CONFIDENTIAL

STATE OF SOUTH DAKOTA

PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE PETITION OF BERESFORD MUNICIPAL TELEPHONE COMPANY. FOR ARBITRATION PURSUANT TO THE TELECOMMUNICATIONS ACT OF 1996 TO RESOLVE ISSUES RELATED TO THE INTERCONNECTION AGREEMENT WITH ALLTEL, INC.	Docket No. TC07-113 **DIRECT TESTIMONY** **OF** **LARRY D. THOMPSON**

DIRECT TESTIMONY OF LARRY THOMPSON ON BEHALF OF BERESFORD MUNICIPAL TELEPHONE COMPANY

Q1. Please state your name, employer, business address and telephone number.

A1. My name is Larry Thompson. I am the Chief Executive Officer of Vantage Point Solutions, Inc. ("Vantage Point"). My business address is 2211 North Minnesota Street, Mitchell, South Dakota, 57301.

Q2. On whose behalf are you testifying?

A2. I am testifying on behalf of Beresford Municipal Telephone Company ("Beresford"). Based on my experience working with Beresford for over 10 years, I know that Beresford provides local telephone exchange service and exchange access services in South Dakota and is engaged in the provision of general telecommunications services in the State of South Dakota subject to the jurisdiction of the South Dakota Public Utilities Commission ("Commission").

Q3. Generally, what types of services does Vantage Point perform?

A3. Vantage Point is a telecommunications engineering and consulting company whose services include long range communication plans and feasibility studies, emerging technology analysis and migration studies, telecommunications electronic equipment engineering, outside plant engineering, field services engineering and regulatory consulting.

Q4. What are your duties and responsibilities at Vantage Point?

A4. I am responsible for providing consulting and engineering services to clients in a wide array of technical and regulatory areas associated with telecommunications. Our client base consists of small Independent Telephone Companies such as Beresford. We have more than 80 fulltime employees on staff. I am also responsible for the normal duties you would expect from the chief executive officer for a company of our size.

Q5. What is your educational background?

A5. I have a Bachelor of Arts in Physics from William Jewell College in Liberty, Missouri, and both Bachelors and Masters degrees in Electrical and Computer Engineering from the University of Kansas in Lawrence, Kansas.

Q6. Do you hold any professional engineering licenses?

A6. Yes. I am a licensed professional engineer in Colorado, Georgia, Iowa, Idaho, Indiana, Michigan, Minnesota, Missouri, Nebraska, New York, Ohio, South Dakota, Utah, Washington, Wisconsin and Wyoming. I am also a member of the National Council of Examiners for Engineering and Surveying (NCEES).

Q7. Do you have a resume of your experience?

A7. Yes, it is attached to my testimony as Exhibit LT-D-1.

Q8. What is the purpose of your direct testimony?

A8. The purpose of my direct testimony is to provide technical and regulatory facts relating to the Arbitration[1] between Beresford and Alltel Communications, Inc. (Alltel). Specifically, I will provide information relating to Issue 2 identified in the Petition for Arbitration for Beresford (referred to herein as the "Petition"). This issue was presented in the Petitions as follows: "What is the appropriate Percent InterMTA Use Factor to be applied to non-IntraMTA traffic exchanged between the parties?"

Q9. Why is it necessary to establish an InterMTA Use Factor in conjunction with an interconnection agreement between an incumbent local exchange carrier ("ILEC") such as Beresford and a commercial mobile radio service ("CMRS") provider such as Alltel?

A9. Alltel terminates different types of traffic to Beresford intermingled together on the same facilities. The number of Minutes of Use ("MOU") for each of two basic types of traffic must be determined in order to calculate the correct compensation due Beresford. The two basic types of mobile-to-land traffic that Alltel terminates to Beresford are: (a) intraMTA or local MOUs which are subject to reciprocal compensation pursuant to 47 U.S.C. § 251(b)(5) and 47 C.F.R. § 51.701; and (b) interMTA or non-local MOUs which are subject to switched access charges pursuant to 47 U.S.C. § 251(g). The interMTA MOUs or non-local MOUs that are both intrastate MOU and interstate MOU, therefore

[1] In The Matter of the Petition Of Beresford Municipal Telephone Company. for Arbitration Pursuant to the Telecommunications Act Of 1996 To Resolve Issues Related to The Interconnection Agreement With Alltel, Inc. (referred to herein as the "Petition").

should be further divided between intrastate interMTA MOUs that are subject to intrastate switched access tariff rates and interstate interMTA MOUs that are subject to the interstate switched access tariff rates.

