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BEFORE THE ARIZONA CORPORATION COMMISSION

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Chairman

Arizona Corporation Commission

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MARC SPITZER
Commissioner

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**IN THE MATTER OF INVESTIGATION
 INTO QWEST CORPORATION'S
 COMPLIANCE WITH CERTAIN
 WHOLESALE PRICING
 REQUIREMENTS FOR UNBUNDLED
 NETWORK ELEMENTS AND RESALE
 DISCOUNTS.**

**DOCKET NO. T-00000A-00-0194
 PHASE II**

**QWEST CORPORATION'S BRIEF RELATING TO THE TNS-BASED
 REVISED RUN OF THE HAI MODEL**

I. Introduction and Summary

In accordance with the Procedural Order issued May 9, 2002, Qwest Corporation ("Qwest") submits this Brief Relating to the TNS-Based Revised Run of the HAI Model. The Procedural Order required AT&T/WorldCom and Qwest to provide TNS with year 2000 customer location data and for TNS to process those data *in the same manner* that it processed the 1997 customer location data used in the initial AT&T/WorldCom run of the HAI model in this docket. The Order further required the parties to run the HAI model with the new TNS data and to provide a joint rate schedule based on that run by today.

Just about 24 hours ago, TNS provided Qwest and AT&T/WorldCom with the processed 2000 customer location data. Although there has not been enough time to conduct a thorough review of the TNS data, it is abundantly clear that TNS *did not* comply with the Commission's requirement of processing the 2000 customer location data *in the same manner* as it processed the 1997 data in the initial run of the model. First, it is obvious that the TNS clusters are

different from those used in the previous run of the model. For example, although an important HAI parameter limits the number of lines per serving area to 1,800, the new TNS clusters consistently exceed that limit. At least 80 of the serving areas now have more than 1,800. While time has not permitted quantifying the full effect of this fundamental change in the clustering process, this approach appears to perpetuate the basic problem that led to Commissioner Spitzer's amendment in the first place by placing unidentified customer locations directly on top of and at the locations and addresses of existing customers. This also was contrary to TNS' previous methodology; in the previous run of HAI, customers without identifiable addresses were spread throughout the service territory and were not placed on top of and at the locations and addresses of identifiable customers. As a result of these placements, the new TNS clusters still lead to a network that does not reach customers who live and work in new developments.

Adding to the improper effect of this changed approach to creating the clusters, TNS also excluded a significant number of the 2000 customer locations that Qwest provided. Specifically, if a customer location did not have a verifiable address, TNS simply excluded it altogether instead of creating a surrogate location. This is another significant deviation from the clustering methodology that TNS followed for the initial run of HAI.

These basic changes and flaws in the new TNS clustering methodology render any result derived from the TNS year 2000 clusters entirely unreliable. Indeed, one need only glance at the results to recognize that they make no sense. While the year 2000 data add hundreds of thousands of new customer locations, the new run of the model produces a statewide average loop rate of \$12.12,¹ which is \$0.51 less than the rate of \$12.63 produced in the parties' compliance runs that used 1997 customer location data. The average loop cost should not fall when hundreds of thousands of new locations – many of which are in new developments not previously served – are added to the model. Similarly, despite the addition of these many new

¹ AT&T's and Qwest's runs of the HAI model with the new TNS data produce the same cost of \$12.12.

locations, the total cable mileage in the model has actually *declined*, from about 33,000 miles to about 31,000 miles. And these are only the problems that Qwest has been able to identify in less than 24 hours; other flaws in TNS' clearly rushed, incomplete work product are almost certain to exist. It would take an extensive period of time for Qwest to understand the full extent of the problems with the TNS work. In fact, TNS has said it will not even produce the data needed to audit its work until the end of next week; extensive analysis and discovery will be necessary after that production.

These circumstances require a new course of action; the hope that TNS would properly create the new clusters and HAI would produce reliable results based on those clusters has clearly not been realized. Accordingly, Qwest urges the Commission to establish the new loop rate based on the 1997 investment data and 1997 customer location data that are already in the record. As Qwest has previously shown, dividing the 1997 investment by 1997 customers produces a base loop rate of \$13.92.

