

STATE OF MICHIGAN
BEFORE THE MICHIGAN COMMERCE COMMISSION

In the matter, on the Commission's own motion, to review)
the costs of the telecommunication services provided by) Case No. U-13531
SBC Michigan.)
)

Rebuttal Testimony of
James R. Smallwood
On Behalf of SBC Michigan

Recurring Cost Issues

*****PUBLIC VERSION*****

Dated: March 22, 2004

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REBUTTAL TESTIMONY OF JAMES R. SMALLWOOD

I. INTRODUCTION

Q1. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A1. My name is James R. Smallwood. My business address is 38-X-8, One SBC Center, St. Louis, Missouri 63101.

Q2. ARE YOU THE SAME JAMES R. SMALLWOOD WHO SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A2. Yes, I am.

Q3. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A3. The purpose of my testimony is to respond to direct testimony and comments related to recurring unbundled network element (“UNE”) loop costs filed in this proceeding on behalf of AT&T, MCI, and also by the Staff. I will respond to the testimony of Michael Starkey and Warren Fischer, Brian F. Pitkin and Steven E. Turner, and Michael Starkey and John Balke filed on behalf of various CLECs. I will also discuss certain modifications to the SBC’s recurring UNE loop cost studies that have been made in other states and that SBC Michigan would agree to make in any compliance filings in this proceeding. These proposed modifications are submitted in response to comments and proposals made in this proceeding by the CLECs and/or the Staff. I will present the impact analysis results of these modifications for the Commission’s consideration.

1 **Q4. ARE YOU SPONSORING ANY EXHIBITS?**

2 A4. Yes. I am sponsoring the following eleven exhibits:

- 3 • Exhibit A - (JRS – R1): Model Revisions to SBC Michigan’s Cost Studies
- 4 • Exhibit A – (JRS – R2): With Power (“WP”) Designation in ACAR
- 5 • Exhibit A – (JRS – R3): ACAR Guidelines for Loop Installation Factors
- 6 • Exhibit A – (JRS – R4): Sales Tax Double Count in Materials
- 7 • Exhibit A – (JRS – R5): Michigan 2-Wire Analog Sensitivity Analysis with Ordered
- 8 Inputs. (Confidential)
- 9 • Exhibit A – (JRS – R6): Impact Analysis MI 2w Area A 02-05 OCT02 (MAR04)
- 10 • Exhibit A- (JRS – R7): Impact Analysis MI 2w Area B 02-05 OCT02 (MAR04)
- 11 • Exhibit A- (JRS – R8): Impact Analysis MI 2w Area C 02-05 OCT02 (MAR04)
- 12 • Exhibit A - (JRS – R9): Loop Investment Trends from Michigan ARMIS Data
- 13 • Exhibit A – (JRS –R10): MI LoopCAT OCT03 Turner Restated Buried Copper Cable
- 14 ACF Error
- 15 • Exhibit A – (JRS – R11): Impact of Buried Copper Cable Double Count ACF Correction

16 **Q5. PLEASE DESCRIBE WHAT YOU BELIEVE TO BE THE MOST IMPORTANT**
17 **ISSUE IN THIS PROCEEDING WITH RESPECT TO LOOP COSTS.**

18 A5. In their initial comments, SBC Michigan’s competitors, and to some degree, the Staff,
19 have espoused the position that current UNE loop rates in Michigan are either appropriate
20 or should be significantly lower. For example, AT&T is proposing to reduce existing
21 UNE loop rates anywhere from 50% to 85%, depending on the UNE loop type and UNE
22 zone). The fact is that Michigan already has UNE loop rates that are among the lowest in
23 the country, although they should not be. Any proposal to reduce SBC Michigan’s loop

1 costs should be rejected because it is unreasonable on its face. The evidence
2 overwhelmingly supports SBC Michigan's proposal for more equitable loop rates.

3 The estimation of forward-looking, TELRIC-based UNE loop costs essentially boils
4 down to calculating (i) the capital investment required to build a loop in the forward-
5 looking network and (ii) the operating expenses that will be incurred to operate and
6 maintain that network. The CLECs try to cloud this issue by pointing out what they
7 claim to be modeling flaws in LoopCAT. While the details of the modeling process are
8 important, the overall reasonableness of the results must also be considered.

9 SBC Michigan witnesses Mr. John Sneed and Dr. Debra Aron discuss the reasonableness
10 of SBC Michigan's proposed costs relative to other benchmarks that can serve as a guide
11 to determining what a just and reasonable cost might be for UNE loops. SBC Michigan's
12 LoopCAT model produces an investment per loop and operating expenses per loop that
13 are in line with the recent investments and expenses incurred by SBC Michigan and are
14 representative of the costs SBC Michigan is likely to incur in a forward-looking network.
15 The CLECs, on the other hand, are proposing loop costs that are a fraction of what SBC
16 has experienced in the last year. The CLECs never explain how SBC Michigan could
17 actually build and maintain loops for less than half of SBC Michigan's TELRIC
18 investment.

19 The most significant issues that impact loop costs are straightforward: fill factors, cost of
20 money, and depreciation. The CLECs criticize LoopCAT as inflating the UNE costs, but
21 if LoopCAT is run using the fills, cost of money, and depreciation adopted by the
22 Commission in 1998, it actually produces *lower* costs than those approved in 1998 on the

1 basis of cost studies developed using the AFAM model. This is due, in part, to the fact
2 that SBC Michigan’s current cost studies incorporate the latest contract prices for
3 materials that reflect any cost declines for telecommunications equipment. Thus, the
4 CLECs’ complaints about LoopCAT and pining for the old AFAM model are all beside
5 the point – controlling for the three major cost inputs, SBC Michigan’s LoopCAT model
6 produces cost results on par with AFAM. On the big three issues (costs of capital,
7 depreciation, and fill), SBC Michigan has presented detailed testimony from respected
8 experts in the field and proven the validity of its proposals, all of which are fully
9 consistent with TELRIC. Staff has stated, ‘Having considered the criticisms offered by
10 CLEC witnesses Messrs. Starkey and Balke that the LoopCAT model, due to its
11 deficiencies, is largely unusable, we instead chose to attempt to fix those non-TELRIC
12 compliant portions of the model...to make it more TELRIC-compliant.’¹ Furthermore,
13 “We believe that certain modifications to the LoopCAT model are necessary to bring it
14 into compliance with TELRIC.”² SBC Michigan will make those necessary changes.

¹ Case No. U-13531. Initial Comments of the Michigan Public Service Commission Staff, p. 40.

² *Id.*, p. 40.

1 **II. REVISIONS TO UNE LOOP COST STUDIES**

2 **Q6. PLEASE SUMMARIZE THE PURPOSE OF THE REVISIONS SBC MICHIGAN**
3 **AGREES SHOULD BE MADE TO THE RECURRING UNE LOOP COST**
4 **STUDY.**

5 A6. SBC Michigan carefully reviewed the initial comments and testimony filed in this matter.
6 As I will discuss in this testimony, most of the criticisms directed at the Company's cost
7 studies are unjustified and should be rejected. On the other hand, where that review
8 brought to light areas where SBC Michigan's modeling could be improved consistent
9 with TELRIC principles, SBC Michigan believes those changes should be made. These
10 changes should resolve a number of concerns raised by the other parties.

11 **Q7. WHAT WILL BE THE OVERALL IMPACT OF THESE UNE LOOP**
12 **MODELING CHANGES?**

13 A7. The overall impact of the modeling changes SBC Michigan agrees are appropriate will be
14 to lower SBC Michigan's proposed UNE loop costs.

15 Table 1 below provides that comparison for the most commonly used loop types.

16 *****CONFIDENTIAL**

17 **XX**
18 **XXXXXXXXXXXXXXXXXXXX**

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1 ***

2 **Q8. PLEASE IDENTIFY THE CHANGES THAT SBC MICHIGAN WILL**
3 **INCORPORATE INTO ITS REVISED COST STUDIES AS A RESULT OF THE**
4 **UNE LOOP MODELING REVIEW DESCRIBED ABOVE.**

5 A8. SBC Michigan will modify its cost modeling in several areas. I will identify each of the
6 items below and then will discuss them individually.

- 7 1. SBC Michigan will incorporate multiple dwelling units (“MDUs”) into the
8 development of its premises termination costs.
- 9 2. SBC Michigan will remove the investment dollars associated with premises
10 termination from its cable accounts and recalculate its cable installation factors
11 accordingly.
- 12 3. SBC Michigan will remove the building entrance costs.
- 13 4. SBC Michigan will reassess the residential and business mix for certain types of
14 loops.
- 15 5. SBC Michigan will remove the explicit line item investment in distribution terminals.
- 16 6. SBC Michigan will recalculate its DLC installation factors.
- 17 7. SBC Michigan’s Feeder Distribution Interface (“FDI”) fill rates will be adjusted to
18 reflect feeder fills and not distribution fills.
- 19 8. SBC Michigan will include extended range cards in its LoopCAT model.
- 20 9. SBC Michigan will extract sample loop length data from the Loop Engineering
21 Information System (“LEIS”).
- 22 10. SBC Michigan will include 3/7 channel bank systems for both unbundled central
23 office terminals (“COTs”) and integrated central office terminals.
- 24 11. SBC Michigan will include controlled environmental vaults (“CEVs”) in its forward-
25 looking modeling of DLC systems.
- 26 12. SBC Michigan will include 448-pair Litespan systems in its forward-looking DLC
27 modeling.
- 28 13. SBC Michigan will reassess the TELRIC-compliant forward-looking mix of remote
29 terminal cabinets.

1 **Q9. PLEASE DISCUSS THE MDU MODIFICATIONS MADE IN LOOPCAT.**

2 A9. This adjustment addresses the issues related to MDUs raised by AT&T witnesses Messrs.
3 Steven Turner and Brian Pitkin.³ Previously in LoopCAT, all residential premises were
4 modeled to reflect the investment required to provide premises termination at a single
5 family dwelling. However, the update to LoopCAT reflects the incorporation of larger
6 terminal sizes to reflect the type of premises termination equipment that can be deployed
7 at MDUs (*e.g.*, an apartment complex).

8 **Q10. PLEASE DISCUSS THE MODIFICATION THAT WILL REMOVE PREMISES**
9 **TERMINATION DOLLARS FROM THE CABLE ACCOUNTS AND THE**
10 **RECALCULATION OF CABLE INSTALLATION FACTORS.**

11 A10. Mr. William Dunkel reviewed of the development of the cable installation factors, on
12 behalf of the Illinois Attorney General's office. Mr. Dunkel determined that the
13 investment dollars associated with premises termination equipment was aggregated into
14 associated cable accounts. For example, the investment dollars associated with aerial
15 premises termination were aggregated with the dollars for aerial copper cable. Likewise,
16 buried premises termination investment dollars were aggregated with buried cable. In
17 order to ensure that premises termination investment is not counted twice, SBC Michigan
18 will remove the premises termination investment dollars from the cable accounts. Once
19 these dollars are removed from those accounts, the cable installation factors will be

³ Case No. U-13531: Initial Testimony of Brian F. Pitkin and Steven E. Turner, pp. 27-31

1 recalculated. This ensures that premises termination costs are not recovered through the
2 cable installation factors.

3 **Q11. PLEASE EXPLAIN THE REMOVAL OF THE BUILDING ENTRANCE COSTS**
4 **FROM THE PREMISES TERMINATION DOLLARS.**

5 A11. It has proven to be difficult to provide solid supporting documentation for the building
6 entrance facilities costs. Further review has revealed that the building entrance facilities
7 costs are immaterial, and therefore unimportant to the cost study. SBC Michigan has
8 decided to remove the item altogether.

9 **Q12. PLEASE DISCUSS THE REASSESSMENT OF RESIDENTIAL AND BUSINESS**
10 **MIX FOR CERTAIN LOOP TYPES.**

11 A12. To resolve certain concerns expressed by AT&T witnesses Pitkin and Turner, SBC
12 Michigan will reassess the residential and business mix for certain loop types that are
13 predominantly or exclusively used by business customers.

14 **Q13. PLEASE EXPLAIN THE LOOPCAT MODIFICATION TO REMOVE THE**
15 **DISTRIBUTION TERMINAL LINE ITEM.**

16 A13. This issue is similar to the issue described above relating to the premises termination
17 investment. SBC Michigan determined that the distribution terminal investment is
18 booked to an associated cable account as an exempt material. However, unlike the
19 premises termination investment, SBC Michigan could not separately identify the
20 investment dollars associated with distribution terminals. Therefore, those dollars could

1 not be removed from the cable accounts that provide input to the cable installation
2 factors. In order to ensure that no double recovery of that investment will occur, SBC
3 Michigan will remove the distribution terminal as a separate line item in the cost study.

4 **Q14. PLEASE DISCUSS THE RECALCULATION OF DLC INSTALLATION**
5 **FACTORS.**

6 A14. As I will discuss more fully in the in the section of my testimony below dealing with
7 installation factors, to resolve certain concerns expressed by AT&T witnesses Pitkin and
8 Turner, SBC Michigan will revise its DLC installation factors to base those factors on
9 general ledger data rather than the PICS/DCPR data used to develop those factors in the
10 original study. This revision must also include the addition of Cluster Vendor items,
11 which are not captured in the general ledger factors.

12 **Q15. PLEASE EXPLAIN THE FDI FILL ADJUSTMENT THAT SBC MICHIGAN**
13 **WILL BE MAKING TO ITS COST STUDIES.**

14 A15. SBC Michigan has changed the formula for computing FDI fills in response to criticisms
15 made by the Illinois Commerce Commission Staff. The new formula properly calculates
16 FDI fills on the feeder side of the interface, and not the distribution side as in the previous
17 method.

1 **Q16. WHAT IS THE REASONING BEHIND SBC MICHIGAN'S DECISION TO**
2 **INCLUDE EXTENDED RANGE CARDS IN THE LOOP COST?**

3 A16. Messrs. Pitkin and Turner have noted that a small portion of the loops in ARES exceed
4 18,000 feet of distribution cable.⁴ In order for these lines to have an acceptable forward-
5 looking quality of service ("QOS") for plain old telephone service ("POTS"), it is
6 necessary that these longer loops be equipped with extended range cards.

7 **Q17. WHY HAS SBC MICHIGAN ADOPTED THE LEIS DATABASE FOR ITS**
8 **SAMPLE LOOP LENGTHS INSTEAD OF CONTINUING TO USE THE ARES**
9 **DATABASE?**

10 A17. At the time the study was initially created, ARES represented the best source of actual
11 loop length information. That is because, prior to the SBC / Ameritech merger,
12 Ameritech had minimized support of the PLAN module of the LEIS database, and the
13 information had become outdated, while the ARES database had received strong support
14 as the source for LoopQual information. Since the SBC merger with Ameritech, the
15 LEIS loop length database has again become the primary engineering source for loop
16 length information, and now, again, represents a valid source of loop length information.
17 In response to the criticisms levied by MCI's witnesses, SBC has re-evaluated the use of
18 the LEIS information, because it resolves certain issues that the MCI witnesses have
19 presented. Namely, it addresses the criticisms that "The quantity of loops in LoopCAT

⁴Case No. U-13531: Initial Testimony of Brian F. Pitkin and Steven E. Turner, p.121.

1 provides a false sense of accuracy,”⁵ that “LoopCAT’s reliance on individual loop length
2 samples and lack of information on loop architecture building blocks cause distortions,”
3 and that “LoopCAT is oblivious to the locations of the customers it is attempting to serve,
4 in relation to individual DAs and CSAs.”⁶ By obtaining and utilizing the LEIS data that
5 is now available, issues related to those particular complaints can be remedied.

6 **Q18. PLEASE DISCUSS SBC MICHIGAN’S DECISION TO UTILIZE 3 AND 7**
7 **CHANNEL BANK COT SYSTEMS.**

8 A18. SBC Michigan has agreed to use of the 3 and 7 channel bay Central Office Terminal
9 (COT) systems in response to AT&T witnesses Brian Pitkin and Steve Turner’s claim
10 that the 9 channel universal DLC system was not a forward looking technology. The use
11 of the 3 and 7 channel bay systems represent the particular configurations that would be
12 used for forward-looking GR-303 capable systems, and their inclusion here lowers the
13 overall costs. This is due to the fact that the cheaper 7 channel bank system is assumed
14 for those times when the number of channels required exceeds 3 channel banks due to the
15 unbundling requirements at any given wire center, instead of the larger, more expensive 9
16 channel bank universal system.

⁵ Case No. U-13531: Initial Testimony of Michael Starkey and John Balke, p. 58.

⁶ Ibid, p.52.

1 **Q19. PLEASE DISCUSS THE MODELING IMPROVEMENTS TO MORE FULLY**
2 **FOLLOW ACTUAL DLC REMOTE TERMINAL COST DEVELOPMENT.**

3 A19. The modifications that will be made to the UNE loop cost study in LoopCAT broaden the
4 types of DLC systems included in the cost study and reassess the TELRIC-compliant
5 forward-looking mix of remote terminal cabinets. These modifications were initially
6 implemented in response to the Illinois Commerce Commission Staff's
7 recommendations. Messrs. Pitkin and Turner also recommended the inclusion of
8 controlled environmental vaults ("CEVs") in recent Illinois and Indiana proceedings. The
9 first is the inclusion of CEVs. CEVs are underground structures that serve as equipment
10 "rooms" for DLC systems. These systems are only used in dense areas given the large
11 number of lines served out of a CEV. The other DLC-related modification was the
12 inclusion of a 448-line DLC-RT. Inclusion of these two cabinet structures were not
13 included in the original cost study.

14 **III. RESPONSE TO GENERAL CRITICISMS OF SBC MICHIGAN'S COSTING**
15 **METHODOLOGY AND LOOPCAT**

16 **Q20. SEVERAL WITNESSES ATTACK SBC MICHIGAN'S UNE LOOP COST**
17 **STUDY AS NOT BEING COMPLIANT WITH THE TELRIC STANDARD. DO**
18 **YOU AGREE?**

19 A20. No. CLEC witnesses Messrs. Turner and Pitkin⁷ and Messrs. Starkey and Balke⁸ contend
20 that SBC Michigan's cost studies are not compliant with TELRIC. The Michigan Staff

⁷ Initial Testimony of Brian F. Pitkin and Steven E. Turner, pp. 27-30 & 36.

⁸ Initial Testimony of Michael Starkey and John Balke, pp. 49-106.

1 has also expressed similar concerns.⁹ The TELRIC costing standard was created by the
2 FCC in its First Report and Order, the first FCC order implementing the local
3 competition provisions of the Telecommunications Act of 1996.¹⁰ The TELRIC of an
4 element is the sum of three components -- operating expenses, depreciation expense, and
5 cost of capital. Operating expenses are the annual costs associated with operating a
6 particular element. Depreciation is the mechanism by which the network investment in
7 an asset is recovered over the life of the asset. Finally, the cost of capital, i.e., the cost of
8 obtaining debt and equity financing, reflects the amount investors would demand in order
9 to be compensated for the risks of investing in the enterprise.

10 **Q21. DO THE UNE COST STUDIES FILED BY SBC MICHIGAN IN THIS**
11 **PROCEEDING COMPLY WITH THE FCC'S TELRIC METHODOLOGY?**

12 A21. Yes. SBC Michigan's UNE cost studies comply with the TELRIC methodology as
13 required by the FCC. These UNE cost studies incorporate forward-looking network
14 designs, forward-looking technologies, and forward-looking material costs, which is
15 consistent with the TELRIC standard. For example, SBC Michigan's UNE loop cost
16 study for 2-wire analog loops is based on the forward-looking assumption that loops
17 longer than a certain point (the copper-fiber crossover point) will be provisioned over
18 fiber feeder with a DLC system, even though SBC Michigan's current network includes

⁹ Initial Comments of the Michigan Public Service Commission Staff, pp. 25-28.

¹⁰ Federal Communications Commission, FCC 96-325, *First Report and Order*, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 (CC Docket No. 96-98); Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers (CC Docket No. 96-185) (rel. Aug. 8, 1996) ("First Report and Order" or "Local Competition Order").

1 loops longer than the assumed copper-fiber crossover point that are not provisioned over
2 fiber feeder.

3 The result of this assumption is that SBC Michigan's UNE loop cost study includes
4 extensive placement of fiber loop plant well beyond what exists in the current loop
5 network. This is appropriate in a TELRIC study because a higher incidence of fiber
6 facilities versus copper facilities characterizes the design of SBC Michigan's forward-
7 looking loop network. The UNE loop cost study, in turn, applies maintenance factors for
8 fiber cable, which are much lower than corresponding maintenance factors for copper
9 cable. Therefore, the UNE loop cost study captures productivity gains and maintenance
10 efficiencies associated with pervasive placement of fiber cable in the forward-looking
11 loop network. Further, the cost development for the 2-wire analog UNE loops assumes
12 the use of forward-looking Litespan DLC technology, even though SBC Michigan does
13 not currently have 100% Litespan DLC systems in its existing network.

14 **Q22. THE FCC RECENTLY RELEASED ITS TELRIC NOTICE OF PROPOSED**
15 **RULEMAKING ("NPRM"). DOES THIS PROVIDE ANY FURTHER INSIGHT**
16 **INTO TELRIC REQUIREMENTS?**

17 A22. Yes. The FCC recently released a Notice of Proposed Rulemaking¹¹ in which it
18 announced its intent to clarify and/or revise the TELRIC pricing standard. The FCC has
19 tentatively concluded that TELRIC should focus on real-world characteristics, rather than

¹¹ Federal Communications Commission, FCC 03-224, *Notice of Proposed Rulemaking*, In the Matter of Review of the Commission's Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers (WC Docket No. 03-173). Released: September 15, 2003.

