Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Call Authentication Trust Anchor	)	WC Docket No. 17-97
	)	

REPLY COMMENTS
OF
WTA – ADVOCATES FOR RURAL BROADBAND

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Summary

WTA - Advocates for Rural Broadband ("WTA") supports the termination of the continuing extension for STIR/SHAKEN compliance by non-IP networks because the Out-of-Band and the Non-IP In-Band standards have been fully developed and finalized and the underlying equipment and software is reasonably available on the commercial market. Increased implementation of STIR/SHAKEN – either via use of the non-IP standards or via the upgrade of originating, intermediate and terminating networks to IP technology – will reduce the danger of increasing call completion problems and related service quality reductions affecting rural and other small service providers and their customers.

The most efficient and effective way to implement nationwide STIR/SHAKEN, as well as to ensure uniform nationwide voice service quality, is to complete the ongoing transition to an all-IP voice network. While most commenting parties agree on this point, the primary obstacle to ubiquitous STIR/SHAKEN on an all-IP voice network remains the refusal by several large carriers to convert their existing access tandem switches from time division multiplexing ('TDM") technology to IP technology.

The Out-of-Band standard has not been revised or otherwise changed since it was distributed in August 2021, has been successfully deployed by a number of providers, and has been designed to be scalable and secure. Both the Out-of-Band standard and the complementary Non-IP In-Band standard address only alternative ways to transport caller ID authentication information, and do not impact other aspects of the STIR/SHAKEN framework such as governance authority, policy administration, certification authority, and certificate processes.

Finally, the last minute "working group options" advanced by Verizon and USTelecom are not "consensus" proposals but rather are opposed by many of the small voice service providers on whom they are intended to be imposed. Among other defects, these "options" constitute transparent attempts to evade the TDM access tandem issues; appear to require smaller carriers to accept substandard service on existing facilities via an "arrangement" that the larger carriers themselves do not intend to use; contain no indication that the "options" will actually work but rather require at least another year of delay for study and discussion; require smaller carriers to engage in substantial commercial negotiations before the "options" can be implemented; pose the danger of higher transport costs that are likely to require smaller providers to increase their voice service rates; and gloss over "security concerns" with respect to the "options."

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WTA – Advocates for Rural Broadband ("WTA") hereby submits its reply comments with respect to the Commission's *Notice of Inquiry* (Call Authentication Trust Anchor), WC Docket No. 17-97, FCC 22-81, released October 28, 2022 ("*NOI*").

It is now more than three years since the passage of the Pallone-Thune Telephone Robocall Abuse Criminal Enforcement and Deterrence Act ("TRACED Act"). There is no reason to further delay implementation of a nationwide STIR/SHAKEN caller identification ("caller ID") authentication framework that can deter and minimize illegally spoofed robocalls. Therefore, WTA urges the Commission to terminate the extensions in Sections 64.6303(a) and 64.6304(d) of the Rules for STIR/SHAKEN compliance by non-Internet Protocol ("IP") networks because the two non-IP network standards issued by the Alliance for Telecommunications Industry Standards ("ATIS") – specifically the Out-of-Band standard (ATIS-1000096) and the Non-IP In-Band standard (ATIS-1000095) – are fully developed and finalized and the underlying equipment and software necessary to implement them is reasonably available on the commercial market. Given that the Section 63.6304(a)(1) STIR/SHAKEN compliance extension for small service providers is scheduled to terminate on June 30, 2023, that date constitutes a reasonable target for at least beginning the phase-out of the non-IP network extension. These steps will not only result in closure of the major remaining gap in the Commission's caller ID authentication system but also

will encourage and accelerate the ongoing transition to the ultimate future IP network. Finally, increased implementation of STIR/SHAKEN – either via the ATIS non-IP standards or via the upgrade of all or virtually all originating, intermediate and terminating voice networks to IP technology – will avoid the danger of increasing call completion problems affecting rural and other small service providers and the resulting subversion of the reasonably comparable service goals of Section 254(b) of the Communications Act.

