DOCKET NO.: 981834-TP - Petition of Competitive Carriers for Commission action to support local competition in BellSouth's Telecommunications, Inc. service territory

DOCKET NO.: 990321-TP - Petition of ACI Corp. d/b/a Accelerated Connections, Inc. for generic investigation to ensure that BellSouth Telecommunications, Incorporated, Sprint-Florida, Incorporated, and GTE Florida, Incorporated, comply with obligation to provide alternative local exchange carriers with flexible, timely, and cost-efficient physical collocation.

WITNESS: **Rebuttal Testimony of David J. Gabel**
Appearing on Behalf of Staff

DATE FILED: April 18, 2003

[Confidential information in this version has been redacted.]

PREPARED REBUTTAL TESTIMONY OF DR DAVID GABEL

Q. Please state your name and business address?

A. My name is David Gabel. My business address is 31 Stearns Street, Newton, Massachusetts 02459-2441.

Q. On whose behalf are you appearing?

I am appearing on behalf of the Staff of the Florida Public Service Commission ("FPSC").

Q. Could you please summarize your qualifications and work experience?

A. Since obtaining my PhD in economics from the University of Wisconsin in 1987, I have been a member of the Department of Economics at Queens College. I am also a Visiting Scholar in the Massachusetts Institute of Technology Internet and Telecommunications Convergence Consortium in Cambridge, Massachusetts. Prior to my job at Queens, I was employed in both the public and private sectors.

As an employee of the Massachusetts Department of Public Utilities and the Wisconsin Public Service Commission, I was involved in cost and rate analysis. At the American Telephone and Telegraph Company I was responsible for developing interfaces between engineering simulation models and financial forecasting systems. While an employee of Dean Witter Reynolds, my primary area of responsibility was evaluating the economics of different telecommunications products. As an employee of the Yadkin Valley Telephone Membership Cooperative, I was involved in plant installation.

During the past seven years, I have been an advisor to the Washington, New Mexico, and Maine public utility commissions, as

well as the Federal Communications Commission. I have assisted these Commissions with the resolution of various issues that have arisen due to the passage of the 1996 Telecommunications Act. I have also been a consultant to various foreign governments on telecommunications matters.

Q. What is your area of academic research?

A. I specialize in the field of telecommunications. I have conducted research on a number of topics. My dissertation focused on the evolution of the telephone market in Wisconsin between 1894 and 1917. Beginning with my tenure as a member of the Staff of the Massachusetts Department of Public Utilities, and continuing with subsequent jobs at the Wisconsin Public Service Commission and the American Telephone and Telegraph Company, I have had a strong interest in measuring the cost of providing telecommunication services. After I completed my doctoral dissertation, I conducted further study in this area. This work was partially funded by the National Regulatory Research Institute (NRRI). I continue to spend a large share of my time exploring issues related to the cost function of the telecommunications industry. I am also an instructor at the National Association of Regulatory Commissioners (NARUC) summer training course held at Michigan State University each year

My vita is attached to this testimony as Exhibit DJG-1.

Q. Have you ever testified in a regulatory proceeding before?

A. Yes. I have testified before the Wisconsin, Maine, New York, Indiana, Maryland, Massachusetts, Connecticut, and the Pennsylvania Public Service Commissions, as well as the Canadian Radio and Television Commission.

Q. What is the purpose of your testimony?

A. I have been retained by the FPSC to assist the Commission Staff in developing the evidentiary record in this proceeding with respect to "Issue 9A - For which collocation elements should rates be set for each ILEC"; and "Issue 9B - For those collocation elements for which rates should be set, what is the proper rate and the appropriate application of those rates?"

In doing so I provide an evaluation of the collocation cost studies filed by BellSouth, Sprint, and Verizon in addition to the proposed application of the rate elements each firm supports. Specifically, I address the proposed costs associated with floor space, space preparation, building modifications, collocation applications and engineering fees, security, collocation cages, premise space reports, and cross connects. I also address the reliability of the estimates provided by the ILEC's Subject Matter Experts (SMEs).

Q. Please describe the general methodology you used to analyze the ILEC's cost studies.

A. Rather than address each and every cost and rate element proposed by the ILECs in this proceeding my testimony addresses a smaller sample of elements that I expect to have the greatest influence on the rates ALECs pay for collocation, and thus, the greatest impact on their ability to exist as viable and efficient competitive providers of telecommunications services in Florida.

Q. How did you determine which rate elements were the most significant?

I reviewed the ILEC's responses to Staff's Interrogatories 1 through 4 to determine the nonrecurring and recurring rate elements that

Florida.[1] Furthermore, in a recent collocation proceeding in North Carolina:

> "Sprint maintained that the two biggest costs for a CLP entering a central office for collocation are DC power and floor space. Sprint noted that as its study demonstrated, these two costs alone constitute approximately 50% to 60% of total collocation costs."[2]

The methodology we employed is consistent with Sprint's comments. On Staff's behalf, Mr. Curry addresses power and grounding, while I address floor space and other ancillary collocation elements that a collocator is likely to request.

Q. What steps did you take after identifying which rate elements you would address?

A. I reviewed the cost estimates and supporting documentation provided by each of the companies in addition to further explanations and supporting documents received through the discovery process. Using this information I identified similarities and variances both within and between companies, and used analogous processes, as close as possible, to best estimate the cost of efficiently providing the collocation element in question. (i.e. Firm A's vs. Firm B's work time and total estimated cost of pulling transmission cables a given distance, and Firm A's work time and estimated total cost of pulling transmission cables vs. pulling power cables a given distance).

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[1] These questions asked each of the ILECs to provide an itemized list of the five most recent collocation arrangements completed, by type. (I.e., caged, cageless, virtual, and remote terminal)

[2] State Of North Carolina Utilities Commission Docket No. P-100, Sub 133j, at page 236. Order dated December 28, 2001. ("North Carolina Decision")

Q. Why were such comparisons necessary?

A. ILEC's cost studies generally rely on some combination of employee opinions, embedded data, and vendor quotes. These models and input values tend to be idiosyncratic so it is often difficult, if not impossible, to independently verify many of these numbers. Thus, it is difficult for witnesses, including those sponsored by the ILECs, to unequivocally state that the efficient forward looking time to complete a given work activity is exactly "x" number of minutes. For these reasons I used the aforementioned comparisons as a measuring stick to validate the reasonableness of both inputs and proposed rates.

Q. How are your recommendations presented?

A. Where sufficient information was available to support or challenge a given input value, methodology, or cost estimate, I have provided specific recommendations that I believe the FPSC should implement to promote a fair balance between each ILEC's recovery of efficiently incurred costs and compliance with the FCC's TELRIC pricing methodology. Where the information in my possession at the time this testimony was submitted was not sufficient to support a specific recommendation I have delineated my concerns with the input value or study methodology in question so that the FPSC is aware of potential problems so that it can continue to investigate these issues and/or seek further clarification from the ILEC(s) prior to reaching a decision.

Q. Why would you not have sufficient information to provide specific recommendations in every case?

A. In some instances responses to discovery requests were either never received or were delayed because the questions were objected

to and not answered, delayed by objection, or delayed because the respondent felt that it was prudent to fulfill its obligation to respond at some future "mutually agreeable time and place" rather than within the 20 days contemplated by the procedural order.[3] In other instances ongoing inspection of the ILEC's costs submissions and discovery responses resulted in additional discovery requests, which repeated the process described above and/or materially reduced the time period available to utilize the requested information prior to the submission date of this testimony.

Q. Are the events you describe above extraordinary?

A. No. Such events are fairly common in proceedings of this nature. Although the burden of proof rests squarely upon the ILEC(s) proposing collocation rates, and thus, it is incumbent upon each ILEC to provide sufficient documentation to support its purported costs, the cost models and supporting documents can be both voluminous and complicated, often requiring multiple rounds of discovery requests and responses to flush out the facts. Even after parties have executed the back and forth that is characteristic of the discovery process it is still common for regulatory commissions to issue bench requests seeking additional supporting documentation or clarification prior to publication of a decision.

Q. Are there any outstanding discovery requests that the FPSC would find beneficial to reaching an equitable resolution of the issues presented in this proceeding?

A. Yes. I hope to have received appropriate responses to the outstanding discovery requests prior to the hearings in this proceeding which are scheduled to take place between August 8th and

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[3] See Order No. PSC-02-1513-PCO-TP, issued November 4, 2002, at page 4.

15th, 2003. I anticipate that the information contained within these responses will help to clarify many of the issues I have highlighted for the Commission. For this reason I reserve the right to file supplemental rebuttal testimony at a later date, or address these issues in surrebuttal testimony, should the Commission Staff deem it necessary. Regardless, I hope that the ILECs will address the concerns that I have raised herein in their surrebuttal testimony, which is scheduled to be filed on June 18th, 2003.

Q. You previously stated that you would address the cost of floor space. Would you like to begin this discussion with Verizon?

A. Yes.

Q. Would you please describe how Verizon estimates its floor space investment?

A. Verizon begins with the book investment for each building. The embedded investment is multiplied by a price index in order to obtain the current investment. Verizon then subtracts from this product its estimate of "costs associated with providing HVAC (Heating, Ventilation and Air Conditioning) for the building shell." Verizon witness Ellis explains that these costs are subtracted out from the building investment because "environmental conditioning" costs are recovered through a separate rate element. (BKE-1, pp.23-24 (quote)).

