ORIGINAL

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June 6, 2003

BY HAND DELIVERY
Ms. Blanca Bayó, Director
The Commission Clerk and Administrative Services
Room 110, Easley Building
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, Florida 32399-0850

Re: Docket Nos. 981834-TP and 990321-TP

Dear Ms. Bayó:

Enclosed for filing are an original and fifteen copies of REVISED Rebuttal Testimony of Steven E. Turner (Redacted Version) on behalf of AT&T Communications of the Southern States, LLC ("AT&T).

Also included in this filing is one copy of the REVISED Rebuttal Testimony of Steven E. Turner (Confidential Version). The confidential information in the Revised Testimony is the same as was included in Mr. Turner's original rebuttal testimony filed in this docket on April 18, 2003. AT&T, pursuant to Section 364.183(1), Florida Statutes, hereby claims that highlighted information provided in the REVISED Rebuttal Testimony of Steven E. Turner is confidential and proprietary business information that should be held exempt from public disclosure. Pursuant to Rule 25-22.006(5), Florida Administrative Code, in the attached envelope is one

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OPC
MMS
SEC 1
OTH

copy of the REVISED Rebuttal Testimony of the Steven E. Turner with the confidential information highlighted.

The revisions to Mr. Turner's Rebuttal Testimony are in Section V(A)(3), Fused Amp versus Load or Used Amp. The revisions begin on page 31 of the revised testimony and conclude on page 34 of the revised testimony. To avoid any confusion resulting from any pagination changes, the revised testimony is being refilled in its entirety. For the parties' convenience, the revisions are indicated in the revised testimony by showing additions as underscored and deletions as stricken-through.

The revisions are necessary to clarify the discussion regarding charges for DC power to collocated equipment and to make clear that the appropriate measure for DC power to be used to calculate charges for power to be assessed to CLECs purchasing collocation from BellSouth, Verizon or Sprint is the actual amount of DC power used by the collocated equipment.

Please acknowledge receipt of this letter by stamping the extra copy of this letter "filed" and returning the same to Lisa Sapper in the enclosed stamped envelope. If you have any questions, please do not hesitate to contact me at (850) 425-6360.

Thank you for your assistance with this filing.

Sincerely yours,

Tracy Hatch/las

Tracy W. Hatch

TWH/las
Enclosure
cc: Parties of Record

CERTIFICATE OF SERVICE
DOCKET NOS. 981834 & 990321

I HEREBY CERTIFY that a copy of the foregoing has been furnished via U.S. Mail this 6th day of June, 2003, to the following parties of record:

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AT&T COMMUNICATIONS OF THE SOUTHERN STATES, LLC

REBUTTAL TESTIMONY OF STEVEN E. TURNER (REDACTED)

DOCKETS NOS. 981834-TP/990321-TP

APRIL 18, 2003

I. BACKGROUND AND EDUCATION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven E. Turner. My business address is Kaleo Consulting, 2031 Gold Leaf Parkway, Canton, Georgia 30114.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I head my own telecommunications and financial consulting firm, Kaleo Consulting.

Q. PLEASE DESCRIBE YOUR EDUCATION BACKGROUND.

A. I hold a Bachelor of Science degree in Electrical Engineering from Auburn University in Auburn, Alabama. I also hold a Masters of Business Administration in Finance from Georgia State University in Atlanta, Georgia.

Q. PLEASE DESCRIBE YOUR WORK EXPERIENCE.

A. From 1986 through 1987, I was a Research Engineer for General Electric in its Advanced Technologies Department developing high-speed graphics simulators. In 1987, I joined AT&T and, during my career there, held a variety of engineering, operations, and management positions. These positions covered the switching, transport, and signaling disciplines within AT&T. From 1995 until 1997, I worked in the Local Infrastructure and Access Management organization within AT&T. In this organization, I gained familiarity with many of the regulatory issues surrounding AT&T's local market entry, including issues concerning the unbundling of incumbent local exchange company (incumbent) networks. I was on the AT&T team that negotiated with Southwestern Bell

Telephone Company ("SWBT") concerning unbundled network element definitions and methods of interconnection. A copy of my resume is attached as Exhibit SET-1.

Q. HAVE YOU PREVIOUSLY TESTIFIED OR FILED TESTIMONY BEFORE A PUBLIC UTILITY OR PUBLIC SERVICE COMMISSION?

A. I have testified or filed testimony before commissions in the states of Alabama, Arkansas, California, Colorado, Delaware, Florida, Georgia, Hawaii, Indiana, Illinois, Kansas, Kentucky, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Washington, and Wisconsin. Additionally, I have filed testimony before the Federal Communications Commission ("FCC").

II. PURPOSE AND SUMMARY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony responds to the Direct Testimony of W. Bernard Shell on behalf BellSouth Telecommunications, Inc. ("BellSouth"); the Direct Testimony of Jimmy R. Davis on behalf of Sprint-Florida, Incorporated ("Sprint"); and the Direct Testimony of Barbara K. Ellis, Allen E. Sovereign, and James H. Vander Weide on behalf of Verizon Florida Inc. ("Verizon"). My testimony will address the costs for collocation for all three of these incumbent local exchange carriers in Florida. My testimony will review the concerns that I have with the cost inputs provided by these carriers for collocation elements and provide the Commission with alternative collocation inputs. Moreover, I will present an approach in testimony and through my supporting work papers that will outline how the Commission can readily establish consistent collocation costs that are efficient and forward-looking across all three companies in Florida while reflecting the unique cost aspects of the separate companies to the extent possible. My testimony begins with a

discussion of why this is important and essential in developing collocation costs that are consistent with total element long run incremental cost ("TELRIC") principles.

III. CONSISTENCY ACROSS COLLOCATION COST DEVELOPMENT

Q. WHY DO YOU BELIEVE IT IS IMPORTANT TO ESTABLISH CONSISTENCY BETWEEN THE COLLOCATION COST DEVELOPMENT FOR THESE THREE COMPANIES?

A. ALECs operate in all three of the incumbent territories in Florida. Currently, there is an extremely wide disparity in the rates for collocation found in these three territories and in the application of those rates. The rate elements associated with collocation such as the application process, DC power, interconnection arrangements, cage construction, and space within the central office should not have widely disparate costs in a TELRIC environment. The costs for these components should be very similar in that all three of the incumbents have the ability to purchase the underlying telecommunications assets at similar prices and operate them in a similarly efficient manner on a forward-looking basis. Given that the underlying investments should be similar, developing widely disparate costs and rates for collocation indicates that the results are inaccurate and inconsistent with cost-based TELRIC principles.

Q. WHAT CONTRIBUTES TO THE DEVELOPMENT OF WIDELY DISPARATE RESULTS IN A COST PROCEEDING BETWEEN THE THREE INCUMBENTS?

A. Quite simply, the use of three different collocation cost models makes it almost impossible for the Commission to easily compare inputs and resulting costs between the three models even in situations where the inputs and costs should be virtually identical. Achieving accurate, comparable, and consistent results using three different cost studies is considerably less likely and clearly less efficient than using a single modeling approach. When a single modeling approach is used, the focus can be placed on the accuracy and appropriateness of the inputs to that model rather than on debating whether

the outputs of three different models can even be compared or whether the outputs have achieved equitable cost-based results.

It is my understanding that this Commission has recognized that the current approach of having three different cost models with three different rate structures, inputs, and resulting rates is making it virtually impossible to establish equitable, cost-based rates between the three incumbents. This concern led the Commission to seek comments from parties in Florida regarding the "Commission's Examination of Standardization in UNE Costing." I understand that the Commission has received comments both from ALECs and the incumbents in this proceeding. My testimony will address in more detail why it is important in this present collocation proceeding to utilize a standard collocation model to establish efficient, forward-looking costs and rates for collocation.

A. Efficient Forward-Looking Investments Should Not Vary Widely Between ILECs

Q. DO YOU BELIEVE THERE SHOULD BE WIDE DISPARITY IN THE INVESTMENTS USED BY THE INCUMBENTS IN THE DEVELOPMENT OF COLLOCATION COSTS?

A. No. The investments for telecommunications assets, particularly in a simple technology area such as collocation, should not have much variation at all between incumbents in Florida. As an example, the investment for the DC power plant between the three companies uses the same set of components: batteries, rectifiers, controllers, cable, battery distribution fuse bays, and the like. BellSouth, Sprint, and Verizon all buy essentially the same components with equivalent capabilities and design characteristics to provide for DC power in their central offices. Further, given the scope of these three companies, there should not be widely differing costs for the purchase of these assets between the three companies. As such, the Commission should anticipate that the investment per DC amp between the three companies should be similar, and that the

application of the similar investment in the three different cost models should lead to similar resulting costs. This is not the case currently in the three disparate cost models submitted by BellSouth, Sprint, and Verizon.

The following table compares the starting investments proposed by the three companies as well as the resulting rates per amp proposed.

*****BEGIN CONFIDENTIAL**

	BellSouth	**Sprint**	**Verizon**
Investment per Amp	$429		
Rate per Amp	$10.87	$16.14	$25.45

END CONFIDENTIAL***

This simple chart illustrates at least two significant problems with the use of three models. *First*, the focus needs to be placed on the efficient, forward-looking investment that should be used to develop the cost for DC power. In this regard, BellSouth and Sprint have largely similar investments with Verizon as the obvious outlier. As discussed earlier, there is no basis for Verizon to have such a higher investment per amp than BellSouth and Sprint given that the assets used for DC power are essentially identical and all three incumbents have similar ability to purchase the assets at largely equivalent prices. Please note that I am not recommending the BellSouth and Sprint investments for use in this proceeding. I will propose an alternative investment that is consistent with efficient, forward-looking cost principles later in the testimony. This table is simply to demonstrate the problems of using three different models.

Second, while BellSouth and Sprint have similar investments that differ by only 7.9 percent, the use of the two different cost models has resulted in rates for DC Power that differ by 48.5 percent. It is true that BellSouth and Sprint have different Commission-approved common cost factors and cost of capital inputs, but these

differences simply do not account for the wide disparity in results produced by the two cost models.

Q. HOW WILL USING A SINGLE COST MODEL FACILITATE ESTABLISHING APPROPRIATE FORWARD-LOOKING COSTS IN THE EXAMPLE ABOVE?

A. The Commission will be able to focus on what the appropriate input should be for the investment per DC amp and *know* that once that input has been established that it flows through into results that will be equivalent for the three companies. In other words, the Commission will not be left either guessing at why equivalent input choices lead to such disparate results or alternatively investing large amounts of time evaluating the internal operation of the three cost models to see why the differences are generated. In short, the use of a single cost model will allow the Commission and the parties to focus on the critical input issues which should be largely similar across the three companies.

Q. ONCE THE COMMISSION HAS DETERMINED THE APPROPRIATE FORWARD-LOOKING INVESTMENTS FOR COLLOCATION COMPONENTS, WILL A SINGLE MODEL BE ABLE TO PRODUCE COMPANY-SPECIFIC COSTS?

A. Yes. I will address this question in more detail below. The important point is that the Commission will be able to focus on the critical cost driver – the investments for the various components of collocation – rather than attempting to evaluate the inner-workings of three different cost models. The Commission will also be able to avoid the controversy of how three different cost models may produce results that are not comparable because of rate element definition problems. Further, as will be discussed in more detail below, a single cost model will still permit the application of company-specific factors so that where there are differences between the companies that the Commission has determined to be appropriate, these differences can be equivalently reflected in the results for all three incumbents.

B. Costs Can and Should Reflect the Unique Expense and Common Cost Attributes of the ILECs

Q. HOW CAN A SINGLE COLLOCATION COST MODEL PRODUCE COST RESULTS THAT ARE CONSISTENT WITH THE UNIQUE EXPENSE AND COMMON COST ATTRIBUTES OF THE INCUMBENTS?