Q10. Before we proceed with further detailed discussion of the traffic types that you just described, by way of background, could you provide a definition of an MTA and the relation of such term to the State of South Dakota?

A10. Yes. Major trading area or "MTA" is a term originally developed by Rand McNally to describe geographic areas that appeared in the 1992 Rand McNally Commercial Atlas and Marketing Guide. Except for some minor modifications, the Federal Communications Commission ("FCC") adopted the Rand McNally MTAs to define the geographic areas for some of the wireless licenses in the United States. The resulting 51 MTAs used by the FCC are shown on Exhibit LT-D-2. The MTAs in South Dakota and the surrounding states are highlighted in Exhibit LT-D-2 for emphasis.

Exhibit LT-D-3, shows the state of South Dakota along with the applicable MTAs boundaries. MTA-12, consisting generally of the eastern two-thirds of the State, is the Minneapolis MTA. MTA-22, consisting generally of the western one-third of the State, is the Denver MTA. MTA-32, consisting of the southeastern corner of the State, is the Des Moines MTA.

Q11. What MTA is the Beresford exchange located in?

A11. Beresford services the city of Beresford exchange which borders the Des Moines MTA-32 and the Minneapolis MTA-12. This can also be seen in Exhibit LT-D3. For illustration purposes, we will consider Beresford to be located in the Des Moines MTA-32 throughout this direct testimony.

Q12. Why are MTAs significant when considering CMRS traffic terminating to an ILEC?

A12. A CMRS call that originates and terminates in the same MTA is referred to as an intraMTA call. Likewise, a CMRS call that originates in one MTA and terminates in a different MTA is referred to as an interMTA call. The FCC rules state that interMTA calls are access calls (toll calls) and intraMTA calls are local calls. The compensation due the ILEC from the CMRS carrier is different for an access call than it is for a local call.

Q13. Using Exhibit LT-D-3, can you give examples of an intraMTA and an interMTA call?

A13. Absolutely. However, before providing examples, I believe it would be helpful to provide the FCC's guideline for establishing the location of the mobile phone customer. In its *First Report and Order,* FCC 96-325 (Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers), paragraph 1044, the FCC stated: "For administrative convenience, the location of the initial cell site when a call begins shall be used as the determinant of the geographic location of the mobile customer." Thus, if a CMRS customer originates a mobile call from an initial cell site located in Lesterville, South Dakota (Des Moines MTA-32) to a Beresford city landline customer located in the Beresford, South Dakota local exchange area (also located in the Des Moines MTA-32), this call would be considered an intraMTA call, since both the calling CMRS customer (at the start of the call) and the called Beresford city customer are located in the Des Moines MTA-32. Likewise, if a CMRS customer originates a mobile call from an initial cell site located in Des Moines, Iowa (Des

Moines MTA-32) to a Beresford city landline customer located in the Beresford, South Dakota local exchange area (also located in the Des Moines MTA-32), this call would also be considered to be an intraMTA call, since it also originates (based on the initial cell site location) and terminates within the same MTA.

However, if a CMRS customer originates a mobile call from an initial cell site located in Rapid City, South Dakota (which is within Denver MTA-22) making a call to a Beresford city customer located in the Beresford, South Dakota local exchange area (which is within the Des Moines MTA-32), this call would be considered an interMTA call since the CMRS call originated (at the start of the call) in one MTA (Denver MTA-22) and terminated in a different MTA (Des Moines MTA-32). Additionally, the call in this example both originates and terminates inside South Dakota, so it is considered an *intrastate* interMTA call. If a CMRS customer originates a call from an initial cell site located in Denver, Colorado (which is within Denver MTA-22) to a Beresford city customer located in the Beresford, South Dakota local exchange area (which is within the Des Moines MTA-32), this call would be considered an *interstate* interMTA call since the call not only crosses an MTA boundary (Denver MTA-22 to Des Moines MTA-32), but it also originates and terminates in different states (Colorado originated and South Dakota terminated).

Q14. Have you reviewed the terms of the interconnection agreement attached to the Petitions filed in these proceedings as Exhibit A, and if so, do you agree that the definition of "interMTA Traffic" that appears on page 3 thereof is clear and accurate?

A14. Yes, I have reviewed the interconnection agreement in Exhibit A, and more specifically the definition to which you refer. The interconnection agreement

defines interMTA traffic as wireless to wireline calls that originate in one MTA and terminate in another MTA, based on the location of the initial cell site serving the wireless end user at the beginning of the call and the location of the end office serving the wireline end user. This definition is consistent with my understanding of the requirements of FCC orders on this subject and is the generally accepted definition of interMTA traffic exchanged between customers of wireless and wireline carriers.