Q. Do you agree that this can be a reasonable methodology for estimating floor space investment?

A. Yes. It is reasonable to approximate the current cost of a building by applying a price index to the book investment.

Q. Do you have any concerns about the Verizon methodology for estimating the cost of floor space?

A. Yes. This methodology is essentially a reproduction cost methodology in which the historical cost of a building is converted to current dollars. This approach is somewhat inconsistent with the FCC's pricing rules that require the use of forward-looking efficient technology. The older central offices were constructed during an era when analog telecommunications equipment, such as step-by-step and crossbar switches, were heavier and larger than today's digital equipment. Due to the evolution in technology it would be sensible to rely on cost estimates from more recently constructed buildings that were designed to house modern digital equipment.

Q. In light of this concern, why do you recommend that the commission employ the Verizon methodology?

A. Among other things, the collocation cost studies determine the cost of running cables. The ILECs have estimated, for example, the distance between the collocation area and the main distribution frame, or power cable feeds. The ILEC's estimates are purportedly based on the current configuration of their buildings. If the space studies were to be based on the cost of a hypothetically newly constructed building, it would also follow that all of the distance measurements would need to be reevaluated. The distance related prices would need to be modified to reflect the likelihood that the layout of equipment in a newly constructed office would be different than in the current buildings.

Q. Why would the layout of equipment in a newly constructed building be different than the layout of equipment in an existing building?

A. There are two reasons. First, the most desirable property in a central office is the space closest to the main distribution frame. It is desirable to place a service's equipment close to the main distribution frame in order to minimize the length of cables or tie pairs that link central office equipment to the distribution frame. Whereas the ILECs were already in the central offices when collocation was mandated, ALECs, as well as the equipment associated with new ILEC services, is often placed in the periphery of a central office. New equipment and the ALECs would typically not be located close to the main distribution frame because that space was already occupied by existing ILEC equipment. If the ILEC and ALECs were to move into a new office, the ILEC and ALECs would have an equal claim for the space located near the main distribution frame. Although I am not a lawyer it is my understanding that the ALEC would have an equal claim because of the non-discriminatory requirement of the Federal Telecommunications Act.

Furthermore, if a new building were to be constructed, it might be smaller than today's central offices. Equipment has become progressively smaller over time. For example, all else equal, a digital switching machine requires less room than an analog switching machine. Furthermore, all else equal, more recent vintages of digital switching machines require less room than the earlier digital switching machines. Even in the DSL equipment market, there has been a noticeable shrinkage in footprint requirement in the past few years. Therefore, since the size of a new building might be smaller than the existing buildings, it follows that the cable distances would likely be shorter. Therefore, in order to be internally consistent, if a replacement

building is modeled in a cost study, as has Sprint, then the distance related cable charges should be modified to reflect the assumption of a new building.

Q. Would it be difficult to determine the cable lengths for these hypothetical buildings?

A. It wouldn't be difficult to calculate one of many possible equipment configurations for each of the buildings. The difficulty arises in trying to determine which of the many feasible configurations best reflects the way in which equipment would be placed in a hypothetical office. In order to limit the number of controversies, I recommend that the Commission rely on current lengths at the existing central offices.

Q. You have argued that a new building might be smaller and would therefore require shorter cable runs. Doesn't it follow that the reliance on the existing buildings biases the TELRIC estimates upwards?

A. No. While I do feel that the cable lengths in an existing building are likely longer than they would be in a newly designed building, I do not know if the space estimates would be biased upward. We have very little data on the cost of new central offices and therefore we don't have sufficient information to conclude if using the Verizon reproduction cost methodology results in values that would be higher or lower than the costs that would be incurred if all of the building were replaced.

Q. Do you have any other concerns about how the investment estimate is used to develop rates?

A. Yes. Building investment is recorded in account 2121. According to 47 CFR 32..2121[4] "This account shall include the original cost of buildings, and the cost of all permanent fixtures, machinery, appurtenances and appliances installed as a part thereof. It shall include costs incident to the construction or purchase of a building and to securing possession and title."

Account 2121 includes the capitalized cost of security, the cable vault, overhead lighting and electrical receptacles. Verizon proposed to establish a separate charge for the cable vault. Whereas the cost of the vault will be recovered once in the floor space charge, it would be inappropriate to recover the investment a second time through the proposed rates for cable vault space.

Q. Does Verizon concur that the cable vault investments are capitalized in Account 2121—building investments?

A. Yes. In response to Staff request 44 Verizon stated that it had "determined that the cable vault space rate is not necessary because the cable vault space investment is included in the (account 2121) building investment." Verizon added that Verizon witness "Barbara Ellis will withdraw support for this element at the hearing." I concur that the cable vault rate should be set to zero in light of how Verizon developed its floor space rate.

Q. Does this alleviate all of your concerns regarding the double counting of costs?

A. No. I am also concerned that Verizon's methodology could lead to the double recovery of other costs booked in Account 2121, specifically, the costs associated with Verizon's proposed Building

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[4] http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi?TITLE=47&PART=32&SECTION=2121&YEAR=2002&TYPE=TEXT

Modification charge. Verizon's workpapers show that HVAC investments were backed out of their calculations but I have seen no indication that investments associated with other Account 2121 items were given similar treatment. Furthermore, based on Verizon's response to Staff's Interrogatory No.1, I was unable to determine the circumstances in which an ALEC would be charged the Building Modifications rate.

Again, based on the supporting documentation provided by Verizon at the time this testimony was prepared I was unable to make certain that the costs associated with items booked to Account 2121 were removed from Verizon's building investment costs. I have already, and will continue to request additional information through discovery that I hope will allow me to clarify this argument should the FPSC Staff deem it necessary for me to file supplemental rebuttal or surrebuttal testimony.

Q. What do you recommend the FPSC do if Verizon is unable to prove that these and other costs have not been counted more than once in its cost study?

A. If Verizon is unable to make a showing that these and other costs have been included only once in their costs studies I recommend that the FPSC require Verizon to remove all duplicative appearances of such costs from its study. Should a proposed rate element be wholly or materially the result of a duplicative appearance of a given cost I recommend that the FPSC require Verizon to remove this rate element from consideration just as Verizon has agreed to do with its proposed cable vault space rate.

Q. Would you please summarize BellSouth's proposed rates for physical collocation space?

A. BellSouth has proposed that two monthly recurring rate elements be applied to physical collocation space. The first rate element is for floor space. This rate is intended to recover the cost of the building investment required to provide floor space for collocation. The second rate element is for space preparation.[5] This rate is intended to recover the cost of preparing existing floor space for collocation. I will first address the floor space rate and then the space preparation fee.

Q. Please describe how BellSouth estimated its floor space investment?

A. BellSouth estimated the space investment per square foot by dividing the sum of the cost of eight recent building additions by the sum of the square feet from the eight jobs.[6]

Q. Do you have any concerns about the method used by BellSouth to estimate floor space investments?

A. Yes. I have three fundamental concerns. First, BellSouth used the investment from recent additions. BellSouth makes no claim that the costs of these additions provide an unbiased estimate for the population of Central Offices where collocation occurs. Indeed it can't. Eight observations are too small of a sample for obtaining a statistically valid sample.[7]

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[5] BellSouth's collocation cost study refers to this rate as a "Space Preparation" while its response to Staff Interrogatory #1 identifies this as "CO Modification". I use the terms "Space Preparation" and "CO Modification" interchangeably.

[6] BellSouth February 4, 2003 filing, Documentation\Xappendix\Appendix F\H.1.6.xls.

[7] For a given level of statistical confidence and bound of the error, the sample size is positively correlated with the variance in the underlying population. Gerald Keller and Brian Warrack, Statistics for Management and Economics, (1997), p.320. As illustrated by the cost data provided by BellSouth in Documentation\Xappendix\Appendix F\H.1.41.xls, folder Florida, column L, the standard deviation of cost data can be large. The large standard deviation implies a need for a large sample in order to obtain statistically valid results.

Secondly, BellSouth has not provided adequate documentation regarding the eight projects. The filing merely tells us the capital expenditure and the square footage associated with these additions. BellSouth does not indicate, for example, the degree to which the additions were associated with adding space to an existing central office, or to some other type of building.[8] However, the data provided by BellSouth as part of its collocation cost model suggests significant variation within this small sample of recent CO additions. This high degree of variation makes it even more unlikely that BellSouth has obtained a statistically valid sample.[9]

Third, and most importantly, the space addition data relied used by BellSouth may be appropriate for an incremental cost study but it is certainly not appropriate for a TELRIC cost study. The FCC's pricing order requires that TELRIC cost estimates be obtained "by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element."[10] Whereas BellSouth used incremental rather than total demand in its space study, even if the eight offices were representative of the population of space additions, its floor space investment estimate would still violate the FCC's pricing rules.

Q. What is the likely impact of using incremental rather than total demand in a collocation space cost study?

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[8] It appears that AT&T asked for additional documentation in its POD No. 11. However, BellSouth's response, dated March 18th 2003, indicates that the information has already been produced as part of BellSouth's collocation cost study and no other responsive documents exist.

[9] I note that the values provided by BellSouth in the file H.1.6.xls appear to include 2 observations (rows 4 and 5) that are not identified as central office additions.

[10] Federal Communications Commission, *First Report and Order*, FCC 96-325, August 1, 1996, ¶682 (quote) 690.

BellSouth's methodology likely overstates the TELRIC of collocation space. The effective cost per square foot of a space addition likely exceeds the average forward-looking, or TELRIC, cost per square foot.[11]

Q. Why do you believe that TELRIC of floor space would be less than the incremental cost?

A. Because there are set-up costs associated with building construction. For example, work equipment must be transported to the job site. The cost per square foot of an addition is generally higher than the square foot cost of a new building because these set-up costs are spread over fewer square feet.

