive track record demonstrating the usability of ASR-only IP CTS technologies exists.

Today's CA-based IP CTS and CTS providers have demonstrated that CAs are capable of delivering functional equivalence by providing accurate captions under adverse, real-world conditions. This includes the provision of captioning when the audio is degraded by background noise; when technological effects such as poor wireless, wireline, or VoIP connections or substandard telephone microphones degrade sound quality; when the hearing speaker has a strong accent, speaks softly, or uses an unusual speech pattern; and when the subject matter of a call requires the participants to use a special, niche vocabulary, such as calls about medical, legal, or technical matters. Current ASR engines struggle or fail when facing these issues, all of which are common place in the real world in which IP CTS users live and work. Similarly, CAs are uniquely capable of relaying the non-textual aspects of a call. For example, CAs may include information in captions such as "speaker too soft;" acknowledgement of a siren going off, loud bang, people screaming, multiple people talking, loud music or other prominent background

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<sup>8</sup> Ultratec and CapTel commenced state CTS trials in 2002 and by mid-2003 completed trials in thirteen states. On June 12-13, 2003, Ultratec met with Commission staff to discuss the CTS trials. *See* Letter from Karen Peltz Strauss, Policy Consultant, Ultratec, Inc., to Marlene H. Dortch, Secretary, FCC, CC Docket 98-67 (filed June 13, 2003) (providing notice of FCC meetings regarding CTS state trials and presenting a report, "CapTel Trial Project Report," which is available at <https://ecfsapi.fcc.gov/file/6514182984.pdf>).



noise; or the hearing party choking, laughing, crying, or having trouble breathing.<sup>9</sup> ASR captioning generally does not provide users with this type of useful, functionally equivalent information, which is uniformly available to hearing persons.

For this reason, to comply with section 225 of the Communications Act, and consistent with the Commission’s own instruction, CGB has an obligation to require ASR-only IP CTS applicants to demonstrate the functional equivalence of their service. Specifically, in its 2018 Declaratory Ruling approving the use of ASR-only IP CTS, the Commission established a mandate for all ASR-only IP CTS applicants to:

support all claims regarding their use of ASR and its efficacy through documentary and other evidence. For example, this could include trials and quantitative test results demonstrating that the applicant’s service will afford a level of quality that is at least comparable to currently available CA-assisted IP CTS with respect to captioning transcription delays, accuracy, speed, and readability.<sup>10</sup>

The ASR-only IP CTS Applicants, VTCSecure, MachineGenius, and Clarity, have failed to satisfy this requirement in the public versions of their applications. None of the Applicants provide “documentary and other evidence” such as “trials and quantitative test results” in their filings.<sup>11</sup>

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<sup>9</sup> Ultratec NOI Comments at 12.

<sup>10</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, 33 FCC Rcd 5800 ¶ 63 (2018) (“Declaratory Ruling”).

<sup>11</sup> Each of the Applicants redacted extensive portions of their applications. *See, e.g.*, MachineGenius Application at Exhibit A; VTCSecure Application at 3-4; Clarity Application at Exhibits D & F. To the extent that these portions of the applications contain the type of documentary evidence requested by the Commission, such as trials and quantitative results, CGB should require the information to be filed in an unredacted form to provide the public with an opportunity to review and comment on the data. It would be fundamentally inappropriate for the Commission to approve the deployment of an unvalidated technology for the provision of IP CTS to the deaf and hard-of-hearing community based on secret information about the technology.

Instead, the Applicants provide in their public applications only conclusory assertions regarding the efficacy of their service. For example, VTCSecure asserts that its ASR engine is able to provide 99 percent accuracy—but only under “ideal conditions” when the “ASR engine is receiving HD voice.”<sup>12</sup> VTCSecure provides no evidence in its public filing that its ASR engine is capable of providing adequate captioning in real-world conditions. MachineGenius merely states, without any publicly disclosed evidence, that its “ASR captioning accuracy is comparable to the accuracy provided by CAs.”<sup>13</sup> Similarly, Clarity in its public filing only makes the conclusory assertion that “[i]nternal testing has shown a very high level of accuracy and a very quick response with CAPTIONMATE.”<sup>14</sup> This is insufficient to withstand the level of scrutiny for IP CTS applications that the Commission required in its 2018 Declaratory Ruling.

