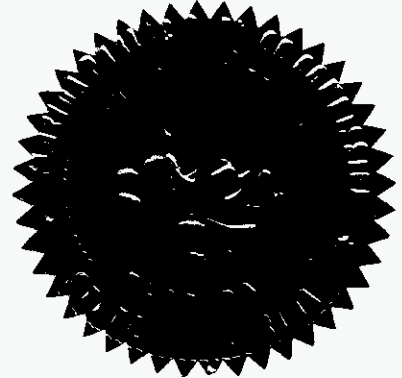


BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION

In the Matter of :

Petitions by AT&T Communications : DOCKET NO. 960847-TP
of the Southern States, Inc., : DOCKET NO. 960890-TP
MCI Telecommunications :
Corporation and MCI Metro Access :
Transmission Services, Inc., :
for arbitration of certain terms :
and conditions of a proposed :
agreement with GTE Florida :
Incorporated concerning :
interconnection and resale under :
the Telecommunications Act of :
1966. :



THIRD DAY - MORNING SESSION

VOLUME 14

Pages 1581 through 1669

PROCEEDINGS: HEARING

BEFORE: CHAIRMAN SUSAN F. CLARK
COMMISSIONER J. TERRY DEASON
COMMISSIONER JULIA L. JOHNSON
COMMISSIONER DIANE K. KIESLING
COMMISSIONER JOE GARCIA

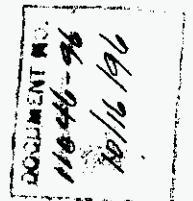
DATE: Wednesday, October 16, 1996

TIME: Commenced at 9:10 a.m.

PLACE: Betty Easley Conference Center
Room 148
4075 Esplanade Way
Tallahassee, Florida

REPORTED BY: JOY KELLY, CSR, RPR
Chief, Bureau of Reporting

APPEARANCES:
(As heretofore noted.)



FLORIDA PUBLIC SERVICE COMMISSION

WITNESSES - VOLUME 14

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11	NUMBER		ID. ADMTD.
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13	40 (MCI-ATT) DJW-1 through 3		1592
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P R O C E E D I N G S

(Hearing reconvened at 9:10 a.m.)

(Transcript follows in sequence from
Volume 13.)

CHAIRMAN CLARK: Let's call the hearing to
order. Is our next witness Mr. Wood?

MR. GILLMAN: Chairman Clark, the parties
decided we would start with Mr. Wood, and then we'd go
to Duncan, then the panel, Trimble and Steele, and
then we'll finish up with the three remaining GTE
witnesses.

MR. TYE: Chairman Clark, before we start
with the witnesses, I think we had an unresolved
matter from yesterday with respect to exhibits 32 and
33. Those were the new evidence brought in by GTE.

I'm prepared to argue AT&T's objection to
those at this time. I spent a good part of the night
on the phone with Mr. Walsh, whose name was brought up
by Mr. McLeod yesterday. I'll be glad to state AT&T's
objections, or perhaps -- I've offered a compromise up
to GTE. If they will accept that, we can --

COMMISSIONER KIESLING: What is the
compromise, Mr. Tye?

MR. TYE: Chairman Clark, my compromise is
that we will allow this document to be entered into

1 evidence if we have an opportunity -- if we have seven
2 days to prepare to have our expert, Mr. Shurter or
3 someone like Mr. Shurter who has been in negotiations
4 look at it, tell us what is wrong with it and prepare
5 an affidavit to be submitted as a late-filed exhibit
6 stating AT&T's positions with respect to what is in
7 this document.

8 **CHAIRMAN CLARK:** Ms. Caswell.

9 **MS. CASWELL:** Okay. I'd like to clarify
10 once again what this document is.

11 GTE's original submission in response to
12 AT&T's arbitration petition included a proposed
13 interconnection contract. Since the arbitration
14 petition was filed, the negotiations have continued as
15 they are supposed to. In Exhibit 32 introduced
16 yesterday is an updated version of GTE's proposed
17 contract and reflects further movement in
18 negotiations.

19 I'd like to be clear, as I said yesterday
20 that AT&T has not agreed to all of the terms of the
21 agreement. They have not agreed to the language and
22 we're not representing it for that purpose. And, in
23 fact, the agreement itself cross-references a matrix
24 also sponsored by Mr. McLeod, which is a joint AT&T
25 and GTE document which sets forth the parties'

1 respective positions on the issues in the contract.
2 And by cross referencing that matrix, it's very clear
3 where the parties still disagree.

4 **CHAIRMAN CLARK:** Ms. Caswell, let me ask
5 you, can you respond to Mr. Tye's --

6 **MS. CASWELL:** Yeah, I'm going to do that
7 now.

8 With regard to his compromise, that's not
9 acceptable to GTE because it will allow Mr. Tye to
10 reargue the entire case.

11 That contract includes no issues that
12 weren't raised in the original contract, and it
13 presents nothing new with regard to GTE's case and
14 GTE's testimony in this case. So submitting an
15 affidavit to respond to that contract and all of the
16 issues in that contract, will allow AT&T to reargue
17 their case again.

18 **CHAIRMAN CLARK:** Here's my thinking on it.
19 I think Exhibit 32 is of value to the Commission in
20 understanding what is GTE's latest position on things
21 so that the Staff has that information. And I
22 likewise think that for AT&T to simply respond to it
23 in the sense of saying, "we can agree to this or we
24 can agree to that" without any argument would be of
25 value.

1 MR. TYE: Madam Chairman --

2 CHAIRMAN CLARK: Is that what you intend to
3 put --

4 MR. TYE: What I would --

5 CHAIRMAN CLARK: -- is an affidavit?

6 MR. TYE: Yes, ma'am. That type of thing.
7 I would intend to have -- frankly, what I'd like to do
8 is what I would have done had this exhibit been
9 presented during the course of these proceedings and
10 we had an opportunity to file rebuttal on it. I mean
11 what happened here was GTE comes in with this
12 so-called new contract --

13 CHAIRMAN CLARK: Mr. Tye, let me interrupt
14 you just a minute. I don't care about them coming in
15 late or something like that. We're all under a time
16 crunch. What I'd like to do is resolve it so we have
17 a clear picture of where there continues to be
18 disagreement.

19 MR. TYE: I think my compromise would allow
20 that, Chairman Clark. That's why I offered it up
21 rather than have to go into argument today.

22 CHAIRMAN CLARK: Mr. Tye, have you had an
23 opportunity to talk outside this hearing with
24 Ms. Caswell and GTE about your compromise?

25 MR. TYE: Yes, ma'am, I have and we haven't

1 been able to resolve it. So I either have to argue it
2 or --

3 **CHAIRMAN CLARK:** Let me put it this way, I'm
4 going to give you yet another opportunity to resolve
5 it because I think there is value in having that
6 exhibit and value in having AT&T say, "Yes, we can
7 agree to this updated version" or "No, we can't
8 agree." As simple as that.

9 **MR. TYE:** My problem is, Chairman Clark, I
10 think we should be able to at least state why we can't
11 agree to it.

12 **CHAIRMAN CLARK:** That would be fine. I have
13 no objection to that either. But get together on it
14 and see what you can work out with regard to it.
15 Because I view this as a continuing process of weeding
16 out those things that you don't agree on, or weeding
17 out the things that you do agree on so we can focus on
18 that which we have to arbitrate.

19 **MR. TYE:** I understand.

20 Our position is this was never on the table
21 in negotiations, and, frankly, has not been dropped on
22 AT&T except in the arbitration process, and that's --
23 I think we need to point that out.

24 **MS. CANZANO:** Chairman Clark, it is Staff's
25 position if AT&T is permitted to respond to this

1 proposed contract, that it does so to the red line
2 version which was distributed.

3 **CHAIRMAN CLARK:** So we do have that red line
4 version of it? Thank you very much.

5 We'll still leave those things pending and
6 we'll get on with having Mr. Wood testify. Who is
7 going to handle Mr. Wood? Mr. Melson.

8 **MR. MELSON:** Mr. Wood has not been sworn
9 this week.

10 **CHAIRMAN CLARK:** Is there anyone else here
11 today who is testifying who has not been sworn in?

12 **MS. MURPHY:** Chairman Clark, there are
13 witnesses but they are outside right now.

14 **CHAIRMAN CLARK:** That's fine. We'll get
15 them later.

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1 DON J. WOOD

2 was called as a witness on behalf of MCI
3 Telecommunications Corporation and AT&T of the
4 Southern States and, having been duly sworn, testified
5 as follows:

6 DIRECT EXAMINATION

7 BY MR. MELSON:

8 Q Mr. Wood, would you please state your name
9 and business address?

10 A Yes. My name is Don J. Wood. My business
11 address is 914 Stream Valley Trail, Alpharetta,
12 A-L-P-H-A-R-E-T-T-A, Georgia.