Furthermore, certain environmental problems arise as part of an expansion that do not exist when a structure is first constructed. Consider a situation in which space is added to an existing site, special care must be taken so that no harm comes to the existing structure or the equipment operating within. The need to protect existing structure and equipment increases the per square foot cost of construction relative to the cost incurred when a central office is first built.[12]

Q. Is there any evidence in this proceeding that lends support to your assertion?

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[11] Sprint appears to agree, as indicated by its response to Staff Interrogatory No. 14. "TELRIC pricing rules call for reconstructing the entire central office building based on the scale of total floor space demand...It is much more efficient to build an entire central office based on total demand than it is to build one in smaller increments."

[12] These arguments were supported by Sprint in North Carolina where "Sprint stated that BellSouth's methodology is not reasonable because a building addition inherently costs more per square foot than construction of a new building. Sprint maintained that even though BellSouth uses forward-looking building costs, it adds site preparation fees when, based upon FCC Rule 51.323(f)(3), the cost of construction projects should already have been taken into consideration." North Carolina Decision at page 248.

A. Yes. BellSouth is the only party to advocate an incremental cost methodology for floor space costs in this proceeding. While I have expressed some concern regarding the floor space costs proposed by Verizon (above) and Sprint (below) it is clear that BellSouth's incremental cost methodology has produced investment estimates that are significantly out of line with the estimates supported by either Verizon or Sprint.

Q. Don't you believe that BellSouth should be permitted to recover its building modification costs?

A. BellSouth should be permitted to recover its building modification and environmental conditioning costs when an addition occurs. But its methodology effectively assumes that this cost is incurred at every central office, an assumption that is incorrect and results in an overstatement of its floor space costs. Furthermore, if BellSouth were ordered to adopt the methodology used by Verizon, as I propose below, these costs would be recovered because they would already be included in the capitalized cost of the building.

Q. Do you have any additional concerns about the calculation of BellSouth's floor space investment?

A. No, not at this time. But I reserve the right to address this issue again at a later date after I have received appropriate responses to any outstanding discovery requests. However, I would like to address BellSouth's proposed CO modification, or space preparation charge.

Q. What is a space preparation charge?

A. BellSouth's physical expanded interconnection service tariff states that "The Company shall charge a Space Preparation Charge on

a recurring basis for costs of any renovation or upgrade to Premises space or support mechanisms which is required to accommodate physical collocation, unless otherwise specified in this tariff. For this section, support mechanisms provided by the Company may include, but not be limited to, HVAC equipment, HVAC duct work, cable support structure, fire wall(s), mechanical upgrade, asbestos abatement, or ground plane addition."[13]

Q. Does this charge apply to every physical collocation?

A. It appears it does. Staff asked BellSouth to provide billing information for the five most recent physical collocation projects it completed. In each of the five cases the ALEC was being charged a recurring space preparation charge.[14]

Q. Is it inappropriate for BellSouth to charge a space preparation charge?

A. The concept is reasonable but the proposed charges need to be closely reviewed in order to insure that the price level is both non-discriminatory and reflective of reasonably incurred costs.

Q. Please explain why you contend that the concept of a space preparation charge to be reasonable?

A. The process of conditioning collocation space is analogous to conditioning loops for DSL service. In both situations an ILEC incurs incremental costs in order to provide an unbundled network element to an ALEC. Where an ALEC's placement of an order causes an ILEC to incur costs, it is efficient to recover the appropriately

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[13] E20.2.7.J, First Revised Page 22, Issued October 25, 2000.

[14] BellSouth's Response to Staff's First Set of Interrogatories, Item No. 1. To illustrate why it appears that BellSouth always bills a space preparation charge, it we assume that the five completed jobs are independent of one another, and if the probability of being billed a space preparation charge is 99%, then the probability of all five being billed is $.99^5 = 95\%$, which is less than what we observe in the response, a 100% billing occurrence.

defined costs from the cost causer. In PSC-01-1181-FOF-TP the Commission concluded that it was appropriate to recover appropriately defined loop conditioning costs from the ALECs.[15]

Q. Has BellSouth appropriately defined the costs that should be recovered through a space preparation charge?

A. No. There are a number of problems associated with the development of the rate. The cost associated with space preparation is developed in work paper H.1.41. BellSouth has not adequately demonstrated that the costs reported on work paper H.1.41 are reasonably associated with preparing space for a collocator.[16]

Q. Please elaborate.

A. BellSouth has not shown that the costs reported on H.1.41 are drawn from a random sample that is representative of the locations where the Company incurs space preparation costs. BellSouth should have shown that its sample is representative of the population of offices that house physical collocators.

Q. Are there other problems with BellSouth's proposed space preparation fee?

A. Yes. BellSouth's tariff requires that at the termination of occupancy a collocator "at its expense [must] remove its equipment and other property from the Collocation Space." The tariff further mandates that the collocator "surrender such Collocation Space to the Company in the same condition as when first occupied by the [physical] collocator except for ordinary wear and tear unless otherwise agreed to by the Parties. The [physical] collocator shall

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[15] May 25, 2001, p.459-60.

[16] It appears that AT&T asked for additional documentation in its POD #25. However, BellSouth's response, dated March 18th 2003, indicates that the information has already been produced as part of BellSouth's collocation cost study and no other responsive documents exist.

be responsible for the cost of removing any enclosure, together with all support structures (e.g., racking, conduits), at the termination of occupancy and restoring the grounds to their original condition."[17]

BellSouth appears therefore to be first asking the ALEC to pay for the cost of making the space ready for itself, the ALEC, and then asking the tenant to pay to get the space ready for the next occupant, which may be BellSouth. Such a proposition is unreasonable because BellSouth is asking the ALEC to pay for getting the space ready for itself and the next occupant.

Q. Could this problem be remedied by eliminating the requirement that the exiting ALEC "restor[e] the grounds to their original condition?"

A. No, that is not a sensible solution. The CLEC should have to pay for any damage or clutter, beyond normal wear and tear, that was the result of it occupying the space. It should not have to pay for cleaning up a mess created by someone else. Furthermore, the ALEC would have less of an incentive to be tidy if someone else was responsible for cleaning up its mess.

Q. Well then lets focus on the cost of conditioning the space for the ALEC. Is there an existing pricing process for paying for the cost of removing equipment that has been retired by the ILEC?

A. Yes. The central office houses equipment that is used to terminate loops, and carry out transmission and switching functions. The cost of removing the ILEC's equipment is factored into the Company's cost estimates. The depreciation rates reflect the cost

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[17] E20.2.5.E, First Revised Page 17, Issued October 25, 2000.

of removing the plant.[18] Therefore the cost of removing the ILEC's equipment from the central office has already been reflected in the rates charged by the Company. In light of this accounting and rate-making practice, it is problematic to have the ALECs' pay for the cost of removing equipment that has already been paid for by the customers who benefited from the use of the equipment.

Q. Do you have any other concerns about BellSouth's cost study?

A. Yes. Suppose that there is space available in an office that could house DSLAMs owned by either an ALEC or BellSouth. It is my understanding that when BellSouth does a cost study for its retail services, it does not include in its estimate of its forward-looking costs an explicit space preparation charge.[19] Rather BellSouth would allocate a portion of its historical building investment, converted to current dollars, based on the cost of the DSLAM. Whatever costs have been incurred for refurbishing buildings would be included in the historical building investment.

If an ALEC were to use the same space for its own DSLAM it would likely have to pay a space preparation charge. This is because BellSouth is using a different costing methodology for

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[18] See, for example, BellSouth Documentation, Appendix B, file BCCCXL02FLC.XLS, folder capital cost inputs, column I. The FCC's Accounting Rules state "At the time of retirement of depreciable operating telecommunications plant, this account shall be charged with the original cost of the property retired plus the cost of removal and credited with the salvage value and any insurance proceeds recovered." http://www.fcc.gov/wcb/CFRparts/PART32.PDF, §32.3100(c). The FCC defines the cost of removal as "the cost of demolishing, dismantling, removing, tearing down, or otherwise disposing of telecommunications plant and recovering the salvage, including the cost of transportation and handling incident thereto." Id. §32.9000.

[19] My statement is based on my general understanding of how ILEC's conduct retail incremental cost studies rather than any explicit knowledge of how BellSouth has completed its DSL cost studies. In this proceeding I have reviewed how BellSouth develops its building loading factor and I see no indication that space preparation charges have been backed out from the calculation. See Xappendix\Appendix C\plspaaa02.xls, folder land&bldgs, cell D45.

wholesale and retail services. This difference in methodology has the potential to exclude from the market an efficient firm because the competitor of BellSouth would have to pay for a cost that exceeds the amount that BellSouth's retail service would have to cover.

Q. But wouldn't BellSouth's DSL service be assigned the same effective cost of the CLEC through the building-loading factor that you described above?

A. No. Suppose there is central office that covers 4,000 square feet and that BellSouth spent $40,000 refurbishing one tenth of the space, 400 square feet. BellSouth would allocate $100 per square foot to the collocator ($40,000 /400) and effectively $10 per square foot to its own retail operations ($40,000 /4,000).[20] Therefore the Company's methodology has the potential to exclude any equally efficient firm.

Q. How can this discrimination be eliminated?

A. The Commission should set the space preparation charge at zero and require BellSouth to use Verizon's methodology for estimating space costs. The capitalized space preparation costs would be included in the building investment that is used to determine the space fee. Furthermore, under the Verizon methodology, the space preparation costs are effectively allocated in the same fashion to both wholesale and retail services.

Q. Are you advocating that BellSouth use Verizon's methodology to establish the current cost per square foot of floor space?