Moreover, absent the continuing involvement of CAs with IP CTS calls, there will be no rigorous means of monitoring the efficacy of ASR-only IP CTS on a day-to-day basis under real-world conditions. Users who have sufficient hearing loss to require a captioned telephone may have no way of knowing when ASR-only captioning is inaccurate.<sup>15</sup> Therefore, CAs are needed to ensure that ASR engines perform appropriately. Without this continuing evaluation of captioning by CAs, ASR-only IP CTS may fail on a broadscale basis to provide functional equivalency, and there may be no means available to detect this failure.

In light of the untested nature of the adequacy of nascent ASR-only services under real-world conditions, especially relative to the long track record of the functional equivalence of CA-

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<sup>12</sup> VTCSecure Application at 2.

<sup>13</sup> MachineGenius Application at 7.

<sup>14</sup> Clarity Application at 6.

<sup>15</sup> For example, a call must be relayed verbatim under the Commission’s rules. 47 C.F.R. § 64.604(a)(2)(ii). Deaf and hard-of-hearing users may have no means to independently determine when ASR-generated captions are inaccurate.

based ASR, CGB should follow the Commission’s guidance and require a more robust, public showing by the Applicants that they are capable of providing functionally equivalent IP CTS in the less than ideal telephone environments. It would be legally impermissible for the Commission to certify these Applicants to secure compensation from the TRS Fund if they only are capable of providing a low-quality service that does not meet the functionally equivalent standard mandated by law.

### **III. THE FCC SHOULD ESTABLISH A REGULATORY FRAMEWORK FOR ASR-ONLY IP CTS BEFORE CERTIFYING ASR-ONLY PROVIDERS**

Section 225 directs the Commission to “prescribe regulations to implement” the statute by, *inter alia*, “establish[ing] functional requirements, guidelines, and operations procedures for telecommunications relay services” and “establish[ing] minimum standards” for TRS.<sup>16</sup> As the Commission has added new forms of TRS, the agency has consistently applied and adjusted its mandatory minimum standards to ensure that each type of relay is delivered in a functionally equivalent manner.<sup>17</sup> With respect to ASR-only IP CTS, however, the Commission’s current regulatory framework does not provide sufficient guidance regarding how its mandatory minimum standards and other IP CTS and TRS rules should apply, including what compensation rates should be applicable to ASR-only IP CTS. As a result, each of the Applicants has requested multiple waivers of the Commission’s rules.<sup>18</sup> Until the Commission has better fleshed out how its TRS

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<sup>16</sup> 47 U.S.C. § 225(d)(1)(A)-(B).

<sup>17</sup> See, e.g., *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, Internet-based Captioned Telephone Service*, Declaratory Ruling, 22 FCC Rcd 379 (2007) (recognizing IP CTS as a compensable form of TRS, provided it meets the applicable standards set forth in the Declaratory Ruling); *Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities*, Declaratory Ruling, 18 FCC Rcd 16121 (2003).

<sup>18</sup> See MachineGenius, Inc. Request for Waiver, CG Docket No. 03-123 (filed Oct. 13, 2017) (requesting waiver of various CA-related IP CTS requirements); Clarity Application at 15-19

rules will apply to this new, proposed technology, the Commission should not certify use of the technology to provide service to the deaf and hard-of-hearing community.

