

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

In the Matter of)	
)	
Closed Captioning of Video Programming)	CG Docket No. 05-231
)	
Telecommunications for the Deaf and Hard of)	
Hearing, Inc. Petition for Rulemaking)	
)	
Telecommunications for the Deaf and Hard of)	RM-11848
Hearing, Inc. et al. Petition for Declaratory)	
Ruling and/or Ruling Making on Live)	
Closed Captioning Quality Metrics and the)	
Use of Automated Speech Recognition)	
Technologies)	

**COMMENTS OF
NCTA – THE INTERNET & TELEVISION ASSOCIATION**

October 15, 2019

Rick Chessen
Jared Sher
Jacqueline Clary
Radhika Bhat
NCTA – The Internet & Television
Association (“NCTA”)
Washington, D.C. 20001-1431
(202) 222-2445

TABLE OF CONTENTS

I.	Introduction and Summary	2
II.	The Commission’s Current Rules Strike a Considered Balance to Ensure Caption Quality.....	3
III.	The Current Rules Enable Industry Efforts to Advance Caption Quality and Promote Innovation	5
	A. The Cable Industry Is Dedicated to Providing Viewers High Quality Captions	5
	B. Caption Quality Has Improved Under the Best Practices Approach, and Petitioners Have Presented No Evidence to the Contrary	7
	C. The Current Rules Encourage Innovation in the Captioning Marketplace.	10
IV.	Conclusion	11

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

In the Matter of)	
)	
Closed Captioning of Video Programming)	CG Docket No. 05-231
)	
Telecommunications for the Deaf and Hard of)	
Hearing, Inc. Petition for Rulemaking)	
)	
Telecommunications for the Deaf and Hard of)	RM-11848
Hearing, Inc. et al. Petition for Declaratory)	
Ruling and/or Ruling Making on Live)	
Closed Captioning Quality Metrics and the)	
Use of Automated Speech Recognition)	
Technologies)	

COMMENTS OF NCTA – THE INTERNET & TELEVISION ASSOCIATION

NCTA – The Internet & Television Association (“NCTA”)¹ submits these comments in response to the Public Notice seeking comment on a petition for declaratory ruling and petition for rulemaking (“Petition”) filed by Telecommunications for the Deaf and Hard of Hearing, Inc. et al. (“Petitioners”).²

¹ NCTA – The Internet & Television Association represents content creators, network innovators, and voice providers that entertain, inform, connect, and inspire consumers. NCTA is the principal trade association for the U.S. cable industry, representing more than 200 cable program networks as well as cable operators that serve nearly 80 percent of the nation’s cable television customers. Cable program networks reach nearly 90 million U.S. television households and have invested more than \$430 billion in award-winning news, sports, and entertainment content since 1997. The cable industry also is the nation’s largest provider of broadband service after investing over \$290 billion over the last two decades to deploy and continually upgrade networks and other infrastructure, which has helped spur more than a decade of innovation in the streaming television space, with tens of millions of consumers accessing billions of minutes of online programming each year.

² Telecommunications for the Deaf and Hard of Hearing, Inc. et al., Petition for Declaratory Ruling and/or Rulemaking on Live Closed Captioning Quality Metrics and the Use of Automatic Speech Recognition Technologies, CG Docket No. 05-231 (filed July 31, 2019) (“Petition”); *see also Consumer and Governmental Affairs Bureau Seeks Comment on Petition for Declaratory Ruling and Petition for Rulemaking Filed by Telecommunications for the Deaf and Hard or Hearing et al. on Live Closed Captioning Quality Metrics and the Use of Automatic Speech Recognition Technologies*, Public Notice, CG Docket No. 05-231, RM-11848, DA 19-776 (rel. Aug. 14, 2019).

I. INTRODUCTION AND SUMMARY

The cable industry is committed to providing high quality captions to cable customers and has devoted significant resources to serving deaf and hard of hearing viewers. The typical cable system and its program networks offer tens of thousands of hours of captioned programming weekly, including substantial amounts of captioned live programming. Cable operators and programmers continually strive to improve their deaf and hard of hearing viewers' experience, including by implementing internal caption quality systems, working with advocates and other stakeholders, monitoring and, where appropriate, implementing technological advancements, and promptly investigating possible issues after those rare instances in which there have been complaints.