A. All cost models have a similar high level structure. *First*, the cost model develops the investment for the particular component including any installation cost and related support investments for building or land depending on the element under study. *Second*, once these investments are developed, cost factors are applied against these investments that allow for the conversion of those investments into recurring costs. In some models, these factors are implemented as a single number that has been developed in an external factor development model. In others, these factors are explicitly identified or calculated internally within the cost model and then applied to the investments also contained within the same model. Nonetheless, in either case, the investments are converted into a recurring cost using the application of factors within the model. *Third*, this recurring cost is then converted into a recurring rate by the application of a common cost factor.

A single collocation cost model can readily be used for all three incumbents in Florida as long as it is readily capable of allowing the three companies to reflect their own unique expense and common cost factors in the model. Effectively, the single cost model would be run three times with the same investment inputs for all three companies, but with the slight variations in cost factors that would lead to the differences in resulting rates.

Q. DOES ANY ONE OF THE THREE COST MODELS FILED IN THIS PROCEEDING PERMIT A MORE EFFICIENT APPLICATION OF COMPANY-SPECIFIC COST INPUT INTO THE MODEL?

A. Yes. The BellSouth Cost Calculator is by far the most flexible of the three cost models in permitting the use of company-specific cost factors. I will discuss this issue in more

detail later, but only the BellSouth Cost Calculator of the three cost models filed in this collocation cost proceeding has the internal calculations to allow for the flexible use of different cost factor inputs. As an example, the BellSouth Cost Calculator has a built in model that allows one to enter different cost of capital inputs such as the cost of equity, cost of debt, capital structure, and the like and then calculate within the model the input on all related cost factors from those inputs. This flexibility is vitally important and only the BellSouth Cost Calculator has this flexibility among the collocation models filed in this proceeding. Moreover, of the three models filed, BellSouth has the most comprehensive set of cost factor inputs of the models allowing for any potential variations that might exist between the companies.

In short, a single cost model must be able to reflect the unique cost factor inputs of the three companies in this proceeding and such a model already exists in this proceeding. As such, no harm would come to any of the three companies involved in using a single cost model with a common set of investment inputs that were deemed to be cost-based in that the unique company-specific cost factors could be applied to those inputs.

C. Rate Element Structures Should Be Consistent between the ILECs

Q. WHY IS IT IMPORTANT TO HAVE SIMILAR RATE ELEMENT STRUCTURES FOR COLLOCATION BETWEEN THE THREE INCUMBENTS IN FLORIDA?

A. *First*, it is essential to have similar rate element definitions so that the Commission can more readily establish collocation costs that are comparable between the three companies. While it is possible to make some comparisons between important elements (such as for DC power) between the three companies resulting rate sheets, it is a painstaking process to make these comparisons on a comprehensive basis. Furthermore, doing so illustrates how incomplete the cost development is particularly for Sprint and Verizon.

Second, cost proceedings are not a once and done event. The Florida Commission has a responsibility to periodically review the costs for interconnection and UNEs to ensure that the costs that are in place are cost-based. Having a single model for collocation will enable the Commission to perform this analysis at less cost to itself. Further, a single model will permit the analysis to be performed by the three incumbents and the ALECs at less cost in that the evaluation of inputs and modifications to three different models will not be required. Only one model will have to be modified and a consistent set of inputs can be readily compared within that one model.

Third, moving to a single rate structure for collocation will simplify the interconnection process for ALECs within the state of Florida. Currently, ALECs have to work with three different rate structures with three different implementations of collocation arrangements. This is not necessary. Collocation is a very straightforward process of establishing space within a central office for collocator equipment and then establishing interconnection facilities and power to that equipment. There is no reason that a single set of terms and conditions for collocation along with a single rate structure for those collocation costs could not be implemented in Florida. Moreover, doing so would again lessen the overall cost of the regulatory process and facilitate the Commission ensuring that ALECs are treated in a nondiscriminatory manner between the three incumbents in Florida.

D. BellSouth Cost Calculator Should Be Used as the Base Cost Model for Collocation Elements

Q. GIVEN THE ABOVE DISCUSSION, WHAT RECOMMENDATION WOULD YOU MAKE TO THIS COMMISSION REGARDING THE COSTING OF COLLOCATION ELEMENTS IN FLORIDA?

A. I believe the most efficient approach would be to identify a single cost model for collocation. A single cost model would allow the Commission to focus on the important

issues of the efficient, forward-looking investment inputs that are consistent with TELTIRC principles that should go into the model for all three incumbents without being concerned with how three different models may convert the single input into widely disparate results. Further, a single cost model would allow the Commission to establish cost-based rates for the three incumbents in Florida that are easily compared and would have more certainty that the resulting costs borne by ALECs for collocation would be consistent between the three Florida incumbents.

Q. WHAT SINGLE MODEL WOULD YOU RECOMMEND TO THE COMMISSION?

A. As noted earlier, the BellSouth Cost Calculator has significant advantages over the Sprint and Verizon cost models with regards to its comprehensive ability to internally calculate and flexibly apply cost factors. As I alluded to above and will discuss in more detail below, the BellSouth Cost Calculator is the only model of the three that easily permits the Commission to change the cost of capital inputs and have these inputs flow through to resulting costs for the three companies.

Another important benefit to the BellSouth Cost Calculator is that it is the only one of the three cost models that develops a comprehensive set of collocation elements for all of the forms of collocation. Sprint has an extremely limited set of cost elements that simply does not begin to address all of the necessary rate elements for collocation. Further, Verizon's while more comprehensive than Sprint's does not include the comprehensive set of collocation rate elements found in the BellSouth Cost Calculator.

Finally, the BellSouth Cost Calculator is flexible allowing the user to easily add new cost elements if necessary and it is auditable in that all of the internal calculations within the model can be exported to EXCEL spreadsheets to demonstrate how the calculations within the model are conducted. In short, the BellSouth Cost Calculator

presents the best alternative for developing collocation costs among the models submitted in this proceeding and the Commission should use this model to establish a comprehensive and consistent set of collocation rates for Florida ALECs.

IV. FACTOR APPLICATION ISSUES

Q. CAN YOU GIVE THE COMMISSION A SENSE OF THE APPROACHES TAKEN BY THE THREE INCUMBENTS WITH REGARDS TO THE COST FACTORS USED IN THIS COLLOCATION PROCEEDING?

A. Yes. BellSouth's cost factor approach is straightforward. Mr. Shell identifies BellSouth's approach in his Direct Testimony on pages 9-10:

> BellSouth used the same cost methodology previously approved by this Commission in its Orders in Docket No. 990649-TP (Order No. PSC-01-1181-FOF-TP, date May 25, 2001 and Order No. PSC-01-2051-FOF-TP, dated October 18, 2001). Additionally, BellSouth has made all applicable ordered adjustments in that docket. For example, BellSouth is using the ordered cost of capital, depreciation rates, and income tax factor.

In general, BellSouth has utilized the same cost factors for collocation that this Commission already approved for unbundled elements generally. This is appropriate in that collocation is simply the vehicle for obtaining access to unbundled elements as well as for interconnecting with BellSouth's network. It is only reasonable that the same cost factors that are used to establish the costs for unbundled elements should be used to establish the costs for collocation as well.

Sprint claims to have taken a similar approach. Specifically, Sprint notes the following::

> Annual charge factors (ACF) were determined based on the capital structure, debt and equity costs and tax rates ordered for Sprint by the Florida Public Service Commission on January 8, 2003 in Docket No. 990649B-TP. The common cost factor applied to collocation rate elements is also consistent with the Commission's order in Docket No. 990649B-TP. (Davis Direct, p. 11)

While, Mr. Davis' testimony on behalf of Sprint makes this representation, it has not been possible for me to confirm whether this is the case. *First*, Sprint makes reference to a model entitled the "Annual Charge Factor Model" where its cost factors are apparently developed. All that is loaded into Sprint's collocation cost study is a single hard-coded number. Given the importance of this model in developing Sprint's proposed costs, this model should have been submitted with its cost filing. Nonetheless, Sprint has left the Commission in the position of simply having to trust that Sprint has used the appropriate approved factors.

Second, as noted earlier with DC Power, Sprint's cost factors on their surface do not appear to be reasonable. I have been able to confirm that BellSouth did in fact use the factors approved by the Commission through comparing the factors to BellSouth UNE compliance filings in Florida so I am confident as a baseline that the BellSouth cost factors accurately reflect the Commission's prior orders. For DC Power, as an example, the factors proposed by Sprint in this proceeding are approximately 37.6 percent higher than the factors used by BellSouth. On its surface, there does not appear to be any reason that the costs within Sprint should be 37.6 percent higher than the costs within BellSouth. Moreover, when the Commission-approved cost of capital inputs are compared, there is virtually no reason to believe there should be such a difference. Specifically, the BellSouth approved cost of capital is 10.24 percent. *See* Florida Public Service Commission, *In re: Investigation Into Pricing of Unbundled Network Elements*, Docket No. 990649-TP, Order No. PSC-01-1181-FOF-TP, Issued: May 25, 2001, p. 188. Sprint, on the other hand, actually has a lower Commission-approved cost of capital at 9.86 percent. *See* Florida Public Service Commission, *In re: Investigation Into Pricing of Unbundled Network Elements (Sprint/Verizon Track)*, Docket No. 990649B-TP, Order

No. PSC-03-0058-FOF-TP, Issued: January 8, 2003, p. 70. The bottom line is that while I cannot confirm whether Sprint has accurately reflected the Commission's ordered cost factors in its collocation cost filing, on their surface the factors appear to be significantly overstated given the similarity in the underlying cost of capital. Certainly the cost of capital is only one of the inputs that help to derive to cost factors for a particular company. However, it is the most influential input on the resulting cost factors and leads me to believe that Sprint's factors do not appear to be reasonable in light of the Commission's apparent attempt to set the cost factors at relatively similar levels.

While BellSouth and Sprint both acknowledge that the use of the existing approved factors are the appropriate route to take for collocation costs (even though I believe Sprint may not have implemented this approach), Verizon has taken a very different tact. Specifically, Mr. Vander Weide has recommended a cost of capital of 18.36 percent. (Direct Testimony of James H. Vander Weide, , p. 62.) By way of comparison, the Florida Commission ordered the use of a 9.63 percent cost of capital for establishing UNE rates. *See* Florida Public Service Commission, *In re: Investigation Into Pricing of Unbundled Network Elements (Sprint/Verizon Track)*, Docket No. 990649B-TP, Order No. PSC-02-1574-FOF-TP, p. 88. In other words, Verizon proposed to almost double the cost of capital in this collocation proceeding above that which was recently ordered by this Commission for use in establishing unbundled element rates. It is simply not reasonable to use a cost of capital proposal that is almost double that which was used by this Commission to set the rates for unbundled elements that the collocation arrangements will provide access to. Moreover, I should point out that if the cost of capital was subject to a fresh look in this proceeding, AT&T would have proposed a cost

of capital in the seven percent range based on recent filings in Texas and California that I have been a part of.

Q. HOW DO YOU PROPOSE TO ADDRESS THE COST FACTOR ISSUES GIVEN THE INCONSISTENCY IN SPRINT'S FACTORS AND THE SIGNIFICANT DIFFERENCE IN VERIZON'S PROPOSED FACTORS?

A. With BellSouth, the factors that have been included in the BellSouth Cost Calculator will not be changed. However, for Sprint and Verizon, I would recommend that the Commission use the cost of capital inputs that it has ordered in Docket No. 990649B-TP, Order No. PSC-03-0058-FOF-TP (Sprint) and Order No. PSC-02-1574-FOF-TP (Verizon). The BellSouth Cost Calculator as documented earlier has a tool included within the model that allows the user to load company-specific cost of capital inputs. In doing this, the BellSouth Cost Calculator then recalculates the appropriate cost factors for each asset class using the revised cost of capital. Separate runs can then be generated for Sprint using the Commission-ordered Sprint cost of capital and for Verizon using the Commission-ordered Verizon cost of capital.

