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

In the Matter of	)	
	)	
Requests to Redefine "Voice Grade Access" for Purposes of Federal Universal Service Support	)))	CC Docket No. 96-45

TO: Chief, Common Carrier Bureau

COMMENTS OF THE WESTERN ALLIANCE

The Western Alliance, by its attorney, hereby submits its comments with respect to the Common Carrier Bureau's Public Notice ("Common Carrier Bureau Seeks Comment On Requests To Redefine 'Voice Grade Access' For Purposes Of Federal Universal Service Support"), DA 99-2985, released December 22, 1999.

The Western Alliance vigorously supports the improvement and expansion of Internet access and other information services for rural residents. To the extent that the specification of wider bandwidths or additional bandwidth alternatives for voice grade access constitute an effective and economical means to achieve these service goals in rural areas, the Western Alliance will support them. However, the Commission needs to study carefully both the technology and costs necessary to increase bandwidth in rural areas, and to develop reasonable, reliable and cost-effective mechanisms to satisfy rural bandwidth and service needs. As detailed below, the Western Alliance believes that "voice grade access" should be defined to encompass multiple bandwidth and transmission speed alternatives, and that the federal universal service mechanism should support each of these alternative definitions. In addition, the Commission should determine at an early date whether these critical rural service issues are best examined and resolved in the present proceeding or by a Joint Board.

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List A B C D E

The Western Alliance

The Western Alliance is a consortium of the member companies of the Western Rural Telephone Association (WRTA) and the Rocky Mountain Telecommunications Association (RMTA). It represents approximately 250 rural telephone companies serving sparsely populated farming and ranching areas, mountain and desert communities, and Native American reservations west of the Mississippi River. Neither large local exchange carriers nor wireless carriers have ever shown any significant or sustained interest in serving the most rural portions of these areas.

Western Alliance members are generally small businesses serving less than 3,000 access lines. The typical member serves less than 500 subscribers per exchange and less than 3.24 subscribers per route-mile. Members have been required by their "carrier of last resort" status to install and maintain lengthy loops (10-to-25 miles, and sometimes as much as 40-to-50 miles) over rough and unpopulated terrain to serve remote customers.

Because of their small size, high costs and limited subscriber and revenue bases, Western Alliance members rely significantly upon existing federal access charge and Universal Service Fund (USF) revenues. They have a substantial interest in the mechanisms and procedures employed to calculate and distribute federal USF support, including the designation and definition of the services supported by the federal USF mechanisms.

Rural Telephone Companies Are the Most Capable and Reliable Providers Of Rural Internet and Information Services

Notwithstanding their small size and limited financial resources, Western Alliance members and other rural telephone companies long have been leaders in bringing state-of-the-art telecommunications facilities and services to Rural America. Rural telephone companies have

installed digital switches, constructed inter-office fiber rings, and offered advanced voice and data services to their rural customers. The Bureau's study area waiver files show that numerous rural telephone companies not only have long provided state-of-the-art facilities and services to their traditional exchange areas, but also have acquired nearby rural exchanges from larger carriers and spent millions of dollars to upgrade these exchanges as well. See, e.g., East Plains Telecom, Inc. et al., 12 FCC Rcd 21,525 (AAD 1997) (replacement of existing switches with switches supporting CLASS and other SS7-related services, and upgrade of existing plant, including construction of some fiber in the loop); Golden Belt Telephone Association, Inc. et al., 11 FCC Rcd 10,165 (AAD 1996) (replacement of electromechanical switch with digital serving office, and replacement of major portion of local loop plant); Bluestem Telephone Company et al., 11 FCC Rcd 7130 (AAD 1996) (installation of new digital switches, and inclusion on inter-office fiber optic ring); GTE Midwest Incorporated et al., 11 FCC Rcd 11,553 (AAD 1996) (replacement of electromechanical switches with digital switches, and deployment of 168 miles of improved loop plant); United Telephone Company of SouthCentral Kansas, Inc. et al., 9 FCC Rcd 3197 (CCB 1994) (replacement of step-by-step switches with digital switches, and inclusion on inter-office fiber optic ring); U.S. West Communications, Inc. et al., 9 FCC Rcd 202 (CCB 1993) (installation of new digital switches, conversion of multi-party service to single party service, and upgrade of local loop plant); and U.S. West Communications, Inc. et al., 9 FCC Rcd 198 (CCB 1993) (replacement of electromechanical switches with digital switches, and upgrade of 8-party service to single party service).

Western Alliance members desire to continue and extend their roles as leaders in the provision of modern telecommunications and information services to their rural communities and

service areas. Most Western Alliance members presently offer Internet access service to their customers. They want to furnish higher data transmission speeds for Internet access and other information services as soon as such speeds become technically feasible and economically practicable. In the future, they desire to roll out broadband services to Rural America, and believe that they are the only entities with the proven interests and capabilities to establish and sustain such services on a long-term basis.