Given the current highly competitive video marketplace, NCTA's members want all of their viewers to have the best experience possible, and accordingly, they fully support the Petitioners' goal of ensuring viewers have access to live programming with high quality captioning. The actions proposed in the Petition, however, would not advance this goal and instead could unnecessarily complicate industry efforts to provide quality captioning for live programming. The Commission's current rules—which became effective in 2015 and were adopted based on a robust record—already are ensuring the presence of quality captions. These rules remain fully capable of maintaining high quality captions going forward. The current rules also provide industry with the flexibility to pursue innovative and beneficial technological advancements. The Commission therefore should decline the Petitioners' request to (i) initiate a notice of inquiry and subsequent rulemaking to develop technology-neutral caption quality metrics; and (ii) issue a declaratory ruling and/or expedited rule change on the use of automatic speech recognition (“ASR”) technologies.

II. THE COMMISSION'S CURRENT RULES STRIKE A CONSIDERED BALANCE TO ENSURE CAPTION QUALITY

The Commission has taken recent, significant action to advance the accessibility of video programming, adopting its current closed captioning quality rules only a few years ago after considering substantial input from an array of stakeholders.³ These rules promote the benefits of accessible programming for all by appropriately balancing the need for consistency in caption quality against the risk that overly prescriptive requirements would hamper growth and innovation. These rules have proven to be effective in increasing the quality of closed captions, including for live programming.⁴ Petitioners introduce no compelling evidence warranting reconsideration of the rules at this time.

The Commission's caption quality rules became effective in 2015, following review of a robust record that reflected proposals from captioning vendors, video programmers, programming distributors, and advocates for the deaf and hard of hearing, among others. Indeed, the Commission considered over 1,600 comments and *ex parte* filings before (i) adopting the non-technical quality standards requiring that captions be accurate, synchronous, complete, and appropriately placed,⁵ and (ii) establishing best practices that video programmers may adhere to in order to certify their compliance with these caption quality requirements.⁶ The choice to adopt a best practices compliance mechanism was deliberate; the Commission found that a best

³ It has been less than five years since the rules became effective. In addition, program networks and cable operators have spent several years implementing the various captioning requirements for IP-delivered programming, which were phased in over multiple deadlines, including as recently as July 2017. Now, even more captioning is available across the spectrum of NCTA members' programming, including live digital content.

⁴ As just one example, the rules specifically have helped improve caption placement—save for inadvertent errors, captions now appear above breaking news banners, stock market tickers, and so forth.

⁵ See *Closed Captioning of Video Programming Telecommunications for the Deaf and Hard of Hearing, Inc. Petition for Rulemaking*, Report and Order, Declaratory Ruling, and Second Further Notice of Proposed Rulemaking, 29 FCC Rcd. 2221, ¶¶ 16, 26-33 (2014) ("2014 Report and Order"); 47 C.F.R. §79.1(j)(2).

⁶ 2014 Report and Order ¶¶ 51-65.

practices approach would advance the objective of “delivering high quality captions to viewers[.]”⁷ On the other hand, the Commission explicitly rejected requests that it create objective caption quality metrics, concluding that metrics “may be more burdensome, yet less effective in ensuring that viewers can fully understand the captions.”⁸

The Commission’s analysis of the value of mandating caption quality metrics was—and remains—correct. As the Commission recognized in the *2014 Report and Order*, a requirement “to monitor every program on every channel at all times for the purpose of measuring captioning quality” against some objective metric would impose an enormous and expensive administrative burden on the cable industry,⁹ and would divert funds that could otherwise be used on programs or technologies to improve the viewer experience. Moreover, caption quality metrics would be especially unfair if applied to live programming, as the Petitioners request. There are significant challenges to captioning content in real time, many of which the Commission recognized in adopting the quality standards.¹⁰ Live captioners, for instance, operate under extreme time pressure, with little or no time to correct for errors,¹¹ and the nature of live program captioning makes perfect synchronicity nearly impossible.¹² A technology-neutral metric cannot eliminate the possibility of human error or remove these technological limitations.

⁷ *Id.* ¶ 59.

⁸ *Id.* ¶ 67.

⁹ *Id.*; see also Comments of National Cable & Telecommunications Association, CG Docket No. 05-231, at 6 (filed Nov. 10, 2005) (noting that cable operators typically offer hundreds of channels).

¹⁰ See 2014 Report and Order ¶¶ 40-46 (discussing the limitations in achieving complete accuracy, synchronicity, program completeness, and placement in captioning live programming).

¹¹ See Comments of National Cable & Telecommunications Association, CG Docket No. 05-231, at 4 (filed Nov. 24, 2010) (“NCTA Comments”); Reply Comments of the National Cable & Telecommunications Associations, CG Docket No. 05-231, at 2-3 (filed Dec. 9, 2010) (“NCTA Reply Comments”).