13 Q What is your occupation or profession?

14 A I'm a regulatory consultant specializing in
15 cost of service issues.

16 Q And you're appearing in this docket on
17 behalf of both AT&T and MCI?

18 A Yes, I am.

19 MR. MELSON: Chairman Clark, my
20 understanding is that we're building a single record
21 and for that purpose, to avoid duplication, there's
22 one piece of the prefiled testimony we're not going to
23 put in because it's essentially duplicative of another
24 one.

25 We are not going to put in the direct

1 testimony of 22 pages that was filed on behalf of
2 AT&T, so you can toss that in the trash can.

3 Q (By Mr. Melson) Mr. Wood, have you
4 prefiled direct testimony on behalf of MCI dated
5 August 26th and consisting of 25 pages?

6 A Yes, I have.

7 Q And on October 2nd did you cause to be filed
8 substitutes for pages 24 and 25 of that direct
9 testimony which contains some revised information?

10 A Yes.

11 Q And with those two substitute pages, do you
12 have any changes or corrections to that testimony?

13 A No, I don't.

14 Q Have you also filed rebuttal testimony in
15 the AT&T docket dated September 24, 1996, and
16 consisting of 15 pages?

17 A Yes.

18 Q Do you have any changes or corrections to
19 that rebuttal testimony?

20 A No, I don't.

21 Q And finally, did you prefile rebuttal
22 testimony dated September 30, 1996, and consisting of
23 two pages?

24 A Yes.

25 Q Do you have any changes or corrections to

1 that piece of testimony?

2 A No, sir.

3 Q So with the two substitute pages to your
4 direct testimony, if I were to ask you the same
5 questions today, would your answers be the same?

6 A Yes, they would.

7 MR. MELSON: Chairman Clark, I'd ask that
8 the direct testimony dated 8-26, with the substitute
9 pages and the two pieces of rebuttal testimony be
10 inserted into the record.

11 CHAIRMAN CLARK: That testimony will be
12 inserted into the record as though read.

13 Q (By Mr. Melson) Mr. Wood, did you have
14 attached to your August 26th direct testimony three
15 exhibits identified as DJW-1 through DJW-3.

16 A Yes.

17 Q And on October 2nd did you cause to be filed
18 a substitute for Exhibit DJW-3 which contains updated
19 information that corresponds to the revisions in your
20 testimony?

21 A Yes, that's right, same correction.

22 Q And with the substitution of that revised
23 exhibit, do you have any other changes or corrections
24 to DJW-1 through 3?

25 A No, sir.

1 **MR. MELSON:** Madam Chairman, I'd ask those
2 three exhibits be marked as on composite exhibit.

3 **CHAIRMAN CLARK:** The next exhibit I have is
4 Exhibit 40.

5 **MR. MELSON:** Thank you.

6 (Exhibit 40 marked for identification.)

7 **Q** **(By Mr. Melson)** Finally, Mr. Wood, did you
8 have attached to your rebuttal testimony dated
9 September 30, 1996, an exhibit identified as DJW-4?

10 **A** Yes.

11 **Q** Do you have thing changes or corrections to
12 that exhibit?

13 **A** No.

14 **MR. MELSON:** Madam Chairman, I ask that be
15 identified as Exhibit 41.

16 **CHAIRMAN CLARK:** It will be identified as
17 Exhibit 41.

18 (Exhibit 41 marked for identification.)

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DIRECT TESTIMONY OF DON J. WOOD

1593

ON BEHALF OF MCI

(MCI/GTEFL Arbitration)

AUGUST 26, 1996

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Don J. Wood, and my business address is 914 Stream Valley Trail, Alpharetta, Georgia 30202. I provide consulting services to the ratepayers and regulators of telecommunications utilities.

Q. PLEASE DESCRIBE YOUR BACKGROUND AND EXPERIENCE.

A. I received a BBA in Finance with distinction from Emory University and an MBA with concentrations in Finance and Microeconomics from the College of William and Mary. My telecommunications experience includes employment at both a Regional Bell Operating Company ("RBOC") and an Interexchange Carrier ("IXC").

I was employed in the local exchange industry by BellSouth Services, Inc. in its Pricing and Economics, Service Cost Division. My responsibilities included performing cost analyses of new and existing services, preparing documentation for filings with state regulatory commissions and the Federal Communications Commission ("FCC"), developing methodology and computer models for use by other analysts, and performing special assembly cost studies. I was employed in the interexchange industry by MCI Telecommunications Corporation, as Manager of Regulatory Analysis for the Southern Division. In this capacity I was responsible for the development and implementation of regulatory policy for operations in the southern U. S. I

1 then served as a Manager in the Economic Analysis and Regulatory Affairs
2 Organization, where I participated in the development of regulatory policy for
3 national issues.

4

5 Q. HAVE YOU PREVIOUSLY PRESENTED TESTIMONY BEFORE STATE
6 REGULATORY COMMISSIONS?

7 A. Yes. I have testified on telecommunications issues before the regulatory
8 commissions of twenty-three states, the District of Columbia, state courts, and
9 have presented comments to the FCC. A listing of my previous testimony is
10 attached as Exhibit 40 (DJW-1).

11

12 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

13 A. I have been asked by MCI Telecommunications Corporation ("MCI") to
14 describe the methodology that MCI believes should be used for accurately
15 determining the relevant costs of unbundled network elements to be provided
16 by General Telephone Company of Florida ("GTEFL") pursuant to the Federal
17 Telecommunications Act of 1996. I will also describe the results of applying
18 this methodology in the state of Florida, and provide an overview of the model
19 used to develop these costs.

20 My testimony is divided into three sections: Section I introduces the
21 basis for the costs developed by MCI for the unbundled network elements and
22 describes how those costs -- and the underlying methodology used to develop
23 them -- are consistent with sound economic costing principles generally and
24 with the FCC's August 8, 1996 First Report and Order in CC Docket 96-98

1 specifically. Section II describes how the model used to develop these costs
2 operates, and Section III identifies the inputs used and reports the results of
3 this analysis. I will refer to the methodology used as the Hatfield Model
4 ("HM"), and will discuss the results obtained using Version 2.2, Release 2, of
5 that model.

6

7 Q. PLEASE DESCRIBE YOUR EXPERIENCE REVIEWING COST MODELS
8 AND METHODOLOGIES.

9 A. While employed in the BellSouth Service Cost organization, I had the
10 opportunity to work with a number of cost models and to analyze and review
11 the manner in which these models were used in the cost development process.
12 Since that time, I have reviewed incremental cost studies performed by each of
13 the seven regional Bell Operating Companies ("RBOCs") and a number of Tier
14 1 Local Exchange Companies ("LECs"). My review has included an
15 evaluation of the methodologies, computer models and spreadsheets, and
16 inputs/assumptions used. I have also been asked by regulators to develop
17 detailed rules to be used by the LECs when performing TSLRIC studies.

18 Two constant sources of frustration have been present throughout this
19 process: 1) The lack of publicly available information related to the LEC
20 studies, and 2) the lack of independent and objective cost data to be used as a
21 benchmark for the evaluation of the LEC-provided data.

22

1 **Section I: Description of the Cost Principles Implemented by the Hatfield Model**

2

3 Q. PLEASE DESCRIBE THE ORIGIN AND PURPOSES OF THE HATFIELD
4 MODEL.

5 A. The Hatfield Model was developed by Hatfield Associates, Inc. of Boulder,
6 Colorado at the request of AT&T and MCI. Its purposes are to 1) estimate
7 the costs of the unbundled network elements described in § 252 (d) (1)(A) and
8 (B) of the Telecommunications Act of 1996, and 2) to develop an estimate of
9 the cost of basic exchange telephone service that is the subject of universal
10 service funding mechanisms. Complete documentation describing the
11 operation of the model in detail is being developed and can be made available
12 upon request.

13 The HM derives some of its inputs and methods from version 1 of the
14 BCM Plus model, a successor to the Benchmark Cost Model ("BCM"), which
15 was originally developed by US WEST, NYNEX, MCI, and the local services
16 operation of Sprint. (On July 3, 1996, US West and Sprint Corporation
17 presented version 2 of the BCM to the FCC. NYNEX and MCI are not
18 sponsors of BCM2. A careful review indicates that the purported
19 enhancements in BCM2 are already present in the Hatfield Model.)

20

21 Q. HAS THE HATFIELD MODEL EVOLVED OVER TIME?

22 A. Yes. Originally, the Model was used to produce estimates of the TSLRIC of
23 basic local exchange service as part of an examination of the cost of universal
24 service. A second version, referred to as the Hatfield Model V.2.2, Release 1

1 was then developed to estimate costs for unbundled network elements only.
2 Version 2.2, Release 2, used to produce the results in this testimony, considers
3 both unbundled elements and basic local exchange service. It also incorporates
4 a number of enhancements over earlier versions, the ultimate effect of which is
5 to increase the degree of certainty associated with the results it calculates.

