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April 23, 1998

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Magalie Roman Salas, Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

Re: Ex Parte Submission
Federal-State Joint Board on Universal Service; CC Docket No. 96-45
Forward-Looking Mechanism for High Cost Support for Non-Rural LECs; CC Docket No. 97-160

Dear Ms. Salas:

On April 22, Mike Lieberman of AT&T and I met with Gary Biglaiser, Craig Brown, Bryan Clopton, Chuck Keller, Mark Kennet, Bob Loube, Jeff Prisbrey, Bill Sharkey, Richard Smith, Don Stockdale, and Brad Wimmer, to respond to an ex parte filed by Sprint on April 17, 1998, in the above captioned dockets.

Based on an exhaustive investigation of the customer location cluster data inputs used in the HAI Model 5.0a in a state proceeding before the Nevada Public Utility Commission, Sprint identified 7 clusters (out of a total of 2626 clusters in Nevada) containing 71 lines (or 0.0055% of Nevada's total) in which they determined that HAI modeling processes might cause cable lengths and costs to be inaccurately measured. Because the situation identified by Sprint is rare, the total cost effect of correcting it is minor – and likely to be at least partially offset by the effects of other HAI Model assumptions that have tended to overestimate costs.

The HAI Model engineers distribution areas based on customer cluster data passed to it by the PNR Spatial Clustering Module.[1] Output from this module is in the form of convex polygons having as vertex, boundary or interior points the customer geocodes associated with the cluster. Currently, the only information about this polygon's customer

[1] The module itself takes as input the latitude and longitude geocode points of the actual and surrogate customer locations within a wire center's boundary.

configurations that is passed by PNR for use in the HAI Model's input data is the polygon's area, centroid location, vertical and horizontal dimensions. The process of preparing these data for input into the HAI Model converts these data about the polygon into a rectangle that has the same area, centroid location and ratio of horizontal to vertical dimension (aspect ratio) as the polygon.

Although the *modeling* of distribution area configurations will never perfectly represent *all* clusters, it is desirable that it be as "close" to correct as possible for as many clusters as possible. In particular, all models generally make a collection of partially offsetting assumptions in this regard. Among the cost-overestimating assumptions made by HAI (and certainly made by the BCPM) is an assumption that within distribution areas, customers are uniformly distributed. Rather than attempting to add up all of the puts and takes, in its ex parte Sprint has seized on one particular situation where the HAI modeling practices may underestimate costs - when the polygonal clusters are not only long and very thin, but also oriented substantially away from North-South or East-West in major dimension. In the most severe of these occurrences, the various conservative HAI modeling assumptions may be insufficient to offset the effect of this particular cost underestimate.

It is certainly curious that Sprint should focus on this particular situation in which the HAI Model may be slightly inaccurate, because the BCPM, due to its engineering of all distribution areas as squares, will always do a worse job at matching geographical configurations than the HAI, which uses rectangles.[2] Because of the flexibility of the HAI Model, it is feasible to make adjustments that would address this concern, if it should prove in fact to be distorting the HAI results. For instance, the HAI model could allow the rectangles to be rotated to match orientation of major and minor axes of cluster polygons, which would retain the long, thin shape of customers strung out along a road when building distribution plant. The HAI Model sponsors plan to examine the effect of this modification on the model results.

It is also telling that the BCPM sponsors do not propose any fixes to their model to improve it in this regard. It is the practice of recognizing the possibility of improvements in the HAI Model, and implementing changes that make those

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[2] This assumes that the BCPM models actual customer clusters, which it does not due to its arbitrary grid cell approach. In addition to BCPM's greater distortion of distribution areas into squares rather than rectangles, BCPM also distorts the area and location of distribution areas by arbitrarily squashing them into tiny "road-reduced squares," and relocating these squares to areas where their data adduce neither the existence of customers nor roads.

improvements, that has made the model a viable model in Nevada. In fact, the discovery of these issues are the result of an open and cooperative review of the model in Nevada. This reinforces the conclusion that adopting the HAI Model and allowing for a continuing improvement in the model's engineering assumptions and its inputs is the best use of all the resources before this Commission.

Respectfully submitted,

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