Q15. Why is it necessary for a CMRS provider such as Alltel and an ILEC such as Beresford to establish an interMTA Use Factor in their reciprocal compensation agreement?

A15. As discussed previously, the ILEC is compensated differently for interMTA and intraMTA traffic. CMRS providers such as Alltel often choose to deliver interMTA traffic intermingled with intraMTA traffic to the ILEC over the same facilities rather than sending this traffic through an interexchange carrier (IXC). Unfortunately, it is not possible for the ILEC to determine the location for the CMRS caller based on the signaling information delivered by the CMRS provider. Since the ILEC cannot determine the CMRS caller location, it is not possible for the ILEC to determine the appropriate compensation applicable to each individual call. Because of this, CMRS providers and ILECs often agree upon an InterMTA Use Factor that can be applied to the total MOUs that are terminated by the CMRS provider to the ILEC. An accurate InterMTA Use Factor ensures that the ILEC is properly compensated for the CMRS originated traffic that is terminated to the ILEC's landline customers. It is also important that the ILEC be able to accurately divide the interMTA traffic into interstate and intrastate jurisdiction so

the ILEC can be properly compensated for the interstate and intrastate switched access portions of the interMTA traffic, since the tariff rates applicable to each traffic type (jurisdiction) are different for Beresford.

Q16. Since the exact location of the wireless caller cannot be determined for each individual call from the SS7 signaling, how is the InterMTA Use Factor determined?

A16. Since the originating carrier (the CMRS carrier) does not provide signaling information to the terminating carrier (the ILEC) that is adequate to determine whether the call in question is an interMTA or intraMTA call, it is often necessary to perform a traffic study to determine the InterMTA Use Factor. Performing such a study is consistent with the FCC rules. Again referring to paragraph 1044 of the FCC's *First Report and Order* (Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers), the FCC stated: "We conclude, however, that it is not necessary for incumbent LECs and CMRS providers to be able to ascertain geographic locations when determining the rating for any particular call at the moment the call is connected. *We conclude that parties may calculate overall compensation amounts by extrapolating from traffic studies and samples.*" (emphasis added)

Q17. Is there more than one methodology that can be used to establish an InterMTA Use Factor?

A17. Yes, there are three methods I am familiar with that can be used to determine an InterMTA Use Factor. They are (1) the Signaling System 7 or "SS7" method, (2) the Call Detail Record or "CDR" method and (3) the Point of Interconnection or "POI" method. I will discuss each briefly below.

(1) The SS7 method relies on the information that is available in the SS7 protocol. SS7 is the industry standard signaling protocol for inter-carrier communications. SS7 network equipment can be used to monitor and record the SS7 messages exchanged between the CMRS and ILEC networks. These messages can be recorded by SS7 network equipment and be post-processed to estimate the number of interMTA and intraMTA MOU. Unfortunately, carriers are not required to populate the SS7 message with any information that would allow the ILEC to determine the location (initial cell site) of the CMRS customer (calling party). Therefore, the SS7 analysis technique uses the CMRS customer's NPA-NXX to estimate the location of the CMRS customer. Assuming the CMRS carrier is populating the SS7 message properly, this method does not require the cooperation of the CMRS carrier as the NPA-NXX of the calling and called party should always be passed in the SS7 record.

(2) The CDR method uses signaling information that is available internal to the CMRS's switching network. The CDR data includes the location of the wireless caller at the initiation of the call (or the location of the initial cell site), so the interMTA calls can be more accurately identified. For example, the Lucent Technologies 5ESS wireless switch can identify the cell site number as part of the Automatic Message Accounting ("AMA") setup internal to the switching system per Lucent Table 2003 – Radio/Channel/Cell Information.[2] Similarly, the Nortel Network MTX wireless switch identifies the originating trunk group from a specific cell site location as a field in the AMA recording called the First

[2] Lucent Technologies Document 401-610-133 Issue 28 - Flexnet®/Autoplex® Wireless Networks Executive Cellular Processor (ECP) Release 24 pp 4-125 to 4-127.

Originating Trunk Common Language Location Identifier ("CLLI") field.[3] Because the location of the CMRS customer originating the call is needed to accurately determine if the call is interMTA in nature and the fact that this is not passed along to the landline carrier in the SS7 signaling, gathering the CDR data requires cooperation of the CMRS carrier to collect this information.