Alternatively, the Commission could adopt the \$12.63 rate included in the parties' previous compliance run based on the ALJs' Recommended Opinion and Order ("ROO"), subject to further consideration of the appropriate use of the 2000 customer location data and the 2000 line counts during Phase III of this docket. This alternative, which is consistent with the procedure suggested by Chairman Mundell during the Open Meeting of April 11, 2002, would provide two benefits. First, it would allow the Commission to conclude this phase of the docket without delaying completion of the Section 271 process. Second, it would allow sufficient time to carry out the intent of Commissioner Spitzer's amendment.

II. Argument

A. The Results Of The HAI Model Run Based On The New TNS Clusters Are Inaccurate.

Had the plan proceeded as the Commission intended, TNS would have created the new clusters using the same clustering methodology it followed in the initial run of HAI. The parties would have run the new TNS clusters through the HAI model, yielding an agreed-upon loop rate. But that is not what has occurred. TNS used a significantly different, flawed methodology that produces a patently inaccurate loop rate. It does not require any significant cost expertise to recognize that adding hundreds of thousands of new locations and expanding the network to reach the many new housing and business developments that have been built since 1997 will increase cable distance and the cost of the loop. That the run of the HAI model produces precisely the opposite effects – less cable distance and a lower loop cost – tells us that something is dramatically wrong. These results, along with the facts listed below, demonstrate why one of the two alternative approaches that Qwest has suggested for resolving this issue is essential:

- (a) The purpose of using 2000 data to correspond with 2000 line counts was to accurately reflect the impact of increased plant needed to serve “increased growth” since 1997.
- (b) The FCC's Synthesis Model, while being used to establish state-by-state cost differences for universal service, assumes approximately 54,000 miles of cable is required to serve Arizona customers. The original run of the HAI model filed in this case by AT&T/WorldCom assumed approximately 33,000 miles. In contrast, the new run of HAI with the

new TNS clusters assumes only 31,000 miles of cable despite adding hundreds of thousands of locations.

- (c) Using 1997 HAI investment data and adding both the new (*i.e.*, post-1997) customers and an estimate of the plant required to serve those new customers produces a rate of \$13.92.

In addition to these facts, as discussed in greater detail below, TNS itself expressed serious concerns about the accuracy of its processing of Qwest's 2000 customer location data, including as recently as just a few days ago. As shown in the correspondence attached to this brief as Attachment A, TNS was very uncertain as to how to create the clusters and admitted to having to use "patches" to resolve the problems it encountered.

Weighed against these indisputable facts, the rate of \$12.12 and the decrease in cable mileage produced by the new run of HAI clearly reflect flawed modeling. This rate would plainly violate the TELRIC requirement of estimating the costs of serving existing demand. Because of the method TNS has followed to create the new clusters, much of the existing demand in Arizona still is not served by the HAI model.

B. TNS Failed To Follow The Methodology It Used previously To Create The Customer Clusters.

As mentioned above, even the early analysis of its work demonstrates that TNS' clustering process varied from what it did in the first run of HAI and from what a TNS official represented to the Commission that it would be able to do with Qwest's 2000 data. Within the customer location information Qwest provided, TNS claimed that about six percent of customers did not have verifiable addresses. It refused to include these customers at all in the clusters, failing to establish surrogate locations for them. In addition, TNS did not look at other customer information that would have required further surrogating of customers and thus failed to establish

locations for those customers. This process is significantly different from what TNS did earlier in this docket. The exclusion of real Arizona customers from the physical plant investment in the numerator of the loop cost calculation and the inclusion of them in the line count denominator improperly lowers costs and cannot be consistent with the Commission's intent of using matching line count and customer location data. Indeed, TNS recently agreed that it should surrogate these customers and was discussing a process for doing so, but it suddenly stopped that discussion and apparently chose to ignore the issue.

In addition, in the recent exchange of e-mails, TNS also identified several other processing issues that were never resolved, such as the treatment of outliers, whether to place customers by zip code or wire center, and how to treat customers with no central office specific location. TNS and Qwest were in the middle of discussing possible solutions to these issues when TNS ended discussions and apparently chose to implement self-described "patches" that are unexplained.