6

7 Q. WHAT ARE THE KEY PRINCIPLES AND ATTRIBUTES OF THE
8 HATFIELD MODEL?

9 A. The model uses sound economic costing principles to estimate the relevant
10 costs. Its operations can be readily scrutinized, and a large number of its
11 inputs can be set, by users. It includes all network elements and associated
12 costs that are necessary to provide the unbundled elements and local exchange
13 service considered by the model.

14

15 Q. PLEASE DESCRIBE THE PUBLIC NATURE OF THE MODEL.

16 A. Version 2.2, Release 1 of the model has been available through the
17 International Transcription Service of Washington, DC, for some time.
18 Release 2 of the model will shortly be available from the same source, and
19 will be made available in this proceeding. The new release will be
20 accompanied by complete documentation that describes the operation of the
21 model. In addition, a considerable effort has been expended to facilitate the
22 setting of many inputs by the user of the model through a graphical interface,
23 and it is anticipated that this interface will be available when the model is
24 released, or shortly thereafter.

1 The inputs to the model, both those adjustable by the user and those
2 incorporated into the model itself, are readily visible to the user. The model
3 runs as a set of Excel spreadsheets, and those spreadsheets can be examined by
4 the user.

5

6 Q. WHY IS IT IMPORTANT THAT COST MODELS CAN BE PUBLICLY
7 REVIEWED IN THIS FASHION?

8 A. Previously lacking such open cost models, regulators and intervenors have
9 been forced to rely on cost studies produced by the incumbent Local Exchange
10 Carriers (ILECs) as the only available source of cost data. Attempts to
11 review, analyze, and verify the cost data produced by such models have met
12 with, at best, only limited success.

13 As described above, two constant sources of frustration have been
14 present throughout the process of reviewing such models. First, the lack of
15 publicly available information related to the ILEC studies has often made a
16 meaningful review difficult or impossible. The inputs and assumptions used
17 by the respective ILECs, when made available, have often been subject to
18 proprietary protection. Similarly, the mechanized cost models have often
19 remained "black boxes" because of the inability of intervenors (and often
20 regulators) to test either the accuracy of the algorithms or the sensitivity of the
21 model to inputs and assumptions. The second source of frustration has been
22 the lack of independent and objective cost data to be used as a benchmark for
23 the evaluation of the LEC-provided data. Without such an objective data
24 source, it has been impossible for either regulators or intervenors to ascertain

1 the reasonableness of ILEC cost estimates.

2 In contrast to the difficulty often experienced when attempting to
3 evaluate ILEC cost studies and the underlying models, a review of the Hatfield
4 Model can be direct and straight-forward. Complete and detailed
5 documentation of the model is available, including descriptions of both the
6 model algorithms and the inputs and assumptions used. Because the model is
7 publicly available and its inputs can be varied by the user, it possible to
8 directly evaluate the model for accuracy and to ascertain the sensitivity of the
9 model to changes in various inputs. Because this level of review is possible, it
10 is possible for the reviewer to conclude that the model produces both
11 reasonable and verifiable cost data.

12 In summary, a fundamental issue with any cost study is the integrity of
13 the assumptions, calculations and input values used to develop the ultimate
14 outputs. The only method to test the reliability of the final product is to make
15 all of the data as well as the methodology accessible for independent scrutiny
16 and evaluation. The Hatfield Model uses clearly documented and visible
17 methodologies which are verifiable, and non-proprietary data obtained from
18 publicly-available sources. Both the inputs and outputs to the Hatfield Model
19 are open for inspection and analysis. Inputs can be varied as appropriate, and
20 sensitivity testing can be conducted by varying these inputs. The results are
21 all subject to challenge and verification.

22

23 Q. YOU STATED THAT THE HATFIELD MODEL CALCULATES COSTS
24 USING A METHODOLOGY THAT IS CONSISTENT WITH THE

1 "FORWARD LOOKING ECONOMIC COST"-BASED STANDARD
2 ADOPTED BY THE FCC. PLEASE DESCRIBE THE STATED BASIS FOR
3 THE FCC'S METHODOLOGY.

4 A. In its August 8, 1996 First Report and Order in CC Docket 96-98 ("Order"),
5 the FCC concluded that because "the prices of interconnection and unbundled
6 elements...are critical terms and conditions of any interconnection agreement,"
7 it was necessary to "set forth the methodological principles" to be used when
8 determining relevant costs and rates (para. 618). The FCC outlines in some
9 detail a "cost based pricing methodology based on forward looking economic
10 costs" which it concludes is the approach for setting prices that best furthers
11 the goals of the 1996 Act" (para. 620), and that will "give appropriate signals
12 to producers and consumers and ensure efficient entry and utilization of the
13 telecommunications infrastructure" (para. 630). This methodology is to be
14 used to determine costs and rates for unbundled network elements,
15 interconnection, and collocation (paras. 628, 629).

16 In order to develop a national standard for the calculation of forward
17 looking economic costs, the FCC identified the following criteria to be used:

18 Use of a long run assumption. The term long run, in the FCC's
19 methodology, "refers to a period long enough so that all of a firm's costs
20 become variable or avoidable" (para. 677). The HM uses this assumption
21 when identifying relevant investments and expenses.

22 Definition of increment to be studied total demand. The FCC states
23 that "the increment that forms the basis for a TELRIC study shall be the entire
24 quantity of the network element provided, and that "all costs associated with

1 providing the element shall be included in the incremental cost" (para. 690).
2 The HM studies an increment equal to the entire quantity of the network
3 element, both as the incumbent uses the network element to provide its own
4 retail services and as it provides that network element to other carriers on an
5 unbundled basis. All costs that an efficient incumbent LEC would incur to
6 provide the network element are included.

7 Use of a forward-looking methodology. The FCC concluded that the
8 relevant costs should be the costs that "a carrier would incur in the future"
9 (para. 683), and that a "forward-looking economic cost methodology based on
10 the most efficient technology deployed in the incumbent LEC's current wire
11 center locations" (para. 685). The HM utilizes existing wire center locations,
12 and develops investments using the most efficient, currently available
13 technologies for the provision of loop facilities, switching, interoffice
14 transport, and signalling.

15 The inclusion of a "reasonable profit." The FCC concludes that "the
16 concept of normal profit is embodied in forward looking costs because the
17 forward looking cost of capital...is one of the forward-looking costs of
18 providing the network elements," (para. 700), and that because a normal profit
19 is represented by the LEC's forward looking cost of capital, "no additional
20 profit is justified under the statutory language" (para. 699). The HM includes
21 a forward looking cost of capital in the costs that it calculates, and does not
22 provide an additional "markup" over this level.

23 Embedded costs should not be included. The FCC concluded that a
24 cost methodology based on embedded costs, or a "markup" to reflect the

1 difference between forward-looking and embedded costs, "would be pro-
2 competitor -- in this case the incumbent LEC -- rather than pro-competition,"
3 and went on to state that "we reiterate that the prices for interconnection and
4 network elements critical to the development of a competitive local exchange
5 should be based on the pro-competition, forward looking, economic costs of
6 those elements, which may be higher or lower than historical embedded costs.
7 Such pricing policies will best ensure the efficient investment decisions and
8 competitive entry contemplated by the 1996 Act" (para. 705). The HM is
9 based on forward looking economic costs, and embedded investments are not
10 used.

11 Universal Service Subsidies should not be included. The FCC
12 concluded that "funding for any universal service mechanisms adopted in the
13 universal service proceeding may not be included in the rates for
14 interconnection, network elements, and access to network elements" (para.
15 712). The HM does not include these costs in its calculations.

16 Access to Cost Data/Burden of Proof. The FCC notes that "the
17 incumbent LECs have greater access to the cost information necessary to
18 calculate the incremental cost of the unbundled elements of the network.
19 Given this asymmetric access to cost data, we find that incumbent LECs must
20 prove to the state commission the nature and magnitude of any forward
21 looking cost that it seeks to recover" (para.680, 696). The HM calculates
22 costs using the best publicly available data that has been identified. The
23 model is designed to permit calculations of cost based on LEC-provided data if
24 the LEC has met the burden of proof that these data will accurately identify

1 forward looking costs.

2 Use of generic forward looking cost models. While the FCC stated
3 that it had not had ample time to review the Hatfield Model specifically, it
4 stated that the HM and similar generic models "appear best to comport with
5 the preferred economic cost approach discussed previously" in the Order (para.
6 834), and that the HM and similar models "appear to offer a method of
7 estimating the cost of network elements on a forward looking basis that is
8 practical to implement and that allows state commissions the ability to examine
9 the assumptions and parameters that go into the cost estimates" (para. 835).
10 Of those models referred to by the FCC in this section, only the Hatfield
11 Model is based on publicly available data and permits scrutiny by both
12 commissions and interested parties.