1 on the hypothetical characteristics of some imaginary “most efficient” carrier. According
2 to the FCC,

3 “We tentatively conclude that our TELRIC rules should more closely
4 account for the real-world attributes of the routing and topography of an
5 incumbent's network in the development of forward-looking costs.”¹²

6 In particular, the FCC observed:

7 Part of the difficulty that states and interested parties have encountered
8 springs from the excessively hypothetical nature of the TELRIC inquiry...
9 In the absence of more specific guidance, this can ... make it difficult to
10 understand how actual UNE rates are derived. The lack of predictability
11 in UNE rates is difficult to reconcile with our desire that UNE prices send
12 correct economic signals.¹³

13 While the FCC appears to intend, however, to retain its “commitment to forward-looking
14 costing principles,”¹⁴ the FCC also recognized that one of the “central internal tensions
15 in the application of the TELRIC methodology is that it purports to replicate the
16 conditions of a competitive market by assuming that the latest technology is deployed
17 throughout the hypothetical network, while at the same time assuming that this
18 hypothetical network benefits from the economies of scale associated with serving all of
19 the lines in a study area.”¹⁵ In the real world, on the other hand, “firms do not
20 instantaneously replace all of their facilities with every improvement in technology,” and
21 “even the most efficient carrier's network will reflect a mix of new and older technology
22 at any given time.”¹⁶

¹² TELRIC NPRM at ¶ 52.

¹³ TELRIC NPRM at ¶ 7.

¹⁴ TELRIC NPRM at ¶ 29.

¹⁵ TELRIC NPRM at ¶ 50.

¹⁶ *Id.* See also Dennis L. Weisman, *The (in)efficiency of the "efficient firm" cost standard*, Antitrust Bulletin (Spring 2000) (“If regulators had sufficient information to implement the

1 The FCC specifically noted its concern that the application of its pricing rules by state
2 commissions has resulted in “estimates of forward-looking costs below the costs that
3 would actually be found even in an extremely competitive market.”¹⁷ Underestimating
4 the TELRIC cost would “undermine the incentive for either competitive LECs or
5 incumbent LECs to build new facilities, even when it is efficient for them to do so.”¹⁸
6 Three FCC Commissioners wrote separately to recognize the harmful incentives caused
7 when TELRIC prices do not reflect real-world costs, and to express their hope that more
8 realistic prices would create the right investment incentives.¹⁹ FCC Chairman Michael
9 K. Powell explained, “I believe that an approach grounded in the real-world attributes of
10 the incumbent's network would address claims that our TELRIC rules currently distort a
11 competitor's decision whether to invest in new facilities or to lease an incumbent's
12 existing facilities.” Commissioner Kathleen Q. Abernathy stated, “[T]he excessively
13 hypothetical nature of the Commission's existing standard sends inappropriate investment

efficient-firm cost standard, competition would be wholly unnecessary. In this respect, the efficient-firm cost standard is fatally flawed because it confuses mandating the competitive outcome with fostering the competitive process.”); Alfred E. Kahn, Timothy J. Tardiff, and Dennis L. Weisman, *The Telecommunications Act at three years: An economic evaluation of its implementation by the Federal Communications Commission*, 11 Info. and Econ. Policy 319, 326 (1999) (“In a world of continuous technological progress, it would be irrational for firms constantly to update their facilities in order completely to incorporate today's lowest-cost technology.”) (emphasis in original); *id.* at 322 (“Competitive prices will not tend, in a technologically dynamic industry, to be equated to the lowest cost of duplicating a service with the most recent technology.”).

¹⁷ TELRIC NPRM at ¶ 51.

¹⁸ *Id.* See also, e.g., Thomas M. Jorde, J. Gregory Sidak, and David J. Teece, *Innovation, Investment and Unbundling*, 17 Yale J. Reg. 1 (Winter 2000) (“Mandatory unbundling confers a second-mover advantage and substantially decreases a CLEC's incentives to make a sunk investment.”).

¹⁹ Each of the five FCC Commissioners issued statements that were appended to the TELRIC NPRM. The discussion below references and quotes from these statements.

1 signals and produces irrational pricing in some instances.” Finally, Commissioner Kevin
2 J. Martin wrote, “Today’s item, in conjunction with our decision in the recent Triennial
3 Review Order, begins the process to provide the necessary adjustments to the TELRIC
4 formula that will more accurately reflect incumbent costs and help spur deployment in
5 new facilities and services.”

6 **Q23. HOW DOES THE FCC INTENT TO CLARIFY ITS TELRIC STANDARDS**
7 **IMPACT THIS PROCEEDING?**

8 A23. I understand that the FCC has not yet formally modified the TELRIC methodology. At
9 the point it does, UNE costs may need to be revisited. Nonetheless, the FCC’s
10 comments, particularly with respect to the dangers inherent in setting UNE rates below
11 cost, are instructive. In no event, though, are SBC Michigan’s cost studies dependent on
12 the TELRIC NPRM for validity. Indeed, SBC Michigan’s cost studies comply with
13 existing TELRIC methodology. The important point is that the FCC has recognized the
14 serious negative consequences of below-cost UNE prices, and this Commission should be
15 equally mindful of those consequences as it sets new UNE costs in this proceeding.

16 **Q24. HOW DOES USING EXISTING NETWORK DATA DIFFER FROM USING**
17 **EMBEDDED COSTS?**

18 A24. Using existing network characteristics simply reflects the fact that SBC Michigan
19 believes that its engineers have efficiently placed cable, that the existing rights of way
20 (which determine cable lengths) would be the same rights of way that would exist in the
21 forward-looking network, and that speculating about hypothetical changes in cable

1 placements and cable routing are unwarranted. This existing network data is then
2 combined with forward-looking equipment costs and forward-looking equipment designs
3 to develop costs.

4 SBC Michigan does not rely on embedded costs of historical equipment placements.

5 Further, as I will discuss below, SBC Michigan's installation factors are based on recent
6 relationships between equipment costs and installation costs. Grounding a forward-
7 looking cost study on known network characteristics and known equipment
8 price/installation cost relationships is a perfectly acceptable method of estimating
9 forward-looking costs. To ignore what we know and engage in sheer speculation about
10 forward-looking costs is not only wrong, it is irresponsible.

11 **Q25. HAS THE FCC RECOGNIZED THE NEED TO GROUND TELRIC IN REAL**
12 **WORLD NETWORK CHARACTERISTICS?**

13 A25. Yes. In its TELRIC NPRM, the FCC noted the need for TELRIC rules to “more closely
14 account for the real-world attributes of the routing and topography of an incumbent’s
15 network in the development of forward-looking costs.”²⁰ The FCC also recognized that
16 “the UNE pricing methodology, while forward-looking, must be representative of the real
17 world and should not be based on the totally hypothetical cost of a most-efficient
18 provider building a network from scratch.”²¹ This is not, however, a new requirement. In
19 the First Report and Order that created the TELRIC standard, the FCC contemplated that
20 TELRIC would “most closely represent the incremental costs that incumbents actually

²⁰ TELRIC NPRM, ¶ 52.

²¹ TELRIC NPRM, ¶ 53.

1 expect to incur in making network elements available to new entrants.”²² Thus the FCC
2 recognizes that the incumbent should be allowed to capture its forward-looking costs.

3 **Q26. MESSRS. STARKEY AND FISCHER (STARKEY/FISCHER PP. 216-218)**
4 **ASSERTS THAT SBC MICHIGAN REJECTS THE CONCEPT OF A**
5 **FORWARD-LOOKING EFFICIENTLY DESIGNED NETWORK BY BASING**
6 **COSTS ON EXISTING RELATIONSHIPS FOR CENTRAL OFFICES,**
7 **CUSTOMER LOCATIONS AND CABLE PLACEMENTS. DO YOU HAVE ANY**
8 **COMMENTS IN RESPONSE TO THIS ASSERTION?**

9 A26. Yes. The use of existing cable lengths is consistent with, if not mandated by, the
10 TELRIC requirement that existing wire centers and customer locations are fixed. It is
11 reasonable to use existing cable lengths to estimate this fixed relationship between SBC
12 Michigan’s wire centers and its customer locations, rather than speculating that some
13 unknown different cable routes could be more efficient. Under the TELRIC standard,
14 even in the most extreme hypothetical interpretation, it cannot seriously be argued that all
15 buildings, private property, streets, rivers, and other obstacles would be gone. Therefore,
16 it is reasonable to assume that SBC Michigan’s existing rights of way, which already
17 account for these obstacles and for the limited availability of right-of-way access, are
18 efficient for forward-looking cable routing. Not a single witness offers any evidence to
19 prove those routes inefficient. Furthermore, there is also no evidence to suggest that SBC
20 Michigan’s existing cable sizes are inefficient. AT&T claims that SBC Michigan’s
21 distribution fill factors are evidence that its cable sizes are inefficient. However, SBC

²² First Report and Order, ¶ 685.

1 Michigan's fill factors are consistent with the fill factors achieved by other facilities-
2 based carriers. I do not find it reasonable to assume that every facilities-based carrier is
3 inefficient. The fact is that efficient engineering practices result in relatively low
4 distribution cable utilization rates. This is discussed in the direct testimony of SBC
5 Michigan's network witness Ms. Dorothy De Baene.

6 **Q27. PLEASE DISCUSS THE CRITICISMS OF LOOPCAT ESPOUSED BY MESSRS.**
7 **STARKEY AND BALKE.**

8 A27. Messrs. Starkey and Balke claim that SBC Michigan LoopCAT model should be rejected
9 in favor of the AFAM model which was used by Ameritech prior to its merger with SBC.
10 According to these witnesses, the LoopCAT model improperly relies on "embedded" or
11 "historical" data that is not TELRIC compliant.²³

12 **Q28. ARE THEIR CRITICISMS OF LOOPCAT VALID?**

13 A28. No. Embedded costs are the costs contained in SBC Michigan's balance sheet plant
14 accounts and reflect the historical investment that SBC Michigan has made in its
15 network. When one speaks of embedded or historical plant investments, one is referring
16 to the cumulative, historical investment in cable, loop electronics, and other facilities
17 placed over many years. Embedded costs are those costs associated with that cumulative,
18 historical investment. SBC Michigan's UNE cost studies, by contrast, incorporate
19 forward-looking network designs, forward-looking technologies, and forward-looking
20 material costs.

²³ Initial Testimony of Michael Starkey and John Balke, pp. 49-50 & 67.

1 The studies do make use of current operational, maintenance, and labor costs, but that is a
2 natural way to estimate forward-looking costs, and is perfectly consistent with TELRIC.
3 Simply put, a forward-looking network must look forward from somewhere, and the
4 logical starting point is the incumbent's current costs and practices. The only alternative
5 to basing forward-looking cost estimates on actual data would be to engage in sheer
6 speculation about the extent of the costs. In short, an approach that reflects actual
7 network characteristics, recent installation costs, and current material prices, is the best
8 way to estimate forward-looking costs reliably, accurately, and without the need for
9 particularized data that is simply unavailable or impractical to use in many instances.
10 SBC Michigan's reliance on its current data to derive its forward-looking UNE cost
11 estimates is entirely appropriate. SBC Michigan's UNE cost studies comply with
12 TELRIC methodology.

13 **Q29. MESSRS. STARKEY AND BALKE (STARKEY/BALKE PP. 11-14) CLAIM**
14 **THAT SBC MICHIGAN HAS NOT PROVEN THAT ITS CURRENT LOOP**
15 **RATES ARE TOO LOW. HAS SBC MICHIGAN SHOWN A NEED TO**
16 **REEXAMINE LOOP RATES?**

17 A29. Yes. The very nature of the regulatory process is that cost decisions are revisited from
18 time to time. SBC Michigan has shown an urgent need to reexamine loop costs. First,
19 SBC Michigan's UNE loop cost study demonstrates the existence of significantly higher
20 forward-looking costs than are reflected in the currently effective UNE loop rates.
21 Second, SBC witness Dr. Debra Aron's testimony demonstrates that SBC Michigan is
22 actually incurring significantly higher costs than it is recovering from the current UNE

1 loop rates. As the United States Court of Appeals for the 7th Circuit held, “A rate that is
2 long out of date...frustrates the goals of TELRIC every bit as much as does a rate
3 generated under the flawed state legislation. SBC and its rivals are entitled to an updated
4 rate that comports with federal law.”²⁴

5 **Q30. MESSRS. STARKEY/BALKE (STARKEY/BALKE PP. 27-34) ALSO CRITICIZE**
6 **LOOPCAT BY CLAIMING THAT THE OLD AMERITECH COST MODEL,**
7 **AFAM, WAS SUPERIOR. SHOULD THIS TESTIMONY CARRY ANY**
8 **WEIGHT?**

9 A30. No. I do not think that the testimony is accurate as far as the criticisms of LoopCAT are
10 concerned, nor do I believe that the testimony is even relevant in this proceeding. Mr.
11 William Palmer discusses some of the limitations of the old AFAM model.

12 **Q31. PLEASE DESCRIBE WHY SBC CHOSE TO USE LOOPCAT AS ITS LOOP**
13 **COST MODEL THROUGHOUT ITS 13-STATE OPERATING TERRITORY.**

14 A31. After the merger with Ameritech, the Cost Analysis division at SBC had to decide which
15 loop cost model to use going forward, both for internal efficiency and external
16 consistency. Ameritech and SBC had both independently developed different cost
17 models. Ameritech’s model at that time was LFAM, (which was a successor to AFAM)
18 and SBC was using the SBC Loop Cost System, which was later renamed LoopCAT.
19 Clearly, for efficiency purposes, the Company had to select one model as the standard.

²⁴ United States Court of Appeals for the 7th Circuit, *AT&T Communications of Illinois Inc., et. al. vs. Illinois Bell Telephone Co. and Ameritech Corp.* Nos. 03-2735 and 03-2766; November 10, 2003 at page 15.

1 Ultimately, SBC decided to reject the old Ameritech models such as AFAM and LFAM,
2 and select LoopCAT as its loop cost model for several reasons. Primary among these
3 was the realization that LFAM contained a significant amount of programming that was
4 not easily accessible to CLECs and Commission staffs, or anyone without significant
5 programming skills. Also prevalent in the decision was the realization that LFAM relies
6 upon a significant number of assumptions about the network that are built into the
7 software code. LoopCAT, on the other hand, is spreadsheet-based, which makes
8 LoopCAT significantly easier to audit, update, and operate than LFAM. The ongoing
9 usefulness and accuracy of LoopCAT, in terms of ease of updating source data, of
10 operating the model, and of open and verifiable cost development was superior to LFAM.

11 **Q32. PLEASE DESCRIBE HOW LOOPCAT WAS DEVELOPED AND DESCRIBE**
12 **THE PARALLELS BETWEEN THAT PROCESS AND THE DEVELOPMENT**
13 **OF AFAM.**

14 A32. The current LoopCAT model is essentially the same model as its predecessor model, the
15 SBC Loop Cost System (“SLCS”). Of course, the model has been updated to
16 accommodate modeling and input changes. The SLCS model was a spreadsheet-based
17 version of SBC’s previous loop model Loopvst, which was the nomenclature standing for
18 loop investment. Loopvst was a mainframe-based model, as was AFAM. SBC’s SLCS
19 was developed to create a spreadsheet version of Loopvst. This was done in response to
20 requests from commission staffs and CLECs because as a mainframe-based system,
21 Loopvst, was difficult to provide to other parties and difficult to audit due to the
22 programming.

1 In a parallel fashion, Ameritech had developed a mainframe-based AFAM system that
2 evolved into the more PC-based format under the name LFAM.

3 **Q33. DID SBC MICHIGAN CHOOSE TO USE THE LOOPCAT MODEL OVER**
4 **AFAM BECAUSE LOOPCAT PRODUCES HIGHER UNE LOOP RATES?**

5 A33. Absolutely not. LoopCAT was chosen as SBC's loop costing model for all of the reasons
6 discussed above. Furthermore, LoopCAT does not produce higher UNE loop costs.

7 **Q34. HAVE YOU ATTEMPTED TO REVIEW THE LFAM RUNS AND FILES THAT**
8 **WERE DISCUSSED IN MESSRS. STARKEY AND BALKE'S DIRECT**
9 **TESTIMONY?**

10 A34. Yes, with great difficulty. SBC Michigan issued a discovery request on January 28,
11 2004, which requested all the LFAM runs files and work papers used to support Messrs.
12 Starkey and Balke's testimony. In their response to the discovery request, MCI claimed
13 that SBC was in possession of the LFAM model which contained no altered inputs by
14 Mr. Balke. After thorough review, SBC found that there were indeed files that had been
15 altered by Mr. Balke. These files that had not been provided, and SBC issued follow up
16 questions on February 24, 2004, asking for the work papers specific to the LFAM runs.
17 Again, MCI did not immediately provide all the necessary information. After numerous
18 E-mails and requests to MCI's attorney, MCI finally did provide the information via E-
19 mail. Upon the receipt of the E-mail, SBC found that the Oracle dump file had arrived
20 corrupted, and that the Microsoft Access database file arrived in a newer version of
21 Microsoft Access than previously used (this causes the need to convert the file back to

1 the earlier version for compatibility). After additional E-mails and requests to MCI's
2 attorney to rectify the corrupted database situation, SBC received the LFAM Oracle
3 dump file on a CD-ROM March 10, 2004. On March 15, 2004, SBC had managed to
4 load LFAM, and began testing LFAM. After working through a large number of runtime
5 errors, the first successful report extraction occurred on March 16, 2004.

6 **Q35. WERE THERE TECHNICAL PROBLEMS IN GETTING THE LFAM MODEL**
7 **TO RUN?**

8 A35. Yes. SBC's Cost Analysis Division first engaged its in-house programmer and another
9 SBC programmer, who had previously worked on LFAM. These programmers then had
10 to enlist the help of a Database Administrator ("DBA") to help resolve issues concerning
11 the Oracle elements of LFAM. The DBA also encountered errors when working with the
12 LFAM model, and was unable to correct the issues with the LFAM even after two days
13 debugging. At that point, the DBA contacted an Oracle Representative, who reviewed
14 the errors and was also unable to import the Oracle dump information. The Oracle
15 Representative recommended that MCI recreate the data dump. Only after receiving the
16 recreated data dump on a CD-ROM, LFAM was successfully loaded.

1 **Q36. MESSRS. STARKEY AND BALKE CLAIM THAT THEIR REVIEW OF THE**
2 **LOOPCAT METHODOLOGY REVEALED THAT THE LOOPCAT MODEL**
3 **“...TENDS TO PRODUCE HIGHER COSTS WITH THE SAME SET OF INPUTS**
4 **AS COMPARED TO SBC’S PREVIOUS MODEL AFAM.” (STARKEY/BALKE P.**
5 **7) HOW DO YOU RESPOND?**

6 A36. SBC has reviewed Messrs. Starkey and Balke’s assessment of LoopCAT and has
7 identified three substantial errors in their analysis. The three errors result in a double
8 counting of the installation factor, Power, Land and Building (“PL&B”) factor, and the
9 sales tax. These three double counting errors result in a significant overstatement of costs
10 in Messrs. Starkey and Balke’s analyses. When these three errors are corrected, the
11 results are lower than what AFAM produced in the compliance run for Docket No.
12 11831.

13 **Q37. PLEASE EXPLAIN MESSRS. STARKEY AND BALKE’S DOUBLE COUNTING**
14 **RESULTING FROM THE INAPPROPRIATE USE OF INSTALLATION**
15 **FACTORS.**

16 A37. Messrs. Starkey and Balke have inflated LoopCAT’s estimates by using LFAM
17 installation factors without regard for the difference in application of the factor between
18 the two models. More specifically, the LFAM installation factors include material,
19 whereas the LoopCAT model operates with an installation factor that does not include
20 material. Therefore, in order to calculate comparable results between the two models, it
21 is requisite that the value 1 (representing the material) be subtracted from the LFAM
22 installation factor in order to remove the material portion. Failure to do so results in a

1 double-counting of material costs. As a result, Messrs. Starkey and Balke have
2 overstated LoopCAT's estimates by an average of *** **Confidential** **XXXXX** ***
3 statewide.

4 **Q38. PLEASE EXPLAIN THE ERROR THAT RESULTS IN THE DOUBLE-**
5 **COUNTING OF THE POWER, LAND AND BUILDING COSTS.**

6 A38. Messrs. Starkey and Balke have included the power, land, and building costs in their
7 annual charge factor for the Central Office ("CO") Based DLC systems. The line item
8 explicitly states "CO-Based DLC w/ power", which is defined as incorporating the floor
9 space costs as well. However, after adopting this annual charge factor, they neglected to
10 zero out the LoopCAT factors which capture power, land, and building costs. Again, this
11 error results in the double-counting of costs, thereby overstating the LoopCAT estimates
12 by a statewide average of *** **Confidential** **XXX***** when compared to the Case No. U-
13 11831 results.

14 **Q39. WHAT EVIDENCE DO YOU HAVE THAT THE LAND, BUILDING AND**
15 **POWER EXPENSES WERE ALREADY INCLUDED IN THE ANNUAL**
16 **CHARGE FACTORS THAT WERE INCLUDED IN THE U-11831 AFAM RUN?**

17 A39. Within the ACAR guidelines specific to the use of the Annual Charge Factors,²⁵ there is a
18 general footnote that indicates that when the annual charge factors (ACFs) are denoted
19 with the 'WP'²⁶ designation (e.g., 257C-WP rather than just 257C), then the factor

²⁵ ACAR Tab 8.0 at page MI1

²⁶ "WP means both power/floorspace are included."

