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 364.025, Florida Statutes	

VOLUME 7

Pages 826 through 875

PROCEEDINGS:	HEARING
BEFORE:	CHAIRMAN JULIA A. JOHNSON COMMISSIONER J. TERRY DEASON COMMISSIONER SUSAN F. CLARK COMMISSIONER JOE GARCIA COMMISSIONER E. LEON JACOBS
DATE:	Monday, October 12th, 1998
TIME:	Concluded at 6:30 p.m.
LOCATION:	Betty Easley Conference Center Box 148 4075 Esplanade Way Tallahassee, Florida
REPORTED BY:	JANE FAUROT, RPR

(APPEARANCES: As heretofore noted.)

I N D E X

WITNESSES

P R O C E E D I N G S

(Transcript follows in sequences from Volume 6.)

Thereupon,

DON J. WOOD

continues his testimony under oath from Volume 6:

CONTINUED CROSS EXAMINATION

BY MR. FONS:

Q I do not have Exhibit 6 to your rebuttal testimony; what is its title?

A Geocode success rates.

Q Do you know whether this that you have included as your DJW/BFP-6 is from the same ex parte filed on March 2nd, 1998?

A Well, again, without a copy of the ex parte you're talking about, I don't know. It is my understanding that we produced actually a little photocopy of what was filed with the ex parte.

Q Okay. Let's do wire center by wire center, then.

A There is no wire center information here, Mr. Fons.

Q Pardon me?

A There is no wire center information here.

Q I know there isn't. We will do it from the ex parte. Let's turn to your Exhibit DJW-5, which is attached to your direct testimony. It was the one that was marked as

Exhibit 43. I'm sorry, Exhibit 42, and used with Mr. Guepe?

A Yes.

Q And let's go to Page 7, if we could. And do you see the wire center or the CLLI code 3CGRFLXA, and would you accept that that is Boca Grande?

A I'm sorry, I have that on my Page 6. Yes, actually I believe that is the correct location of that CLLI code.

Q And the average monthly cost per line is $49.67?

A Yes.

Q Do you know what the success rate of geocoding is for Boca Grande?

A No.

Q Would you accept subject to check that it is zero?

A It would purely be subject to check, since you have the document and I don't.

Q And would you go to Page 9 of your exhibit, and would you go down to HRFDFLXA?

A Yes.

Q Which is Hurlburt Field?

A I didn't know that.

Q And, I'm sorry, I have the wrong line. If you would go two lines down to Lee. I think that's pretty easy. Lee, Florida?

A Yes.

Q And the average cost per line, the monthly cost per line is $146.60?

A Yes.

Q And would you accept subject to check that the geocoding success rate for Lee is zero?

A I would. And I suspect that's why you see a cost of that magnitude, because it's based on the high cost assumption of spreading those customers around the boundary, and none of them located inside.

Q And would you go down several lines to PANCF, which is Panacea, Florida?

A Yes.

Q A cost of 59.49, and would you accept subject to check that the geocoding success rate is zero?

A Again, subject to check, because I don't have that ex parte --

Q And by zero it means that none of the addresses in the Panacea wire center were geocoded?

A No. All of them would have been geocoded to one of the various census blocks serving -- or that this wire center serves. And there would be likely quite a few of them. None of them were point coded beyond the census block level, and for that reason they were placed at the surrogate locations, which creates the higher cost out.

Q Now, you indicated that the geocoding is not particularly successful in the low density and the high density areas, is that what you have testified to?

A No. I said in the very extreme cases, in terms of less than five lines per square mile, which is extremely low density, and more than 10,000 lines per square mile, which is extremely high density.

Q And what is the explanation for that?

A The explanation for the success rate?

Q The lack of success, yes, sir.

A Again, as I described this morning, for the very highest density areas, you have block addresses and apartment addresses that are perhaps in high-rise -- in fact, if you have got 10,000 lines per square mile you do have high-rises. In the lowest density areas you will have customers with rural route numbers or you will post office boxes in a lot of cases, or you will have customers who are geocoded to a degree of precision, but not the highest degree of precision. In other words, if you have got a road name, but not a north, south, east, west indicator on it, for example, the model throws those out as not acceptable. In fact, a lot of rural addresses are that way. So you have got a number of addresses that for whatever reason are not point codable to the latitude and longitude.

Q Do you know how many wire centers there are in

the Miami exchange area?

A Not offhand.

Q Would you accept subject to check that there are 23 of them?

A That sounds about right.

Q And would you also accept subject to check that 15 of those 23 wire centers, the geocoding success rate was under 30 percent?

A That doesn't sound right to me, but, again, you are looking at a document that I don't have.

Q And would you accept subject to check that there are several wire centers in the Miami exchange area that are less than 10 percent?

A The same response. And I'm a little confused about exchange area, because within an exchange it's very likely one serving wire center. But in the broader metropolitan area could there be wire centers with that type of rate? That sounds unusual to me. It's something I would want to look at. But, again, I don't have the information that is front of you.

Q Would you accept subject to check that there are ten of them?

A The same response; I don't have it.

Q And on a broader scale, would you agree subject to check that -- first of all, do you know how many wire

centers there are in the State of Florida?

A No. I can give you a total count of locations, but the way the incumbent local company data is categorized from the LERG where there are multiple switches and locations in the same location in the same building treat that as multiple CLLI codes. And, in fact, since we are independently sizing switching to go into each one of those locations based on total lines, we don't use the same breakout of number of switches at that location, we build up a separate switch count. So our location count will be different than your incumbent CLLI code count, because you will reflect perhaps an old and a new switch where we would just have a larger new switch in place.