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[20] BellSouth would actually allocate the $40,000 investment to all of the central office investment in the building. This is analogous to allocating the $40,000 to the 4,000 square feet of space.

A. Yes. I recommend that BellSouth convert its embedded building investment to a current value using current-to-book ratios. The current investment should then be divided by the associated floor space in order to obtain a current investment per square foot. This quotient would then be the input to BellSouth's model that is used to determine the monthly cost per square foot.

Q. Did you examine the methodology employed by Sprint for estimating floor space investment?

A. Yes. As explained by Sprint witness Davis in JRD-2, Feb. 4, 2003, page 17-19 of 107, Sprint estimated its building investments based on R.S.Means[21] data for telephone exchange buildings. R.S.Means indicates the cost of constructing a new central office.

Q. Were you able to validate Sprint's calculations?

A. Yes.

Q. Did you find any problems with Sprint's methodology of estimating building investment?

A. Yes, there are a number of problems with Sprint's methodology. First, Sprint obtains its floor space estimate by assuming that a new building is constructed to replicate its existing facilities. This presents a problem because, as I explained above, if a new building were to be constructed it could be smaller than today's central offices. It would also be highly unlikely that the layout of the building would be identical to the existing layout so cable lengths and other essential cost model inputs would have to be adjusted accordingly.

Second, it appears that Sprint's building investment calculations already include the cost of permanent fixtures such as

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[21] R.S.Means Building Construction Cost Data, 61st Annual Edition, 2003.

overhead lighting and AC receptacles. Thus, if the FPSC were to approve Sprint's building investment estimates and separate rate elements that included the cost of overhead lights, AC receptacles, or any other item included in the R.S. Means building investment estimates, Sprint would double recover these costs.

Third, Sprint improperly grosses up its floor space investment to account for shared support and growth space in the CO.

Q. Has Sprint proposed separate rate elements for overhead lighting and ac receptacles?

A. Yes. Since it appears that Sprint's calculation of building investment already includes the cost of overhead lighting and AC receptacles, it would be inappropriate to establish separate non-recurring rates for these permanent fixtures. Consistent with my prior testimony I recommend that these rates be set to zero. In the event that the FPSC finds that these costs are not already contemplated in Sprint's building investment estimates I recommend that the FPSC adopt the recommendations of Mr. Curry.

Q. Are there any other rates that you recommend be set to zero?

A. Not at this time. However, to the extent that R.S.Means construction cost estimate for "Telephone Exchanges" already include the costs associated with overhead superstructure, cable racks, and other permanent fixtures including, but not limited to those listed above, such costs should be removed from consideration because they are already included in Sprint's building investment estimates. Thus, in the event the FPSC approves Sprint's R.S.Means derived rate methodology, I recommend that Sprint first be required to provide a detailed explanation of the fixtures and permanent equipment already

included in its construction estimates so that duplicate costs and rate elements can be removed.

Q. What concerns do you have with the way in which Sprint grosses up floor space investments to account for shared support and growth space in a central office?

A. The basis for Sprint's shared support and growth space factor was an analysis of floor plan drawings for five Sprint COs that purportedly represent a cross section of small, medium, and large COs in Florida.[22] From the outset, any estimates derived from this study are highly suspect because Sprint's sample size of five observations is far too small for it to conclude with reasonable certainty that its results are representative of the population of Sprint COs in Florida. In fact, in Sprint's response to Staff POD No.13 the company makes no claim that the 5 COs used to estimate space utilization results in a statistically valid sample. I find this especially problematic for a rate element such as floor space that will be charged to all collocators and is likely to have a significant impact on the total cost of collocation.[23]

Q. If the sample size were larger or could be proven to return statistically significant results would this alleviate your concerns?

A. No. There are other significant flaws in the study itself. For example, Sprint derived its shared support and growth space factor by dividing the assignable transmission space by the total footprint of the CO after subtracting out from the total footprint the floor space associated with offices, vault space, and power

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[22] See Confidential Exh. JRD-2, at page 19 of 107.

[23] Sprint's response to Staff Interrogatory No.1 suggests that floor space fees comprise roughly 20% of an ALEC's monthly recurring costs.

equipment.[24] [I.e. Factor = Transmission / (Total - Office - Vault - Power)] Sprint then weights the results by the relative size of each CO to derive its factor. Because of this methodology Sprint effectively assumes that the costs associated with all common floor space should be assigned to, and thus recovered from, the rate element associated with transmission floor space.

Q. How should sprint have calculated this factor?

At a minimum, Sprint should have allocated what it classified as growth, shared, AC, and egress space proportionally to the remaining floor space classifications, such as office, transmission, vault, and power, and then calculated its floor space factor. This methodology is appropriate because it allocates the common space of a CO to all floor space classifications that cause and/or derive benefit from its existence. When corrected in this fashion the observed floor space factor is estimated to be roughly 81% as opposed to Sprint's original value of 40%. The impact of utilizing these different factors are compared in the following table. The table indicates that Sprint assumes a 150% overhead on assignable transmission space when the more accurate figure is no greater than 23%.[25]

	Floor Space Factor	Space Used	Space Paid For	Calculations
Sprint	40%	100	250	= 100 / 40%
Corrected	81%	100	123	= 100 / 81%

[24] Office space used by Sprint for its own marketing, customer service, and billing were removed for obvious reasons. The floor space associated with the cable vault and power equipment were removed because Sprint has proposed to recover these costs through separate rate elements.

[25] These figures were derived from workpapers attached to this testimony as Confidential Exhibit DJG-2.

Q. You say that your corrected floor space factor is still conservative, please explain.

A. The corrected floor space factor shown above is a conservative estimate (i.e. floor) because it relies on Sprint's original study, which contains a number of other errors and inconsistencies that over allocate common space to the transmission category.

Q. Please explain why even after your corrections there is still an over allocation of common space to the transmission category.

First, it is reasonable to assign more than a proportionate share of egress and shared space to the office category because the amount of such space in a building depends largely upon the number of people expected to occupy the building at any one time. Thus, the existence of call centers and other dedicated Sprint offices in a CO requires that the building have more exits, wider pathways, and larger bathrooms and lounges than a building dedicated to housing only telecommunications equipment and the relatively few employees necessary to maintain it.

Second, Sprint's study was a very simple collection of "back of the envelope" calculations in which dimensions were rounded, and spaces that appear to be dedicated to Sprint and its call center employees were allocated to the shared category without explanation.[26]

Third, Sprint's response to Staff Interrogatory No.13 indicates that this study did not include any observations of Sprint COs that

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[26] For example, in the case of the latter, see Sprint's response to AT&T POD No.10, "Winter Park CO." The lower left hand portion of the Second Floor Plan Record is described as a "Lounge" but assigned to the shared category in Sprint's calculations. Similarly a "Break Room" and "Office" on the First Floor Plan Record are assigned to the shared category.

are listed as "full" on its web site.[27] Since more than one-third of Sprint's COs in Florida are represented on this list, but none in its sample, it is even less likely that Sprint's sample is representative of the population of COs in Florida. Assuming that collocation has occurred in at least some of these COs it would be reasonable to include such observations in this study so that the calculated fill rate is more reflective of actual conditions. Sprint's exclusion of these observations likely understates actual floor space utilization rates because COs at or near exhaustion are likely to have less common space to allocate to other categories, including transmission, as a result of there being little or no unused growth space remaining.

Q. What other observations have you made regarding sprint's calculations?

A. While R.S.Means is not a wholly unreasonable starting point, I am concerned that Sprint is placing too much reliance on this source for such a crucial input to its cost study. R.S.Means and similar construction cost estimators generally caution that the cost estimates you derive from their products, while accurate, are "ball park" figures. For example, the editor of a competing product cautions that:

> "It's an aid in developing an informed opinion of cost. If you are using this book as your sole

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[27] See http://www.sprint.com/sprint/clec_fullsites.xls for the number of COs in Sprint's Florida service territory that are closed to collocation. This file, downloaded March 10, 2003, indicates that 49 of Sprint's 134 COs (roughly 37%) are at or near capacity. I note that the probability of randomly selecting 5 offices with no space limitations is roughly 9.8%.
[(85/134)*(84/133)*(83/132)*(82/131)*(81/130)] ≈ 0.098.

cost authority for contract bids, you're reading more into these pages than the editors intend"[28]

Furthermore, R.S.Means cautions that while its estimates are useful "when no details are available" and "should present a fairly accurate base figure" adjustments must be made based on the estimator's experience, local economic conditions, and local building codes.[29] These adjustments would already be considered, and thus unnecessary, if Sprint followed Verizon's building investment methodology.

Q. Are you advocating that Sprint use Verizon's methodology to establish the current cost per square foot of floor space?

A. Yes. Consistent with my previous testimony I recommend that Sprint convert its embedded building investment to a current value using current-to-book ratios. The current investment should then be divided by the associated floor space in order to obtain a current investment per square foot. This quotient would then be the input to Sprint's model that is used to determine the monthly cost per square foot.

Q. Do you have any final recommendations regarding the calculation of building investment?

A. Yes. When estimating building investment the FPSC may want to consider ordering the ILECs to only convert booked building investments to current values for Central Offices where collocation has occurred. Excluding COs where no collocation has taken place from these investment calculations should return results that are

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[28] See 2000 National Construction Cost Estimator, at page 5. This argument appears to have been supported by BellSouth at page 240 of the North Carolina Decision.

[29] See R.S.Means at page 483.

more representative of the cost of floor space actually used to provide ALEC's with collocation space.

