BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of	DOCKET NO. 980696-TP
Determination of the cost of basic local telecommunications service, pursuant to Section Section 364.025, Florida Statutes.	

VOLUME 25

Pages 2737 through 2890

PROCEEDINGS:	HEARING
BEFORE:	CHAIRMAN JULIA L. JOHNSON COMMISSIONER J. TERRY DEASON COMMISSIONER SUSAN F. CLARK COMMISSIONER JOE GARCIA COMMISSIONER E. LEON JACOBS, JR.
DATE:	Friday, October 16, 1998
TIME:	Commenced at 9:05 a.m.
PLACE:	Betty Easley Conference Center Room 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	MARY ALLEN NEEL, RPR

BUREAU OF REPORTING
RECEIVED 10-19-98

APPEARANCES: (As heretofore noted.)

I N D E X

WITNESSES - VOLUME 25

EXHIBITS - VOLUME 25

P R O C E E D I N G S

(Transcript follows in sequence from Volume 24.)

(Witness Art Lerma on the stand.)

CROSS EXAMINATION

BY MR. MITCHELL:

Q Good morning, Mr. Lerma. Tom Mitchell for GTE.

A Good morning.

Q Your rebuttal testimony notes as its first criticism of GTE, as I understand your testimony, that you didn't have much data to analyze GTE's expense information. Is that right?

A Yes. At the time that I prepared my testimony, I didn't. And I subsequently do have the information that was provided in data request responses and have even prepared an exhibit that shows what the comparable adjustments would have been.

Q Okay. And just so the record is clear, I'm holding up a big fat notebook. Is this about the quantity of documents that GTE provided you to back up its expense numbers as reflected in Mr. Norris's test mony?

A That's representative of what I've seen, but quantity does not necessarily translate to

quality.

Q I see. And you got the data response requests that have calculations and things like that that you said in your rebuttal testimony GTE had not provided?

A Yes, because they didn't provide them in their filed information, and those data request responses did not -- I did not have those until after the deadline for filing that testimony.

Q Now, just to close the loop, with respect to GTE, you've been asked whether you did specific studies of BellSouth and Sprint's efforts to reduce expenses through downsizing. I take it then you didn't do a specific study with respect to GTE about downsizing, did you?

A No. I couldn't for two -- for a couple of reasons. One is, I asked for that information about whether there were any expectations of any downsizing or future re-engineering, and the response I got was no.

And it also contradicts the fact that -- you know, I went into the Internet, and on GTE's Web site, you can click on a button for merger information related to Bell Atlantic and GTE. And one of the biggest things in there is that they expect expense

synergies of $2 billion, of which $500 million is in common costs and overheads. And there's no indication whatsoever that any of that has been considered in here.

Q Would you agree with me, Mr. Lerma, that -- for instance, looking at your ALR-3, you have a list of ARMIS account categories there -- that one of the ways you could have done this analysis would be to look back historically for some period of time to see what efficiency gains GTE in Florida had made in each of those categories?

A Yes. And I do have -- first it was necessary to find out how GTE came up with its calculations, because regardless of what data that I had available for me to determine whether there were trends downward or not, if I wanted to make an adjustment, I would need to know how GTE went about doing its numbers. And that's what we didn't have. We had the totals, but we didn't have how they went about it.

And it involves how did they come up with factors to determine what piece of their total is local so that I could translate that into an adjustment. That's what I didn't have available and what I did receive later in interrogatory responses.

Q So it's your testimony that you couldn't reach any conclusion without that backup documentation?

A I reached a conclusion enough to determine that the same observable trends that I had for BellSouth was there. I looked at GTE's general and administrative expenses and network operating expenses for a period from 1992 to 1997 off of its ARMIS reports. For network operating expenses, they trended downward, if I recall, about 6.5%, and for general and administrative expenses, they trended about 5%. So I did look at that, and that was the basis for my testimony suggesting that there are declining cost trends for all companies.

What I couldn't do is make the adjustments or the actual calculations, because I didn't have the background information as to how GTE came up with its numbers.

Q You were here yesterday when Mr. Norris testified, weren't you?

A Yes, I was.

Q Did you hear him say that GTE had just finished a one- or two- or three-year re-engineering pro ess of its operations in Florida?

A Yes.

Q And did you hear him say that based on that, GTE doesn't expect to be able to increase its level of efficiency in any substantial way for the next three to five years?

A Yes, but that doesn't necessarily mean it won't happen, because the trends were -- the cost trends were there before that took place. The access line growth is such that unit costs will continue to go down. Even if those level of costs are maintained and the access line growth goes up, the units costs will go down.

And you factor in -- I presume that GTE has -- publicly feels like there's a good chance of this merger. And if you factor those in, the verbiage that I pulled off of the Internet says that they expect to be able to do those synergies or accomplish those expense synergies as a result of economies of scale and efficiencies.

Q Of the merged company; right?

A That's correct.

Q We're not talking about the merged company here, are we?

A No, but if we're talking about forward-looking and what these costs are going to be like in the future, that merged company is where a

large amount of those corporate overheads generate. They're eventually allocated to each of the individual states, so there will definitely be a benefit to GTE in Florida as a result of that.

Q Well, does that mean then you also assume that BellSouth could merge with somebody and reach these efficiency gains?

A Sure, but they don't have anything announced, sir, or otherwise we would be looking at that.

Q Right, but they could? They could merge with somebody; right?

A Sure.

Q Okay. With respect to technology, have you done a specific study of GTE's network to see whether they have made gains in technology over the past couple of years?

A No, I have not.

Q Okay. Would you expect that one of these gains that you're talking about would be replacing analog switches with digital switches?

A I would expect that would be -- that could be a contributor.

Q And if a company has already replaced all its analog switches, you wouldn't find any gain there,

would you?

A That's not necessarily true. I heard in the cross examination of several witnesses yesterday that what you're talking about going forward is not necessarily that you're at -- that you have digital switches in place, but there are next generation systems that are out there, for example, next generation digital loop carrier systems that, once those come in, provide additional efficiencies.

MR. MITCHELL: Thank you, Mr. Lerma. That's all I have.

CHAIRMAN JOHNSON: Staff?

MR. BECK: Madam Chairman, could I ask a few questions, please?

CHAIRMAN JOHNSON: All right.

CROSS EXAMINATION

BY MR. BECK:

Q Good morning, Mr. Lerma. My name is Charlie Beck with the Office of Public Counsel.

A Good morning.

Q I would like to ask you a few questions about the size of a fund attracting competitors. In general, a fund would provide funding for those wire centers where the bench -- where the costs exceed the benchmark, however those things are set; isn't that

right?

A Yes, generally speaking.

Q Suppose that the fund were set large enough so that half of the wire centers in the state received funding. Wouldn't the non-funded exchanges be more attractive to a new entrant than funded exchanges or wire centers?

COMMISSIONER GARCIA: Could you repeat the question? I didn't hear it.

MR. BECK: I'm asking the witness whether unfunded wire centers would be more attractive to new entrants than funded wire centers for the Universal Service Fund.

THE WITNESS: I don't know specifically. I've never done that type of analysis myself. I'm not involved in that. It would -- an opinion would be that the unfunded wire centers are probably some of the larger wire centers where costs of doing business are lower in and of themselves, and so there's probably a lot of companies that are wanting to compete in those wire centers already.

Q (By Mr. Beck) Wouldn't a fund, at least in concept, to the extent that it subsidizes the costs to the extent they exceed a benchmark, makes those wire centers look like the costs are the benchmark, doesn't

it?

A Can you repeat the question again?

Q The fund would provide funding to the extent that the costs, however determined, exceed whatever benchmark is picked. Isn't that the fundamental concept?

A Yes.

Q And to a competitor, if they could rely on that fund, that would make the costs look like they are the benchmark in those funded wire centers, wouldn't it?

A Yes, that would be one way of looking at it.

Q Now, in the unfunded wire centers, the costs are going to be less than the benchmark, are they not, by definition?

A That's by definition the way it should work.

Q And so all other things being equal, wouldn't the unfunded wire centers be more attractive to a new entrant than a funded one?

A Yes.

Q And that assumes that a new entrant could rely on the fund being there and being permanent, not being subject to change every few years too, doesn't

it?

A Yes.

Q Okay. Would uncertainty about the permanence of a fund or the possibility of that fund being changed every few years also affect the attractiveness of funded exchanges to a new entrant?

A I would think it would.

MR. BECK: Thank you. That's all I have.

CROSS EXAMINATION

BY MR. COX:

Q Good morning, Mr. Lerma. Will Cox on behalf of the Commission Staff.

A Good morning.

Q In your summary you mentioned -- I'm not sure exactly how you referred to it, but some exhibits or some analyses that you performed that you could provide to the Staff. I'm trying to recall what it was. Do you remember when you mentioned that in your summary?

A Yes. I mentioned that initially when I filed my testimony, I would have prepared schedules similar to those that I prepared for BellSouth quantifying how to go about making the adjustments that I recommended for BellSouth. I have put one of those together for GTE since I obtained the

interrogatory responses.

Q But you did not have one for Sprint? Is that --

A No. There was not sufficient information provided, and it was also provided very late, because those data request responses weren't answered until October the 8th, and I just did not have time to put something together.

Q Do you think you could provide the BellSouth and GTE adjustment analysis as a late-filed exhibit?

A Yes. The BellSouth is already part of the testimony. It's attached to my testimony.

Q Oh, it is attached? Okay.

A And additional backup information for that was provided in a response to Staff interrogatories to AT&T. But I can provide the GTE analysis as a late-filed exhibit.

Q The GTE adjustment analysis?

A Yes.

MR. COX: Okay. Chairman Johnson, Staff would ask that a late-filed exhibit be marked for identification. It's the GTE -- AT&T's GTE adjustment analysis.

CHAIRMAN JOHNSON: It will be marked as

Late-filed 92 and identified as stated.

(Late-filed Exhibit 92 identified.)

Q (By Mr. Cox) I just have one question for you, Mr. Lerma. You mentioned three primary drivers or factors that would lower operating expense unit costs lower than the historical costs of a regulated monopoly, and those were productivity, technology, and competition?

A Yes.

Q On page 7 of your rebuttal testimony, you discuss the effect that competition would have.

A What line are you on?

Q Particularly I want you to look at lines 12 through 17.

A Okay.

Q And on those lines -- and I just want a little more explanation of what you're saying here in these lines. You state at line 12, "Although the onset of competition has impacts on operating expenses across the board, it has a particularly significant impact on general and administrative costs." And you go on to say that in a competitive environment, G&A expenses per line are considerably less than those reflected by BellSouth, GTE, and Sprint in their BCPM inputs.

A Yes.

Q Could you explain -- they're probably tied together -- why and how this occurs, why it would be a particularly significant impact on the G&A costs?

A Well, what it's going to drive -- and a good example of that is the timing, for example, of when -- if we look at BellSouth, BellSouth in many of its states has in the last few years gone into alternative regulation. I know that here, I know BellSouth, GTE, and Sprint, alternative regulation began in '96. In very many of the states across the region that BellSouth has been involved in, that's about when their alternative regulation began, '95, '96 time frames.

Coincident with that, these major large downsizings and re-engineering processes occurred, and expense levels came down over those period of times when, you know, the incentive probably before alternative regulation when things were pretty much in a monopoly environment was not there to reduce costs. Alternative regulation is rooted in the fact that competition is emerging. It is beginning. Otherwise, the Commission would not have considered doing alternative regulation, because things would have been status quo. So it drove those types of behaviors to

bring costs down.

What it also has done is, there is observable larger reductions that have occurred as a result of that over those time periods, about there were already reductions occurring even before then that are observable when you look at trends looking at specific ARMIS data.

In one of the responses that I provided to the Staff, Staff's fourth request to AT&T for production of documents, under Document No. 25, I provided three trend analyses for BellSouth, GTE, and Sprint that were based off of the ARMIS data. And if you look at that, you can see that costs have been coming down, but you'll see them more pronounced beginning with -- around the time that alternative regulation took place, indicating that, you know, competition is beginning to emerge.

Q And that was particularly for the G&A costs?

A Yes. The analysis that I provided there was for G&A, because the question that was asked was related to those same words that you just covered relating to general and administrative costs.

Q It seems like you discussed the impact of alternative regulation, and you're saying that that

sort of is equivalent to or translates into competition?

A Not necessarily. What -- because I think in most states, alternative regulation is a step towards even lesser regulation, which ultimately comes when a Commission feels that there is enough competition to not regulate that industry any further. So it indicates that there is some competition beginning.

And the fact that you're no longer being rate-of-return regulated, the incentives are different. The incentives are to reduce expenses and reduce investments so that earnings are higher and they're not driven any longer by any target rate of return.

Q So am I to understand that you're using the impact of alternative regulation, this historical information, to base your opinion on what the potential impact of competition will be?

A That's just one of them.

MR. COX: Thank you, Mr. Lerma.

CHAIRMAN JOHNSON: Commissioners?

Redirect?

MR. HATCH: No redirect.

CHAIRMAN JOHNSON: Exhibits?

MR. HATCH: AT&T would move 91.

CHAIRMAN JOHNSON: Show that admitted without objection.

(Exhibit 91 received in evidence.)

CHAIRMAN JOHNSON: Thank you, sir.

THE WITNESS: Thank you.

MR. HATCH: AT&T would call Catherine Petzinger to the stand.

- - - - -

CATHERINE E. PETZINGER

was called as a witness on behalf of AT&T and testified as follows:

DIRECT EXAMINATION

BY MR. HATCH:

Q Ms. Petzinger, could you state your name and address for the record?

A Yes. My name is Catherine Petzinger, and I work at 295 North Maple Avenue in Basking Ridge, New Jersey.

Q By whom are you employed and in what capacity?

A I'm a district manager for AT&T.

Q Did you prepare and cause to be filed in this proceeding rebuttal testimony consisting of approximately 44 pages?

A Yes, I did.

Q Do you have any changes or corrections to your rebuttal testimony?

A Yes, I have three. In my rebuttal testimony, on page 19, at the top of the page, line number 1, I would like to strike the words "used by GTE," delete those. The sentence -- the question should read, "Please explain why the ALSM method is faulty and why the default regression coefficients may have the same problem."

On page 20, there's a simple typo on line number 8. The last word on line 8 should read "outputs," so the "C" before that should be deleted.

And then on page 38, at the end of line 13, there were some quotes left off of that. That was the end of a quote, so that should read, "mix meets the least cost principle of TELRIC," unquote.

Q Subject to those changes and corrections, if I asked you the same questions as are in your rebuttal testimony, would your answers be the same?

A Yes, they would.

MR. HATCH: Madam Chairman, I would request that the rebuttal testimony of Ms. Petzinger be inserted into the record as though read.

CHAIRMAN JOHNSON: It will be inserted.

Q (By Mr. Hatch) Ms. Petzinger, did you also prepare supplemental rebuttal testimony in this proceeding?

A Yes, I did.

Q Do you have any changes or corrections to your supplemental rebuttal testimony?

A No, I do not.

Q If I were to ask you the same questions as are in your supplemental rebuttal testimony, would your answers be the same?

A Yes, they would.

MR. HATCH: Madam Chairman, I would request that Ms. Petzinger's supplemental rebuttal be inserted into the record as though read.

CHAIRMAN JOHNSON: It will be inserted.

Q (By Mr. Hatch) Ms. Petzinger, did you prepare and cause to be filed with your rebuttal testimony one exhibit labeled CEP-1?

A Yes, I did.

Q Do you have any changes or corrections to CEP-1?

A No, I don't.

MR. HATCH: Madam Chairman, could I have that marked for identification, please?

CHAIRMAN JOHNSON: It will be marked as 93.

(Exhibit 93 marked for identification.)

THE WITNESS: That was a proprietary.

MR. HATCH: Yes, ma'am, that is a proprietary exhibit.

Q (By Mr. Hatch) Did you also prepare and cause to be filed an exhibit to your supplemental rebuttal testimony identified as CEP-2?

A Yes, I did.

MR. HATCH: Madam Chairman, could I have that marked for identification?

CHAIRMAN JOHNSON: It will be marked as 94.

(Exhibit 94 marked for identification.)

Q (By Mr. Hatch) Do you have any changes or corrections to either your CEP-1 or CEP-2 exhibits?

A No, I don't.

Q Were they prepared by you or under your supervision?

A Yes, they were.

REBUTTAL TESTIMONY OF

CATHERINE E. PETZINGER

ON BEHALF OF AT&T COMMUNICATIONS

OF THE SOUTHERN STATES, INC

DOCKET NO. 980696-TP

I. INTRODUCTION

Q. Please state your name, present position and business address

A. My name is Catherine E. Petzinger. I am a District Manager with AT&T Corp. in Regulatory and Legislative Affairs, 295 North Maple Avenue, Basking Ridge, New Jersey.

Q. Please describe your work experience and educational background

A. I have an MBA from Rutgers University, New Jersey, and have thirteen years of experience in the telecommunication industry building, and subsequently leading, a group that developed switching cost models, including the Switching Cost Information System ("SCIS"). My experience includes extensive consultation on the use of cost models in various cost studies in the United States and abroad.