Q I thought the wire centers under this analysis were supposed to remain the same, the locations of the --

A The locations, that is exactly right. And they always do.

Q And isn't that what the CLLI code represents, the location of the wire center?

A No, sir. The CLLI code represents the switch within the wire center. You often have multiple switches in one building. So if you have got two CLLI codes, they may, in fact, have exactly the same location. Rather than deal with both of those as arbitrarily two switches, we deal with the location itself, and then size the switch accordingly.

So, yes, the location of the switches has remained the same, but we may have a different number of switches than you do as reflected by your CLLI codes. That is not necessarily a different number of locations. In fact, it certainly is not a different number.

Q But each switch serves a different group of customers, doesn't it?

A That's right, by definition.

Q And in your model, then, if you are modeling it differently than the wire centers are today or the switches are today, then are you changing -- are you giving them new names?

A No, sir. Let me try this again. All of the locations are exactly the same. You may have one location, one building that has multiple switches in it. If you do, you will show multiple CLLI codes for that same location. We may not show that whole list. What we will certainly show is a CLLI code representing that location. We don't change that in any way, form, or fashion. That comes from the local exchange routing guide, it's a Bellcore document, it's information you provide.

What we do is within that building where you may have an inefficient mix of switches, we place an efficient mix of switches, which might be a different number than you do. And as a result you will see a different number of CLLI

codes. Same locations, same wire center boundaries in terms of customers served. Exactly the same. We get our wire center boundaries from exactly the same source that BCPM does. We don't change any of that.

Q All right. So you don't change the wire center boundaries?

A Absolutely not.

Q So the CLLI codes would remain the same for those wire centers?

COMMISSIONER CLARK: Excuse me just a minute, what is the CLLI code?

WITNESS WOOD: I'm sorry.

COMMISSIONER CLARK: I assume it's an acronym?

WITNESS WOOD: Yes, it is. And I knew you were going to ask me that. It's a line identification is where it ends up. It is a character -- if you will look at DJW-5, the left-hand column where we list the wire centers, it's the CLLI code. I think it's common language location identifier.

COMMISSIONER CLARK: Okay. CLLI is the --

WITNESS WOOD: Is what we're saying, CLLI, that's right. And it's the correct number of digits, and it varies slightly depending on whether it is a host or remote that tells you what office we are looking at. But there may be several of these that are physically located in the same

building, and that is the distinction that I think Mr. Fons and I are talking about.

BY MR. FONS:

Q The ex parte that was filed with the FCC on March the 2nd, has a wire center with a geocoding success rate of 107.41 percent. Can you explain how it could have a 107 percent success rate?

A Not without seeing the document that you're talking about. What I suspect is that they have found what they have reported -- and, again, without seeing the document, I don't know exactly how they reported it -- is the success rate for the total number of locations, which did not true-up to the estimate of total lines for that area. So there were, in fact, more lines than originally anticipated or originally predicted. They were able in most cases to geocode those, so they got geocoded locations that were more than 100 percent of the total predicted number of lines, but obviously were not higher than the total actual number of lines, which is why the line true-up process occurs at the wire center level.

Q What was your role, or is your role in the development of the HAI Model 5.0?

A I am not a developer of this model. I have been asked to sponsor it. As part of my agreement to do that, I have evaluated it, asked a lot of questions, gotten a lot of

information, provided some feedback to the developers, but I am not a developer of the model.

Q But you actually had no hand in the development of the model itself?

A Other than presentation meetings where versions of the model were presented, and not only myself but several other people were giving feedback to those folks. So to the extent they listened to our suggestions, we had that type of input. But I'm not responsible, I'm not part of the team that is responsible for putting this together.

Q You are not part of any team responsible for the development of the HAI or its inputs, isn't that correct?

A That is absolutely correct. And, very honestly, Mr. Fons, I wouldn't be comfortable here giving an objective review of this model to the Commission if I were on one of those teams. I would feel uneasy about doing that.

Q All you have done, both here in Florida and other states, is presented testimony on the HAI, is that correct?

A No, sir. Again, I have looked very carefully at it. I wouldn't testify to its appropriateness to this Commission if I didn't fully believe that that was the case.

Q Did you have any role in the development of the manner in which second lines were developed for purposes of the HAI?

A No. I understood that to be part of your

previous question. The answer is no.

Q Do you know how second line development takes place?

A Yes.

Q Pardon me?

A Yes.

Q And how is that done?

A One of two ways; through the line estimation model that is described in DJW-3, the model looks at line counts from Metro Mayo (phonetic), it also looks at line counts -- this is residence -- from a source called Claritus, which is another source of comparable information to compare those to. It also looks at Census Bureau information, and studies that have been performed by people on that information in terms of how to predict who would buy a second line.

And what the studies have indicated, and this is also described in the documentation, is that there is a very high correlation, mathematical correlation, between age, income, and second line penetration. So, based on the Census Bureau's information of age and income down to these discreet levels, you can get a very good idea of the number of people who buy second lines. Now, of course, once that prediction is made --

Q Excuse me.

A -- the process is trued up to the actual line counts that your company provides to the FCC.

Q Who makes that prediction?

A Well, it's part of the model.

Q What part of the model?

A I think it's called the National Access Line Model.

Q And isn't that part of PNR, isn't that a pre-process?

A Well, that is part of their responsibility, is to perform that function. That's right.

Q But that is not done in the model, it's done in the pre-processing, isn't it?