Q. Have you been able to independently validate the building investment or floor space costs of the ILECs?

A. As I noted earlier independent validation of specific input or output values is quite difficult. However, based on BellSouth's response to Staff Interrogatory No. 26 it appears that it is possible to lease space to house central office equipment for approximately ********* per square-foot, per month. Similarly, in a recent collocation proceeding the North Carolina Utilities Commission found "…evidence in the record that the ILECs lease central office space for $0.20 to $0.80 per square foot per month."[30] To be sure, I am not advocating that the FPSC establish collocation floor space rates based on these values, but I do believe that these values can be used to test the reasonableness of the floor space rates proposed in this proceeding. In as much as the rates proposed by the ILECs in this proceeding are anywhere from 1.7 to 4.2 times the rate at which CO space is available for lease, this indicates an overstatement of costs.

Q. Please summarize your recommendations for estimating the cost of collocation floor space.

A. I recommend that the FPSC find Verizon's method of estimating building investments is an acceptable starting point for estimating the floor space costs of each firm. Thus, I recommend that the FPSC require BellSouth and Sprint to conduct a study, similar to that used by Verizon, where the investments booked in Account 2121 are made current based on accepted current to booked ratios.

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[30] North Carolina Decision at page 250.

Based on the information at hand I do not know the outcome of applying this methodology to either Bellsouth or Sprint. However, this methodology is clearly superior to what has been proffered by either BellSouth or Sprint. Furthermore, not only does this methodology provide the FPSC with a verifiable source of input data it also eliminates the need for certain ancillary rate elements proposed by the ILECs in this proceeding because the cost for items like vault space (Verizon), overhead lights and AC receptacles (Sprint), and building modifications (BellSouth) are already booked in Account 2121 and are reasonable to recover in the floor space rates.

Q. Earlier you recommended that the FPSC require Verizon to remove any duplicative appearance of costs from its study. Do you recommend that this also be required of BellSouth and Sprint?

A. Yes, where applicable.

Q. Please explain some of your concerns regarding the reliance on subject matter experts (SMEs) for developing cost model inputs.

A. My concerns regarding SMEs are similar to those previously expressed by the Commission on this issue. There is often inadequate, or non-existent, support for SME proposed inputs.[31] Furthermore, as has been previously noted by the Commission, a change in SME can result in a dramatically altered cost study.[32]

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[31] See for example, Before The 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 at 392-395.

[32] *Id.* At 393-394, where the Commission noted: "On August 16, 2000, approximately one month prior to the September 19, 2000 hearing, BellSouth filed its revised cost study. One of the changes to the SL1 loop nonrecurring cost study was an increase in the field dispatch rate from 20 percent to 38 percent - an almost 100 percent increase…. The 20 percent rate was asserted to have been an estimate, but the 38 percent dispatch rate was based on a regional BellSouth report on service orders and dispatches. The reason this report came to light was that a new SME knew of the report and used it."

It is also worth noting that labor constitutes a significant share of the costs associated with many rate elements. Since loaded labor rates are often calculated using time estimates provided by SMEs it is easy to see how even a relatively small overstatement of a work time by an SME can snowball into a significantly overstated cost estimate.

Thus, the problems I have identified point to the need of a higher standard for cost study input development then what appears to be achievable through reliance on SME testimony alone.[33]

Q. Who bears the ultimate responsibility of ensuring that proposed cost study inputs are properly supported?

A. The FCC, which has expressed frustration with unsubstantiated SMEs opinions,[34] has clearly stated that this obligation falls on the ILECs. Because "…incumbent LECs have greater access to the cost information necessary to calculate the incremental cost of the unbundled elements of the network. Given this asymmetric access to cost data, we find that incumbent LECs must prove to the state commission the nature and magnitude of any forward-looking cost that it seeks to recover in the prices of interconnection and unbundled network elements."[35] In a later Order the FCC concluded that when ILECs had not provided specific information on the "data, assumptions, and methodology" used in developing their cost study

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[33] This point was also recognized by the Commission at p. 393 of the Order cited at footnote 31.

[34] See, for example, Before the Federal Communications Commission, *In the Matter of Local Exchange Carriers' Rates, Terms, and Conditions for Expanded Interconnection Through Physical Collocation for Special Access and Switched Transport*, FCC 97-208, June 13, 1997, par. 205-6, 222.

[35] Before the Federal Communications Commission, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98 and *Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, CC Docket No. 95-185, First Report And Order, FCC 96-325, Adopted: August 1, 1996, Released: August 8, 1996 at ¶680.

inputs, it was the obligation of the FCC to establish interim rates that were in the public interest.[36] Consistent with these arguments, it is also the responsibility of the FPSC to set rates that are in the public interest.

Q. Are there any criteria the FPSC can employ to test the validity of subject matter expert proposed study inputs?

A. Yes there are. Although I am not a lawyer it is my understanding that the relevant legal standard for evaluating SME testimony is derived from *Daubert v. Merrell Dow Pharmaceuticals, Inc.*(*Daubert*), 509 U.S. 579, 113 S.Ct. 2786 (1993). In *Daubert* the Supreme Court explained that a trial judge, when faced with a proffer of expert testimony, must perform a preliminary Federal Rule of Evidence 104 analysis. This involves first making an assessment as to whether the reasoning or methodology underlying the testimony is valid, and then determining whether that reasoning or methodology can be applied to the particular facts at issue. While noting that "many factors will bear on the inquiry, and we do not presume to set out a definitive checklist or test" [37] the Court nevertheless went on to outline four factors that it felt were worth considering when making a reliability/validity assessment of expert testimony: (a) Whether the expert's theory or technique is falsifiable and has been tested, (b) the reliability of a procedure and its potential rate of error, (c) whether the theory or technique has been subjected to peer review and whether the results have been published, and (d)

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[36] Before the Federal Communications Commission, *In the Matter of Local Exchange Carriers' Rates, Terms, and Conditions for Expanded Interconnection Through Physical Collocation for Special Access and Switched Transport*, FCC 97-208, June 13, 1997, par. 407-410.

[37] *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. at 593.

whether the expert's methods and reasoning enjoy general acceptance in a relevant scientific community.[38]

The Supreme Court later expanded upon *Daubert* by finding that *Daubert's* specific factors and analysis may also be appropriately applied in determining the "admissibility of an engineering expert's testimony."[39] And through its finding that: "Conclusions and methodology are not entirely distinct from one another. Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence ... connected to existing data only by the *ipse dixit* of the expert. A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered."[40]

Taken together I understand these decisions to suggest that for SME testimony to be considered valid it must sufficiently past muster according to some form of *Daubert* type analysis[41] and it must be supported by whatever studies on which it is purported to rely and these have to be specific to the immediate issue under consideration. That is to say, it is not enough that the principles employed by an expert be consistent with the applicable standards of the field in which they are an expert; they must also have been employed in a manner that provides specific, verifiable facts that assist in determining the issue at hand rather than being used to support educated opinions as to what those facts ought to be. The

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[38] *Id.* 509 U.S. at 590-594.
[39] *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 150
[40] *General Electric Co. v. Joiner*, 522 U.S. at 146.
[41] For example, in *Kumho Tire Co. v. Carmichael*, 119 S.Ct. at 1179, the Supreme Court noted: "Though, as the Court makes clear today, the *Daubert* factors are not holy writ, in a particular case the failure to apply one or another of them may be unreasonable, and hence an abuse of discretion."

expert must expect to support each proposition with both the factual basis as established in the record and the pure science that leads to the applied science of his or her field.

Q. How have the cost inputs proposed by the ILECs in this docket been supported?

A. BellSouth has stated, in response to Staff Request for Production of Documents No. 8, that it has not relied on any time and motion studies to assist in the development of the work times utilized in its cost study. In its response to Staff's second set of interrogatories, at Response to Item 19, BellSouth goes on to say that these estimates, which are regional values, were developed by an SME "…knowledgeable about and representing a specific work center for collocation activities provided the work time inputs. BellSouth has no specific written guidelines." In this same response, BellSouth stated that "[t]here were no studies performed to validate for reasonableness" the SME recommendations.

In response to Staff's second set of interrogatories, at interrogatory No. 12, Sprint states that it relied on SME data to support cost inputs only when actual work time data was not available. Just as with BellSouth's response to similar questions Sprint states: "…[T]he subject matter experts used in Sprint's collocation cost study are highly experienced and qualified. Sprint's SME's currently work with collocation and/or have experience in other general operational areas related to collocation." On the other hand, Sprint did provide documentation as to how information was gathered from SMEs[42] and stated that there was process for validating SME provided data. While this process

[42] See, for example, Sprint's response to Staffs POD No. 12.

was predominantly based on the opinions of other Sprint employees Sprint did on at least one occasion take actual measurements of existing facilities to ensure that its "inputs were accurate and reasonable."[43]

Verizon stated that a "team of Verizon cost personnel collaborated with a variety of Subject Matter Experts (SME) within Verizon to develop this study."[44] In response to Staff Interrogatory No.60, Verizon indicated that the recommendations provided by SMEs were validated by "knowledgeable and experienced individuals in the upper management of Verizon West's Service Costs, Regulatory, Product Management, and Engineering Groups [who] reviewed the cost estimates for reasonableness."[45]

Q. Did you obtain from the ILECs any documents that were given to subject matter experts that explained how they should construct their estimates?

A. Yes, but only from Sprint. In its response to Staff POD No.12, it provided the "form" [emphasis added] that was sent to Sprint SMEs in which application and project management work times were solicited. BellSouth and Verizon indicated that they did not distribute similar documents to their SMEs.