(3) Finally, the POI method is described in paragraph 1044 of the *First Report and Order*, where the FCC states: "As an alternative, LECs and CMRS providers can use the point of interconnection between the two carriers at the beginning of the call to determine the location of the mobile caller or called party."

Q18. In your expert opinion, does one of these methods more accurately measure the InterMTA Use Factor and, if so, why?

A18. Yes, the CDR method is the most accurate. The goal of any InterMTA Use Factor study is to estimate the amount of interMTA traffic as accurately as possible or practical. In my opinion, the CDR method is the most accurate method as the CDR method uses actual data from the CMRS switching network to determine the location of the CMRS caller's cell site at the start of the call and thus is entirely consistent with the definition of "InterMTA Traffic" as provided in the interconnection agreement attached to the Petition as Exhibit A. Also, the location of the central office serving the ILEC customer who is being called by the CMRS caller is easily determined by the NPA-NXX of the ILEC customer.

[3] Nortel Networks Document 411-2131-204 – MTX 12 (February 2004) – DMS-MTX CDMA/TDMA Billing Management Manual Standard Issue 11.11 p 6-147.

Q19. Do you believe that the SS7 method can result in an accurate estimate of the interMTA traffic being terminated to Beresford by Alltel?

A19. Yes. The SS7 method uses the telephone number or NPA-NXX of the CMRS customer and the ILEC customer to arrive at an estimate of the InterMTA Use Factor. This method is often referred to as the "telephone numbers" method. This method is not as accurate as the CDR method, since the SS7 method does not properly account for ported numbers and the actual customer location cannot be properly identified. However, it has been my experience that the SS7 method provides a reasonable estimation of the InterMTA Use Factor in the absence of CDR information from the CMRS carrier.

Q20. Do you believe that using the POI method would result in an accurate estimate of the interMTA traffic being terminated to Beresford by Alltel?

A20. No. There are very limited circumstances where a POI methodology would yield accurate results. As discussed previously, to arrive at an accurate interMTA Use Factor, it is important to determine the location of the CMRS customer at the start of the call. At a minimum, the MTA and the state in which the call originated must be known for the CMRS caller so that the traffic type (intraMTA or interMTA and interstate or intrastate) can be accurately determined. In densely populated areas, it is possible that there could be a large number of POIs and the POI could be a reasonable representation of the location of the CMRS customer. In rural areas like South Dakota, the CMRS provider may deliver calls originating in various states or in various MTAs to a single POI. Therefore, the POI method will not yield accurate interMTA results when considering the Alltel and the Beresford network.

Vantage Point then determined the total call duration of the intraMTA calls and the interstate interMTA calls and the intrastate interMTA calls. The InterMTA Use Factor was determined by taking the ratio of the call duration for the interMTA calls to the call duration for the total Alltel calls terminated to Beresford. The interMTA calls were further refined to determine the amount of interMTA traffic that was intrastate interMTA in nature and those that were interstate interMTA in nature based upon the originating and terminating NPA-NXX.

Q23. What was the result of the interMTA analysis that was performed by Vantage Point using the SS7 method?

A23. The result of this analysis can be seen in Exhibit LT-D-4. This exhibit shows the results of the InterMTA analysis for Beresford, which yielded an InterMTA Use Factor of 70.7%. This means that 70.7% of the traffic being terminated by Alltel to Beresford over their common trunks is interMTA in nature. Of the total terminating interMTA minutes, 93.5% of the traffic was determined to be intrastate in nature and 6.5% was determined to be interstate in nature.

Q24. What are the proper rates per MOU that would be applied to intrastate interMTA and interstate interMTA traffic?

A24. Beresford is required to charge Alltel their current switched access rates for these traffic types as reflected in their currently filed tariffs just as Beresford does with regard to all carriers that terminate intrastate and interstate switched access traffic to their networks. For the intrastate interMTA traffic, the currently approved intrastate switched access tariff rate (approved by the South Dakota Public

applicable interstate interMTA factor of 6.5% (296,940 x 6.5%), it is found that 19,301 MOU are subject to the interstate interMTA switched access rate (19,301 x $0.033795. Beresford's interstate switched access rate is currently $0.033795 per MOU. The total estimated annual interstate interMTA revenue would be approximately $650. Therefore the total estimated annual revenue for Beresford would be around $35,350 based on these MOU and the factors listed in LT-D-4.

Q26. Does that conclude your testimony?

A26. Yes. However, I wish to reserve the opportunity to supplement this testimony in the future, if necessary.

Beresford Exchange by Major Trading Areas