Ultimate Goal: Ubiquitous STIR/SHAKEN on All-IP Voice Network

WTA believes that the most efficient and effective way to fully implement nationwide STIR/SHAKEN, as well as to ensure voice service of uniform quality throughout the nation, is to accelerate and complete the ongoing transition to an all-IP voice network. WTA agrees with the Competitive Carriers Association ("CCA") and NCTA – The Internet & Television Association ("NCTA") that the primary obstacle to such an all-IP voice network is the refusal by several large carriers (namely, Verizon, AT&T, Lumen and Frontier) to convert their existing access tandem switches from time division multiplexing ('TDM") technology to IP technology.[1] As NCTA states, "there is no technological impediment to transitioning this equipment to IP – it is strictly a business decision by these providers not to facilitate IP traffic exchange."[2]

The presence of so many TDM access tandems in the existing voice network is frustrating the efforts of many WTA members and other rural local exchange carriers ("RLECs") to transition their voice services from TDM to VoIP, and is creating significant potential for the recurrence of rural call completion problems as well as the condemnation of many rural customers to inferior and uncertain voice service.

[1] See *Comments of Competitive Carriers Association*, WC Docket No. 17-97 (filed December 12, 2022), at pp. 1-2 ("*CCA Comments*"); *Comments of NTCA-The Internet & Television Association,* WC Docket No. 17-97 (filed December 12, 2022) at pp. 1-2 ("*NCTA Comments"*).
[2] *NCTA Comments,* p. 2.

Many WTA members and other RLECs have already converted their voice services from TDM to VoIP, but cannot implement STIR/SHAKEN reliably and effectively because they must hand off their originating voice calls to intermediate service providers that use TDM access tandems that remove the STIR/SHAKEN header. Moreover, even where an RLEC originates a VoIP call containing appropriate STIR/SHAKEN information and hands the call off to an IP intermediate service provider, the RLEC has no certainty that the call will retain the STIR/SHAKEN data along the entire call path. It is WTA's understanding that most or all calls that lack a direct route to a terminating carrier are transmitted via default to the Local Exchange Routing Guide ("LERG") and are then most often routed and delivered via one or more TDM tandem switches where STIR/SHAKEN data is likely to be removed.

Other RLECs – particularly very small ones – have been discouraged from making the investments necessary to convert their voice services from TDM to VoIP because their voice traffic will still be routed through one or more TDM access tandem switches. Given the inability to pass STIR/SHAKEN data as well as other TDM-IP transition issues, these RLECs have little incentive at this time to devote their limited resources to VoIP conversions.

While claiming that such transition should not be mandated, Verizon asserts that the "best approach" for achieving the Commission's and the Congress's goal of widespread call authentication to protect consumers from illegal robocalls is to promote and encourage the ongoing transition from non-IP to IP so that STIR/SHAKEN can better achieve its promise.[3] WTA agrees that Verizon's "best approach" is the most effective and efficient way to address the call authentication problem, but points out that the reluctance to date by Verizon and the other three large carriers to convert their TDM access tandems to IP remains the primary obstacle to an all-IP

[3] *Verizon's Comments on Notice of Inquiry,* WC Docket No. 17-97 (filed December 12, 2022), at p. 1 ("*Verizon Comments").*

network.[4] And whereas USTelecom claims that TDM network usage is at an all-time low and continues to decline rapidly as service providers deploy IP-based networks at an unprecedented pace, its asserted "conclusion" that TDM-reliant communications create only a "small gap in caller ID authentication"[5] does not follow. This is because the Verizon-AT&T-Lumen-Frontier TDM access tandem switches constitute bottlenecks that are located along potential call paths in a manner and number that significantly exacerbate the "gap" by stripping of STIR/SHAKEN data from calls that were originated in an IP format by many RLECs and other providers that have deployed IP-based networks.

Moreover, the damage caused by the removal of STIR/SHAKEN data by TDM access tandems includes call completion problems as well as caller ID authentication gaps. Until RLECs can originate IP calls and be certain that the STIR/SHAKEN "signatures" for such calls reach the terminating service providers, it is likely that calls lacking STIR/SHAKEN authentication will be blocked or designated as "spam risk" by many terminating service providers. This situation will result in the recurrence of rural call completion problems like those addressed by the Commission in WC Docket No. 13-39 during the 2013-2019 period. By limiting the ability of *bona fide* rural customers of RLECs and other small service providers whose traffic passes through TDM access tandems to complete lawful personal and business calls to destinations served by other carriers, further delays and gaps in STIR/SHAKEN implementation will deny them the reasonably

[4] Aureon notes a second obstacle to STIR/SHAKEN implementation and an all-IP network: the fact that several interexchange carriers ("IXCs") continue to deliver their toll traffic in TDM format to the new IP tandem switch that it has deployed for its centralized equal access network. *Comments of Iowa Network Services, Inc., D/B/A Aureon Network Services,* WC Docket No. 17-87 (filed December 12, 2022), at pp. 4-6 ("*Aureon Comments"*). However, given that two of the three named IXCs delivering TDM traffic for termination are Lumen and Frontier, this situation may also stem in whole or part from the continuing use of TDM access tandem switches by such IXCs.