Ultratec recognizes that the Commission already has determined that ASR-only IP CTS is subject to certification<sup>19</sup> despite the substantial concerns expressed on the record that this Commission action was premature.<sup>20</sup> For example, Telecommunications for the Deaf and Hard of Hearing, Inc.

expressed concern that the Declaratory Ruling opens the door for ASR solutions to widespread deployment without the implementation of quality standards or performance metrics. While the Commission acknowledges that Section 225 of the Communications Act requires it ensure that IP CTS solutions provide functional equivalence to consumers with disabilities, the draft item relegates this task to a Notice of Inquiry with no obvious timeline while immediately opening the door to the deployment of ASR solutions with potentially serious quality shortcomings.<sup>21</sup>

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(requesting waiver of certain CA-related and 911 call handling rules); VTCSecure, LLC Request for Waiver, CG Docket No. 03-123 (filed Sept. 13, 2019) (“VTCSecure Waiver Request”) (requesting waiver of various CA-related rules).

<sup>19</sup> See Declaratory Ruling ¶¶ 48-66.

<sup>20</sup> See, e.g., Letter from Scott R. Freiermuth, Counsel, Government Affairs, Federal Regulatory, Sprint Corporation, to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 13-24, 03-123 at 1-2 (filed June 1, 2018) (expressing concerns about ASR-only IP CTS and requesting the Declaratory Ruling approving such use to instead be issued as a further notice of proposed rulemaking (“FNPRM”)); Letter from David A. O’Connor, Counsel for Hamilton Relay, Inc., to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 13-24, 03-123 at 1-2 (filed June 1, 2018) (expressing concerns about ASR-only IP CTS, requesting it to be addressed in an FNPRM, and requesting the FCC to seek public comment on all ASR-only IP CTS certification applications); Letter from Rebekah P. Goodheart, Counsel for CaptionCall, LLC, to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 13-24, 03-123 at 2, 7-9 (filed May 29, 2018) (expressing concern about the use of ASR for IP CTS and requesting the FCC to seek comment on a “robust certification process” before certifying ASR providers).

<sup>21</sup> Letter from Blake E. Reid, Counsel to Telecommunications for the Deaf and Hard of Hearing, Inc., to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 13-24, 03-123 at 2 (filed May 25, 2018) (expressing a wide variety of concerns about ASR-only IP CTS and requesting it to be addressed in a further NPRM) (internal citations omitted).

Indeed, the Commission itself acknowledged that ASR-only IP CTS may not be adequate in all circumstances.<sup>22</sup> Moreover, the Commission’s ruling approving ASR-only IP CTS currently is subject to a request for clarification or, in the alternative, reconsideration by Sprint Corporation.<sup>23</sup> Sprint’s filing is aimed at ensuring that “all certified ASR providers [will] offer functionally equivalent service in an efficient fashion.”<sup>24</sup> As an initial matter, the Commission should address Sprint’s filing prior to acting on the ASR-only IP CTS applications that are the subject of this proceeding.

Further, in a proceeding that is still pending, the Commission requested comment regarding the appropriate scope of the functional equivalence requirement and how compliance with this requirement might be measured,<sup>25</sup> but it has not yet adopted IP CTS performance metrics.<sup>26</sup>

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<sup>22</sup> Declaratory Ruling ¶ 52 (“ASR may be more conducive to communication on certain categories of calls, such as calls to customer call centers, where there is likely to be less background noise and clearer articulation by call takers, or calls to friends, relatives and colleagues, who may be more aware of and sensitive to the user’s hearing loss and the need to speak clearly.”).

<sup>23</sup> Sprint Corporation, Petition for Clarification or, in the Alternative, Reconsideration, CG Docket Nos. 13-24 & 03-123 (filed July 9, 2018).

<sup>24</sup> *Id.* at 3.

<sup>25</sup> See Declaratory Ruling ¶¶ 164-175 (requiring comment on what performance metrics the Commission should impose on IP CTS providers); see also Recommendation of the FCC Disability Advisory Committee, IP CTS Quality Standards, CG Docket Nos. 03-123 and 13-24 (filed Sept. 23, 2016); Ultratec NOI Comments at 7-12; Reply Comments of Hearing Loss Association of America, et al., CG Docket Nos. 13-24 & 03-123, at 5 (filed Nov. 15, 2018); Comments of Hamilton Relay, Inc. Concerning Notice of Inquiry, CG Docket Nos. 13-24 & 03-123, at 2-4 (filed Oct. 16, 2018); Reply Comments of Hamilton Relay, Inc. Concerning Notice of Inquiry, CG Docket Nos. 13-24 & 03-123, at 5-7 (filed Nov. 15, 2018).