Before joining AT&T in 1996, I worked at Bellcore for 13 years in the Cost Methods and Models organization. I was one of three individuals who designed the Bellcore SCIS feature model and implemented new incremental

costing methodology into the program. I also was the lead subject matter expert on feature costing in general as well as a subject matter expert on 1ESS, 1A ESS and 5ESS switches. When I was promoted to lead the SCIS group of approximately 20 people, I had responsibility for the technical development, production, documentation, customer care and cost study consultation for the SCIS family of models.

Q. Have you previously testified in regard to LEC cost models in general, and the Switching Cost Information (SCIS) in particular?

A. Yes, I have presented expert testimony in numerous State proceedings dealing with switching unbundled element cost studies.

II. PURPOSE AND SUMMARY OF TESTIMONY

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to report my findings regarding the BCPM switch module methodology and the inputs used by BellSouth, GTE and Sprint.

Q. Please summarize the main points of your testimony

A. The BCPM switch model's methodology is deficient in the following major respects:

1. The BCPM model is dependent upon the embedded network configuration that does not represent an efficient forward-looking network. For example, BCPM uses the embedded host/remote and standalone configurations from the LERG, modified using undocumented assumptions.

2. The BCPM switch module is based on proprietary third-party models populated with undocumented input data. Using confidential models is neither necessary nor appropriate for determining USF and violates the FCC's USF Report and Order.

3. There are a number of model errors that cause overstated switch costs, such as the USF investment per line calculated by BCPM, when multiplied by the number of working lines exceeds the total amount of switch investment identified by BCPM as the total switch investment associated with USF.

4. Some of the inputs to the BCPM model by GTE, Sprint and BellSouth are incorrect and some are unjustifiably widely divergent. Most importantly, BellSouth, GTE and Sprint use incorrect switch price input data, which causes all the switch costs used to calculate the USF to be inflated.

IV. BCPM'S MODELING METHODOLOGY IS NOT FORWARD-LOOKING

Q. Describe how BCPM uses an embedded host/remote network configuration.

A. BCPM requires the LERG to run. The LERG is a Bellcore database that identifies wire centers and the switches that are deployed in the wire centers. Each switch is identified as a host, remote, or standalone. A standalone switch has no remotes, while a host will have at least one remote. BCPM requires every switch to be identified as host, remote or standalone. BCPM apparently also uses the LERG to identify the host to which a remote belongs.[1]

Q. Why is the current host/remote network configuration not forward-looking?

A. The embedded host/remote/standalone configurations in the LERG are not forward-looking and do not represent an efficient network, primarily because there are many more types of remotes available today than existed in the recent past, and the capacities of remotes have increased compared to remotes of just a few years ago. BellSouth stated "BCPM 3.1 designs a modern network of digital host, remote and stand-alone switches based on the *actual in-place network*."[2] TELRIC cost methodology does not require using the in-place network; in fact, it only requires the wire center locations to be

maintained and the methodology expects that a new, cost-effective network will be put in place. A network planner looking at the current demands for lines, trunks and traffic would definitely place a different mix of equipment, even assuming the same wire center locations. An example of a forward-looking change to the LERG mix of standalones and remotes can be found in BCPM's own documentation, which states: "Discussions with the sponsor companies' engineering subject matter experts indicate that few placements of *small standalone switches*, such as the Nortel DMS-10 are expected in the future. Most small exchanges will be served by 5ESS or DMS *remotes*."[3] It is unclear, however, how BCPM treats the DMS-10 switches. A network planner could optimize which wire centers were hosts vs. remotes given today's demands rather than being saddled with host placement decisions made many years ago.

Q. Why is it unclear how BCPM treats DMS-10s?

A. BCPM starts with data from the LERG. BCPM, however, appears to edit the LERG data so that only one switch is placed per wire center. AT&T has spent considerable time and effort reviewing equations and cell references in column after column of the switching module, but we have been unable to locate how the switches are translated from the LERG to BCPM. If the LERG shows multiple switches in a wire center, it has not been documented as to how BCPM chooses to identify the one switch it "keeps." Next, the switches that are "kept", are assigned to be either a Nortel DMS-100 or a

Lucent 5ESS, regardless of the manufacturer or technology of the actual switch. It is unclear whether a DMS-10 host or standalone switch is changed to a DMS-100 remote (as the developer suggests in the quote above) or whether the DMS-10 standalone or host is converted to a DMS-100 or 5ESS host or standalone switch.

Q. Is it wrong to assign all switches in Florida to be 5ESS or DMS 100s?

A. Yes. The 5ESS and DMS-100 are both large switches with huge capacities, and correspondingly large fixed costs. Many of the switches in Florida are small and forcing them to assume the pricing structure of a 5ESS or DMS-100 would seriously overstate the costs for these switches.

BCPM provides an optional small switch option that has been used by GTE and Sprint (but not BellSouth) that is an apparent effort to counteract BCPM's using data from the LERG and forcing all switches to be large 5ESS or DMS-100s.

Q. Does forcing all switches to be 5ESS or DMS-100 make the model forward-looking?

A. No. Although Lucent 5ESS and Nortel DMS-100 are market leaders for large switches, they are not the only suppliers of large switches. There are in Florida, for example, Siemans and Ericsson switches that can also be large switches. Even more importantly for Universal Service cost analyses are the critical assumptions about switches in more rural areas, where small switches

may be the norm and there are a number of suppliers of these switches, including Siemans Stromberg-Carlson, Nortel, and many others.

Q. Why is it important to reflect the mixture of switch technologies and manufacturers?

A. The fixed costs are dramatically different for a small standalone switch compared to a large one. Equally important, however, is BCPM's disaggregation calculations assign switch investment to specific buckets based solely on 5ESS and DMS-100 switches. Therefore the costs assigned to port, and the multiple usage categories are not relevant for any switches other than a 5ESS and DMS-100. Therefore, not only is the total investment probably overstated in many cases, but the amount assigned to the subcategories, or buckets, is totally inappropriate for other switch technologies that would be considered forward-looking as well.

BCPM's small switch option has its own disaggregation percentages. The entire documentation for the development of these percentages is in the Switch Model Inputs, p. 39, "The default data was generated from a *typical* state run of the *large* switch model during BCPM model development." The documentation does not explain what a typical state run is, and so we cannot determine whether it has any relevance. What is clear, however, is that any run of the "large switch model" would certainly not generate relevant or correct percentages for small switches.

V. BCPM INAPPROPRIATELY RELIES ON CONFIDENTIAL MODELS AS THE FOUNDATION OF THE SWITCHING MODULE

Q. Why is it inappropriate to use closed, confidential models?

A. First of all, using closed models for determining USF violates the FCC's USF Report and Order.[4] Closed models make it excessively difficult, and usually impossible, to evaluate whether the models are valid and whether they were used appropriately in the context of USF. For example, what forward-looking assumptions were made about SS7 signaling, digital loop carrier, etc. In addition, the closed models use massive amounts of data that need to be examined for consistency and relevancy with other assumptions in the USF forward-looking cost study methodology. These difficulties have been showcased in this proceeding where the short timeframe between the submission of the hugely complex BCPM switch model, coupled with delays in providing a working BCPM model in the case of GTE and delays in responding to data requests, have made a comprehensive and accurate assessment of the BCPM switch model an impossible task.

Q. What inputs to the proprietary models can significantly affect BCPM's methodology?

A. The SCIS models are typically run for essentially every switch in the cost study area. For each switch, traffic levels and switch size are entered as

office-specific inputs. Types and numbers of subscriber ports are entered; fill factors are inputs for both lines and trunks; types of remotes are entered (for example, copper-based, fiber based, etc.); and discounts are entered for various types of equipment. Without access to the underlying models, however, this is probably only a partial list of inputs that affect BCPM. Should additional information become available as data requests are received, this section will be revised or supplemented, if I have an opportunity to file additional testimony.

Q. Please provide some examples of how these inputs would affect BCPM?

A. BCPM and SCIS both use fill factor inputs. It appears at this point that at least one company has entered fill factors into both SCIS and BCPM.[3] The investments associated with the spare capacity defined by the fill factor inputs would therefore be double counted. For example, assuming a 95% SCIS fill factor and an 85% BCPM fill factor would result in an approximate 18% overstatement in the port investment.

The numbers and types of lines will cause volatile changes in the proprietary model outputs. The costs for different types of ports can vary dramatically, affecting both the overall investment levels as well as distorting the disaggregations. For example, Next Generation Digital Loop Carrier (NGDLC) costs are significantly less than either older Integrated Digital Loop Carrier (IDLC) or analog lines. From the data I have available at this point, it appears that NGDLC has not been entered into SCIS, therefore the

port costs will be overstated. In addition, although no NGCLD is in the switch model, apparently NGDLC is assumed in the BCPM loop module, which raises critical questions of inconsistencies within BCPM itself.

This volatile differences in costs is also true for the types of remotes – copper-based remotes, for example, are tremendously more expensive than fiber-based. (The cost difference is mainly attributable to the large amount of dedicated equipment at the host that is necessary to terminate copper-based remotes compared to a totally different architecture that requires essentially no dedicated equipment for a fiber-based remote.) At the time of preparing this testimony, I do not have information to determine what types of remotes have been assumed. As this information is made available in data request responses, I will supplement this testimony accordingly.

The proprietary cost models for at least one of the sponsors used discount inputs. If we receive the necessary data request responses, this testimony will be supplemented with just such an analysis The documentation indicates that the discounts "were mathematically eliminated from the results."[6] There are multiple discount inputs that can affect different outputs in a non-uniform manner and any process that "mathematically eliminated" these discounts would have to have been quite complicated. This mathematical process has not been documented nor explained in any way, and therefore it is highly questionable whether even the undiscounted prices for large switches are correct in BCPM.

Q. Are inputs to the proprietary cost models and inputs to BCPM consistent?

A. No one knows for sure. It is not clear that even Indetec, a BCPM developer, that purportedly reviewed all the *output* data to generate the regression analyses ever reviewed all of the *input* data used in the proprietary models. It is highly probable that data provided by three separate companies (and possibly multiple organizations within those companies) may not be consistent with the input data used in BCPM. For example, if the inputs to the proprietary models assumed an average line to trunk ratio of eight to one, in a 10,000 line switch, costs for 1,250 trunks would have been included in the BCPM default regression coefficients used by BellSouth, Sprint and GTE. In BCPM, the line to trunk ratio default (and used by BellSouth and Sprint) is fourteen to one, making 714 trunks for a 10,000 line switch. This would mean that the cost for 1,250 trunks included in the regression coefficients would essentially be spread over the 714 trunks calculated in BCPM, thereby overstating the cost by 75%.

These are only isolated examples of the potential problems that can exist between the proprietary model input data and BCPM. The bottom line is that without carefully reviewing the voluminous and confidential data inputs to the proprietary models, BCPM cannot be considered to be consistent or accurate and should be rejected.

Q. BCPM sponsors claim that other sources can be used for the BCPM switch price datA. Is this a viable alternative?

A. No. I know of no other switch models that use detailed engineering that would be consistent with the pre-defined output categories in BCPM other than the models used in this proceeding – all of which are proprietary. If Method #2 is used, then not only do the switch prices need to be entered for each switch, but the data must be broken down into the subcategories, or buckets used by BCPM. The only viable option for Method 2 is to use the same proprietary models used by the BCPM sponsors. Although it is also possible to override the default regression coefficients, the BCPM sponsors themselves caution: "The user can substitute other known relationships for the values in the coefficient matrix table. Caution is advised, however, as the investment results are highly sensitive to some of the coefficient values."

Method 3 appears to be more flexible because only the total switch investment needs to be entered. However, BCPM will disaggregate the total switch investment into the buckets using its internal logic, again based on proprietary models' data on only the 5ESS and DMS switches. In the end, BCPM is effectively tied to, and completely dependent upon, these proprietary models and the proprietary input data used to generate the proprietary results.

Q. Does the use of the proprietary models that produce highly granular cost outputs increase the accuracy of the switching costs assigned to USF?

A. No. Even if the BCPM proprietary model foundations were shown capable of generating accurate subcategory costs, the BCPM sponsors do not justify why their complicated and proprietary analysis, based on a more granular disaggregation of switch costs is any more accurate. Indeed, BellSouth's BCPM runs show that 38% of total switch investment is assigned to the port, whereas HAI uses a user-adjustable input of 37.2% for BellSouth.

Q. How does the structure of BCPM insure that the contents of the BCPM model must always be considered proprietary as well?

A. As BCPM starts with undiscounted switch prices (although even the undiscounted prices may not be correct, as discussed earlier), users must enter the highly proprietary switch discounts on a *manufacturer-specific basis*. The highly sensitive discount inputs guarantee that BCPM will be considered proprietary not only by the filing company, but by third party switch vendors, as well.

When Method #2 is utilized, the discounted switch prices *by switch manufacturer* are entered, which again would be considered proprietary by switch manufacturers.

VI. BCPM MODEL ERRORS

Q. Please identify the errors associated with BCPM's switch regression analysis.

A. BCPM's regression analysis, used to develop switch prices, purportedly used undiscounted list prices for switching. These prices must be subsequently discounted to reflect real prices paid for switching. The discounts, however, are not applicable uniformly to all of the investment buckets. Through an undocumented BellSouth "special study"[7] adjustment factors were developed that are applied to the discounts entered by the user to achieve purported *effective* discounts. The bottom line is that the regression analysis was performed on the incorrect undiscounted price data, instead of the real switch prices. Subsequent fudge factors, ranging between 62% and 99%, developed through an undocumented special study does not "fix" the incorrect regression coefficients that form the foundation of all the switch costs using BCPM default switch prices calculated in USF. BellSouth and Sprint used the default BCPM switch prices for all of their switches and GTE used the default BCPM for a large number of switches as well.[8]

Q. Please explain how BCPM's results overrecover BCPM's own identification of USF-related switch investments

A. Within the Main Logic spreadsheet, BCPM calculates the investment relevant to USF for each switch. In the same spreadsheet is the re-aggregation of the subcategories of investments into an investment per port and a usage per port that appear to be used to develop the final USF costs. The problem is that when the investment per port plus the usage per port is multiplied by the number of working lines, it *always* exceeds the total investment that BCPM started with as the USF-related total switch investment. The actual overrecovery in Florida for each company is significant and is shown below:

Company	Over-recovery
BellSouth	$36,649,378
GTE	$13,464,022
Sprint	$6,012,629
Total	$56,126,029

In spite of an extensive review of how the port and usage columns are derived in an attempt to specifically identify what is causing the error, the equations are so complex that we have been unable to locate the precise problem. The fact remains, however, that the investment per port, including USF-related usage, far exceeds the amount BCPM has calculated to be the total USF switch investment.

Q. Please describe the error that causes inflated trunk investments in BCPM

A. BCPM uses a line to trunk ratio to calculate the number of trunks required for each switch, based on the number of lines calculated in the loop module and passed to the switch module. The engineered lines in a switch is the total number of lines that are equipped compared to the lesser number of these lines that are "working". The difference between the two is the utilization level (often referred to incorrectly as the fill factor).[9] The number of trunks required in a switch is engineered in the real world based on usage levels, not the number of lines. If the number of lines is used to generate a rough estimate of the number of trunks, the number of lines used should be the working lines that are actually generating traffic. In fact, BCPM's sponsors agree that the line to trunk ratio should be using working lines as stated in BCPM's definition of line to trunk ration: "The average number of *working* lines per local interoffice trunk terminated on the switch."[10] BCPM, however, is calculating the number of trunks based on the *engineered* lines, thereby overstating trunking costs by approximately 15%, assuming an 85% fill factor input.

Q. Please explain why the ALSM method [redacted] is faulty and why the default regression coefficients may have the same problem.

A. When BCPM "bundles" the ALSM outputs into categories, it makes numerous errors causing incorrect assignment of investments to cost categories. One example is a subcategory called "Terminating Call Cost." This subcategory of cost identifies the costs of equipment necessary to terminate a call. This cost is caused only when terminating a call and terminating calls are both intraswitch and interswitch. BCPM incorrectly adds the terminating call cost to the trunk usage cost. The trunk usage cost will then be applied to originating and terminating interoffice calls (i.e., incoming and outgoing calls), but not to calls that stay within the switch, which is simply wrong.

Another more egregious example is a little more complicated. BCPM asks users entering switch price data via the ALSM option in Method #2 to input investments as generated by SCIS for two subcategories for [1] usage to carry traffic from a remote to the host (umbilical CCS) and [2] usage within a multiple-remote complex. The two remote-related usage categories should be multiplied only by the number of remote calls and inter-remote calls, respectively. BCPM, however, adds all these usage costs together and multiplies times all local service calls. Since the total local calls is significantly higher than just the calls involving remotes, the total usage investment is significantly inflated.[11]

As these are the same categories of investment that SCIS generates, it is reasonable to assume that the same or similar errors may have been made in the development of the BCPM default regression coefficients prices used by BellSouth, GTE and Sprint.