[5] *Comments of USTelecom – The Broadband Association,* WC Docket No. 17-97 (filed December 12, 2022), at pp. 2-3 ("*USTELECOM Comments").*

comparable voice service promised in Section 254(b) of the Communications Act and associated Universal Service Fund programs.

Whether accomplished voluntarily or as the result of a Commission mandate, WTA believes that the best short-term and long-term approach to mitigate caller ID authentication and rural call completion issues is to accelerate the upgrade of the entire voice network to IP to allow for the initiation, maintenance, and termination of Session Initiation Protocol ("SIP") calls and to fully implement the STIR/SHAKEN framework throughout such entire network. WTA recognizes that this will entail increased investment and expense for its members, as well as for other originating, intermediate, interexchange and terminating voice service providers. However, many voice service providers have already implemented, or are currently in the process of implementing, IP in substantial portions of their networks. For example, Aureon notes that it installed a new IP tandem voice switch in 2020 for its Iowa centralized equal access and transport network and that it will complete the transition of all of the traffic of its many subtending Iowa RLECs to that switch during the first quarter of 2023.[6] Without getting into the comparative advantages and disadvantages of various technologies, the indisputable fact is that the telecommunications industry has already moved far down the path toward what is virtually certain to be a future all-IP national network.

Non-IP Standards Are Finalized and Ready for Implementation

If an all-IP network is not possible at this time, WTA believes that the Out-of-Band standard that was published by ATIS in August 2021 (ATIS-1000096) is a feasible and effective alternative. This standard was distributed over 15 months ago, has not been revised or otherwise changed since that time, and there does not appear to be any proceeding opened to consider

[6] *Aureon Comments*, pp. 3-4.

potential revisions. In fact, it is WTA's information and belief that the Out-of-Band standard is fully developed, finalized and in actual use.[7] The underlying functionalities necessary to implement the standard are reasonably available on the commercial market.

WTA defers to TransNexus, an experienced provider of STIR/SHAKEN solutions, with respect to the existing and future mechanics of the Out-of-Band standard's implementation.[8] WTA understands that TransNexus has been employing Out-of-Band functionality to provide STIR/SHAKEN caller ID authentication for multiple service provider customers. One WTA member that has used the Out-of-Band STIR/SHAKEN functionality provided by TransNexus for more than a year reports that it has proven to be highly reliable and effective, and that it enables calls to be completed with their STIR/SHAKEN data intact regardless of the presence of TDM facilities in the call path.

TransNexus points out that the Out-of-Band and Non-IP In-Band standards address only alternative ways to transport caller ID authentication information, and do not impact other aspects of the STIR/SHAKEN framework such as governance authority, policy administration, certification authority, and certificate processes.[9] As WTA understands the Out-of-Band process, it entails: (a) the publication of a call's STIR-SHAKEN passport by a provider originating a call to a non-IP trunk (or by a provider transmitting a call from an IP trunk to a non-IP trunk) to a Secure Telephone Identity Call Placement Service ("STI-CPS") database using STI-Authentication Service ("STI-AS") software and an Internet connection; (b) the simultaneous replication of the STIR/SHAKEN passport by the receiving STI-CPS to all other STI-CPS databases in the STI-CPS mesh network; and (c) the retrieval of the STIR/SHAKEN passport from

[7]Like STIR/SHAKEN itself, it is common for virtually all technical standards, systems, databases and software to be revised and supplemented as problems are encountered during implementation and operation.
[8] *Comments of TransNexus,* WC Docket No. 17-97 (filed December 12, 2022) ("*TransNexus Comments").*
[9] *TransNexus Comments,* pp. 2-3.

one of the STI-CPS databases using STI-Verification Service ("STI-VS") software and an Internet connection by the provider terminating the call (or by a provider transiting a call received from a non-IP trunk to an IP trunk). A functional version of the core STI-CPS database has been developed and is already in use. The STI-CPS mesh network is readily scalable and can be expanded or contracted to include as many STI-CPS databases as necessary to accommodate service provider needs and traffic volumes. The STI-AS and STI-VS software add an additional feature to the respective STIR/SHAKEN authentication and verification services that gives voice service providers the option of sending passport information to, or receiving passport information from, the STI-CPS mesh network.