In recent years, the Commission has made these goals much more difficult to accomplish. Its access charge (CC Docket Nos. 96-262 and 98-77) and universal service (CC Docket No. 96-45) proceedings have threatened rural telephone companies with substantial reductions in the interstate access revenues and federal universal service support that constitute the major element (often as large as 40-to-60 percent) of their revenue bases. At the same time, Commission requirements for four-digit Carrier Identification Codes (CIC), billed party preference, Truth –in-Billing, local number portability and dialing parity have required rural telephone companies to incur millions of dollars in compliance costs to upgrade their networks. During 2000 and 2001, it appears that rural telephone companies will have to spend millions of dollars to redesign their switches to comply with the capability and capacity requirements of the Communications Assistance for Law Enforcement Act (CALEA). This "regulatory squeeze" coupling reduced interstate revenues with increased federal compliance costs has made it increasingly difficult and dangerous for rural telephone companies to make the further investments necessary to continue to upgrade their networks.

Significant Technical And Economic Issues
Must Be Addressed and Resolved Before
Bandwidth Can Be Expanded In Many Rural Areas

In considering the technical modifications and costs to achieve rural data transmission speeds reasonably comparable to those achieved by non-rural customers using 28.8 kilobits per second (kbps) modems, the Bureau should focus upon existing rural loop technologies rather than the modems themselves.

The foremost technical problem blocking rural telephone companies from achieving 28.8 kbps and greater data transmission speeds is multiple analog-digital conversions. Unfortunately, these conversions are an integral element of the digital loop carrier systems employed during the last decade to improve service over the long local loops prevalent in rural areas. Multiple analog-digital conversions reduce the effective bandwidth of rural loops, and degrade the performance of 28.8 kbps modems.

At the time that most rural telephone companies upgraded their customers from four-party service to single party service, analog carrier systems comprised the most efficient and cost-effective technology. However, the loop lengths attainable by these systems were limited, because the noise amplification produced by cascade designs reduced the number of repeaters that could be used to sustain signal quality on long rural loops.

Many rural telephone companies subsequently addressed this analog repeater problem by deploying digital loop carrier systems and regenerative repeaters. However, digital loop carrier systems generally require at least two additional analog-digital conversions in the loop (because they often must be connected to the switch through a back-to-back interface of analog carrier line cards to analog switch line cards). These analog-digital conversions reduce the bandwidth

available to customers.

At the present time, rural telephone companies have found the most effective answer to the multiple analog-digital conversion problem to be the connection of their digital loop carrier systems to their switches by GR-303 (or TR-303) interfaces. This allows traffic to go from the digital loop carrier system to the switch over multiple T1 lines. However, GR-303 interfaces are expensive. A typical one costs approximately $140,000, and provides eight interfaces (only seven where ISDN is furnished). Thus, a rural telephone company needs to invest a minimum of $17,500 to $20,000 per T1 interface to upgrade its digital loop carrier facilities to accommodate 28.8 kbps data transmission speeds. This cost estimate does not include the costs of: (a) switch software upgrades to recognize the GR-303 interface (approximately $40,000 per exchange); (b) carrier system interfaces; or (c) backhaul facilities. In addition, GR-303 interfaces work only off stand-alone switches. Hence, where a rural carrier employs a host-remote switch configuration, additional network facilities and costs will be required to serve customers directly from the host switch.

The median exchange size for Rural Utilities Service (RUS) borrowers is 860 subscribers. Assuming that 480 of these subscribers are located far enough away from the central office to require a digital loop carrier system and assuming that 48 subscribers can be served by each digital loop carrier system (often not possible in areas of low population density), then a typical rural exchange will require 10 digital loop carrier systems. Assuming conservatively that seven of these ten systems need to be upgraded, the typical rural telephone company will have to spend $122,500 to $140,000 per exchange -- for GR-303 interfaces alone -- to furnish 28.8 kbps data transmission speeds. On a national level, the cost of upgrading the 4,836 exchanges in the RUS

program in this manner would be $592.4 million to $677.1 million.

The foregoing estimate assumes that all of the exchanges in the RUS program are presently using digital loop carrier systems. Where rural telephone companies are still employing analog carrier systems, there will be substantial additional investments needed to acquire and install digital loop carrier systems.

Also, many of the smaller rural telephone company exchanges are presently served by Mitel or Redcom switches, which do not have GR-303 interfaces available. Upgrading these exchanges will require switch replacement at a cost of $500 thousand to $1.2 million per exchange, before GR-303 interfaces can be acquired and installed.

The foregoing estimates are consistent with other industry studies and analyses. For example, a 1998 Wisconsin study found that 38.3 percent of the subscriber lines in the state were not capable of supporting 28.8 kbps data transmission speeds, and that it would cost $516 per line (or an aggregate of $667.9 million) to upgrade these subscriber lines to that level.

