

1 **TESTIMONY OF MR. JAMES W. STEGEMAN**
2 **ON BEHALF OF BELL SOUTH TELECOMMUNICATIONS, INC.**
3 **BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION**
4 **DOCKET NO. 990649A-TP**
5 **NOVEMBER 8, 2001**

6
7 **INTRODUCTION**

8
9 **Q. PLEASE STATE YOUR NAME AND BUSINESS AFFILIATION.**

10
11 A. My name is James W. Stegeman. I am the President of CostQuest Associates, Inc. I am
12 testifying on behalf of BellSouth Telecommunications (“BellSouth”, “BST” or the
13 “Company”).

14
15 **Q. ARE YOU THE SAME JAMES STEGEMAN WHO PREVIOUSLY FILED**
16 **TESTIMONY IN THIS PROCEEDING ON MAY 1 AND AUGUST 20, 2000?**

17
18 A. Yes, I am.

19
20 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

21
22 A. My testimony describes the changes made to BSTLM to allow the model to develop
23 structure-related costs using a “bottom-up” approach. In its previous cost filing, which
24 was adopted by this Commission and used to establish UNE loop rates, BellSouth
25 developed engineering, furnished, and installed costs outside of BSTLM using in-plant

1 loadings. The Commission, however, instructed BellSouth to re-file recurring loop costs
2 that were based on BSTLM's development of material as well as installation and
3 engineering of outside plant cable and structure costs.

4
5 **Q. HOW IS YOUR TESTIMONY ORGANIZED?**

6
7 A. The first section of my testimony introduces BSTLM-SC, an updated version of BSTLM,
8 and sets forth the reason changes were made to BSTLM. The second section describes
9 errors that have been discovered and corrected in BSTLM since the August 2000 Florida
10 filing. The third section describes enhancements and modifications made to BSTLM
11 since the August 2000 filing.

12
13 **SECTION I: BSTLM-SC**

14 **Q. WHAT IS BSTLM-SC?**

15
16 A. BSTLM-Structure Cost or BSTLM-SC is an updated version of BSTLM. This updated
17 version includes a combination of new features, input table and logic changes, and error
18 corrections made since BSTLM was last filed in Florida. The specific changes in
19 BSTLM-SC are described in the Sections II and III. To differentiate this Structure Cost
20 release from previously filed models, I will refer to the current application as BSTLM-SC
21 and the previously filed application as BSTLM throughout this testimony.

22
23 **Q. ARE THE CHANGES IN BSTLM-SC COVERED IN THE MODEL'S FILED**
24 **DOCUMENTATION?**

1 A. Yes. Release notes were filed summarizing the changes made to BSTLM with the
2 development of BSTLM-SC. In addition, BellSouth released an updated BSTLM-SC
3 User's Guide, Model Methodology, and Online Help system.

4
5 **Q. DO THE MODIFICATIONS MADE IN BSTLM-SC ALTER THE MATERIAL**
6 **INVESTMENT RESULTS THAT HAVE BEEN PREVIOUSLY ADOPTED IN**
7 **FLORIDA?**

8
9 A. No. There should be no significant difference between the material investments
10 produced by BSTLM and the material investment produced by BSTLM-SC, since none
11 of the changes to the model are associated with calculations of material investment. The
12 changes only impact internal processing (e.g., factors such as memory allocation or
13 speed) and the calculation, accuracy, and consistency of the installation, engineering, and
14 structure costs.

15
16 **Q. DID YOU PREVIOUSLY TESTIFY THAT BSTLM COULD BE USED TO**
17 **DEVELOP INSTALLATION, ENGINEERING, AND STRUCTURE COST? IF**
18 **SO, WHY WERE MODEL CHANGES REQUIRED FOR THIS RE-FILING?**

19
20 A. Yes, I have testified in a number of proceedings that BSTLM was designed to estimate
21 both the material and related installation, engineering, and structure of the BellSouth
22 network. Typically, this type of investment is referred to as Engineered, Furnished and
23 Installed ("EF&I"). As BellSouth began to load the model with BellSouth specific
24 inputs, however, the BSTLM development team noted inconsistencies in some input table
25 layouts and BellSouth's actual data. The development team also noted that the model's

1 accuracy could be improved with a few modifications. Finally, the development team
2 became aware of a few errors in the model that had been discovered since the previous
3 filing.

4
5 **SECTION II: CORRECTIONS**

6 **Q. CAN YOU BRIEFLY REVIEW THE PROCESSING STEPS OF BSTLM-SC?**

7
8 A. Yes. BSTLM-SC, like BSTLM, relies upon four distinct processes. The first is the GIS
9 (or Geographic Information System) Process, which performs clustering operations and
10 “designs” the modeled network. The second is the Configuration Process, which
11 “engineers” the modeled network. The third is the Investment Process, which calculates
12 the necessary investment for the given modeled network. The fourth and final process is
13 the Summary Process, which calculates service specific investment and generates key
14 statistic report data.