Q. Do you have any concerns about the survey form Sprint distributed?

A. Yes. It appears that when the cost analyst distributed the survey form to the SMEs, he included recommendations regarding the hours associated with the activities and the probability of events. I base this tentative conclusion on the fact that the survey

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[43] See Sprint Response to Staff Interrogatory 12(h) and 12(i).
[44] See Exhibit BKE-1, page 4.
[45] See Verizon Response to Staff Interrogatory 60(h).

instrument provided by Sprint is populated with time estimates and probabilities. If I am interpreting the survey form correctly, the responses are biased because the SME's recommendations would be influenced by the cost analyst's recommendations.

Q. In your opinion, has the SME data provided met the criteria outlined above and if not, what would you recommend?

A. No it has not. It seems that the long-term solution to this issue would be for the Commission to mandate that the ILECs, or an independent third party, conduct time and motion studies. Given the impracticality of this requirement at this juncture, the methodology I followed in my analysis was to evaluate the reasonableness of the inputs based on their internal consistency both within and between the different studies that have been provided. That is, I believe that the Commission would be best served by comparing the proposed inputs and results across models.

As discussed in more detail below, I found significant problems with many of the SME supported costs provided by Sprint and BellSouth. For example, I observed significant variation in both the number of work activities and the estimated work times for processing collocation applications that each ILEC assumed necessary to complete a given task when compared with Verizon. The magnitude of these variations indicate that SMEs for BellSouth and Sprint expect their respective companies to be far less efficient than Verizon when completing this identical task. TELRIC calls for costs to be based on those incurred by an efficient firm.[46] There is nothing in the record indicating why BellSouth and Sprint could not

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[46] In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 CC Docket No. 96-98 and Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers CC Docket No. 95-185. First Report and Order, released August 8, 1996, ¶690. ("LCO")

achieve the same efficiencies in processing collocation applications as have apparently been achieved by Verizon. For this reason, and because of the lack of supporting data, a sensible solution to the conflicting SME opinions put forward would be for the Commission to adopt Verizon's proposed inputs for such items as I address below.

Q. Do all of Sprint's proposed rates rely on the opinions of subject matter experts?

A. No. Sprint indicated in its response to Staff Interrogatory No.15 that the majority of its proposed rates are "substantially supported by actual costs or turnkey quotes." However, this does not sufficiently address why it takes Sprint so much more time to carry out certain tasks as compared to Verizon.

Q. Do you recommend that time and motion studies be conducted to support all work activities?

A. No. Where there is not a significant amount of activity to complete a given task or there are few work activity observations to record I do not recommend that work activity studies be performed because the small size and variance of the population will make it difficult to generate a statistically valid sample. In these extraordinary circumstances the burden of preparing time and motion studies may far outweigh any resulting benefits.

Q. What criteria do you recommend that be used to determine when time and motion studies should be conducted to support a work time estimate?

A. There must be a sufficiently large sample size. The sample size necessary to achieve a statistically valid sample depends on the probability distribution of the activity, the desired level of confidence, and the variance of the activity.

Q. You previously mentioned processing collocation applications. Would you like to move on to this topic now?

A. Yes.

Q. What observations did you make when reviewing the ILEC's nonrecurring cost studies regarding the processing of collocation applications?

A. When reviewing the activities and work time estimates proffered by each firm for processing collocation applications I observed significant variation in both the number of work activities and the estimated work times each ILEC assumed necessary to complete the task at hand.

Q. Are these variations a cause of concern?

A. Yes. While it may be reasonable to observe some variation in the number of tasks and/or work times necessary to process a collocation application you would expect to observe considerable similarities across companies given that all three firms are required by TELRIC to estimate the cost incurred by an efficient provider to complete this task. The magnitude of the variations observed indicates that BellSouth and Sprint expect to be far less efficient than Verizon when completing this task. Confidential Exhibit DJG-3 suggests that both BellSouth and Sprint have included too many tasks in their project descriptions and/or grossly overstated the time necessary to accept an ALEC's application and determine if it technically feasible at the location requested.

Q. How do you suggest that the FPSC remedy the problems you just identified?

A. I recommend that the FPSC approve for all three firms the activities and work times proposed by Verizon as shown in Confidential Exhibit DJG-3.

Q. Are there any other recommendations you have for the FPSC regarding collocation applications?

A. Yes. I recommend that the FPSC establish rate elements that mirror the way in which Verizon calculated its proposed costs. [See Exh. BKE-1, p 93 of 235.][47] That is, ALECs submitting collocation applications should first be charged a "Pre-Acceptance Fee", or "Application Fee" based on the data in Confidential Exhibit DJG-3. This fee would be designed to allow the ILEC to recover the cost it incurs determining:

-the ILEC's future needs for the office in question;
-if sufficient space is available, and if so, where the type of collocation requested would be most efficiently located;
-if building modifications are necessary to provide the requested collocation;
-if sufficient DC power facilities exist in the central office to accommodate the collocation request.

Only after the ALEC has made a binding decision to follow through with its application would it be charged a "Post Acceptance Fee" or "Firm Order Commitment Fee" designed to allow the ILEC to recover the cost it incurs to engineer the ALEC's collocation arrangement.

Q. Why is it appropriate to recover the ILEC's application and engineering costs in the manner described above?

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[47] See also See BKE-1 9-10 of 235 "Initial Site Audit"

A. This methodology is appropriate because it recovers costs in the way in which they are incurred. For example, consider a situation in which an ALEC submits a collocation application but then decides not to consummate its request with physical or virtual collocation. By bundling together the application processing costs with the costs incurred actually engineering the collocation request before collocation is ordered it is possible for the ILECs to recover costs that it never actually incurs.

Q. What observations did you make when reviewing the ILEC's collocation related engineering costs?

A. Just as with the Application Processing proposals there appears to be significant variation in both the number of work activities and the estimated work times each ILEC assumed necessary to complete the task at hand. Once again, the magnitude of the variations observed is an area of concern because it appears that BellSouth and Sprint expect to be far less efficient than Verizon when completing identical tasks. Confidential Exhibit DJG-4 suggests that both BellSouth and Sprint have included too many tasks in their project descriptions and/or grossly overstated the time necessary to engineer an ALEC's collocation arrangement.

Q. What do you suggest that the FPSC do to remedy the problems you just identified?

A. Unlike my previous recommendation where it was easy to compare BellSouth's and Sprint's work time estimates to Verizon's "Internal Site Audit" work time estimates I am less certain that Confidential Exhibit DJG-4 represents one-to-one comparisons of analogous "Post Acceptance" engineering and project management activities. The project explanations and supporting documentation provided by the

ILECs were not descriptive enough for me to be more confident about my comparison. In any event, I hope that the ILECs' will address this issue with detailed explanations of the work activities and work times they assume necessary to engineer common collocation arrangements such as those cited in response to Staff Interrogatories 1 through 4. With such information the FPSC could establish rates based on the expectations of an efficient provider.

Q. Do you have any comments regarding security investments?

A. Yes. I would like to begin this discussion with BellSouth.

Q. Were you able to determine how BellSouth calculates its security investment?

A. Yes. BellSouth divided the cost of a two card-reader security access system by the average assignable square footage of a CO.

Q. Do you agree with BellSouth's calculations?

A. Yes, I agree with BellSouth's methodology, and, while I have not yet independently validated the cost of the security system modeled, or the average assignable square footage of a CO, the resulting costs per square foot appear to be reasonable.

Q. Would you please describe how Verizon calculates its security investment?

A. Verizon estimated its security investment based on cost of security additions that occurred in Texas and California.

Q. Do you have any concerns regarding how Verizon proposes to recover these costs?

Yes, I have a few concerns. First, it is possible that these costs have already been included in Verizon's building investment calculations used to develop floor space rates. Unless Verizon is

able to prove otherwise it should not be permitted to recover these costs in a separate rate element.

Second, Verizon has proposed to recover these costs as part of its Building Modification charge. But as I explained above, I was unable to determine the circumstances in which an ALEC would be charged this fee. I hope that Verizon will address and clarify this matter in its surrebuttal testimony.

Third, Verizon has proposed to recover these costs based on the number of parties it expects to "share" this element. Verizon expects that the cost of CO security will be shared between itself and ******** collocators. This occupancy rate is allegedly based on the average number of collocators in a Verizon CO. However, while Verizon's response to AT&T POD No. 5(d) indicates that this occupancy value is roughly equal to the national average number of collocators in Verizon COs it is clearly not representative of Verizon's experience in Florida.[48]

Fourth, and most significantly, Verizon's recovery proposal conflicts with a previous decision of the FPSC regarding cost sharing of modifications or enhancements that benefit multiple collocators as well as the ILEC.

Q. Where can this decision be found?

A. At page 86 of Order No. PSC-00-0941-FOF-TP, Issued May 11, 2000 it states:

> "...we shall require that when multiple collocators and the ILEC benefit from modifications or enhancements, the cost of such benefits or enhancements shall be allocated based on the

[48] This confidential response indicates that the national average CO fill is ******** but ******** for Florida.

amount of square feet used by the collocator or the ILEC, relative to the total useable square footage in the central office."

Thus, at a minimum, Verizon should be required to spread its security investment over the total floor space of the CO rather than the number of collocators it expects, plus itself.

Q. Would you please describe how sprint calculates its security investment?

A. Sprint calculates security investment based on a sample of recent security additions in COs throughout the country.

Q. Did you find any problems with the methodology sprint used to calculate security investment?

A. Yes. First, of the 48 observations in this sample only 2 are from COs in Florida. Second, Sprint makes no claim that its sample of security additions is representative of the population of COs in Florida. Third, there are significant variations in the per square foot cost Sprint derives from this study. These estimates range from as little as ********** to over ******* per square foot. These factors, along with the proposed rate which I address below, combine to cast doubt on the reasonableness of Sprint's proposal.