The Western Alliance is not attempting to discourage or dissuade the Bureau from redefining "voice grade access" and promoting the increase of bandwidth in rural areas. Rather, the point is that the expansion of rural loop bandwidth to accommodate 28.8 kbps data transmission speeds is a complex and expensive process. Rural telephone companies will incur substantial direct costs to increase their bandwidth; and some will have to bear even greater financial burdens to replace or upgrade their existing switching and transmission facilities before bandwidth expansion is possible. The Commission should order these upgrades and investments only if it is willing to enter into a firm commitment to furnish interstate revenues and universal service support sufficient to sustain rural bandwidth expansion on a long-term basis.

A Multi-Layered Definition of "Voice Grade Access"
Should Be Defined and Supported

The Western Alliance believes that a 28.8 kbps data transmission speed is a desirable interim goal, but that it is neither a necessary nor a sufficient requirement at the present time or in the future. Rather, in light of rapidly changing technologies and service demands, a variety of acceptable (and Commission-supported) bandwidths and data transmission speeds will best serve rural customers.

In some rural exchanges, there is not yet any perceptible demand for 28.8 kbps or higher data transmission speeds for Internet access and other information services. In others, there is some limited demand, but not at the prices necessary to recover the costs of upgrading switching and transmission plant to offer higher data transmission speeds. With respect to these types of exchanges, the Commission should retain its existing definition and minimum bandwidth requirement for "voice grade access" in the 300 Hz to 3,000 Hz frequency range. Rural carriers providing this minimum bandwidth should continue to be Eligible Telecommunications Carriers (ETCs), and to receive federal universal service support for their existing loop facilities.

The Commission should also define "voice grade access" to encompass 28.8 kbps data transmission speeds, and make a firm commitment to provide sufficient and reliable long-term federal universal service support for the upgrades and investments necessary to achieve this transmission speed.

The Commission should recognize that 28.8 kbps is an interim solution, and that some rural subscribers will soon demand wider bandwidths and higher speeds. Personal computers on the market today typically include V.90 modems and rural customers are beginning to request connect speeds in excess of 40 kbps. In some areas, customers employing ISDN service can

obtain data transmission speeds up to 90 kbps (and even up to 128 kbps if an ethernet adapter or Universal Serial Bus port is used). The Western Alliance believes that the Commission should not use the federal universal service support mechanism to limit rural telephone companies to the deployment of interim 28.8 kbps systems, if local technical or demand conditions make a higher bandwidth solution more feasible or economical. Therefore, the Western Alliance proposes that the Commission's definition of "voice grade access" should also encompass data transmission speeds higher than 28.8 kbps, and that the Commission make a firm commitment to provide sufficient and reliable long-term federal universal service support for the upgrades and investments necessary to achieve these transmission speeds as well.

Finally, the Commission should remove at this time the "interim" cap that it has imposed upon the federal universal service support of rural telephone companies since 1993. If the Commission wants carriers to provide higher data transmission speeds and greater bandwidths to rural subscribers, it needs to convince them that it is willing to furnish sufficient and reliable federal universal service support on a long-term basis.

Should Redefinition of "Voice Grade Access"
Be Considered By the Commission or A Joint Board?

The Western Alliance supports the Commission's efforts to improve and expand the Internet access and other information services available to rural residents. However, it notes that the Commission has previously declared that it will convene a Joint Board on or before January 1, 2001 to review the definition of universal service. Federal-State Joint Board on Universal Service, 12 FCC Rcd 8776, 8790 (1997); Deployment of Advance Telecommunications Capability to All Americans, 14 FCC Rcd 2398 (1999). It therefore questions whether the

Commission or the future Joint Board is the more appropriate entity to modify the definition of "voice grade access" and other services supported by the federal universal service mechanism.

Conclusion

The bandwidth increases necessary to bring high speed Internet access and other information services to rural residents entail complex technical upgrades and substantial costs. The Western Alliance believes that rural telephone companies are the entities most willing, able and likely to provide these facilities and services to rural residents on a long-term basis. In order to encourage the necessary investment, the Commission must establish and sustain sufficient and reliable federal universal service support mechanisms, and terminate the current "interim" cap. The Western Alliance believes that the most effective and equitable approach is for the Commission to define "voice grade access" to encompass a variety of alternative bandwidths and transmission speeds, and to furnish federal universal service support for each alternative.

Respectfully submitted,
THE WESTERN ALLIANCE

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Dated: January 19, 2000

CERTIFICATE OF SERVICE

I, Michael B. Adams, Jr., hereby certify that I am an attorney with the law firm of Blooston, Mordkofsky, Jackson & Dickens and that a copy of the foregoing **"COMMENTS OF THE WESTERN ALLIANCE"** was served this 19th day of January, 2000, by messenger to the persons listed below.

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