<sup>26</sup> See Letter from Dixie Ziegler, Vice President of Relay, Hamilton Relay, Inc.; Cristina Duarte, Director of Regulatory Affairs, Mezmo Corporation dba InnoCaption; Michael Strecker, Vice President of Regulatory and Strategic Policy, ClearCaptions, LLC; Bruce Peterson, Vice President Government & Community Relations, CaptionCall, LLC; Scott Freiermuth, Counsel, Government Affairs, Federal Regulatory, Sprint Corporation; Kevin Colwell, Vice President of Engineering, Ultratec, Inc., to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 13-24, 030123 (filed Sept. 20, 2019) (noting that “the Commission has not adopted objective and

Ultratec believes that such performance metrics are needed and will be beneficial in connection with TRS generally. The metrics are crucial, however, in connection with a new and untested TRS technology such as ASR-only IP CTS that has not been proven through more than a decade of successful use by the deaf and hard-of-hearing community, like CA-based IP CTS has. The Commission’s determination that it “will be able to gather data that can inform our adoption of further measures to improve [ASR-only IP CTS]’ utility”<sup>27</sup> by certifying ASR-only providers places the cart before the horse.<sup>28</sup> It is inappropriate for the Commission to conduct an experiment regarding the adequacy of ASR-only IP CTS using actual deaf and hard-of-hearing users. Instead, the Commission should confirm the functional equivalence of ASR-only IP CTS on an applicant-by-applicant basis *before* certifying such providers, rather than using newly certified ASR-only providers (and their deaf and hard-of-hearing customers) as a test bed to determine the efficacy of their service.

Also, notwithstanding apparent concern over the current and projected size of the TRS Fund, the Commission has not yet set forth a rate methodology for ASR-only IP CTS.<sup>29</sup> It makes little sense to certify ASR-only IP CTS providers when the Commission has not yet determined how they should be compensated. Moreover, the Commission should not rush to prematurely certify ASR-only IP CTS providers for the primary purpose of reducing IP CTS expenditures from

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quantifiable metrics, measurement tools, and standards for IP CTS which provide a meaningful understanding of the quality of service experienced by IP CTS users” and describing the group’s efforts to propose such metrics, tools, and standards).

<sup>27</sup> Declaratory Ruling ¶ 52.

<sup>28</sup> See Declaratory Ruling at 101, Statement of Commissioner Jessica Rosenworcel Concurring (“[T]he approach here is backwards. It puts the cart before the horse by introducing automatic speech recognition into the IP CTS program before we address our most basic regulatory responsibilities.”).

<sup>29</sup> See *id.* ¶¶ 96-100.

the TRS Fund if the Commission determines in the future to reduce the per-minute rate paid to ASR-only providers relative to CA-based providers.<sup>30</sup> Until the functional equivalence of ASR-only IP CTS has been firmly established, any financial motive in certifying ASR-only IP CTS providers is not an appropriate—or legally permissible—element of the Commission’s regulatory decision-making.<sup>31</sup>

#### **IV. ASR TECHNOLOGY IS NOT YET ADEQUATE STANDING ALONE TO BE USED TO PROVIDE IP CTS, AND IT CAN POSE RISK TO USERS**

Ultratec continues to test ASR technologies as part of the future provision of IP CTS service. Although Ultratec’s testing has shown that ASR has promise to improve IP CTS, these tests also have demonstrated that ASR-only technologies currently are not adequate in many situations to provide functionally equivalent service without the involvement of a CA. The World Federation of the Deaf and the International Federation of Hard of Hearing People concurs in this assessment: “When ASR services are used without human operator, deaf and hard of hearing people are excluded from full participation in society.”<sup>32</sup> Certification of providers proposing ASR-only service simply is premature at this time, irrespective of whether the Commission has