If a user enters data via the SCM input process, as GTE has done, this bundling is not done. There is no explanation in the documentation. We assume it is because of the inherent, undefined and undocumented differences between SCM and SCIS. If the bundling is trying to make the SCIS outputs conform to SCM outputs, that means that SCM, itself, may have these same errors within the model.

Q. Please describe the error associated with the engineering and installation factor.

A. BCPM's documentation defines the Telco E&I Factor as "The ratio of telephone company capitalized engineering and installation dollars to switch investment dollars."[12] Also, it states that "The investment function is: Telco E&I Investment = Telco E&I Loading * Vendor EF&I Switch Investment."[13] Vendor EF&I switch investment does not include common equipment and power. The BCPM model, however, applies this factor after the Common Equipment and Power Investment factor has increased the switch investment dollars. This results in overstated engineering and installation costs

VII. INPUT DATA ERRORS THAT GTE, SPRINT AND BELLSOUTH HAVE IN COMMON

Q. Have the Companies entered input data that reflects the forward-looking cost of switches?

A. No. They have used incorrect discount inputs to BCPM to modify the default undiscounted prices to forward-looking prices paid for switching.[14] The discount factors utilized for each switch type are of critical importance. If the discount factors do not reflect the actual forward-looking prices, the results produced by BCPM will misstate all of the switching investments used as the basis for USF.

Q. What are the discounted switch prices per line used in BCPM?

A. Total discounted switch investment divided by total lines is an industry standard of measure to evaluate and compare switch prices for end office switches. These prices are switch vendor engineered, furnished and installed (EF&I) investments and do not include local telephone company installation and engineering, power, land or building, but do include the main distributing frame (MDF) and protector. Sprint and BellSouth BCPM data allows us to compare these directly as shown in Table 1 in Rebuttal Exhibit CEP-1.

GTE has only provided data that apparently already includes local telephone company installation and engineering and power. These factors are in BCPM for Sprint and BellSouth, and so the table below shows a comparison of total

installed investment (including telephone company installation and engineering and power), MDF and protector, but do not include land or building.

Q. What is the difference on a per line basis between the Nortel, Lucent and GTD switch manufacturers as included in the BCPM filings?

A. Table 3 in Rebuttal Exhibit CEP-1 shows the differences.

Q. Is this disparity among the vendors appropriate or acceptable?

A. No. Lucent and Nortel are aggressively competing in all areas of the switching market. As these switches are essentially identical in functionality and features, these vendors compete primarily on price. Corroborating statements made by Southwestern Bell and Pacific Bell indicate that the same price is paid for switching regardless of vendor.[15] It is illogical, and incorrect for a forward-looking cost study, that a telephone company would consistently *plan* to pay more for one switch than another. What is logical is to assume that telephone companies, in the forthcoming competitive environment would choose the low cost provider. The difference in switch price between the GTD-5 and Nortel and Lucent is discussed in the GTE Input Data Section of this document.

Q. What if specific switch vendor contracts for one company appear to substantiate the difference? How can that be reconciled with your previous assertions that the switch prices should be similar?

A. There are numerous reasons why at a given time, a particular telephone company may produce contracts that appear to justify a large disparity among switch vendors. Some of these reasons are:

- The contract could be a "baseline" contract. I characterize this as the off-the-shelf contract. It is similar to the first price a car salesman will quote you when you ask how much the dealer wants for the car. These baseline contracts are typically in place with all large telephone companies.

- There usually are separate agreements, competitive bids or additional contracts that are simultaneously in effect that may not have been provided, that could even the disparity. These prices are the equivalent of the price for a car after hard negotiations and after the salesman has 'approval from his manager.'

- A particular telephone company simply may not have plans to place switches in the immediate future and has not initiated aggressive negotiations for competitive switch prices, and therefore may not have a contract that reflects forward-looking prices.

Q. How should this disparity be treated in the cost studies?

A. The cost studies should use switch prices for all technologies that are comparable and reflect least-cost, generally available technology.

Q. How do the discounted prices in BCPM used by BellSouth, GTE and Sprint compare to switching prices in the industry?

A. The Northern Business Information (NBI) study, "U. S. Central Office Equipment Market", states that the average price for RBOC digital switches per line shipped in 1995 was $102, and $99 in 1996. The study also indicates that per line prices are expected to continue to decline slightly through the remainder of the decade.

Both Lucent and Nortel have referenced this document's marketing data estimates, which lends credibility to NBI's expertise in the central office equipment market.[16]

Q. Do the switch prices reported for Pacific Bell support BCPM's prices?

A. No. Four years ago, Pacific Bell negotiated a major contract for approximately $110 per line.[17] According to the NBI study, the price per line for switching has been declining and is expected to continue to decline. The four-year old data for Pacific Bell, when brought down to current switch prices with a .97 factor per year[18] would result in $97 per line.[19] There were no separate prices quoted for different size switches, so the deflated $97 per

line either applies to all line size switches or is an average; and the $97 per line provides a comparative price point to evaluate the BellSouth switching prices.

Q. Do the switch prices reported by SPRINT support BCPM's prices?

A. No. The January, 1997, BCPM proxy model contained switching prices using a fixed cost of $261,871 and variable per line amount of $225[20] that were the results of a survey, based on telephone company inputs to SCIS. Sprint later retracted these switching prices, stating that "there exists a fundamental disagreement concerning the costs of switching."[21] Sprint submitted new BCPM inputs for switching prices of $150,000 fixed/startup and $110 per line.[22] Sprint said "the current BCPM values [the new lower values] more closely approximate Sprint's current costs of switching . . .."[23] For a 15,000-line switch, allocating the $150,000 fixed cost to the lines would result in an overall average price of switching of $120 per line. Note that AT&T does not suggest that this is the correct price; but as shown in the vendor switch price per line table at the end of this section, Sprint's switch prices in this proceeding appear disingenuous, at best.

Q. Does Southwestern Bell's 1996 switch price per line support BCPM's prices?

A. No. Mr. Hugh Raley stated in 1996 testimony that for Southwestern Bell Telephone, "the Engineered, Furnished and Installed"(EF&I) price was

$85/line"[24] for switching. Mr. Raley stated that $85 includes "everything that is required to make the switch work,". . . "the trunks, the fabric, the processors - the total price from a vendor standpoint divided by the number of lines on the switch." He also indicated that this figure represents recent bids both from Lucent and Nortel and that this price was the average *and not the lowest bid price*. Mr Raley included in his testimony an Attachment[25], which revealed the following:

	1-15,000 lines	15-40,000 lines	40-80,000 lines
EF&I Inv. Per Line	$140	$115	$85

Q. Do Vendor Announcements support the BCPM's prices?

A. No. The most current information comes from Nortel's Internet web page[26] announcing that a contract has been signed with US WEST "in excess of $US 100 million" for 2.2 million DMS-100 lines. This implies switch prices as low as $45 per line. Even allowing for the *in excess* to be an incredible additional 50% of the contract, for a total of $150 million, $150 million divided by 2.2 million lines would yield a price per line of only $68.[27] Nortel also indicated that this upgrade of US WEST's network will provide advanced digital features, such as ISDN, network business services and advanced display services. In addition, Nortel stated that "Nortel will keep US WEST's network ready for new services, such as Local Number Portability and for Advanced Intelligent Network AIN features . . .."

Q. Please summarize the switch prices you have discussed and compare them to the prices used in this filing

A. The table below compares the average prices per line and demonstrates that BCPM's prices are significantly overstated.

Source	Price Per Line
NBI	~$100
Pacific Bell	$110
Sprint Inputs to BCPM	~$120
Raley Testimony-BellSouth	$85/115/140
Nortel/US West	~$50
BellSouth USF Filing	***$188***
Sprint USF Filing	***$168***

GTE's data cannot be entered here because these prices are switch-vendor prices only and apparently GTE's data includes telephone company engineering, installation and power.

It is valuable to note the information provided in Mr. Pitkin's testimony, Section IV, regarding the dramatic reduction in switch investment that occurred when the BCPM defaults were replaced by US WEST with US WEST-specific data.

VIII. BELLSOUTH INPUT DATA ERRORS

Q. What are the inputs "Percent of Line New" and are they correct?

A. BellSouth's discount inputs are different for "new" lines, meaning lines that are placed at the initial installation of a switch, compared to lines that are added subsequent to initial installation, or "growth" lines. The inputs that identify what percent of lines are new is entered for the 5ESS and DMS-100.

These inputs are not correct because they contribute to faulty TELRIC cost calculations in BCPM. Using a TELRIC construct, the percent of new lines for both switch types should be 100% as Sprint has used in this filing.[28] TELRIC cost study methodology requires that a new network be deployed, using the existing wire centers. That means new switches at new switch prices. We do not advocate that some unreasonably low switch price could be achieved by asking the vendor to quote a price for a total system replacement, but do advocate that the best new switch discount currently available is the correct one to use in a TELRIC study.

Q. Why is the use of growth prices inappropriate?

A. All of the models proposed in this proceeding are "snapshot" models. Performing full, life-cycle analyses costing is extremely difficult and requires a tremendous amount of contentious forecasting. As snapshot, or point-in-time models, they capture the cost of equipment to serve current demand.

Incorporating the cost of growth into the switch prices changes the fundamental definition of the models and the cost study. And BCPM uses special growth prices solely for switching, while ignoring "growth" costs with respect to the remainder of the network. It is important to note that "growth" in loop plant, for example, would be cheaper than initial installation per loop because structure (poles, conduit), which are a significant portion of the cost would not be required. The incorporation of growth only in the switch studies is inconsistent with the loop and USF-related other studies and opportunely increases costs.

Q. Please define Reserved CCS and explain the problem with the BellSouth Input.

A. Reserved CCS is spare capacity within certain line-related components of a switch that is due to exhausting a different capacity on the same components, thereby "stranding" the costs of the unused capacity. This issue arises due to differences between the US WEST SCM and Bellcore's SCIS models. To my knowledge, SCIS includes this cost in the port investment, while SCM includes it in the line usage category. According to BCPM documentation, it appears that the BCPM default regression data includes the Reserve CCS cost in the line usage category. The ALSM Method #2, however, include the Reserve CCS in the line port category.[29]

The inputs for Reserve CCS are supposed to add this cost to the port and subtract it from the usage category. When we changed BellSouth's Global

Input from Line to Usage, the port investments increased significantly, but the usage investments declined much less.[30] In addition, it is not clear given the contradictions within the BCPM model and documentation of the treatment of this investment category that this BellSouth input hasn't already been included in the port investments.

BellSouth's input values in the State Default Inputs for the discounted cost of Reserve CCS per line are not correct. First of all, the DMS, unlike the 5ESS, typically has minimal reserve CCS because the inherent nature of its architecture allows "fine-tuning" of the engineering and purchase of the components, drastically reducing any stranded capacity costs. BellSouth's numbers indicate an absolutely huge amount of Reserve CCS for the DMS host, that is almost twice as much as the already inflated 5ESS Reserve CCS. The 5ESS Reserve CCS input values far exceed any costs I have ever seen. When BellSouth's information is provided to the data requests, the quantification of these Reserve CCS overstatements should be possible.

As the model methodology concerning this whole area is suspect, BellSouth should set these inputs to 0.

Q. Are BellSouth switch prices inflated due to forcing switches to be 5ESS or DMS-100s?

A. Yes, it appears that there are approximately 35 BellSouth switches that fall into BCPM's default definition of small switch. Acknowledging that

small switches do have different cost characteristics, BCPM provided a small switch option price matrix, but BellSouth chose not to use it. If BellSouth were to use the small switch option, the small switch price matrix should be revised to reflect the prices paid by a large LEC, rather than using the RUS data for very small telephone companies, as described in the following Sprint input data section.

IX. SPRINT INPUT DATA ERRORS

Q. Please identify the problems with the Small Switch price data used by Sprint.

A. The BCPM sponsors populated the small switch option with data from an FCC presentation by Dr. Gabel.[31] These prices were obtained for very small independent telephone companies that obtain RUS assistance. These prices certainly would not be applicable to a GTE or Sprint, as the buying power of these companies would certainly allow them to obtain better pricing than the extremely small companies that provided the data in the RUS study. (I also have serious reservations about using Dr. Gabel's data even for small companies purchasing small switches. The widely diverging prices per line between host and remotes is not reasonable, in my experience. The variable price per line does not change significantly between host and remote as it is basically the same equipment. The relevant, significant difference between the two switch types is in the fixed costs.)

In addition, the BCPM documentation indicates the website of the final version of this report with "slightly revised results".[32] The following table illustrates a comparison of the revised results to those used in BCPM that raises serious questions about the BCPM sponsors' definition of "slightly revised."

Switch Type		BCPM Input	NRRI Gabel /
Standalone	Fixed per Switch	$589,263	$518,307
	Inv. Per Line	$43	$44
Host	Fixed per Switch	$589,263	$572,988
	Inv. Per Line	$43	$44
Remote	Fixed per Switch	$54,270	$82,279
	Inv. per Line	$145	$140

Q. What problems appear with the Sprint switch types?

A. In response to a data request, Sprint provided a working SCIS model loaded with data from Sprint's Florida switches. We have been unable to determine precisely how this data was used in the BCPM filing, but a serous data error appears to have been made regarding the identification of switches as hosts/remotes/standalones. In BCPM, Sprint has 139 offices, of which 47 are standalone, 32 are hosts, and 60 are remotes. Sprint's SCIS data also shows 139 offices, but Sprint's inputs to SCIS indicate that of the 139 offices 38 are standalone/hosts and 101 are remotes. It would be expected that a higher ratio of remotes to host/standalones would be more efficient with corresponding lower costs. BCPM, however uses more than twice the

number of standalones and hosts, and therefore the costs may have been overstated.

X. GTE Input Data Errors

Q. What is different about GTE's use of BCPM compared to Sprint and BellSouth?

A. GTE has not used the default switch prices based on the BCPM regression coefficients in the model for some of the switches. As GTE's working model was received late, I have not had a full opportunity to review all of the GTE data, and will supplement this testimony, if necessary.

The analysis to date has indicated that BCPM entered data for certain switches under the SCM switch price input columns, which are then used to compute the USF. The switches that GTE selected for this special treatment are 52 standalone, 6 host and 11 remote "DTD" switches, which I assume are actually GTD-5 switches. (Apparently, BCPM cannot accept any name that doesn't begin with a 5(5ESS) or a D (DMS-100) and GTE had to fake out the program to get it to run. Entering the real name of the switch causes the BCPM investments to come up as errors.) GTE also selected 21 5ESS and DMS-100 switches that are standalone switches only. No 5E or DMS hosts or remotes were included. There is obviously some bias involved in choosing specific switches to be entered separately by GTE via the SCM inputs. The remaining 208 host and remote switches appear to have used the BCPM

default regressions. Interestingly there are significant differences in costs for GTE's SCM-entered switches and BCPM default costs as shown below:

Switch Type	SCM Inv. per Line	BCPM Inv. per Line
Standalone	$169	$204
Host	$182	$211
Remote	$164	$212

The BCPM default prices apparent bias for overstating costs is also discussed in Mr. Pitkin's testimony.

Q. Is the GTD-5 switch considered to be forward-looking?

A. No. In multiple jurisdictions, GTE has been required to eliminate the GTD-5 switches from forward-looking cost studies. We have been unable to locate any major shipments of new GTD-5 switches for eight years, except one outside of the United States. Although the manufacturer still maintains the switch, the vendor does not appear to promote this switch nor does it seem to compete with other vendors for GTE's business, which means the vendor has little incentive to price competitively.

GTE formed a joint venture called AG Communication Systems (AGCS) with AT&T (now Lucent) in January, 1989, for their digital central office

switch, GTD-5. GTE held the majority ownership for the first five years, with increasing ownership to Lucent reaching 100% in 2004.

As reported in Telephony, January 9, 1989, GTE Chairman James L. "Rocky" Johnson proclaimed that "There are no plans for a massive switch change-out" and AT&T Chairman Robert Allen stated that the joint venture will manage an "orderly transition" to new technology for the GTD-5's installed base.

Francis McInerney, an analyst with North River Ventures was quoted in Telephony, April 30, 1990, saying that "GTE wanted to get out of manufacturing because the GTD-5 switch was too expensive to develop. The joint venture with AT&T would meet GTE's needs until the GTD-5 switch was no longer needed."

Indeed, Telephony reported on April 30, 1990, that "GTE pulls funding from AG's ISDN development plan". They opined that "questions were raised at the time about the commitment of AT&T and GTE to the GTD-5 switch, given its limited share of the market."

In 1992, the Chicago Sun-Times, April 23, reported the AGCS closing of its Northlake facility and said: "Workers were told Wednesday that the manufacturing of big-ticket telephone switching systems will be phased out by the end of next year."

The Arizona Business Gazette reported on November 4, 1993, that "AG Communication intends to support its installed base of GTD-5 switches (most of them at telephone operating companies) for the rest of their call-handling lives – perhaps the year 2000 or later. And AG Communication will play a key role in the transition of the GTE systems to AT&T switches." . . . "In the meantime, AG Communication is working to develop new lines of business."

