

STATE OF TENNESSEE

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Opinion No. 07-38

Application of E911 Charges to T-1 and PRI Circuits

QUESTION

In accordance with Tenn. Code Ann. § 7-86-108, which authorizes the local Emergency Communications Board to impose an emergency telephone service charge on all service users to fund E911 services, how many emergency telephone service charges should be imposed on T-1 circuits capable of transmitting digital signals through 24 separate channels, and on PRI circuits capable of transmitting through 23 channels?

OPINION

Pursuant to Tenn. Code Ann. §§ 7-86-108 and 7-86-103(7), it is the opinion of this Office that the E911 board may impose an emergency telephone service charge for each channel in a T-1 or PRI circuit that is capable of conveying an outbound voice telephone call from the service user to an E911 public safety answering point.

ANALYSIS

Emergency communications districts are established and operate under the Emergency Communications District Law (“the Act”), codified in Tenn Code Ann. §§ 7-86-101, et seq. The Act authorizes the E911 district to levy an “emergency telephone service charge” on telephone “service users.” Tenn Code Ann. § 7-86-108(a)(1). The Act defines “service user” as “any person, corporation or entity that is provided 911 service.” Tenn. Code Ann. § 7-86-103(13). The Act further defines “911 service” to include:

regular 911 service enhanced universal emergency number service or enhanced 911 service that is a telephone exchange communications service whereby a public safety answering point may receive telephone calls dialed to the telephone number 911. “911 service” includes lines and may include the equipment necessary for the answering, transferring and dispatching of public emergency telephone calls originated by persons within the serving area who dial 911

Tenn. Code Ann. § 7-86-103(10). Accordingly, an E911 charge may be assessed on each service user who is able to reach a public safety answering point by dialing the telephone number 911.

The Act authorizing the collection of E911 charges from “service users” mandates that the charges be collected by the telephone “service supplier.” Tenn. Code Ann. § 7-86-108(d). The Act defines “service supplier” as “any person, corporation or entity providing exchange telephone service to any service user.”¹ Tenn. Code Ann. § 7-86-103(14). The Act further outlines that “[n]o such service charge shall be imposed upon more than one hundred (100) exchange access facilities per service user per location.” Tenn. Code Ann. § 7-86-108(A)(1)(a). The Act defines “exchange access facilities” as “all lines, provided by the service supplier for the provision of exchange telephone service, as defined in existing general subscriber services tariffs filed by the service supplier with the Tennessee regulatory authority.” Tenn. Code Ann. § 7-86-103(7). Thus, it is evident that the E911 charges are imposed on service users according to the number of “lines” they are able to utilize.

Additionally, the Act indicates that the purpose of the E911 charge is to “fund the 911 emergency telephone service.” Tenn. Code Ann. § 7-86-108(A)(1)(a). Moreover, the Tennessee Legislature expressly codified its desire that the E911 charge be levied in a fair and equitable manner so as to negate any competitive disadvantages, stating: “[a]ny such service charge shall have uniform application and shall be imposed throughout the entire district to the greatest extent possible in conformity with the availability of such service within the district.” *Id.*

In sum, the Act allows the E911 district to assess a telephone service charge to all service users capable of telephoning a public safety answering point. These charges are collected by the telephone service supplier on “all lines” capable of “telephone exchange service,” up to 100 lines per service user per location. The Legislature expressly declared that the purpose of the E911 charge is to pay for the 911 emergency service, and, with this in mind, the charges are to be applied uniformly. Accordingly, the language of the Act mandates that one E911 charge may be assessed for each “line” with a cap at 100 E911 charges for service users with multiple lines at the same location. The Act’s language is relatively straightforward when applied in the context of traditional analog telephone exchange service, where one line supports one voice-based connection capable of accessing 911 service. The more difficult question is how the Act’s one E911 charge per line mandate should be applied to voice-capable digital signals transmitted through T-1 and PRI circuits.