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<sup>30</sup> See, e.g., *id.* ¶ 50 (“[T]he substantially lower costs of operation for ASR can allow for the provision of IP CTS with far greater efficiency.”); *id.* ¶ 59 (“[O]ffering an ASR option that will largely eliminate personnel costs associated with IP CTS will help fulfill Congress’s directive to provide TRS in the most efficient manner. This will not only reduce the current cost burden on TRS Fund contributors, but also provide greater security for the TRS Fund....”).

<sup>31</sup> See, e.g., *Sorenson Commc’ns, LLC v. FCC*, 897 F.3d 214, 228 (D.C. Cir. 2018) (“efficient service is not just about cost but also quality”); Comments of MachineGenius, Inc., CG Docket Nos. 13-24 & 03-123, at 6 (filed Oct. 17, 2018) (“There may be a tradeoff between efficiency and level of functionally equivalent performance, because it may be that it costs more per minute to deliver better performance.”).

<sup>32</sup> WFD/IFHOH Statement at 1.

determined that CGB is permitted to do so. It places at risk the health, safety, and wellbeing of users. There are several reasons for this.

First, Ultratec’s long-term evaluation and user testing of ASR demonstrates that accuracy is crucial for user satisfaction and confidence.<sup>33</sup> If transcription accuracy is obviously inadequate, the user may be required to repeatedly ask the hearing party to repeat themselves. This can degrade the communication to the point that the conversation becomes confused, which undermines functional equivalence. Although ASR captioning accuracy may prove adequate in controlled, ideal settings, Ultratec has found that it is not yet sufficiently accurate in the types of real-world circumstances discussed above.

Further, captioning errors may not always be apparent to a user, which can result in potentially harmful consequences to all parties to a call. ASR engines that prioritize contextual cues to present the most grammatically correct version of an utterance may introduce several “invisible errors”—*i.e.*, language that is grammatically correct and that may seem correct when read but nevertheless is not a faithful representation of the speech. For example, if an ASR engine drops the word “not” because it was not uttered clearly by the hearing party, the hearing party’s statement, “You should not mix these two prescriptions,” could be transcribed by the ASR engine as, “You should mix these two prescriptions.” The potential danger to the user caused by this “invisible error” is plain.

Second, ASR technologies do not convey to the user non-language audio information, such as background noises or a hearing party’s emotional state (*e.g.*, laughing, crying, or yelling). For example, unlike a CA, an ASR engine is not likely to indicate that the hearing, elderly parent of a

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<sup>33</sup> See Hamilton Letter (discussing the relative importance of accuracy and delay in an extensive study examining both ASR-only and CA-assisted IP CTS).



deaf user is coughing excessively during their call, which is information that the user would value and may utilize to direct aid to the parent. As a result, the ASR engine is unable to provide captions of non-language audio information in a manner that is functionally equivalent to what a hearing person perceives. By contrast, CA-assisted IP CTS (as well as CAs handling other types of TRS calls) can and do convey such non-language audio information to the user to provide a functionally equivalent experience.

Third, an ASR engine cannot recognize a context-specific emergency or public safety situation, which creates a real risk to the health, safety, and wellbeing of users. Not all calls involving emergencies or significant and exigent health and safety issues are placed to 911. As a result, merely redirecting 911 calls away from ASR-only captioning platforms and to CAs is insufficient because it is not possible to determine whether any given *non-911* call will present a safety-of-life issue. For example, an elderly parent seeking aid may call an adult child first, rather than 911. Similarly, the child of a deaf parent who uses IP CTS may call the parent regarding an emergency, rather than 911. Also, a call can become an emergency during the course of the call. On calls captioned entirely using ASR, there is no way for the ASR engine to detect this and add a CA to the call to assist with the emergency. Further, calls with doctors (and sometimes attorneys) regularly involve the conveyance of critical information relevant to a user's health, safety, and wellbeing. In each of these cases, a CA will recognize an emergency or other safety-of-life situation during a call. An ASR engine cannot.