A Well, I guess it's the same answer to Mr. Carver. There are two big major steps here. That's in step one, which is part of creating this cluster data base. Step two, which is the Excel spreadsheets that design the network is a separate and independent process. That second process doesn't include all the material from the first process.

Q Who provides the input data to PNR for purposes of developing the second line development?

A It comes from Metro Mayo, it comes from Claritus, it comes directly from Census Bureau information, and there may be one other source. Let me look and make sure I haven't left something out. (Pause). There is additional

information that PNR developed, used what is called the request three residential survey, which looks at the demographic information that I was describing from the Census Bureau, and second line penetration to determine the correlation. And then, of course, to the extent that all of these line counts are then trued-up, either at the wire center level or the service level, Sprint would have provided relevant information because that information that you report to the FCC is what we used to normalize the line counts.

Q Does the HAI engineering team have any input into the development of the second line development?

A None to my knowledge. They would not be involved at all in this process.

Q And the information that you used for the second line development is all historical?

A It is the most current census data information, but obviously the census is not a projection, it's the most recent actual.

Q I believe you were asked some questions earlier by Mr. Carver concerning who participated in the switch model development?

A Yes.

Q And that was Doctor Mercer and a Dick Chandler, is that correct?

A They had primary responsibility, and I hope I was clear that there were certainly other people involved in various parts of that.

Q Did Cathy Petzinger -- was she involved with the development of the switch model?

A She has been involved recently with that module. You will have to ask her as to -- she will be here, you will have to ask her as to the degree of her involvement. I don't want to speak for her.

Q Are you familiar with the development of the switch model?

A I am familiar with how it's done, yes.

Q Can you describe for me the process whereby the total switch investment is separated between local, toll and other services in the model?

A Yes. There are two pieces to that process. First of all, we divide the total switch investment into what is called the traffic sensitive and the non-traffic sensitive components. A switch is a large computer. A lot of that is a fixed investment, whether you have one minute of use or a million minutes or 40 million minutes of use. That is the non-traffic sensitive part. You divide that as a per line cost typically, but you don't try to make it a per minute cost because it doesn't vary by minute.

And the other piece is the part, the processor

costs that do vary directly based on usage, based on numbers of minutes. So you need to divide it first in that way. The non-traffic sensitive piece then is applied on a per line basis because that is the cost, that is the driver that causes that cost to be what it is. And the per minute of use piece is driven by total number of minutes of use, and we take the traffic data that the local companies report in their ARMIS reports for local traffic, for intraLATA toll for access, inter and intrastate, all of those categories of traffic information by wire center, we look at that to size the traffic sensitive portion correctly and to calculate those costs on a minute of use basis.

Q Are the processor related investments for custom calling, class, and other vertical services separated from the processor, from the USF investment?

A No, because typically what those costs really are are software costs, not hardware costs. And they are part of the generic switching software that you would buy when you purchase the switch in order to offer the range of services that you purchase.

Q Are those investments included or excluded?

A They are included, but I thought you asked me were they broken out separately, and the answer is no, because they are part of the -- the vendors themselves don't even break those costs out separately in what they charge

you for the switch. A lot of those capabilities are in the generic and they charge you one price for that.

Q Does the HAI Model 5.0a contain formulas to separately calculate the investment for host, remote, and stand-alone switches?

A Yes.

Q Does the model also have a melded option for determining the investment?

A Yes.

Q And which option did you use in this case?

A For this particular run, I used what you're referring to as the melded option purely because I do not have on a switch-by-switch basis whether the switch is stand-alone, whether it's host, or whether it's remote. The model is set up to receive that information and to use it, as I described this morning. What we would require in order to make that run is that list of information about those switches from the local companies. But if they provide a list by these CLLI codes of whether the switch is stand-alone, remote, or host, we can put that into the model and conduct that run. It's a very straightforward process.

Q Do the formulas that you used to separately calculate the investment for host, remote, and stand-alone switches, do these formulas use the investment inputs shown in the HIP, and I believe it's 4.1 -- I'm sorry, 4.11.2,

which is Page 114 of the HIP? And the HIP, just for the record purposes, is the Hatfield Inputs Portfolio.

A I'm sorry, Page 114, 4.11.2?

Q Yes.

A Yes.

Q Do you have that?

A Yes.

Q Are these -- what is the source of the switch investment inputs on this input table?

A Two of those, part of it is a review of prices paid for switches in the aggregate as in a published source, I think it's the McGraw-Hill source. Part of it is also based on a review of individual purchases of these individual different types of switches. And this actually may be an area where Ms. Petzinger is certainly the expert and may be able to enlighten you further.

Q Did she develop these investment amounts for the HIP?

A I do not know the extent of her involvement in the separate investment amounts. She was not involved in the investment amount in the total melded version, that comes from the public source. She may have been involved in the process of splitting this out by host, remote, and stand-alone. I simply don't know the degree of her involvement.

Q But you do know that you weren't involved?

A Other than, again, in these feedback sessions I described to you before, no, I was not.

Q Were any of the feedback sessions -- did you talk about switch investment?

A Oh, extensively. All of us.

Q Did you offer any of these investment amounts in these feedback sessions?

A Oh, these numbers? No.

Q So you don't know the source of these numbers?

A Well, other than what I just described to you, they come from a published source first, and then they come from additional information related to the actual prices paid for these different types of switches.

Q Let's go to the host fixed investment, which is under the heading box and large ICOs. The amount $183,750 --

A Yes.

Q -- what is the source of that number?