The Tennessee Emergency Communications Board has adopted a “policy” whereby it interprets the Act to allow for the collection of one E911 charge for “each of the twenty-four (24) lines available to the subscriber that can transmit a telephone call” in the case of a T-1 circuit, and “each of the twenty-three (23) lines used for telephonic purposes” in the case of PRI service.² This “policy” has not been adopted as a rule under the Uniform Administrative Procedures Act and thus lacks the force and effect of a duly-promulgated rule. It was noted in the request for this Opinion

¹The term “exchange telephone service” is not defined in the Act.

²Tennessee Emergency Communications Board Policy 23.

that at least one local telephone exchange service provider has elected to collect and remit only one E911 charge for its T-1 circuits and no more than five E911 charges for each ISDN circuit utilizing a PRI protocol. Other local service providers are following the Tennessee Emergency Communication Board's policy.

As a prerequisite to determining the number of E911 charges that should be assessed to T-1 and PRI digital transmission pathways pursuant to the Act, it is first necessary to briefly examine the telecommunications technology involved. While commonly referred to as a T-1 line, T-1 is more accurately defined as a voice and data transport system capable of transferring digital information at 1.455 megabytes per second over 24 dedicated channels, each channel supporting a transfer rate of 64 kilobytes per second. Accordingly, a T-1 line is actually a digital signal protocol that can operate physically through various media, including the same two-wire copper circuit as analog telephone traffic, or via fiber optics.³ PRI, or Primary Rate Interface, is a type of protocol commonly used in an Integrated Services Digital Network (ISDN), and operates in a similar manner to that of T-1 service, with the exception that PRI service offers 23 channels (B channels) available for voice and data transfer while one channel (the D channel) is reserved for the system to communicate with itself. The advantage of T-1 and PRI protocols over traditional analog telephone service is the ability to transfer a greatly increased volume of both voice and data traffic over the same physical infrastructure by utilizing digital technology. For example, the same two-copper-wire circuit that would support only one telephone call at a time using an analog protocol could support 24 simultaneous voice telephone calls utilizing a T-1 protocol or 23 voice telephone calls under a PRI protocol.⁴ Moreover, many service users prefer the T-1 and PRI service primarily because of its fast and efficient data transfer capabilities, and often utilize the technology more for this function than for traditional voice telephone exchange.

Because of the manner in which the digital signals are routed, the service supplier knows which channels under T-1 and PRI protocols are tagged for data transfer and which channels are reserved for voice telephone transmissions. As a general rule, with only a few exceptions, a T-1 or PRI circuit is dedicated to either data transfer or voice communication.⁵ While current technology

³While two wires are required as a bare minimum (one talk wire and one receive wire configured to complete a circuit), a four-wire conversion, sometimes described as a four-wire access loop, is often used to transfer digital signals over greater distances.

⁴The utilization of T-1 and PRI digital transfer protocols assumes that both the service supplier has the proper equipment in its central office (CO) and the service user has the proper digital-capable equipment at its end. Service users served by a T-1 line or PRI service will have either a channel bank with multiple attachment points to utilize the channels available to them, or more often some type of computerized system that automatically manages input devices. For voice telephone exchange service, it is often a Private Branch Exchange, or PBX system, that routes calls through to available voice-dedicated channels.

⁵These exceptions include data transfer over a channel designated for voice traffic utilizing the now relatively antiquated dial-up modem. Because of the higher tariff rates for T-1 and PRI service, it would be rare indeed to have significant data transfer conducted through a channel designated for voice traffic. Also, an increasingly popular exception involves the transfer of voice communication over channels designated for

allows the fractional use of the band-width available through a T-1 or PRI protocol, essentially allowing multiple service users to divide up the channels of a dedicated T-1 or PRI circuit, each channel is nonetheless assigned to a particular user and is dedicated to either data transfer or voice telephone service. For those channels designated for voice telephone service, three separate options are available to the end user: one-way outgoing voice calls, one-way incoming voice calls, and two-way voice calls. The service provider controls, and therefore knows, the designation of each channel. In sum, the service supplier designates and therefore knows for accounting purposes the following with regard to T-1 and PRI circuits: each channel that is assigned to each individual service user at a particular location; whether the channel is designated for data transfer or voice telephone service; and, if the channel is dedicated to voice telephone service, whether it provides incoming, outgoing, or two-way telephone service.