¹² See 2014 Report and Order ¶ 44 (“[W]e recognize, based on comments from industry and captioners, that a slight delay in the delivery of live captions is inevitable due to the time it takes for the captioner to hear the program, provide the captions, and have the captions transmitted to the viewer.”).

Petitioners provide no new information that would alter the sound analysis in the Commission’s *2014 Report and Order*, nor do they propose any specific metrics for the Commission to consider now. Indeed, by their own explanation, Petitioners are currently undertaking a multi-year study regarding caption quality metrics and do not expect to be able to propose specific metrics for years, if at all.¹³ Given that Petitioners themselves remain unsure about what appropriate metrics might look like, it simply is not ripe for them to ask the Commission to mandate new rules at this time. The Commission therefore should decline to grant Petitioners’ request for further inquiries and rulemakings, and instead allow time for Petitioners’ study to better define whether rule revisions may be necessary in the future or whether evolution of technology, including ASR solutions, obviate the need for further action.¹⁴

III. THE CURRENT RULES ENABLE INDUSTRY EFFORTS TO ADVANCE CAPTION QUALITY AND PROMOTE INNOVATION

A. The Cable Industry Is Dedicated to Providing Viewers High Quality Captions

Being in the business of providing video content to subscribers, the cable industry has a strong incentive to try and reach every viewer, especially as competition increases. Engaged viewers watch more television and more advertisements, and they remain loyal customers. Quality captioning therefore is a win-win for the deaf and hard-of-hearing community and for the cable industry. In adopting its rules governing caption quality standards and best practices, the Commission confirmed that it “intended for companies to take the measures necessary to ensure that the captions would be produced as an integral part of their video production process[.]”¹⁵

¹³ See Petition at 15.

¹⁴ As is discussed below, it is premature for the FCC to constrain use of ASR, since it is expected that ASR will continue to improve as the technology evolves.

¹⁵ 2014 Report and Order ¶ 23.

NCTA's members have done exactly that, devoting substantial time and resources to making programming accessible for deaf and hard of hearing viewers nationwide.

For instance, NCTA members participate in stakeholder groups that foster advancements in captioning industry wide. NCTA and the National Association of Broadcasters regularly host a caption quality summit to bring together cable operators, cable and broadcast networks and stations, advocates for the deaf and hard of hearing, and (recently) caption vendors to assess the state of closed captioning, share observations and information, and work toward overcoming any challenges. The most recent summit, held on October 2, 2019, provided industry with valuable feedback that will inform industry efforts to engage and continue to meet the needs of deaf and hard of hearing viewers. Some NCTA members also have been selected to participate in the Commission's Disability Advisory Committee ("DAC"), which currently is evaluating issues related to the use of enhanced Electronic Newsroom Technique for captioning live programming. The cable industry looks forward to actively participating in the DAC's discussion and to continued collaboration with all stakeholders to promote the advancement of closed captioning. The DAC and other opportunities to convene stakeholders to work toward improving the viewer experience offer more flexible ways to facilitate the provision of high-quality captions than rule changes.

In addition to industry-wide efforts, individual companies within the cable industry make concerted efforts to better the experience of deaf and hard of hearing viewers. Cable programming networks, for example, typically incorporate caption quality provisions into their agreements with caption vendors, demanding high quality captions that meet exacting standards. Networks and cable systems also have worked hard to implement operational best practices,

including by instituting systems to monitor caption quality.¹⁶ Moreover, during the most recent caption quality summit, one video programmer explained that it has established a dedicated team of experts that is specifically tasked with resolving captioning complaints received company-wide to ensure that it not only catches and resolves isolated issues, but also is able to identify any broader trends should they arise. Another video programmer noted instances where company engineers volunteered to meet viewers at their homes to resolve equipment issues related to captioning, even in cases when the equipment was purchased by the viewer from a third party. These examples demonstrate that the cable industry remains committed not just to adhering to the letter of the Commission's caption quality rules, but also to living up to the spirit of the rules and the shared goal of making video programming as accessible as possible.

B. Caption Quality Has Improved Under the Best Practices Approach, and Petitioners Have Presented No Evidence to the Contrary

Petitioners allege that the Commission's current rules have done little to improve caption quality. As is discussed in more detail below, the facts do not bear this out.