1 includes and captures expenses related to power and (building) floor space. When
2 comparing the ACFs utilized within the Case No. U-11831 compliant AFAM model we
3 find that the ACFs used were the ones that had the WP designation, thus were already
4 capturing the building and power expenses. This is also shown in Exhibit A - (JRS - R2).
5 Then, the inclusion of separate building and power factors in Messrs. Starkey and Balke's
6 LoopCAT reproduction with U-11831 inputs resulted in a double-counting of costs,
7 giving the false impression that LoopCAT creates higher costs with U-11831 inputs.

8 **Q40. PLEASE EXPLAIN THEIR DOUBLE-COUNTING OF THE SALES TAX IN**
9 **THEIR LOOPCAT REVIEW.**

10 A40. Material prices in LoopCAT do not include sales tax; instead this is captured by the
11 application of a sales tax factor. LFAM, on the other hand, captures the sales tax
12 explicitly in the material costs. Messrs. Starkey and Balke used the material prices from
13 LFAM, which already had sales tax included. In order to avoid double-counting of sales
14 tax, the sales tax factor should have been zeroed out in the LoopCAT model. By failing
15 to do so, they have essentially double-counted the costs associated with sales tax. This
16 causes an average statewide overstatement of costs of *****CONFIDENTIAL XXX*****.

17 **Q41. WHAT EVIDENCE DO YOU HAVE THAT THE SALES TAX WAS ALREADY**
18 **INCLUDED IN THE MATERIAL COSTS THAT WERE INCLUDED IN THE**
19 **U-11831 AFAM RUN?**

20 A41. During the Michigan U-11831 cost filing, the standard procedure within Ameritech was
21 to use the cost guidelines called the Ameritech Cost Analysis Resource ("ACAR").

1 Within the guideline specific to the use of the Loop Installation Factors as presented in
2 Exhibit A – (JRS-R3), the guideline has some fairly explicit instruction on the use of the
3 Loop Installation Factors:

4 “NOTE: As noted above, applicable sales taxes and supply expense must
5 be loaded on the non-exempt material costs prior to factor application.
6 The cost analyst must ensure that their cost development routine applies
7 the Loop Installation Factors to the proper base as described above.”
8

9 The cost analyst’s resource of material prices was a file called an Engineering Unit
10 Cost (EUC) file labeled Exhibit A – (JRS – R4). Since the AFAM model is no longer
11 operational, we cannot say with 100 percent certainty that the sales tax was included in
12 the material prices within the EUC file, but notes within the file which read “(W sales tax
13 & supl exp)” indicate a strong probability that the sales tax was loaded onto the material
14 before insertion into AFAM. These notes are highlighted in Exhibit A- (JRS- R4), and
15 are located in cells M1 of the “materials” tab and S1 of the “edited materials” tab.

16 Due to the fact that the material costs already included sales tax, the inclusion of a
17 separate sales tax addition within Messrs. Starkey and Balke’s LoopCAT reproduction
18 with U-11831 inputs resulted in a double-counting of costs, contributing to the false
19 impression that LoopCAT creates higher costs with U-11831 inputs.

20 **Q42. WHAT ARE THE NET RESULTS OF MESSRS. STARKEY AND BALKE’S**
21 **ERRORS?**

22 A42. These errors falsely overstate the costs generated by LoopCAT. In fact, after corrections
23 for the double counts have been made, LoopCAT actually produces costs which are *lower*
24 than those filed with the AFAM compliance runs in Case No. U-11831. The following
25 table demonstrates this fact.

1 **Q43. REGARDING THE LFAM INFORMATION PROVIDED BY MESSRS**
2 **STARKEY AND BALKE, CAN YOU DETERMINE IF THE INFORMATION**
3 **CONTAINED IN THE MODEL USED TO DEVELOP THEIR ANALYSIS IS**
4 **CORRECT?**

5 A43. From what we can determine, there are many errors in the LFAM data altered by Messrs.
6 Starkey and Balke. In addition to the errors discussed above: double counting of material
7 sales tax and power, land and building investment, the following errors were also made:

- 8 • Fiber utilization for Zone A is different from Zones B and C in LFAM runs 2143,
9 2163, and 2183.
- 10 • In LFAM runs 2143, 2163, and 2183, the quantity of fibers per remote terminal is
11 different than the quantity in LoopCAT. Additionally, Run 2143 (Zone A)
12 information is different from Zones B and C, and should not be.
- 13 • Copper cable investment information is missing for the 2400, 2700 and 3000 pair
14 sizes.

15
16 **Q44. DID MCI ALSO ADMIT IN RESPONSE TO DISCOVERY THAT THERE WERE**
17 **ERRORS IN THEIR LFAM MODEL RUNS?**

18
19 A44. Yes. In response to SBC discovery questions SBCMCI-072 and SBCMCI -073, MCI
20 admitted that it made errors in the building copper cable investment and the Plug-in
21 factor for 257C.

1 **Q45. HAVE YOU DEVELOPED AN ANALYSIS WHICH SHOWS THE**
2 **APPROPRIATE USE OF THE LOOPCAT MODEL, AND THE EFFECT OF**
3 **CHANGING MAJOR INPUTS IN LINE WITH THE COMMISSION ORDERED**
4 **LFAM INPUTS IN THE LOOPCAT MODEL ON 2-WIRE ANALOG LOOP**
5 **COST?**

6 A45. Yes. This analysis is submitted as Exhibit A - (JRS- R5).

7 **Q46. DO YOU HAVE ANY GENERAL COMMENTS TO MAKE ABOUT THE**
8 **REASON FOR COST DIFFERENCES BETWEEN THE CURRENT AND**
9 **PROPOSED TELRICS?**

10 A46. Yes. In general, direct cost (*i.e.*, TELRIC) differences can be explained almost entirely
11 by the use of different input values in SBC's current cost studies versus the input values
12 that were used in its previously approved cost studies. For most recurring elements,
13 changes in the three key inputs - fill factors, cost of capital and depreciation lives -
14 explain the vast majority of cost differences. These key inputs are discussed in detail in
15 the direct testimonies of Ms. De Baene, Dr. Avera, and Dr. Vanston. The remaining cost
16 differences are primarily attributable to other input changes, such as equipment price
17 changes, labor rates, and contract structure changes. While other witnesses provide
18 detailed explanations to support the particular input values used in SBC's cost studies, the
19 purpose of my cost variance analysis in Exhibit A - (JRS-R5) is to quantify the cost
20 impact of the key inputs on the 2-wire analog loop.

1 **Q47. YOU DID NOT INCLUDE MODEL CHANGES AS A REASON FOR COST**
2 **DIFFERENCES. PLEASE EXPLAIN.**

3 A47. Even though SBC Michigan is using the LoopCAT model in place of the LFAM model to
4 determine forward-looking investments and costs, the new model, by itself, does not
5 produce material differences in costs. Cost models are largely processors of data,
6 network designs and input assumptions. My analysis, as shown on Confidential Exhibit
7 A – (JRS-R5) demonstrates that when the previously-ordered assumptions for the key
8 inputs are used with SBC’s LoopCAT, the proposed cost changes are more than
9 explained. Thus, cost differences between SBC Michigan’s proposed costs developed
10 using LoopCAT and the currently-approved costs developed using LFAM are not
11 attributable to significant cost modeling or methodology differences. The cost
12 differences are primarily driven by inputs, as shown in Confidential Exhibits A – (JRS -
13 R5).

14 **Q48. PLEASE DESCRIBE THE COST VARIANCE ANALYSIS SHOWN IN EXHIBIT**
15 **A – (JRS-R5).**

16 A48. The cost variance analysis in Exhibit A – (JRS-R5) was developed to show the impact of
17 changing SBC’s proposed 2-wire analog loop costs to reflect major Commission-ordered
18 inputs. The table shows a variance analysis that demonstrates the cumulative impact,
19 starting with a cost reflecting Commission ordered inputs, of changing each Commission-
20 ordered input to SBC Michigan’s proposed inputs. The table first shows a breakdown of
21 the currently approved statewide average cost for a 2-wire analog loop developed using
22 LFAM in Michigan Case No. U-11831. Then the cost variance analysis starts with the

1 statewide 2-wire analog loop cost result from SBC Michigan's LoopCAT, where SBC
2 Michigan's LoopCAT has been modified to incorporate Commission-ordered inputs for
3 fill factors, depreciation lives, cost of capital, maintenance expense factors and 50%
4 IDLC. These ordered inputs were taken from Case No. U-11831 Order. Shared and
5 Common costs were removed from the analysis to enable a comparison of the TELRICs.
6 Mr. Makarewicz discusses the shared and common factor in his rebuttal testimony.

7 **Q49. PLEASE FURTHER DESCRIBE EACH OF THE COLUMNS IN THE COST**
8 **VARIANCE ANALYSIS SHOWN ON EXHIBIT A – (JRS-R5)**

9 A49. As I indicated above, the variance analysis starts with the 2-wire analog statewide
10 average cost developed using LoopCAT. This is shown in the column labeled "SBC
11 Proposed MAR 2004 LoopCAT." The information shown in the next four columns of
12 Exhibit A – (JRS-R5) demonstrates the impacts (isolated above and cumulative below) of
13 changing the major cost inputs from the SBC Michigan proposed values to the
14 Commission-ordered inputs. SBC's proposed fill factors are incorporated into the
15 analysis in the column labeled "Fills". Thus, the impact of moving from LoopCAT with
16 the four major SBC Michigan proposed inputs to Commission-ordered fill factors, ceteris
17 paribus, can be determined in this column. The column labeled "Cost of Capital" then
18 takes the LoopCAT model used to generate the results in the previous column, and
19 replaces SBC Michigan's proposed cost of capital and replaces it with the Commission-
20 ordered value. The analysis continues in this fashion, each column building upon the
21 previous column's model, incorporating Commission-ordered depreciation lives
22 ("Depreciation Lives" column), and Commission-ordered weighting for IDLC ("IDLC"

1 column). In the final two columns, labeled “SBC's LoopCAT With All Major MI
2 Ordered Inputs” and “MI Order LFAM”, one can readily see that SBC Michigan’s
3 proposed 2-Wire Analog LoopCAT model produces a lower cost of
4 ***CONFIDENTIAL XXXX*** compared to the Michigan ordered LFAM costs of
5 ***CONFIDENTIAL XXXX***.

6 **Q50. IN EXHIBIT A – (JRS-R5), WHY HAS SBC MICHIGAN CHANGED ONLY**
7 **FOUR OF THE INPUTS TO THE COMMISSION-ORDERED VALUES?**

8 A50. The analysis was performed for these inputs because these few inputs have a very large
9 impact on the costs. As you can see from the results in column labeled “Fills”, current
10 fill factors explain the a significant portion (*i.e.*, ***CONFIDENTIAL XXX***) of the
11 difference between what LoopCAT produces with the Commission-ordered values for
12 these significant inputs and what LoopCAT produces with SBC Michigan’s values for
13 these inputs. The other changes in inputs each account for an average of
14 ***CONFIDENTIAL XXX*** percent of the difference. These inputs were easily
15 changed in LoopCAT to show the sensitivity of LoopCAT developed costs to these major
16 inputs and the cumulative impact of changing proposed input back to the Commission
17 ordered inputs from Case No. U-11831.

18 **Q51. WHAT ARE THE PRINCIPAL COST INPUTS IDENTIFIED IN THE COST**
19 **VARIANCE ANALYSIS FOR RECURRING UNES?**

20 A51. Again, in summary, the analysis identifies the impact of incorporating into the recurring
21 UNE 2-wire analog loop costs SBC Michigan’s proposal for the following key inputs:

- 1 • Fill factors
- 2 • Cost of Capital
- 3 • Depreciation Lives
- 4 • Integrated Digital Loop Carrier Weighting

5 **Q52. HAS THE METHODOLOGY UNDERLYING LOOPCAT BEEN APPROVED BY**
6 **OTHER STATE COMMISSIONS?**

7 A52. Yes. In the recent Indiana UNE Docket (Cause No. 42393), the IURC approved new
8 UNE loop rates which were developed using a slightly different version of SBC
9 Michigan's LoopCAT cost model. Furthermore, Loopvst, which has the same underlying
10 conceptual methodology as LoopCAT, was the UNE loop model used to develop the
11 UNE loop costs approved by state commissions throughout the Southwestern Bell
12 Telephone Company region. Additionally, the SBC Loop Costing System model, the
13 immediate predecessor to LoopCAT, was used to determine UNE rates in Connecticut.

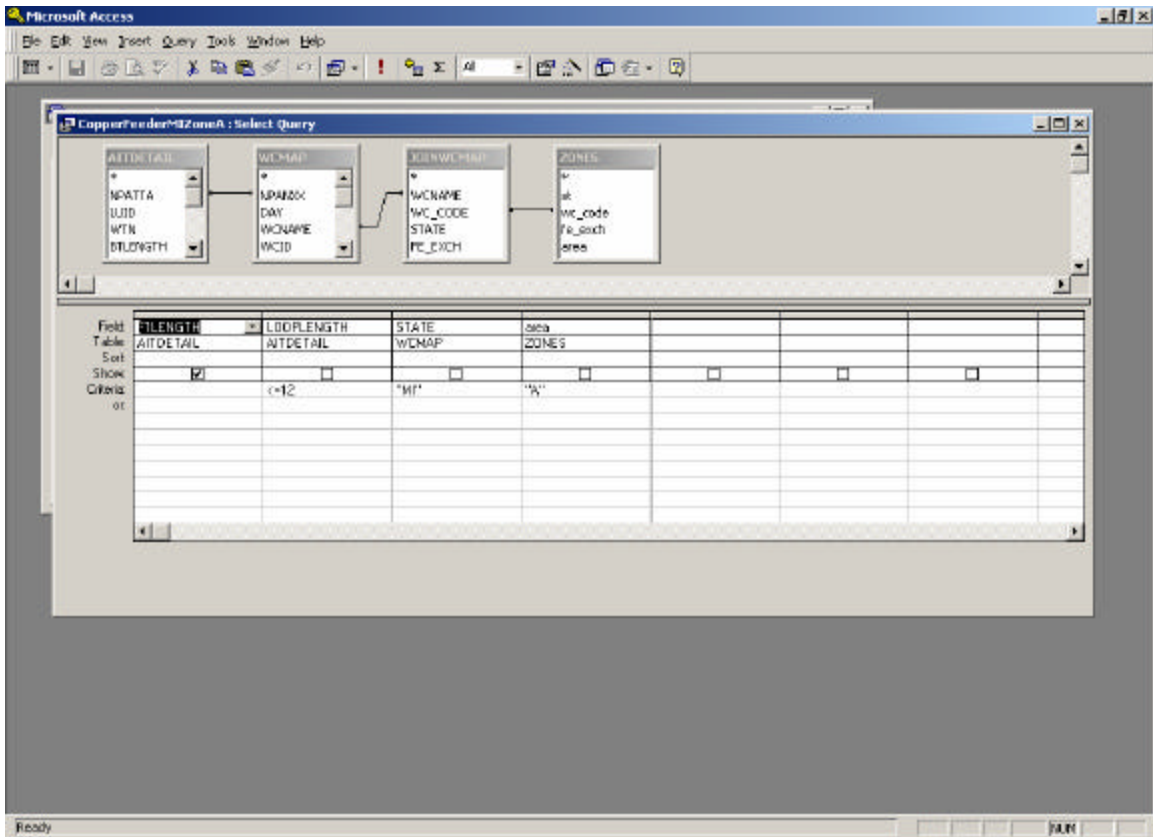
14

15 **Q53. MESSRS. STARKEY AND BALKE (STARKEY/BALKE P.29) COMPLAIN**
16 **ABOUT THE AMOUNT OF TIME IT TOOK TO DEVELOP NEW LOOP**
17 **LENGTHS IN LOOPCAT BASED ON THEIR PROPOSED CROSSOVER**
18 **POINT. ARE THEIR CRITICISMS VALID?**

19 A53. No. While Messrs. Starkey and Balke are correct when they state that AFAM/LFAM
20 fiber/crossover point is an input change within one of the forms of the client software,
21 they failed to note that the LoopCAT sample file, provided as a Microsoft Access
22 database, contained all of the queries necessary to adjust the breakpoint and extract all of
23 the inputs to the Excel workbooks.

1 For example, the query “CopperFeederMIZoneA,” used to extract copper feeder lengths
2 for Michigan Zone A, could have been modified using the query designer in Microsoft
3 Access by changing the criteria for the “looplevelength” field to any desired length. The
4 query designer in Microsoft Access doesn’t require any specialized computer training.
5 Anyone with Microsoft Access knowledge could create/modify these simple select
6 queries.

7



8

9

10 Each of the thirteen queries present in the samples database were tested and took less
11 than one minute each to run (on a Pentium 4 2.4-GHZ computer with 512-MB RAM).

1 Messrs. Starkey and Balke's claim that it required five to ten minutes per query (note 9,
2 p.29) was not experienced in our tests.

3 Messrs. Starkey and Balke are correct in their assertion that LoopCAT expects the
4 samples to be in a specific arrangement in the spreadsheet. Microsoft Excel has a
5 published limit of 255-columns and 65,536-rows. Since the sample file contains
6 4,438,194 loops, it is necessary to place the samples on multiple columns within the
7 workbook. It is also necessary for the program that processes the sample inputs to know
8 where to find the inputs. Cutting and pasting the samples, as Messrs. Starkey and Balke
9 apparently did, (note 9, p.29) would take hours to accomplish. A more efficient means of
10 accomplishing the task of transferring records from Access to Excel could be to use a
11 simple Visual Basic for Applications routine run from an Access form.

12 One advantage of providing loop records in an Access Database is that they are easily
13 viewable and auditable by commission members, staff, and interveners. In addition,
14 anyone that can use the query wizard and query builder in Access can easily develop and
15 run queries to answer questions about the loop records provided. On the other hand,
16 LFAM spreads records across both Oracle and Access databases. This setup requires
17 extensive programming knowledge, as was evident in the fact that Mr. Balke required the
18 assistance of three programming consultants. The Oracle records normally are accessible
19 only to those who have had some training in the use of the Oracle toolkits and
20 applications.²⁷

²⁷ Access and Excel are registered trademarks of Microsoft Corporation. Oracle is a registered trademark of Oracle Corporation.

1 **Q54. MESSRS. STARKEY AND BALKE (STARKEY/BALKE P. 27 & 49) CLAIM**
2 **THAT LOOPCAT IS A MERE CALCULATOR AND LACKS FLEXIBILITY. IS**
3 **THAT TRUE?**

4 A54. No. LoopCAT is an extremely flexible, Excel-based cost development tool. LoopCAT
5 provides a template of input requirements in an easy-to-use format. Many inputs are
6 direct entry (e.g., material costs, utilization factors), and thus do not need an external
7 modeling process. Such a structure also allows modeling leeway for the development of
8 input data.

9 SBC Michigan provided CLECs with the source information used in LoopCAT. Thus,
10 CLECs have been free to use SBC Michigan's input data and adjust them as they have
11 deemed appropriate. Moreover, the fact that CLEC witnesses have been able to
12 manipulate LoopCAT in this proceeding, in the completed Indiana cost proceeding, as
13 well as in the pending Illinois, California, and Texas cost proceedings, undermines their
14 argument that LoopCAT is too complex or difficult to use.

15 **Q55. MESSRS. STARKEY AND BALKE (STARKEY/BALKE P. 31) ASSERT THAT**
16 **LOOPCAT IS NOT CAPABLE OF DEVELOPING COSTS AT THE WIRE**
17 **CENTER LEVEL. IS THIS TRUE?**

18 A55. No. LoopCAT can develop loop costs at the wire center level. LoopCAT was used in
19 California to do just that. However, the Commission previously determined the
20 geographic zones are appropriate for cost development purposes, and SBC Michigan
21 followed that convention in this case. Further, AFAM, upon which Messrs. Starkey and

1 Balke would rely, like LoopCAT, made technical assumptions about the appropriate
2 network deployment depending on the UNE zone being studied. While Messrs. Starkey
3 and Balke claim that LoopCAT is incapable of developing loop costs at a wire center
4 level. Messrs. Pitkin and Turner have used LoopCAT to purportedly develop loop costs
5 at the wire center level. This argument is simply without merit.

6 **Q56. MESSRS. BALKE AND STARKEY ASSERT THAT “LOOPCAT’S LACK OF**
7 **INFORMATION OF LOOP ARCHITECTURE BUILDING BLOCKS CAUSES**
8 **COST DISTORTIONS.” (STARKEY/BALKE PP. 50-54) DO YOU AGREE WITH**
9 **THIS STATEMENT?**

10 A56. No. The claim that LoopCAT cannot build a loop network using actual engineering
11 architectures because LoopCAT relies on embedded data is completely false. The inputs
12 used in the LoopCAT model are based on actual data and information obtained from
13 Network Subject Matter Experts (“SMEs”) who make engineering architecture decisions.
14 Much of the actual data, such as remote terminal quantities, was updated for these studies
15 so the data would be forward-looking yet compatible with the actual SBC Michigan
16 network.

17 **Q57. PLEASE RESPOND TO THE CLAIMS THAT “THE QUANTITY OF LOOPS IN**
18 **LOOPCAT PROVIDES A FALSE SENSE OF ACCURACY.”**
19 **(STARKEY/BALKE P. 54-56 AND STAFF P.40)**

20 A57. Messrs. Starkey and Balke contend that even though SBC Michigan used a huge sample
21 of loops to derive the costs in LoopCAT, the costs are still somehow misleading.

1 Developing the loop length characteristics on the information provided by approximately
2 5 million loops, representing a sample size of around 70% of the access line count, is
3 more than sufficient to be statistically valid. The data that was left out is comprised of
4 three data types – data in which a specific telephone number was not assigned, data being
5 updated at the time of the data extraction, and data in which the join field between two
6 databases did not match.²⁸ Curiously, AFAM distribution costs that Messrs. Starkey
7 and Balke support were based on a sample size of only about 1,600 loops,²⁹ or
8 significantly less than 1% of the sample size used in LoopCAT.