As noted above, the Act and the corresponding statutes allow for the collection of one E911 charge per line providing exchange telephone service. When this mandate is applied to digital service utilizing T-1 and PRI protocols, the issue is whether the E911 charges should be assessed based on the number of circuits (also called loops), or the number of digital channels contained in each circuit. Furthermore, if the fees are assessed based on the number of digital channels, another issue is whether these charges should be collected on all channels, or only those capable of connecting to 911 service. The resolution of these issues is essentially a matter of statutory interpretation.

The primary objective of statutory construction is to ascertain and give effect to the intent and purpose of the legislature. *Conley v. State*, 141 S.W.3d 591 (Tenn. 2004). When the statutory language is unambiguous, legislative intent is to be derived from the plain and ordinary meaning of the statutory language. *State v. Wilson*, 132 S.W.3d 340 (Tenn. 2004). Furthermore, the meaning of a statute is determined by viewing the statute as a whole and in light of its general purpose. *City of Lenoir City v. State ex rel. City of Loudon*, 571 S.W.2d 297, 299 (Tenn. 1978). A statute should not be given a forced construction in an effort to extend the import of the language. *State v. Butler*, 980 S.W.2d 359 (Tenn. 1998).

With these principles in mind, it is necessary to return to the language of the Act as codified in Title 7, Chapter 86. An “emergency telephone service charge” may be assessed on “service users.” Tenn Code Ann. § 7-86-108(a)(1). A “service user” is “any . . . entity that is provided 911 service.” Tenn Code Ann. § 7-86-103(13). “911 service” is “a telephone exchange communications service whereby a public safety answering point may receive telephone calls dialed to the telephone number 911. . . .” Tenn. Code Ann. § 7-86-103(10). The plain and ordinary meaning of this language, viewed in its entirety and with the general purpose of the Act in mind, leads to the conclusion that the legislature intended that emergency telephone service charges apply only to voice telephone exchange communication service. Additionally, this interpretation is also implicit within the language of the Act upon consideration of the fact that the E911 public safety answering

data transfer though Voice Over Internet Protocol, or VOIP, technology. This technology presents a particular problem for the collection of E911 charges, and was recently directly addressed by the Tennessee Legislature, resulting in the amendments to the Act found in 2006 Tenn. Public Acts Chapter 925.

points can currently be reached only via voice telephone exchange communication.

The Act further states that an E911 charge is to be assessed on the first 100 “exchange access facilities” per service user per location. Tenn. Code Ann. § 7-86-108(A)(1)(a). The term “exchange access facilities” is defined as “all lines, provided by the service supplier for the provision of exchange telephone service, as defined in existing general subscriber services tariffs filed by the service supplier with the Tennessee regulatory authority.” Tenn. Code Ann. § 7-86-103(7). However, despite the Act’s reference to existing tariffs, the current general subscriber services tariffs on file with the Tennessee Regulatory Authority do not expressly define “exchange telephone services.” Nonetheless, tariffs often define “exchange service” in language such as “[t]elecommunications service provided for subscribers within a specified geographical area for local calling and access to toll services.” In short, the general subscriber services tariffs on file with the Tennessee Regulatory Authority indicate that “exchange telephone service” means voice telephone service. Accordingly, it is the opinion of this Office that the Act does not contemplate the assessment of E911 charges on lines devoted exclusively to non-voice telephone exchange service, such as T-1 or PRI channels used solely for data transfer.