13 Inclusion of specific types of cost and application of principle of cost
14 causation. The FCC states that unbundled network elements should be priced
15 at "the forward looking costs that can be attributed directly to the provision of
16 services using that element, plus a reasonable share of the forward looking
17 joint and common costs" (para. 673), and indicates that "costs must be
18 attributed on a cost-causative basis. Costs are causally related to the network
19 element being provided if the costs are incurred as a direct result of providing
20 the network elements, or can be avoided, in the long run, when the company
21 ceases to provide them" (para. 691). The FCC goes on in subsequent
22 paragraphs of the Order to define these terms and to give illustrative examples
23 (See paras. 678,679,682, 690, 691, 694, 698). The HM uses cost-causative
24 principles to identify forward-looking costs with specific network elements. It

1 includes in the cost of network elements all the costs that the FCC specifically
2 discussed in its order as being part of the direct cost of network elements.
3 Specifically, the HM includes all "investment costs and expenses related to
4 primary plant used to provide that element" (para. 682), and attributes
5 "incremental costs of shared facilities and operations...to specific elements to
6 the greatest extent possible" (para. 682). The HM specifically attributes "the
7 costs of conduits shared by both transport and local loops, and the costs of
8 central office facilities shared by both local switched and tandem switching...to
9 specific elements in reasonable proportions" (para. 682). For both dedicated
10 and shared investments, the HM includes "the forward-looking costs of capital
11 (debt and equity) needed to support investments required to produce a given
12 element" (para. 691).

13 The FCC's rules require that overhead costs be included to the extent
14 that they vary with the output of particular network elements (despite their
15 accounting classification), and thus are part of the TELRIC of those elements.
16 The FCC also requires, to the extent that there are any such overhead costs
17 that are common to several wholesale elements, or to wholesale and other
18 functions, that the prices of of network elements include "a reasonable share
19 of common costs." The procedure of estimating the overhead costs of a
20 wholesale-only carrier, which is what Hatfield does by adding the 10%
21 markup, satisfies the FCC requirements. While statistical evidence and a
22 growing literature on activity-based accounting systems suggest that many of
23 the costs that have traditionally been considered "overhead" costs should
24 actually be considered service-specific or element-specific costs, the Hatfield

1 Model method for treating overhead costs renders any precise distinction
2 between element-specific and "common" overhead costs unnecessary. Insofar
3 as the 10% markup captures all of the relevant overhead costs, it includes any
4 element-specific costs and a reasonable share of any "common" overhead
5 costs. This approach ensures that each network element recovers at least its
6 "reasonable" share of such common costs, to the extent that they exist.
7 Moreover, if regulators set prices for network elements equal to the costs that
8 the Hatfield Model reports for each element, these prices would allow a firm
9 that is engaged solely in providing network elements on a wholesale basis
10 (with no retail functions) to recover all of its economic costs of doing
11 business, including a reasonable profit, but no more. From this vantage point
12 also, the Hatfield approach lies well within the bounds of reasonableness.

13 In conclusion, the Hatfield Model complies with the detailed
14 explanation of the cost methodology adopted by the FCC and the results of the
15 Model should be used to establish rates for unbundled network elements in
16 Florida.

17

18 Q. HAVE REGULATORS AND ECONOMISTS ENDORSED THE HATFIELD
19 MODEL?

20 A. Yes. With reference to an earlier version of the model, which lacks a number
21 of the features and enhancements incorporated into Release 2, the Washington
22 Utilities and Transportation Commission concluded the following (See WUTC
23 Docket No. UT-950200, Fifteenth Supplemental Order, page 82):

24 The Commission rejects USWC's cost studies for local

1 service and the local loop. The most reasonable and
2 accurate measure of incremental cost for these services
3 on this record is provided by the Hatfield model ... We
4 are satisfied that it accurately reflects costs incurred by
5 USWC and that, if it errs, it likely errs on the high side.

6

7 Nationally prominent economists have also endorsed the HM. In an
8 affidavit submitted in response to the FCC's April 19, 1996, Notice of
9 Proposed Rulemaking in CC Docket No. 96-98, Professors William J.
10 Baumol, Janusz A. Ordover and Robert D. Willig state in paragraph 38 that:

11 We have reviewed the costing model constructed for
12 AT&T and MCI by Hatfield Associates, Inc., a
13 telecommunications consulting firm. The object of the
14 current Hatfield model is to estimate the total costs of
15 building and operating a network, using efficient,
16 forward-looking technology, to supply all "basic"
17 narrowband services (essentially all local and intraLATA
18 toll service, including carrier access) currently supplied
19 in the United States. We conclude that the Hatfield
20 Model follows reasonably closely the TSLRIC principles
21 discussed in Section II. Where limitations on the
22 availability of data have forced the designers of the
23 model to use approximations that deviate from the
24 theoretical ideal, the shortcuts adopted tend to

1 overestimate, not underestimate, true TSLRIC. Further
2 the model is extremely flexible: whenever values are
3 available, they can readily be substituted for the values
4 used currently.

5

6 **Section II: Constituents and Operation of the Hatfield Model**

7 Q. PLEASE PROVIDE A SUMMARY DESCRIPTION OF THE HATFIELD
8 MODEL'S OPERATION.

9 A. The Hatfield Model employs a methodology based upon engineering standards
10 and methods applicable to the local exchange network in order to estimate the
11 costs that would be incurred by an efficient firm to provide the unbundled
12 network functions and basic exchange service that are considered by the
13 model. Specifically, these costs would be incurred by an efficient LEC to
14 provide the specified functions and services using a network designed to
15 provide narrowband, voice-grade telephone services. The Hatfield Model is a
16 table-driven system that is adaptable to any LEC or geographic area, provided
17 the appropriate state-specific and company-specific information is available and
18 input into the model.

19

20 Q. HOW DOES THE HATFIELD MODEL RELATE TO THE BCM?

21 A. A key constituent of the HM is BCM-PLUS, which was derived from the first
22 version of the BCM ("BCM1"). However, BCM-PLUS, and the remaining
23 modules of the HM, use BCM1 only as an initial step in the development of
24 the investment associated with the feeder and distribution components of the

1 local loop. The Hatfield Model adds network components not included in
2 BCM1. It also applies BCM1 output to its own switching investment module.
3 The switching module in the Hatfield Model contains separate, user-changeable
4 factors for switching investment, construction, installation, floor space and
5 frames. This disaggregation provides for a thorough determination of wire
6 center costs. The same module determines the investment in interoffice call
7 transport and signaling facilities.

8 BCM-PLUS, together with the Hatfield Model, improve on BCM1 in a
9 number of ways. First, the HM uses a 1995 estimate of households per
10 Census Block Group (CBG), whereas BCM1 used 1990 census data. Second,
11 the HM accounts for multi-line residences, and business, special access, and
12 payphone lines, which were excluded from the loop facilities calculation in the
13 BCM1. In doing so, it uses a database showing the number of employees per
14 CBG that was not identified at the time BCM1 or earlier versions of the HM
15 were written. Third, the HM estimates costs according to the line density --
16 that is, the number of *lines* served per square mile -- rather than the number of
17 *households* per square mile. Fourth, the HM increases the amount of
18 distribution cable in the two highest density ranges, and decreases it in lowest
19 density range, consistent with the amount of cable that would actually be
20 required for such a line density. Fifth, the HM estimates structure costs
21 independently of the cost of the cable itself, whereas the BCM1 estimated
22 structure costs as a multiplier of cable costs. In addition, the HM includes
23 cable installation (placement) costs, which tends to increase the per-foot cost of
24 the cable. Sixth, the Hatfield Model includes costs associated with network

1 elements that were not included in the BCM1, such as the drop wire, network
2 interface device, terminal, and serving area interface portions of the local
3 loop, and the facilities necessary to connect LEC end offices (interoffice
4 facilities). These are perhaps the most significant changes; there are a number
5 of additional minor changes.

6 As already noted, U S WEST and Sprint recently released a new
7 version of the Benchmark Cost Model ("BCM2"). BCM2 incorporates many,
8 but not all, of the modifications that the Hatfield Model made to BCM1.

9

10 Q. PLEASE DESCRIBE THE INPUT DATA USED BY THE HATFIELD
11 MODEL.

12 A. The Hatfield Model uses seven primary categories of input data: CBG data,
13 business employee data, cable and installation cost data, wire center data,
14 traffic data, expense data, and ARMIS-reported data on the number of
15 residence and business lines. The CBG data used by the Hatfield Model are:
16 1) number of households in each CBG; 2) CBG land area; 3) CBG position
17 relative to the nearest wire center; and 4) geological factors including rock
18 depth, rock hardness, water table depth, and surface texture. The business
19 line data provide the number of business employees by CBG; this information
20 is used to distribute the ARMIS-reported number of business, special access,
21 and payphone lines by CBG.

22 The wire center data provides the location of existing wire centers in
23 each LATA, as well as the location of existing tandem switches and signal
24 transfer points.