A I can't really give you an answer beyond the one I just gave you, Mr. Fons.

Q And do you know where the $75 stand-alone per line investment comes from?

A The same response; overall from the published source, broken out by that from a review of the prices paid

for these types of switches.

Q Do you know whether or not these inputs were developed from a survey or sample of existing switches?

A Certainly in part they were done from the McGraw-Hill study, which includes purchase prices actually paid by Tier 1 local exchange companies.

Q And that is the only source that you are aware of?

A That is the source I can cite you to. I know there was an additional amount of information and judgment involved based on people who have experience both with costing out switches and with reviewing the contracts. But to give you the detail, I suggest you ask Ms. Petzinger, she is probably the right source for that.

Q Let's talk about the host/remote option we spoke about earlier. I believe you agreed that for purposes of this proceeding you used the melded host/remote, is that correct?

A Yes. For lack of better information, although we would certainly be willing to prepare the run based on the updated information if we have it.

Q Do you know whether or not the host/remote option that you used for purposes of this proceeding has been tested with a data set made up of host/remote relationships from an actual state or states?

A I honestly do not understand your question, Mr. Fons.

Q Well, have you tested the host/remote option to make sure that it is realistic when compared to data from any particular state or states?

A I'm sorry, I thought we were talking about the melded option. I'm a step behind you.

Q We are talking about the host/remote option.

A If we go to the host/remote option, there wouldn't be anything to test, because we would actually exercise it based directly on information provided by the incumbent companies.

Q And what information that is provided directly by the companies would you use for the host/remote option?

A We would need to know by CLLI code whether the switch was a host or remote or a stand-alone switch.

Q And, in effect, then you are going to create the investment for switching based upon host, remotes, and stand-alones for each company?

A Yes. If the information is there, that is the capability.

Q And if the information isn't there, what is your alternative?

A Again, it is what we are referring to here as the melded approach, which is an investment, a source of

investment information that includes the mixture of all three types, and then we would then apply an investment curve, which is presented also in this document based on the size of the office and the number of lines.

Q Is what you are saying that for -- when you use the melded option, that you do it on a state-specific basis and a company-specific basis?

A No, we use it on the level of disaggregation in the McGraw-Hill study, which combines these three switch types.

Q Oh, so you -- that is my question. Where do you come up for the amount of money for the cost -- the investment per line for your melded option?

A That is from the McGraw-Hill study.

Q Okay. So you don't do it on specific information from each individual company?

A No. If we had specific information we would actually not use the melded option at all, we would use the host/remote option that we have described and actually locate the host and remote switches.

Q When the host/remote option is used, how do the switch cost results compare from those from the default HMM switch curve?

A I don't know, because I have not yet received the information necessary to run the host/remote option and

compare the two on an apples-to-apples basis. I would certainly welcome the opportunity to do that if we had the information here in Florida for Sprint, but I don't. But I would certainly be happy to perform the analysis if I were provided with the information.

Q You mentioned earlier a document called the LERG, L-E-R-G?

A Yes, the local exchange routing guide.

Q And I believe you indicated that Bellcore is the author of that?

A Yes.

Q And does HAI model use the LERG?

A Yes. We licensed directly from Bellcore an extract of the LERG that includes the switch locations based on V&H (phonetic) coordinates. And not only for the switches, but also for the signaling STPs and SCPs, so that we have the right amount of facilities connecting all of those together, as well.

Q And the LERG is an acceptable method for locating the switches?

A Yes. Again, it goes back to why I put a star on one of my slides this morning. Existing switch locations aren't forward-looking and they would certainly be in different places if we were to go in a pure forward-looking basis. But as a practical starting point to a compromise

methodology, that's where we are starting, and the FCC also made the conclusion in its May 7th order last year that that was a reasonable compromise and a practical place to start. And for both of those reasons that's where we start.

Q Would you turn to 5.5.9 of the HIP, please. The end office non-line port cost fraction?

A Yes.

Q And can you tell me what you mean by the end office non-line port cost fraction, and what you are trying to accomplish there?

A Yes. What is being tried -- what we are trying to accomplish there is the mixture of traffic sensitive and non-traffic sensitive components of the switch. As I was describing before, the switch investment can be divided up that way. The non-traffic sensitive varies on a per line basis, the traffic sensitive bear varies on a per minute of use basis or on a usage basis generally.

Q And I believe you used 70 percent as the fraction?

A Yes. Let me confirm. I think we used that in this particular run. In previous runs we have used alternative values based on Ms. 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 Telecom, for example, or Nortel, configures their switch in a way that causes a mixture that is very different from the way Lucent configures its switches. So you need to have a number that reflects that mixture of purchased switches. The reason that is a user adjustable input is to allow you to reflect exactly that. I know Ms. Petzinger has made the adjustment, but I think it's probably data proprietary to the companies that she could only use in those specific dockets, in the previous dockets here. So with permission to use that in this docket, we would also be able to make this value specific to Sprint's operations in Florida.

Q And would I be correct that the complement of the 70 percent is 30 percent, and that that 30 percent relates to the cost of the -- or the switch costs that are allocated to the line port?

A Yes.

Q Okay. And what is the source of the 30 percent?

A Well, the source of the 30 is 100 minus 70. The source of the 70 is based on Doctor Mercer and Mr. Chandler's experience looking at these various switch technologies. And 70/30 is actually a number that has been in general use in the industry for awhile, as at least a first approximation of this mixture. It's not unique to this process. But, again, it's a number -- it's a value

that we could certainly adjust to be specific to Sprint Florida with permission, of course, to use the information, and assuming we have the information to use it from the other docket.