The ultimate issue with regard to T-1 and PRI protocol circuits is the number of E911 charges that may be assessed when voice telephone exchange service is provided. As already noted, the Act requires the assessment of E911 charges on “service users” capable of reaching “911 Service” via voice telephone exchange service. Tenn. Code Ann. § 7-86-103(13) and (9). This E911 charge is assessed on “all lines” providing exchange telephone service, *see* Tenn. Code Ann. § 7-86-103(7), on a one-charge-per-line basis up to 100 charges per user per location, *see* Tenn. Code Ann. § 7-86-108(A)(1)(a). Moreover, the purpose of the E911 charge is to “fund the 911 emergency telephone service,” and the funds are to be “used for the operation of the district and for the purchase of necessary equipment for the district.” Tenn. Code Ann. § 7-86-108(A)(1)(a) and (e). With these purposes in mind, the Tennessee Legislature further mandated that the E911 charge be levied in an equitable manner, requiring that the “service charge shall have uniform application.” Tenn. Code Ann. § 7-86-108(A)(1)(a). Based on the plain and ordinary meaning of this language, viewed in its entirety and considering the general purpose of the Act, it is the opinion of this Office that the Act requires that one E911 charge be assessed per voice telephone pathway capable of reaching a public safety answering point by dialing 911, whether it be an analog wire circuit or a digital signal channel.

It has been brought to the attention of this Office that at least one local service provider contends that T-1 and PRI circuits amount to only one line for E911 charge purposes because these architectures are referred to in the general subscriber services tariffs by language expressed in the singular, e.g., “a line” or “a path,” as opposed to “lines” or “paths.” While the Act does indicate that the E911 charges are to be applied to “all lines” providing “exchange telephone service, as defined in existing general subscriber tariffs,” *see* Tenn. Code Ann. § 7-86-103(7), the existing tariffs simply do not define the terms associated with the digital signal architecture used to convey voice traffic via T-1 or PRI protocols. However, a plain and natural reading of the Act’s provisions must take into account the fact that within the telecommunications industry, multiple communication pathways are frequently referred to in the singular when bundled together. For example, a telephone cable (singular) contains multiple lines (plural); a traditional telephone line (singular) contains multiple

wires (plural); a T-2 line (singular) contains multiple T-1 circuits (plural); and, of most significance to this issue, a T-1 and PRI “line” (singular) contains multiple channels (plural). It is a well established rule of statutory construction that the singular includes the plural and the plural the singular, except when the contrary intention is clearly manifest in the language interpreted. *See* Tenn. Code Ann. § 1-3-104(c); 2A Sutherland Statutory Construction § 47.34 (6th ed. 2000). Accordingly, when all of the provisions of the Act are considered as a whole in light of its general purpose, and when the language contained in the Act and the corresponding statutes is given its plain and natural meaning, the conclusion is that each separate analog line and each separate digital channel capable of reaching 911 service should be assessed a separate E911 charge. Therefore, in an effort to give effect to the legislative intent behind the Act, the “all lines” for which an E911 charge is assessed, *see* Tenn. Code Ann. § 7-86-103(7), should be interpreted to include each digital channel within a T-1 or PRI protocol circuit that supports voice telephone exchange service capable of obtaining E911 service.

The instant request relates that at least one local service provider remits only five E911 charges per PRI circuit, apparently because it considers a FCC rule that assesses only five subscriber line charges per PRI circuit to be analogous to Tennessee’s E911 charge requirements. Curiously, this same service provider also finds the FCC rules pertaining to subscriber line charges attributed to T-1 lines not to be analogous to Tennessee’s E911 charge requirements, and therefore remits only one E911 charge per T-1 circuit. Consequently, it is appropriate to examine the federal telecommunications fee structure and corresponding FCC rules.

At the federal level, local exchange carriers are allowed to recover costs for establishing and maintaining telecommunication lines through several charges collected from end users, including Subscriber Line Charges (SLC). The Federal Communications Commission has “long specified that carriers . . . must assess one SLC ‘per line,’ which is defined to mean per channel.”⁶ However, because the Subscriber Line Charges are set in accordance with the FCC’s “long-standing efforts to align rates with costs,”⁷ the FCC “created exceptions to the general rule that one SLC be assessed for each channel of service provided”⁸ and promulgated rules expressly providing that a maximum of five SLCs be assessed for circuits used to provide PRI ISDN service.⁹ These exceptions were deemed necessary because service provider cost studies at that time revealed that PRI ISDN

⁶Federal Communications Commission Order Granting Petition for Rulemaking, Notice of Proposed Rulemaking, and Order Granting Interim Partial Waiver, FCC 04-174, released July 19, 2004, at 3 (“July 19, 2004 FCC Order”). *See also* 47 C.F.R Part 36, App.-Glossary (defining “Exchange Line” as “[a] communications channel between a telephone station, PBX or TWX station and the central office which serves it.”).