9 **Q58. MESSRS. STARKEY AND BALKE CLAIM THAT DATA USED IN LOOPCAT**
10 **COME FROM SEVERAL SOURCES THAT WERE BEING USED AS INPUTS IN**
11 **WAYS THEY WERE NOT INTENDED TO BE USED. (STARKEY/BALKE PP.**
12 **58-66) DO YOU AGREE?**

13 A58. No. LoopCAT appropriately relies upon data from several different sources in order to
14 develop UNE loop costs. These various data sources align with the way that SBC
15 Michigan inventories its plant and equipment. The specific criticism made by Messrs.
16 Starkey and Balke relates to the way that SBC Michigan allocated its cable inventory
17 between feeder and distribution. Because cable is inventoried in SBC Michigan's

²⁸ For ARES loop length data acquisition, data from the customer list must be mated with a database with loop length information. The specific join field is the address. At times, the abbreviations used to denote the address may not match and the corresponding data was left out of the samples used in this proceeding.

²⁹ “The version of AFAM advocated by Ameritech, and ultimately adopted by the Commission in Docket No. 96-0486/0569 relied on a sample of approximately 1,600 distribution facilities.” Direct Testimony of Michael Starkey and John Balke Before the Illinois Commerce Commission, Docket No. 02-0864, page 30.

1 databases without regard for whether that cable is used for feeder plant or distribution
2 plant, the Cost Analysis group sought a way to divide that inventory between feeder and
3 distribution for the purposes of developing the weighted average cable costs for feeder
4 and distribution. In consultation with SBC Michigan's Network organization, it was
5 determined that the most effective way to divide the inventory was based on cable size.
6 The assumption was that the smallest cables (i.e., < 200 pairs) are generally placed in the
7 distribution section of the loop, the largest cables (i.e., > 1500 pairs) are generally placed
8 in the feeder section, and cables in between these two boundaries are representative of
9 both feeder and distribution and should be divided between the two plant types. This
10 methodology for dividing the cable inventory is completely reasonable for modeling
11 purposes.

12 **Q59. DOES THE USE OF ACTUAL NETWORK DATA MEAN THAT LOOPCAT**
13 **IGNORES ECONOMIES OF SCALE, AS MESSRS. STARKEY AND BALKE**
14 **CLAIM (STARKEY/BALKE PP. 66-68)?**

15 A59. No. The network data used by SBC Michigan reflect the plant deployments that serve
16 demand in the state of Michigan. Messrs. Starkey and Balke give an example which
17 points to a theoretical placement of two cables in the past that could now be replaced by
18 one larger cable.³⁰ However, incremental placement of cables is a forward-looking
19 reality in engineering a telecommunications network for SBC Michigan and any other
20 telecommunications carrier. Therefore, the use of such is appropriate and consistent with
21 TELRIC. TELRIC was designed to estimate the network costs that an efficient carrier

³⁰ Starkey/Balke at p. 61.

1 could achieve. It was not designed to calculate costs that no real-world carrier could
2 achieve. Such an interpretation of TELRIC does not make sense, given that such a
3 costing standard would ensure that artificially low regulatory prices would be set and that
4 network investment by all carriers would be discouraged. Again, it is important for the
5 Commission to evaluate whether the results produced by LoopCAT are reasonable in
6 light of the actual costs being incurred by SBC Michigan. They are.

7 **Q60. IS IT IMPORTANT THAT EVERY LOOP FOR WHICH LOOPCAT DEVELOPS**
8 **COSTS MEET THE FORWARD-LOOKING DESIGN GUIDELINE OF LESS**
9 **THAN 12,000 FEET OF COPPER CABLING IN A LOOP (STARKEY/BALKE**
10 **PP. 70-71)?**

11 A60. No. It is important to understand that the forward-looking design guideline of having less
12 than 12,000 feet of copper in a loop is only a guideline. Messrs. Starkey and Balke point
13 out that a very small percentage (approximately 3% or less) of the loops in LoopCAT
14 will have greater than 12,000 feet of copper. Even in the forward-looking environment,
15 some loops will not meet the transmission parameters set out by CSA guidelines. Such a
16 small percentage of loops is simply not relevant for determining whether SBC
17 Michigan's proposed loop costs are valid. However, eliminating these loops as Messrs.
18 Starkey and Balke suggest penalizes SBC Michigan because SBC Michigan must still
19 provide service to these customers. This topic is discussed further in Section VI.

1 **Q61. MESSRS. PITKIN AND TURNER CLAIM THAT SBC MICHIGAN'S**
2 **PROPOSED UNE LOOP COSTS ARE TOO HIGH, AND THUS SHOULD HAVE**
3 **NO BEARING IN THIS CASE. PLEASE ADDRESS THIS ISSUE.**

4 A61. The testimony of Messrs. Pitkin and Turner claim that SBC Michigan's proposed costs
5 represent "outrageously large" and "astronomical increases," and that SBC Michigan's
6 proposal "simply does not pass a 'red face test.'" Nothing could be further from the
7 truth. The fact is that SBC Michigan's proposed UNE loop costs are in line with
8 TELRIC standards, are grounded in current, solid data, and represent a reasonable
9 estimation of forward-looking costs. Further, Messrs. Pitkin and Turner claim that SBC
10 Michigan's proposed loop costs are not based on "any reasonable support" is clearly
11 false. SBC Michigan's proposed loop prices, as revised in this rebuttal filing, are
12 supported by the evidence and the substantial amount of supporting data and work papers
13 submitted with its initial filing, as well as its responses to more than 2,500 requests,
14 including subparts.

15 In reality, Messrs. Pitkin and Turner's resulting rate proposal cannot pass their so-called
16 "red face test."³¹ Messrs. Pitkin and Turner's proposal rests on the assumption that SBC
17 Michigan is so inefficient that it could cut its investment per loop by 73% simply by
18 deploying currently available technology (which SBC Michigan already does anyway)
19 and applying modern engineering methods (which SBC Michigan also does).³² Given
20 SBC Michigan's constant effort to upgrade and modernize its network and operations, it

³¹ Initial Testimony of Brian F. Pitkin and Steven E. Turner, p. 11.

³² The CLEC's proposed a statewide average investment per loop of approximately ***
Confidential XXXXX ***. This compares with SBC Michigan's ARMIS investment per loop
in 2002 of \$1010.46 per loop.

1 is simply unreasonable to presume such large efficiency gains. TELRIC is a forward-
2 looking costing methodology, not a fantasy world.

3 **Q62. DO YOU HAVE ANY FURTHER COMMENTS ON AT&T'S FANTASY**
4 **PROPOSAL?**

5 A62. Yes. If AT&T truly believed that loops could be engineered and constructed for about
6 \$5.00 per month, then it should be building those loops today. But AT&T certainly isn't,
7 and there is no evidence that other CLECs have been able to build and operate loops at
8 those costs. As a communications giant with "industry leading scale,"³³ AT&T's
9 shareholders should be shocked that it was leasing loops from SBC Michigan for over
10 \$9.00 per month if it really could build its own loops for approximately \$5.00 per month.
11 The reality is, AT&T does not build its own \$5.00 loops (or anything under \$9.00 loops
12 for that matter) because neither AT&T nor any other carrier can do so. The CLECs'
13 proposal for a \$5.00 loop is built on fantastical assumptions that no real-world carrier,
14 including AT&T, could ever achieve.

15 **Q63. HOW DO YOU RESPOND TO MESSRS. PITKIN AND TURNER'S ARGUMENT**
16 **(PITKIN/TURNER PP. 11-27) THAT SBC MICHIGAN'S LOOP COSTS SHOULD**
17 **BE GOING DOWN BECAUSE COSTS IN THE TELECOMMUNICATIONS**
18 **INDUSTRY ALLEGEDLY ARE DECLINING?**

19 A63. Messrs. Pitkin and Turner claim that costs are decreasing due to (1) declines in
20 equipment costs, (2) merger savings, (3) technological advancements, and (4) growth and

³³ AT&T Announces Second Quarter 2003 Earnings.

1 overall demand. To the extent they exist, however, these savings are already accounted
2 for in SBC Michigan's cost studies.

3 **Q64. PLEASE EXPLAIN HOW MERGER SAVINGS HAVE BEEN INCORPORATED**
4 **INTO SBC'S COST STUDIES.**

5 A64. Merger savings are typically realized in reductions in the overhead costs of a firm,
6 increased operating efficiencies, and better purchasing power with vendors. As described
7 above, SBC Michigan has already incorporated prices from its latest vendor contracts
8 into its cost studies. With respect to operating efficiencies, SBC cost studies incorporate
9 any operating efficiencies that have been achieved as a result of the merger through the
10 application of expense factors in the cost study. The expense factors used in the cost
11 study are based on the most recent year's data available and will reflect all operating
12 efficiencies achieved. Finally, with respect to overhead costs, SBC Michigan's proposed
13 shared and common factor reflects the overhead costs of SBC-based on the most recent
14 year's data. Merger savings achieved are reflected in this factor. The issue of merger
15 savings is also addressed in the rebuttal testimony of SBC Michigan witness David J.
16 Barch.

17 **Q65. PLEASE EXPLAIN HOW DECLINES IN EQUIPMENT COSTS ARE ALREADY**
18 **INCORPORATED INTO SBC MICHIGAN'S COST STUDIES.**

19 A65. SBC Michigan has negotiated discounted prices for certain types of equipment in recent
20 years, but those prices are already used in the cost study, so any declines in equipment
21 prices have already been accounted for. Furthermore, SBC's cost studies adjust the

1 capital costs for the planning period of the cost study through the use of TPI factors.
2 These factors account for cost declines or increases that are projected for specific
3 categories of equipment.

4 **Q66. PLEASE DESCRIBE HOW TECHNOLOGICAL ADVANCEMENTS ARE**
5 **INCORPORATED INTO SBC MICHIGAN’S COST STUDIES.**

6 A66. The issue of cost savings associated with technological advancements discussed by
7 Messrs. Pitkin and Turner refers to reductions in maintenance and provisioning costs.
8 These types of costs are reflected in SBC Michigan’s cost studies through the application
9 of expense factors. These expense factors capture the recent relationship between
10 expenses and investment for specific categories of equipment. Messrs. Pitkin and Turner
11 try to construct their argument by referring to savings projections made by SBC on a
12 thirteen-state basis in 1999. Any gains in efficiencies made from SBC Michigan’s cost
13 saving strategies are reflected in SBC Michigan’s expense factors. Thus, cost savings
14 realized in these areas are reflected in the cost study through the application of expense
15 factors based on recent accounting data.

16 **Q67. WOULD AN INCREASE IN UNE LOOP COSTS NECESSARILY CAUSE AN**
17 **INCREASE IN THE LOCAL RATES PAID BY CONSUMERS AS MESSRS.**
18 **STARKEY AND FISCHER (STARKEY/FISCHER P. 225) ASSERT?**

19 A67. No. While this is not relevant, it is also not necessarily the case. The current low UNE
20 loop rates in effect subsidize the CLECs’ operational costs. By doing so, the CLECs do
21 not experience the full costs of their day to day business. Nonetheless, they charge local

1 rates to their customers that are comparable to those offered by SBC Michigan.
2 Therefore, the CLECs are reaping an economic profit. An increase in UNE rates may cut
3 into the CLECs economic profits, but this does not necessitate an increase in local rates.
4 The current UNE rates also discourage CLEC investment that would lead to true
5 competitive choices for consumers.

6 **Q68. HAS SBC MICHIGAN ACTUALLY EXPERIENCED A SIGNIFICANT**
7 **GROWTH IN DEMAND ON ITS NETWORK, RESULTING IN A DECLINE IN**
8 **AVERAGE COSTS?**

9 A68. No. Once again, Messrs. Pitkin and Turner make blanket allegations without providing
10 evidence to support them. They do not cite to any data for the line demand growth that
11 they allege has contributed to cost declines. In other proceedings, CLECs have cited to
12 FCC ARMIS line count data to support similar claims. Presumably, Messrs. Pitkin and
13 Turner did not bother to cite the ARMIS reports because they know that this data does
14 not support their claims. As Messrs. Pitkin and Turner are aware from their involvement
15 in other proceedings, SBC changed its method for reporting high-capacity lines in recent
16 years. For example, a DS3 was formerly reported as one line. Now that same DS3 is
17 reported in DS0 equivalents, making the ARMIS line count for that same circuit is 672
18 even though there is no real increase in demand. While Messrs. Pitkin and Turner are
19 aware from testimony in other proceedings that the method for reporting access line
20 counts for high-capacity circuits has changed, causing this false jump in access line
21 counts, but they inexplicably ignore that fact. The truth is that SBC Michigan has
22 actually seen a decrease in demand for switched access lines (*i.e.*, traditional POTS lines)

1 as a result of competition.³⁴ Many consumers are substituting wireless telephony, cable
2 telephony, and cable modems for SBC access lines.

3 Finally, I would note that Messrs. Pitkin and Turner offer absolutely no support for their
4 claim that alleged growth in demand on the network results in declining per-unit costs.
5 They simply assume that SBC Michigan is operating at a point in which an incremental
6 increase in output will result in declining per-unit costs, but that is not always the case.

7 **Q69. HAVE YOU PERFORMED AN ANALYSIS OF THE ARMIS DATA WHICH**
8 **ACCOUNTS FOR THE CHANGE IN METHOD USED TO REPORT DS1 AND**
9 **DS3 FACILITIES ?**

10 A69. Yes. These data show that the increase in Total Access Line Counts is attributable to the
11 increase in Special Access Lines (Non-Switched): Digital. These non-switched digital
12 special access line increased from 654,257 lines in 1996 to 2.80 million in 2002, an
13 increase of 2.14 million lines. Again, the cause of this “increase” is not an actual
14 increase in demand but simply a change in the method for counting this particular type of
15 line. The fact is that Switched access lines, which are traditional phone lines, decreased
16 from 4.99 million to 4.26 million over the 1996 to 2002 time frame. This data can be
17 obtained from Exhibit A – (JRS-R9).

³⁴ The FCC’s ARMIS 43-08 report shows that SBC Michigan’s switched access line count decreased from 6.32 million lines in 1996 to 5.97 million lines in 2002.

1 **Q70. WERE MESSRS. PITKIN AND TURNER CORRECT IN STATING THAT THE**
2 **FCC WIRELINE BUREAU ORDERED THE CONSIDERATION OF GROWTH**
3 **IN THE VIRGINIA ARBITRATION DECISION?**

4 A70. While the Wireline Bureau indicated that growth was an appropriate consideration, the
5 Bureau noted,

6 We question whether it is appropriate to weight equally line growth data from the
7 boom years immediately following the 1996 Act and from the year 2000. Indeed,
8 as Verizon notes, line growth slowed considerably in 1999 and 2000 compared to
9 earlier years, and AT&T/WorldCom offer no evidence that the more recent trend
10 would not continue through 2002. We find that the most recent data (i.e., 2000)
11 provide a better basis to predict line growth for the following two years (i.e., 2001
12 and 2002). Accordingly, we adopt the Verizon proposal and generate projected
13 year-end 2002 line counts by applying the year 2000 line growth rate to the year
14 2000 line count.³⁵

15
16 The fill rates currently contained in SBC's cost studies reflect the fill rates from early in
17 2002. Unlike in the situation in Virginia, SBC Michigan's growth rates have not only
18 slowed, but have been negative. Accordingly, if the Commission were to adopt a
19 position that growth should be considered, the effect would be to lower SBC Michigan's
20 proposed fill factors.

³⁵ FCC's Wireline Decision in the Virginia Arbitration Order, ¶ 199.

1 **Q71. HAVE YOU PERFORMED AN ANALYSIS OF THE CHANGE IN OVERALL**
2 **LOOP COSTS SINCE THE EXISTING UNE LOOP RATES WERE**
3 **DEVELOPED?**

4 A71. Yes. As shown in my direct testimony, loop costs in Michigan have increased. I have
5 performed an analysis, using Michigan ARMIS data, that shows an increase in loop costs.
6 This analysis is submitted as Exhibit A - (JRS – R9).

7 **Q72. WHY WOULD LOOP COSTS BE INCREASING?**

8 A72. The majority of the loop cost is related to labor costs, including engineering and
9 contractor costs. The proportion of labor in SBC Michigan's loop costs is
10 approximately *****CONFIDENTIAL XXX*****, based on an analysis of the revised cost
11 studies. Labor costs have increased over time, and will continue to increase.

12 **Q73. WHAT DOES THE ARMIS ANALYSIS SHOW IN TERMS OF LOOP COSTS?**

13 A73. The ARMIS information shows that cable and wire investment costs and circuit
14 investment per loop in Michigan have increased from 1992 to 2002. As Exhibit A - (JRS
15 – R9) to my testimony shows, total loop investment in Michigan has increased by 44.2%
16 between the years 1992 and 2002 This exhibit also shows that total loop investment in
17 Michigan has increased by 43.4% since 1998 when UNE loop costs were last approved in
18 Michigan. Furthermore, this exhibit shows that Michigan is not alone. I also include the
19 data for other states that have a population density similar to that of Michigan. In order
20 to develop these data, I used the ARMIS 43-04 Report that contains investments for loop
21 plant. Specifically, I divided the total loop investment, inclusive of cable and wire and

1 circuit equipment, by the number of working loops from the ARMIS 43-04 Report. This
2 analysis shows that the investment per loop has increased over the last decade. This fact
3 clearly dispels the claims of some CLECs that loop investment is decreasing. As
4 WorldCom candidly acknowledged in its brief to the Supreme Court in the *Verizon* case,
5 “[a]lthough the computer-based elements of the network (such as switches) may be
6 characterized by declining costs, other elements (such as the loop) are not declining; for
7 many elements costs are rising.”³⁶

8 **Q74. DO INDEPENDENT SOURCES CONTAIN LOOP COST DATA THAT**
9 **SUPPORTS SBC MICHIGAN’S POSITION?**

10 A74. Yes, in a recent article in *Telecom* magazine, it was reported that an investment of “about
11 \$1,200 per home to install new twisted-pair telephone cables” is required.³⁷ This
12 investment information supports SBC’s calculated loop investment. SBC’s proposed
13 investment per loop, on a statewide average basis, is actually lower than this reported
14 amount.

15 **IV. RESPONSE TO TESTIMONY REGARDING FILL FACTORS**

16 **Q75. HOW DO YOU RESPOND TO THE CLAIMS THAT USE OF FILL FACTORS**
17 **BASED ON THE ACTUAL FILL LEVELS EXPERIENCED IN SBC**

³⁶ Reply Brief for the Petitioners WorldCom, Inc., The Association for Local Telecommunications Services, and Competitive Telecommunications Association, In the Supreme Court of the United States, Docket No. 00-555 Worldcom, Inc., et al., Petitioners, vs. Verizon Communications, Inc., et al., Respondents, July 23, 2001, page 6 (emphasis added).

³⁷ Michael Kennedy, *Telecom*, February 2003, "Business Networks; Can the Last-Mile Problem Be Solved?"

1 **MICHIGAN’S NETWORK IS INAPPROPRIATE UNDER THE TELRIC**
2 **METHODOLOGY?**

3 A75. The CLECs claim that SBC Michigan has not proven to their satisfaction that its actual
4 fills are representative of an “efficient” provider. Since they cannot establish that SBC
5 Michigan’s *existing* network has not been prudently and efficiently engineered over the
6 years, they are contending that, for cost study purposes, SBC Michigan must assume an
7 entirely *fictional* network that has been redesigned and reconstructed to precisely match
8 the level and location of customer demand as it exists today. This conceptual model has
9 nothing to do with “efficiency” as that concept is commonly understood. No real world
10 network, no matter how efficiently designed, would ever meet that standard. Nothing in
11 the TELRIC methodology requires use of such a hypothetical network and, in fact, many
12 state commissions have used actual fill levels (or something close to them) as the basis
13 for TELRIC studies. The FCC has never required use of such an approach and is now
14 considering whether to *require* states to use more realistic assumptions.

15 As the United States Court of Appeals has held,

16 Any sensible carrier builds more network capacity than can be used at the
17 moment; that way capacity will be available for additional customers
18 demand service, without waiting for the arrival of new equipment,
19 excavating streets to lay new wire, and so on. Moreover, many kinds of
20 telecommunications equipment have minimum efficient sizes; a switch
21 able to handle 100,000 circuits may be cheaper than two switches able to
22 handle 50,000 circuits apiece. The fill factor reflects the extent of this
23 (economically justified) unused capacity.

24 * * *

25 “The district judge also thought that any use of actual fill factors (or asset
26 lives matching the company’s financial reports) violates federal law
27 because TELRIC is forward-looking, while depreciation looks to the past
28 and fill factors to the present. True enough, TELRIC calls for a
29 projection, but it does not demand that every ingredient be hypothetical.

1 How could one know the long-run costs of the most efficient technology
2 without understanding the costs of today's most efficient producers? If
3 SBC's current fill factors are the efficient ones (or are within the range
4 that a student of the subject might think a reasonable estimate of that
5 figure), then they are exactly the right figures to use.”³⁸
6

7 I demonstrated in my direct testimony and Mr. William Palmer further demonstrates in
8 his rebuttal testimony that numerous state commissions have used actual fill factors in
9 UNE studies.