C. TNS Has Admitted That The Processed Data Are Unreliable.

The concerns that TNS has expressed about the basic reliability and accuracy of the clusters it has created emphasize the need for Qwest and the Commission to be able to audit all of TNS' work. To illustrate, the following quote is from an e-mail of May 22 sent by TNS representative, Kevin Landis, to Qwest employee, Peter Copeland:

Based on the number of issues that have been appearing with the customer data I have some concerns about it's reliability. Ideally, Qwest should probably re-pull the data to specification but based on time limitations, we can continue to apply patches to the process. The other concern is that handling these input data problems and the additional time for analysis and work-arounds has gone beyond the scope of this project and we need to bring closure to the process or explore defining a new project.

We should probably all have a discussion this afternoon and try to resolve outstanding issues. I will try and pull together a list of outstanding questions before then.

--Kevin Landis

Despite these ominous words and the statement that Mr. Landis would try to "pull together a list of outstanding questions," Qwest heard nothing further from TNS about these issues. TNS never provided the list of outstanding questions that Mr. Landis referred to nor made any attempt to resolve issues after sending that e-mail. At this point, Qwest can only speculate about how TNS resolved these issues and is, therefore, greatly concerned about TNS' admission as to the unreliability of its processed data. Given this admission and the total inability to audit or verify what TNS did and has done, Qwest submits that the Commission cannot rely on the TNS processed data to form the basis for the loop rate in this docket.² TNS has promised to provide some form of audit trail and explanation for these patches and the clusters by the end of next week. Upon receiving these materials, Qwest will have to review and analyze the data and conduct extensive depositions of TNS personnel to determine exactly how the clustering was done and whether it faithfully recreated the process used with the 1997 data. As suggested by Chairman Mundell, a full review of the data can more properly be conducted in Phase III of this hearing.

III. Conclusion

For the reasons stated, Qwest urges the Commission to discard the HAI model run based on the TNS processed data. Instead, Qwest recommends that the Commission establish a loop rate based upon the 1997 customer location data and 1997 customer line counts that are in the

² The specific information that TNS would have to provide is identified in Qwest's May 13 letter to TNS, included in Attachment A.

record. Alternatively, Qwest recommends that the Commission use the joint price list loop rate of \$12.63 as the default rate, subject to further analysis of the issue of customer locations in line counts in Phase III of this docket. Qwest recommends that the Commission proceed to resolution of this issue in an open meeting as quickly as possible.

Respectfully submitted May 24, 2002,

Qwest Corporation

By: 

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ORIGINAL +10 copies filed this 24th day of May, 2002:

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A handwritten signature in cursive script, appearing to read "Joan J. Burke", is written over a horizontal line.

PHX/1305495.1/67817.240

ATTACHMENT
A

KLandis@tnstelecoms.com on 05/22/2002 09:56:08 AM

To: pcopela@qwest.com, ddenney@att.com, Lieberma@lga.att.com, Geoffrey
Murphy <gxmurph@qwest.com>
cc: Charles_White/TNS@tnspa.com

Subject: Customer Data Concerns

All,

In addition to the earlier concern I had with the customer data, a few additional issues have come to light. Although the records were thought to each represent a location, quite a few locations have multiple records. I have pulled out 5 examples and attached them in an Excel file.

Problem0.xls - is the one that helped me discover the problem. In this example, it appears that the second record was added to reduce the line count from 325 to 320, matching the location count. However the way we are handling negative line counts means that the locations are being counted twice but the line counts once. ***Perhaps negative records should just be removed***.

Problem1.xls - shows 1 address with 10 records, all with resline=-1 and resloc = 1 but also including a wide range of busline values all with busloc =0.

Problem2.xls - These records differ some on the zip4 although the addresses are them same. The numbers for lines and locations looks like there might be some other issues with how the data was generated. This example has something that I have noticed in multiple records. One record has a negative resline count apparently to negate the resline on a records that was only supposed to have a busline.

Problem3.xls - Just an example of a lot of multi-line records at a single address with differing Zip4s.

Problem4.xls - Another example of multiple records for a single address with a variety of Zip4s. There is some duplication of Zip4s which might imply double counting.

Based on the number of issues that have been appearing with the customer data I have some concerns about it's reliability. Ideally, Qwest should probably re-pull the data to specification but based on time limitations, we can continue to apply patches to the process. The other concern is that handling these input data problems and the additional time for analysis and work-arounds has gone beyond the scope of this project and we need to bring closure to the process or explore defining a new project.

We should probably all have a discussion this afternoon and try to resolve outstanding issues. I will try and pull together a list of outstanding questions before then.