Recognizing the risk posed by this shortcoming of ASR-only IP CTS, VTCSecure proposes to “always have an agent come on during an emergency call.”<sup>34</sup> Because an ASR engine cannot detect when a call involves an emergency, VTCSecure presumably anticipates that the user will

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<sup>34</sup> VTCSecure Waiver Request at 3.

summon the CA by pushing a button on their device. However, Ultratec’s testing has demonstrated that elderly users, who represent a large percentage of IP CTS customers, as well as users with multiple health challenges, often are confused by this type of control.<sup>35</sup> Consequently, it is inappropriate to rely on it to address emergency situations. Another Applicant, MachineGenius, acknowledges concerns expressed about the handling of 911 calls by ASR-only IP CTS providers. MachineGenius agrees to “undertake a study” of the matter and commits to using CAs to handle 911 calls if the study demonstrates that CAs handle 911 calls better than ASR-only IP CTS.<sup>36</sup> As noted above, however, many emergency or urgent calls are not placed to 911, and it is unclear how an ASR engine would be able to identify when a call that is not placed to 911 should be given the care that is required for an emergency and/or urgent call. Further, it is unclear whether MachineGenius has completed this study. It should be required to do so prior to being certified to relay actual user IP CTS calls.

Over time, ASR technologies will continue to improve and ultimately may be able to address some or all of these important shortcomings. But current ASR-only technologies do not

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<sup>35</sup> Ultratec has tested the concept of allowing a user to press a button to switch between ASR captions and CA captions. Even when trained, certain users did not understand the function of the button and often pressed the button at inappropriate times, such as while the user is speaking or repeatedly throughout the call, which undermines its usefulness. Also, in an ASR-default/CA-optional IP CTS service, certain users, including many senior citizens, will become accustomed to using ASR-only IP CTS and, as a result, may not be able to successfully switch to a CA mode in an emergency. Indeed, the Commission has known for years that it is vital that individuals are able to call 911 using the same method that a person typically uses to communicate with friends and co-workers every day. *See* Emergency Access Advisory Committee, *Report on Emergency Calling for Persons with Disabilities, Survey Review and Analysis*, at 30 (presented July 21, 2011) <https://docs.fcc.gov/public/attachments/DOC-308532A1.pdf> (“Between 86% and 98% of the respondents in each disability group said that it was very important or somewhat important that they are able to call 9-1-1 using the same device they use every day, with an average of 95% across all respondents.”).

<sup>36</sup> Letter from Erik Strand, President, MachineGenius, to Marlene H. Dortch, Secretary, FCC, CG Docket Nos. 03-123, 13-24 at 7 (filed May 30, 2018).

and therefore are presently not adequate to caption telephone conversations. As a result, it simply is premature to certify ASR-only IP CTS providers at this time. Instead, the next step in the development of ASR for purposes of IP CTS may appropriately be the use of ASR with a CA on the call to ensure the quality of the call and that the user is not at risk.

## **V. CONCLUSION**

CGB should require the Applicants in this proceeding to provide more robust and public demonstrations of the efficacy of their unsubstantiated ASR-only services in compliance with Commission guidance provided in the 2018 Declaratory Ruling, especially in connection with the identification and handling of calls related to the health, safety, and wellbeing of users. The Commission also should complete the work that it has begun to create an appropriate regulatory framework for ASR-only IP CTS before moving forward with the certification of ASR-only services. Ultratec continues to be hopeful that ASR-only technologies can be incorporated into IP CTS in a manner that ensures functional equivalence and the efficient deployment of the technology. But ASR engines currently are not capable of adequately captioning calls under all of the adverse calling conditions experienced each day by numerous deaf and hard-of-hearing users. For this reason, it is premature at this stage to certify ASR-only IP CTS service.

Respectfully submitted,

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