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4. GTE's Cost Models and Studies

Model Methodology, Design, and Operation

Q. Would you please elaborate on your criticism concerning the GTE approach to modeling the geographic aspects of the loop network?

A. GTE runs its loop cost model numerous times in order to produce a single set of cost estimates. For example, in this proceeding GTE prepared estimates for three density categories, instead of estimating costs for any specific wire centers. Using COSTMOD, GTE prepared cost estimates for thirteen different loop length categories, i.e., 0-1 kilfeet, 1-2 kilfeet, and so forth. The thirteenth category represented loop lengths greater than 12 kilfeet. To derive separate estimates for each of the three density categories, the Company blended these thirteen loop cost estimates together, in order to develop a distinct blended average for each density category, in which the thirteen costs were weighted by the number of loops within each distance band which are estimated to be included in that density category. This process was performed separately for business and residence loops. In effect, to derive its cost estimate for 2-wire unbundled loops, GTE ran its simplistic models 78 times (13 length categories * 3 density categories * 2 customer categories).

If GTE wanted to generate different cost estimates for each of its individual wire centers, and it wanted to distinguish the mix of loop lengths applicable to individual line, PBX, Key, and Centranet customers, rather than lumping all business customers together, the same repetitive approach would require 13,975 separate iterations of the process (13 length categories * 215 wire centers * 5 services). Although this would produce an impressive mountain of paper, it would be very inefficient, and would produce little information of real value to the Commission. Taking a simplified model

1 and running it dozens (or thousands) of times doesn't ensure that the information
2 obtained through that repetitive process will necessarily be any more useful than if the
3 model were run just a few times.

4 GTE's loop cost model uses a simplistic approach to modeling the loop
5 network, which is repeatedly applied (78 times in this proceeding). Because this
6 process relies upon and generates large amounts of data, one can get the false
7 impression of great precision. However, as a result of inherent simplifications within
8 COSTMOD, relatively little benefit is obtained from the large amounts of network data
9 which are used to drive the model. The simplified nature of the model precludes a high
10 level of precision in the resulting cost estimates, no matter how much data is pushed into
11 or out of the "black box."

12
13 **Q. You have indicated that the GTE hasn't used detailed geographic information**
14 **concerning individual wire centers in preparing its cost studies. Can you**
15 **elaborate upon the simplified approach to geography and loop network routing**
16 **used by GTE?**

17 A. Yes. GTE uses highly simplified assumptions regarding network configuration. GTE
18 assumes four cables leaving every central office, each serving one fourth of the wire
19 center. While this is a reasonable assumption, GTE makes no effort to distinguish the
20 loop lengths, population density, or other characteristics of these four quadrants. Each
21 cable is assumed to repeatedly fork into a series of four smaller cables, each of which
22 has a sheath one-fourth the size of the sheath of the preceding segment. These cable
23 segments also follow a highly simplified pattern with regard to their length (route
24 distance). Specifically, the first segment leaving the wire center is assumed to be

25 *****Begin Proprietary**

26 **End Proprietary***** of the average loop

1 length, respectively. This is true no matter what density category is being studied, or
2 what total loop length is used in running the model.

3 These assumptions are obviously unrealistic, particularly for shorter bop
4 lengths. For example, to serve a customer that is located 1000 feet from the central
5 office, it is unlikely the cable would be divided into four separate segments, since this
6 would require an excessive amount of splicing activity. Also, it seems very unlikely that
7 the final segment would be just *****Begin Proprietary**

8
9 **End Proprietary***** feet. [Response to OUCC Data Request No. 20 ss].

10 The GTE studies create the impression of great precision, but in reality there is
11 very little information used in distinguishing the three density bands. In each case,
12 virtually the only factual differences which are reflected in the cost estimates are
13 differences in the residence and business average loop lengths. In reality, there are
14 numerous other differences between rural and urban wire centers, and even within
15 individual wire centers, including differences in route density (number of loops served
16 by each feeder and distribution cable route), differences in drop lengths (distance from
17 the distribution cable to the customer's premises) differences in terrain (presence of
18 bedrock or other difficult soil conditions), and the like. Despite the large amounts data
19 used by, and produced by, the GTE models, none of these important differences are
20 adequately reflected in the Company's cost studies. To the contrary, according to
21 GTE's documentation, its loop cost model makes the following simplifying assumptions:

22
23
24 *****Begin Proprietary** The underlying assumption of the sizing model is
25 that the serving area is square and the population being served is
26 distributed uniformly throughout it with the central office located at the
27 center of the serving area. **End Proprietary*****
28

1 It should be obvious that the actual geographic characteristics of GTE's wire centers
2 are not always consistent with these assumptions. This discrepancy between assumption
3 and reality can be further confirmed by a review of the wire center maps contained in
4 volume 2 of my exhibit. Anyone involved in cost modeling knows that it is necessary to
5 make simplifying assumptions. The problem with GTE's approach is that they have
6 placed a great emphasis upon gathering enormous amounts of raw data (e.g. loop
7 length samples), and not enough effort on making their model more accurate. Running
8 enormous amounts of data through an extremely simplified model cannot overcome the
9 inherent limitations of the underlying assumptions and model structure.
10