10 **Q76. IN ADDITION TO THE EXAMPLES PROVIDED BY MR. WILLIAM PALMER,**
11 **ARE THERE OTHER STATES THAT HAVE APPROVED FILL FACTORS**
12 **COMPARABLE TO WHAT SBC MICHIGAN IS PROPOSING HERE?**

13 A76. Yes. In a Florida decision, the FPSC adopted a fill factor of 47% as supported by CLEC
14 witness Joseph Riolo. Significantly, Mr. Riolo appeared to agree that two pairs per
15 dwelling unit is a minimum guideline for sizing distribution facilities:

16 The two pair per dwelling unit is somewhat of a minimal guideline. The
17 actual design criteria are really left to the engineer, who should be more
18 familiar with the geography to be served. For example, in some very
19 affluent areas where the perception might be, and very well so, that five
20 and six pair would be the proper number per household, although it
21 certainly does not preclude the engineer from doing that. There has to be
22 some sufficient material that would indicate things of that nature. But I
23 know of locations that were designed on certainly more than 2 pairs per
24 dwelling.³⁹

³⁸ AT&T Communications of Illinois, Inc., et al., vs. Illinois Bell Telephone Co. and Ameritech Corp., U.S. Court of Appeals for the Seventh Circuit, Case Nos. 03-2735 & 03-2766, Pages 3-4.

³⁹ Florida Docket No. 990649-TP Order No. PSC-01-1181-FOF-TP May 2001.

1 That testimony is consistent with SBC Michigan’s loop deployment guidelines, which
2 use 2.25 pairs per household. This guideline is one of the drivers of the fill levels
3 proposed by SBC Michigan in this proceeding. This subject is also covered at length in
4 Bill Palmer’s testimony.

5 The Arizona Commission also adopted fill factors that are very close to what SBC
6 Michigan is proposing for distribution fill factors in this proceeding. Specifically, the
7 Arizona Commission stated:

8 The HAI model’s use of a 75 percent cable sizing factor for distribution
9 plant, resulting in an average fill factor of 48.8% (or slightly more than 2
10 lines per household) is appropriate.⁴⁰

11 **Q77. MESSRS. STARKEY AND FISCHER (STARKEY/FISCHER PP. 209-210) CLAIM**
12 **THAT SBC MICHIGAN’S CURRENT ACTUAL FILL FACTORS FOR**
13 **DISTRIBUTION PLANT DO NOT REFLECT AN EFFICIENT LEVEL OF**
14 **OPERATION. DO YOU AGREE?**

15 A77. No. In support of this claim, Messrs. Starkey and Fischer allege, without any proof, that
16 current actual fill factors for distribution cable “fail to incorporate or, for that matter,
17 even recognize proper network efficiency and least cost practices...”⁴¹ As Ms. De Baene
18 demonstrates, however, these fill factors are reflective of the realities associated with
19 engineering an efficient ubiquitous telecommunications network that can meet the
20 demands of consumers and the service requirements of this Commission.

⁴⁰ Arizona Docket No. T-00000A-00-0194.

⁴¹ Initial Testimony of Michael Starkey and Warren Fischer, p.209.

1 **Q78. COULD SBC MICHIGAN EVER ACHIEVE THE HIGH LEVELS OF**
2 **UTILIZATION REFLECTED IN THE CLEC FILL RECOMMENDATIONS?**

3 A78. No. I am unaware of any major carrier that has ever been able to achieve such levels of
4 utilization. It simply will not happen in the real world. The Commission should
5 determine if an “efficient” firm providing a ubiquitous telecommunications network that
6 has been installed over time to meet customer service demands and that is subject to the
7 quality of service requirements faced by SBC Michigan would operate at significantly
8 higher levels of utilization. I have not seen any evidence that it is possible.

9 **Q79. DO THE UTILIZATION RATES OF SBC MICHIGAN’S NETWORK REFLECT**
10 **EFFICIENT ENGINEERING PRACTICES (STARKEY/FISCHER PP. 210-214)?**

11 A79. Yes. Many factors affect the achievable utilization rate in the network. Three examples
12 are standardized cable sizes, regulatory requirements, and engineering for long-term
13 demand. Cables come in standard sizes and are not custom-made by cable vendors. This
14 standardization is cost-effective because it makes the vendors’ manufacturing costs
15 lower, but at the same time it makes spare capacity inevitable. In addition, regulatory
16 requirements, including universal service obligations and service quality standards,
17 mandate that SBC Michigan be able to provide service on demand and remedy outages
18 quickly. This means that SBC Michigan must deploy spare capacity that will be
19 available when and if needed. Long-term planning is required because of the great
20 expense associated with augmenting distribution plant. However, such long-term
21 planning means that, inevitably, there will be spare capacity in the distribution plant.
22 SBC witness Mrs. De Baene has discusses these issues from an engineering perspective.

1 As Ms. De Baene explains at length, SBC Michigan has followed industry-accepted
2 engineering practices throughout its existence. Specifically, SBC Michigan has
3 employed the Carrier Serving Area (“CSA”) concept since its inception. This standard
4 was developed by AT&T and it is still the efficient forward-looking design criteria for a
5 wireline network. Managing a dynamic network is a process in which facilities are
6 continuously being added in some areas and approaching exhaust in other areas.
7 Achieving the high average levels of fill recommended by the CLECs is simply not
8 feasible in a real network. That is why the CLECs have not pointed to a single network
9 provider, including themselves, that has achieved such levels of utilization.

10 **Q80. MESSRS. STARKEY AND FISCHER CLAIM THAT YOU HAVE**
11 **MISINTERPRETED THE FCC’S ORDER WITH RESPECT TO HOW FILL**
12 **FACTORS SHOULD BE DEVELOPED (STARKEY/FISCHER PP. 214 - 217).**
13 **PLEASE COMMENT.**

14 A80. I have not misinterpreted the FCC’s order. The CLECs engage in a tortured textual
15 analysis of the FCC’s Order, in which they try to distinguish between “actual” usage,
16 which they say *can* be used, and “actual” fill, which they say *cannot* be used. The short
17 answer to this argument is that no one else agrees with them--not the 7th Circuit, not the
18 numerous state commissions that have approved use of actual fill factors in TELRIC
19 studies, not the FCC when it found those rates to be TELRIC-compliant in Section 271
20 proceedings and when it issued its TELRIC NPRM.

1 **Q81. HOW DO YOU RESPOND TO THE CLECS' ARGUMENT THAT THE FILL**
2 **LEVELS SBC MICHIGAN IS PROPOSING IN THIS DOCKET ARE LOWER**
3 **THAN THOSE APPROVED IN CASE NO. U-13455?**

4 A81. Although the fill factors proposed in this proceeding are different from the fills adopted
5 in 1998, they are fully consistent with the TELRIC standard. As Mr. William Palmer
6 explains, the fill factors approved in the original TELRIC docket were the product of a
7 record that did not even provide the Commission with an opportunity to consider the
8 approach SBC Michigan is recommending here. In addition, those fill factors did not,
9 and were not intended to, reflect overall utilization levels. They reflected the point at
10 which network relief jobs are triggered—i.e. the point at which the operating costs
11 associated with continuing to provide service at a particular capacity level exceeds the
12 capital costs associated with installing new plant. The best evidence of forward-looking
13 utilization levels comes from the fill factors achieved by SBC Michigan today.

14 **Q82. IS IT NECESSARY TO USE THE SAME FILL FACTORS FOR BOTH RETAIL**
15 **AND WHOLESALE COST STUDIES, AS MESSRS. STARKEY AND FISCHER**
16 **SUGGEST (STARKEY/FISCHER PP. 223-225)?**

17 A82. No. The cost object of and the purpose served by retail and wholesale cost studies are
18 very different and warrant the use of different fill factors. Mr. William Palmer discusses
19 this issue in light of SBC Michigan's historical costing and pricing practices. My views
20 and his views are virtually identical. Total Service Long Run Incremental Cost
21 ("TSLRIC") studies are used to determine a "price floor" for a retail service. Price floors
22 are used to ensure that one service is not receiving a cross-subsidy from another service.

1 However, every service cannot be priced at the price floor, as the firm would receive no
2 contribution to its common overheads and other costs not included in TSLRIC, including
3 spare capacity. In practice, SBC Michigan prices certain retail services like residence
4 network access lines at or near the price floor (i.e., no or little markup), while other
5 services like central office vertical features are priced to provide a substantial margin and
6 a substantial contribution to common overheads and other costs (like spare capacity).

7 In contrast to TSLRIC, a TELRIC cost study for a UNE is used to set a price not a price
8 *floor*, for a specific network element. In the case of the UNE loop cost study, that
9 element is a UNE loop. Hence, the spare capacity of the loop plant is directly
10 incremental to the UNE loop element and is appropriately included in the cost of that
11 element. The formulaic nature of TELRIC pricing does not allow the network provider
12 any pricing flexibility to recover spare capacity costs from other wholesale products. Nor
13 would it be appropriate to assign spare capacity costs properly recovered from CLEC
14 UNE customers from other wholesale customers (or retail customers, for that matter).
15 Therefore, it is imperative that SBC Michigan be able to recover spare capacity costs by
16 reflecting them in the UNE element costs. Dr. Aron addresses any price squeeze issues
17 arising from SBC Michigan's proposals in this proceeding.

18 **Q83. WHAT IS SBC MICHIGAN'S POSITION WITH RESPECT TO THE**
19 **APPROPRIATE FILLS THAT SHOULD BE USED IN A TELRIC COST STUDY?**

20 A83. SBC Michigan, consistent with the FCC's TELRIC rules, supports the use of a
21 reasonable projection of actual utilization of the network. Further, SBC Michigan

1 believes that its current actual utilization rates are the best estimate of future utilization
2 levels and, therefore, should be used for TELRIC costing purposes.

3 **V. RESPONSE TO TESTIMONY REGARDING INSTALLATION FACTORS**

4 **Q84. PLEASE DESCRIBE THE METHOD THAT SBC MICHIGAN USES TO**
5 **CALCULATE THE INSTALLATION INVESTMENT ASSOCIATED WITH THE**
6 **MAJORITY OF EQUIPMENT USED IN THE LOOPCAT MODEL.**

7 A84. SBC Michigan uses a factor-based methodology to develop the installation investment
8 for the majority of equipment used in the LoopCAT model. This factor approach is used
9 for copper and fiber cabling, feeder-distribution interfaces (“FDIs”), and digital loop
10 carrier (“DLC”) systems. SBC Michigan uses information from its accounting system to
11 develop installation factors that represent the relationship between certain installation
12 costs to either materials or labor. These installation costs represent all of the relevant
13 costs required to install equipment in SBC Michigan’s network. These factors account
14 for all installation costs, including any unforeseen costs that can occur after an initial
15 engineering cost estimate is done.

16 The installation factor development using general ledger data is a simple process that is
17 easily verified, and provides an excellent accounting of all costs associated with every
18 one of the thousands of projects (i.e., undertakings) that SBC has conducted in Michigan.
19 In fact, the data used in creating the installation factors flow into the general ledger
20 (which undergoes substantial annual auditing) and ultimately into the company’s filings
21 with the FCC and SEC. SBC Michigan witness Mr. Timothy Dominak discusses the use
22 of accounting data in his Rebuttal Testimony.

1 **Q85. IF THE PROCESS IS SIMPLE, WOULD YOU EXPLAIN IT?**

2 A85. Yes. The Company tracks all of the costs incurred in each undertaking by FRC (Field
 3 Reporting Code) and sub-account (these sub-accounts are called transaction cost codes,
 4 or TCCs), as depicted in the following diagram.

Undertaking XXXXXX

FRC 45C - Buried Copper

TCC 520 - Materials
TCC B46 - Engineering
TCC B12 - Plant Labor
• • •
TCC B37 - General Admin

FRC 22C - Aerial Copper

TCC 520 - Materials
TCC B46 - Engineering
TCC B12 - Plant Labor
• • •
TCC B37 - General Admin

FRC 5C - Underground Copper

TCC 520 - Materials
TCC B46 - Engineering
TCC B12 - Plant Labor
• • •
TCC B37 - General Admin

5

6 At the end of the year, SBC accumulates the totals of all labor, engineering, vendor, and
 7 miscellaneous costs incurred for construction of all outside plant placed in service, in
 8 Michigan, throughout the year. This actual construction cost data flow to the general
 9 ledger and also form the basis for the installation factors that were used in SBC's loop
 10 cost study.

1 **Q86. AT&T WITNESSES PITKIN AND TURNER (PITKIN/TURNER PP. 29 & 31-33)**
2 **AND MCI WITNESSES STARKEY AND BALKE (STARKEY/BALKE P.77 - 80)**
3 **CRITICIZE SBC MICHIGAN’S DEVELOPMENT OF INSTALLATION**
4 **FACTORS. IS SBC MICHIGAN’S USE OF INSTALLATION FACTORS AN**
5 **APPROPRIATE METHODOLOGY FOR DEVELOPING UNE LOOP COSTS?**

6 A86. Yes. The use of installation factors for developing the installation investment associated
7 with loop cabling and equipment is a long-accepted practice in telecommunications
8 costing and has been used in cost studies approved by this Commission in the past, as
9 recently as MPSC Case No. U-11831. Further, I find it interesting that MCI Witness Mr.
10 Balke would criticize the use of installation factors for cable since the method employed
11 in SBC Michigan’s current loop study is the same as that used in the AFAM cost study
12 developed under Mr. Balke’s direction and approved by this Commission.

13 **Q87. MESSRS. PITKIN AND TURNER (PITKIN/TURNER P. 36) CLAIM THAT “IT**
14 **IS ABSOLUTELY IMPOSSIBLE FOR A PROCESS THAT RELIES**
15 **EXCLUSIVELY ON HISTORICAL INSTALLATION RELATIONSHIPS OF AN**
16 **EMBEDDED NETWORK TO REFLECT THE FORWARD-LOOKING**
17 **TECHNOLOGY AND NETWORK ARCHITECTURE MANDATED BY A**
18 **PROPERLY PERFORMED TELRIC STUDY.” DO YOU AGREE?**

19 A87. No. The installation factors used in the cost study were developed based on SBC
20 Michigan’s recent actual data for both material costs and installation costs in order to
21 establish a relationship between such costs. For example, if last year SBC Michigan
22 spent \$4.00 in total costs (less material) for every \$1.00 in material costs, then the

1 installation factor would be equal to 4.0. Then, in the model, SBC Michigan would take
2 current contract costs for equipment and multiply that contract price for the equipment by
3 the factor to obtain a forward-looking total installation cost. As a result, the total
4 installed equipment costs included in the Company's study are neither "embedded" nor
5 "historical." The CLEC witnesses do not offer any evidence that demonstrates that this
6 method is unsound or that the relationship between material costs and installation costs
7 over the past few years will not hold true for the future. It is appropriate to base a
8 forward-looking cost study on known facts.

9 **Q88. MR. TURNER STATES THAT MANY OF THE INPUTS INTO LOOPCAT**
10 **SHOULD BE REJECTED BECAUSE THEY ARE BASED ON EMBEDDED**
11 **INFORMATION. WHAT IS THE VINTAGE OF THE DATA USED IN JAM?**

12 A88. JAM was created in 1995 and studies were conducted to set the initial FTIs. In 1997
13 another study was conducted to verify the time estimates in JAM, which resulted in
14 revisions being made to 21 of the FTIs. Travel and set up time has not changed since the
15 initiation of JAM in 1995. Although still valid, the majority of the data in JAM is over 6
16 years-old.

17 Mr. Turner dismisses all inputs into LoopCAT that are based on current or historical
18 information, yet he is using the JAM system that contains data that is older than many of
19 the inputs in LoopCAT.

20 **Q89. MESSRS. PITKIN AND TURNER (PITKIN/TURNER PP. 33-34) CITE FCC**
21 **GUIDANCE REGARDING THE APPROPRIATENESS OF LINEAR LOADING**

1 **FACTORS. DID THEY TELL THE WHOLE STORY REGARDING THIS**
2 **GUIDANCE?**

3 A89. No. While Messrs. Pitkin and Turner cite the FCC Wireline’s concerns (Virginia
4 Arbitration Order, ¶523) regarding the use of linear loading factors, they failed to
5 provide some very pertinent portions of the referenced ruling. The verbiage just prior to
6 the extract, provided below, provides some telling information:

7 “We find that, although we have some concerns about both Verizon’s and
8 AT&T/WorldCom’s proposals, the Verizon proposal is the better of the
9 two proposals because it relies on more recent vintage data. Therefore,
10 under the baseball arbitration rules, we adopt Verizon’s proposed transport
11 EF&I factor.

12 There is some doubt about the reliability of both Verizon’s and
13 AT&T/WorldCom’s proposed EF&I factors.”⁴²

14 In other words, contrary to the implication Messrs. Pitkin and Turner intended to convey,
15 the FCC Wireline Bureau adopted the use of linear loading factors, and AT&T and MCI
16 proposed the use of installation factors as part of their “*TELRIC compliant*” proposal, was
17 albeit of an older vintage (more “embedded”) than Verizon’s supporting data.

18 **Q90. WHAT OF MESSRS. PITKIN AND TURNER’S QUOTES (PITKIN/TURNER P.**
19 **38) FROM FCC RULINGS PROHIBITING THE USE OF “EMBEDDED DATA?”**

20 A90. In each of the quotes cited by Pitkin and Turner, the FCC quote forbids the use of
21 embedded *costs*. The FCC has never intimated that it or state commissions must ignore
22 reality. At no time does SBC use embedded costs in the study. All material prices are up
23 to date with current contracted pricing, and recent accounting data is used to provide a

⁴² FCC’s Wireline Decision in the Virginia Arbitration Order, ¶¶ 522-3.

1 ratio of material investments to installation costs, a reasonable approach for the estimates
2 required in this proceeding.

3 **Q91. MESSRS. PITKIN AND TURNER (PITKIN/TURNER PP. 53-54) CLAIM THAT**
4 **THE USE OF LOADING FACTORS IS NOT FORWARD-LOOKING, AND GIVE**
5 **THE EXAMPLE OF HOW, WHEN BUILDING A NEW HOME, ONE WOULD**
6 **USE A BOTTOMS-UP ESTIMATING APPROACH. IS THIS A LEGITIMATE**
7 **COMPARISON?**

8 A91. This analogy is inapposite because of the scale of the comparison. In Messrs. Pitkin's
9 and Turner's example, they refer to the fact that one would not use loading factors when
10 building a single home but rather would estimate construction costs from the "bottom
11 up." When one builds a home, one typically knows where the home would be placed,
12 and the size of the home, and who is building it. Under those circumstances it would be
13 reasonable to do such a detailed estimate. It would be a far different situation if, like
14 here, none of those parameters were given.

15 A more accurate analogy would be to determine the probable cost for the next home of
16 undetermined square footage somewhere in the state of Michigan. One would certainly
17 look at recent costs for doing a like task. If one was a major contractor, one might have a
18 body of work from which reasonable assumptions could be made based on actual
19 experience. Recent activities are the best, most legitimate, most reasonable means for
20 performing such an estimate.

1 Likewise, one could perform a fairly accurate detailed estimate for the cost of
2 constructing outside loop plant to any single house. But the task for this proceeding is
3 not to determine the cost for supplying phone service to a single house. Here the task is
4 to determine the probable cost for building outside plant for the next randomly selected
5 location out of several million of homes and businesses.

6 A better analogy might be the building of a highway system. The highway must be able
7 to accommodate the future growth in an area; otherwise the effect would be a serious
8 disruption in traffic flow or the necessity to condemn houses and businesses that are
9 located near the highway or to tear down bridges over the highway to accommodate extra
10 lanes. Therefore, highways are built with extra lanes in an effort to prevent such
11 disastrous and costly consequences. Highway engineers' growth projections may not
12 account for every possible factor, however. This is why augmentations to highways are
13 often necessary, despite the fact that they are expensive and disruptive. However, no one
14 would claim that the underlying design of the interstate highway system is severely
15 inefficient or flawed. Likewise, it is impossible to completely estimate the costs of
16 building the entire highway system. Instead, it can only be estimated from the most
17 recent highway construction projects undertaken. Here, neither SBC nor the CLEC
18 knows where the home is, or if it easy or difficult to do construction in the area, or what
19 type of plant is needed. There are no restrictions regarding where the next UNE customer
20 is located. Given the uncertainty of such issues, it is certainly legitimate (and forward-
21 looking) for SBC to use information regarding recent loop construction activities to
22 estimate the cost of near-future loop construction.

1 **Q92. IS THERE ANY REASON TO BELIEVE THAT SBC MICHIGAN'S**
2 **INSTALLATION FACTOR METHODOLOGY MIGHT BE CONSERVATIVE?**

3 A92. Yes. To the extent that certain equipment prices, such as those for electronics, tend to
4 stay relatively flat or decline (which Messrs. Pitkin and Turner claim is a fact), and that
5 labor costs tend to rise, the ratio of total installed costs to equipment costs would increase
6 in the future, not decrease.

7 **Q93. MESSRS. PITKIN AND TURNER (PITKIN/TURNER PP. 51-52) CONTEND**
8 **THAT SBC MICHIGAN'S INSTALLATION FACTORS ARE INFLATED**
9 **BECAUSE THE COST ACCOUNTS USED BY SBC MICHIGAN TO REFLECT**
10 **EXPENDITURES ARE NOT ONLY FOR NEW NETWORK CONSTRUCTION**
11 **BUT ALSO INCLUDE COSTS TO REINFORCE OR EXPAND THE EXISTING**
12 **NETWORK. DO YOU AGREE?**

13 A93. No. An argument is made that some of SBC Michigan's construction jobs reflect
14 "augmentations" to the existing network. In other words, SBC Michigan has to
15 undertake construction in an area in which it has already deployed facilities. However,
16 no evidence is provided in support of the claim that every augmentation would be smaller
17 than any new construction effort. Regardless of the size of augmentation jobs, the fact is
18 that SBC Michigan's installation factors reflect a variety of job sizes. This is not
19 inconsistent with forward-looking principles. Even in a forward-looking network,
20 facilities are built over time and not instantaneously. In other words, the reality is that
21 networks are built incrementally. Therefore, it is appropriate to include reinforcement
22 jobs.