Q. CAN THE SAME APPROACH BE USED TO INCORPORATE THE COMMISSION-ORDERED COMMON COST FACTORS FOR EACH COMPANY?

A. Yes. The BellSouth Cost Calculator provides an input that allows the user to incorporate a company-specific common cost factor. BellSouth, Sprint, and Verizon-specific common cost factors have been used in developing my restated collocation rates for each company.

V. EVALUATION OF COLLOCATION INPUTS

Q. HOW DO YOU INTEND TO PROCEED IN YOUR ANALYSIS OF THE COLLOCATION INPUTS?

A. Given that the BellSouth Cost Calculator is being used as the starting point for the development of collocation rates for all three incumbents, I have focused my critique of

these inputs on those found in BellSouth's cost filing. As such, to the extent that I have left cost inputs unmodified, my implicit recommendation is that the input used by BellSouth is cost-based and should represent the cost or investment input for all three companies. However, for those elements where I have proposed an alternative cost or investment input for BellSouth, my recommendation is that this input should be used again for all three incumbents.

Q. COULD YOU PLEASE PROVIDE AN OVERVIEW OF THE PROBLEMS THAT YOU FOUND WITH BELLSOUTH'S COLLOCATION COST STUDY?

A. Yes. There are 135 rate elements contained in BellSouth's collocation cost study. The areas I address, including the proposed corrections that I document in my testimony affect 58 rate elements. However, while the number of rate elements that need corrections is large, the corrections can be categorized into seven main areas.

First, BellSouth's DC Power rate has significant problems that prevent it from being consistent with TELRIC:

(1) BellSouth acknowledges that its investment per amp for DC power is based upon "augment jobs" for DC power. An "augment job" occurs when BellSouth alters its power provisioning infrastructure to accommodate an incremental demand for power. Augments fail to account for the "total demand" upon which an appropriately constructed TELRIC cost study must be based. Thus, BellSouth's analysis of its investment precludes ALECs from obtaining the same economies of scale that BellSouth has with its use of its DC power plant. Because the DC power unit investment is significantly overstated it must be corrected to a TELRIC level that accounts for total demand.

(2) BellSouth has overstated the AC power component of its DC power rate as compared to an independent source for this cost in Florida. Moreover, BellSouth has not reflected the proper efficiency in its rectifiers in its cost study. The overstatement related to these two problems must be corrected in BellSouth's DC power rate.

(3) BellSouth currently charges for DC power on a *fuse amp* basis. The Commission has recognized in the order establishing this present proceeding that charging for DC power on a *load* or *used* basis may be more appropriate. My testimony will demonstrate that charging for DC power on a fuse amp basis, even if calculated correctly, does not efficiently track the costs associated with the DC power plant. My testimony demonstrates that DC power should have its cost based on the *usage* that is placed on the plant – not the size of the fuse that is placed in a power board or Battery Distribution Fuse Bay ("BDFB"). This is because the fuse has little or no bearing on the cost that BellSouth actually incurs and is entitled to recover.

Second, BellSouth has overstated many collocation nonrecurring rate elements associated with collocation planning, engineering, installation times, and cable records. This is primarily due to BellSouth's failure to account for activities and costs that the ALEC bears when establishing the collocation arrangement. In addition, in several instances the time estimates that BellSouth has offered appear overstated based on my experience or based on comparisons with related tasks in BellSouth's own cost study.

Third, BellSouth's Floor Space cost is not based on TELRIC costs for a central office and the space that is occupied by collocation. BellSouth provides little information

about the method that it used to develop the investment. However, it appears that once again, augments to the central office and not the comprehensive cost to construct a central office are the basis for BellSouth's investment per square foot. As explained earlier, TELRIC requires that the total demand for an element be evaluated in developing the incremental cost for a unit of that demand. In this case, BellSouth has failed to account for the investment associated with the total space within the central office thereby overstating the investment per square foot. Given the inappropriate method BellSouth used in developing its building investment and the general lack of support provided by BellSouth, my testimony provides a TELRIC analysis for building space cost that is based on an independent firm's assessment of the forward-looking cost to construct telecommunications space. In addition, I outline how to take this investment per square foot and appropriately convert it into costs for collocation space. Finally, BellSouth fully recovers the land cost for the space occupied by the collocator in its land and building rate per square foot. However, in several other instances BellSouth attempts to recover additional land investment on a factor basis for: (1) modifications that are made to the space; or for (2) the construction of the cage on the space that is already being recovered by the land and building rate element. My testimony explains why this double-recovery should not be permitted.

Fourth, BellSouth has failed to properly account for the quantity of cables that can be placed in a cable rack in developing the pro-rata cost that the ALEC should bear. I provide details on how to properly calculate these costs and restate BellSouth's cost study to correct these errors.

Fifth, BellSouth has not consistently applied fill factors to equipment in the collocation cost study. These inconsistencies have been identified and corrected.

Sixth, several of the material items contained in BellSouth's cost study for the construction cost of a collocation cage are higher than TELRIC. My restatement relies on external professional cost estimating resources to offer an alternative cost for the items.

Seventh, BellSouth has several rate elements related to Space Preparation that purport to recover costs for retrofitting the central office space to make it capable of providing collocation. There are several problems with the investment BellSouth seeks to recover in these elements. However, the principal problem is that in a TELRIC cost study, the building investment already recovers the forward-looking investment for central office space capable of housing all carriers' telecommunications equipment. BellSouth cannot recover a forward-looking investment for the building and then also recover the cost for modifying that same building to house collocated telecommunications equipment. Doing so results in a double-recovery of cost that is inconsistent with TELRIC principles.

Q. HOW WILL YOU ORGANIZE YOUR TESTIMONY ON COLLOCATION?

A. In general, I will address each of the seven categories identified above and explain why BellSouth's approach or input values are incorrect. I will also recommend an alternative approach or value and support why my analysis is correct. In instances where a problem affects several types of rate elements, I make distinctions between the different rate elements.

A. DC Power

1. Investment per Amp for DC Power

Q. WHAT INVESTMENT PER DC AMP DID BELLSOUTH USE IN ITS PREVIOUS DC POWER COST STUDY SUBMITTED IN FLORIDA?

A. BellSouth used an investment per amp of $165.80 per fuse amp. *See* Florida PSC Docket Nos. 960846-TP, 960757-TP, 971140-TP Cost Study Filing, Output Report for Element H.1.8. *See* attached Exhibit SET-2. As best as I can determine this investment per amp was used to establish BellSouth's collocation power rates.

Q. WHAT INVESTMENT PER DC AMP IS BELLSOUTH PROPOSING IN THE CURRENT PROCEEDING?

A. BellSouth has proposed an investment of $286.00. This amounts to a 72 percent increase over the investment BellSouth used in Docket Numbers 960846-TP, 960757-TP, and 971140-TP. Given the nature of how the current investment was developed, the Commission should reject this increase in investment for the rates BellSouth charges ALECs for DC power.

Q. HOW DID BELLSOUTH DEVELOP THE REVISED INVESTMENT FOR DC POWER?

A. According to BellSouth's Response to AT&T's 3rd Request for Production (POD No. 32), BellSouth developed the investment per amp exclusively on the basis of augments for power for collocators and not based on the total demand for DC power placed on the power plant by all users – including BellSouth.

Q. WHY IS IT WRONG TO USE ONLY AUGMENTS TO DEVELOP THE COST FOR DC POWER?

A. TELRIC principles require that the costs for unbundled elements or interconnection utilize *total demand* (the "T" in TELRIC) to develop cost. This principle applies to DC power as well. BellSouth's cost study relies only on small power augments. Augments mean that BellSouth has added a small incremental amount of DC power capacity to its

existing power plant to support only the demand for power associated with collocators. Augments, by nature, do not provide the scale economies in the derivation of the DC power investment that BellSouth benefits from based on its installation of a comprehensive DC power plant.

This is the same issue that arises when determining rates for unbundled switching. In that instance, the prices for new switches include a discount that is much larger than for "growth" jobs for the switch. It is widely accepted under TELRIC principles that ALECs should not pay the "growth" cost of the switch, but rather should benefit from the purchase of new switches which include the larger discounts the incumbent obtains. *See* FCC *First Report and Order*, August 8, 1996, ¶ 677, where it notes: "The term 'total service,' in the context of TSLRIC, indicates that the relevant increment is the entire quantity of the service that a firm produces, rather than just a marginal increment over and above a given level of production." The concept remains the same in TELRIC. This same TELRIC principle applies to DC power. ALECs should not pay for "growth" or "augment" jobs in central office power facilities. In addition, when all of the equipment associated with an entire DC power plant is installed, there are economies of scale in doing all of this work at one time rather than spreading the work across numerous small jobs. TELRIC requires that BellSouth size the DC power plant for all demand on the plant including BellSouth's demand and then develop the investment consistent with this total demand. On its face, BellSouth's use of only small augments associated with the demand from ALECs clearly contradicts the requirements of a TELRIC cost study.

Q. ARE THERE OTHER PROBLEMS WITH BELLSOUTH'S DATA BESIDES THAT IT IS BASED EXCLUSIVELY ON AUGMENT JOBS?

A. Yes. Again, on its face, the data that BellSouth used was exclusively based on augment power jobs performed only for collocators. The data did not incorporate BellSouth's

demand for power or account for the total power capacity available in the central office. However, there are many unusual aspects to BellSouth's DC power investments that cause the use of its data to be unwarranted. *First*, the data provided by BellSouth does not support the investment per amp proposed by BellSouth in this proceeding. Specifically, BellSouth provided a document that it claims supports its investment per amp – H.1.8, H.1.71, and H.2.4.xls in Appendix F of its backup work papers. I have reviewed this document and it does not support the investment per amp proposed by BellSouth. BellSouth's proposed investment per amp is $429.00 per used or load amp. *See* "FLphycol.xls" Workbook, "INPUTS_Recurring" Worksheet, Row 293 ("Average Investment per Used Amp"). However, the work paper BellSouth cites to in its response to AT&T POD No. 32 indicates an investment per amp of ***BEGIN CONFIDENTIAL $ END CONFIDENTIAL***. *See* "H.1.8, H.1.71 & H.2.4.xls" Workbook (Located in Appendix F), "FL" Worksheet, Row 10 (Power Construction $$$/Amp – Plant Only). The Commission will note that this same document also contains BellSouth's proposed investment of $429.00 per amp, but the backup data simply does not support that investment.

Q. ARE YOU AWARE OF WHY THIS DISCREPANCY EXISTS?

A. Yes. BellSouth has not provided a complete set of the supporting documentation for its investment of $429.00 per amp. I know from participation in the collocation proceeding in Georgia that BellSouth proposed the same investment there as in Florida. However, when NewSouth – an ALEC participating the in the cost proceeding – filed discovery with BellSouth, BellSouth provided supporting documentation that led to the $429.00 investment. BellSouth has been asked for the same support in Florida, but BellSouth has thus far not produced the documentation. The fundamental difference between the

Georgia backup documentation for the $429.00 investment and the Florida backup documentation for the $429.00 investment is that in Georgia BellSouth provided the backup documentation for all of its states such that the sum of data across all of its states ultimately led to the investment per amp that it proposed. BellSouth in Florida has only provided the Florida backup documentation even though it is relying on states outside of Florida to support its ultimate proposal of $429.00 per amp.

Q. ARE YOU ABLE TO USE THE INFORMATION FROM THE NEWSOUTH DISCOVERY IN GEORGIA?

A. No. The information I have provided above is public knowledge from the cost proceeding in Georgia. However, the content of the backup documentation in Georgia is proprietary to the cost proceeding in Georgia. AT&T has made repeated efforts to have BellSouth provide this documentation so that Florida can have the same support for BellSouth's proposed investment as was obtained in Georgia. Thus far, BellSouth has not provided this documentation. As a result, my evaluation of the support of BellSouth's investment will be incomplete. Nonetheless, I believe it demonstrates that the investment per amp proposed by BellSouth should be completely rejected.