In the same article, Ms. Van Fleet, a spokeswoman for AGCS, was quoted "We're not really competing for new business in the switching systems business any longer. Ms. Van Fleet explained. "What we're doing instead is developing new business opportunities where we can use our expertise in telecommunications and apply it to emerging areas of the industry."

This appears to be exactly what they have done as evidenced in 1995 with announcements for advanced intelligent network peripheral equipment such as voice recognition, voice-activated dialing and fax storage and forwarding capabilities, called INgage. Their February 23, 1995, announcement quoted Mr. Curtis Steinhoff, an AG Communication spokesman, "The INgage line compares with AG Communication's primary business: servicing its installed base of GTD-5 switching systems. The company no longer makes base systems, but maintains and enhances GTD-5s for its customers, Mr. Steinhoff explained."

In addition, in 1997, AGCS announced its new ATM product line.

The last announcement of any major sale of GTD-5 switching systems our search could find was in 1989 in Canada.

The articles and quotes I have assembled above provide credence that the GTD-5 switch and it's historical prices should not be included in a forward-looking TELRIC cost study. In addition, the migration of this embedded base of lines to Lucent and Nortel should increase GTE's volume purchasing power with these vendors; thereby decreasing the cost of switching overall.

In Indiana's Generic Proceeding on GTE's Rate for Interconnection Services Unbundled Elements, Transport and Termination approved May 7, 1998, found: The fact that GTE may use this particular switch in its existing network, and may continue to do so for the foreseeable future, does not mean that this is an appropriate technology to include in a long-run cost analysis. Neither GTE's' past choices of equipment for use in its existing network, nor its choice of technology to add to its existing stock of equipment, have any bearing on the issue."

Q. What evidence is there that the GTD-5 is not least-cost technology?

A. Staff Economist, Nelson Parish, of the Public Utility Commission of Texas, in response to GTE's very similar studies filed in that state, conducted an analysis comparing the unit investments required to furnish a weighted average of various switching services using the GTD-5 versus other

switching technologies. Mr. Parish's analysis demonstrates that the GTD-5 requires an average of twice the investment needed for the other technologies to provide the same functions.

The Indiana Commission Order referenced earlier also found, "GTE witness Steele argued that the inclusion of the GTD-5 switch in the technology mix conforms to TELRIC costing principles as forward looking. He based this conclusion only on the fact that a Canadian telephone company purchased some GTD-5 central office equipment last April. GTE Exh. BIS-R, p.12. Mr. Steele admitted on cross-examination, however, that elimination of the GTD-5 switch from the technology mix would reduce the cost of a two wire port by $1.76. TR F-38. Given this admission, we fail to see how GTE can claim that its use of the inclusion of the GTD-5 in its switching technology mix meets the "least cost" principle of TELRIC."

In this proceeding, the average price per line for the GTD-5 switches is $195, higher than the average price per line for all 5E or DMS switches for BellSouth, Sprint and GTE. The averages break down to consistently higher prices for GTD-5 standalones, hosts and remotes than the equivalent standalone, host and remote switches in the other switch technologies.

XI. SUMMARY AND CONCLUSION

Q. Please summarize your testimony

A. The BCPM model has numerous errors that make the model inaccurate. Most importantly, however, it is based on confidential models that effectively prohibit interested parties from ensuring that the models are accurate, that the data used to run them is consistent with BCPM inputs and assumptions and the modeling methodologies are compatible. BCPM's claims that alternate sources, presumably non-proprietary, are simply not viable, because the detailed complex engineering-based outputs are only available from proprietary models. Even if the user enters locally developed total switch investment on a switch by switch basis, BCPM's logic invokes all the data to partition the total investment into the individual buckets that was again, obtained from the proprietary models.

BCPM's overly complex attempt to granularize switching investment into small, discrete functions does not add any accuracy to the analysis – only complexity and increased probability of errors.

BCPM's methodology that attempts to segregate host, remote and standalone switch costs is flawed because it is dependent upon the embedded host/remote configurations that are not forward-looking, nor efficient. Again, BCPM sponsors claim users can enter this data individually switch by switch, overriding the LERG information, but this is next to impossible. Even if a

company could enter all the data, including the precise host-remote affiliations, how could it be verified as efficient? The best estimate that exists today of the efficiencies gained by forward-looking host/remote/standalone configurations would be the blended costs in the Northern Business Report used in the HAI model because those costs represent the current mix of host/remote/standalone switches being shipped today.

Should this Commission favor the flawed BCPM model, then the filing companies' input data must be corrected. In addition, more time should be granted in order to ensure a thorough review of all underlying data inputs to the proprietary models to ensure they are consistent with the way BCPM uses them and the filing companies enter their input data.

Q. Does this conclude your testimony.

A. For now. When the complete responses are received to the data responses that were not available at the time of this testimony preparation, this testimony may require modification and/or supplemental testimony may be necessary to ensure as complete an analysis is made available to the Commission on the BCPM switch model.

---

[1] This is h Sprint and BellSouth determined these additives. GTE apparently included unknown additives in its starting prices for engineering, installation, common equipment and power, and were not added separately in BCPM.

[2] Bowman Direct Testimony, p. 12. [emphasis added]

[3] BCPM 3.1 Model Methodology, Appendix D - Switch Curve Methodology, Page 132 [emphasis added]

[4] See USF Report and Order ¶ 242. Also, e.g., Staff Cost Model Analysis ¶ 15; State Cost Study Criteria

[5] Based on the incomplete response received from Sprint and no responses at the time this testimony was written to requests for the SCIS models used to support BCPM.

[6] Ibid.

[7] This special study is not documented nor even described in any detail. BCPM 3.1 Model Methodology, Page 68-69.

[8] BellSouth, Sprint and GTE all used the default BCPM switch prices. GTE used the defaults for 70% of its switches along with GTE-entered data for some switches identified as using the US West SCM model.

[9] In switching, the "fill factor" is typically an administrative fill – those lines permanently reserved for testing and other administrative functions and do not include spare capacity. Utilization factor is a more accurate term in switching to describe the total difference between engineered and working lines.

[10] BCPM 3.1 Switch Model Inputs, Page 20. [emphasis added]

[11] The BCPM "bundling" of ALSM investment categories can be found in the ALSM input sheet, columns R-V.

[12] Telephone Company Engineering and Installation Factor, BCPM 3.1 Switch Model Inputs, Page 17

[13] Ibid, Page 17-18

[14] As the time of preparing this testimony, I have not received the actual switch vendor contracts, except for one contract for one company and therefore my testimony is limited. It is crucial that the switch investment reflect the efficient forward-looking cost of switching as evidenced by competitive bid or seriously negotiation contracts with switch vendors. When I receive this data, this testimony will be supplemented, if allowed the opportunity.

[15] This is substantiated by Mr. R. Scholl and Mr. J. Caling in Deposition of R. Scholl p. 46, ls 1-5, and Deposition of J. Caling, p. 93, ls 13-18, dated February 12, 1997.

[16] Lucent and Nortel October 15, 1996, filings in response to FCC Supplemental Request for Information from Lucent and Nortel, respectively. Cited in FCC 97-125, page 24.

[17] Quoted in GTE's Responses to proxy cost model questions in CC Docket 96-45, Federal-State Joint Board on Universal Service Proxy Cost Models, January 7, 1997.

[18] Extrapolated from the NBI yearly prices.

[19] This data substantiates the prices used in Hatfield. The average switch size for Pacific Bell is 27,200 lines. The average switching price on the Hatfield cost curve for a 27,200 line switch is $90.

[20] BCPM Methodology (no date), Page 20.

[21] Ex Parte Letter, 3/24/97, from Mr. Warren D. Hannah, Sprint to Mr. William F. Caton, FCC, Attachment A, page 5.

[22] Id., Attachment BCPM National Results Using Sprint Input Values, Page 3.

[23] Id., Attachment A, Page 3. The remainder of the quote dealt with a recommendation to use the higher rates for USF purposes.

[24] Direct Testimony of Hugh W. Raley, 9/6/96, Docket Nos. 16189,16196,16226,16285,16290; p. 7, lines 9-10 and Deposition of Hugh Raley, 9/13/96.

[25] Note, however, that there are other equipment costs added to Mr. Raley's $85/line such as taxes. AT&T agrees that these need to be added, but the relevant cost in this analysis is the actual price paid to the vendor which Mr. Raley calls EF&I. This compares to the prices used in the Hatfield Model switch curve that also are switch prices paid to the vendor. The Hatfield Model includes costs for the other components shown on Mr. Raley's chart in subsequent calculations. Mr. Raley was claiming that Southwestern Bell Telephone's $85 per line was significantly higher than the Hatfield Model's $59 per line for an 80,000 line switch. This comparison was flawed for two reasons: [1] Mr. Raley stated that the $85.00 per line was based on an average switch size of 53,653 lines; therefore, Mr. Raley's comparison to the Hatfield Model 80,000 line switch is inappropriate; and [2] the Hatfield Model's $59 per line is the price without trunk ports and when these are added back in, the actual price the Hatfield Model calculates for a 53,653 line switch is approximately $80 per line. Mr. Raley's $85.00 per line is, in actuality, very close to the $80 per line that the Hatfield Model calculates.

[26] www.nortel.com/home/press/1997b/6_16_9797219_US_West.html

[27] Thus substantiating that the large switch price of $75 per line used in Hatfield is conservative. All switch prices are quoted as prices paid to the vendor just for

vendor EF&I switch equipment and do not include taxes, telephone company installation, etc.

[28] Sprint affirmatively stated in February 16, 1998 testimony before the North Carolina Utilities Commission (Bollinger Supplemental Direct) in Docket No. P-100, Sub 133d that "The switching cost study has been changed to incorporate the switch discount associated with new switch purchases. The original cost study reflected a growth switch discount representative of additional investment to current switches. Sprint has determined that a new switch discount is more representative of forward looking switching costs than a growth switch discount." Pp 1-2

[29] This can be seen in the ALSM input sheet. The column labeled Min. Inv. per Line from SCIS includes the Reserve CCS. None of the other columns subtract the Reserve CCS before attributing the cost to the port, and therefore Method #2 used by GTE automatically includes Reserve CCS in the port investments. This is contrary to the information provided in the Switch Model Inputs, pp. 23-24.

[30] This appears to occur for every switch. One example is switch CLLI ABDLFLXa96H where the port increased by $_____, and the usage per line decreased by only $_____ for a net *increase* per port of $_____.

[31] BCPM 3.1 Switch Model Inputs, p. 37

[32] Ibid.

SUPPLEMENTAL TESTIMONY OF

CATHERINE E. PETZINGER

ON BEHALF OF AT&T COMMUNICATIONS

OF THE SOUTHERN STATES, INC

DOCKET NO. 980696-TP

I. INTRODUCTION

Q. Please state your name, present position and business address

A. My name is Catherine E. Petzinger. I am a District Manager with AT&T Corp. in Regulatory and Legislative Affairs, 295 North Maple Avenue, Basking Ridge, New Jersey.

II. PURPOSE OF TESTIMONY

Q. Please describe why you are filing supplemental testimony

A. BellSouth's response to AT&T's Request for Production of switch vendor contracts (AT&T's Third Request for Production of Documents to BellSouth Telecommunications, Item 21) indicated that AT&T would have to review the documents at BellSouth's Atlanta office. Upon review, it is clear that the information contained in these vendor contracts would tremendously impact

not only the switch price inputs used in BCPM, but the underlying cost structure of the BCPM switch module methodology as well.

Q. Please explain why this information was not included in your Rebuttal Testimony

A. BellSouth's response to the above Document Request was dated Friday, August 28, 1998 requiring AT&T to review the information at BellSouth's Atlanta offices. There simply was no possible way to travel from New Jersey to Atlanta to review the contracts, digest the information and include the material in the Wednesday, September 2 Rebuttal Testimony filing.

II. NEW PRICE INFORMATION AFFECTS BELLSOUTH'S BCPM INPUTS

Q. Please provide the switch prices you found in the latest BellSouth contracts for new Lucent switches.

A. The price per line for Lucent switches that are replacing analog 1AESS switches is and the price for *all other new switches is [* . The 1AESS replacement price is contained in Amendment No. 1 – Appendix A to Letter of Agreement #24, effective January 1, 1998 on page 8 of 19. The [ ] for all other new switches is contained in Amendment No. 1 – Appendix B to Letter of Agreement #24, effective January

1, 1998 on page 1 of 10. The specified contract pages are attached to this testimony as Exhibit A.

Q. What prices did you find in the latest BellSouth contracts for adding growth equipment to Lucent switches?

A. Amendment No. 1, Appendix A, described above also included the "Growth Discount Applicable to BST's Embedded Base of Switches". These prices are in the familiar form of "percent discount from list" and are [ ]. This information can be found on Pages 8 and 9 of Appendix A. These pages are attached to this testimony as Exhibit B.

Q. How do these Lucent prices compare to the prices used by BellSouth in BCPM?

A. The growth discount BellSouth used in BCPM was compared to the BellSouth will receive in 1998-2003. A direct comparison of the new switch price is difficult because the contract information is a [ ], while BellSouth used a percent discount from list in BCPM. To make the appropriate comparison, we ran BCPM at 100% 5ESS switches with 100% of the switches being new in order to have BCPM calculate the price of new 5ESS switches. The average BellSouth-filed BCPM price is , compared to the and in BellSouth's contracts.

Q. Please provide the switch prices you found in the latest BellSouth contracts for new Nortel switches.

A. The Nortel contract indicates that the price of new switches is dependent upon the [line size of the switch]. This information can be found in Letter of Agreement No. 34, effective 1/96-12/02, Attachment G, labeled Flexible Schedule Pricing Matrix. The prices range from [

]. The arithmetic average BellSouth switch size in BCPM is 24,0137 lines, which would be according to the Nortel contract. These contract pages are attached as Exhibit C.

Q. How do these prices compare to the Nortel prices used by BellSouth in BCPM?

A. We used the BCPM switch size information to calculate the cost of each switch using the Nortel contract Flexible Schedule Pricing Matrix in Attachment G. Assuming 100% Nortel switches, the average price for a new Nortel switch using the contract prices is This number differs from the price shown above because this is a "weighted" average for all switches in Florida and captures the fact that there are more small switches than large switches. The average price for new Nortel switches as filed by BellSouth in BCPM is

Q. Why do you assume 100% of the switches are one technology or another when comparing the contract prices to the BCPM prices?

A. BellSouth has not explicitly identified which switches are Nortel and which are Lucent. It has entered user inputs indicating of switches are Lucent and are Nortel. Assuming 100% of the switches are the technology being reviewed allows us to compare apples to apples; in this case, new switch contract prices for each technology to the new switch price used by BellSouth in BCPM.

Q. What would be the new switch contract price using the Lucent and Nortel melding used by BellSouth?

A. The average price for new switches would be

Q. Are these low new switch prices per line reasonable?

A. Yes. As stated in my Rebuttal testimony, the most recent information available indicated that numbers of this magnitude are being reported, and that prices are continuing to decline. In my experience, these are reasonable prices for new switch purchases and these most recent BellSouth contracts show lower prices than earlier contracts I reviewed. Growth prices are also declining as can be seen in the larger discounts for growth in BellSouth's most recent contracts. In addition, the price difference between the two switch

manufacturers is not large – [ ] for Lucent compared to [ ] for Nortel. This difference is understandable as it appears BellSouth purchases significantly [ ].

III. NEW PRICE INFORMATION THAT AFFECTS BCPM'S OVERALL SWITCH METHODOLOGY

Q. You stated that these contracts impact more than just the price inputs to BCPM. Please explain.

A. BCPM infers that it has superior switch cost methodology because it can accurately assign the costs to subcategories of switching, based on cost causation. Examples of these categories include processor, trunk, line usage, etc. (see Functional Investment Category Rationale included in BCPM3.1 Switch Curve Methodology, page 131.) These subcategories are required by BCPM's methodological structure in order to calculate call set-up costs and other micro-functions that are subsequently aggregated into the USF-related usage and line port categories. These new contracts highlight the fact that BellSouth's forward-looking costs are not caused by these micro-functions. The contracts unequivocally specify a [ ], making the [number of lines] the true cost causer. BellSouth's use of BCPM's functional cost categorization, with all its complexity that attempts to imply more accuracy,

ends up being an arbitrary allocation of the straight-forward cost per line clearly stated in the contract.

IV. SUMMARY AND CONCLUSION

Q. Please summarize your testimony

A. BellSouth's latest switch vendor contracts demonstrate that the BCPM model methodology does not accurately reflect cost causation because new switches are purchased on a [.], and not BCPM's functional categories. BCPM's detailed identification of subcategory switch costs is not only overly complex and dependent upon proprietary models, it does not accurately reflect the cost-causation of BellSouth's forward-looking switch costs.