1 Network traffic is estimated using dial equipment minutes and call
2 attempt statistics. These inputs are used to appropriately size investment in
3 switching, signaling, and interoffice facilities, as well as to calculate usage-
4 sensitive costs for several of the unbundled network elements.

5 The information necessary to estimate future recurring expenses
6 associated with operating and maintaining the telephone network comes from
7 two sources. Forward-looking expense information is used if it exists in the
8 public domain. Where no such data is available, selected expense data
9 reported by the LECs in ARMIS is used because it is the best publicly
10 available data.

11

12 Q. WHAT ARE THE FUNCTIONAL MODULES THAT COMPRISE THE
13 HATFIELD MODEL?

14 A. The Hatfield Model contains six functional modules. They are:

- 15 • Line Multiplier Module;
- 16 • Data Module;
- 17 • Loop Module;
- 18 • Wire Center Investment Module;
- 19 • Convergence Module; and
- 20 • Expense Module.

21 An overview of each of the modules is provided below.

22

23 Q. WHAT IS THE PURPOSE OF THE LINE MULTIPLIER MODULE?

24 A. In order to calculate costs on a per line basis, the HM uses estimates of the

1 total number of lines (including residential, business, public telephone and
2 special access lines) within each CBG. CBG input data contains the number of
3 households, not number of lines, in each CBG. The line multiplier module
4 determines a ratio of total residential lines reported in ARMIS to total
5 households, and applies this ratio to the number of households in each CBG to
6 estimate the number of residential lines by CBG. It estimates the number of
7 business, special access, and payphone lines by distributing the corresponding
8 ARMIS numbers among CBGs proportionally to the number of employees in
9 each of the CBGs.

10 Because the network is sized to provide all loops, not just residential
11 loops, and because the total line density may be substantially different than the
12 residential line density, the model subsequently categorizes and reports costs
13 within CBGs according to total line density (i.e., total lines served per square
14 mile) rather than residential line density. Line density is broken into six
15 categories, or density ranges: 0-5, 5-200, 200-650, 650-850, 850-2,550 and
16 greater than 2,550 lines per square mile, respectively.

17

18 Q. WHAT FUNCTION IS PERFORMED IN THE DATA MODULE?

19 A. The Data Module uses CBG data and line totals to determine the quantity and
20 type of outside loop plant facilities required, based upon density and distance
21 of the CBG from the wire center. In doing so, it basically employs the same
22 methodology as does the BCM1, although there are a few exceptions, such as
23 1) as already discussed, the length of distribution cable is changed for the
24 highest and lowest line density zones; 2) the fiber-copper breakpoint -- that is,

1 the feeder length below which copper cable, and above which fiber cable, are
2 used -- becomes a user input; and 3) fiber cable is assumed to have a higher
3 equivalent line capacity than is assumed by BCM1. The HM also separately
4 considers the amounts and costs of underground and buried cable, whereas
5 they were combined in the BCM1. The Data Module also calculates outside
6 plant structure (poles, conduits) costs associated with placing and installing
7 cable under varying terrain and population density conditions.

8

9 Q. WHAT FUNCTION IS PERFORMED BY THE LOOP MODULE?

10 A. The Loop Module, which is also part of BCM1, determines the size and type
11 of cable required to serve each CBG, given loop lengths, fill levels, and
12 population density. The Module then uses the distribution and feeder lengths
13 calculated in the Data Module as well as cable price information to determine
14 the total required loop investment for each CBG including supporting structure
15 investment.

16

17 Q. WHAT IS THE PURPOSE OF THE WIRE CENTER MODULE?

18 A. The Wire Center Module calculates wire center and interoffice facilities
19 investments. This module quantifies investments associated with end office
20 switches, wire centers, trunks, tandems (including operator tandems, and
21 operator positions), signaling links, signal transfer points (STPs), and service
22 control points (SCPs). Some of the elements it considers, such as the cost of
23 the SCPs and operator positions, are relevant only to unbundled network
24 elements; the remainder are germane to both unbundled elements and the cost

1 of basic local service. The module uses the total number of access lines, the
2 location of wire centers, and network traffic data to determine required
3 switching, trunking, and signaling investments.

4 The module sizes network facilities sufficient to serve the total demand
5 created by all users and uses of the network. The Hatfield Model derives its
6 switch investment estimates by using both typical per line prices paid for by
7 Bell Operating Companies, GTE and other independents for end office
8 switches (according to a published source), and by using Table 2.10 of the
9 FCC's Statistics of Communications Common Carriers, which provides the
10 average number of access lines served by a LEC switch.

11

12 Q. WHAT IS THE PURPOSE OF THE CONVERGENCE MODULE?

13 A. The Convergence Module modifies the loop investment calculated in the Loop
14 Module to account for network elements omitted from BCM1. It combines the
15 modified loop investment with the wire center, interoffice, and signaling
16 investment calculated in the Wire Center Module. For each of the six density
17 ranges, the convergence module reports the number of lines by type, number
18 of households and investment in categories such as distribution, feeder, end
19 office switching, tandems, and trunks.

20

21 Q. PLEASE DESCRIBE THE EXPENSE MODULE.

22 A. The Expense Module uses the outputs from the Convergence Module to
23 determine annual capital carrying costs, operations and maintenance expenses,
24 and support expenses associated with the investments needed for a local

1 telecommunications network. This module uses the best publicly available
2 information to estimate future expenses and reports the annual cost for each
3 unbundled network element. The module requires as inputs appropriate
4 assumptions regarding the cost of capital (cost of debt, cost of equity, and
5 debt/equity ratio); the economic lives of various categories of network
6 equipment and facilities, and the relationship between investment and
7 expenses. It produces the appropriate unit cost of various unbundled network
8 elements and of basic exchange service. These units vary by type of element
9 and service: for instance, the cost of unbundled local switching is reported as
10 both cost per port and cost per minute of use; while the SCP cost unit is
11 messages. Basic local exchange service is reported as the cost per line per
12 month for the service, whose elements have been defined previously. The
13 results are reported by line density zone, using the ranges I have defined
14 previously.

15

16 Q. YOU PREVIOUSLY REFERRED TO HATFIELD MODEL VERSION 2.2,
17 RELEASE 1. PLEASE SUMMARIZE THE KEY DIFFERENCES
18 BETWEEN HATFIELD MODEL VERSION 2.2 RELEASE 1 AND
19 RELEASE 2.

20 A. The key differences may be summarized as follows. Compared to Release 1,
21 Release 2

- 22 - estimates the cost of basic local exchange service,
- 23 - tentatively provides a graphical user interface to facilitate the
- 24 setting of user inputs and running the model,

- 1 - provides an increased set of inputs that can be set by the user,
2 - uses a 1995 estimate of households by CBG, rather than 1990
3 census data,
4 - estimates the number of business, special access, and payphone
5 lines per CBG using a database containing employees per CBG,
6 - increases the length of distribution cable for the two highest-
7 density ranges, and decreases it for the least dense range,
8 - specifies cable costs on an as-installed basis, generally leading to
9 higher per-foot cable costs,
10 - separates structure costs from cable costs, rather than calculating
11 them as a multiplier of cable costs,
12 - places each serving area interface (the interface point between
13 feeder and distribution cable) inside the CBG it serves, rather
14 than at the edge of the CBG,
15 - refines the treatment of interoffice transport and signaling costs,
16 - provides a greater disaggregation of expense factors, for
17 instance, by considering underground and buried cable expenses
18 separately, and
19 - adds the estimated cost of local number portability.

20

21

Section III: Florida-Specific Model Results

22 Q. PLEASE SUMMARIZE THE MODEL INPUTS THAT HAVE BEEN USED
23 TO DEVELOP COST ESTIMATES FOR FLORIDA.

24 A. The inputs used to perform the run of the model used to develop costs for use

1 in this proceeding are attached as Exhibit DJW-2. As with all data, MCI is
2 continuing to evaluate the accuracy and validity of these inputs in order to
3 ensure the reliability of the cost information produced by the model.
4

5 Q. WHAT ARE THE RESULTS OF THE MODEL?

6 A. In Exhibit DJW-3, I have included the results of running the Hatfield Model to
7 develop costs for use in this proceeding. In summary, the results of MCI's
8 analysis are as follows:
9

Hatfield Model Unbundled Network Element Summary

Element	Unit Definition	Unit Cost
1. Network Interface Device	per line-per month	\$ 0.56
2. Loop Distribution	per line-per month	\$ 6.12
3. Loop Concentrator	per line-per month	\$ 2.42
4. Loop Feeder	per line-per month	\$ 2.34
5. End Office Switching		
Port	per line-per month	\$ 1.13
Usage	per minute	\$ 0.0021
6. Signaling Links "A"	per link-per month	\$ 17.87
Signaling Links "D"	per link-per month	\$ 8.74
7. Signal Transfer Point	per message	\$ 0.00003
8. Signal Control Point	per message	\$ 0.00104
9. Common Transport	per minute	\$ 0.00095
10. Dedicated Transport	per DSO - per month	\$ 4.05

1	11.	Tandem Switching	per minute	\$ 0.0008
2	12.	Operator Systems		\$ 4,342,294

3

4 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

5 A. Yes. However, I would like to reserve the right to update or supplement the
6 specific cost numbers in the event that this becomes necessary.