1 **Q94. MESSRS. PITKIN AND TURNER (PITKIN/TURNER P. 51) CLAIM THAT MS.**
2 **DE BAENE’S TESTIMONY DEMONSTRATES THAT REINFORCEMENT**
3 **JOBS COST MORE THAN INSTALLING SPARE CAPACITY AT THE**
4 **OUTSET. DOES THAT MAKE THESE JOBS INCONSISTENT WITH TELRIC?**

5 A94. No. Ms. De Baene was pointing out that reinforcement jobs are expensive. That is why
6 SBC Michigan, like other efficient network providers, builds spare capacity into the
7 network. However, as Ms. De Baene explains in her rebuttal testimony, plant
8 reinforcements must and will occur over time and these reinforcements represent part of
9 the engineering process involved in the efficient operation and maintenance of the
10 network. Again, TELRIC is designed to calculate the cost of an efficient network
11 provider, not the “perfect” network. All providers will incur reinforcement expenses. To
12 ignore this fact would result in an underestimation of forward-looking costs.

13 **Q95. IN A RELATED ARGUMENT, MESSRS. PITKIN AND TURNER ASSERT**
14 **THAT INSTALLATION FACTORS DO NOT REFLECT THE SCALE OF JOBS**
15 **THAT WOULD BE UNDERTAKEN IN A FORWARD-LOOKING**
16 **ENVIRONMENT. (PITKIN/TURNER PP. 50-51) DO YOU AGREE?**

17 A95. No. Messrs. Pitkin and Turner claim that “SBC’s embedded relationships of installation
18 to material costs reflect SBC’s experience with construction projects that are much
19 smaller than those that are associated with a scorched node, forward-looking cost study as
20 required by the FCC.”⁴³ Messrs. Pitkin and Turner apparently do not understand the way

⁴³ Testimony of Brian F. Pitkin and Steven E. Turner, ICC Docket No. 02-0864, p. 39.

1 in which outside plant is constructed. They assume that TELRIC requires that forward-
2 looking costs only consider the average cost of large construction jobs. But even when
3 there are large construction jobs that need to be completed, those jobs are typically
4 structured as a series of smaller jobs. Thus, even assuming SBC Michigan were going to
5 rebuild its network from scratch, such an extremely large construction project would
6 actually be completed as a series of much smaller projects, which in the end would
7 accomplish what the “total” project intended to realize. In the real world, outside plant is
8 constructed in phases, allowing projects to be managed more efficiently.

9 SBC Michigan’s installation factors reflect a sufficiently large number of projects to
10 accurately represent a realistic, forward-looking mix of small, medium, and large
11 construction projects. SBC Michigan’s installation factors are based on three years of
12 recent construction jobs in Michigan. By covering a multiple number of recent years, the
13 data include sufficient representation of all projects sizes to ensure that the resulting
14 installation factors accurately reflect the normal forward-looking relationship between
15 equipment costs and engineering and installation labor costs.

16 **Q96. ARE SBC MICHIGAN’S PROPOSED COSTS TRULY “OUTLIERS” AS**
17 **MESSRS. PITKIN AND TURNER ALLEGE, OR ARE THE PROPOSED COSTS**
18 **USED IN COMPUTING THE INSTALLATION FACTOR A REASONABLE**
19 **FUNCTION OF THE ESTIMATES? (PITKIN/TURNER P. 100)**

20 A96. The costs associated with the computation of the installation factors are the reasonable
21 estimates of costs for all the reasons described above.

1 **Q97. HOW ARE THE FILL FACTORS FOR FEEDER AND DISTRIBUTION**
2 **APPLIED IN THE LOOPCAT MODEL?**

3 A97. The fill factors are applied to the distribution cable material and the distribution cable
4 labor costs, separately.

5 **Q98. WHY DID YOU APPLY THE FILL FACTOR SEPARATELY TO MATERIAL**
6 **AND LABOR?**

7 A98. When cable is placed for distribution or feeder, there is a cost for the pair size placed
8 (material) and a cost for trenching the cable and burying the cable (labor). The labor
9 portion of the total cost is relatively constant regardless of what pair size is placed,
10 assuming a fixed length of cable. As discussed in SBC witness Dorothy De Baene's
11 direct testimony, the cost of placing a given length of 50-pair cable is about the same as
12 placing the same length of 100-pair cable. The concept of a fill factor is irrelevant when
13 calculating the labor portion of the cable because the labor has nothing to do with the
14 increase or decrease in the pair size of the cable, which is what an adjustment to the fill
15 factor implies.

16 **Q99. IF THE FILL FACTOR IS IRRELEVANT WHEN CALCULATING LABOR FOR**
17 **PLACING CABLE, WHY THEN, DID YOU APPLY THE FILL FACTOR TO**
18 **THE LABOR PORTION OF THE CABLE IN THE LOOPCAT MODEL?**

19 A99. The methodology in the model uses an average cost per pair foot, which includes the
20 material and labor for one cable pair. In order to recover the total labor costs for all pairs
21 placed, the fill factor must be applied to the labor included in the average cost per pair

1 foot. This methodology ensures that the total labor cost for placing the cable, which has
2 nothing to do with the pair size of the cable, is fully recovered.

3 **Q100. BASED ON WHAT YOU'VE STATED ABOUT HOW YOU'VE APPLIED THE**
4 **FILL FACTOR TO THE LABOR PORTION OF THE CABLE TO FULLY**
5 **RECOVER THE LABOR FOR ALL THE PAIRS IN THE CABLE, THERE**
6 **SHOULD BE NO ADJUSTMENTS MADE TO THE FILL FACTOR FOR THE**
7 **LABOR PORTION OF THE CABLE. IS THIS TRUE?**

8 A100. Yes. Any adjustments that are made to the fill factor should only apply to the fill factor
9 applied to the material portion of the cable.

10 **Q101. HAS THE MPSC AGREED WITH THE APPROACH OF NOT ADJUSTING THE**
11 **CABLE LABOR FILL FACTOR?**

12 A101. Yes. In Case No. U-12261, the Michigan Exchange Carrier's Association, Inc.
13 ("MECA") filed an application for approval of a joint total service long run increment
14 cost (TSLRIC). In its March 2000, Opinion and Order, the Commissions stated:

15 "The proper treatment of fill factors continues to be a contentious issue,
16 here and in Ameritech Michigan's TSLRIC case. The flaw in MECA's
17 argument is the assumption that the fill factors are a target not to be
18 exceeded for any piece of its network, rather than an average for the
19 network as a whole. In a sense, the function of fill factors is to create an
20 incentive for greater efficiency by establishing costs on a higher usage
21 factor than providers have been accustomed to achieving. The
22 Commission rejects MECA's approach because it necessarily results in
23 actual fill factors less than the approved average fill factors. The
24 Commission does agree with MECA that the Staff's adjustment should not
25 be applied to the cost of installing cable."

1 **Q102. HAS THE FCC RECOGNIZED THE FACT THAT NETWORKS ARE BUILT**
2 **OVER TIME?**

3 A102. Yes. In its TELRIC NPRM, the FCC stated that “[i]n the real world, however, even in
4 extremely competitive markets, firms do not instantaneously replace all of their facilities
5 with every improvement in technology. Thus, even the most efficient carrier’s network
6 will reflect a mix of new and older technology at any given time.”⁴⁴ This argument
7 would equally apply to types of technology and the cable sizing mix. The FCC went on
8 to say that “[a]s discussed above, the UNE pricing methodology, while forward-looking,
9 must be representative of the real world and should not be based on the totally
10 hypothetical cost of a most-efficient provider building a network from scratch.”⁴⁵ In
11 short, the FCC has clearly refuted arguments of CLEC witnesses regarding the use of
12 actual data for the development of forward-looking UNE costs.

13 **Q103. MESSRS. STARKEY AND BALKE ALSO STATE THAT LOOP**
14 **INSTALLATION FACTORS MAY NOT BE REPRESENTATIVE OF**
15 **EQUIPMENT CURRENTLY BEING PLACED IN SBC MICHIGAN’S**
16 **NETWORK. (STARKEY/BALKE PP. 78-80) DO YOU AGREE?**

17 A103. No. The cable installation factors used in the LoopCAT model are representative of the
18 equipment currently being installed. Those factors are developed specifically for the type

⁴⁴ Federal Communications Commission, FCC 03-224, *Notice of Proposed Rulemaking*, In the Matter of Review of the Commission’s Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers (WC Docket No. 03-173). Released: September 15, 2003. ¶ 50

⁴⁵ *Id.*, ¶ 53

1 of cable (i.e., either copper or fiber and for aerial, buried, and underground). Therefore, I
2 must assume that digital loop electronics, not cables, were the subject of this discussion.
3 Again, the Company's proposed installation factors, are representative of the DLC
4 equipment currently being installed. As discussed below, the DLC installation factors are
5 developed based on the most recent three years of available data (2000-2002). During
6 that period, Alcatel's Litespan DLC system has been the predominant DLC system
7 installed. This is the system that is currently being installed and is likely to be installed in
8 the future.

9 **Q104. MESSRS. STARKEY AND BALKE (STARKEY/BALKE P. 81) AND MESSRS.**
10 **PITKIN AND TURNER (PITKIN/TURNER PP. 43-45) CLAIM THAT IT IS**
11 **INAPPROPRIATE TO USE STATEWIDE DATA TO DEVELOP**
12 **INSTALLATION FACTORS ON A STATEWIDE AVERAGE. DO YOU AGREE?**

13 A104. No. It is not expected that installation costs will vary significantly by zone. That aside, it
14 is also important to note that it is not possible to calculate geographically deaveraged
15 installation factors, given existing data and accounting systems.

16 **Q105. DO INSTALLATION FACTORS CREATE GEOGRAPHIC AVERAGING**
17 **DISTORTIONS, AS MESSRS. PITKIN AND TURNER CLAIM**
18 **(PITKIN/TURNER PP. 43-45 & 55)?**

19 A105. No. Messrs. Pitkin and Turner contend that, just because larger pieces of equipment may
20 be installed in higher-density (i.e., urban) areas, installation factors will overstate
21 construction costs in those areas. The fact, however, is that per unit construction costs

1 may actually increase in higher-density areas because of the nature of construction in
2 urban areas. Higher-density areas are likely to involve more concrete, more traffic, and
3 more municipal regulations. These are but a few complicating factors that increase the
4 cost of doing business in more congested areas.

5 **Q106. HAVE MESSRS. PITKIN AND TURNER ADMITTED IN OTHER**
6 **PROCEEDINGS THAT INSTALLATION FACTORS ARE APPROPRIATE?**

7 A106. Yes. In a recent California proceeding, these witnesses acknowledged that installation
8 factors are appropriate in some instances.⁴⁶ That is the case with the factors used in SBC
9 Michigan's loop cost study. It would be overly burdensome, if not impossible, to
10 develop accurate installation costs for outside plant otherwise. As I will discuss below,
11 SBC Michigan's method is far superior to the "bottoms-up" approach proposed by
12 AT&T, which omits a significant amount of the activities and related costs that are
13 necessary to install loop facilities.

14 **Q107. HAVE THERE BEEN ANY RECENT PROCEEDINGS WHERE SBC'S**
15 **INSTALLATION FACTOR APPROACH HAS BEEN ADOPTED?**

16 A107. Yes. In general, linear loading factors have been used in, and approved in, various
17 Ameritech UNE rate proceedings for several years, including in previous Michigan UNE
18 rate cases.

19 The Indiana Utility Regulatory Commission (the "Indiana Commission") recently entered
20 an order establishing UNE rates for SBC Indiana, in which it expressly approved the

⁴⁶ California Reply Declaration of John Donovan, Brian Pitkin, and Steven Turner at p. 48.

1 installment factor methodology used by SBC Michigan in this case. In doing so, the
2 Indiana Commission rejected many of the same criticisms that have been directed at that
3 methodology in this case. The Indiana Commission also rejected the “bottoms up”
4 approach proposed in that case by CLEC witnesses Pitkin and Turner⁴⁷, which is virtually
5 identical to the approach that they propose in this case. In arriving at these conclusions,
6 the Indiana Commission held:

7 In analyzing this dispute we are guided by the recognition that TELRIC
8 does not preclude the use of total, long-run averages. That is, installation
9 costs have to be computed as average costs across a variety of situations in
10 order to be usable in setting generally applicable rates.

11 The Commission reaffirms that SBC Indiana's use of linear loading factors
12 is reasonable.⁴⁸

13
14 The Indiana Commission also recognized that the build-out of telephone plant is
15 incremental by nature, thereby rejecting the argument that the TELRIC method requires
16 an assumption that an entire state's network could be replaced in a few days:

17 TELRIC assumes that a forward-looking network will be constructed over
18 time, not instantly, and networks placed over time will include
19 construction projects of all shapes and sizes.

20 SBC Indiana's linear loading factors approach is a reasonable way to
21 compute such average installation costs.⁴⁹

22 SBC Michigan uses the same reasonable approach in its cost studies for this TELRIC-
23 based rate case proceeding as was used in the Indiana proceeding.

⁴⁷ Indiana Utility Regulatory Commission, Cause No. 42393, In the Matter of the Commission Investigation and Generic Proceeding of Rates and Unbundled Network Elements and Collocation, Approved Jan 05, 2004, p. 44.

⁴⁸ Indiana Utility Regulatory Commission, Cause No. 42393, p. 44.

⁴⁹ Indiana Utility Regulatory Commission, Cause No. 42393, In the Matter of the Commission Investigation and Generic Proceeding of Rates and Unbundled Network Elements and Collocation, Approved Jan 05, 2004, p. 44.

1 **Q108. HAS THIS COMMISSION APPROVED COSTS DEVELOPED THROUGH THE**
2 **USE OF LOADING FACTORS?**

3 A108. Yes. In Case No. U-11831, which set the current Michigan UNE rates, linear loading
4 factors were used in the same manner that SBC Michigan proposes they be used in the
5 current docket.

6 **Q109. HAS SBC MICHIGAN AGREED TO REVISE THE CABLE INSTALLATION**
7 **FACTORS IN ITS COMPLIANCE COST STUDY?**

8 A109. Yes. The cable installation factors will be revised to remove premises termination labor
9 investments, making the factors more precise with respect to cable, as will be discussed
10 in more detail in Section VI of this rebuttal testimony.

11 **Q110. WHY DID SBC MICHIGAN BASE CABLE FACTORS ON THREE YEARS OF**
12 **RECENT DATA, RATHER THAN ON DATA FOR THE ONE MOST RECENT**
13 **YEAR?**

14 A110. There may be fluctuations in the precise ratio of installation and engineering labor costs
15 and material costs on a year-to-year basis, reflecting factors such the particular mix of
16 facilities that are installed in each year. As I previously discussed, by covering three
17 recent years, the data includes a sufficient sample of all sizes of projects to ensure that the
18 resulting installation factors accurately represent the normal forward-looking relationship
19 between equipment costs and engineering and installation labor costs.

1 **Q111. MESSRS. PITKIN AND TURNER (PITKIN/TURNER PP. 56-57) CRITICIZE**
2 **SBC MICHIGAN’S USE OF INSTALLATION FACTORS FOR ESTIMATING**
3 **INSTALLATION COSTS ASSOCIATED WITH CABLING AND EQUIPMENT.**
4 **PLEASE EXPLAIN WHY LOOPCAT INCORPORATES INSTALLATION**
5 **FACTORS IN THIS MANNER.**

6 A111. Installation factors allow for a more accurate and comprehensive accounting of
7 installation costs for outside plant than do the bottoms-up cost estimates recommended by
8 the CLECs. SBC Michigan’s cost studies use installation factors to develop the
9 installation costs for major material. The use of such factors is reasonable and has been
10 applied in the development of network costs for many years. Contrary to the claims of
11 Messrs. Pitkin and Turner, the installation factors employed by SBC Michigan’s UNE
12 cost studies are not based upon SBC Michigan’s embedded costs; rather, the installation
13 factors are based on very recent data that give an accurate reflection of the relationship
14 between major material investment and the costs to install the major material. Finally,
15 these factors represent a mix of projects from very small to very large in scope, and thus
16 are reasonably representative of forward-looking construction activities.

1 **Q112. IN PLACE OF INSTALLATION FACTORS, MESSRS. PITKIN AND TURNER**
2 **PROPOSE TO CALCULATE A “BOTTOMS-UP” ESTIMATE OF CABLE**
3 **INSTALLATION COSTS BY USING SBC’S JOB ADMINISTRATION**
4 **MANAGEMENT (“JAM”) TOOL. IS THIS APPROPRIATE?**

5 A112. No. As Ms. De Baene explains in her rebuttal testimony, JAM is not a system that
6 attempts to capture all costs; it is an engineering estimator’s tool. The JAM estimating
7 tool serves its purpose of providing feedback to the engineers on the relative impact of
8 various choices. It provides labor force information, helping those who have to create
9 workforce schedules make their plans. It was never intended to capture the total costs for
10 outside plant placement, which is what matters under TELRIC.

11 Moreover, even if JAM were an appropriate tool for developing TELRIC costs (and it is
12 not), Messrs. Pitkin and Turner’s work papers reveal that they did not really use JAM
13 properly. Rather, they hand picked various factors from JAM to create the story they
14 wanted to create. To the extent Pitkin and Turner relied on JAM data, they misused and
15 misinterpreted it. In particular, as Ms. De Baene demonstrates in her rebuttal testimony,
16 Messrs. Pitkin and Turner did not properly apply JAM because they did not take into
17 account all of the steps that must be taken in order to install cable facilities. As a result,
18 their so-called “bottoms-up” calculation does not accurately reflect all of the hours of
19 engineering and labor time needed to complete any cable installation project.

20 Finally, as Ms. De Baene also discusses, there are a myriad of costs that are incurred on
21 real-world cable installation projects that cannot be fully and accurately predicted and
22 estimated at the time that the job is planned. JAM makes no attempt to estimate those

1 costs. As a result, using JAM to develop a “bottoms-up” estimate, even if one did not
2 hand pick the factors to be used, is simply not a proper method for calculating the total
3 installed cost of facilities for purposes of developing TELRIC loop cost estimates. The
4 reasonable approach is to calculate a loading factor taking into account all of the costs
5 actually incurred to engineer and install labor facilities and which are audited and booked
6 to the Company’s general ledger.

7 **Q113. CAN YOU FURTHER DESCRIBE JAM’S SHORTCOMINGS WHEN IT COMES**
8 **TO DETERMINING THE COSTS OF PLANT PLACEMENT?**

9 A113. There are two main types of cost estimation errors generated within the JAM estimation
10 tool:

11 JAM time estimate errors – While SBC tries to maintain correct time estimates for every
12 function, there are errors. These can be either job-specific estimation errors, which are
13 errors that occur on any given job estimate, or these can be engineering estimation errors,
14 which are errors that occur when the engineer simply makes a mistake.

15 Unforeseeable Issues – These errors occur when, despite SBC’s best efforts to perform a
16 correct estimate, events outside of SBC’s control have an impact on the level of effort
17 required to perform the task. Examples of such costs are discussed by Ms. De Baene.

18 **Q114. WHY DO YOU SAY THAT MESSRS. PITKIN AND TURNER DID NOT USE**
19 **JAM PROPERLY?**

20 A114. Messrs. Pitkin and Turner claim to have relied on JAM for inputs to their revised cost
21 estimates (such as man-hours to perform a splice), but a review of their work papers
22 shows that they did not really use JAM inputs at all. I believe that if one represents that
23 he has used an estimating tool like JAM, the necessary implication is that the data were
24 used without significant modifications to the inputs and outputs. Messrs. Pitkin and

1 Turner, however, have altered the output in a way that makes the original outputs all but
2 irrelevant.

3 For example, Messrs. Pitkin and Turner attempt to develop the time required to place and
4 splice an aerial terminal. They show that *** CONFIDENTIAL XXXX *** hours are
5 required to place and splice a 25-pair aerial terminal. The JAM Estimator Report, which
6 they claim to have used for the time estimates, shows *** CONFIDENTIAL XXX ***
7 hours to place and splice an aerial terminal and *** CONFIDENTIAL XX *** hours to
8 test the terminal. After performing such modifications, one could say that JAM wasn't
9 really used at all. Instead, Messrs. Pitkin and Turner created their own stand-alone
10 estimate and simply alleged that it came from JAM inputs. Ms. De Baene discusses other
11 errors in Messrs. Pitkin's and Turner's use of JAM.

12 **Q115. DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING THE TIME**
13 **ESTIMATES PROPOSED BY PITKIN/TURNER?**

14 A115. Yes. Their estimates so severely depart from even the JAM estimates (which already
15 tend to be low) that there is no doubt that the estimates are unrealistically low. For
16 example, they cut the JAM estimate presented above by over two-thirds. Although Mr.
17 Turner has little if any "hands-on" experience in constructing outside plant and Mr. Pitkin
18 appears to have none, these witnesses offer expertise that is supposedly more valid than
19 that of the engineers working in the field. These "experts" present estimates that
20 represent such a radical departure from SBC Michigan's high level JAM estimates of the
21 time required to construct outside plant, that their estimates lack any credibility.

1 **Q116. ARE THERE ANY OTHER PROBLEMS WITH THE WAY IN WHICH MESSRS.**
2 **PITKIN AND TURNER CALCULATED CABLE INSTALLATION COSTS**
3 **USING THEIR “BOTTOMS-UP APPROACH”?**

4 A116. Yes. Messrs. Pitkin and Turner purported to calculate cable installation costs by
5 multiplying their inadequate estimates of the time it takes to perform the activities
6 necessary to install cable equipment by the hourly labor rates developed by AT&T
7 witness Robert Flappan. As discussed by Mr. Barch in his rebuttal testimony, the labor
8 rates proposed by Mr. Flappan do not accurately reflect SBC Michigan’s forward-looking
9 labor costs. For example, as demonstrated by Mr. Barch, Mr. Flappan arbitrarily reduced
10 wage and benefit levels below those that SBC Michigan is actually required to pay its
11 union employees pursuant to collective bargaining agreements.

