Exhibit T-___ (GB-5T)
Docket No. UT-023003
Witness: Glenn Blackmon, Ph.D.

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of Review of Unbundled Loop and Switching Rates and Review of the Deaveraged Zone Rate Structure.	DOCKET NO. UT-023003

REBUTTAL TESTIMONY OF

GLENN BLACKMON, Ph.D.

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION STAFF

May 12, 2004

Q. Please state your name and business address.

A. My name is Glenn Blackmon, Ph.D. My business address is 1300 South Evergreen Park Drive Southwest, P.O. Box 47250, Olympia, Washington 98504. My e-mail address is blackmon@wutc.wa.gov.

Q. Did you testify earlier in this proceeding on behalf of Staff?

A. I did.

Q. What is the purpose of your rebuttal testimony?

A. I have been asked to respond to the rebuttal testimony of AT&T witness Douglas Denney (Exhibit ____, pre-filed April 20, 2004) critiquing Staff's method for establishing deaveraged zone prices for unbundled loops.

Q. What specific points have you been asked to address?

A. Mr. Denney claims that minimizing absolute deviations is superior to the method recommended by Staff of minimizing squared deviations. He also claims that it is appropriate to weight the deviations by the inverse of the average cost for each zone. These are both incorrect claims. The first is fairly innocuous, but the

second introduces a significant bias to the resulting allocation of wire centers to zones.

Q. Are there any areas in Mr. Denney's rebuttal testimony with which you agree?

A. Yes. I agree with Mr. Denney's description of the deaveraging proposal by Staff, AT&T, and Verizon. He has accurately captured in his Table 1 the key differences among the witnesses. I believe we also agree that a mathematical approach is superior to the "eye-ball" used in the past and proposed to be used again, in part, by Verizon in this proceeding.

Q. Mr. Denney contends that minimizing absolute errors produces a more accurate allocation of wire centers to zones than does minimizing the sum of squared errors (SSE) approach. Please respond.

A. This testimony is incorrect. As I explained in my direct testimony, using absolute variations will not bias the results, i.e., it will tend to miss on the high side as often as it will miss on the low side. However, it makes inefficient use of the information that is contained in the wire center data. In other words, it is more likely that random variations in the data will result in inaccurate assignment if one uses absolute errors than if one uses SSE.

Q. Is minimization of SSE the objective in statistical regression analysis because it is theoretically superior to minimization of absolute errors, or because it is computationally easier as Mr. Denney suggests?

A. Minimization of SSE is used in regression analysis (where it is called ordinary least squares or OLS) because it is theoretically superior. OLS is not an appropriate estimation technique in every circumstance, but there is no circumstance where minimization of absolute errors would be superior. Mr. Denney is correct in noting the relative computational ease of OLS estimation, but that is simply not the reason why it is universally used instead of minimization of absolute errors.

Q. Is your reasoning in support of SSE circular?

A. No, though I can understand why it might seem so. Rather than being circular, it is inevitable. The most efficient method is the one that produces the lowest variance, so the method with the lowest variance should be used. SSE inherently produces the lowest variance, so it is inevitable that it would be preferred.

Q. You testified that the difference between SSE and absolute errors is fairly innocuous. Why do you say that?

A. The absolute errors method is inefficient, but it is an unbiased estimator. If one were allocating wire centers to zones many times, the expected results would be the same. This does not mean that they will produce the same results every time, and the SSE method will result in fewer inaccurate allocations. Based on his discussion of heteroskedasticity, it appears that Mr. Denney agrees that a more efficient method should be preferred over a less efficient method. Therefore, there is no good reason to use the inferior method.

Q. Mr. Denney claims that weighting the deviations by the zone cost corrects for heteroskedasticity in the data. Do you agree?

A. No. Mr. Denney has not demonstrated the existence of heteroskedasticity, which is a condition in which the variance of observations (the difference between the observed values and the "true" values) is not constant across the sample or universe. Mr. Denney plotted the variation in cost estimates *across cost models* and found that the models produce a greater variation in estimates in high-cost wire centers. That analysis may say something about the models, but it does not show that the variation in costs *across customers* is greater in high-cost wire

centers. To the extent there really is such a variation across customers, this would already be addressed by giving more weight to large wire (generally low-cost) centers than to small wire centers, and this weighting is already part of both Staff's method and AT&T's method. Simply put, dividing the errors by the zone cost introduces a significant skewing of the results with no demonstrated empirical or theoretical purpose.

Q. Please explain how it skews the results.

A. It causes more importance to be placed on having accurate prices for the low-cost zones than for the high-cost zones. In other words, it steers the results toward an outcome in which the low-cost zones have few wire centers and the high-cost zones have lots of wire centers. This can be illustrated using Mr. Denney's example of three equal-sized wire centers with costs of $5, $10, and $15. Let us assume that we need to assign these three wire centers to two zones. The only practical question is whether to put the middle wire center into Zone 1 or into Zone 2:

A: Zone 1 = average ($5, $10) = $7.50, Zone 2 = $15

B: Zone 1 = $5, Zone 2 = average ($10, $15) = $12.50

The two configurations – A and B – are equally good, because whether one is using SSE or absolute variations, the size of the error is equal. The only question is whether to have that error occur in Zone 1 or in Zone 2. However, AT&T's method, by giving much less weight to Zone 2 errors than to Zone 1 errors, makes B look superior to A. In other words, it skews the results so that low-cost zones are more accurate and lower priced. Indeed, this effect is so strong that the B configuration would be chosen even if the three wire centers had costs of $5, $9.50, and $15. AT&T's method would put the $9.50 wire center in Zone 2 with the $15 wire center, even though it clearly would be more accurate to include it in Zone 1 with the $5 wire center.

Q. Does this conclude your testimony?

A. Yes.