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REBUTTAL TESTIMONY OF

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DON J. WOOD

**—ON BEHALF OF AT&T COMMUNICATIONS
OF THE SOUTHERN STATES, INC.**

**BEFORE THE
FLORIDA PUBLIC SERVICE COMMISSION**

Docket No. 960847-TP

Filed: September 24, 1996

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Don J. Wood, and my business address is 914 Stream Valley Trail, Alpharetta, Georgia 30202. I provide consulting services to the ratepayers and regulators of telecommunications utilities.

Q. ARE YOU THE SAME DON J. WOOD WHO PRESENTED DIRECT TESTIMONY ON BEHALF OF AT&T IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to the criticisms of the Hatfield Model included in the testimony of Gregory M. Duncan on behalf of GTE Florida Incorporated ("GTEFL"). Because the substance of Dr. Duncan's testimony is his attachment, I will cite to the page numbers in Exhibit GMD-1.

Based on his analysis, Dr. Duncan makes a number of rather sweeping assertions

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1 regarding the accuracy and usefulness of the Hatfield Model. The stated foundations
2 for Dr. Duncan's assertions generally fall into one of three categories:

3 1) Dr. Duncan's "straw man" criticisms of limitations inherent in the initial
4 version of the Benchmark Cost Model ("BCM1"). As Dr. Duncan is fully
5 aware, the Hatfield Model presented by AT&T is not based on BCM1, and
6 shortcomings that may occur in the BCM1 model are not present in the
7 Hatfield Model. As a result, many of his criticisms -- whether or not they are
8 valid -- are misleading and simply do not apply to the model being sponsored
9 by AT&T in this proceeding;

10 2) Those criticisms related to Dr. Duncan's apparent desire to revise certain
11 fundamental economic costing principles and to rewrite the FCC's August 8,
12 1996 Order in CC Docket No. 96-98; and

13 3) Criticisms whose underlying premise is simply not valid.

14 I will discuss Dr. Duncan's assertions in some detail below, and explain why each of
15 Dr. Duncan's criticisms of the model is either invalid, unrelated to the fitness of the
16 results of the Hatfield Model to serve as a reliable estimate of the forward-looking
17 economic cost of unbundled network elements, or both.

18

19 *Criticisms based on Dr. Duncan's review of the original version of the Benchmark*
20 *Cost Model -- a cost model that is unrelated to the Hatfield Model as presented by*
21 *AT&T -- and other misstatements regarding how the Hatfield Model works*

22

23 **Q. AT PAGE 1, DR. DUNCAN DESCRIBES THE MODEL AS UNDERGOING**
24 **"CONSTANT CHANGES" AND SUGGESTS THAT SUCH CHANGES**
25 **CALL INTO QUESTION THE RELIABILITY OF THE MODEL. DO YOU**

1 **AGREE?**

2 **A.** No. Dr. Duncan appears to believe that in order for a cost model to be reliable for
3 use in developing cost estimates, it must be developed in final form and thereafter
4 remain rigid and unchanged. His testimony implies that no additional information
5 should be utilized in developing cost models and no new features should be added.
6 Such an assertion is both baseless and inconsistent with the history of the cost models
7 currently in use by GTEFL. There is certainly no dispute that the Hatfield Model has
8 evolved over time in order to incorporate new data and to include additional features.
9 Because the model is based only on publicly available, non-proprietary inputs, the
10 developers of the model continue their efforts to identify public sources of data. For
11 example, the original version of the model could only be used for universal service
12 calculations.. The second version produced only costs for unbundled elements. The
13 current version can be used for calculations of both universal service and unbundled
14 element costs. Dr. Duncan offers no argument why such model evolution, and the
15 additional information that it makes available, is not desirable. In addition, Dr.
16 Duncan is apparently not aware that the cost models in use by GTEFL's own costing
17 organization have undergone similar changes over time.

18

19 **Q.** **AT PAGES 9-12, DR. DUNCAN ATTACKS A NUMBER OF**
20 **SHORTCOMINGS OF THE INITIAL VERSION OF THE BENCHMARK**
21 **COST MODEL, AND SUGGESTS THAT THE HATFIELD MODEL**
22 **EXPERIENCES THE SAME LIMITATIONS. IS HE CORRECT?**

23 **A.** No, and Dr. Duncan is fully aware of this fact. To be clear, Dr. Duncan is correct
24 that three modules of BCM1, jointly developed by US West, NYNEX, Sprint, and
25 MCI, have been adapted to develop loop investments in the Hatfield Model. Dr.

1 Duncan is also correct that a number of legitimate shortcomings have been identified
2 regarding investment calculations in BCM1. As I described in my direct testimony,
3 however -- and as Dr. Duncan later acknowledges -- the Hatfield model incorporates
4 BCMPLUS, which is an updated and corrected version of BCM1, and therefore does
5 not suffer the same shortcomings. Dr. Duncan's description of what he describes as
6 inaccurate "calculations built into BCM," therefore, are both wholly unrelated to the
7 calculations in the Hatfield Model and misleading to this Commission.

8
9 For example, Dr. Duncan states that "for loop plant, both feeder and distribution,
10 BCM1 calculates the investment costs of installation and structures by multiplying
11 the cost of cable by factors." Dr. Duncan goes on to conclude "problems can arise"
12 when this method is used and cable costs change. After making this first of several
13 "guilt by association" claims, Dr. Duncan admits his understanding that the Hatfield
14 Model does *not* use the methodology of BCM1 that he had described. Dr. Duncan
15 states that "Hatfield's BCMPLUS separately estimates the cost of structures, thus
16 potentially overcoming the conceptual flaw in BCM1." While Dr. Duncan continues
17 with his "guilt by association" strategy and describes other shortcomings of BCM1 as
18 if they were flaws in the Hatfield Model, he neglects in all subsequent examples to
19 clarify that he is fully aware that his criticisms apply to BCM1 only, and are
20 unrelated to the Hatfield Model.

21
22 Since to my knowledge no party to this proceeding is advocating the use of BCM1,
23 and since he is fully aware that the Hatfield Model does not utilize the BCM1
24 modules, Dr. Duncan's descriptions of the shortcomings of BCM1 in his testimony
25 are, at best, irrelevant and, at worse, overtly misleading.

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Q. AT PAGE 11, DR. DUNCAN STATES THAT ERRORS IN THE COST ESTIMATION OF DISTRIBUTION PLANT IN LOW DENSITY AREAS OCCUR IN BCM1. ARE THESE ERRORS PRESENT IN THE HATFIELD MODEL PRESENTED BY AT&T IN THIS PROCEEDING?

A. No. At pages 11-12, Dr. Duncan describes a number of purported flaws in BCM1, and concludes that the Hatfield Model is flawed, even though he had previously stated that he is fully aware that the Hatfield Model does not incorporate BCM1. In this section he also begins to use the BCM1 and Hatfield labels loosely and interchangeably, although he knows that these are two separate and distinct models and that criticisms of BCM1 are not applicable to the Hatfield Model as presented by AT&T in this proceeding.

For example, Dr. Duncan is correct that BCM appears to have overstated the amount of distribution cable necessary in low density areas, and understates the amount of distribution cable in high density areas. As I described in my direct testimony, BCMPLUS as incorporated into the Hatfield Model makes the necessary corrections so that the investment associated with distribution plant is correctly reported for each density zone. It is interesting to note, however, that while Dr. Duncan incorrectly argues at length in other sections of his testimony that the Hatfield Model understates the relevant cost, the error in BCM1 regarding distribution investment in low density areas that he describes, if it were incorporated into the Hatfield Model, would result in an *overstatement* of investment and therefore an *overstatement* of reported costs.

Similarly, Dr. Duncan states at page 10 that BCM1 uses "abstract representations" of

1 loop plant. Specifically he points out that feeder plant extends only "from the central
2 office to the edge of the CBG," that "all loop plant within the CBG is assumed to be
3 distribution plant, and that BCM1 assumes that "households are uniformly distributed
4 over the area of the CBG." As Dr. Duncan is well aware, however, the Hatfield
5 Model as presented by AT&T in this proceeding does not assume that feeder plant
6 stops at the edge of the CBG, does not assume that all loop plant within a CBG is
7 distribution plant, and does not assume a uniform distribution of households.