Q There is no study that was performed by HAI or that HAI relied upon to develop the 70 and the 30 percent?

A No formal study. Again, it's an approximation that has been in general use in the industry for quite awhile. There have been specific studies done, but to be clear, to get a company-specific study it requires going to switch and purchase contracts to determine what is being purchased and how the company is paying for that switch.

That is considered the most proprietary of information, because it's not just proprietary to the company buying the switch, it's proprietary to the company selling the switch. So we have had an ongoing process of having people -- people having access to those contracts -- to the extent we have that access and can use the information in the proceeding, we can adjust this number to a specific value and perform that type of specific study. But it does have those limitations on it.

Q Is the 30 percent applied to all switch costs or are the non-traffic sensitive portions excluded?

A Well, that is how you determine which portion is non-traffic sensitive and which portion is traffic

sensitive.

Q So this is what drives the determination of what is traffic sensitive and non-traffic sensitive?

A Yes. This is the fraction that takes the total investment and divides it into traffic sensitive and non-traffic sensitive components.

Q And which gets the 70 percent?

A In this assumption, it is the -- the 70 percent is the non-line port, so it is the usage sensitive portion. The line ports, which are the non-traffic sensitive, would be the remaining 30 percent.

Q I believe you indicated earlier that a lot of the switch investment data is derived from a study called the Northern Business Information Study?

A Yes.

Q Better known as the NBI study?

A Yes. That's what I have referred to previously as the McGraw-Hill study, because they are the publisher.

Q Do the switch investments from the NBI study, which form the basis for the switch curve, include vertical service investments, such as CENTREX, C-line cards (phonetic) and conference circuits?

A CENTREX, I think the answer is no, and I certainly hope the answer is no, because it shouldn't be in there. I don't know about the hardware configurations

specifically for the other two categories. I do know about the software, but not the hardware.

Q Now, the NBI study provided the foundation for the switch curve that is part of the Hatfield Default, is that correct?

A That's correct.

Q And which switch vendors are represented in that switch curve?

A It has been awhile since I've looked at that study. I know AT&T, now Lucent is in there, I know Northern Telecom, now Nortel, is in there, I know Sieman's is in there. Beyond that I really would have to go back and look at the study to see if there were smaller manufacturers. I suspect Stromburg-Carlson is also in there, or some corporate entity that used to be Stromburg-Carlson.

Q On that switch curve, how many data input points are there?

A On the curve we use, I believe four.

Q How many?

A I believe four, but I will have to go back and find that.

MR. FONS: I have no further questions.

CHAIRMAN JOHNSON: You had a question?

COMMISSIONER JACOBS: Can I ask a question real quick? Going back to that question on usage sensitive, you

said that the 70 percent was the usage sensitive one?

WITNESS WOODS: That's right. That's the part, the computer processor that actually routes calls and provides features.

COMMISSIONER JACOBS: Okay. I was confused. What this says is the fraction of the total investment that is assumed to be not related to connection of lines to the switch.

WITNESS WOOD: That's right.

COMMISSIONER JACOBS: That would imply to me to be nonusage sensitive.

WITNESS WOOD: Well, there is a double negative in here, and I will be the first to admit it, because I didn't write this section. The non-line point -- if you take out the double negatives, what this is is the usage part. The remaining part is the line part, and it's the non-traffic sensitive part of the switch that actually it is the hardware that the lines are physically connected through and that holds the line cards as they are placed into the switch. And they are separate.

COMMISSIONER JACOBS: I understand.

WITNESS WOODS: These things look now like rows of file cabinets, if you will, and in those cabinets there are bays. And in each one of those bays there are line cards where the lines terminate onto the switch. That

doesn't change with minutes of use. It does change with number of lines coming in. So that's why we are trying to separate this. There is a big piece of investment here in this switch that is line sensitive, but not traffic sensitive. And then over here there is a big computer processor that is largely indifferent to the number of lines coming in, but is driven by the traffic coming through the switch, how many calls, whether a lot of people subscribe to vertical features, like call waiting and the like, that sort of thing. And what we are trying to do is pick this up because the traffic sensitive piece then, if we want to divvy it out based on units of traffic, the non-traffic sensitive, the line piece we want to divvy that out based on lines.

COMMISSIONER JACOBS: Thank you.

MR. FONS: Madam Chair, I have one more question, if I may, of the witness.

BY MR. FONS:

Q With regard to the switch curve that we were talking about, does each one of those points on the curve represent a different manufacturer?

A No, sir.

Q Do you know for each one of those points what switch manufacturer is represented in each one of those data points?

A To the best of my knowledge, it is the list that I gave you in response to a previous question.

Q Is it the same number in each one of the points, same number of switch manufacturers in each one of the points?

A I would have to check that, and the reason that I have some hesitation is that some of these manufacturers specialize in switches that are used to serve very small areas, like Sieman's and Stromburg-Carlson. While they sell large switches, they typically sell -- they focus on the part of the market that is smaller ones. So it may be that they are represented in the smaller office data points, but not represented in the larger office data points which would primarily be Lucent and Nortel.

MR. FONS: I promised only one. I'm afraid I asked more than one. I will ask no further. Thank you.

COMMISSIONER DEASON: Let me ask a question at this point. On the 70/30 split between traffic sensitive and non-traffic sensitive, explain to me why a switch would not be considered 100 percent traffic sensitive since it is there to switch traffic?