Q. WHAT ARE YOUR CONCERNS WITH THE SUPPORT DOCUMENTATION THAT YOU DO HAVE FOR BELLSOUTH'S PROPOSED DC POWER INVESTMENT?

A. As noted earlier, BellSouth's data is based exclusively on the use of augment projects to support the power needs for ALECs collocating in Florida. However, augments are not consistent with TELRIC methodology in that they do not reflect the total demand for DC power in the central office and the total investment to support that demand. Instead, BellSouth approach calculates the power investment just looking at the cost to augment its existing plant to supply the demand from the ALECs which provides none of the scale economies that BellSouth enjoys. (Note: I will point out later that even this calculation

was done improperly by BellSouth.) I took the Florida data – the only state that BellSouth provided data even though its proposed investment is based on region-wide jobs – and analyzed the distribution of projects done in this state. In Florida, there were DC power augment projects conducted in 99 central offices. Of these projects, 57 of the projects are at an investment per amp that is more than double the BellSouth proposed average. Fully 46 of the projects resulted in investments per amp that were greater than $1,000. BellSouth's proposed average is $429.00. These investments per amp for so many of BellSouth's central offices are simply outside any reasonable estimate of the forward-looking investment for DC power. Remember, BellSouth proposed an investment of $248.70 (on a load or used amp basis) in the previous collocation cost proceeding in Florida. This investment is much more within the appropriate range of reasonableness. For this comparison, I took the investment per fuse amp that BellSouth proposed in the last collocation proceeding and multiplied it by the 1.5 fuse amp to load amp factor so that it would be comparable to the load or used amp investment proposed by BellSouth in the present proceeding of $429.00 per amp.

I would also direct the Commission's attention to a collocation cost proceeding in Texas that I participated in. I point this out because Southwestern Bell's collocation cost filing was made public by the Texas Public Utilities Commission. In Texas, Southwestern Bell determined that its investment for installing a 2,500 amp DC power plant is $677,706.61. *See* Exhibit SET-3 to review Southwestern Bell's investment proposal for the 2,500 amp and 4,000 amp DC power plants in Texas. Further, Southwestern Bell also determined that its investment for installing a 4,000 amp DC power plant is $952,581.61. Please note that these values were the investments that Southwestern Bell *proposed* in Texas. Ultimately, the Commission actually awarded

lower investments in that there were numerous issues even with Southwestern Bell's investments that caused them to be higher than TELRIC. Nonetheless, these examples demonstrate just how outrageous BellSouth's proposed investments are for Florida. Please see Exhibit SET-4 for the investments that the Texas PUC ultimately approved for DC power rates in Texas. These two Southwestern Bell data points lead to an investment per amp of $250.81. Further, given that BellSouth's analysis is at times conducted on a fuse amp basis, this value per amp must be divided by 1.5 to obtain a comparative investment to that used by BellSouth in its cost study for rate element H.1.8 (DC Power per Fuse Amp). Thus, Southwestern Bell's proposed investment per amp is $167.21 whereas BellSouth is seeking $286.00 per amp. BellSouth's previous investment of $165.80 is almost exactly what Southwestern Bell *requested* in Texas.

Q. IS THERE ANY WAY TO CORRECT BELLSOUTH'S DATA TO REMOVE THESE UNREASONABLE AUGMENT INVESTMENT VALUES?

A. Fundamentally, there is no way to correct BellSouth's analysis in total. BellSouth has failed to provide a TELRIC investment cost study for DC power that includes *all* of the jobs rather than just the augments for ALECs. However, in addition to the fundamental error BellSouth made in not accounting for the total demand required in a TELRIC study, BellSouth also made a calculation error as well in developing the investment per amp. A review of the BellSouth response to AT&T POD No. 32 shows that BellSouth has taken the investment for an augment to its power plant and divided by only the DC power amperage *requested* by the ALEC. However, this does not provide an accurate representation of the investment per amp *placed* by BellSouth in that BellSouth has routinely placed more power capacity than the ALEC requested. It turns out that there is one office in Florida where BellSouth has made a large scale installation of DC power capacity that begins to provide insight into the efficient, forward-looking investment that

BellSouth actually enjoys with its plant. As documented in BellSouth's response to AT&T POD No. 32, the Gainesville-Main (GNVLFLMA) central office added ***BEGIN CONFIDENTIAL END CONFIDENTIAL*** amps of DC power capacity (defined through the rectifier capacity added to the office) at an investment of ***BEGIN CONFIDENTIAL END CONFIDENTIAL***. Based on this DC power installation project, BellSouth's investment per used amp would be $196.00. Adjusting this investment to a fuse amp basis using BellSouth's 0.667 load amp to fuse amp conversion factor arrives at an investment of $130.73. Given that this investment per amp does not account for fill, it would need to be adjusted with an 85 percent fill factor. This is typically the fill factor that I have observed in the development of DC power investments. This final adjustment leads to an investment of $153.80. This investment is almost precisely equal to the $165.80 that was recommended by BellSouth in the previous cost proceeding in Florida. While it is slightly lower than what BellSouth proposed in the last collocation cost proceeding, it is far more indicative of the scale economies that should be incorporated into a TELRIC calculation of DC power investment in that it reflects the power plant size – ***BEGIN CONFIDENTIAL END CONFIDENTIAL*** amps – that is more typical of the total demand for a central office.

Of course, BellSouth distorts this analysis in that instead of dividing the investment in the power plant by the capacity of the power plant, BellSouth only divides the investment by the amount of power that the CLEC orders – ***BEGIN CONFIDENTIAL END CONFIDENTIAL*** amps in this case. This leads to an investment per load or used amp of $1,277.35 or 5.54 times higher than would be consistent with TELRIC. The bottom line is that the Commission should reject

BellSouth's approach in that it simply does not represent the scale economies appropriate with TELRIC and is calculated across an artificially defined capacity that does not reflect the total demand inherent in a TELRIC analysis.

The analysis described above for Gainesville can be extended to all of the central offices in Florida that have received capacity upgrades to the rectifier plant. The augment to the rectifier plant is important in that this determines whether capacity has really been added to the plant or not in that the telecommunications equipment actually receives its power from the rectifiers with backup provided through batteries and other equipment. When all of the rectifier augments are considered, the total DC power investment in those offices totals ***BEGIN CONFIDENTIAL END CONFIDENTIAL*** with a total capacity added of ***BEGIN CONFIDENTIAL END CONFIDENTIAL*** load amps. This leads to an investment per amp of $248.49 after the application of an 85 percent fill factor. Converting this to fused amps arrives at an investment of $165.74. Both the used and fuse amp values are within pennies of the investment per amp recommended by BellSouth in the prior collocation cost proceeding.

Q. GIVEN THE FUNDAMENTAL PROBLEMS WITH BELLSOUTH'S DATA AND APPROACH TO DEVELOPING ITS INVESTMENT FOR DC POWER, WHAT RECOMMENDATION DO YOU MAKE?

A. Given all of the foregoing problems, I recommend that the Commission retain the investment per amp that was used by BellSouth in setting the previous DC power rate in Florida. In other words, I recommend that the Commission use the $165.80 for fuse amp or $248.70 per used amp that was previously used by BellSouth in Docket Numbers 960846-TP, 960757-TP, and 971140-TP in light of BellSouth's failure to provide a TELRIC study for its DC power investment in this present proceeding. Moreover, these investments are supported by the data BellSouth has provided in this docket when

appropriate conversions are made to reflect a TELRIC calculation of cost from BellSouth's data.

Q. HAVE ANY OTHER STATE COMMISSIONS IN THE BELLSOUTH TERRITORY RECENTLY UTILIZED THIS INVESTMENT LEVEL TO SET DC POWER RATES FOR COLLOCATION?

A. Yes. The Georgia Public Service Commission recently concluded its re-evaluation of the costs for UNEs and collocation. Please understand that BellSouth requested the same investment in Georgia per fuse amp – $286.00 – that BellSouth is seeking in Florida. In the Georgia proceeding, the Commission determined that $165.80 per fuse amp or $248.70 per used amp are the appropriate investments to utilized for establishing the TELRIC cost for DC power. *See* Georgia PSC Docket No. 14361-U, rates approved on March 18, 2003, written order not yet released.

2. AC Component of the DC Power Rate

Q. COULD YOU EXPLAIN WHAT THE AC COMPONENT OF THE DC POWER RATE IS?

A. Yes. There are two main components to the DC Power rate. *First*, the majority of the cost is associated with recovering the cost of the equipment necessary to generate DC power. Virtually all telecommunications equipment operates on DC power (or direct current power). Yet, the power that can be purchased from the electric utility is AC power (or alternating current power). A whole series of equipment must be installed by BellSouth to convert this AC power to DC power and provide for its redundancy: rectifiers (which actually convert the AC power to DC power); batteries (which stabilize the DC power and provide for short-term backup in the event of an AC power failure); controllers and power distribution service cabinets (for managing the DC power elements and distributing the power throughout the central office); and the emergency generator (for providing long-term backup in the event of a lengthy AC power failure). The cost

recovery of these elements constitutes the majority of the costs in the DC Power rate. *Second*, the other part of the DC Power rate is the AC power that is purchased from the electric utility that is then converted into DC power. This part of the DC Power rate element is a smaller part of the overall DC power cost.

Q. ARE THERE PROBLEMS WITH BELLSOUTH'S AC COMPONENT OF THE DC POWER RATE?

A. Yes. There are two. *First*, BellSouth is imposing a higher cost on ALECs for AC power than what BellSouth itself incurs from the AC electric utility. Specifically, BellSouth has indicated in its DC Power cost study that BellSouth pays $0.07 per kilowatt hour for AC electricity. *See* "FLphycol.xls" Workbook, "INPUTS_Recurring" Worksheet, Cell B26 ("Average Monthly Cost per KWH") and Cell F26. BellSouth proposed precisely the same cost per kilowatt hour in Georgia well. However, in Georgia we also obtained copies of invoices for two of BellSouth's central offices and learned that BellSouth actually incurs costs that are much lower than the $0.07 per kilowatt hour that BellSouth seeks here. The problem in Florida is that AT&T asked the same discovery request as in Georgia but BellSouth has not provided an adequate response. Nonetheless, alternative data does exist that allows me to restate the AC kilowatt hour rate.

Attached as Exhibit SET-5 to my testimony I have provided the US Department of Energy Estimated U.S. Electric Utility Average Revenue per Kilowatt Hour to Ultimate Consumers by Sector, Census Division, and State, Year-to-Date (November) 2002 and 2001. This report provides the average AC kilowatt hour rate for residential, commercial, and industrial power users for every state in the country. The report is updated every six months and reflects the average AC rate over the preceding 12 months. The appropriate category to use for BellSouth is the industrial user category. I am confident of this selection for at least two reasons. *First*, from experience I know that the

incumbent LECs tend to have AC power rates that are most closely approximated by the rates in this column. *Second*, incumbent LECs normally have load-sharing arrangements with the AC power provider in that the incumbent LECs can provide their own AC power if needed. Moreover, incumbent LECs often have agreements that allow them to place AC power back onto the power grid, if needed by the electric utility. The bottom line, however, is that I have used the industrial category for 2002 in identifying the appropriate AC kilowatt hour rate for BellSouth and the other incumbents.

Q. WHAT IS THE SECOND PROBLEM THAT YOU HAVE WITH BELLSOUTH AC COMPONENT OF THE DC POWER RATE?

A. Quite simply, BellSouth has used a rectifier efficiency that is too low. Rectifiers are used to convert AC power from the electric utility into DC power that is used by telecommunications equipment. Whenever this conversion is done, there is some loss that is experienced through the rectifier in that the amount of AC power that is brought into the rectifier does not come through completely as DC power. The inverse of this loss is expressed as the efficiency of the rectifier. BellSouth has recommended the use of 85 percent efficiency on its rectifiers. *See* "FLphycol.xls" Workbook, "wp H.1.8" Worksheet, Row 19 ("Rectifier Efficiency"). In reality, based on the rectifiers used in AT&T's network which are similar to those used in incumbent networks, the efficiency of rectifiers is at least 90 percent. There is no reason to believe that BellSouth's rectifiers should operate at less efficiency than AT&T's. Moreover, in a TELRIC environment, the most efficient, least-cost technology should be used in the developing the forward-looking cost.