8

9 **Q. AT PAGE 9, DR. DUNCAN STATES THAT THE HATFIELD MODEL**
10 **DEVELOPS COSTS BASED ON AN "EXTREMELY ABSTRACT**
11 **REPRESENTATION OF THE NETWORK -- A FEATURELESS PLAIN."**
12 **IS HE CORRECT?**

13 **A. Not at all. The Hatfield Model develops investments for facilities and related**
14 **structure in a "real" world of hills, surface rocks, soil types, bedrock, and water**
15 **tables. The model incorporates these variables on a highly disaggregated geographic**
16 **basis, increasing the reliability of the model results. Dr. Duncan's description of a**
17 **"featureless plain" is simply wrong.**

18

19 **Q. AT PAGES 12-14, DR. DUNCAN CRITICIZES WHAT HE REFERS TO AS**
20 **THE HATFIELD MODEL'S USE OF "UNREALISTICALLY HIGH" FILL**
21 **FACTORS. IS HE CORRECT?**

22 **A. No. I do agree with Dr. Duncan's statement that fill factors determine, in part, the**
23 **amount of a given investment that is needed and therefore are important to consider**
24 **when reviewing a cost methodology. I also agree that networks are, or should be,**
25 **built to operate at less than 100% capacity. Instead, a lower assumed level of**

1 utilization, sometimes referred to as "engineering fill" or "administrative fill" is used.
2 The Hatfield Model uses conservative assumptions regarding the "fill" levels
3 associated with plant and equipment. In most cases, the default levels of fill used in
4 the Hatfield Model are lower than the equivalent assumptions made in LEC cost
5 studies that I have reviewed , and in no case are they higher.
6
7 I strenuously disagree, however, with Dr. Duncan's statement at page 12 that "the
8 spare capacity represented by a fill factor less than 1.0 is a *current* economic cost of
9 providing service" (emphasis in original). Such a statement ignores the principle of
10 cost causation, a fundamental principle in the development of economic costs. By
11 characterizing all costs associated with spare capacity as a cost of existing services,
12 Dr. Duncan is effectively giving incumbent LECs an opportunity to deploy the
13 capacity necessary to offer any future competitive services (broadband services, for
14 example) today, and to have this expansion funded by current captive monopoly
15 ratepayers. Costs that will have been *caused* by GTEFL's decision to offer a
16 competitive service in the future will be recovered, if Dr. Duncan's principle is
17 adopted, from the purchasers of existing local exchange services and from new
18 entrants who seek to purchase unbundled network functions. Such an approach is
19 both anti-consumer and anti-competitive on its face and should be rejected. The
20 forward-looking economic cost incurred by GTEFL to provide an unbundled network
21 function includes the cost of the unused portion of the facility operating at
22 "engineering fill" or "administrative fill." However, it does not include an unlimited
23 amount of spare capacity that the incumbent LEC elects to install over Dr. Duncan's
24 proposed "indefinitely long planning horizon" in order to meet its strategic objectives.
25

1 **Q. AT PAGES 14-16, DR. DUNCAN ARGUES THAT THE HATFIELD MODEL**
2 **UNDERSTATES THE COST OF SWITCHING. IS HE CORRECT?**

3 **A.** No. Not only are Dr. Duncan's assertions unsupported by his testimony, they are
4 unsupported by other incumbent LECs. US West and Sprint, two of the four original
5 joint sponsors of the Benchmark Cost Model, have recently released BCM2. Because
6 both of the BCM2 sponsors are incumbent local exchange companies, it is reasonable
7 to assume that BCM2 has been developed from that perspective. In BCM2, US West
8 and Sprint have adjusted the level of switching investment per line to a level that is
9 almost identical to the level used in the Hatfield Model. Put another way, the curve
10 used to approximate the relationship between switching investment and line size
11 criticized by Dr. Duncan at page 15 has effectively been adopted for use by US West
12 and Sprint. At least these two incumbent LECs, therefore, do not agree with his
13 assertion that this curve understates the required level of switching investment.

14

15 **Q. AT PAGE 18, DR. DUNCAN ARGUES THAT THE EXPENSES**
16 **CALCULATED BY THE HATFIELD MODEL ARE UNRELIABLE**
17 **BECAUSE THEY ARE BASED ON HISTORIC DATA. IS HIS CRITICISM**
18 **VALID?**

19 **A.** No. In order to create a model that can be fully reviewed and evaluated, the
20 developers of the Hatfield Model have sought to use the best available public data.
21 Where forward-looking sources of expense data have been identified, they have been
22 incorporated into the model. Where no other public source of data is available, it has
23 proven necessary to base forward-looking expenses on the historic levels of expense
24 as reported in ARMIS. Where an objective basis exists to do so, adjustments have
25 been made to this data to reflect the likely magnitude of forward-looking expenses.

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As the FCC explicitly recognized, an "asymmetry of information" exists, and "the incumbent LECs shall have the burden to prove the specific nature and magnitude of these forward-looking costs" (para. 695). The developers of the model have utilized the best available public data that has been identified. If GTEFL believes that the expense levels or any other inputs into the Hatfield Model are not correct, it bears the burden of demonstrating what those inputs should be.

Q. AT PAGES 20-22, 24, AND 27, DR. DUNCAN ASSERTS THAT THE HATFIELD MODEL FAILS HIS PROPOSED CHECK OF "INTERNAL CONSISTENCY." IS HIS CRITICISM VALID?

A. No. Dr. Duncan has once again described what he asserts to be a problem associated with another model, and, after dazzling us with his mathematical prowess and discussing the implications of such a shortcoming, quietly admits that his criticisms may not actually apply to the Hatfield Model as presented by AT&T in this proceeding. Dr. Duncan attempts to demonstrate that a previous version of the Hatfield Model, which was based on BCM1, violates the derivative property. Then, as a result Dr. Duncan declares at page 20 that "the Hatfield Model is not a valid cost model." Yet, Dr. Duncan admits at page 22 that "*to the extent that the Hatfield Model maintained the multiplicative structure of its past versions one should expect the derivative property of cost functions to be violated as well*" (emphasis added). As described previously in my testimony, however, the "multiplicative structure" used to derive the investments associated with outside plant structure (i. e. poles and conduit) that was present in BCM1 and in previous versions of the Hatfield Model has been replaced in the current version of the model. As he acknowledges at page 10, Dr.

1 Duncan was aware of this fact before preparing his testimony.

2

3 It is also noteworthy that while Dr. Duncan readily concludes that the Hatfield Model
4 is not a valid cost model because previous versions of the model are shown to violate
5 the derivative property, at no time does he make the statement "The Hatfield Model
6 (or some previous version of it) violates the derivative property, *in contrast to the*
7 *cost models used by GTEFL*. In fact, at no point in his testimony does Dr. Duncan
8 utilize the methodology used in the cost studies prepared by GTEFL to illustrate the
9 "correct" application of the principles he advocates.

10

11 *Criticisms related to Dr. Duncan's apparent desire to revise certain fundamental*
12 *economic costing principles and to rewrite the FCC's August 8, 1996 Order*

13

14 **Q. AT PAGE 8, DR. DUNCAN ARGUES THAT THE HATFIELD MODEL**
15 **SHOULD NOT BE USED TO DEVELOP "ACTUAL PRICES" BECAUSE IT**
16 **DOES NOT DUPLICATE THE "ACTUAL COSTS" INCURRED BY THE**
17 **INCUMBENT LECS. IS HE CORRECT?**

18 **A.** No. The Hatfield Model calculates the costs that an efficient wholesale provider of
19 unbundled network elements would incur on a forward-looking basis. Consistent with
20 fundamental economic costing principles, the Hatfield Model does not attempt to
21 calculate the costs associated with GTEFL's embedded network, and it does not
22 purport to calculate the level of GTEFL's embedded costs. What Dr. Duncan fails to
23 recognize when making his argument is that no forward-looking cost study, assuming
24 that it is correctly performed, is based on the network configuration and technologies
25 correctly in use. As the FCC clearly points out in its August 8, 1996 Order in CC

1 Docket 96-98, "forward-looking cost methodologies, like TELRIC, are intended to
2 consider the costs that a carrier would incur in the future" (para. 683). Dr. Duncan
3 argues at page 1 that the most efficient forward-looking technology should be defined
4 as "the least cost technology *taking the installed network as a base* and building from
5 that." The approach advocated by Dr. Duncan to base forward-looking costs on the
6 installed network, however, has been specifically rejected. The FCC found that a
7 methodology that calculates costs "based on existing network design and
8 technology...currently in operation" is "essentially an embedded cost methodology,"
9 and that to establish rates on such a basis would permit the incumbent LECs to
10 recover costs "that reflect inefficient or obsolete network design and technology"
11 (para. 684). In contrast, the Hatfield Model, as Dr. Duncan acknowledges at page 5,
12 calculates forward-looking economic costs in the manner specifically adopted by the
13 FCC, based on "the most efficient technology deployed in the incumbent LEC's
14 current wire center locations" (para. 685). In summary, Dr. Duncan and GTEFL
15 would have this Commission reject the Hatfield Model because it complies with the
16 methodology specified by the FCC rather than with a methodology that was
17 specifically rejected.