The contracts also prove that BellSouth's discount inputs are causing the BCPM switch cost results to be seriously overstating the forward-looking switch investment as specified in BellSouth's own contracts and should not be accepted. Please refer to Exhibit D showing a summary of BellSouth's BCPM wire center results when the new switch contract prices are substituted for the as-filed prices. Exhibit E is the wire center by wire center results.

Q. How should BellSouth's inputs be corrected?

A. As detailed in my rebuttal testimony, the only valid cost for a switch is the new switch price for an incremental, long-run cost study that assumes that the entire

network is being purchased new and the increment of demand is the total demand being served. AT&T also recommends the HAI model be used as discussed by Mr. Wood. However, should this Commission decide that the BCPM model should be used and that growth prices should be included, the BellSouth inputs must be made to reflect the growth price percentages in its latest contracts. In addition, the percent of growth pricing as input by BellSouth is [ ] which is illogical, given that all the current demand must be priced at new switch prices. For new switch discount inputs, BellSouth will have to iteratively run the BCPM model to determine what discount input would be required to generate new switch priced that reflect the contract prices.

Q. Does this conclude your testimony.

A. Yes, it does.

Q (By Mr. Hatch) Do you have a summary of your testimony, Ms. Petzinger?

A Yes, I do.

Q Could you give that, please?

A Do I need to be sworn in?

CHAIRMAN JOHNSON: Yes.

MR. HATCH: My apologies.

CHAIRMAN JOHNSON: It would help.

MR. HATCH: I thought they were sworn in yesterday. I'm sorry, Madam Chairman.

CHAIRMAN JOHNSON: So did I. If you could raise your right hand.

(Witness sworn.)

CHAIRMAN JOHNSON: Thank you. And do we have CEP-2?

MR. HATCH: It is a proprietary exhibit. In fact, let me hand that out to you.

CHAIRMAN JOHNSON: Okay.

Staff, were we supposed to have -- we have like redacted copies of CEP-1. Were we supposed to have --

MR. COX: I think we have the other available.

CHAIRMAN JOHNSON: Okay.

COMMISSIONER DEASON: Can we get the

unredacted version? Is that in a folder you can hand out?

MR. COX: Yes, we can bring that to you.

CHAIRMAN JOHNSON: Okay. Mr. Hatch?

MR. HATCH: I forgot where we were.

Q (By Mr. Hatch) Do you have a summary of your testimony?

A Yes, I do.

Q Could you give that, please?

A Certainly.

Good morning. My name is Catherine Petzinger, and I'm here to discuss the switch module methodology within BCPM, as well as the switch inputs that were used by BellSouth, GTE, and Sprint in this proceeding.

The BCPM switch module methodology is dependent upon the proprietary SCM model from U.S. West, which was a sponsor of BCPM, and the SCIS model from Bellcore.

And before I continue, I would like to share a little of my background. Prior to joining AT&T in 1996, I was a director of the switch modeling group at Bellcore responsible for the methodology, the software development, and the client support of the SCI model, as well as numerous cost study

consultations. And prior to becoming director, I worked as a subject matter expert on the model in numerous areas, and most importantly, for the Lucent 5ESS switch module methodology, as well as all the feature costing in all of SCIS.

Back to my analysis of BCPM. I found some serious flaws in the fundamental construct of the model, of the switch module, a number of apparent modeling errors, and switch inputs that are simply not reasonable. I will briefly describe each problem.

The first fundamental construct flaw is BCPM's reliance upon a proprietary SCIS model that was run with undocumented input data. BCPM has multiple ways of entering switch price data. However, ultimately, they all rely at one point or another in the processing upon data that has been extracted from the proprietary models.

I cannot emphasize strongly enough that despite assertions that BCPM is not completely dependent on these models, that there are alternate ways of entering data, at some point in the processing, it still relies on data from those models.

Now, besides the obvious inappropriateness of using closed models for determining a universal service funding level, there are concrete modeling

problems within BCPM as well. For example, there are apparent inconsistencies between the data that was run in SCIS that forms the foundation for some of the data in BCPM, compared to the same data that is entered into BCPM. The information is inconsistent.

One example, another example of an inconsistency in BCPM is the line fill factors. Fill factors were used in one company's supply of SCIS data, and that upwardly adjusts the cost to account for fill. That information, as I understand it, went into the development of the BCPM regression prices that are in the model.

Fill factors were then again entered into BCPM itself, further altering the investments. This is an inconsistency then between data that was entered in SCIS and then data that was entered in BCPM.

Just as important, or maybe even more important, is what assumptions were made when SCIS was run to generate the default prices in BCPM for switching regarding what type of line port you have in the network. Analog and digital loop carrier line ports have very different costs. The SCIS model substantiates that. And it not only has different costs for analog and digital loop carrier, but it generates different costs for old digital loop carrier

equipment compared to next generation digital loop carrier equipment, which is the forward-looking technology.

Now, the next generation digital loop carrier is currently available and is being deployed, as was mentioned by Mr. Dickerson in his testimony. It does have a lower port cost, as Mr. Dickerson mentioned, in the switch portion where you connect those ports into the switch than the older types of digital loop carrier.

That means that if the data inputs into the SCIS model that formed the foundational pricing for port costs in BCPM did not include digital loop carrier, and specifically next generation digital loop carrier, those default prices in BCPM are going to be overstated. They're going to have the wrong type of line ports in them, or the wrong mix of line ports. Let me put it that way.

Now, when we looked at data provided by Sprint, of the 139 offices in Florida only two of them included any next generation digital loop carrier ports at all. And we understand that Sprint, being a sponsor, would have submitted their data as the foundation.

My testimony considers a number of these

examples, and they all highlight the difficulties of attempting to validate a USF proxy model that is fundamentally dependent on proprietary models that makes it almost impossible for other parties to review and understand exactly the interactions going on between the proprietary model and the assumptions that are made in that model compared to assumptions made in the BCPM model.

In addition, the BCPM model relies on the LERG, which is from Bellcore, for the construct of the network as far as deciding where hosts and remote switches are placed. Now, in this cost study, we're supposed to be doing a long run incremental cost study that holds fixed the customer locations and the wire centers. It does not hold fixed which switches are hosts and which switches are remotes. Those decisions were often made decades ago using old technology and demands that were in effect at that time.

If in the current type of cost study where you are going to be replacing and building a new network, a cost-efficient network, those old decisions made decades ago about which switches are host and which ones are remotes and how many of each that you place are outdated and inefficient. There is new technology. Remote switches have increased capacities

tremendously, and therefore, where originally a host switch may have been placed or a stand-alone, today a remote could be placed there at much less cost.

My testimony also highlights a number of modeling errors that contribute the BCPM's incorrect switch results.

One example is that the formula calculating the number of trunks required was based on engineered lines rather than working lines. Even the BCPM documentation says it should have been based on working lines. You only engineer trunks to carry traffic that lines are generating. You don't need trunks for lines that are engineered but are not working, and therefore have no traffic on them.

Another error involves an incorrect formula compared to the documentation regarding how engineering and installation costs for switching are developed within the model. And again, the details are in my testimony.

Another apparent error I found when I was reviewing two portions of the switch module, in one place BCPM identifies what is the cost per port and what is the usage assigned to USF on a per line basis. So we have a per port, which is basically a per line number, and you have usage associated with

basic local service identified, and that is achieved through extensive calculations that disaggregate and then reaggregate things back up multiple times over different jurisdictions, jurisdictions meaning either wire center or rate center, which are different. I don't mean to say it's outside of Florida.

In another place, however, in BCPM, there's a fairly straightforward calculation that says here's the total investment in switching by wire center assignable to USF.

If I take the per line number, the usage and the port number and multiply it times the number of lines in that wire center and compare it to the total investment in this other section that says this is the amount of investment in this wire center associated with USF, in every instance that line and port usage multiplied times the number of lines greatly exceeds the total amount that BCPM itself says belongs associated with USF.

The calculations were way too complex. I just could not find where the precise error was, but it definitely needs to be corrected if this Commission should decide to go with the BCPM model.

I would like to briefly discuss the input errors.

The one input error shared by all three companies as far as I'm concerned is the starting switch price. If the starting prices for switches going into the model as adjusted by their discount input entries, there is absolutely no hope that the outputs will be accurate or reflect a forward-looking cost of these companies.

Now, as can be seen in the proprietary attachment to my rebuttal testimony, which is labeled CEP-1, there is a comparison there of the switch prices per line of the three companies. They are proprietary. I won't mention the numbers, but they are very, very high. These are the investments that BCPM is using for the switch prices paid to the vendor in the top Table 1.

These numbers simply do not correspond to the data that is publicly available about what the price of switching is, nor does it comply with the contract data that I have recently been able to review that I received from Sprint, which was an old contract that -- the one I reviewed was an out-of-date contract. I understand now that that contract has been extended, but apparently no new negotiations were conducted to improve the discounts received in that contract.

Switch prices are coming down, even as the Turner Plant Index have shown, and there's no reason to expect that a discount derived many years ago would still accurately reflect forward-locking costs.

Now, in my supplemental testimony, I also had an opportunity to review the BellSouth contracts. And those numbers were discussed somewhat with Daonne Caldwell, but they are located in my CEP-2 attached to my supplemental. And those contract prices again are very proprietary, but the table in my CEP-1 shows that they are radically higher than the contract prices, and it cannot be explained away because of taxes or transport.

All the companies should be using switch prices that reflect the best price that can be obtained for new switches, as appropriate for a long run study where a new network is being placed, and where only the wire center and customer locations are fixed.

In my opinion, one of GTE's input errors is the inclusion of the GTD-5 switch. Simply because they have sold some switches to Canada does not make them forward-looking in Florida. On average, GTE is placing new switches with the Lucent or Nortel technology. They are not, in my experience, been

shown to be placing on any major effort any GTD-5 switches. And I have quite a lot of information in my testimony about why I think the GTD-5 switch is not appropriate for a forward-looking cost study.

In addition, for example, the Texas Commission in the unbundled network element proceeding had disqualified the GTD-5 switch as forward-looking or least-cost.

GTE used multiple processes within BCPM to enter their switch price data. In one case they used what they called the SCM input price -- process, excuse me. I don't understand why. SCM is a U.S. West model. GTE uses SCIS. Why they didn't use the SCIS input process for this is not clear at all. They did that for a number of switches.

For the remainder of the switches, however, they did rely on the BCPM default prices. There was a huge disparity between the prices used in the default BCPM versus what was done in this SCM input process. Again, we don't know the reason for this. It could be both a modeling and an input problem.

BellSouth has described its switch discount methodology as a melding of new and growth discounts. New switches sometimes receive a larger discount than add-on growth equipment and therefore would cost

less. Now, BellSouth has used this melding only in the case of switching.

These models, all of them, BCPM and CIS and HAI, are what they call static models. It is the industry standard. You're trying to capture at this point in time what is the total cost of developing the network for the current demand, not five or ten years' worth of growth, current demand, with some allowance through the application of fill factors for maybe some growth. That was done on the loop, and fill factors are also on the switch.

On top of that, BellSouth has incorporated the use of growth pricing over extended periods of time. It just simply does not fall within the realm of a long run incremental cost study and is totally inconsistent with everything else they've done in the rest of the cost study in BCPM, so it should not be allowed. They must use consistent modeling methodology assumptions throughout the cost study.

In addition, by the way, Sprint did use 100% new switch pricing. I don't necessarily agree with their number they used, but I do agree with the idea that they used 100% new switches.

Now, one other item is that Sprint used the BCPM small switch option in BCPM, and these small

switch prices are based on Dr. Gable's data submitted to the FCC for switch prices as reported by the Rural Utility Service.

The Rural Utility Service supports extremely small rural telephone companies in the United States and in the U.S. territories, for example, Marshall Island with like two switches. And many of these companies literally only have one switch in their entire network. These extremely small company prices simply cannot reflect the economies that a Sprint size company would be able to obtain from a switch manufacturer. It simply is not relevant to use that data for small switches.

In addition, Mr. Dickerson indicated he thought those numbers were being discounted yesterday. That is not true. If you look at the inputs to the BCPM model, there is an input for a small switch discount input. It has not been activated. There is no discount adjusting those numbers in Sprint's filing.

In summary, I believe BCPM is fatally flawed as a model for the switch module. It is relying on massive amounts of data that is proprietary and on models that are proprietary that other parties -- makes it reasonably impossible to do a really good

validation. And we have shown that there are numerous inconsistencies between what little we did obtain about the inputs to the SCIS model versus what goes into BCPM making the outputs inaccurate.

Again, because of the proprietary nature of these models, some of the data requests were rejected from some of the companies that refused to answer our data requests, and we have not been able to perform as thorough an analysis as we would like, and I am sure there are more error lurking in the models that we have not been able to uncover.

BCPM's overly complex modeling to granularize switching investment into very small, discrete functions does not add accuracy to the analysis. It doesn't add accuracy to the model, and it certainly doesn't add accuracy to the results for USF funding. It only adds complexity. It precludes others from viewing the model, for all practical purposes, and tremendously increases the probability of errors. The more complex it is, the more probability you have for errors.

Now, should this Commission decide in favor of the BCPM model despite what I've said, then the inputs must be corrected, at a minimum, for the switch price is by far the most important piece, as well as

the other input errors I detailed in my testimony.

I again emphasize that due the complexity of the model and the lack of the information on the assumptions and the data in the proprietary models that were used to develop the important BCPM pricing, I am so sure that there are numerous errors that I have not been able to uncover at this time given the short time frame between when we received the model and these hearings.

Thank you. That concludes my summary.

MR. HATCH: Tender the witness for cross.

COMMISSIONER DEASON: Before we begin, Staff, I still don't have an unredacted CEP-1. I don't see it in this folder.

(Document tendered to Commissioner Deason.)

CHAIRMAN JOHNSON: BellSouth?

MR. CARVER: Sprint will go first this time, if that's okay.

CROSS EXAMINATION

BY MR. FONS:

Q Good morning, Ms. Petzinger. My name is John Fons, and I'm representing Sprint-Florida.

A Good morning.

Q As an AT&T district manager in regulatory and legislative, what are your duties?

A Recently? Well, I've only been with AT&T since 1996.

Q Well, during that time --

A In the past year and a half, I would say I have been almost exclusively devoted to researching unbundled network element cost studies filed by the incumbent carriers, the switching cost studies.

Q Based on that, am I correct that you don't have any role in the analysis of switch proposals submitted to AT&T or its divisions or departments or subsidiaries from any switch vendor or manufacturer?

A I don't have any role in the procurement or negotiating of contracts for switches. Was that your question?

Q Yes.

A No, I don't have any role. I don't deal with that at all.

Q Prior to your employment at AT&T in 1966, you worked for Bellcore for about 13 years?

A 1996?

Q Yes, 19 -- what did I say? I'm --

A 1966. I'm not that old yet. I'm getting there, but not yet.

Q Forgive me. That was not intended. Let's try it again.

You worked for Bellcore for 13 years prior to 1996?

A That's correct.

Q And in that capacity, you stated that you participated or led a group that developed switching cost models, including the Switching Cost Information System or SCIS; isn't that correct?

A Yes.

Q Is there more than one variety of the SCIS model?

A I'm not sure what you mean by variety.

Q Is there a SCIS model for the switching processor, and is there a SCIS model for the features?

A There is a model called SCIS-IN, which is the feature module. There is a model called SCIS-MO, which is -- I would not characterize it as a processor. I would characterize it as the basic switch analysis. Those two models talk to each other. They are linked when running. The features need the basic MO model to run.

Q And I believe your testimony was that you had a role in the development of the SCIS-IN; is that correct?

A I testified that I was involved specifically as a subject matter expert in the

development of the 5E switch SCIS development, which included MO, and then I also was a lead on the feature module. When I became director, I had responsibility for all of the methodology for all of the SCIS models.

Q And does the BCPM rely upon the SCIS-MO?

A Yes, it does.

Q Are you familiar with the BCPM methodology which describes how the BCPM models switch information?

A I have reviewed it, yes. I looked at it. You're talking about the written documentation?

Q Yes.

A Yes.

Q Section 7.0 of the BCPM model methodology?

A I don't know what the section number is, but it was labeled "Switch Module Methodology," I think.

Q Are you familiar with the FCC switch design goals?

A Somewhat familiar.

Q Would you agree that one of the goals is to separately identify host, remote, and stand-alone switches and calculation of costs specific to each type?

A In my discussions with some FCC staffers on

this particular area, we did discuss that. I think you're right. I think they are leaning that way.

My caution, however, was, although that's the ideal, all of the parties, including Sprint and BellSouth, agree that there is no way to dynamically model what the optimum mix of host and remote should be in this forward-looking network, and that in my opinion, for the reasons I gave in my summary, that reliance on the embedded host/remote configuration is not acceptable in a forward-looking environment, because, as I said, where a stand-alone switch may have been placed even only five years ago, today they could put in a remote. The capacities have changed dramatically. The technology has changed.

Although they are moving in that direction, the caution is, how do you determine what the optimum methodology is, if you can identify separately the cost of a remote separately from the cost of the host.