Although NCTA's members have made great strides toward providing even higher quality captions, closed captioning is not always perfect. As the Commission has recognized, despite the quality standards and companies' best efforts, captioning errors will occur due to limitations intrinsic to the technology available and human capabilities. This is particularly true with respect to live captioning.¹⁷ The Commission's caption quality rules accounted for this reality and incorporated a mechanism to address problems that may arise: the consumer complaint process. The complaint model appropriately balances consumer desires to incentivize

¹⁶ See 47 C.F.R. §79.1(k).

¹⁷ See 2014 Report and Order ¶¶ 35-36 (discussing the *de minimis* standard for pre-recorded programming); *id.* ¶¶ 40-46 (discussing the limitations in achieving complete accuracy, synchronicity, program completeness, and placement in captioning live programming).

caption innovation, companies' responsibilities to ensure caption quality, and the Commission's need to enforce its rules without unduly burdening the industry.¹⁸ NCTA's members take seriously any complaints that they receive, and they work with the individual complainant and advocacy groups to quickly resolve the issue. As the Commission has found, these complaints are "the most practical means to monitor industry compliance with [the] rules"¹⁹—and the reality is that cable operators and programmers receive very few complaints related to closed captions, whether reported to the Commission or directly to the companies.

The Commission's data reinforces NCTA member experiences by showing that relatively few consumers file complaints relating to closed captioning, and the numbers have been declining. This data further suggests that the current caption quality rules—including the best practices and consumer complaints approach—are working.

Specifically, the volume of captioning complaints reported to the Commission dropped off significantly following the adoption of the *2014 Report & Order*. Between 2009 and 2013, the Commission received 2,323 general caption complaints—an average of 465 per year. The Commission expressed the view that this number was lower than expected due to the absence of caption quality rules; in other words, the agency believed that consumers were not complaining more about caption quality because the rules did not provide them any legal mechanism to do so.²⁰ The data from 2015-2018,²¹ however, illustrates that the Commission received far fewer

¹⁸ In rejecting the Consumer Groups' call for quality metrics, the Commission recognized the significant costs that an audit program could have on industry. *See* 2014 Report and Order ¶ 67; *see also* NCTA Comments at 3-5, 9-10; NCTA Reply Comments at 5.

¹⁹ *See* 2014 Report and Order ¶ 66.

²⁰ *See id.* ¶ 16, n.49.

²¹ *See* Federal Communications Commission: Consumer Inquiries and Complaints Division, *CGB – Consumer Complaints Data*, FCC – Open Data (last updated Sept. 13, 2019), <https://opendata.fcc.gov/Consumer/CGB-Consumer-Complaints-Data/3xyp-aqkj>. The FCC's data for 2014 is not included in this analysis—the rules

complaints in the years following implementation of the caption quality standards. Not once in those years did the number of complaints for closed captioning reach the yearly average for 2009-2013. Indeed, the average number of caption complaints per year for closed captioning on television between 2015-2018 declined to 278, and even when adding complaints for captioning on programming delivered over the Internet, the combined caption complaint average was 364 per year during this period.²²

The Petitioners present no evidence of an increasing number of complaints or unresolved complaints, nor do they offer any specific indication that the best practices generally have failed to provide quality captions.²³ To the extent that Petitioners observe that captions from time-to-time (especially during live programming) may have inaccuracies or synchronicity problems, as noted above, some problems likely will persist due to the limitations of current technology and human capability. Petitioners do not provide a basis upon which the Commission could conclude that its existing rules are insufficient.

Accordingly, the Commission should maintain the current rules and allow industry to continue to work toward providing the highest quality captions possible as the tools and technology evolve. The current rules, combined with open dialog and cooperation—not metrics,

adopted in the *2014 Report and Order* did not go into effect until March 2015, and in any event, the FCC has data only for November and December 2014.

²² *See id.* This number may be an overstatement of actual complaints. The Commission's consumer complaint database appears to log complaints as they are submitted regardless of whether the submission contains all of the information required by the rules. Particularly within the first few years of implementation, many NCTA members received non-compliant complaints from the Commission, including complaints that lacked the specificity needed to address them, complaints not about captioning or involving programming not covered by the rules, or complaints with no merit, among others. Similarly, during the October 2, 2019 summit, industry participants noted that only a fraction of the caption complaints they receive directly from consumers relate to caption quality. For example, a substantial number of complaints received by one major programmer earlier this year were about how to turn captions off.