15
16 **Q. IN WHICH OF THESE MODEL PROCESSES WERE ERRORS DISCOVERED?**

17
18 A. Errors were discovered in each of the four processes. However, as I indicated earlier,
19 none of these errors had an impact on the material investment produced by BSTLM and
20 approved by this Commission. In addition, the correction of these errors in BSTLM-SC
21 does not alter the material investment produced when compared to the approved values
22 produced by BSTLM.

23
24 **Q. WHAT ADJUSTMENT WAS MADE TO THE GIS PROCESS IN BSTLM-SC?**

1 A. Given a rare combination of user inputs for clustering, customer locations, and road
2 routing in a wire center, the BSTLM GIS Process could enter an infinite loop and not
3 terminate properly when attempting to optimize upline distribution routing. The infinite
4 loop was the consequence of a limited series of road configurations that resulted in
5 multiple solutions with no solution being better (more optimal) than any other. While
6 this problem has not yet been reported in Florida, BSTLM-SC contains a modification
7 (released in those states where the error has been reported) to avoid this potential
8 problem. Under BSTLM-SC, when this infinite loop occurs, optimization is stopped, the
9 process is terminated properly, and a warning is posted into the application's log file
10 noting the Carrier Service Area ("CSA") and wire center where the situation occurred.

11

12 This fix does not impact BSTLM-SC's calculation of the approved material investments.
13 Rather, the new approach simply selects one from a multiple number of optimal solutions
14 to avoid the infinite looping between equivalent solutions.

15

16 **Q. WHAT ADJUSTMENT WAS MADE TO THE CONFIGURATION PROCESS IN**
17 **BSTLM-SC?**

18

19 A. In the previously filed BSTLM, the Configuration Process improperly determined the
20 type of terrain for some areas. Due to an error in logic, BSTLM never assigned water
21 terrain to a network node when appropriate. BSTLM-SC corrects this. However,
22 because the terrain inputs are only used in computing installation, engineering and
23 structure investments, the terrain assignment had no impact on the original filing or on
24 the ordered rates.

25

1 **Q. WHAT ADJUSTMENTS WERE MADE TO THE INVESTMENT PROCESS IN**
2 **BSTLM-SC?**

3

4 A. The Investment Process required three minor adjustments which impacted Microsoft®
5 Excel®'s ability to perform table lookup functions. To address these problems, the
6 following changes were made in BSTLM-SC:

- 7 ▪ The Excavation Activity column (A21 – A54) in the “StructureConduit Interim Calc”
8 worksheet was modified to correct a lookup error by creating a consistent reference to
9 match existing inputs.
- 10 ▪ Cells B11-C11 in the StructureConduit worksheet were modified to correct a lookup
11 error by creating a consistent reference to match existing inputs.
- 12 ▪ Cells AC2-AC7 in the Media worksheet were modified to correct a reference to a
13 non-existing table.

14 As with the other adjustments, none of these changes invalidated or impacted the original
15 filing or the Commission ordered rates since the functions are only associated with
16 installation, engineering, and structure investment development.

17

18 **Q. WHAT ADJUSTMENT WAS MADE TO THE SUMMARY PROCESS IN**
19 **BSTLM-SC?**

20

21 A. While not necessarily an error, there was a memory allocation problem that would
22 occasionally cause the Summary Process application to freeze. This problem was
23 addressed by changing the memory allocation procedure and updating the third party
24 storage DLLs (dynamic link libraries) used to create the intermediate database files in
25 BSTLM-SC.

1 **SECTION III: MODIFICATIONS AND ENHANCEMENTS**

2 **Q. CAN YOU SUMMARIZE THE MODIFICATIONS AND ENHANCEMENTS**
3 **MADE TO BSTLM-SC?**

4
5 A. Yes. To support increased accuracy in installation, engineering, and structure investment
6 calculations, the following modifications and enhancements were made in BSTLM-SC:

- 7 ■ BSTLM-SC improved the determination of where Splice Points take place;
- 8 ■ BSTLM-SC created a new input table to allow the user to control how structure costs
9 along shared distribution and feeder routes are shared;
- 10 ■ BSTLM-SC introduced Rate Zone reporting as a user convenience. (However, it is
11 not used in this Florida filing since de-averaged rate zone results are developed
12 outside BSTLM in BellSouth's Final Cost Summary application);
- 13 ■ BSTLM-SC expanded the Contractor Excavation tables to allow user inputs by
14 terrain type;
- 15 ■ BSTLM-SC expanded the Material Loading table to allow inputs by Cost Component
16 and specific loading factors for each Cost Component; and,
- 17 ■ BSTLM-SC modified the structure sharing apportionment method between fiber and
18 copper to be more in line with approved methods.

19
20 **Q. CAN YOU DESCRIBE THE NEW SPLICING METHODOLOGY IN MORE**
21 **DETAIL?**

22
23 A. Yes. The previously filed BSTLM only put a splice at each "Junction Node" in the cable
24 routing. A Junction Node is where a cable route splits into two directions (e.g., when a
25 cable comes to a T-shaped road intersection and cable goes in both directions). The

1 splicing methodology in BSTLM-SC now allows the user to select a more realistic
2 approach that reflects where cable splices would occur because it places a splice not only
3 at Junction Nodes but also when there is a change along a route in cable size (commonly
4 referred to as a taper point).