Q Would you also agree that one of the design goals is the acceptance of data such as switch classification, wire center traffic characteristics, and switch investments from multiple sources?

A I'm not sure I understand completely what you're asking me.

Q I'm asking you whether one of the FCC

switch design model goals is the acceptance of data such as switch classification, wire center traffic characteristics, and switch investments from multiple sources?

A No, I'm not aware of that. I'm not sure what you mean by multiple sources. In my discussions with them, which was quite some time ago, there was no discussion of multiple sources. That was to be done -- I believe that tended to be -- in my discussions with them, there was the modeling issue of how the model should be, and then the inputs were going to be a separate discussion.

Q Are you aware that another design goal of the FCC for these models is the sharing of costs between the host switch and its attendant remote switches to reflect properly the efficiencies of such arrangements?

A Well, again, yes. When we were discussing this issue, we talked about if you can identify the cost of a host, and if you can identify the cost of a remote separately, when you have it, what do you do with it?

In reality, should -- for example, if the customer is served from a remote, if the cost of that remote is less than the cost of the host, should only

the customers served off the remote receive the benefits of that lower cost remote, or in reality, as my recommendation was, should that be looked at as an entire system, and that all subscribers on the host and the remotes benefit somewhat equally and actually have the same cost. It's levelized over all the customers served by that system. Otherwise, you are penalizing people for being served arbitrarily from whether or not they live close to a remote or close to a host, and that didn't make much sense to me. So my recommendation was to serve all equally.

Q Would you agree, Ms. Petzinger, that for universal service purposes and the provision of basic local exchange service, that for switching purposes, that that requires a line port on the switch, usage of the central processing module, line and trunk CCS usage, and SS7 usage?

A Yes, that's correct. However, I don't see it necessary to separately identify those. We've lived a long time with identifying the cost of a port, and then usage basically being the cost of the rest of the switch, and more or less a minute is a minute. I don't think it's necessary to identify the difference in cost of the part of the minute that is incurred on the line versus the part of the minute that's incurred

in the trunk. If you take the switch and figure out what the cost of a minute is through that switch, you'll consider that entirely.

COMMISSIONER JACOBS: How is the serving configuration organized when you have a remote? Would a -- let me ask it this way. Would a remote serve an entire wire center?

THE WITNESS: Oh, absolutely. Remotes have gone through a number of generations of capacities. There were times in some technologies where a remote only served in the hundreds of lines. Then they moved up to the 2,000 line mark, then the 4,000 to 5,000 line mark. And now there's a remote that serves -- let me think. It has been characterized as being capable, this one remote being capable of replacing an old 1A analog switch, which were typically fairly large switches. So I don't know the exact number of lines.

COMMISSIONER JACOBS: In the case where you would have a remote that serves a wire center, if you follow the suggestion that you made of levelizing costs across the whole system, wouldn't that skew somewhat the identification of the high cost, of the high cost areas?

THE WITNESS: No, I don't think it would,

because that host, although it's defined as a wire center, and it can operate somewhat limitedly on its own if it's cut from the host -- and when I say limited, it's extremely limited. No company would run any length of time that way. It can't do billing. It can't do any vertical features. It's very restricted, and you can't do remote maintenance or anything else on it.

So what you want to do is -- a remote is always tied to a host, and to separate them out and treat one versus the other differently I think is inappropriate. The benefits to the serving area of that is the system of that host and its attending remotes, subtending remotes. You have to look at a system, because they won't work without that host. So it really is a system.

COMMISSIONER JACOBS: Thank you.

Q (By Mr. Fons) Ms. Petzinger, would you agree that in the BCPM there are six functional categories that are costed out?

A Subject to check, I think that's right, five or six.

Q And would you agree that one of them is the processor-related cost, another is the line termination MDF and protector, the third is the line

port cost, the fourth is the line CCS usage, the fifth is the trunk CCS usage, and the sixth is SS7?

A Yes, that's correct, although some of those -- those are BCPM categories. They correspond with some SCIS outputs. But actually there are more SCIS outputs than the categories in BCPM, so therefore, some aggregation was made to collapse the SCIS outputs into the BCPM categories.

I would also like to mention that the processor-related cost is not just the processor. That is the entire fixed cost of a switch to get it up and running before you add lines or traffic to it.

Q Based on your experience, what are the major functions or subsystems in a central office switch?

A Are you asking me from an engineering perspective or from a cost perspective?

Q From your experience.

A From an engineering perspective, there are multiple functions within a switch. And if you can identify that each one of those functions has a discrete cost, that was -- you can therefore identify the cost of those functions. That was what SCIS was all about, and it was done primarily to enable costing of vertical features and services, so you could

differentiate vertical services and features from basic pots, and it was built originally in the '70s for cross-subsidization issues.

From a costing perspective, today we are seeing more and more costing issues that affect that process. If you do not have a separate cost for each of the components that make up a switch, if traffic patterns and other things don't impact the cost a company is going to pay for a switch, then I would argue that you lose cost causation when you then take that number and try to make it into a -- with these list of subcategories. If you have one price for the switch and you cannot identify what the cost of the little subcomponents are, it then becomes a totally arbitrary allocation to assign those costs to independent, individual subcategories of functions.

Q Well, let me help you through this. Would you agree that --

A I thought I was doing pretty well.

Q Well, you were on a roll. Let me put it that way.

Let me ask it this way. Would you agree that one of functions of a central office switch is to terminate lines?

A Yes, it is.

Q And another is to terminate trunks?
A Yes. Well, to carry the traffic.
Q Another is to process calls?
A Yes.
Q And another is to provide connections between lines?
A Yes, absolutely. That was what I was explaining when I said from an engineering perspective, those functions exist.
Q And another one is to provide interoffice signaling?
A Yes.
Q And another one is to provide vertical services?
A Yes.
Q And don't the six categories that are costed out in the BCPM reflect each one of those operations of the central office switch?
A Yes, they do. But all I was saying was that if you do not have any cost causation that underlies that, there is no reason to split it out that way. If there is no separate cost causation of line CCS, for example, from another function of the switch, there's no reason to arbitrarily allocate them that way.

Q Doesn't the HAI divide up the switch costs into four separate categories?

A The switch itself?

Q Yes.

A My understanding is that it's divided into two, port and usage, or minute of use.

Q Doesn't it divide it up into the MDF, the main distribution frame, the line port, trunks, and usage?

A The first part of your question I understood, which is the MDF. The MDF is not switch equipment. It goes into that account, but I do not consider it part of the switch. It's often purchased from a different vendor than the switch is purchased from.

Q But isn't that necessary --

A That is not -- that is done separately, and the cost for that is a separate process within HAI, as I understand it. It is not done in switching. It is then added to the port later on. I don't think it's maintained as a separate function.

Q Don't you need an MDF and a line port to terminate lines?

A Yes, you do, but sometimes in cost studies the MDF or the main distributing frame is included in

the loop plant.

Q And determining --

A Like I said, that's a separate -- it's a separate piece of equipment. It depends on the cost study and the company involved as to where they allocate that cost, whether it's switch port or loop plant.

Q But you did agree that trunks and usage are also costed out separately in the HAI Model?

A I believe that for most -- for aggregation -- let me back up. For the results, it is primarily port and usage. I believe I've seen a report that will split out trunks for the purpose of identifying the purchase of dedicated trunks or stand-alone trunks. But for USF, it's going to be the port, and the rest of the switches is assigned to minutes of use.

Q Well, let me ask you, how did you cost outlines and vertical services during your career at Bellcore?

A Well, as far as -- I didn't actually do the costing out. I did the modeling. That was done because at that point in time we had very detailed engineering rules, and we also had costs of the individual components that make up the switch. Each

component was assumed to be purchased individually, so I could take, you know, one of item A, two of item B. In that way, we were able to explicitly identify what the cost of the equipment purchased for a port would be.

However, again, if you don't have costs for individual component pieces of a switch, if you are looking at a flat rate cost per line for purchasing a switch, for example, then the cost causation link is gone. You don't have the individual component cost to be able to decide how much of that flat rate cost per line belongs in the port and how much belongs in usage and how much belongs in trunks, or SS7, or anything else. It becomes an arbitrarily allocation.

Q Would you -- and this is kind of going back to where we were before. I just want to establish that we've got it correct. You agree that the HAI Model separates costs for the switch line ports, main distribution frames, switch usage, and switch trunks; isn't that correct?

A I agree with what you said, except for the main distributing frame. That is a separate process. It is not part of a large switch price that then gets unbundled and allocated out. It is developed separately.

Q But that is part of the HAI Model?
A It is added back into the port investment subsequently.
Q But it is costed out separately?
A Yes. It's not part of the switch. It's a separate frame. You can go into a central office and see it's a separate piece of equipment. It's, in effect, acting as a connection, a connection point between the loop and the switch.
Q What is the process that the HAI Model uses to compute the universal service usage cost per line, beginning with the total usage cost per line as identified by the non-line port fraction input?
A Well, I'm not really here to talk about HAI. I have an understanding of what it does, but I think the HAI witnesses have been here and --
Q Well, unfortunately, the HAI witnesses punted that particular question to you, indicating --
A How to develop the usage cost?
Q Yes.
A Could you show me where that was?
Q Yes.
A Mr. Wood has been doing this a long time. I'm sure he would have known the answer to that question.

Q He said, "In previous runs, we have used alternative values based on Mrs. Petzinger's analysis, which we could do here with the proper information. Different switch technologies, because of the way they are configured, have a different mixture of traffic-sensitive and non-traffic-sensitive components. Northern Telcom, for example, or Nortel configures the switch in a way that is very different from the way Lucent configures its switches, so you need to have a number that reflects the mixture of purchased switches." So he's relying upon your analysis.

A Well, that's not -- that's not quite right. Actually, the split between port and usage in the HAI Model was put forward before I became an AT&T employee.

Now, in that process, we had looked at some data put out in public record in New York that supported the number, and I had looked at that for him. But I did not do the original development of it.

However, I do agree with his statement of my knowledge of switches, that the technology, as well as, which I don't think he did mention, how much analog loops, copper loops come into the switch versus how much next generation digital loop carrier is

assumed, will dramatically impact the amount assigned to port, because digital loop carrier doesn't even come in on the line port side of the switch. It comes in on the trunk side.

Q You would agree, though, that the partitioning of the switch into line ports and other components should be split specific to the switch vendor?

A If you have that kind of data, and if you have the detailed cost information for each component in the switch, it can be done. I don't necessarily think that that's a better way, because the assumptions you have to make, there are a large number of assumptions, and I don't think that's a credible way of doing it. I mean, I don't think it's a reasonable way of doing it. Let me put it that way. I'll withdraw the "credible." If you have the data, it could be done.

Q Isn't one means of doing this partitioning to use an engineering-based model such as SCIS or SCM?

A From an engineering basis it can be done, but again, two things there. One is what assumptions are you making when you're running that engineering model. For example, as I said in my testimony, if you don't include next generation digital loop carrier,

you're going to get the wrong number to start with, which is what happened in BCPM.

In addition, if your cost structure doesn't identify separately the cost of a digital loop carrier from an analog line, then that engineering model is no longer useful. It simply has no relevance. If you're paying the same cost for all of the equipment needed to make a line operational and do all the switching functions, there is no relevance in that then to identify discrete portions. It's an arbitrary allocation.

Q And you agree that we should not use arbitrary allocations?

A I'm not saying that. I'm saying that in some cases, that has to be done, and as long as it is reasonable, I think it's okay. And in fact, in some cases I think it's superior because it is identifiable. People can discuss it. You can -- it's open, and you can agree on what that percent should be. If there are differences of opinion, people can put forward their arguments. If you rely on engineering models, the process is way too complicated for anybody to review and understand what's going on.

Q Do you believe then that it's appropriate to use arbitrary allocation factors of switch

investment to the switch network functions, for example, line ports and usage?

A As I said, I think in some cases it is the more reasonable way to go if it is reasonable and if the parties can agree to what that number should be.

Q Are you familiar with an input in the HAI Model called the processor featured loading multiplier?

A Yes, I've seen it.

Q Isn't the purpose of that input to increase the basic busy hour calling rate on the switch to account for the additional processor load caused by the use of vertical services and features?

A Well, again, I'm not the HAI Model expert. I'm here to talk about BCPM. My testimony was limited to that.

Q When you were employed at Bellcore, did you design cost equations to determine incremental investments for vertical services?

A Yes, I did.

Q And did these equations include processor usage as part of the feature incremental investment?

A At times.

Q And so you would agree that a portion of the switch processor investment is used to support

vertical services and features?

A It depends on how you look at it. I'm not going to say yes definitely, because the processor is definitely used to process vertical features. However, processors are -- that same processor is required if you never put a feature on that switch.

So right now when a telephone company goes out to buy a switch, they get that switch with a processor. It processes everything that comes its way, whether it be pots or vertical services. So even if you never add a vertical service, when you look at a rural wire center that has no features, it still has the same processor that the switch down the road has that has a fairly high penetration of features.

Q Are you aware that the BCPM has an input for feature loading multiplier?

A Did you ask if BCPM has one?

Q Yes.

A No, I don't think it does.

Q Can I refer you to 7.4.4.1 of the BCPM methodology?

A I don't have that with me.

Q Would you accept, subject to check, that the BCPM does in fact have such a feature?

A Subject to check. I thought it was doing

it through the allocation of a processor utilization factor that adjusted the amount of the processor that would be assigned to USF.

Q And doesn't --

A It was a fairly trivial amount, but it does downwardly adjust.

Q It's 17% of the processor?

A I was under the impression that it varies by the mix of switches in the BCPM run.

Q Right. And can't --

A I would not call that a feature loading multiplier, though. That was --

Q But can't this particular percentage go much higher if there are a number of business lines on that switch?

A Yes, I think was what was --

Q Do you know -- on the HAI Model, the processing feature loading multiplier that we talked about, do you know whether that applies the feature loading multiplier to the entire switch or just the processor part of the switch?

A I don't know.

Oh, actually I do know, now that I think a little bit about it. I believe that is used only to -- in HAI, I believe that is used only to determine

whether or not the capacity of the switch could be exceeded, the processing capacity.

Q Well, then wouldn't --

A That was my understanding.

Q Well, then wouldn't you agree that the switch must be partitioned accurately by engineering rules to avoid applying this loading to parts of the switch other than the processor and its related equipment?

A No. I think you're mixing something up. I don't think HAI is applying the loading to change the cost in any way.

As I said, my understanding is that that input is used only to effectively increase the level of traffic from the pots level to some higher level to see if the processor would exhaust.

My understanding is that there are few, if any, switches where that occurs. And where it does, my understanding is they put in a second switch in that wire center. So it doesn't have the impact that you're asking me about.

Q Do you have any experience, Ms. Petzinger, as a network planner?

A No, not at all.

Q In your rebuttal testimony at page 7, you

state, "A network planner looking at the current demands for lines, trunks, and traffic would definitely place a different mix of equipment --

A I'm sorry. Could you tell me where on page 7 again?

Q On line 2.

A Yes.

Q Do you see that statement, "A network planner looking at the current demands for lines, trunks, and traffic would definitely place a different mix of equipment, even assuming the same wire center locations"?

A Yes, I do.

Q Do you have any evidence of this?

A Just my discussions with people that are in the business. And it is clear that if you have a remote which costs less than a stand-alone, and if that remote will serve that wire center efficiently, that a remote would be placed rather than a stand-alone.

And as I mentioned before, since the capacities have changed, that's exactly what would happen today compared to what may have been decided five, 10, 15, 20 years ago, which is what the LERG looks at.

Q Are you aware that the FCC has required that HAI 5.0a use the LERG to place ILEC switches, including the host, remote, and end office relationships?

A I understand that they have asked for that data to be capable of being run. As I mentioned before, I personally disagree with that conclusion.

Q Hasn't MCI in fact in an ex parte to the FCC mailed September 14, 1998, agreed to do that?

A As far as I know, the HAI sponsors have agreed to do what the FCC asked them to do.

Q Are you familiar with how the HAI develops switch investment costs?

A Not tremendously, no. I have an idea in general, but again, I'm not the HAI witness.

Q Are you familiar with the switching curves that the HAI Model uses for --

A I have seen it in the documentation.

Q And do you know upon what basis those curves were drawn?

A I think you're going to have to ask Mr. Wood that.

One interesting thing I have noted, though, however, from that --

Q I don't think there's a question pending.

Is it your understanding, Ms. Petzinger, that in order for the interoffice signaling network to operate, there is equipment required in the central office switch generally known as the switching -- I'm sorry, service switching point SSP?

A There is equipment in the end office in order to make SS7 operational, yes, that's correct.

Q And wouldn't the switch cost -- switch investment have to include this cost?

A Yes, it does. I mean, you can assign it to the switch, or you can assign it to SS7, depending on how you're doing your cost study.

Q Let's turn to page 24 of your rebuttal testimony, please.

At line 15, you state that four years ago, Pacific Bell negotiated a major contract for approximately $110 per line. Do you see that?

A Yes, I do.