WITNESS WOODS: There are -- there is an investment that you've got to have -- let's say your line comes into the switch and you terminate, we are going to terminate your line onto the switch and you never make a

call. There are still switch investments that have to be incurred to terminate your line, even though you never use -- have call usage or feature usage. It is purely there to connect your line to the switch. That is the non-traffic sensitive piece, the line piece that we are trying to capture here. And then obviously there is the processor that is used then only if you make a call, and that is what is driven, that processor capacity and that processor usage would be driven by you actually then picking up the phone and either making a call, using a vertical feature, that sort of thing.

CHAIRMAN JOHNSON: Sir.

MR. WILLIAMS: Thank you. Madam Chairman and Commissioners, my name is John Williams and I represent GTE.

CROSS EXAMINATION

BY MR. WILLIAMS:

Q Good evening, Mr. Wood. It's nice to see you again.

A Good evening, Mr. Williams. It's been awhile.

Q It has been. I wanted to ask you about the scorecard and your direct testimony when you indicate the number of states that have adopted the Hatfield model over BCPM. And I think you indicate that Kentucky and Louisiana are two in that category, is that right?

A I think I referenced those. I don't think I

tried to give a complete scorecard. There are a number of states nationally beyond those, obviously, that have adopted it.

Q That's right.

A I think if we keep score, we are exactly even both nationally and within BellSouth territory.

Q Right.

A But in the region we are two to two.

Q We are two to two in this region?

A That's right.

Q Okay. You define this region as including Louisiana and Kentucky for you and South Carolina and North Carolina for BCPM?

A That's right.

Q Okay. What I wanted to ask about, Mr. Wood, is in the past few months we have heard something new in this area about the minimum spanning tree (phonetic). Are you aware of that concept?

A We have. Yes, I have.

Q And the minimum spanning tree is, as I understand, an algorithm that is able to determine the shortest distance to connect a set of points. Is that a fair characterization, and if not, why don't you tell us what it is?

A That is the way it is characterized. In terms of

network design, I understand there are some alternatives to minimum spanning tree analysis that may yield a different result. We describe some of that in our rebuttal, but quite frankly it is part of Mr. Pitkin's analysis that he is primarily responsible for, so that is in our rebuttal testimony and we certainly address it there.

Q Well, just to be clear, the minimum spanning tree was something that was developed by Sprint, was it not?

A I think -- I know you have used it in your ex parte filings, but I think it's -- I don't know that it is unique to Sprint. I think it has been around for awhile.

Q Well, in any event, Sprint filed it in an ex parte with the FCC sometime in April of this year?

A You did.

Q I'm not Sprint, I'm GTE.

A I'm sorry. I sincerely apologize to you or Mr. Fons, I'm not sure which I should. Yes.

Q You don't remember that well, do you?

A I apologize, no. It is part of an ex parte filing made by Sprint. I actually had thought that other companies, other sponsoring companies had been part of the filing, but perhaps they weren't.

Q In any event, you agree that it is possible to use this algorithm to compare the distribution routes that are modeled by the Hatfield model against the distribution

routes necessary to connect the actual geocoded locations?

A No, absolutely not.

Q All right. Tell me what the minimum spanning tree does, then?

A What you can do with this analysis is compare -- you can use it as an internal prediction and to validate what you have done internally. You can't use it to validate whether the model performs well in a real world setting. You can compare geocoded and non-geocoded total customer locations predicted by the model to this MST analysis and the total route miles of cable that would be required under either scenario, but you cannot use this analysis to compare or to determine or validate how well a model would perform in terms of does it produce enough cable to serve actual customer locations.

If I understand Doctor Tardiff's testimony, he is trying to reach the second conclusion, and I don't think he can. In fact, I'm sure he can't. I believe Doctor Duffy-Deno on behalf of BellSouth describes this correctly, which is purely an internal validation check, and not an analysis that will tell you whether a model produces sufficient cable to serve an actual area. Two very different processes. This can give you some information on one, it can't give you any information on the second.

Q I understand. But at least it is an internal

validation check?

A It is certainly something that you can look at, yes.

Q Right. And have you looked at that in connection with how well Hatfield is modeling and performing in Florida?

A Yes. Mr. Pitkin and I have that, and, again, this is in the rebuttal testimony. And Exhibits 18 and 19 provide results based on an MST analysis not only of the HAI model, but also the BCPM, because it is --

Q And what does that analysis show with respect to GTE's serving territory and the Hatfield model?

A We don't have it broken out for GTE. I think we have got -- let's see. The analysis we have run is for BellSouth of Florida. I do not know if Mr. Pitkin has also performed an analysis for GTE. What we attached is the BellSouth analysis.

Q I'm sorry, I didn't hear what you said.

A What we attached was for BellSouth wire centers. Mr. Pitkin performed the analysis, and I frankly don't know if he has GTE information or whether he had the underlying information necessary to do this analysis for GTE.

Q Now, in your testimony you indicate that Nevada adopted Hatfield over BCPM. I believe that is in your rebuttal testimony.

A That is not in the direct. The reference to Nevada may be in the rebuttal.

Q Excuse me?

A There may be a reference in the rebuttal, it's not in the direct. I didn't prepare that list.

Q You didn't prepare your rebuttal testimony?

A Yes, I did, but if you are looking at a scorecard in the rebuttal, that's not something that I inserted. It's something you would need to talk to Mr. Pitkin about.

Q The Nevada Commission adopted initially both -- the Hatfield for both UNEs and USF purposes, is that correct?

A Yes.