--Kevin Landis

(See attached file: problem4.xls) (See attached file: problem1.xls) (See attached file: problem2.xls) (See attached file: problem3.xls) (See attached file: problem0.xls)

Kevin G. Landis
Senior Vice President Information Technology
TNS Telecoms
(267) 287-0128

(See attached file: problem4.xls)
(See attached file: problem1.xls)
(See attached file: problem2.xls)
(See attached file: problem3.xls)
(See attached file: problem0.xls)

May 10, 2002

Mr. Kevin Landis, Senior Vice President Information Technology
Mr. Charles White, Vice President – Marketing and Business Development
TNS Telecoms
101 Greenwood Ave. Suite 502
Jenkintown, PA 19046

Mr. White and Mr. Landis:

I am writing on behalf of Qwest Corporation in connection with a recent order issued by the presiding Administrative Law Judge ("ALJ") in the wholesale cost docket in Arizona (Docket No. T-00000A-00-0194).

On May 9, 2002, the ALJ ordered Qwest and AT&T/WorldCom to provide Qwest's year 2000 Arizona customer location data to TNS to enable TNS to process the data for use in the HAI model. The order requires Qwest to pay one-half of TNS' processing costs. It also directs the parties to work together to minimize and resolve disagreements in order to meet the Commission's May 24, 2002 deadline for filing a joint price list based on the run of HAI using the 2000 customer location data.

As you are aware, Qwest has already provided the year 2000 customer location data to TNS through its production of this data to AT&T and WorldCom on May 1. Additionally, to assist TNS' preparation of the data, Qwest provided its Arizona wire center boundaries on May 3. In a conference call with representatives of TNS and AT&T on May 9, Qwest answered additional questions about the customer location data. Based on the ALJs' requirement that Qwest pay one-half of TNS' costs and work on an equal footing with the other parties involved in the process, Qwest would like to be sure that TNS provides Qwest with full, unfettered access to the processes and information that TNS uses to process Qwest's customer location data. Like AT&T/WorldCom, Qwest is now your paying customer. Accordingly, with this letter, I am requesting that TNS provide Qwest with access to all the processes, algorithms and intermediate and final outputs TNS uses and generates to transform Qwest's customer location data into the cluster data input file for use in HAI 5.2a. Many of Qwest's initial questions regarding the methods for processing the data can be satisfied by sending Qwest comprehensive documentation of algorithms and processes used to transform the data. As you know, the documentation provided in the HAI Model description is inadequate to replicate and therefore understand and monitor TNS' processes. To permit a proper understanding and allow us to meet our ALJ-ordered obligation to work cooperatively and "minimize and resolve disagreements, we will need documentation on the following processes and algorithms:

- Assignment of latitude and longitude to customer locations, including information regarding the precision that was achieved in the geographic

assignment and the number of instances in which TNS was unable to assign a specific longitude and latitude resulting in the need to surrogate the customer location;

- Assignment of latitude and longitude to surrogate points;
- Assignment of points to clusters and outlier clusters, including the choice of starting point and logic for exceeding the 1800 line cluster limit;
- All logic concerning the development of the convex hulls, including density and area calculations, centroid calculations, and aspect ratio calculations;
- All logic concerning the development of cluster strand distance; and
- The minimum spanning tree algorithm used to determine strand distance.

Additionally, we will need access to the intermediate output at the following steps in the process:

- Latitude and longitude of the customer points and their wire center assignments;
- Latitude and longitude of the surrogate customer points and their wire center assignments;
- Convex hulls and customer location points for each wire center; and
- Strand distance for each cluster.

Qwest also requests access to any preliminary runs of the TNS data through the HAI model at the time such runs are completed.

Qwest requests that we have a planning call with TNS and AT&T/WorldCom as soon as possible to develop specific timeframes for each process. This call, which we ask be held no later than the morning of May 14 in view of the short timeframe under which we are all operating, should establish specific dates for TNS to provide documentation and the results of each step of the process. In addition, draft or sample results of the process should be made available simultaneously to all the parties in this docket as TNS completes them. To permit compliance with the ALJs' requirement of joint submission of a price list by May 24, the entire process must be complete with the resulting input file distributed to the parties in the docket by May 21.

I look forward to working with TNS in this process to enable all of us to meet the demanding deadline under which we are operating. Please call me on 303-896-5178 if you have any questions.

Gary Fleming, Senior Director
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