Q Is the source of that statement a 1993 Pacific Bell press release that it would spend just over $1 billion to replace all of its remaining analog switches with digital ones?

A Just let me check for a moment.

That was not my source, no.

Q Well, let me ask you this. How do you get

$110 per line out of that press release?

A I didn't. That was not my source.

Q What is your source?

A Well, as it's noted in the back on Note 15, I used a GTE response to a proxy cost model question in CC Docket 96-45, Federal-State Joint Board on Universal Service Cost Proxy Models.

Q Do you have that with you?

A No, I don't.

Q And you're using a GTE filing with regard to a Pacific Bell cost?

A I've identified it appropriately, I think. And I was just trying to identify what publicly available information I had at the time, because when I wrote this, I had very limited access to any of the contract prices, which are a much better benchmark, I agree, than the publicly available information.

Q You didn't get this information from a California Utilities proceeding?

A No. I think I've given you the cite where I identified the data. And I do have this in my office. I can provide it if you would like it, but I don't have it with me.

Q Are you aware that AT&T in a California proceeding used this same $110 figure?

A In what respect did they use it? I was involved in the California proceeding, and I don't know where the line has to be drawn between proprietary and non-proprietary data. I don't know where you're getting your number from.

Q I'm getting it from the order of the California Public Utilities Commission dated October 25, 1996.

A Okay. No, I did not get it from that order. I think I've been using this -- well, never mind.

Q Are you aware that the California Public Utilities Commission rejected the $110 switching cost per line on the basis that there was no supporting evidence that the $110 switching cost per line is accurate?

A As I said, I was involved in that proceeding. My understanding at this point in time is that there was a subsequent order or recommendation -- I would have to check my files to see what it was anymore -- quite some time ago that was using, I think, $115 or $118 a line.

Q I thought you indicate here it's $110 per line.

A That was the cite from this source. What

the California Public Utility Commission was suggesting that they use to me was not public information about what the actual price of switching was. That was, at best, a negotiated number, as I understand it, between the parties.

Q You were in -- you say you participated in that proceeding?

A Not in the -- you seem to have an order from 1996. I don't think I was involved in that one.

Q Do you know whether --

A California is an OANAD proceeding that has been going on -- from my understanding, I think it's like three years now. So I did participate in a portion of it. I think I first participated somewhere early last year, in 1997.

Q Do you know whether Mr. Selwin was appearing as a witness in that proceeding on behalf of AT&T and MCI?

A Again, I only participated in one portion of the proceeding. In the portion I was in, I think Mr. Selwin was there, but I was not in the room when he testified.

Q So you would not know whether or not Mr. Selwin was the source of the $110 in the California proceeding?

A No. I'm not familiar with the $110 number in California. That apparently preceded -- you said that was 1996. That may have preceded my involvement. I was still at Bellcore in 1996.

Q Would you turn to page 25 of your rebuttal testimony?

On line 5, you contend that Sprint's reported switch prices do not support BCPM's prices. Do you see that? Your question is, "Do the switch prices reported by Sprint support BCPM?" And your answer on 5 is no; is that correct?

A That's right, meaning the prices that were submitted to the FCC for use in a earlier BCPM model are much higher -- excuse me, are lower than what was used in the BCPM model by Sprint in this proceeding.

Q And you go on to support your statement that they don't support the BCPM prices. You state that Sprint submitted $120 as the switch cost per line.

A No. I think that's a fairly blatant mischaracterization of what I said.

Q Well, I'm sorry. I thought you --

A And I provide information. What Sprint provided was $150,000 fixed startup cost plus $110 per line as a variable cost.

Q And you say on line 11, "Sprint said the current BCPM values," and then you've got a bracket, "the new lower values," bracket closed, "more closely approximate Sprint's current cost of switching." Do you see that?

A Yes, I do have that.

Q Yes. Do you see that?

A Yes, I do.

Q And was the bracketed language in the filing with the FCC?

A No. That's why I bracketed it. That was what my interpretation of that statement was.

Q But that bracketing is yours?

A Yes, it is. That's why it was bracketed.

Q And you haven't quoted the entire sentence out of the filing that was made by Sprint with the FCC, have you?

A No. And I think if you look at the note on 23, I explain why.

Q Well, let's read -- let me read to you the entire sentence, including the sentence immediately before it. Do you have that with you?

A Yes, I do.

Okay. Could you tell me the page again?

Q It will be page 3 of the attachment to the

ex parte filing.

A That's the text attachment? Because there's multiple --

Q Yes, it's the text attachment. It's Attachment A, page 3.

A Yes, I have it.

Q And the entire sentence that you take an extract from says, "Although the current BCPM values more closely approximate Sprint's current cost of switching, Sprint believes that it would be appropriate for the Commission to use the more conservative input cost until it has concluded its own investigation on this issue."

A Yes, I see it.

Q And the sentence immediately before that says, "Finally, Sprint recognizes that there is a fundamental disagreement on the level of switching costs, and this issue can only be revolved by Commission access to invalidation of cost data that is proprietary to switch vendors." Is that correct?

A Yes. I would also like to -- I agree, but I would also like to call your attention to the previous page, where it says that responding to these concerns, Sprint has independently reassessed the default input values and has identified a number of

changes that fall, in its view, within the range of reasonableness and would provide a reasonable basis for a national USF fund.

Q Right. But for purposes of this proceeding, you've said what Sprint says the costs are. And didn't Sprint say in its response to the Commission, "Although the current BCPM values more closely approximate Sprint's current cost of switching," and wasn't that amount $225 per line?

A I interpreted current to mean what you were putting on the table right then and there, the current numbers you were putting out.

Q Well --

A I will agree with you, when I was rereading this this morning, that that could be open to some interpretation as to the language. It was a bit unclear. So again, I will agree with you that I may have misinterpreted that. I may not have. I still think the language is unclear.

However, I would go back to the sentence I read on page 2 that's saying that Sprint believes these are reasonable, and that they're a reasonable basis for a USF fund. And I believe they reiterated in the conclusion on page 7, where it said, "It is equally critical that the Commission adopt a model and

model inputs that not only reflect a network design capable of producing a high quality of service, but also incorporate a realistic assessment of the cost of building such a network. The BCPM model with the input changes suggested by Sprint meet these criteria."

Q But Sprint told the FCC that its current BCPM value of $225 per line more closely approximates Sprint's current cost of switching?

A Again, I find the language that you are referring that to on page 3 to be very confusing. I don't necessarily interpret it that way. I read current costs meaning the ones you had currently put on the table and were proposing for the FCC to use. I mean, you had put out these numbers in the attachment of $150,000 fixed startup and $110 per line and had -- I mean, I had to take the whole package in its entirety.

I believe the language you're referring to, it was confusing to me. I may have misinterpreted it, but I think the overall gist of it was that -- well, my reading of this document in its entirety, taken as a whole, was that Sprint was putting forth these numbers as reasonable.

Q On line 17 of that same page -- well,

starting on 16 --

A Page 3?

Q On page 25 of your rebuttal testimony, or starting on 15.

A Yes.

Q You state that Sprint's switch prices in this proceeding appear disingenuous at best. Can you define disingenuous for me?

A Well, my definition, not exactly textbook, but I find it extremely unreasonable for Sprint to expect this Commission to believe that the $120 that they filed with the FCC claiming it was a reasonable number compared to the numbers --

MR. FONS: Madam Chairman, I asked her to please define the term "disingenuous," and I don't think she's defining the term "disingenucus." She's giving us a speech.

MR. HATCH: Madam Chairman, he asked the question, and she is giving her answer.

CHAIRMAN JOHNSON: Go ahead and finish. I thought she was trying to describe what she thought disingenuous meant --

THE WITNESS: All I was --

CHAIRMAN JOHNSON: -- in the context of how the question was asked. Go ahead. Go ahead.

THE WITNESS: Again, I can't give you a textbook definition, but I found it extremely disconcerting when I saw the $120 per line on average for a 15,000-line switch, which is representative of Sprint's average size in Florida.

When you -- the way I got to the $120, I take the $150,000 fixed and the $100 per line. If you apply that formula to a 15,000-line switch, it equates to $120 per line.

If I take that number and compare it to the numbers for Sprint in my Exhibit CEP-1, they aren't close. And I just found it to be unreasonable that Sprint is trying to put something in this proceeding that is so much higher than what was produced at the FCC.

Q (By Mr. Fons) You're not using disingenuous in its technical, definitional dictionary term, are you?

A Well, if you would like to give me the technical dictionary term, I'll let you know whether or not I do.

Q Lacking candor and frankness.

A I would say that the numbers proposed in this proceeding do not have -- do not frankly correspond to the numbers that you've produced

elsewhere. I don't know what to say. I don't -- I mean, are you asking me could it have been a mistake in your numbers?

Q No.

A I guess so. But, I mean, these numbers were out. You've --

Q The number --

A You went out with the FCC publicly putting these numbers on the record. I don't know how to explain why else you would have put these numbers --

Q You would agree that the number that Sprint said is its current cost is $225 per line?

A No, I'm looking at the 150 plus -- thousand plus 110, which is the numbers that you put on the record at the FCC as being reasonable.

Q Not Sprint's costs.

A Oh, I'm sorry.

Q Were those Sprint's costs?

A The $150,000 plus 110?

Q Yes.

A Yes.

Q Okay.

A That was the Sprint letter that we were just talking about.

Q At the bottom of page 25, you make

reference to some testimony for Southwestern Bell from a Mr. Hugh Raley in 1996. Do you see that?

A Yes, I do.

Q And you state that he says that the engineered, furnished and installed, paren, EF&I, price was $85 per line for switching. Do you see that?

A Yes.

Q Have you looked at Mr. Raley's entire testimony in that proceeding?

A Yes, I did quite some time ago.

Q And didn't he say the engineered, furnished and installed, EF&I, price was $85 per line, but in addition, if you add telephone company cost plus tax, you arrive at a total of $109 per line; if you then add frame power and test sets, you have a total cost of $183 per line?

A I can -- I don't remember the exact numbers, but, yes, I do. But that is not the correct comparison to the numbers we're looking at here. All of the numbers in my testimony are talking about the investment paid or the prices paid to the vendor for switching. Both HAI and BCPM have separate factors for adding in those other costs, so that's not relevant to this comparison here.

Q But in the HAI Model, the cost per line in the switch curves, does that include all of these various costs?

A No. As in BCPM, those numbers are added through the application of additional costs and factors. I believe it's done in the expense module to increase the overall level of switching to accommodate all those other categories of costs associated with switching, but not actual switch prices.

Q On page 26 at line 6, you say, "Mr. Raley included in his testimony an attachment which revealed the following," and then you have a chart which says EF&I investment per line, and then you've got 1 to 15,000 lines, et cetera. Do you see that?

A Yes, I do.

Q That's not the entire chart that Mr. Raley put in the testimony in Texas, is it?

A No. The rest of the chart dealt with those other numbers that were for local telephone company engineering and installation that, as I mentioned, are added subsequent in both models. Everybody adds those numbers after you identify what this number should be.

Q And these --

A You've got to get this number right first.

Q But these additional costs that he

identified are legitimate costs that should be used in determining the cost of switching?

A The category of costs. I did not review the absolute numbers as to whether or not I consider the numbers themselves of relevance, because the categories of costs, local telephone engineering and installation and those kinds of costs are added in both models. Those are legitimate costs.

CHAIRMAN JOHNSON: Mr. Fons, let me ask you a quick question. How much more do you have?

MR. FONS: I think I have just one more question.

CHAIRMAN JOHNSON: Okay. Let me just -- for the witnesses that are here, we are going to break for lunch, and it will be about 45 minutes. So for those of you who have a 1:45, you're not going to make it.

Go ahead.

Q (By Mr. Fons) Ms. Petzinger, in your summary, you stated that the BCPM relies upon data extracted from SCIS and SCM. Do you remember that?

A Yes. That was my understanding based on reading the methodology for BCPM, that --

Q Can you --

A -- SCM was involved. I have not seen any

specific data about that.

Q Can you identify by name or reference a single data item or formula within the BCPM switch module that was extracted from SCIS or SCM?

A Oh, absolutely. Do you want the specific items, or do you want me to just generally categorize them?

Q I would like the specifics.

A I managed to have misplaced the detailed document, but I think I can get through a fairly comprehensive list.

To start with, on the switch -- these are all switch inputs. You would have the -- all of the price -- the BCPM default price coefficients, with the exception of the small switch price coefficients. And all of the companies in this proceeding did use to one degree or another the BCPM default prices.

Q Aren't those all inputs?

A Excuse me?

Q Aren't those all inputs to the BCPM process?

A Those are inputs, yes, that's right.

Q That's not what -- I thought you had indicated that the model relies upon data. So you're talking as an input, it relies upon the data?

A Yes.

Q Okay.

A I agree, that particular aspect is an input.

Now, where it becomes part of the modeling is, there is a separate group of inputs that talk about how you divvy up the switch investment to -- what percent gets assigned to port, what percent gets assigned to line CCS, what percent gets assigned to trunk CCS.

The application and the -- or the disaggregation of a total switch investment, those factors are all a result of the SCIS, and presumably the SCM process.

Q But my question was, can you identify within the BCPM switch module that was extracted from SCIS or SCM, but you're giving me inputs that go to the BCPM model. I'm asking whether there is anything in the BCPM switch module that has SCIS or SCM formulae in it.

A Oh, no. I agree. There was no lifting of SCIS or SCM formulas that I know of to be put into BCPM. However, what I'm saying is, my testimony said it relied on the data from those models, because BCPM, in order to run, must disaggregate the switch

investment down to these buckets.

Q We have no disagreement on that, Ms. Petzinger. I was --

A Okay.

Q We were interpreting you saying that there were SCIS and SCM formulae in the BCPM switch module, and I think you've clarified that there isn't.

A No. I didn't -- I was not implying that you stole anything from SCIS or SCM as far as formulas, not that I'm aware of.

MR. FONS: I have no further questions.

CHAIRMAN JOHNSON: Mr. Carver?

MR. CARVER: No questions.

CROSS EXAMINATION

BY MR. MITCHELL:

Q Good morning, Ms. Petzinger. Tom Mitchell representing GTE.

A Good morning.

Q Let me just go briefly back to your qualifications. My understanding is that you spent 13 years helping to develop the SCIS model; is that right?

A Part of it was as a subject matter expert. Part of it was -- I was promoted as director of the group.

Q Am I right, though, that you were there when the SCIS model was developed?

A SCIS has been around since the mid 1970s, and there are various enhancements, changes, accommodations to technology, to economic principles. I was involved in many of -- the application of those items that forms what the SCIS model is today. But I was not there when it was originally developed.

Q Okay. So in a sense, you've spent some of your time trying to perfect the model through those changes and modifications?

A No, I would not say -- I would not characterize it as perfecting it. I would just say that technology changes -- ISDN came about. SCIS was originally an average costing tool, meaning total investment divided by demand, and we incorporated more aggressive economic costing techniques that were becoming popular and acceptable at Commissions.

Q You helped market the model to customers; is that right?

A The last couple of years, yes, I did.

Q You consider it to be a reliable model, don't you?

A If you're asking me if the math is correct, I would say yes. As far as saying is it a reliable

model, you can never use a model without understanding what its final application is going to be for. So if you've got the right inputs, if you have -- and if you're using the model for what it was intended, I would have to agree, the last I looked, which was a couple of years ago, it was a reliable model.

Q Okay.

A It did what it purported to do.

Q All right. So if you use the model properly, and using your words, use the right inputs as the model is intended, you don't have any doubt that the outputs coming out of the SCIS model are reliable, do you?

A Not in any of the areas that are being reviewed in this proceeding.

Q Well, let's not get that focused. I'm talking about in general, if the model is used properly, do you have any doubt that its outputs are reliable?

A No. I don't really have any major problem with the way the model works. I didn't imply that anywhere. I just don't think it is a reasonable tool for developing universal service funding because it's closed and proprietary.

Q Now, you recommend that BCPM be rejected

because SCIS is proprietary; correct?

A I think that's a part of it. I also am doing it because the data that went into the proprietary models, we're talking about thousands and thousands and thousands of items that would have to be reviewed. It would make the input items for BCPM or HAI look infinitesimally small.

Q All right. Let --

A I just think that's a -- you know, that was another reason why I think it's unreasonable.

Q Let me have you assume again that the model inputs are used and input properly, and the SCIS model is used as it was intended to be used, and it generated an input. Yet as I understand your testimony, you say SCIS is proprietary, and BCPM is based on SCIS. Do you recommend that the Commission reject BCPM based on the proper use of the SCIS model because it is proprietary?

A Well, yes, that would -- it was not used properly in this proceeding, and even if it were, I would recommend against using, because I don't think proprietary models for switching should be a part of this.

Q If the Hatfield Model relied on a proprietary model, I take it your answer would be no

different, that is, you would recommend that the Commission reject the Hatfield Model for that same reason?

A Not necessarily. It depends on what you're doing.