12 **Q117. HOW DO MESSRS. PITKIN AND TURNER’S INSTALLATION COST**
13 **ESTIMATES COMPARE WITH THE COSTS ACTUALLY INCURRED ON**
14 **ACTUAL JOBS?**

15 A117. The installation cost estimates offered by Messrs. Pitkin and Turner are ridiculously low
16 and do not allow SBC Michigan to recover its forward-looking costs. SBC Michigan’s
17 cable installation factors reflect the relationship between the material and installation
18 costs that SBC Michigan has and will continue to experience in the actual construction of
19 its network. Messrs. Pitkin and Turner’s numbers are based on voodoo costing.

1 **Q118. HAS ANY STATE COMMISSION COMMENTED ON THE “BOTTOMS-UP”**
2 **METHOD OF CALCULATING INSTALLATION COSTS PROPOSED BY AT&T**
3 **IN THIS CASE?**

4 A118. Yes. As I previously indicated, in the recently completed UNE cost docket for SBC
5 Indiana, the Indiana Commission specifically analyzed AT&T’s proposed methods for
6 calculating installation costs, and found that AT&T’s bottoms-up method for calculating
7 installation costs understates the true costs involved with outside plant construction.

8 “The Commission finds that AT&T’s proposed bottom-up approach to
9 developing loop costs is unworkable because, among other things, it does
10 not account for all of the different variables that can occur at each job, and
11 thus it would understate SBC Indiana’s actual costs.”⁵⁰

12 The Indiana Commission also determined that AT&T’s reliance on JAM has
13 shortcomings when pressed into service for the task of developing TELRIC-based costs.

14 “Moreover, AT&T’s bottom-up approach depends on using data from the
15 JAMS database to develop proposed costs. The evidence shows that
16 JAMS is not appropriate for use in developing SBC Indiana’s total costs,
17 because it is not designed to, and does not reflect the actual total costs of a
18 project.”⁵¹

19 Here, AT&T has tried to use the JAM tool in a manner for which it was never intended
20 and then substituted numbers that have no basis when the already low numbers derived
21 from JAM did not achieve its objective.

⁵⁰ Indiana Utility Regulatory Commission, Cause No. 42393, In the Matter of the Commission Investigation and Generic Proceeding of Rates and Unbundled Network Elements and Collocation, Approved Jan 05, 2004, p. 44.

⁵¹ Indiana Utility Regulatory Commission, Cause No. 42393, In the Matter of the Commission Investigation and Generic Proceeding of Rates and Unbundled Network Elements and Collocation, Approved Jan 05, 2004, p. 44.

1 **Q119. DO THE AT&T WITNESSES MAKE ANY CRITICISMS OF THE**
2 **INSTALLATION FACTOR APPROACH TAKEN BY THE COMPANY THAT**
3 **ARE SPECIFIC TO THE DLC EQUIPMENT?**

4 A119. Yes. Messrs. Pitkin and Turner criticize the Company's use of the PICS/DCPR database
5 to calculate DLC installation factors on the grounds that it is a "black box"⁵² containing
6 data that "cannot be verified." They also claim that PICS/DCPR database causes a
7 double count of removal and minor material costs.⁵³

8 **Q120. DO YOU AGREE WITH THE CRITICISM THAT THE PICS/DCPR DATABASE**
9 **IS A "BLACK BOX" ?**

10 A120. Not entirely. I do not agree that it is a fair characterization to call SBC's PICS/DCPR-
11 based factors are a "black box." In fact, SBC Michigan provided the supporting data for
12 its factors and also responded to extensive discovery related to the PICS/DCPR database.
13 However, SBC has decided that the general ledger-based factors are better for estimating
14 costs, and I agree. The general ledger data used contains more detailed information than
15 did the PICS/DCPR data and is based only on 257C (rather than x57C), making the
16 general ledger-based factors both more auditable and more precise. The general ledger
17 was also the source of the data used to calculate the Company's cable installation factors.

⁵² Initial Testimony of Brian F. Pitkin and Steven E. Turner, pp.75-80.

⁵³ *Ibid*, pp. 100 & 107.

1 **Q121. MESSRS. PITKIN/TURNER ADVOCATE USING *** CONFIDENTIAL XXX*****
2 **AS THE TOTAL INSTALLATION COST FOR A DIGITAL LOOP CARRIER**
3 **(“DLC”) REMOTE TERMINAL (“RT”).⁵⁴ IS THAT APPROPRIATE?**

4 A121. Absolutely not. The CLECs have taken this number from an initial Project Pronto
5 business case that is nearly five years old and was not based on actual experience. That
6 initial estimate has proven to be grossly inadequate and should not be used by this
7 Commission.

8 **Q122. WHAT ACTIVITIES MUST SBC MICHIGAN ITSELF PERFORM BEFORE**
9 **AND DURING A DLC RT INSTALLATION?**

10 A122. The following activities must take place:

- 11 • The Loop Planner performs a feeder route study and develops design requirements.
12 The Loop Planner also initiates the right-of-way acquisition and obtains all necessary
13 work permits.
- 14 • The Loop Electronic Coordinator (“LEC”) implements the Loop Planner’s request to
15 engineer facilities. The LEC estimates the cost of the detailed equipment
16 requirements and provides this to the Loop Planner; prepares all necessary Telephone
17 Equipment Orders (TEOs); processes all material order requests; and establishes the
18 inventories of the equipment in TIRKS, LFACS, and SOLID.
- 19 • The Design Engineer pre-fields the site to get measurements and validate right-of-
20 way (“ROW”) specifications; provides detailed drawings to the construction
21 contractor to show the RT and the conduit placement; and obtains commercial power
22 for the site.
- 23 • The Construction Facility Workgroup (“FWG”) is responsible for site preparation
24 including easement requirement, municipal permits, and placement of foundations,
25 driveways and landscaping. The FWG coordinates the placement of all cables and
26 conduit and places fiber and copper cables from the remote terminal.

⁵⁴ Pitkin/Turner at p. 77.

- 1 • Network Support Personnel perform additional activities to monitor and manage the
2 installation and order process.

3 Messrs. Pitkin and Turner fail to include, or grossly underestimate, the time and costs for
4 all of these activities in their estimate.

5 **Q123. ARE INSTALLATION COSTS COVERED IN THE ALCATEL PROCUREMENT**
6 **CONTRACT?**

7 A123. No. As discussed by Mr. Donald Palmer in his rebuttal testimony, the Alcatel contract
8 does not include any installation costs. All installation activities are performed by
9 telephone company personnel and outside contractors.

10 **Q124. MESSRS. STARKEY AND BALKE CLAIM THAT IT IS INAPPROPRIATE TO**
11 **APPLY HARDWIRED IN-PLACE FACTORS TO ALCATEL DLC EQUIPMENT**
12 **BECAUSE, ACCORDING TO THEIR TESTIMONY, MUCH OF THE COSTS**
13 **ARE COVERED BY SBC'S CONTRACT WITH ITS DLC VENDOR. DO YOU**
14 **AGREE?**

15 A124. No. Messrs. Starkey and Balke have misread the SBC contract with its vendor and base
16 their recommendations on this misreading. Mr. Donald Palmer explains in his rebuttal
17 testimony what the Alcatel contract includes and does not include. Alcatel DLC
18 equipment is recorded in the accounting system under field reporting code 257C, and
19 SBC Michigan's installation factor is appropriately applied to equipment in that account.

1 **VI. RESPONSE TO SPECIFIC UNE LOOP MODELING ISSUES**

2 **A. INTRODUCTION**

3 **Q125. PLEASE DESCRIBE THE STRUCTURE OF THIS SECTION OF YOUR**
4 **TESTIMONY.**

5 A125. In this section of my rebuttal testimony, I will be responding to a number of specific
6 criticisms levied against the LoopCAT model and its inputs which are not addressed
7 above. Since several witnesses have submitted direct testimony related to various aspects
8 of the cost study, I have organized this section of my testimony to respond to these
9 criticisms by topic.

10 **B. DLC INVESTMENTS**

11 **Q126. MESSRS. PITKIN/TURNER SUGGEST THAT ADDITIONAL DISCOUNTS**
12 **FROM SBC'S DLC CONTRACT SHOULD BE APPLIED IN THE COST STUDY.**
13 **(PITKIN/TURNER PP. 15-16 & 129-133) DO YOU AGREE?**

14 A126. No. As discussed by Mr. Donald Palmer in his Rebuttal Testimony, SBC Michigan has
15 not received the benefit of the discounts discussed by Messrs. Pitkin and Turner, nor any
16 equivalent benefit, that would apply to the DLC equipment that SBC Michigan has
17 modeled in its study.

1 **Q127. SBC'S DLC CONTRACTS ARE ALSO CRITICIZED AS USING PRE-**
2 **FABRICATED SYSTEMS IN ADDITION TO THE FULL INSTALLATION**
3 **COSTS FOR THE ENTIRE CLASS OF OUTSIDE PLANT ELECTRONICS IN**
4 **AN ATTEMPT TO OVERSTATE INSTALLATION COSTS. (PITKIN/TURNER**
5 **P. 29) HOW DO YOU RESPOND?**

6 A127. The loop electronics installation factors were developed based on actual costs for the
7 design, procurement, set-up, and turn-up of the very same types of loop electronics
8 equipment that are included in the study. Therefore, there is no discrepancy between the
9 development of the factor and its application within the cost study.

10 **Q128. IN THEIR TESTIMONY, MESSRS. PITKIN AND TURNER ADDRESS AN**
11 **ISSUE REGARDING UNIVERSAL DIGITAL LOOP CARRIER ("UDLC") AND**
12 **INTEGRATED DIGITAL LOOP CARRIER ("IDLC"). PLEASE DESCRIBE**
13 **THE DIFFERENCE BETWEEN ULDC AND IDLC.**

14 A128. UDLC refers to a DLC system that is configured in a way that individual circuits that are
15 multiplexed onto a fiber facility for transport over the DLC system are demultiplexed
16 back down to the individual circuits in the central office. From there, those circuits can
17 be routed to the necessary equipment within the central office. IDLC refers to a DLC
18 configuration where the DLC system does not demultiplex the circuits back down to an
19 individual level. Instead, the system leaves groups of circuits together at the DS1 level
20 and those DS1 circuits are routed directly to the central office switch.

1 **Q129. MESSRS. PITKIN AND TURNER ASSERT THAT THE LOOP COST STUDY**
2 **SHOULD ASSUME THAT 100% OF DLC IS IDLC AND 0% UDLC.**
3 **(PITKIN/TURNER PP. 137 -145) DO YOU AGREE?**

4 A129. No. In making this assertion, Messrs. Pitkin and Turner assume that every loop that rides
5 on a DLC platform can and should be integrated. That is not true. First, any UNE loop
6 that is handed-off to the CLEC (i.e., every non-UNE-P loop) in a DS-0 format cannot be
7 integrated, thereby necessitating the deployment of substantial amounts of UDLC in any
8 forward-looking model. Furthermore, UDLC capability is required for all non-switch
9 special circuits riding on a DLC system.

10 Another consideration is that the switch has to be capable of handling the IDLC signal.
11 IDLC-capable switches cost more, and are not deployed ubiquitously, unless there is cost
12 justification. Ms. Dorothy De Baene discusses this issue in more detail in her rebuttal
13 testimony.

14 **Q130. WHAT IS THE PROPER ASSUMPTION REGARDING THE MIX OF IDLC AND**
15 **UDLC?**

16 A130. The loop cost study that SBC Michigan has presented assumes a mix of approximately
17 85% UDLC and 15% IDLC. This weighting was developed by looking at the percentage
18 of IDLC systems in the network and multiplying that percentage by the percentage of
19 UNE-P loops. This is appropriate because it accounts for the number of possible UNE
20 loops that can be served on an IDLC platform.

1 **Q131. MESSRS. PITKIN AND TURNER (PITKIN/TURNER PP. 139-141) CLAIM**
2 **THAT THE SBC MICHIGAN COST STUDY DOES NOT CONSIDER THE**
3 **PROPER NUMBER OF REMOTE TERMINALS SERVED BY A COT. DO YOU**
4 **AGREE?**

5 A131. No. SBC Michigan's cost study assumes that two RTs are served by each COT. This is a
6 reasonable estimate of the average number of RTs that will likely be served from a COT.

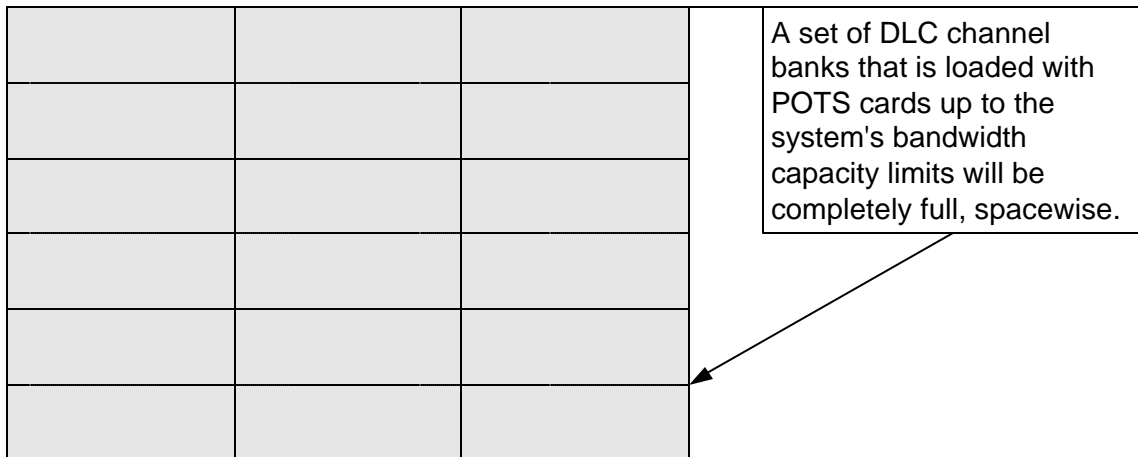
7 **Q132. PLEASE EXPLAIN.**


8 A132. There are only two optical ports on the COT, generally called the East optics and the
9 West optics, so there can be at most two RTs that directly connect to the COT, and the
10 others must "daisy-chain" off of those two. That sets up the requirement that the
11 subordinate carrier serving areas need to be served across a common fiber cable route, so
12 that the second RT's traffic can flow through the first. In order for that to be practical,
13 there needs to exist sufficient demand to warrant two RTs located at some distance from
14 the central office along the same route. In some towns, there may only enough demand
15 to justify one RT

16 Also, as discussed earlier, there is a limited amount of bandwidth available on a COT.
17 The presence of substantial numbers of special access loops and unbundled loops in an
18 area can lower the overall number of customers that can be served by the COT in such a
19 way that higher numbers of RTs cannot be served by the single COT.

1 **Q133. MESSRS. PITKIN AND TURNER ALLEGE THAT SBC MICHIGAN'S UNE**
2 **LOOP COST DEVELOPMENT INAPPROPRIATELY ALLOCATES THE**
3 **SHARED DLC COMPONENTS ON A DS0 EQUIVALENT BASIS.**
4 **(PITKIN/TURNER PP. 147-148) HOW DO YOU RESPOND?**

5 A133. Messrs. Pitkin and Turner's argument lacks merit. Messrs. Pitkin and Turner have
6 provided an incomplete analysis to determine the amount of space that a DS-1 card
7 consumes. A DS-1 card consumes one slot, the same as a POTS card. However, when a
8 DS-1 card is inserted into the system, it consumes 24 DS-0s worth of system bandwidth.
9 The single DS-1 card has consumed the bandwidth that could have been used by six
10 POTS cards which support 24 POTS lines. It has *effectively* consumed 24 POTS lines
11 worth of DLC space, since, by using the DS-1 card, SBC is precluded from supporting 24
12 POTS customers. This concept is illustrated in the figures below.



			<p>A set of DLC channel banks that is loaded with DS1 cards up to the system's bandwidth capacity limits will have a large amount of unusable space, since there is no more bandwidth available for cards that may be plugged into those slots.</p> 

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As illustrated in the figures, due to bandwidth consumption, SBC Michigan foregoes the ability to use a substantial amount of DLC space when a DS-1 card is installed. This indicates that bandwidth is the limiting factor that should be allocated as the cost causative factor, not actual physical space. Messrs. Pitkin's and Turner's contention that SBC Michigan's cost allocation for DS-1 cards should be adjusted from 24 to 4 should be rejected.

8

C. DLC REMOTE TERMINAL INVESTMENT ALLOCATION

9

Q134. MESSRS. PITKIN AND TURNER (PITKIN/TURNER PP. 135-137), ARGUE

10

THAT 25% OF THE RT CABINET INVESTMENT SHOULD BE REMOVED

11

FROM LOOPCAT IS THIS AN ECONOMICALLY CORRECT

12

MODIFICATION TO LOOPCAT?

13

A134. No. The argument is based on the fact that DLC systems used for both voice and DSL

14

share certain facilities. However, SBC Michigan's DLC systems modeled in LoopCAT

15

are not configured to provide both voice and DSL. Rather, the DLC systems only contain

16

the equipment necessary to provision voice circuits. Therefore, the DLC systems in

1 LoopCAT are configured for voice services only and, as such, appropriately assign 100%
2 of the investment in the RT to the UNE loops that the RT is configured to provide.
3 Simply deleting 25% of the investment that is required to provide voice services is
4 unacceptable.

5 **Q135. IS THERE ANOTHER ECONOMIC PROBLEM WITH MESSRS. PITKIN AND**
6 **TURNER’S SUGGESTION TO REDUCE THE RT INVESTMENT BY 25%?**

7 A135. Yes. First of all, to apportion any investment in the RT to data, the RT would have to be
8 configured to provide both voice and data services. Therefore, the additional investment
9 required to support DSL would have to be added to the loop costs, including DSL capable
10 common cards and DSL capable line cards. Second, the fact is that the DSL functionality
11 that is added to an RT system is incremental to the investment required to provide voice
12 services. Therefore, an economic solution would be to assign the incremental investment
13 required for DSL to the data component of a Voice/Data equipped RT and to assign the
14 remainder to voice. The end result of that calculation would be to assign the same
15 investment to the voice compatible circuits as is contained in LoopCat. However, I want
16 to reiterate that the DLC investments contained in LoopCAT are configured for narrow
17 band services only. Any allocation of that investment to broadband services would be
18 entirely inappropriate.

19

1 **D. DISTRIBUTION TERMINAL AND PREMISES TERMINATION**
2 **COSTS**

3 **Q136. MESSRS. PITKIN AND TURNER CLAIM THAT SBC MICHIGAN**
4 **INAPPROPRIATELY ASSUMED THE SAME MIX OF RESIDENTIAL AND**
5 **BUSINESS CUSTOMERS FOR PREMISES TERMINATION EQUIPMENT FOR**
6 **LOOPS (E.G., 4-WIRE ANALOG) THAT WOULD MORE TYPICALLY BE**
7 **TERMINATED AT A BUSINESS LOCATION. (PITKIN/TURNER PP. 123-126)**
8 **DO YOU AGREE?**

9 A136. Yes. This is another area, as I identified above in my discussions of cost study revisions,
10 in which SBC Michigan has modified its modeling. SBC Michigan has changed its
11 premises termination modeling to reflect the appropriate weighting for business premises
12 termination given the particular loop type.

13 **Q137. WITH RESPECT TO THE MIX OF AERIAL AND BURIED PREMISES**
14 **TERMINATION, MESSRS. PITKIN AND TURNER CONTEND THAT SBC**
15 **MICHIGAN SHOULD USE THE SAME PERCENTAGE WEIGHTING FOR**
16 **PREMISES TERMINATION AS IS FOUND IN THE DISTRIBUTION CABLE.**
17 **(PITKIN/TURNER PP. 124-126) IS THIS AN APPROPRIATE MODIFICATION**
18 **TO LOOPCAT?**

19 A137. No. SBC Michigan's used an appropriate forward-looking estimate of ***
20 **CONFIDENTIAL XXXX** *** percent buried premises terminations and ***
21 **CONFIDENTIAL XXXX** *** percent aerial terminations. This is appropriate for a
22 forward-looking network design. Furthermore, Messrs. Pitkin and Turner fail to

1 recognize that the distribution cable weightings are based on pair-feet in service, not pairs
2 in service. For example, a distribution pair that is 10,000 feet long may contain both
3 aerial and buried plant, with the aerial plant running 8,000 feet from the FDI, along a
4 right-of-way up to the subdivision, and 2,000 feet of buried plant running into the
5 subdivision. In this case, the weighting would be 80% aerial and 20% buried. However,
6 all of the customers would be served using buried drop wires because the distribution
7 plant that runs into the subdivision is buried. Again, Messrs. Pitkin and Turner do not
8 properly consider this issue. SBC Michigan's mix of aerial and buried plant is
9 appropriate and should be adopted.