Q. Do you have any additional concerns regarding Sprint's proposal?

A. Yes. I agree with Sprint inasmuch as it has proposed to recover security costs as part of the recurring rate for floor space. However, when compared to BellSouth's proposed per square foot security costs Sprint's costs are unreasonable. Sprint proposes to charge a monthly recurring rate for security of roughly

********* per square foot[49] while BellSouth's expects to provide this for ********** per square foot.

Q. Please summarize your recommendation regarding security costs.

A. I recommend that the FPSC require the ILECs to recover security costs in the rates charged for floor space. This is consistent with both the prior decision of the Commission and the manner in which parties derive the benefit of this element. Should the Commission agree with my recommendations regarding the calculation of building investment for the ILECs the costs associated with security investments should already be reflected in the floor space rates so no additional charges are appropriate. Should the Commission choose another method for estimating building investment, or should a party prove that security investments are not already considered in the floor space rate calculations ultimately approved by the FPSC, I recommend that the BellSouth's methodology be adopted for all parties. That is, the cost of efficiently providing an appropriate security system should be distributed evenly across the total footprint of the CO.

Q. Is there another rate element you would like to discuss?

A. Yes, I would like to discuss collocation cages beginning with Sprint.

Q. Please explain how Sprint estimated the cost of providing a collocation cage.

A. Sprint used a sample of recent work activities to estimate the cost per linear foot of constructing a basic collocation cage.

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[49] This rate is equal to Sprint's security additive per square foot (Exhibit JRD-2 WP4 line3) times the building ACF 0.2431 (Exhibit JRD2-Inputs line 4).

Sprint avers that a collocation cage typically consists of an 8-foot tall chain link fence with a roll gate.[50]

Q. Did you examine Sprint's work activity study for collocation cages?

A. Yes. This study and associated paper were provided by Sprint in response to AT&T Interrogatory Nos. 6, 7, and 8. The documents examine the costs associated with cage construction, grounding, engineering, AC receptacles, and lighting.

Q. Do you have any concerns with sprints study or proposed costs?

A. Yes, any estimates derived from these studies are suspect because Sprint's sample size of approximately nine observations is too small for it to conclude with reasonable certainty that its results are statistically significant especially given the high variance of both work times for like activities, and material costs across observations.[51]

I found this to be especially true with respect to engineering times. This appears to be a problem because engineering accounts for a significant portion of the cost of a cage.

Q. What did you observe with respect to engineering collocation cages that concerned you?

A. There appears to be little if any relationship between the engineering times applied to these projects and the scope and/or scale of the project. For example, Sprint claims to have provided ***** hours of time to engineer a single 10' x 10' collocation cage with a gate, one AC receptacle, one overhead light, and grounding

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[50] JRD-2 at page 15 of 107.

[51] The sample size varies by activity studied. For example there were nine cage installations considered but only eight engineering observations.

for the cage.[52] However, for another project it only required just ***** hours to engineer three 10' x 10' cages with gates, one AC receptacle in each cage, and grounding for the cages. This work order also included changing the gate on an existing collocation arrangement.[53] Sprint fails to explain why this second observation, which is obviously more complicated than the first, required so much less time to engineer.

Sprint's calculation of the average engineering time also appears to be flawed as it spreads ****** total hours over 8 observations for an average of ********** hours per job. Sprint then arbitrarily allocates its average as follows; ***** hours to cage construction, and ******* hours to each AC receptacles and lighting. Not only does Sprint fail to provide support for these allocations it also fails to explain why its engineering was not necessary for all projects.

I am also concerned about the way in which Sprint estimated its grounding costs. These estimates are based on only 3 observations and Sprint fails to explain why grounding costs should be included in the per linear foot rate for all cages when it appears that not all cages in its study required or received grounding.[54]

Q. What recommendation do you have for the FPSC concerning Sprint's collocation cage proposal?

A. Although not without flaws I believe Sprint's proposal to be the most reasonable based on its per linear foot rate proposal.

Q. Do you have any concerns about Verizon's proposed rates for collocation cages?

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[52] See Sprint response to AT&T POD No. 6, line 25.
[53] See Sprint response to AT&T POD No. 6, line 13.
[54] I note that Mr. Curry addresses Sprint's proposed grounding costs in his testimony.

A. Yes, when compared to Sprint, Verizon's proposed rates for a collocation cage are unreasonable. Verizon's cost estimate for a cage surrounding a 10' x 10' collocation arrangement are more than twice Sprint's. I hope Verizon will address this cost differential in their surrebuttal testimony.

Q. Do you have any additional testimony regarding this issue?

A. No. I am prepared to discuss space reports.

Q. Please provide a brief description of the methodology employed by each ILEC to produce a space report.

A. Each of the ILECs relies on the work time estimates of SMEs to support its proposed costs. Both BellSouth and Sprint assume that the costs associated with producing a space report are the result of one-time events for each CO report requested. On the other hand Verizon assumes that each space report is a combination of two processes, a one time comprehensive examination of the CO, and annual evaluations to update any information that has changed since the initial examination of conditions within the CO. To calculate its proposed rate Verizon applies equal weights to the cost of the comprehensive and annual evaluations and then a fill factor is applied based on Verizon's demand forecast for each CO report.

Q. What observations did you make when reviewing the ILECs' cost studies regarding space reports?

A. I observed significant variation in the estimated work time each party assumed necessary to complete the task at hand, especially with respect to Verizon. BellSouth and Sprint expect to produce a space report with approximately ****** and ****** hours of labor, respectively. However, Verizon assumes that it will take

****** hours for the initial comprehensive examination and another ****** hours annually to update its information.

Q. Are these variations a cause of concern?

A. Yes. While it may be reasonable to observe some variation in the number of tasks and/or work times necessary to produce a space report you would expect to observe considerable similarities across companies given that all three firms are required by TELRIC to estimate the cost incurred by an efficient provider to complete this task. The magnitude of the variations observed indicates that Verizon expects to be far less efficient than BellSouth and even Sprint when producing these reports.

Q. It appears that Verizon's work time estimates are grossly overstated, but given that the difference in work time between Sprint and BellSouth is only a few hours do you believe that sprint's rate should be approved as filed?

A. No. While Verizon's work time estimates are clearly overstated the relatively more efficient time estimates proffered by Sprint also suggest an overstatement of costs. The description provided by Sprint indicates that it produces space reports based on an analysis of CO drawings. It is reasonable to assume that these drawings are kept up to date as additional ILEC equipment and/or collocation arrangements are placed in a CO. Thus, determining existing conditions and calculating the square footage and distances to essential facilities should take little time to complete. Similarly, the remaining items on Sprint's report should also take little time to gather because they should be readily available from billing records or data maintained by Sprint employees.

Q. How do you propose the FPSC resolve this issue?

A. I recommend that the FPSC require both Sprint and Verizon to recalculate their space report costs assuming that this activity requires no more than 10 hours to complete. I find this amount of work time to be more reasonable than either Sprint or Verizon's original proposals as it reflects greater efficiency and a more intimate knowledge of the operating conditions of their COs.

Q. Do you have any addition comments on this subject?

A. Not at this time.

Q. Did you have any concerns with the ILECs' cost studies regarding DSO cross connects? Please explain.

A. Yes. Based on a comparison of the amount of time assumed by Verizon to provision copper cables for cross connects it appears that Sprint's work time estimates and resulting rates are unreasonable.

Sprint proposes to charge for DS0 cross connects running from the MDF to the collocation cage in 100 pair increments. Sprint assumes that it takes ******** hours to complete this task; ******* hours for the pull, and another ******** hours to terminate the side on the MDF. The ALEC is assumed to be terminating the side at its collocation arrangement. However, for provisioning the same cable Verizon expects to need only ******** hours to pull, and ******* hours to terminate each side.[55]

Q. What is your recommendation regarding this issue?

A. As the previous discussion illustrates Sprint's work time estimates are unreasonable when compared to Verizon's. Thus, I

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[55] Verizon pull estimate is based on ********* hours per foot (Vz Collo cost Study…xls tab Cable Run Labor-CS cell E9) and Sprint's cable length of ***** **feet. (Exh JRD-2 WP 7.1)

recommend that the FPSC require Sprint to recalculate its costs based on the work time estimates proposed by Verizon.

Q. Do you have any recommendations with respect to BellSouth?

A. No. Based on my review of BellSouth's study its proposed rates for this element appear to be reasonable.

Q. Do you have any further recommendations?

A. Yes. To the extent that the FPSC finds my previous recommendation reasonable it should implement similar changes to Sprint's cost study with respect to fiber cables, as necessary.

Q. Would you like to move on to discuss collocation cable records?

A. Yes.

Q. What is a "collocation cable records" element?

A. According to BellSouth, "The Collocation Cable Records element consists of nonrecurring costs for establishing the cable records in BellSouth's systems. The records contain the local exchange carrier's (ALEC) cables terminating on BellSouth's frame and are needed for cable facility assignments. BellSouth assigns and pre-wires interconnection facilities from within its network to the collocation demarcation point."[56]

Q. Do you agree with the rates that BellSouth proposed for these elements?

A. It is hard to say much about the proposed rates because BellSouth has done a poor job of explaining the nature of the activities associated with the rate elements and the basis for the time estimates.[57]

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[56] See Exhibit WBS 1, Section 5, page 14.