⁷July 19, 2004 FCC Order, at 8.

⁸July 19, 2004 FCC Order, at 4.

⁹*See* 47 C.F. R. §§ 69.152(l) and 69.104(p). These rules were adopted in 1997 and 2001 respectively.

common line costs were approximately five times that of analog common line costs.¹⁰ More recent cost studies have determined that T-1 services are provided in the same manner as PRI ISDN services, and therefore have the same costs.¹¹ Accordingly, the FCC has issued an order granting a waiver of the current rules to allow T-1 service also to be assessed SLCs at the same rate of five per channel as PRI circuits, and has issued a notice of proposed rulemaking that would expressly promulgate the rule that PRI and T-1 circuits be assessed the same number of SLCs.¹²

The key principles that can be gleaned from an examination of the FCC's treatment of Subscriber Line Charges are twofold: (1) as a general rule, "line" is to be interpreted as "channel" when dealing with digital T-1 and PRI ISDN service, and (2) federal Subscriber Line Charges are tied to the actual common line costs, and not to the volume of calls capable of being transmitted through the various lines or channels. Accordingly, the FCC's interpretation of "lines" as synonymous with digital "channels" supports the conclusions of this Opinion. Furthermore, the rationale behind the FCC rules on SLCs also clearly distinguishes its cost-based charge structure from the Tennessee E911 district's volume-based charge structure. The FCC currently allows only five SLCs per T-1 and PRI circuits because existing cost studies show that these digital circuits cost no more than five times that of analog circuits. However, there is no dispute that PRI and T-1 circuits are capable of handling up to 23 and 24 times more voice telephone exchange traffic, respectively, than a traditional analog line. Therefore, because the E911 charge is based on the number of lines capable of reaching 911 service — and not on the cost of those lines — there is no rational or objective basis to assess fewer E911 charges than actual digital channels capable of obtaining and using 911 service.

¹⁰July 19, 2004 FCC Order, at 4.

¹¹*Id.*, at 6. Recent studies have revealed that the 5:1 ratio may be too generous, as the cost of T-1 and PRI circuits is now estimated to be either the same as analog lines, or at a 1.5:1 ratio. *Id.* at 8. Regardless, the Commission determined that circuits used to provide T-1 service and PRI service are functionally comparable and therefore have comparable common line costs. Therefore, adherence to the principle of aligning pricing rates with costs, as well as the desire to avoid cost disparity harmful to rural carriers that do not support PRI service, mandated that T-1 and PRI circuits be assessed the same number of SLCs. *Id.* at 15-16.

¹²*Id.* at 1-46. The only exception is that certain carriers, termed competitive eligible telecommunications carriers by the FCC, are not subject to the waiver order and must continue to use the old assessment method of 24 charges per channel for T-1 service. *Id.* at 44. *See also* 47 C.F.R. § 54.307.

In conclusion, Tenn. Code Ann. § 7-86-108 authorizes an emergency communications district to impose a “telephone service charge” to all “service users” to fund 911 emergency telephone service. Pursuant to Tenn. Code Ann. § 7-86-103 (7), this charge is assessed on “all lines” that provide “exchange telephone service.” Based on the foregoing analysis, “all lines” would include all digital channels in a T-1 or PRI circuit that transmit voice telephone exchange calls capable of connecting to 911 service. In a T-1 circuit, this would include a separate E911 charge on up to 24 channels per circuit, and in a PRI circuit, up to 23 channels. The applicable statutes do not contemplate assessing E911 charges on channels dedicated exclusively to data transfer or incoming-only voice telephone exchange service. However, every digital channel in a T-1 or PRI circuit that transmits voice telephone exchange traffic capable of reaching 911 service, whether two-way or one-way outbound service, is subject to an E-911 charge.

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