Q. WHAT RECOMMENDATION DO YOU HAVE FOR THESE ISSUES?

A. The Commission should reduce BellSouth's cost for AC electricity to $0.053 per kilowatt hour as documented in Exhibit SET-5. Further, the Commission should implement an efficiency of 90 percent for the rectifier.

3. Fused Amp versus Load or Used Amp

Q. COULD YOU EXPLAIN THE DIFFERENCE BETWEEN "FUSED AMP" AND "LOAD AMP" OR "USED AMP" AS IT RELATES TO DC POWER?

A. The distinction between "load amps" or "used amps" and "fused amps" is important to understand to develop a cost-based rate for DC Power. The DC "load" or "used amp" is determined based on the requirements of the equipment being powered. For example, a piece of telecommunications equipment (or a collocator) may require 15 amps of DC power. This would be the DC power "load." Later in my testimony I will provide more detail on the term "load" explaining that it is defined in two forms: List 1 and List 2 Drain. For the time being, the example that follows is illustrative and will be refined later in the testimony to provide a specific adjustment that must be made to BellSouth's cost study. The DC power "load" is sourced from the BDFB or power distribution center for the power plant. It is common engineering practice that if the "load" required on a power feed is 15 amps, the engineer will "fuse" this feed at around 25 to 50 percent greater than the "load" or at around 20 to 25 amps in the example I have provided. The 20 to 25 amps would be the "fuse amps." It is necessary to fuse the power feed at a greater level than the load on the power feed to avoid having short-term spikes in amperage to the equipment causing the fuse to blow. Blown fuses stop the flow of power to the equipment through the power feed. Also, it is necessary not to fuse the feed at too high of a level because if there is a problem with the telecommunications equipment and it starts to draw too much amperage, the engineer wants the fuse to blow to protect the

telecommunications equipment and the power plant itself. The 25 to 50 percent factor is used by the engineer to balance these two objectives.

It is critical to understand that the economic cost for DC power is based on "used or load amps" because this is what the collocator or piece of equipment actually uses. The size of the fuse has engineering significance, but it is irrelevant from a cost perspective.

There is a second distinction that is equally important to understand. Vendors that sell telecommunications equipment such as Lucent or Nortel identify the load that the equipment will require with two measurements: List 1 Drain and List 2 Drain. List 1 Drain is the amperage that the equipment uses when the power plant is operating normally. List 2 Drain is the amperage that the equipment uses when the power plant is in distress meaning that the batteries are nearing the point of complete failure. It is an industry standard to provide this type of engineering information for each piece of equipment. Using this information, engineers base their power drain requirements off of the List 1 Drain for the equipment, but use List 2 Drain for cable sizing and fuse requirements for the rare circumstance of meeting the List 2 Drain. Nonetheless, the load that is important is the ~~List 1 Drain~~ load amps that are placed on the incumbent's power plant by the ALEC. While List 1 Drain is the current that the equipment draws when it is operating at normal voltages, the equipment will not always draw that current. The primary reason for this is that the List 1 Drain is the current that the particular piece of equipment draws when it is fully functional normally meaning that service is placed on the equipment. In other words, the vendor specification may note that a piece of equipment has a List 1 Drain of five amps, but if the actual usage on the piece of

equipment was metered, the actual usage would be less if the equipment was not being fully utilized.

Q. WHY IS THIS IMPORTANT FROM A COSTING STANDPOINT?

A. Quite simply, the cost for DC Power is based on the load that is placed on the plant. This is what causes BellSouth to incur cost and it is the basis upon which BellSouth should be compensated according to TELRIC. The size of the fuse that is installed for the ALEC is somewhat arbitrary and is not directly correlated to the cost that the ALEC is causing BellSouth to incur. In other words, the ALEC may place several pieces of equipment in its collocation arrangement that have a sum total ~~List 1~~ usage of 62 amps. Unless BellSouth's power plant is not operating properly, this is the total load that the collocator will draw for the equipment placed in the collocation arrangement. However, BellSouth wants to charge the collocator based on the size of the fuse that is placed into the BDFB or power distribution center. The size of this fuse can be set at virtually any size larger than the List 1 (and List 2) drains anticipated. However, the size of the fuse, which would typically be 90 or 100 amps for the example that I have described, is not indicative of the costs that BellSouth will incur. The ~~List 1 drain~~ actual usage defines the cost that BellSouth will incur and the cost that the ALEC should bear. This "used amp" drain is measured in load amps – not fuse amps – and, as such, the rate element for DC Power should also be based on "load" or "used" amps.

Q. CAN THIS EASILY BE ADJUSTED IN BELLSOUTH'S COLLOCATION COST STUDY?

A. Yes. Actually, BellSouth has already incorporated this adjustment into its BellSouth Cost Calculator based on the requirements of this Commission. BellSouth has assumed a fixed relationship between fuse and load in its filing of the BellSouth Cost Calculator in Florida. BellSouth did not file the BellSouth Cost Calculator with these calculations in

Georgia. However, BellSouth has implemented the calculations for the *load* amp calculations in the same manner that I provided for in my restatement of the Georgia version of the BellSouth Cost Calculator on behalf of AT&T. BellSouth has assumed that for every load amp placed on its plant, 1.5 amps of fusing will be placed at the BDFB or power distribution center. To convert BellSouth's cost study to a load amp basis the investment per fuse amp in BellSouth's study would have to be divided by 0.667 to convert it to an investment per load amp. This is what BellSouth has done in Element H.1.71.

Q. IS THERE ANY OTHER CHANGE THAT WOULD BE REQUIRED?

A. Yes. While the Commission has reflected its willingness to consider the issue of whether DC power cost should be recovered on a fuse used basis, there are other adjustments that would have to be made if the Commission were to determine that a used amp basis were preferred. The rate element definition in BellSouth's interconnection agreements and in its collocation handbook would need to be modified to ensure that ALECs pay for DC power on a load amp basis rather than on a fuse amp basis. In addition, the terms and conditions in the interconnection agreements and in BellSouth's collocation handbook would need to be modified to ensure that the cost recovery is based on the ~~List 1 drain or~~ actual power usage of the equipment placed in the collocation arrangement by the ALEC.

Q. IS IT EVEN POSSIBLE TO HAVE DC POWER PRICED ON A PER FUSE AMP BASIS, AS BELLSOUTH PROPOSES, AND EVER ACHIEVE A STRUCTURE THAT IS COST BASED?

A. No. I have attempted to devise adjustments that would allow BellSouth to charge for DC power on a fuse amp basis and have that rate represent the cost that the ALEC is placing on BellSouth's DC power plant. However, it is simply not possible. As I have stated repeatedly above, while there are engineering guidelines that facilitate the development of fuse sizing, ultimately the size of the fuse has very little to do with the actual *load or*

usage that is placed on the DC power plant. There can be many different levels of *load* that can fit within the fuse size that is implemented. However, for each of those different levels of *load*, it is never the size of the fuse that drives the cost that is being incurred in BellSouth's DC power plant. It is the actual *usage* ~~measured as List 1 Drain~~ that causes BellSouth to incur cost, and therefore the rate structure must be organized around usage (and not fused amps) to achieve a cost-based system.

B. Planning, Engineering, and Installation Times

Q. YOU INDICATED IN YOUR INTRODUCTION THAT BELLSOUTH HAS OVERSTATED SEVERAL COLLOCATION PLANNING ELEMENTS. COULD YOU IDENTIFY WHICH ELEMENTS YOU ARE REFERRING TO?

A. Yes. My introduction noted that there are several instances in Collocation Planning where the ALEC is responsible for and will directly bear the cost of activities that BellSouth has included in the planning costs for collocation. In doing so, collocators pay the cost twice in violation of TELRIC principles which require that the cost of interconnection be based on cost. Those rate elements area:

(1) Fiber Entrance Cable Installation, per Cable

(2) Security Access System – New Access Card Activation, per Card

(3) Security Access System – Replace Lost or Stolen Card, per Card

(4) Application Cost, Subsequent

(5) Space Availability Report per C.O.

(6) Security Access – Initial Key, per Key

(7) Security Access – Replace Lost or Stolen Key, per Key

(8) Copper Entrance Cable Installation, Per Cable

(9) Collocation Cable Records

These nine rate elements (and their related elements for other forms of collocation such as for Virtual Collocation) will be discussed in more detail below.

1. Fiber Entrance Cable Installation

Q. WHAT PLANNING, ENGINEERING, AND INSTALLATION COSTS HAVE YOU FOUND TO BE OVERSTATED OR DUPLICATED WITH BELLSOUTH'S FIBER ENTRANCE CABLE INSTALLATION ELEMENTS?

A. *First*, BellSouth has included 4.0 hours for Common Systems Capacity Management for Riser Cable Installation. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Row 160. BellSouth notes that this function and associated time is to: "Coordinate with OSP Construction to plan riser cable installation." *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Row 161. The problem is that BellSouth's OSP Construction does not install the fiber riser cable according to BellSouth's interconnection agreements with ALECs and, therefore, BellSouth is not required to coordinate with this group. For example, the AT&T Interconnection Agreement with BellSouth notes: "AT&T will provide and install a sufficient length of fire retardant riser cable, to which the entrance cable will be spliced, which will extend from the splice location to the AT&T's equipment in the Collocation Space." *See* AT&T-BellSouth Interconnection Agreement-Florida, February 21, 2002, § 5.3. If AT&T or any other ALEC is responsible for this cost of installation, which includes coordination with its BellSouth certified vendor to perform this installation, BellSouth should not be compensated for coordinating with its OSP Installation group, which is not even performing the work. Thus, these 4.0 hours for Common Systems Capacity Management for Riser Cable Installation have been removed from BellSouth's cost study.

Second, BellSouth has included 7.5 hours for Outside Plant Engineering. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Row 162. Although BellSouth identifies the tasks that are associated with this function, BellSouth does not provide data to support the time associated with the function. In

addition, some of the functions that BellSouth has identified will not be performed by BellSouth and, therefore, should not be included in this time estimate. For example, BellSouth has included time for the Outside Plant Engineer to "Draft work order for OSP construction." *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Row 167. As indicated above, BellSouth does not perform the cable installation according to its interconnection agreements – the collocator is responsible for this cost. Thus, BellSouth's Outside Plant Engineers will not be required to develop the same complex work orders for its OSP construction personnel as it would if it were actually performing the riser cable installation. All that BellSouth is responsible for is the splicing that occurs between the fiber entrance facility (that is installed by the collocator) and the riser cable (that is also installed by the collocator). And even here, the interconnection agreements indicate that in certain instances the collocator may install facilities that will not require any splicing. Nor does BellSouth's time estimate take into account what work is performed by BellSouth compared to that which the collocator performs. For instance, BellSouth has included time for the Outside Plant Engineer to "Schedule work order for OSP construction." *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Row 168. The only work activity that the OSP Construction personnel could be required to perform is the splicing of the entrance cable to the riser cable. However, this does not always occur based on the interconnection agreement language contained in BellSouth's agreements. Thus, this scheduling task will not always be required. For example, the AT&T-BellSouth Interconnection Agreement-Florida, February 21, 2002, § 5.3 contains the provision that the splice is not always required: "In the event AT&T utilizes a non-metallic, riser-type entrance facility, a splice will not be required." Finally, BellSouth has included time for

the Outside Plant Engineer to "Coordinate with Master Contractor for manhole entry." *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Row 169. However, the collocator is responsible for the installation of the entrance cable through the manhole into the interconnection point within the cable vault. The coordination and the cost associated with this coordination will be borne by the collocator – not BellSouth. In summary, I have reduced BellSouth's estimate of the time required for Outside Plant Engineering to 5.5 hours to account for these three problems

Third, BellSouth has made the same type of errors with its Outside Plant Construction time estimate of 16.0 hours. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Row 170. Specifically, BellSouth has included time for at least three functions that the collocator, not BellSouth, is required to perform. They are: (1) Place pull wire; (2) Pull cable into building; and (3) Place & rack cable in C.O. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5, Rows 172, 173, and 176. The removal of these three functions leaves BellSouth with the only work that it will perform – splicing of the entrance cable to the riser cable. In my experience, based on the installation of a 24-fiber cable, 5.0 hours would be required for this function. This time includes 3.0 hours for Splicing Preparation Activity associated with set-up, take-down, and travel and 2.0 hours for fiber splicing based on 5.0 minutes per splice for a 24-fiber cable.