5
6 By setting the newly added BSTLM-SC input value of *SplicingApproach* equal to
7 *SpliceAtIntersection*, the user is instructing the model to use the previously filed BSTLM
8 approach of splicing only at Junction Nodes. If the user sets *SplicingApproach* equal to
9 *SpliceAtTaperPoint*, the model will place splices at both Junction Nodes and Taper
10 Points.

11
12 **Q. CAN YOU DESCRIBE THE FEEDER/DISTRIBUTION STRUCTURE SHARING**
13 **ENHANCEMENT?**

14
15 A. Yes. In a number of proceedings, one issue that has been raised is whether the results of
16 loop modeling should reflect some amount of structure sharing between feeder and
17 distribution cables on routes where both feeder and distribution cable are placed. In other
18 words, if Feeder cable and Distribution cable share a common route, what is the
19 likelihood that they will share the same outside plant structure (poles, conduit or
20 trenches)?

21
22 While BSTLM recorded which distribution and feeder routes were shared, the user had
23 no control over what portions of the structure on the routes were to be shared. BSTLM-
24 SC addresses this limitation through the newly added Facility Sharing table and
25 corresponding changes to the Investment logic to use these inputs, which allows a user to

1 enter a structure sharing percentage between feeder and distribution plant within a given
2 density zone.

3
4 In BSTLM-SC, if a user enters a zero for the amount of structure sharing, the feeder and
5 distribution cables will share the same structure on the same route 0% of the time.

6 Conversely, if the value is set to 1, the feeder and distribution cables will share the same
7 structure when on the same route 100% of the time.

8
9 **Q. PLEASE DESCRIBE THE RATE ZONE REPORTING FEATURE**
10 **ENHANCEMENT.**

11
12 A. BSTLM-SC added Rate Zone reporting to allow the user to report investment results at
13 the Rate Zone (or deaveraged) level. To accomplish this, BSTLM-SC added a new user
14 controlled Rate Zone table that links wire centers to a deaveraging zone. To access Rate
15 Zone reports, a new Rate Zone grouping variable has been added to the report screen. For
16 this filing, however, this new feature within BSTLM-SC was not used since de-averaged
17 rate zone results are developed outside BSTLM in BellSouth's Final Cost Summary
18 application

19
20 **Q. PLEASE DESCRIBE THE EXPANSION OF THE CONTRACTOR**
21 **EXCAVATION TABLES.**

22
23 A. In BSTLM, the user was not able to input Contractor Excavation costs by terrain type.
24 That is, if the cost for plowing in hard rock was different from the costs for normal
25 terrain, the user had no easy way to input these differences. To correct for this input

1 deficiency, the Excavation Contract Labor table was split into two tables: one for buried
2 and one for underground activities. In addition, within each table, input columns were
3 added to allow potential differentiation in excavation costs by terrain type. Finally, the
4 Investment logic was modified to utilize these inputs. Thus, in BSTLM-SC, users can
5 now input excavation costs by plant and terrain type.

6
7 **Q. PLEASE DESCRIBE THE ENHANCEMENT MADE TO THE MATERIAL**
8 **LOADING TABLE IN BSTLM-SC.**

9
10 A. Even with the expanded development of structure and installation costs within BSTLM-
11 SC, there are still some costs that, as I understand, can only be accurately derived through
12 the use of factors and/or loadings (e.g. taxes, miscellaneous materials, etc.). However,
13 BSTLM had a fairly limited table for these factors and/or loadings. In addition, the input
14 table in BSTLM did not allow the factors and/or loadings to be categorized by plant type.
15 To allow the user to refine how these loadings are applied, BSTLM-SC contains an
16 expanded Material Loading table along with corresponding Investment logic changes
17 utilizing these inputs, which allows the user to input specific loading factors by plant
18 type.

19
20 **Q. PLEASE DESCRIBE THE NEW STRUCTURE COST APPORTIONMENT**
21 **BETWEEN MEDIA TYPES IN BSTLM-SC.**

22
23 A. In the situation where a fiber cable and a copper cable utilize the same structure, the
24 model must apportion the structure investment to the fiber and copper cables that utilize
25 this structure.

1 If BSTLM had been used in the original filing to develop total EF&I investments, the
2 apportionment of structure costs between copper and fiber cables would have been based
3 upon the values in the Media Sharing table. The Media Sharing table specified the
4 percentage apportioned between the media types based upon the relative size of the
5 copper cable.

6
7 The approach was modified in the BSTLM-SC Investment logic so that when both fiber
8 and copper media share the same structure, the structure costs are apportioned based upon
9 the percentage of total DS0s carried on each media type. A DS0 apportionment
10 methodology allows the structure cost apportionment to be consistent with the DS0 basis
11 for apportioning digital loop carrier common equipment and fiber investment as ordered
12 by the Commission (Page 132, ORDER NO. PSC-01-1181-FOF-TP).

13
14 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

15
16 **A.** Yes it does.

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