10
11 **E. CONSIDERATION OF MULTIPLE DWELLING UNITS**

12
13 **Q138. MESSRS. PITKIN AND TURNER ASSERT THAT IT WOULD BE**
14 **APPROPRIATE TO INCLUDE MULTIPLE DWELLING UNITS**
15 **(PITKIN/TURNER PP. 112-118) IN LOOPCAT. DO YOU AGREE THAT**
16 **LOOPCAT SHOULD ACCOUNT FOR MDUS IN MODELING UNE LOOP**
17 **COSTS?**

18 A138. Yes. SBC Michigan agrees that MDUs are a factor that affects the deployment of
19 premises termination equipment in Michigan. In its original cost study, SBC Michigan
20 assumed that each residential customer would have a separate NID when modeling
21 residential premises termination equipment. SBC Michigan is not opposed to modifying
22 this assumption. Further, SBC Michigan would agree that using statewide Michigan data

1 from U.S. Census data is a reasonable way of estimating MDUs. However, SBC does not
2 agree with a more granular use of census data, as the U.S. Census designation of “Urban”
3 includes areas designated as suburban and rural in the UNE tariff.
4

5 **F. FDI COSTS**

6 **Q139. MESSRS. PITKIN AND TURNER’S COMMENT ON THE DEVELOPMENT OF**
7 **FDI COSTS IN LOOPCAT. HAVE YOU REVIEWED THEIR COMMENTS IN**
8 **THIS REGARD?**

9 A139. Yes, I have. First, Messrs. Pitkin and Turner claim that LoopCAT inappropriately
10 includes FDI connections for each loop.⁵⁵ Second, they claim that the number of FDI
11 connections for each loop is too high.⁵⁶

12 **Q140. WHY IS IT APPROPRIATE FOR LOOPCAT TO ASSUME THAT FDI**
13 **CONNECTIONS EXIST ON EVERY LOOP?**

14 A140. That assumption is used in LoopCAT because forward-looking network design practices
15 call for the global use of interfaced plant (i.e., plant with an interface between the feeder
16 and distribution cabling). SBC Michigan recognizes that there may be exceptions where
17 large office buildings are fed directly by feeder cable. However, SBC Michigan does not
18 have a way to quantify these exceptions to the forward-looking deployment guidelines.
19 In any case, Messrs. Pitkin and Turner’s estimation of 25% direct-fed loops on a

⁵⁵ Initial Testimony of Brian F. Pitkin and Steven E. Turner, p. 111.

⁵⁶ *Ibid*, pp. 126-129.

1 statewide basis is an inflated estimate of the percentage of loops that would not be
2 interfaced in the forward-looking network.⁵⁷

3 **Q141. WHAT DO MESSRS. PITKIN AND TURNER SAY ABOUT THE NUMBER OF**
4 **FDI TERMINATIONS (PITKIN/TURNER PP. 127-128)?**

5 A141. Messrs. Pitkin and Turner argue that the three FDI terminations assigned to each working
6 loop in the LoopCAT model are too high. They assert that the correct number is of
7 terminations per working loop is 2.0667.

8 **Q142. DO YOU AGREE WITH MESSRS. PITKIN AND TURNER'S ASSERTION**
9 **THAT SBC MICHIGAN'S THREE FDI TERMINATIONS PER WORKING**
10 **LOOP IS TOO HIGH?**

11 A142. No. SBC Michigan's cost study appropriately includes three FDI pair terminations per
12 loop. This is a standard engineering practice based on the physical construction of the
13 FDI. The concept behind the three-panel FDI is that it allows a single pair within the
14 feeder cable to supply service to any one of many distribution pairs in the distribution
15 cables. This gives the feeder cable the most flexibility. All that is required to move
16 service from one customer to another is a cross-connect change, which is easily
17 accomplished given that the cabinet is designed for this task. The number that
18 Messrs. Pitkin and Turner propose provides little more flexibility than straight-through
19 cabling, which would have 2.0 terminations per working loop.

20

⁵⁷ See Attachment BFP-SET-02.

1 **G. DISTRIBUTION AREA MODELING**

2 **Q143. MESSRS. PITKIN AND TURNER CONTEND THAT LOOPCAT INCLUDES**
3 **TOO MANY DISTRIBUTION AREAS THAT ARE TOO SMALL**
4 **(PITKIN/TURNER PP. 149-151) DOES THEIR CONTENTION HAVE**
5 **VALIDITY?**

6 A143. No, it does not. Messrs. Pitkin and Turner contend that the distribution areas (“DAs”) in
7 Michigan can be instantaneously reconfigured and resized to newer, larger sized
8 distribution areas. They quote the Company’s Loop Deployment Policies and
9 Guidelines, which instruct the design engineer to expand the size of the DA under design
10 if possible. Then they proceed to make wholesale changes to the quantities of equipment
11 that is used to provide service to the distribution areas, such as the FDIs and cables. The
12 fact is that, if the design engineer followed the guidelines as directed, he (or she) has
13 already expanded the size of the distribution area to an efficient size, considering the
14 trade-offs involved. It is not clear how Messrs. Pitkin and Turner can make a grand
15 redesign of all of the SBC Michigan distribution areas in Michigan from afar, without
16 any formal analyses of the DAs, and have valid results.

17 **Q144. CAN YOU PROVIDE EXAMPLES OF HOW THEIR BLANKET REDESIGN**
18 **WOULD BE INVALID?**

19 A144. Yes. Take, for instance, those DAs that are spread throughout the state and that have
20 natural boundaries such as rivers, highways, or large farm fields that prevent the easy
21 rerouting of distribution cable. Messrs. Pitkin and Turner have not considered that such
22 real-life restrictions on DA size exist, and they have summarily resized even those DAs

1 in their modeling, with their assertion that “all” the DAs are inefficiently sized. Network
2 design engineers who are intimately involved with the cities, the neighborhoods, and the
3 customer base have analyzed alternatives where they exist. The engineers have already
4 taken into account where natural boundaries exist and where it is feasible to expand
5 distribution areas (per the guidelines as quoted by Messrs. Pitkin and Turner), and have
6 chosen the efficient size of distribution area and the equipment that provides service to
7 the area. Messrs. Pitkin and Turner have not uncovered some massive flaw in the design
8 of SBC Michigan’s network, nor have they performed a true review of the network’s
9 design. They have not provided any evidence that they have visited several distribution
10 areas, reviewed maps, and can now present better DA designs. Their concept of a
11 wholesale redesign of all of the distribution areas in SBC Michigan’s territory should be
12 rejected outright.

13 **Q145. WHAT ARE THE TRADE-OFFS THAT ENGINEERS MUST CONSIDER WHEN**
14 **DESIGNING A DISTRIBUTION AREA?**

15 A145. At the top of the list are the trade-offs between feeder and distribution. As the DA moves
16 farther away from each DA, more and more cable is now considered to be distribution
17 cable. Distribution cable is more expensive, and less flexible, so this would serve to raise
18 costs on initial installation and in operation hereafter. It does not make sense to replace
19 flexible, economical feeder stub cable with distribution cable.

1 **Q146. ARE THERE MAJOR FLAWS IN THE WAY THAT PITKIN AND TURNER**
 2 **HAVE IMPLEMENTED THEIR REDESIGN?**

3 A146. Yes, there are substantial errors that render their arguments, regarding the re-sizing of
 4 outside plant, invalid. In particular, they have upsized every piece of equipment in the
 5 outside plant without considering the effects that such upsizing would have on the fill
 6 factors for the equipment. This is illustrated by the table below, which deals with FDI
 7 quantities in SBC Michigan’s outside plant.

8 ***** CONFIDENTIAL**

XXXX		XXXXX		XXXX		XXXXX	
XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
XXX	XXX	XXX	XXX	XXX	X	X	X
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

9 *******

10 With their adjustments, Messrs. Pitkin and Turner have taken, for instance, the *******
 11 **CONFIDENTIAL XXX ***** 600 pair-sized FDIs in Zone 2 and converted them all to
 12 900 pair sized FDIs. They have effectively added ***** CONFIDENTIAL XXXXXX**
 13 **XXXXX ***** FDI terminations into Zone 2, but in their study, they show no increase in
 14 demand. Therefore, the fill factors should be decreased accordingly. Instead,
 15 Messrs. Pitkin and Turner have argued for *higher* fill factors. They have made similar
 16 adjustments to the outside plant cable inventory as contained in the cost study. This
 17 inconsistency is irreconcilable, and indicative of the way Messrs. Pitkin and Turner have

1 made broad changes to the underpinnings of SBC Michigan's cost studies with the only
2 goal being to lower the results.

3 If this arbitrary upward adjustment of both FDI and cable sizing was accepted, fill factors
4 for this equipment would necessarily have to be adjusted downward from the levels
5 currently in the SBC's studies.

6 **Q147. IS LOOPCAT ABLE TO REFLECT CARRIER SERVING AREA ("CSA") AND**
7 **DISTRIBUTION AREA ("DA") DESIGN PRINCIPLES IN ITS COST**
8 **DEVELOPMENT? (STARKEY/BALKE PP. 211-213)**

9 A147. Yes, LoopCAT reflects the CSA and DA design principles since it relies on SBC
10 Michigan's actual network data, and that network has been engineered on these principles
11 for at least two decades and will continue to be in the future.

12 **H. LOOP LENGTH, CABLE GAUGE AND CABLE SIZE MODELING**

13 **Q148. MESSRS. PITKIN/TURNER (PITKIN/TURNER PP. 121-122) CRITICIZE THE**
14 **LOOPCAT PREPROCESSOR BECAUSE A SMALL NUMBER OF LOOPS**
15 **HAVE GREATER THAN 18,000 FEET OF DISTRIBUTION CABLE. HOW DO**
16 **YOU RESPOND?**

17 A148. This is simply a red herring. The quantity of loops identified by Messrs. Pitkin and
18 Turner represents a small percentage of the loops used in LoopCAT. Further, the fact
19 that a very small percentage of loops falls outside of engineering guidelines is not
20 surprising. SBC Michigan must deal with real-world conditions, not the hypothetical
21 world which the CLEC community contends could exist. There will be, even in a

1 forward-looking world, certain customers that live in such remote, outlying areas that
2 their distribution lengths will be longer than ideal (i.e., longer than 18,000 feet), and
3 range extending equipment is necessary for telephone service. Therefore, I do not find it
4 inappropriate to account for those loops in a forward-looking cost study. In its study,
5 SBC Michigan chose to ignore the fact that such outlying customers will need *additional*
6 equipment above the standard fare, the use of load coils and extended range line cards in
7 the DLC being the most economical choice. This choice to ignore these added costs was
8 made in part in recognition of the fact that load coils are not considered “forward-
9 looking” by some parties and would be controversial. Had SBC Michigan included these
10 items, it would have had the effect of slightly raising the costs for those particular loops,
11 and would have an (almost negligible) upward effect (of about a penny) on the final UNE
12 rates. To the extent that there are a small number of relatively expensive loops that have
13 longer than 18,000-foot distribution lengths, it is wholly inappropriate to simply
14 eliminate those loops from the cost study, as Messrs. Pitkin and Turner have done.⁵⁸
15 SBC instead proposes to include range extender cards for those customers.

16 **Q149. MESSRS. PITKIN AND TURNER CLAIM THAT LOOPCAT DOES NOT**
17 **REALLY USE ACTUAL LOOP LENGTHS. IS THIS TRUE?**

18 A149. No. Messrs. Pitkin and Turner are, perhaps, confusing the loop data processing
19 performed here with processes SBC has used in some other states. In their testimony,
20 they describe the process this way: “Instead, LoopCAT computes loop length by using
21 (1) actual *feeder* lengths in the embedded base, as indicated in SBC’s ARES outside plant

⁵⁸ See Testimony of Brian F. Pitkin and Steven E. Turner, ICC Docket No. 02-0864, p. 108.

1 planning systems, and (2) the “maximum distribution length” for the distribution portion
2 of the loop. However, the loop information extract from ARES cuts the maximum
3 distribution length in half.”⁵⁹ This process *has* been used in other states, where another
4 loop length data source (LEIS) has been used, but the loop length information out of
5 ARES represents both the actual feeder length and actual distribution length, and the
6 distribution lengths have not been cut in half.

7 **Q150. MESSRS. PITKIN AND TURNER CRITICIZE SBC MICHIGAN’S APPROACH**
8 **OF ALLOCATING ITS COPPER CABLE INVENTORY BETWEEN FEEDER**
9 **AND DISTRIBUTION PLANT. DO YOU HAVE ANY COMMENT?**

10 A150. No. SBC Michigan is able to separate its cable inventory by UNE zone, so the mix of
11 cabling is zone-specific. However, SBC Michigan does not have data required to
12 separate that inventory between feeder and distribution plant. In order to separate the
13 cable into feeder and distribution, SBC’s network subject matter experts provided
14 allocation percentages based on cable size. Despite the fact that Messrs. Pitkin and
15 Turner criticize this approach, their solution is to perform the same allocation, only with
16 different percentages. In other words, Messrs. Pitkin and Turner are saying that the
17 Commission should not rely on the input of SBC Michigan’s SMEs who are intimately
18 familiar with the company’s network, but should rely on AT&T’s *consultants*, one of
19 whom (*i.e.*, Mr. Pitkin, judging by his resume) has minimal, if any, experience with
20 designing a telecommunications network.

⁵⁹ Testimony of Brian F. Pitkin and Steven E. Turner, ICC Docket No. 02-0864, p. 110.

1 **Q151. MESSRS. STARKEY AND BALKE (STARKEY/BALKE P. 34) CLAIM THAT**
2 **LOOPCAT DOES NOT CALCULATE EFFICIENTLY-SIZED CABLES. ARE**
3 **THEY CORRECT?**

4 A151. No. Forward-looking cost modeling should be based, as an initial matter, on network
5 characteristics. The claim that SBC Michigan's cable sizing is not correct, and that
6 LoopCAT is not correct as a result, rests on the notion that the forward-looking network
7 under TELRIC can be built to a perfect size and never need to be augmented as demand
8 changes. This is an unrealistic assumption. The fact is that all telecommunications
9 networks are built over time incrementally as demand for services materializes and/or
10 grows. To assume otherwise would be to artificially underestimate UNE costs.

11 Further, distribution plant is placed to meet ultimate demand. The way in which the
12 feeder and distribution plant "spiders" out into a geographic area around the central office
13 requires that the cable segments get progressively smaller as the loop plant approaches a
14 customer location. The smallest cables in the network are typically the distribution
15 cables that serve a particular street or block on a street. Telcordia's Notes on the
16 Networks (Section 12.1.2, page 12-2) describes distribution plant as follows:

17 The distribution plant consists of small cables/systems that cross-connect the
18 feeder plant to the customer. This plant is designed to meet the greatest expected
19 customer demand in an area for the life of the plant. In the distribution facilities,
20 copper cables of 26, 24, 22 (and rarely 19) gauge predominate. Distribution
21 network design requires more distribution pairs than feeder pairs; distribution
22 networks contain more distribution cables than feeder cables. Most distribution
23 plants include either direct-buried or aerial cable, with the ultimate needs installed
24 initially.

1 SBC Michigan's UNE cost studies mirror this efficient design of distribution plant, which
2 has not changed over time and would not change in a forward-looking network.
3 Messrs. Starkey and Balke have not provided any evidence to the contrary.

4 **I. MISCELLANEOUS**

5 **Q152. MESSRS. PITKIN AND TURNER CLAIM THAT COSTS SHOULD BE**
6 **DEVELOPED AT THE WIRECENTER LEVEL. (PP. 50-51) DO YOU AGREE?**

7 A152. No. As discussed earlier SBC Michigan's cost study appropriately deaverages the inputs
8 for which granularity exists down to the UNE zone level. This is an appropriate level to
9 develop deaveraged costs, and is consistent with the structure of the Michigan UNE
10 tariff. Their contention that they have done a more thorough, granular analysis is invalid.
11 To truly perform an analysis at a more granular level, some portion of the input data
12 should be de-averaged to the more granular level. The CLECs have, in fact, *reduced* the
13 level of granularity in their restatement from the levels that SBC Michigan used, by, for
14 example, assuming the same fill rates for every wirecenter, every zone, statewide.⁶⁰ This
15 renders their claim that they have performed a more accurate, more granular study
16 invalid. What they *have* done is create a substantial amount of extra data, which makes it
17 harder to analyze the data for reasonableness. SBC Michigan's method for de-averaging
18 should not be changed.

⁶⁰ Except for some slight variation in distribution cable fill rates on a per zone basis.

1 **Q153. AT&T HAS CRITICIZED SBC MICHIGAN'S PROPOSED RATES**
2 **DEVELOPED BY LOOPCAT AS BEING TOO HIGH. IN SUPPORT OF THIS**
3 **CLAIM, AT&T HAS SUBMITTED ITS OWN PROPOSED RATES, WHICH**
4 **WERE ALSO DEVELOPED USING THE LOOPCAT MODEL. HAVE YOU**
5 **REVIEWED THEIR STUDY?**

6 A153. Yes, I have. AT&T has proposed an average statewide Loop rate of
7 *****CONFIDENTIAL XXX*****. Such a proposal is preposterously low in hope that
8 this Commission will adopt even lower rates than those currently in place. Moreover,
9 these extraordinarily low rates were developed with an error which tremendously
10 overstated the rate created by their use of LoopCAT.

11 **Q154. WOULD YOU PLEASE EXPLAIN THE NATURE OF THIS ERROR ON**
12 **BEHALF OF AT&T IN THEIR PROPOSED RATES?**

13 A154. AT&T's proposed rates relied on Messrs. Pitkin and Turner's changes to SBC
14 Michigan's LoopCAT model. In their changes, Messrs. Pitkin and Turner changed the
15 annual cost factors for buried copper cable, giving them all a value of
16 *****CONFIDENTIAL XXXXXX.***** The change can be seen in red highlight on the
17 "Yearly_Input" tab of Exhibit A – (JRS – R10). This directly contradicts AT&T's
18 adjusted annual cost factors as presented in the direct testimony of Messrs. Starkey and
19 Fischer at Exhibit MS/WF-8, P.15, line 26.

1 **Q155. WHAT IS THE IMPACT OF THE ERROR IN AT&T'S PROPOSED RATE**
2 **STUDY?**

3 A155. The error actually overstates AT&T's proposed rates by a significant amount. SBC
4 Michigan ran AT&T's model with the correct annual cost factors proposed by Messrs.
5 Starkey and Fischer. The new results were a statewide average rate of
6 *****CONFIDENTIAL XXXXX*****. AT&T has overstated its proposed rates by
7 *****CONFIDENTIAL XXXX *****, or approximately 28.76%. The corrected study is
8 presented in Exhibit A – (JRS - R11).

9 **Q156. AT&T IS ARGUING FOR LOWER LOOP RATES, YET THEY HAVE**
10 **OVERSTATED THEIR PROPOSED RATES. FOR WHAT REASON DO YOU**
11 **THINK THEY WOULD DO THIS?**

12 A156. I believe that the overstatement reveals AT&T's results driven methodologies. The
13 cumulative effect of AT&T's proposed changes creates a UNE Loop Rate that is far
14 below the costs for even the most efficient and technologically advanced forward-looking
15 local exchange carrier. This is readily apparent from the results their model gave when
16 the annual cost inputs, which their own witnesses proposed, are correctly implemented. It
17 appears that AT&T may have simply modified their inputs, inflating the rate estimates
18 produced by their LoopCAT study, in an attempt to produce slightly more "reasonable"
19 rate proposals.

1 **VIII. CONCLUSION**

2 **Q157. PLEASE SUMMARIZE YOUR TESTIMONY.**

3 A157. The majority of the CLECs' criticisms of SBC Michigan's UNE loop studies are
4 unfounded. They waste much effort attacking the LoopCAT model, but LoopCAT is no
5 different than any other TELRIC cost model, except that it is more easily audited. Where
6 the CLECs have found legitimate modeling issues in LoopCAT, SBC Michigan has
7 demonstrated the impact of correcting those modeling issues. The CLECs also expend
8 considerable effort attempting to paint any use of actual data in the cost study as being
9 "embedded" and unsuitable for the development of TELRIC costs, but there is no support
10 for that view. Rather, it is logical to assume that the best predictor of forward-looking
11 costs are inputs such as current material prices, recent installation cost data, and current
12 utilization rates. This is exactly the type of information used in SBC Michigan's cost
13 studies, and it is appropriate for the development of TELRIC rates.

14 SBC Michigan has deployed and operates a local exchange network in Michigan facing
15 budget constraints, competitive pressure, and stockholder and regulatory scrutiny. SBC
16 Michigan's loop cost estimates benefit from this experience and accurately project the
17 forward-looking cost for efficiently placed loop plant. The fact is that SBC Michigan's
18 forward-looking cost estimates for investment in loop facilities are consistent with
19 industry experience. AT&T, by contrast, bases its cost estimate on the opinion of
20 consultants that have essentially never deployed or operated a network.

21 In response to several points, SBC has proposed certain revisions to the loop cost study in
22 this case. These revisions include a change to the fill rate applied to the FDI, the

1 inclusion of additional capacities of digital loop carrier equipment and a recalculation of
2 the remote terminal capacity mix, the inclusion of special consideration for multiple
3 dwelling units, a recalculation of certain installation factors, and a revision in the
4 assumed mix of customers for several loop types.

5 SBC Michigan's UNE loop cost studies, including proposed revisions, are consistent with
6 long-run incremental costing methodologies, and the results represent the forward-
7 looking costs of an efficient carrier. Specifically, SBC Michigan's loop costs are
8 developed based on forward-looking network designs and inputs in compliance with the
9 FCC's TELRIC standard. Establishing appropriate forward-looking costs for UNEs is
10 important to the development of sustainable local competition in Michigan. Setting UNE
11 rates too low will send inappropriate and inefficient pricing signals to the Michigan
12 telecommunications market, and discourage infrastructure investment by all carriers. On
13 the other hand, setting UNE rates too high would discourage competitive entry by CLECs
14 that truly need to employ a UNE-based strategy to get off the ground. SBC Michigan
15 thus recognizes the importance of the Commission's work in this proceeding. SBC
16 Michigan urges the Commission to rely on the very real data and evidence provided by
17 SBC Michigan as opposed to the CLECs' unfounded assertions.

18 **Q158. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

19 A158. Yes.