Fourth, BellSouth has included cost for Manhole Contract Labor that again is borne directly by the collocator who is responsible for installing the entrance facility through the manhole into the interconnection point in the cable vault. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.5,

Rows 179-189. This cost should be removed from BellSouth's Fiber Cable Installation nonrecurring cost.

Q. SHOULD BELLSOUTH HAVE TWO RATE ELEMENTS FOR ENTRANCE CABLE INSTALLATION: ONE WHEN BELLSOUTH PERFORMS SPLICING AND ONE WHEN NO SPLICING IS REQUIRED?

A. Yes. Alternatively, BellSouth could "weight" the costs that only occur when splicing is required with a factor that is based on how often fiber entrance cable installations require splicing. This would allow BellSouth to retain only one rate element but more accurately reflect the cost that it incurs. Nonetheless, I do not have information on how often BellSouth is not required to perform the splicing in the vault. Based upon my experience in other parts of the country, splicing is generally not required. I would expect that this would be the same for BellSouth, but do not have independent information on this at present.

Q. DO THE SAME ADJUSTMENTS YOU HAVE IDENTIFIED ABOVE APPLY EQUALLY FOR THIS ELEMENT IN VIRTUAL COLLOCATION?

A. Yes. BellSouth proposed the same nonrecurring charge of $1,473 for Fiber Entrance Cable Installation, per Cable regardless of whether the collocator is using Physical Collocation or Virtual Collocation. All of the changes that I have proposed apply equally to both forms of collocation.

2. Security Access Labor Times

Q. WHAT PROBLEM HAVE YOU OBSERVED IN THE SECURITY ACCESS LABOR TIMES THAT BELLSOUTH HAS PROPOSED?

A. Primarily, there is a very interesting contradiction in BellSouth's Security Access System – New Access Card Activation times. BellSouth proposes what I believe to be a reasonable activation time per request for security cards of 1.0 hour. *See* FLPHYCOL.xls Workbook, wp H.1.38 NRC Worksheet, Row 17. BellSouth goes on to propose what I believe to be a reasonable number of access cards of 5.0 cards issued per request. *See*

FLPHYCOL.xls Workbook, wp H.1.38 NRC Worksheet, Row 19. This yields a calculation of 0.2 labor hours per card. *See* FLPHYCOL.xls Workbook, wp H.1.38 NRC Worksheet, Row 21. BellSouth calculates this value, but does not use it in the cost study. Instead, BellSouth then goes through several calculations to develop a value of 0.8583 labor hours per card. *See* FLPHYCOL.xls Workbook, wp H.1.38 NRC Worksheet, Row 33.This is the labor time that is used in the cost study. There is no explanation that I could identify for why BellSouth did not use its reasonable calculation of 0.2 labor hours per card and instead used the value of 0.8583 labor hours per card. My recommendation is that 0.2 labor hours per card is more reasonable and should be used.

Q. ARE THERE ANY OTHER LABOR TIMES RELATED TO SECURITY THAT YOU BELIEVE SHOULD BE MODIFIED?

A. Yes. There are two other modifications I believe the Commission should make. *First*, BellSouth has a higher cost to replace a lost security card than to initially provide one. Replacement of a card should not take materially longer than providing a new card. Instead, the replacement of a security card should cost less. Nonetheless, I recommend that the Commission modify BellSouth's cost for replacing a security card to be the same as that for initially providing it. I have made the underlying modifications to BellSouth's cost study labor times to yield this result. Please note also, that even BellSouth has made this type of assumption for its Security Access Key costs by setting replacement costs at the same level as new costs.

Second, unlike with the Security Access Card costs where BellSouth at least provided some support for the development of its costs, BellSouth has provided no such support for the Security Key costs. In my experience, the forward-looking choice for security is the use of a key card. There are many instances where smaller central offices are secured using other mechanisms. Thus, I would recommend that the Commission set

the Security Key costs equal to those for the Security Card to be consistent with TELRIC, particularly in light of BellSouth's failure to provide support for the times or costs associated with the Security Key approach.

3. Subsequent Application Cost

Q. WHAT CONCERNS DO YOU HAVE WITH BELLSOUTH'S SUBSEQUENT APPLICATION COST?

A. There are at least three problems that I have found in BellSouth's Application Cost – Subsequent nonrecurring cost element. *First*, with an initial application for collocation, BellSouth has included 6.5 labor hours for Job Grade 58 functions. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.1, Row 12. However, with a subsequent application for collocation, BellSouth has included 7.5 labor hours for Job Grade 58 functions.[1] *See* FLPHYCOL.xls Workbook, wp H.1.1 & wp H.1.46 NRC Worksheet, Rate Element H.1.46, Row 25. The problem is that subsequent applications generally have less labor or at most the same amount of labor. BellSouth provided some detail regarding the Job Grade 58 functions for an initial application, but did not provide any detail regarding the activities for a subsequent application. Based on the information BellSouth provided for the initial application, there is no reason to believe that the subsequent application should require any more time than an initial application. As a result, I have reduced the subsequent Job Grade 58 labor time to 6.5 labor hours.

Second, Outside Plant Engineering is virtually never involved in a subsequent collocation activity because multiple fibers (normally 24) are installed with the initial installation for collocation. As a result, the 0.5 labor hours that BellSouth included for this function has been removed. *See* FLPHYCOL.xls Workbook, wp H.1.1 & wp H.1.46 NRC Worksheet, Rate Element H.1.46, Row 30.

Third, the level of Parsons Engineering that BellSouth has assumed for an initial application and a subsequent application for collocation are the same, which is wrong. There is always a significantly greater amount of work involved with an initial application with collocation than there is with a subsequent application. Subsequent applications are generally associated with additional Cross-Connect arrangements or incremental power. Occasionally, subsequent applications can be for the addition of space. However, overall the engineering work will be substantially less than that which is required for an initial application for collocation. BellSouth has provided no information substantiating the level of Parsons Engineering that has been included in the cost study. Thus, I have only been able to make a rough adjustment to BellSouth's value by reducing if by half. This adjustment is supported by BellSouth making similar reductions for work activities associated with subsequent applications as compared to the initial application. *See* FLPHYCOL.xls Workbook, wp H.1.1 & wp H.1.46 NRC Worksheet, Rate Element H.1.46, Rows 12-33. Please note that Corporate Real Estate & Support (JG58) and Corporate Real Estate & Support (JG55) were both reduced by half. Also, note that Interexchange Network Access Coord (INAC), Circuit Capacity. Management (CCM), and Common Systems Capacity Mgmt. (CSCM) were all reduced by approximately one-third.

4. Space Availability Report

Q. WHAT IS THE DIFFICULTY WITH BELLSOUTH'S PROPOSED SPACE AVAILABILITY REPORT CHARGE?

A. BellSouth's proposed nonrecurring charge of $572.66 is completely outrageous when compared to charges that have been established in other parts of the country. It is also outrageous when compared to the work activity that is necessary to perform this function.

Q. HOW DOES BELLSOUTH'S PROPOSED RATE COMPARE TO THAT DETERMINED FOR OTHER INCUMBENTS AROUND THE COUNTRY?

A. The table below summarizes a selection of the Space Availability Report charges in states where I have participated in collocation proceedings.

State	Space Availability Report Charge
Texas	$204.06
Missouri	$168.04
Kansas	$168.04
Oklahoma	$168.04
California	$150.00

The point of these comparisons is not to suggest the absolute rate that the Commission should order for Florida, but to illustrate that the rate of $572.66 that BellSouth has put forward in Florida is completely out of range with what other states have ordered (or even that has been proposed by other the incumbent LECs).

Q. WHAT ARE YOUR CONCERNS WITH BELLSOUTH'S INPUTS IN DEVELOPING THE COST FOR THE SPACE AVAILABILITY REPORT?

A. BellSouth has inappropriately included costs for developing the Space Availability Report that should be treated as a normal part of being in the telecommunications business. In other words, BellSouth's development of the cost for this report shows that it intends to transfer to the ALEC the cost for it to inventory the use of its telecommunications space within a central office every time a report of this nature is requested. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.47, Rows 348-350, and 353-355 for activities that demonstrate that BellSouth intends "to transfer to the ALEC the cost for it to inventory the use of its telecommunications space within a central office every time a report of this nature is requested." Moreover, the $572.66 BellSouth is requesting for this report absolutely does

not account for efficient processes that I am confident BellSouth has at its disposal such as using computer aided design (CAD) systems to maintain a space inventory. This proposed cost by BellSouth should be completely rejected.

Q. WHAT INPUTS WOULD YOU RECOMMEND THAT THE COMMISSION UTILIZE?

A. *First*, I would retain BellSouth's estimate of 0.5 labor hours for the Account Team Collocation Coordinator. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.47, Row 341.*Second*, the Common Systems Capacity Management function will only require one hour to pull the space availability from the CAD systems that BellSouth has available to it, identify the available space, and provide this information to the Account Team Collocation Coordinator in an email message. These are the only two labor times and categories that are necessary for this nonrecurring rate element.

5. Copper Entrance Cable Installation

Q. WHAT PROBLEMS HAVE YOU FOUND WITH BELLSOUTH'S COPPER ENTRANCE CABLE INSTALLATION NONRECURRING CHARGE?

A. There are at least two problems with this element based upon how BellSouth developed the inputs for this nonrecurring rate element. *First*, similar to the Fiber Entrance Cable Installation element discussed earlier in this testimony, BellSouth has included costs that the ALEC will have to pay. Specifically, the ALEC will have to pay the cost of entering the manhole to deliver its copper cables to that point. Therefore, the manhole cost needs to be removed from BellSouth's Copper Entrance Cable Installation element.

Second, BellSouth has included a "Connect and Test" function performed by Outside Plant Construction for a total of 16.8333 labor hours in rate element H.1.57. *See* FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.57, Row 413. However, this is inappropriate because BellSouth also included a "Connect

and Test" function performed by Outside Plant Construction for a total of 0.4167 labor hours per 100 copper pairs in rate element H.1.58. FLPHYCOL.xls Workbook, INPUTS_Nonrecurring Worksheet, Rate Element H.1.58, Row 432. Both of these rate elements would be required if a collocator ordered a copper entrance facility. However, the second element that is based on the number of 100 pair increments of copper facilities that are installed is a more appropriate cost element for the ***BEGIN CONFIDENTIAL END CONFIDENTIAL*** function in that the time will be directly proportional to the amount of work the Outside Plant Construction personnel are required to perform. As a result, the 16.8333 labor hours in rate element H.1.57 will be removed.

6. Collocation Cable Records

Q. WHAT IS YOUR CONCERN WITH BELLSOUTH'S DEVELOPMENT OF THE COLLOCATION CABLE RECORDS NONRECURRING CHARGE?

A. Quite simply, there is a large portion of the cost that is already recovered through other elements that the ALEC pays for when it purchases interconnection arrangements from BellSouth. Specifically, the labor time that BellSouth includes for the Circuit Capacity Management (CCM) function in Rate Elements H.7.1, H.7.2, H.7.4, H.7.5, and H.7.6 appears to be completely duplicative of functions and labor cost captured in Rate Elements H.1.1 and H.1.46. It is these latter two elements that recover the cost for the CCM engineering time with establishing the interconnection arrangements. There is no reason to duplicate this cost for the cable records as well. In short, I have removed the CCM time from the Cable Records nonrecurring costs in BellSouth's cost study.