²³ Some advocates have claimed that complaint rates are low because viewers purportedly are resigned to accepting what they claim is substandard captioning. It seems unlikely, however, that viewers are more disaffected today than they were when caption quality rules did not exist. In any event, as discussed above, NCTA's members work diligently to resolve each complaint that they receive.

burdensome mandatory audit processes, or “aggregate quality evaluations across the video programming ecosystem”²⁴—remain the best way to promote caption quality, address concerns, and encourage technological advances.²⁵

C. The Current Rules Encourage Innovation in the Captioning Marketplace.

The Commission’s rules not only are sufficiently flexible to promote high quality captioning,²⁶ they also have enabled the development of new technologies and practices that have the power to further advance caption quality. Chief among these is ASR.²⁷ Although it remains a largely nascent technology for use in closed captioning, the cable industry has begun to actively work with ASR and develop relationships with experts in the field to refine and operationalize it.

ASR’s promise lies in its potential to automate some of the most challenging aspects of real-time captioning, including minimizing human errors (*i.e.*, improving caption accuracy) and reducing the lag that necessarily occurs during human captioning (*i.e.*, improving caption synchronicity and completeness). NCTA members’ early experiences with ASR technology suggest that ASR can play a meaningful role in helping to achieve even higher quality captions. One NCTA member that has rolled out ASR on some of its networks, for example, conducted an

²⁴ Petition at 15.

²⁵ See 2014 Report and Order ¶ 66 (“We believe that a consumer-complaint-driven procedure, rather than an audit-driven one, is the most practical means to monitor industry compliance with our rules”).

²⁶ The Commission’s quality rules promote innovation and ensure accessibility for real-time captioning regardless of which captioning method is used. See *id.* ¶¶ 41-42; see also 47 C.F.R. §79.1(m).

²⁷ “It is apparent ... that both the video programming industry and captioning agencies have already developed many practices of their own to achieve good quality captions of live programming for people who are deaf and hard of hearing. We encourage the continued use of these measures and other measures that are technically feasible, to provide live captions that keep errors to a minimum and that provide an accurate presentation of what is being said.” 2014 Report and Order ¶ 41. These efforts to improve practices continue in the use of ASR. For example, member companies report using current quality standards to develop checklists and standards to consider when soliciting requests for proposals from ASR vendors and conducting informal performance reviews of ASR captioning.

analysis comparing transcripts of captions on its programming from a human captioning firm to captions generated by ASR services. The analysis found the total error rate for incorrect words or missing content with a live captioner was two to five times greater than the error rate using ASR technology. In short, ASR technology was able to caption substantially more content than a live captioner with fewer errors due to incorrect use of words. These findings are consistent with other member company experiments and early implementation—companies are observing that ASR greatly advances accuracy, synchronicity, and completeness. Moreover, because ASR is based on machine learning, it will only continue to improve as it is more widely deployed, as preliminary internal analyses by users of this technology confirm.

That is not to say that ASR is a full-time, turnkey solution for all closed captioning. ASR experts must continue to work on speaker identification and punctuation issues, for instance, as the technology evolves. But the promise shown by ASR, and the willingness to invest in and study the technology, exemplify the cable industry's ongoing commitment to improving caption quality to the maximum extent possible. It is far too early in its development for the Commission to reach any conclusions about ASR. The Commission certainly should not stymie the progress of this promising technology by requiring unnecessary new certifications or burdensome new oversight rules. Instead, the Commission should permit industry to continue to use and experiment with ASR and reevaluate it, if necessary, if and when it is widely deployed.

IV. CONCLUSION

The cable industry shares the interest of deaf and hard of hearing viewers in ensuring that all television programming includes high quality captioning. The cable industry competes vigorously for its viewers, and quality captioning is an integral part of providing viewers with the best experience possible. The Commission's recently adopted caption quality order struck an important balance that makes television programming accessible to people who are deaf and hard

of hearing while simultaneously granting industry the flexibility to innovate. The rules adopted in 2014 have worked to improve caption quality and reduce complaints. The Petitioners do not present any evidence to the contrary. The Commission therefore should decline Petitioners' requests to (i) initiate a notice of inquiry and subsequent rulemaking to develop technology-neutral caption quality metrics; and (ii) issue a declaratory ruling and/or expedited rule change on the use of automatic speech recognition technologies.

Respectfully submitted,

/s/ **Rick Chessen**

Rick Chessen
Jared Sher
Jacqueline Clary
Radhika Bhat
NCTA – The Internet & Television
Association (“NCTA”)
Washington, D.C. 20001-1431
(202) 222-2445

October 15, 2019