Q And then the minimum spanning tree was introduced to the Commission, are you aware of that?

A I am aware that some analysis was provided to them, yes.

Q And are you aware of what the Nevada Commission did subsequent to being presented with the minimum spanning tree analysis?

A I believe the Nevada Commission asked for some specific adjustments to either be made or tested.

Q And the Nevada Commission did not, as you indicated in your testimony, actually submit Hatfield to the FCC for universal service purposes, did it?

A Let me think of where that list is, because I actually went to the -- you can go to the FCC website and get a current list of who submitted which model, and let me see where I put that. If you tell me they haven't, I will accept it subject to check.

Q All right. Thank you.

A It's something that is easily verifiable by going to the FCC website.

Q All right. Thank you. Now, let me ask this question. Are you aware that this Commission, the Florida Commission, has rejected a predecessor version of the Hatfield model, in particular Hatfield 2.2.2?

A That is correct. Or they at least opted not to use it for UNE costs.

Q Right. And that was in an arbitration proceeding involving AT&T, MCI, and GTE a couple of years ago?

A That's right. And, again, as I have been describing both in my presentation this morning and this afternoon, the name is the same, but in terms of the fundamental operation there is very little in common with this model and the release two predecessor because the fundamental way it works has been completely changed. So, the Commission has never seen this model. While it has seen something with a comparable name on it, it has never seen anything like this model that we are presenting here.

Q Has it seen something with comparable UNE prices spun out?

A No, sir.

Q No. Are you aware of the basis upon which this Commission indicated that it would not adopt Hatfield two years ago?

A I have seen the order, I know there was quite a bit of discussion.

Q Excuse me?

A There was quite a bit of discussion in the order pro and con.

Q Well, one of the statements of the Commission was that its review led it to conclude that the Hatfield model appeared to understate costs; do you recall that portion of it?

A I will accept that subject to check. I don't recall all the language, but, again, that was a fundamentally different model than this one.

Q Well, what was the loop cost that it predicted two years ago for GTE?

A For UNE?

Q For UNE.

A I don't know.

Q You don't know what it was?

A No. I have done an awful lot of these

proceedings. As you know, Mr. Williams, because you have crossed me around the country, I have not memorized the results from each one of those cases. I will be the first to admit that. I have it on a shelf at home, but I don't have it here.

Q All right. So you don't know how the -- if you ran Hatfield 5.0(a), if you ran that model and compared it to Hatfield 2.2.2, you do not know what the UNE costs would be for Florida for GTE?

A Not as I sit here, no, because I don't have any recollection of what the release two results were.

Q You are aware that in a number of the algorithmic changes from 2.2.2 to where we are today that adjustments have been made that would have the effect of actually lowering costs?

A There are a mixture of changes that go in each direction. The bulk of the changes, at least on the input side, have resulted in increases. There have been a few that resulted in decreases.

Q I'm sorry, you say the bulk of the changes have resulted --

A The bulk of the input changes have been increases. There have been some input changes that were decreases. I've got -- the mixture at least from the last version, which does not go all the way back to release two,

but it does go back to release four, of the 40 inputs that were changed, 29 changed in a way that increased the cost, nine changed in a way that decreased the cost, and two changed in a way that essentially had no effect.

Q I see. And have you done --

A And in addition to that there were 121 totally new inputs that, of course, had no history, so it wouldn't have been changed.

Q And do you have any idea as to -- can you quantify the extent of the changes on the 29 that went up as opposed to the nine that went down?

A Well, it's going to vary by the details of the area being studied, because some of these inputs might be to a piece of equipment or a facility that would apply in some areas but not others. Some of these changes might apply to a particular deployment or utilization of a piece of equipment. So it's the kind of thing you actually have to look at on a specific basis rather than trying to draw an up front general conclusion. And, frankly, that's one of the reasons why this model is set up to allow you to do this type of sensitivity analysis very easily by changing some of these.

Q Well, have you done an analysis holding constant the 29 that went up to see the effect, and then holding constant the nine that went down to see the overall effect?

A I'm sorry, holding constant --

Q In other words, if you were just to have changed the 29 that went up, make those changes, and to see what effect --

A Oh, and change the effect of the old values from the previous --

Q Right. What effect that had on costs?

A No, I haven't. And actually the reason that I haven't is that for some of these changes, they reflect a technology change and there is not really a comparable apples-to-apples number. One example is the NID, the network interface device, where you attach to the customer premises. For business locations that is an indoor NID, in the earlier version that included both the box itself and the network protection element. In the new version of the model, the network protection is now part of the serving area interface that it connects to. So to go and compare the old NID cost to the new NID cost would not be apples-to-apples.

And there are several instances where there is a technology change that causes the difference. So if you were to try to do the analysis you're talking about, you wouldn't get a meaningful result, because it's not a case where we are varying inputs based on a consistent technical design. There are changes and updates to the technical

design that in part drive the changes in the inputs.

Q All right. The network operations factor fell from 70 percent to 50 percent?

A Yes, it did.

Q The sharing percentages have also gone down, have they not? The sharing percentages attributable to the ILECs?

A They have changed. I don't think that's true across-the-board.

Q It's not true across-the-board, but in general they have gone from one-third down to 25 percent in the highest instances?

A No, I think that's an overgeneralization. I think we have to look specifically at the different types of structure, and we have to look at the different density zones, because those have changed in each direction to fine tune the analysis. I mean, the very early rather crude one-third/one-third/one-third analysis has been replaced by the engineering team actually looking at, okay, here is a pole of a certain height, how much usable space? If you put the electric company on, how much of a buffer do you need between that and the other cables, how much of the usable space then does the electric company use versus telephone or cable? It's a much more refined analysis at this point, and it has resulted in changes in both directions.