Q. NOTWITHSTANDING THIS CORRECTION TO THE CABLE RECORD LABOR TIMES, DO YOU BELIEVE THAT BELLSOUTH SHOULD CHARGE AN ALEC FOR UPDATING ITS OPERATIONAL SUPPORT SYSTEMS WITH CABLE RECORD INFORMATION GENERALLY?

A. No. Establishing the operational support systems records of an ALEC's cables terminating on a BellSouth frame is a routine process and is already a cost being paid by the ALEC through the factors applied on the capital recovery of the equipment investment that is contained in recurring rates. Additionally, as with any capital asset, making updates to the records is a normal function of maintaining the integrity of the asset and included in the recurring maintenance charge. This Commission should not accept BellSouth's nonrecurring rate proposal for Cable Record Charges. AT&T proposes that there is no cost justification to create such a chargeable collocation element.

Q. DO SPRINT AND VERIZON HAVE CHARGES OF THIS TYPE?

A. No. Sprint and Verizon do not have charges of this type in their collocation rate proposals. The bottom line is that these costs are simply not reasonable in that they double-recover costs that are already picked up in recurring elements. Moreover, in my experience reviewing collocation costs across the country, I do not believe I have seen any other incumbent charge for Cable Record systems updates as part of the collocation elements.

C. Floor Space Cost

Q. WHAT IS YOUR CONCERN WITH BELLSOUTH'S PROPOSED FLOOR SPACE CHARGE?

A. The investment BellSouth has used is higher than publicly available data on telecommunications space investment. As a result, BellSouth's resulting rate for Floor Space is inconsistent with TELRIC principles and should be rejected by the Commission.

Q. WHAT PUBLICLY AVAILABLE DATA DID YOU REVIEW TO DETERMINE THAT BELLSOUTH'S INVESTMENT IS IMPROPER?

A. The source that I used for the per square foot cost of building space is R.S. Means. R.S. Means is a data sourcebook widely used in the construction industry. The data provided in this sourcebook are compiled from submissions from companies who actually have constructed telecommunications central offices. Therefore, the investment is an independent evaluation of the forward-looking cost for central office construction. Moreover, the investment information contained in the R.S. Means guide can be adjusted to be state-specific because it provides adjustments to modify its "national" numbers to correspond to numerous cities across the United States including 16 in Florida.

Q. WHY DO YOU BELIEVE IT IS IMPORTANT TO USE AN INDEPENDENT SOURCE FOR THIS INVESTMENT VALUE?

A. There are several advantages to using external sources for construction elements wherever possible. *First*, the information is verifiable because the source is public. Because the investment is not based on proprietary information from BellSouth's accounting systems or based on adjustments to those systems that the Commission and ALECs have had no access to, it is far better to use an external source where available that can be independently evaluated for its veracity. *Second*, the information can be reviewed to ensure that the costs are competitive and least-cost. R.S. Means is a guidebook used throughout the construction industry to estimate the cost of construction projects in a variety of areas. It is in the self-interest of the publishers of the R.S. Means guidebook to be as accurate and current in its information as possible. Moreover, R.S. Means has been used by state Commissions and incumbents in developing investments for collocation. For example, the Texas Public Utilities Commission found the following in its evaluation of the use of R.S. Means in developing collocation investments:

> In an effort to determine accurate forward-looking costs, the Arbitrators agree with AT&T/WorldCom and the Coalition that R.S. Means should be used as a cost reference. R.S. Means provides costing figures on a national average. The Arbitrators believe that R.S. Means provides an objective and independent cost reference in this proceeding where real costs of the incumbent are in dispute. ... Without evidence to support the conclusion that the vendor quotes were not obtained solely for the use of this regulatory costing proceeding, the Arbitrators find that SWBT's "real world" vendor quotes are inflated and overstated when compared to R.S. Means data in similar categories. *See* Revised Arbitration Award, Docket No. 21333, *Proceeding to Establish Permanent Rates for Southwestern Bell Telephone Company's Revised Physical and Virtual Collocation Tariffs*, April 12, 2001, p. 60.

Moreover, in California, Pacific Bell, a sister company to SWBT, used the 2000 version of R.S. Means to develop the cost for Cage Partitioning as support for its input in California. Further, Sprint also relied on R.S. Means for some of the inputs it proposed in this present cost proceeding. The bottom line is that when construction related elements such as the cost of constructing a central office are in question, the investment that comes from an independent source like R.S. Means should be used.

Q. DOES R.S. MEANS EXPLICITLY IDENTIFY THE INVESTMENT FOR A TELECOMMUNICATIONS CENTRAL OFFICE?

A. Yes. R.S. Means provides the total project cost to construct a telephone exchange. *See* R.S. Means Building Construction Cost Data, 2003, 61st Annual Edition, R.S. Means Company, Inc., Line 17100-870-0010, p. 491. (Hereafter referred to as "R.S. Means.") The information provided in R.S. Means is based on the actual construction of telecommunications central offices by contractors who have then reported back to R.S. Means what their costs were for the project. R.S. Means compiles this information and reports the costs in the Building Construction Cost Data guide each year.

Q. COULD YOU PLEASE REVIEW HOW YOU USED THE INFORMATION FOUND IN R.S. MEANS AND HOW YOU CONVERTED THIS INFORMATION INTO A PROPOSED RATE PER SQUARE FOOT?

A. Yes. *First*, R.S. Means provides three different costs per square foot to construct a central office: ¼ Quartile, Median, and ¾ Quartile. According to the notes accompanying R.S. Means, the use of the ¾ Quartile figure provides the greatest assurance that site preparation work and ancillary equipment needs are included in the investment per square foot. This is the value ($200.00 per square foot) that I selected for the calculation.

Second, R.S. Means provides a "Square Foot Project Size Modifier." The purpose for this modifier is to allow for adjustments off of the average investment per square foot based on whether the building being constructed is larger or smaller than average. *See* R.S. Means, R171, p. 573. R.S. Means indicates that the typical square footage of the central offices in its study was 4,500 square feet. In my experience, virtually all central offices where collocation will be required are larger than 4,500 square feet. They range from around 20,000 square feet and up. R.S. Means provides for an adjustment for central offices up to 15,750 square feet by multiplying the average of $200.00 per square foot by a factor of 0.90. This leads to an investment of $180.00. Larger central offices would actually cost less than this value. Thus, the investment I have included in the restatement of BellSouth's land and building cost is conservatively high.

Third, central offices are built to house telecommunications equipment. However, all of the space within the central office is not "assignable" to telecommunications equipment. Some of the space is used for hallways, bathrooms, break rooms, offices, and other administrative space. Generally, I have found that approximately 80 percent of the space within central offices is assignable to

telecommunications use. Thus, to fully recover the investment for the central office, the $180.00 investment per square foot must be divided by this factor to yield an investment per assignable square foot of $225.00.

Fourth, and last, the value of $225.00 is a national value that should be adjusted based on the information provided by R.S. Means for the 16 cities in Florida. Specifically, R.S. Means provides indices that should be multiplied by the national averages to bring the costs in line with those for a particular city. The values for Florida range from a high of 88.4 percent for Melbourne down to 70.6 percent for Panama City. The median and the average value for all 16 cities is 81.0 percent. This is the value that I used. Multiplying the 81.0 percent factor times the investment of $225.00 yields a final investment of $182.25. This is the investment that should be used for Florida in lieu of BellSouth's value for augments of $268.70. *See* FLPHYCOL.xls Workbook, INPUTS_Recurring Worksheet, Rate Element H.1.6, Row 13.

Q. IN YOUR OPINION DOES THE R.S. MEANS SOURCE PROVIDE A FORWARD LOOKING INVESTMENT FOR FLOOR SPACE COST IN A BELLSOUTH CENTRAL OFFICE?

A. Yes and I recommend that the Commission use the $182.25 value I derive above. This figure is calculated based on highly conservative assumptions and is far more likely to be consistent with the true economic cost for central office floor space than BellSouth's proposal.

D. Cabling Racking Capacity

Q. WHAT IS YOUR CONCERN WITH THE CABLE RACKING CAPACITY USED BY BELLSOUTH?

A. Cable racks have a certain capacity of cables that they are able to carry based on the size of the cable rack and the height to which the cable rack is filled. BellSouth's cost study assumes a certain number of cables that can be carried in a cable rack and then

determines a capacity cost for the cable based on the percentage of the rack that the collocator cable occupies. For the Cable Support Structure per Fiber Entrance Cable rate element, BellSouth has significantly understated the capacity of the cable racks based on excessively conservative engineering assumptions regarding the size of the cable rack and pile heights within those racks. In understating the capacity, BellSouth is assigning a cost greater than TELRIC to collocators. This should be corrected.

Q. COULD YOU PLEASE EXPLAIN WHAT YOU BELIEVE THE APPROPRIATE CAPACITY SHOULD BE AND HOW YOU DEVELOPED THIS CAPACITY?

A. Yes. The capacity that I recommend is 74 cables. BellSouth's proposed capacity is 30 cables. *See* FLPHYCOL.xls Workbook, wp H.1.7 Worksheet, Row 17. Understating the cable quantity by this amount effectively more than doubles the cost that collocators must bear for the Cable Support Structure per Fiber Entrance Cable rate element.

The approach that I took to develop the quantity of cables available in a rack was to utilize information provided by Bell Labs regarding the capacity of cable racks given varying pile heights used in those racks. The table below documents several different sized cable racks along with different pile heights and the number of typical cables that these racks can contain.

Cable Rack Width		Cable Pile Height											
Rack Size	**Cable Space**	**1"**	**2"**	**3"**	**4"**	**5"**	**6"**	**7"**	**8"**	**9"**	**10"**	**11"**	**12"**
10"	8.5"	26	51	77	102	128	154	179	204	230			
12"	10.5"	32	63	94	126	158	189	221	252	283	315		
15"	13.5"	41	81	122	162	203	243	284	324	365	405	446	486
20"	18.5"	56	111	167	222	278	333	389	444	500	555	611	666
25"	23.5"	71	141	212	282	353	423	494	564	635	705	776	846
30"	28.5"	86	171	257	342	428	513	599	684	770	855		

In my experience, the typical cable rack used for fiber is a 12-inch cable rack. To develop the capacity of the cable rack, I have used a conservative pile height for this rack of seven inches. With this pile height in this rack, the table above indicates that the

capacity of the rack is 221 cables. However, this quantity is based on the diameter of a DS1 cable containing wiring for 28 DS1s. A 24-fiber riser cable is larger, approximately equivalent to three of the DS1 cables. Therefore, the 221-cable count would need to be divided by three to arrive at the value that I am recommended of 74 cables.

Q. HAS BELLSOUTH GIVEN ANY INDICATION THAT IT HAS USED THIS TYPE OF AN APPROACH OR ANY OTHER SYSTEMATIC APPROACH IN DEVELOPING THE CAPACITY OF ITS VARIOUS TYPES OF CABLE RACKS?

A. No. BellSouth has not documented any systematic approach to developing the capacity for its racks. However, the approach that I have described above is the only cost-based approach that is appropriate in developing this important cost variable. Therefore, I recommend that the Commission use the value that I have calculated because BellSouth provided no support for its value – a value that is far out of line with a reasonable, cost-based level for this input.