[57] BellSouth Exhbit WBS 1, Section 5, page 14, and FlcollCR.xls. For example, in file FlcollCR.xls, the BellSouth has provided its estimate for the circuit capacity management (folder inputs_nonrecurring, cell H13). BellSouth has not

As previously noted, when reviewing the cost filings in this proceeding I have found it useful to compare the three ILEC's cost estimates for similar rate elements. With respect to this item, neither Verizon nor Sprint has proposed similar rate elements and therefore it is not feasible to make a comparison between companies for the collocation cable records element.

Q. What is your recommendation regarding the collocation cable records element?

A. I recommend that BellSouth provide in their surrebuttal testimony a detailed explanation of the functions associated with these rate elements, the basis for its time estimates, and address the degree to which Sprint and Verizon seek cost recovery for similar activities. Until such time as BellSouth has provided sufficient support for the Commission and interested parties to review I recommend that the price for this rate be set to zero.

Q. Are there any additional rate elements that you still need to address?

A. Not at this time.

Q. For some rate elements you have raised a concern but have not made a rate recommendation. Do you intend to file additional testimony on these topics?

A. Perhaps. In my testimony I have raised a number of concerns about the ILECs studies. For some of these items, I have stated that the Commission should review the particular issue but I have not made an affirmative pricing recommendation. It is my hope that the ILECs' and ALECs' responsive testimony will help clarify these

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explained why what appears to be a rather simple task, requires the number of hours proffered by its subject matter experts and cost analysts.

matters. Based upon my reading of their responsive testimony, I may submit final recommendations on these topics in supplemental rebuttal or surrebuttal testimony.

Q. Do you have any recommendations for the rate elements that neither you nor Mr. Curry directly addressed?

A. While there are two obvious options I endorse neither course at this time. The Commission could either accept any unchallenged rates as filed or reduce unchallenged rate elements by a percentage reflective of the adjustments determined necessary by the Commission for any disputed rate elements.

Q. What justification would there be for adjusting the costs associated with unchallenged rate elements?

A. While a given cost or rate element may not be singled out or specifically challenged by any of the parties the Commission may still find that there has been a systematic overstatement of costs or general methodological flaw that resulted in an overstatement of costs that is applicable to an ILEC's entire cost submission. The Commission could also conclude that the evidence supporting uncontested rate elements was no more sufficient than the evidence supporting rates that were challenged by parties and subsequently adjusted by the Commission so a generic or blanked adjustment is in order.

Q. What justification would there be for not adjusting the costs associated with unchallenged rate elements?

A. There are a number of rates that I reviewed and I found to be reasonable. I believe it would be inappropriate to lower these rates because it would establish rates that are below the cost of service.

Q. Why have you declined to take a firm stance on this issue at this time?

A. I believe that it is premature to make a specific recommendation on this topic until I have had, at a minimum, the opportunity to review the ILEC's rebuttal testimony.

Q. Do you have a list of rates that you have reviewed and for which you find to be acceptable?

A. Regrettably I did not maintain such a list during my review of the ILEC's studies.

Q. Does this conclude your rebuttal testimony?

A. Yes.

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Degrees:
B.A. Boston University, magna cum laude, 1976,
Awarded distinction in history.
M.S. University of Wisconsin-Madison, 1982, economics.
Ph.D. University of Wisconsin-Madison, 1987, economics.

Dissertation Title: The Evolution of a Market: The Emergence of Regulation in the Telephone Industry of Wisconsin, 1893-1917.

Fields Of Interest: Industrial Organization, Regulation, and Economic History.

Work Experience:

Queens College. 1987-

Professor of Economics since 1997. Teach industrial organization, statistics, econometrics, economics of the Internet, microeconomics, business economics, and economic history.

Graduate School, City University of New York. 1988-

Teach Industrial Organization.

Massachusetts Institutes of Technology. 2001-

Internet and Telecommunications Convergence Consortium, Visiting Scholar.

Columbia University. 1988-1998

Affiliated Research Fellow, Center for Telecommunications and Information Studies, Graduate School of Business.

Ohio State University. 1991-1998

Institute Associate, National Regulatory Research Institute.

Northeastern University. 1993-95

Visiting Research Associate.

Michigan Divestiture Research Fund. 1986-87.

Wrote report that identified the cost of telephone services in the information age. Quantified the stand-alone and incremental cost-of-service of different telephone services.

Office of Chief Economist, Wisconsin Public Service Commission, 1979-1980, 1983-1985.

Directed cost study that quantified the stand-alone and incremental cost-of-service of different telephone services. Supervised cost study of local measured service. Written and oral testimony presented on costing and pricing issues.

New York State Consumer Protection Board, 1985-1986.

Presented expert testimony to the New York Public Service Commission. Quantified the incremental and embedded cost of message and access services, and the elasticity of demand for various telephone services.

American Telephone and Telegraph Company, 1982-1983.

Responsible for developing interfaces between engineering simulation models and a financial forecasting system. Analyzed the impact of changes in demand on capital expenditures.

Dean Witter Reynolds, 1982.

Advised management on the procurement of telephone networks and hardware. Developed economic model for analyzing different capital expenditure alternatives.

Richard Gabel, Communication Consultant, Summer 1976 and 1980, 1981-82.

Researched the technical impact long distance service had on the design of the local telephone network. Analyzed Bell Operating Company's forecasting procedures. Assisted in the analysis of private line costing and pricing issues raised in antitrust litigation.

Massachusetts Department of Public Utilities, 1977-1979.

Developed costing and pricing procedures for gas, electric, and telephone services. Hearing examiner.

Yadkin Valley Telephone Corporation, 1976-1977.

Outside plant and PBX installations.

Teaching Experience:

1994- .Teach course on how to conduct a cost study at Michigan State University NARUC training seminar.

1987- Teach industrial organization, regulation, microeconomics, business economics, statistics, econometrics and economic history. Queens College.

1988 Teach course at Ohio State University on how to calculate the cost of telephone services.

1980-81, 1984. University of Wisconsin. Teaching Assistant for introductory economics and economic history.

Publications Post-Queens College Employment:

"Accessibility of Broadband Telecommunications Services by Various Segments of the American Population," (with Florence Kwan), in Communications Policy in Transition: The Internet and Beyond, eds. Benjamin Compaine and Shane Greenstein, pp.295-320, MIT Press, 2001.

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"The Role of Costs in the Establishment of Fair Rates." Wissenschafliches Institut fur Kommunikationsdienste. April 1997.

Panelist at Federal Communications Commission Workshop on Cost Proxy Models.

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3		BSMT	1	2	Totals	weights	share of all common	Allocated total
Office	O							
Vault	V							
Power	P							
Transmission	T							
Growth	G							
Shared	S							
AC	A							
Egress	E							
	SUM							
Sprint	T / (Total - O - V - P) =						T Overhead	
	Common Space							

4		BSMT	1	2	Totals	weights	share of all common	Allocated total
Office	O							
Vault	V							
Power	P							
Transmission	T							
Growth	G							
Shared	S							
AC	A							
Egress	E							
	SUM							
Sprint	T / (Total - O - V - P) =						T Overhead	
	Common Space							

1		BSMT	1	2	Totals	weights	share of all common	Allocated total
Office	O							
Vault	V							
Power	P							
Transmission	T							
Growth	G							
Shared	S							
AC	A							
Egress	E							
	SUM							
Sprint	T / (Total - O - V - P) =						T Overhead	Allocates G\S\A\E to all
	Common Space							

2		BSMT	1	2	Totals	weights	share of all common	Allocated total
Office	O							
Vault	V							
Power	P							
Transmission	T							
Growth	G							
Shared	S							
AC	A							
Egress	E							
	SUM							
Sprint	T / (Total - O - V - P) =						T Overhead	
	Common Space							

5

		BSMT	1	2	3	4	Totals	weights	share of all common	Allocated total
Office	O									
Vault	V									
Power	P									
Transmission	T									
Growth	G									
Shared	S									
AC	A									
Egress	E									
	SUM									

Sprint T / (Total - O - V - P) = T Overhead

Common Space

CO	TOTAL SPACE	Sprint Fill		Correct
		Simple	WGTD	
1				
2				
3				
4				
5				

	Ask for	PAY FOR
ACTUAL		
MODELED		
CORRECTED		
CORRECT SP		

	Application Processing Work Time Estimates							
Company	**Initial Collocation**		**Additional or Major Augments**		**Minor Augments**		**Microwave**	
BellSouth		Nonrecurring Labor F21-29		Nonrecurring Labor F30-38		Nonrecurring Labor F30-38		Na
Sprint		Application Fee D-18		Augmentation Fee D37		Augmentation Fee D14		Na
Verizon		Engineering-CS D11-12		Engineering-CS H11-12		Engineering-CS K11-12		Engineering-CS N11-12

Note: Table data can be found in folder identified within JRD-2 Florida Collo Study - Feb 4 - Proprietary.xls (Sprint); Vz Collo Cost Study-Proprietary Version-Filed Feb 4 2003.xls (Verizon); and FLphycol.xls. (BellSouth)

	Project Engineering Work Time Estimates							
Company	**Initial Collocation**		**Additional or Major Augments**		**Minor Augments**		**Microwave**	
BellSouth		Nonrecurring Labor F21-29		Nonrecurring Labor F30-38		Nonrecurring Labor F30-38		Na
Sprint		Admin, Proj Mgmt, RTE Fee D13		Aug Admin, Proj Mgmt, RTE Fee D48		Aug Admin, Proj Mgmt, RTE Fee D13		Na
Verizon		Engineering-CS D18-27		Engineering-CS H18-27		Engineering-CS K18-27		Engineering -CS N18-27

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