Q That's a little more than I need to know tonight. Let me move on, okay, because we will pick that up when we get to the input section of this presentation. Have you compared the actual dollar investment and expenses predicted by the Hatfield model to GTE's actual investment and expense levels as reported in ARMIS?

A Total expense levels?

Q Right.

A I'm sorry.

Q You understand that a calculation is possible where you can look at the actual ARMIS values that GTE reports in terms of investment and expense and compare it to what Hatfield would predict for GTE Florida or any other state?

A Yes. You would be looking at embedded information on one side, forward-looking information on the other, and trying to see if embedded information was a good predictor of forward-looking information.

Q Right.

A I don't think it ever is. I don't know of any reason why it would be, and, no, I haven't compared them.

Q The answer is yes, you can do it, right?

A You can do a lot of things that are ill advised; that, I think, is one of those things.

Q Okay. Well, may we do this ill advised exercise

just once more.

A Sure.

Q If you were to look at the percentage that Hatfield would predict in terms of GTE's actual investment, do you know what the percentage would be?

A I have no idea.

Q Would you accept subject to check that it is 39 percent of actual investment?

A Of your embedded base, entirely possible.

Q Thank you. Now, with respect to the embedded base, let me ask this question, Mr. Wood. Is it your view that as a general matter forward-looking costs are going to be less than embedded costs?

A In almost all instances, yes, I think there has been general agreement about that. We can divide it into the investment and expense components of that cost because both of them drive it, and --

Q When you say there is general agreement, who is it that generally agrees that forward-looking costs are going to be almost in all instances less than embedded costs?

A Well, Bob Savage, my old boss at BellSouth when I did cost studies there, told me the first day I came to work for the company that we were doing forward-looking costs, not embedded, because it was a declining cost industry, and

we expected them to be lower.

Q I see. So you are basing it on the general view that telecommunications is a declining cost industry?

A It actually goes beyond that general view. We can talk about specific pieces of equipment and specific applications in the network, if you would like, that result in lower per unit cost. It's happening across-the-board, both in terms of investment and in terms of the corresponding expenses. I will go into as much detail as you would like.

Q Are there any -- well, let's do that. Are there any forward-looking costs that will exceed embedded costs?

A If we look at it on a pure granular level, if you try to break it down into specific types of expenses, specific types of investment, copper cable as a material has tended to track flat or slightly upward, labor as an expense has tended to track upward as raw inputs, but then you need to combine that with the fact that, for example, as you go to a digital network that requires far less maintenance and far fewer maintenance employees, you may, in fact, have a lower total labor bill even though the per unit cost of labor has increased.

The same thing with the copper investment. Per foot, the copper may have increased, but loop carrier technologies (phonetic) have allowed you to place far more

lines on a single strand of copper, so your per line investment would actually substantially decrease at the same time the copper costs were increasing. So those are the only two input exceptions.

All the other inputs that I am aware of, and I have been looking at these for a long time, have been trended downward. The predictions of the incumbent companies when they create their telephone plant index trends these investment downward, investments downward, and then when you look at the new technologies you are using far fewer units of a lot of these investments, so you are getting cost reductions from both sides of that equation. And that is very broadly true in terms of loop carry systems, switching. Piece by piece the pieces of the network.

Q You referred to the telephone plant index in your last answer?

A Yes.

Q Is that the same as the Turner Plant Index?

A I've never heard it called the Turner Plant Index.

Q You've never heard of that? What is the telephone plant index?

A It is a predictor of -- well, it's actually two things. It is a record -- the current year shows up

somewhere in the middle. Up until the current year, it is an index by account code for different classifications of plant of how that cost, the acquisition costs has varied over time.

In other words, if you looking at digital switching, you can look at the fact that for a given capability the cost of buying it has trended from, you know, an index of say 1 in 1992, down to an index of, say, .92 today, and then the other half of the analysis is the incumbent companies' best guess based on what it knows about what it is going to buy, what it knows about what it is going to pay for it in terms of contracts, going out for a specified number of years continuing that index. And it may trend then down to a .8 for the year 2005, for example.

So in a cost study, then, you can look at an investment and when you are trying to project the necessary investment in the future you use the TPI by account code to project then if you pay a dollar today and in 2005 for the same capability we expect we are only going to be paying 80 cents or 90 cents, and you take that factor and apply it to your investment.

Q Do you consider the TPI an authoritative price guide in the telephone construction industry?

A I certainly consider it to be illustrative in terms of what the incumbent companies expect the trend in

prices to be, and when I have described before the general agreement on this trend, if you look at the TPI for the various companies, you see, in fact, predictions of a downward trend for the vast majority of these investments. And I think they are right.

Q And the answer was do you consider it authoritative, and I think you said yes, is that right?

A I consider it certainly a useful piece of information. I would not consider it to be the final word, but if you are interested in the general consensus that costs are trending downward for specific types of plant, I think you could look at it and see that that is, in fact, the expectation.

CHAIRMAN JOHNSON: Mr. Williams, how much more do you have?

MR. WILLIAMS: I have probably about ten more minutes of questions, but I don't know how many more minutes of answers Mr. Wood has.

CHAIRMAN JOHNSON: We are going to break until 9:00 a.m. in the morning, and we will begin with your ten minutes of questions.

(Transcript continues in sequence with Volume 8.)