E. <u>Fill Factors</u>

Q. WHAT PROBLEMS HAVE YOU FOUND WITH BELLSOUTH'S USE OF FILL FACTORS IN THE COLLOCATION COST STUDY?

A. Primarily, the problem that I have found is that BellSouth has inconsistently applied its application of its fill factors. BellSouth has consistently used a fill factor of 85 percent for the frame equipment that it has included in the collocation cost study.[2] In particular, every form of terminal equipment – MDF, DSX-1, DSX-3, and LGX – uses 85 percent for its fill factor. However, when BellSouth applies a fill factor to the POT Frame – a

[2] *See* FLPHYCOL.xls Workbook, wp H.1.9 Worksheet, Row 15 for the Distributing Frame Fill Factor at 85 percent in a 2-Wire Cross-Connect; wp H.1.10 Worksheet, Row 15 for the Distributing Frame Fill Factor at 85 percent in a 4-Wire Cross-Connect; wp H.1.11 Worksheet, Row 13 for the DSX-1 Panel Fill Factor at 85 percent in a DS-1 Cross-Connect; wp H.1.12 Worksheet, Row 13 for the DSX-3 Panel Fill Factor at 85 percent in a DS-3 Cross-Connect; wp H.1.31 Worksheet, Row 13 for the LGX Term Fill Factor at 85 percent in a 2-Fiber Cross-Connect; and wp H.1.32 Worksheet, Row 13 for the LGX Term Fill Factor at 85 percent in a 4-Fiber Cross-Connect.

piece of terminal equipment that BellSouth is also responsible for engineering – BellSouth has applied a fill factor of ***BEGIN CONFIDENTIAL END CONFIDENTIAL*** percent. *See* Flphycol.xls Workbook, wp H.1.13 Worksheet, Row 15.Because BellSouth is responsible for engineering the POT Frame, there is no reason why BellSouth should engineer this piece of terminal equipment at such a less efficient and discriminatory level as compared to the engineering of frames that BellSouth uses. Thus, BellSouth should be required to utilize a fill factor that is consistent with the engineering BellSouth applies to its terminal frames within the central office – 85 percent.

F. Alternative Construction Prices for Cage Preparation

Q. WHAT CONSTRUCTION COSTS IN BELLSOUTH'S COST STUDY HAVE YOU FOUND TO BE OVER-PRICED?

A. BellSouth's cost estimate for constructing a 100 square foot collocation cage is greatly overstated. Similarly, the cost estimate BellSouth has developed for constructing a 50 square foot addition to the collocation cage is also greatly overstated. Each of these needs to be modified to make BellSouth's costs more realistic.

Q. WHAT APPROACH HAVE YOU TAKEN TO DEVELOP AN APPROPRIATE COST FOR CONSTRUCTING THE 100 AND 50 SQUARE FOOT COLLOCATION ARRANGEMENTS?

A. As with BellSouth's building investment, I have used R.S. Means to develop the cost for the elements that go into constructing a collocation arrangement. As discussed earlier in this testimony, R.S. Means is a guidebook used throughout the construction industry to estimate the cost of construction projects in a variety of areas. The fundamental problem is that the construction costs BellSouth has presented for cage construction elements are significantly higher than an independent, verifiable source – R.S. Means. In a competitive environment, there would be no reason for BellSouth to use construction

costs that are significantly higher except for the fact the ALECs are a captive customer who must acquire space within BellSouth's central office for interconnection. Moreover, simply because BellSouth has proposed certain cage construction costs (providing virtually no backup documentation) does not make the quotes per se consistent with TELRIC. The bottom line is that if the cage construction costs go out of line with R.S. Means, they should not be relied upon at all.

Q. HOW DID YOU USE R.S. MEANS TO DEVELOP ALTERNATIVE COSTS FOR CAGE CONSTRUCTION?

A. BellSouth in its support documentation provided the elements and costs that it included in the construction of a 100 square foot collocation arrangement. *See* "H.1.23 & H.1.24.xls" Workbook (Located in Appendix F), "H.1.23 & H.1.24" Worksheet, Columns A, H, I, and J. Based on this information, I used R.S. Means to restate all of those elements for which there was a directly comparable element in R.S. Means. For example, BellSouth used 30 feet "Welded mesh panels" in the construction of the 100 square foot collocation arrangement. R.S. Means also provides the cost for Woven Wire Mesh Partitions that come in a panel form just as are used in collocation arrangements. *See* R.S. Means, Lines 10605-100-0010 through 10605-100-2200, p. 326. Incumbent LECs such as Pacific Bell and Southwestern Bell have used precisely this element for the cost estimate of partitioning material in a collocation arrangement. Based on an eight-foot high wire mesh partition, the cost per linear foot in Florida is $29.80.[3] BellSouth's

[3] *See* R.S. Means, Lines 10605-100-0400 and 10605-100-0700, p. 326. Line 10605-100-0400 provides the cost for a four-foot wide eight-foot high panel of $150.00. Line 10605-100-0700 indicates that this panel cost must be increased by five percent to account for a five-foot wide panel. Six of these panels would be required to provide for the 30 feet of paneling that BellSouth has included in its study. *See* BellSouth Telecommunications, Inc., Appendix F, "H.1.23 & H.1.24.xls" Workbook, "H.1.23 & H.1.24" Worksheet, Cell H8. The cost information from R.S. Means leads to a cost of $31.50 per linear foot (dividing the panel cost increased by the five percent factor by five feet per panel). Next this cost needs to be adjusted to be Florida specific as indicated earlier for the building investment. The factor for

cost per linear foot is significantly higher at $74.87. *See* "H.1.23 & H.1.24.xls" Workbook (Located in Appendix F), "H.1.23 & H.1.24" Worksheet, Cell I8. It is unreasonable for BellSouth's cost for this element of constructing a collocation cage to be 151 percent higher than an independent source for constructing the same element. Moreover, the R.S. Means guide also includes additional cost for overhead borne by the contractor providing the item to BellSouth and profit for the contractor as well. BellSouth's cost should be rejected.

Q. ARE ALL OF BELLSOUTH'S VALUES SIMILARLY OVERPRICED?

A. Yes. The table below shows the value used by BellSouth in one column and the price that I used and the source that was relied on for the restatement. I have attached a more detailed analysis of this table to my testimony as Exhibit SET-6.

Element	BellSouth Cost	Joint Sponsors Cost	Restatement Source
Welded Wire Mesh Enclosure	$2246.00	$893.97	R.S. Means
Swinging Door and Lockset	$726.00	$529.33	R.S. Means
Dust Protection	$478.00	$0.00	Engineering Experience
Electrical Work	$336.00	$367.15	R.S. Means
Electrical Grounding	$1558.00	$675.33	R.S. Means
Signage	$132.00	$132.00	None
General Conditions	$433.00	$0.00	Included in R.S. Means
Contractor's Fee	$709.00	$0.00	Included in R.S. Means
Architectural/Engineering Fee	$1059.00	$1059.00	None
Project Management Fee	$529.00	$529.00	None
Total	**$8206.00**	**$4185.78**	

Q. COULD YOU EXPLAIN WHY YOU REMOVED THE DUST PARTITION COST?

A. Yes. In my experience, there is virtually no dust created with the type of work that is required to install the wire partitions, lighting, and grounding work identified above. The

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this type of material in R.S. Means is 0.9460 (*see* Exhibit SET-6 for the details on this calculation). Multiplying this factor times the cost per linear foot leads to a final Florida-specific cost of $29.80.

main source of dust is the drilling that would be required for securing the partitions to the floor. However, I have directly observed Lucent Technologies personnel installing framing material in telecommunications lineups that required drilling and not installing a dust curtain. The reason for this is that the drills actually have a vacuum that captures the dust that is caused at the time of drilling so that the expense of installing the dust curtain is eliminated.

Q. DID YOU USE THE SAME PROCESS WITH YOUR RESTATEMENT OF THE 50 SQUARE FOOT ADDITION?

A. Yes. BellSouth's approach to developing the incremental cost for a 50 square foot addition was based on rearranging cage construction components. The reality is that this element would more typically be used for building a properly sized cage from the beginning. As such, I have identified the elements needed to add an additional 50 square feet of space to a cage that is ordered. I identified in Exhibit SET-6 what I believed would be required and developed the cost for the elements. BellSouth's value is $947. The value I developed is $552.60. Again, the cost difference results primarily from the cost for the partitioning.

G. Space Preparation Costs

Q. WHAT IS THE SPACE PREPARATION ELEMENT USED FOR?

A. It appears that BellSouth uses the Space Preparation rate elements to recover costs it alleges are necessary to generally prepare the telecommunications space within its offices for ALECs. BellSouth identifies three elements that it charges for associated with Space Preparation: Cage Cost Set Fee, Barrier Wall, and Card Reader. The Barrier Wall price changes based on how many feet BellSouth installs, but it appears that the largest costs are for the Card Reader.

Q. WHAT ARE YOUR CONCERNS WITH BELLSOUTH'S COSTS FOR THE SPACE PREPARATION ELEMENT?

A. Before getting into the specific problems with BellSouth's cost development, it is first important to understand the principles around the costs for security, which substantially affect BellSouth's inputs for this element. It is important to understand that the Federal Communications Commission ("FCC") *Advanced Services Order* requires that BellSouth not impose a security requirement on ALECs for collocation that is any more stringent that what BellSouth imposes on its own employees or authorized contractors working on BellSouth's equipment.[4] *See* First Report and Order and Further Notice of Proposed Rulemaking, *In the matter of Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket 98-147, FCC 99-48 (rel. March 31, 1999) ("FCC Advance Services Order"), ¶ 47. In my experience, in central offices where card readers exist, they are used by all of the personnel entering the central office including the incumbent's employees and authorized contractors that have a need to enter critical areas of the incumbent's central office. Moreover, where other forms of secured entrances exist (e.g., keyed door or combination lock access), these are maintained for use in securing access to space for the incumbent's employees or authorized contractors as well. There is no reason to believe that BellSouth does things any differently in Georgia. However, in proposing the Space Preparation element in Georgia, BellSouth has incorporated significant additional security cost for collocators to be included in the costs for collocation. In effect, BellSouth has assumed that it must have expensive new card readers, barrier walls, and other security related costs that the collocator must pay for exclusively. It is precisely this type of discriminatory security treatment that the FCC

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was trying to avoid in the *Advanced Services Order* with its prohibition on treating ALECs differently from the incumbent's employees or authorized contractors.

Q. CAN YOU EXPLAIN IN MORE DETAIL WHY YOU BELIEVE THESE SECURITY MEASURES ARE DISCRIMINATORY AS COMPARED TO HOW BELLSOUTH TREATS ITS OWN EMPLOYEES OR AUTHORIZED CONTRACTORS?

A. The Card Reader and new barrier walls that BellSouth is imposing are unnecessary and, again inconsistent with FCC guidelines on the costs for security. BellSouth's normal course of business is to have a Card Reader either at the entrance to the building or at the entrance into the telecommunications space or at both. When the ALEC employee passes through these initial security card readers, the ALEC employee will be identified and the time of his or her entry will be documented. However, BellSouth then accounts for an additional Card Reader for which it seeks full recovery from collocators. There is no need to perform a second (or potentially third) validation of the ALEC employee's entry into the collocation arrangement. Security within the collocation arrangement can be efficiently provided via key-locked doors, the cost for which is already included in the cage preparation element. As a result, it is unnecessary to include BellSouth's cost for the Card Reader as an input for Space Preparation.

The barrier walls are also not appropriate in that BellSouth does not treat its own authorized contractors in this way. The barrier walls are essentially an unnecessary cost to prevent the ALEC from walking where BellSouth does not want them. In effect, BellSouth's approach to security is to assume that the ALEC employees are effectively criminal – severely limit where they can walk and time stamp every door through which they pass. Because BellSouth does not treat its employees and authorized contractors in this way, BellSouth should not treat ALEC collocators in this way either. Thus, I have removed these costs from my restatement of BellSouth's Space Preparation element.

VI. PROPOSED COLLOCATION RATES

Q. DO YOU HAVE PROPOSED COLLOCATION RATES FOR BELLSOUTH, SPRINT, AND VERIZON?

A. Yes. The proposed collocation rates are attached as exhibits to this testimony and are consistent with the modifications outlined above. Specifically, Exhibit SET-7 provides the proposed collocation rates for BellSouth; Exhibit SET-8 provides the proposed collocation rates for Sprint; and Exhibit SET-9 provides the proposed collocation rates for Verizon. Finally, Exhibit SET-10 is a detailed change matrix outlining the modifications that were made to the underlying inputs in the BellSouth input worksheets to the BellSouth Cost Calculator.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.