For switching, as I stated before, although there's a big number, a lot of dollars attached to switching, it's not a really big-ticket item in overall universal service funding.

Along with that, I believe that especially in switching, it should be transparent, it should be visible, it should be open on how it's developed and the results.

In the loop process, I'm assuming you're asking me about the preprocessing that goes on in both BCPM and HAI. It is so critically important, from what I have heard over the past couple of days just sitting in the room here, to get the loop modeling and the customer location down right that I would have to agree that, although that's not a model as in this process, but that preprocessing does have to be done right; otherwise -- you know, the loop costs that form the bulk of this cost must be gotten right, and if it takes that kind of processing to do it, that's what needs to be done.

But I'm not an expert in that area, and my understanding is it has been made open for review.

So I won't -- my answer to your question is, no, I won't say categorically that all closed prccessing should be eliminated from this proceeding.

Q Okay. Let me pick up on that just for a few minutes. Would you agree with me that the use of a closed model in either the switching component of this exercise and the loop component, in your opinion, casts some doubt on the reliability of the costs that are generated in those two areas by the models being used?

A In this particular -- in this particular instance, for BCPM, yes, I think there's some doubt about the reliability because of the closed models.

Q Okay. But you wouldn't disagree with me that if a proprietary model was used in the loop portion that there would be some doubt or question; at least it would be reasonable to have some doubt or question as to the costs being generated in that part of the network?

A I think whenever you've got a closed process, there's extra work to scrutinize it and make sure that it's correct. And we saw an awful lot of witnesses here earlier about that portion of both

BCPM and HAI.

Q Okay.

A So I would agree, that requires -- it's more difficult, and it's more time consuming, but it does need to be scrutinized.

Q All right. And I didn't write down your answer, but what portion of the network cost relates to the loop so far as you know?

A I don't remember. I remember it being a really big number.

Q I think Mr. Wood said between 85 and 90%. Is that about right?

A I'm sure that's probably correct for basic service, yes.

Q So if we have a proprietary model being used in the loop --

MR. HATCH: I'm object. He's going way beyond the scope of Ms. Petzinger's testimony, and he's asking questions that should have been asked Mr. Wood. She's here as a switching expert. I've indulged him in a little bit of latitude, but we're still drifting way past her testimony.

CHAIRMAN JOHNSON: Response?

MR. MITCHELL: Well, we're talking about closed models. She is the one who raised the concept

of the loop and the switch and so forth, and I'm just trying to draw a relationship between the loop and the switch module and the effect of using closed models. And I'm drawing a connection between her opinion that you reject BCPM switching because it's a closed proprietary model to the loop. And it's just a question or two more.

MR. HATCH: And she has already answered those questions.

CHAIRMAN JOHNSON: To the extent that you can't answer the question that's being directed, then start off by saying you don't have knowledge or you can't answer it, but if you can, go ahead and answer the questions.

THE WITNESS: Thank you. Could you repeat your question? I don't remember it.

MR. MITCHELL: I'll move on.

Q (By Mr. Mitchell) Ms. Petzinger, you're aware of a concept known as the line-trunk ratio?

A Yes.

Q Is that something that comes into play when we're trying to determine switch costs?

A Absolutely.

Q Would you please describe what it is?

A In BCPM, the way they determine the number

of trunks --

Q I don't want a description of how BCPM does it. I want to just have you tell me, what is the line-trunk ratio?

A The number of trunks compared to the number of lines.

Q And how does it affect costs of the switch?

A Well, as I said, if it is being used, it determines how many trunks are being equipped on the switch, and the more trunks, the more cost.

Q Is there a generally accepted line-to-trunk ratio that's used in costing switches?

A There used to be a fairly industry-wide standard of 10%, meaning for every ten lines, you would need approximately one trunk to carry traffic out of the switch. There are some people who think that that number has changed somewhat in recent years.

Q Do you think it has changed?

A I've seen -- I tend to look more at individual switch data, and from my experience, the number is going up in some switches and going down in others. So I haven't done an analysis to see whether or not the average has changed.

Q Okay. You refer in your testimony to data provided by an NBI study, don't you?

A Yes.

Q Okay. What is the NBI study?

A It's the Northern Business Information report. It's a -- they are a market research firm that publishes information about the central office equipment market an annual basis.

Q And do you know whether NBI recommends a line-to-trunk ratio?

A I don't know.

Q If I told you they recommend a ratio of six lines per trunk, would that sound about right to you?

A That's a lot of trunks. No, wait a minute. Six -- it's just different than what I've seen, the ten to one, which is what I've known as the average.

Q Would you determine the cost of switching for a forward-looking network based on a line-to-trunk ratio of six to one?

A That sounds to me like a lot of trunks. Instead of having, you know, one trunk for every ten lines, you've got one trunk for every six lines. That's a lot of trunks. It's very conservative.

Q Do you know what line-to-trunk ratio the Hatfield Model uses?

A My understanding is that in its calculation

to determine the number of trunks, the six to one ratio is used. And when you said that it comes from the NBI report, that would make sense that they would use that, because they're using switch prices from the NBI report, and they're trying to back out the trunk costs to identify them separately.

Q And if the model used a higher ratio, for instance, ten to one or 13 to one, that would reduce the cost of switching?

A Yes, it would. But that would be -- that's more in line with what I've seen.

Q Would you expect that if you ran the Hatfield Model for GTE that it would generate an output showing that the line-to-trunk ratio is six to one?

A I don't know. You're asking me HAI questions.

Q Well, Ms. Petzinger, you're somewhat familiar with the HAI Model, aren't you?

A Somewhat, but I do not remember how -- as I said, I do remember they used the six to one to back out the number of trunks, but then I think they add back in the number of trunks based on actual traffic demand, numbers of calls and minutes of use, but I'm not sure about that.

Q Let's just be clear. You've testified in other proceedings to the effect that you were the sponsor of the switching module in the Hatfield Model, haven't you?

A No, I've never been a sponsor of the Hatfield Model.

Q Of even the switching part of it?

A No.

Q If when the Hatfield Model was run for GTE Florida it generated a line-to-trunk ratio of 13 to one, even though the Hatfield Model says that is based on a six to one ratio, do you think the model is working properly?

A That's not an unreasonable number. I think BCPM is using -- it's in the inputs, and it's a user input, but I think I remember seeing a default input of 14 to one. I'm not sure. It was in that range. I'm not sure about the precise number. I apologize. I've lost my little cryptic sheet that consolidated all the input data.

Q Okay. My colleague mentioned the switch cost curve in the Hatfield Model, and I want to ask you some questions about it, because you do discuss switch prices in your testimony in particular at Footnote 25. So let me just start by asking you, you

are familiar with the Hatfield switch cost curve?

A I am somewhat familiar, but I am not an HAI Model witness. I'm here to talk about BCPM.

Q I understand. I'm just going to ask you some questions --

A My testimony, you know, did not mention anything about HAI.

Q Sure it did. Let's look at Footnote 25. It talks about vendor switch prices coming out of the Hatfield Model, what's in and out of those prices, does it not? You say on line 4 of that note, "This compares to the prices used in the Hatfield Model switch curve that are also switch prices paid to the vendor.

A All I'm saying here is what I stated earlier, is that when -- I was trying to ensure that Mr. Raley's numbers, as I was previously questioned on, does reflect the straight comparison of basic switch price paid to the vendor, and that is what I understand the HAI switch curve to be as well. All I was trying to do was show the apples to apples comparison of switch pricing to vendor.

Q And you know --

A And I was going through a very long explanation of the fact that all of the additional

numbers get added in.

Q Well, you know that you can make an apples to apples comparison, because you know how the switch cost curve works; right?

A I've seen the switch cost curve.

Q Okay. Do you have the Hatfield Model in front of you?

A The Hatfield Model?

Q Yes.

A No.

Q Okay. You're familiar with the curve, though, and its data points that were used to generate the curve?

A Not terribly. They were done before I came on board to AT&T. I've seen them. I've looked at them.

MR. MITCHELL: Okay. For the Commission, it's on page 58 of the model description.

Q (By Mr. Mitchell) You're aware that two of the points that were used to draw this curve come from NBI sources?

A I know that data from NBI was used. I wasn't aware that there were two data points.

Q All right. Is the data that comes out of the NBI forward-looking cost data?

A My understanding is that it would be best characterized as current, and then they project out on a yearly basis what their estimation of future costs would be in the NBI report.

Q All right. You criticize GTE's use of the GTD-5 switch; is that right?

A Yes, that's correct.

Q And that's because you don't think the GTD-5 switch is forward-looking?

A No, I don't think so, that's correct.

Q And that's because, I think as you describe in your testimony for a couple of pages, you did some research, and you didn't find any sales past, for instance, 1989 of GTD switches; right?

A It came from actually a variety of things. I provided that information to justify my opinion, but there were other things as well, such as the Texas Commission that rejected the GTD-5 switch. And I know of at least one other Commission, but I've forgotten it off the top of my head.

Q Right. You were here yesterday when Mr. Tucek testified, were you not?

A Yes, I was.

Q And you heard him describe a press release that he obtained from AGCS's Web site of a $12 million

contract for telecommunications upgrades, did you not? You heard that testimony?

A Yes, I did. Upgrades not new switches.

Q All right. Did you bother to go to AGCS's Web site when you were doing your research about --

A Yes, I did. And I've done so recently.

Q Okay. Did you see this press release when you were doing your research?

A I don't know if I saw that particular one, but I remember seeing -- I don t know if I read it or saw the exact one that you've got, but I did see some announcement on the Web site about it.

Q But you didn't mention it in your testimony?

A I don't think it's relevant. As I said, upgrades are not new switches. And it wasn't even in this country, much less in Florida.

Q Well, is there something unique about the network in Canada that means that contracts for the sale of any switches in Canada aren't relevant to their use in the United States?

A Yes. Different countries use different manufacturers. That does not make it a forward-looking switch here.

And again, as I said, upgrades are not new

switches. They're buying -- upgrades means they're upgrading their existing embedded base.

Now, there is no denying that AGCS, at least for the time being, is maintaining the GTD-5 switch. But 1A switches, analog switches are still being maintained as well. So that does not make them forward-looking.

Q So you were looking for sales of new switches; right?

A That's right.

Q And you heard Mr. Tucek describe another press release from the AGCS Web site announcing a $60 million sale of new switches, did you not?

A Yes, I did. That was a year or two ago, yes.

Q It was after 1989, which is the date you specified in your testimony as the last announcement of a major shipment of switches, is it not?

A Right. Switches as opposed to upgrades; right.

Q Would you agree that $60 million is a major purchase of AGCS DGT-5 switches?

A It's not huge. And if I remember right, that also included things besides switching. I think it included some intelligent network equipment, which

is where the bulk of -- my guess would be the bulk of where it's going.

But again, that was in Canada, not here. And again, when I have been in discussions, GTE is not purchasing new GTD-5 switches. When they go to purchase a new switch, they are buying Nortel or Lucent. So at least for GTE in Florida, that to me is not a forward-looking -- the GTD-5 is not a forward-looking switch.

Q Let's get back to NBI. You're familiar with sort of the format of the NBI publications which I'm holding up now, one of them?

A Yes.

Q And if the NBI showed that between 1994 and 1995 there were 45 -- no, let me go back. The switch prices that NBI develops that were used in the Hatfield Model, are those developed from NBI's analysis of recent switch sales?

A I'm not -- are you asking me if the Hatfield group --

Q No, no. I'm asking you if you understand how the switch prices that come out of NBI, as they calculate sort of an average switch price, are based on sales of switches?

A That was my understanding, yes.

Q Okay. And are you aware that NBI has in its list of switches that they track the GTD-5 switch?

A Yes. They track all the manufacturers, I believe, that are sold in the United States. I think they even track some 1As.

Q And if NBI showed on one of its pages that between 1994 and 1995 there were 45 GTD-5 switches sold, would that cause you to believe that there are companies out there buying those switches today?

MR. HATCH: Could we get a copy of that for record and completion purposes to make sure that what he's looking at gives all the information?

MR. MITCHELL: Well, it's copyrighted, so that's the reason I sort of have to pass it around. I have to be sort of careful, because it says right on there, don't reproduce it, prohibited by law. I can show it to the witness if that would satisfy Mr. Hatch.

MR. HATCH: That's okay. I just want to make sure we have some sort of a context.

MR. MITCHELL: Sure. Let me show this to you.

Q (By Mr. Mitchell) Ms. Petzinger, do you have page 22 of that NBI document I've handed to you?

A Yes, I do.

Q Do you understand what that page is trying to convey?

A It's identified as systems in service --

Q Right.

A -- by supplier.

Q And between 1994 and 1995, the GTD-5 systems in service by supplier increased 45 units, did it not?

A Well, I'm not going to do the math, but I'll take your word for the number, the increase, yes.

Q Okay. And --

A That could be remote switches. I would like to clarify that I do understand remote switches are being purchased, but that's because a remote must match the same vendor as its host. You can't mix and match host and remote switches. So it would be reasonable to assume that there are some small remotes being purchased because it has to tie into an existing embedded GTD-5 host. My understanding is that there are no host switches being purchased.

Q All right. This is my last line of questions, Ms. Petzinger. You have your testimony in front of you.

CHAIRMAN JOHNSON: And how long do you think it will take?

MR. MITCHELL: Couple minutes.

CHAIRMAN JOHNSON: Okay.

Q (By Mr. Mitchell) Ms. Petzinger, page 33 of your testimony.

A Yes, I have it.

Q Now, as I understand it, you see a problem in GTE's switching costs because they've used BCPM defaults for a certain number of host or remote switches, which you say are 208, and some other types of costs for the remaining 70?

A Yes, that's correct.

Q I'm sorry, 91, 91.

A Whatever the number was, yes. There was a -- the vast majority used the BCPM defaults, if I remember correctly.

Q Okay. Now, can you tell from what you've written here -- well, the way I read it is, based on what you've written here, is that GTE has 208 plus 91 wire centers. Would that be a fair way to read your testimony?

A I'm sorry. Can you show me the 208 and the 91?

Q Well, I'm adding up 52 stand-alone, six host, and 11 remote on line 14.

A Okay.

Q And then I'm adding the 21 on line 18, and then adding up 208. Those are all the switches you found for BCPM in -- excuse me, for GTE in Florida; right?

A No. On lines 18 and 19, I'm talking about stand-alone switches only. There are a huge number of 5E and DMS -- let me reread this section. If you'll give me a minute --

Q Sure. Here's what I'm getting at, Ms. Petzinger.

A Excuse me?

Q Let me just tell you where I'm going, and maybe we can clear this up, because I think you may have made a mistake.

Mr. Tucek filed some exhibits and may have said in his testimony that GTE has some 90 wire centers in Florida. Okay?

A Ninety?

Q Ninety.

A Okay.

Q And he surmises that you've sort of gotten the number of GTE wire centers wrong. Reading this again --

A I don't have the --

Q Reading this again, because this suggests

to me that GTE has got 290 wire centers or thereabouts, each switch being a wire center.

A I don't -- I thought these numbers were accurate. I did think that when I looked in the GTE switch module that there were more than 90 CLLI codes or the designation for wire centers, there were more than 90 rows of switches. That --

Q Is it possible that you --

A That was my impression. I don't remember the exact numbers, and I did think these numbers were correct. So it may be some discrepancy between what GTE includes as wire centers versus what BCPM is including as wire centers.

We found a discrepancy along that line with the Sprint data. Because Sprint provided SCIS runs, we knew they had 139 switches that were broken out into host, remote, and stand-alone. But when we looked in BCPM, BCPM still had the same number of switches, but the host -- but there were far fewer remotes in BCPM and many, many more stand-alone and host, which, of course, would have increased prices.

Q Okay.

A But I don't know if the same problem is happening here between what's going on in BCPM compared to what Mr. Tucek was looking at or whether I

made an error. But I thought my number was right --

Q Okay.

A -- based on what was in BCPM.

Q Let's assume you made an error and GTE doesn't have 208 host and remote switches for which it used BCPM default values. Will you accept that? Just assume you made an error.

A Well, as a hypothetical. I'll accept it as a hypothetical. I won't assume I made an error.

Q Okay. Assuming it as a hypothetical, then there isn't a discrepancy in the way GTE has used BCPM defaults or GTE-specific data, is there?

A I'm not following your question.

Q Well, I'm --

A My understanding is that GTE used two different input methodologies. They used BCPM default prices for some switches, and then they entered data in. In BCPM, they can enter data through either the ALSM process, they call it, which is SCIS, or they could have entered it via SCM data, which is the U.S. West cost model.

There were entries for investments under the SCM input process within the model. I would -- Unfortunately, it's in the electronic version of the model. I suspect it can be printed out. You didn't

provide any printouts, but we could print it out if you want that.

MR. MITCHELL: Okay. Thanks. That's all I have.

CHAIRMAN JOHNSON: We're going to break for lunch, take a 45-minute lunch break.

(Proceedings recessed at 12:10 p.m.)

(Transcript continues in sequence in Volume 26.)

B

C

D

E

F

G

Q

R

S

U