TransNexus provides specific examples of the efforts by the ATIS Non-IP Call Authentication ("NIPCA") task force to address and resolve potential security issues with respect to the Out-of-Band standard.[10] Whereas Verizon claims that it and other providers have raised security concerns during the course of the ATIS proceedings that have not been addressed and that preclude it from adopting the Out-of-Band approach,[11] the document that it uses as evidence of its security concerns inexplicably comes very late in the process as it is dated November 30, 2022[12] -- over 15 months after the August 2021 issue of the Out-of-Band standard by ATIS and over a month after the October 28, 2022 release of the *NOI* by the Commission.

Contrary to Verizon's speculations, the Out-of-Band system does not make it likely for bad actors to be able to hijack legitimate STIR/SHAKEN credentials and present fraudulent calls to consumers as legitimate calls.[13] First, any entity accessing the STI-CPS network to seek, identify or duplicate a passport must be a service provider and an authorized member of the

[10] *TransNexus Comments, p. 10.*
[11] *Verizon Comments, pp. 6-7.*
[12] *Id., p. 7 n. 14.*
[13] *Id.,* p.6.

STIR/SHAKEN system and have a valid STI certificate.[14] Second, the STI-CPS network requires a requesting service provider to provide both the calling number and the called number in order to obtain a passport – a very difficult task for an entity that is not the service provider originating, transporting or terminating the call along its path.[15] Third, passports are held in the STI-CPS network only for a very brief period of time (generally, 5-to-15 seconds), which means that a bad actor does not have the time or ability to overwhelm the network with multiple attempts to guess the required calling and called numbers but rather would be readily discovered and locked out by routine methods used to prevent denial of service attacks.[16] Fourth, because the bad actor has to sign each request with a valid STI certificate, it is easy for the STI-CPS to identify it and take steps to limit both current and future access by it.

Finally, WTA does not understand Verizon's claim that the ATIS standards "violate Verizon's own rules for CPNI [Customer Proprietary Network Information] access."[17] All of the STIR/SHAKEN framework – both IP and non-IP – is intended to ensure that the calling number indicated by the called party's caller ID is a legitimate number rather than a spoofed one being used by an illegal robocaller. The STI-CPS passports used by the Out-of-Band mechanism contain no sensitive information other than the calling number and called number that are essential for STIR/SHAKEN verification. Put another way, the subject calling and called numbers are used for a specific and lawful robocall deterrence reason, and not for any of the activities subject to CPNI protections and restrictions.

WTA reiterates that it also supports the Non-IP In-Band standard that was adopted by ATIS in August 2021 and revised in August 2022. WTA believes that no work is currently being

[14] *TransNexus Comments*, p. 10.
[15] *Id.*
[16] *Id.*
[17] *Verizon Comments*, p. 6.

done on this standard, and that the revised version is now fully developed and finalized. WTA is aware that this standard can be burdensome from both time and expense perspectives because it requires service providers to enter into multiple bilateral agreements to furnish appropriate trust information to other service providers with which they exchange traffic. However, because this standard may be feasible and economical for some carriers under some circumstances, WTA believes that it can and should be approved and employed as a complement to the Out-of-Band standard.

The Last Minute "Working Group Report" Options Will Saddle
Small Voice Service Providers with Substandard and/or Higher Cost Solutions

Three years after the TRACED Act was enacted and at a time when the Out-of-Band and Non-IP In-Band standards are complete and ready for Commission action, Verizon and USTelecom are disregarding the standards process and trying to substitute instead an eleventh-hour November 2022 "working group report" which outlines three "options" that would enable Verizon, AT&T, Lumen and Frontier to evade the problems created by their TDM access tandems. This "report" is not a "consensus-based agreement"[18] under any reasonable understanding of "consensus" for it is opposed by many of the "providers of small volumes of voice traffic" whose STIR/SHAKEN problems it purports to address (including both RLEC trade associations). Rather, its primary impact will be to delay full STIR/SHAKEN implementation, given that USTelecom states that the working group "will *continue to meet for a year* to evaluate the effectiveness of these solutions and resolve any identified issues [emphasis added]."[19]

Verizon describes the first option as a "solution" that would offer "providers with smaller amounts of IP voice traffic" the ability to exchange that traffic "over their existing internet transit

[18] *USTelecom Comments, p. 8.*
[19] *Id.,* p. 10.

services."[20] USTelecom characterizes this option as "a bi-lateral exchange of small volumes of voice traffic," a "commercially-negotiated solution [that] allows providers with smaller volumes to exchange IP voice traffic over that provider's existing internet transit service."[21] The key references to "small" and "smaller" amounts of voice traffic mean that Verizon and its fellow large carrier operators of TDM tandems want this "solution" to be imposed upon smaller carriers, but have no intention of adopting it for their own larger volumes of traffic. Likewise, the references to "existing internet transit services" indicate that this "solution" has been an available option for several years while the ATIS non-IP standards were being developed, but is only now being raised at the last minute to avoid the need to address the problems caused by TDM access tandems.

The "Voice over the Public Internet" option is an inferior "solution" that, among other defects, suffers from a very limited ability to make technical adjustments and alterations. In addition, to the extent that USTelecom indicates it must be developed via bi-lateral commercial negotiations involving thousands of small and large service providers, it is likely to be very expensive and time consuming to implement and also is likely to suffer from the long-standing problem of large carriers refusing to negotiate with smaller carriers with respect to traffic and dollars that the larger carriers deem to be immaterial. Third, in light of the "concerns" expressed by Verizon and USTelecom regarding the substantial security features of the Out-of-Band mechanism,[22] it is interesting that they offer nothing more than unsubstantiated conclusions regarding the security features of their proposed use of "existing internet transit services" by small volume providers. Certainly, Verizon and USTelecom should be required to demonstrate that their proposed "solutions" are more secure that the Out-of-Band system whose alleged "security risks"

[20] *Verizon Comments,* p.3.
[21] *USTelecom Comments,* p. 8.
[22] *Verizon Comments,* p. 6; *USTelecom Comments,* p. 17.

Verizon asserts it "cannot responsibly assume."[23] Finally, USTelecom states that this first working group option "is expected to deliver comparable quality, which will be confirmed as part of the development process."[24] In other words, USTelecom does not presently know how well this last-minute solution -- which the large carriers are attempting to impose upon smaller service providers and which is allegedly based upon existing internet transit services – will actually work.

USTelecom (but not Verizon) describes a second working group "option" that would entail the exchange of IP-voice service by small volume service providers with other IP voice service providers under wholesale arrangements and the payment of third-party transport providers with extensive networks and traffic exchange arrangements to carry such traffic.[25] USTelecom admits that the "cost for this option can vary" and that the "costs, quality, and security features ultimately depend upon the commercially-negotiated contract between the small volume provider and the third-party transport provider."[26] In other words, this option will take a long time to be implemented because it requires thousands of commercial agreements to be negotiated by small voice providers with third-party transport providers, and is likely to result in substantial cost increases that will need to be recovered via the imposition of rate increases upon the voice service customers of RLECs and other small service providers.

USTelecom makes no attempt to claim that the third working group option – dedicated connections – will be viable for small voice service providers because it generally entails a national or regional operating footprint and a large volume of traffic to justify the cost of the dedicated connection.[27]

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[23] *Verizon Comments,* p. 6.
[24] *USTelecom Comments,* p.9.
[25] *Id.,* pp. 9-10
[26] *Id.*
[27] *Id.,* p. 10.

WTA opposes further delays that can harm the rural customers of RLECs and other small service providers. Without getting bogged down further in the technical characteristics of these last-minute "solutions," WTA notes that they have been available for some time and asks why the large carriers advocating them have not themselves adopted them.

Conclusion

WTA supports the termination of the continuing extension for non-IP networks because the Out-of-Band and the Non-IP In-Band standards have been fully developed and finalized and the underlying equipment and software is reasonably available on the commercial market. In particular, the Out-of-Band standard has been successfully deployed, and is scalable and secure. This step will not only close the remaining gap in the Commission's caller ID authentication system but also will advance the ongoing transition to the ultimate future IP network. Increased implementation of STIR/SHAKEN – either via the ATIS non-IP standards or via the upgrade of originating, intermediate and terminating networks to IP technology – will head off the danger of increasing call completion problems affecting rural and other small service providers.

Respectfully submitted,
WTA – ADVOCATES FOR RURAL BROADBAND

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