18

19 **Q. AT PAGES 17 AND 23, DR. DUNCAN ARGUES THAT THE DEFAULT**
20 **VALUE FOR COST OF MONEY USED IN THE HATFIELD MODEL IS**
21 **TOO LOW AND FAILS TO PROPERLY ACCOUNT FOR THE**
22 **"INCREASED RISKINESS OF AN INDUSTRY MOVING RAPIDLY INTO**
23 **COMPETITION." ARE HIS ASSERTIONS CORRECT?**

24 **A.** No. After considering arguments similar to those made by Dr. Duncan, the FCC
25 elected to provide some guidance regarding an appropriate assumption for cost of

1 capital to be used in forward-looking economic cost studies. Specifically, the FCC
2 found that "based on the current record, we conclude that the currently authorized rate
3 of return at the federal or state level is a reasonable starting point for TELRIC
4 calculations" (para. 702). The Hatfield Model uses a weighted average cost of capital
5 of 10.01%, based on authorized rates of return adopted by the FCC over the 1990-
6 1995 time period. *In doing so, it uses a cost of money assumption that is*
7 *approximately 120 basis points higher than the last authorized weighted average*
8 *cost of capital authorized for GTEFL by this Commission.* In addition, the FCC
9 found that "incumbent LECs bear the burden of demonstrating with specificity that
10 the business risks that they face in providing unbundled network elements and
11 interconnection services would justify a different risk-adjusted cost of capital or
12 depreciation rate. "These elements generally are bottleneck monopoly services that do
13 not now face significant competition" (para. 702). In summary, the Hatfield Model as
14 it has been run for this proceeding uses a higher cost of capital than is required by the
15 FCC Order. If GTEFL continues to assert that the cost of money used in the Hatfield
16 Model "underestimates the real cost of capital," it bears the burden of demonstrating
17 that the risks associated with providing unbundled network elements would require
18 this Commission to sanction the use of a cost of money calculation that is greater than
19 the rate this Commission approved in the recent past.

20
21 **Q. AT PAGES 17 AND 23, DR. DUNCAN ARGUES THAT THE DEFAULT**
22 **VALUES FOR DEPRECIATION USED IN THE HATFIELD MODEL FAIL**
23 **TO TAKE INTO ACCOUNT ECONOMIC LIVES IN A DYNAMIC**
24 **COMPETITIVE ENVIRONMENT. IS HE CORRECT?**

25 **A.** No. Dr. Duncan offers no justification for his implicit assumption that an increase in

1 the level of competition for GTEFL's services will hasten the technical obsolescence
2 of its equipment. His argument once again ignores the language of the FCC Order
3 cited in my previous answer which concludes that unbundled network elements do not
4 face competitive pressures.

5

6 *Other Criticisms raised by Dr. Duncan whose underlying premise is simply not valid*

7

8 **Q. AT PAGE 4, DR. DUNCAN CLAIMS THAT A "MOST VEXING"**
9 **PROBLEM ASSOCIATED WITH THE HATFIELD MODEL IS ITS LACK**
10 **OF WHAT HE REFERS TO AS "EXTERNAL VERIFICATION." IS HIS**
11 **CLAIM VALID?**

12 **A. Absolutely not. To borrow Dr. Duncan's phrase, his argument regarding external**
13 **verification of the model "would try the confidence of even the most partisan**
14 **proponent." Specifically, Dr. Duncan argues in part at page 4 that**

15 *Ideally, a model such as the Hatfield Model would be calibrated or*
16 *estimated using cost data from a source similar to those desired or*
17 *predicted If TS/TELRICs were readily available and*
18 *observable for a number of firms over time, then the model would be*
19 *calibrated using all of the data from a subset of the firms,*
20 *presumably a group whose TS/TELRICs we wish to predict ... The*
21 *validity of the model would be judged by comparing the predictions*
22 *of the model with the data obtained in the real world for the firms in*
23 *the validation set using a variety of well known and widely accepted*
24 *criteria (emphasis added).*

25

1 Dr. Duncan's argument compels two observations. First, throughout his testimony
2 Dr. Duncan is quick to refer to the "estimates" generated by Hatfield Model and to
3 contrast these estimates to the "real data," "real world experience," and "information"
4 purportedly contained in cost studies performed by GTEFL, specifically, and by
5 incumbent LECs, generally. At page 19, for example, Dr. Duncan strains credibility
6 by stating that "Version 2.2 of the Hatfield Model produces *estimates* of network
7 elements costs, based on the abstract representations of network service costs. In
8 contrast, the LECs have *information* on their current forward-looking costs of doing
9 business." Since he has made this statement, it is quite clear that Dr. Duncan has not
10 been involved in the review and scrutiny of the cost studies produced by the
11 incumbent LECs, including GTEFL. As a former Chairman of this Commission has
12 accurately observed, these studies contain "apples, oranges, and a couple of nuts."

13

14 Second, Dr. Duncan is making the incredible assertion that truth is a matter of
15 popular vote. He argues that if a number of incumbent LECs have produced cost
16 estimates for a given unbundled network element that are consistent, and a model such
17 as Hatfield produces costs which differ in magnitude, it is necessary to either reject
18 the Hatfield Model or to "calibrate" it by scaling its results to match the result of the
19 studies performed by the incumbent LECs. In other words, according to Dr. Duncan,
20 once a sufficient number of incumbent LECs have produced cost studies which
21 overstate the costs of supplying unbundled network elements, any attempt (whether it
22 be by a Commission or its Staff, a potential new entrant, or any other party) to
23 objectively and accurately develop costs for these elements must be rejected out of
24 hand, because such an attempt will not overstate costs in a manner consistent with
25 existing cost studies produced by incumbent LECs. If adopted, the principle

1 advocated by Dr. Duncan would ensure that no entity other than an incumbent LEC
2 would ever have the opportunity to produce cost data, because the results of such a
3 study must either be rejected or "calibrated" to match the results of the incumbent
4 LECs. As a result, the incumbent LECs would be able to freely inflate the costs --
5 and therefore prices -- of unbundled network elements and interconnection.

6

7 **Q. YOU HAVE DESCRIBED THE FCC'S DECISION THAT, BECAUSE OF**
8 **THE OBSERVED ASYMMETRY OF COST DATA, THE INCUMBENT**
9 **LECS BEAR THE BURDEN OF PROVING THE NATURE AND**
10 **MAGNITUDE OF THE FORWARD-LOOKING COSTS THEY SEEK TO**
11 **RECOVER. HAS GTEFL DONE SO IN THIS PROCEEDING?**

12 **A. No. Dr. Duncan has made a number of criticisms which are either baseless or which**
13 **simply do not apply to the Hatfield Model (or both). In addition, he has left**
14 **completely unsupported his single specific claim at page 3 of his testimony that the**
15 **Hatfield Model "understates the cost of loop plant and local switching by about \$6.00**
16 **per line per month." As a result, the Hatfield Model continues to represent the most**
17 **accurate, reliable, and verifiable source of cost information available to the**
18 **Commission to be used to establish rates for unbundled network elements.**

19

20 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

21 **A. Yes.**

1 REBUTTAL TESTIMONY OF

2 DON J. WOOD

3 ON BEHALF OF MCI

4 DOCKET NO. 960980-TP

5 September 30, 1996

6

7 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

8 A. My name is Don J. Wood, and my business address is 914 Stream Valley Trail,
9 Alpharetta, Georgia 30302. I provide consulting services to the ratepayers and
10 regulators of telecommunications utilities.

11

12 Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

13 A. Yes, I filed direct testimony in this docket on August 26, 1996. I have also filed
14 both direct and rebuttal testimony on behalf of AT&T in Docket No. 960847-TP,
15 which has been consolidated with this proceeding.

16

17 Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

18 A. The purpose of my rebuttal testimony is to respond to the criticisms of the Hatfield
19 Model included in the testimony and exhibit of Gregory M. Duncan on behalf of
20 GTE Florida Incorporated ("GTEFL").

21

22 Q. PLEASE PROVIDE YOUR RESPONSE TO DR. DUNCAN'S TESTIMONY.

23 A. Dr. Duncan's direct testimony in this docket simply adopted his direct testimony
24 in the AT&T arbitration docket. Therefore I will likewise adopt my rebuttal
25 testimony filed on September 24, 1996 in the AT&T/GTEFL docket as my rebuttal

1 to Dr. Duncan in this proceeding.

2

3 Q. IN YOUR DIRECT TESTIMONY YOU STATED THAT COMPLETE
4 DOCUMENTATION DESCRIBING THE OPERATION OF THE HATFIELD
5 MODEL IN DETAIL WAS STILL BEING DEVELOPED. HAS THAT
6 DOCUMENTATION BEEN COMPLETED?

7 A. Yes. I have attached a copy of that documentation to this testimony as Exhibit 41
8 (DJW-4).

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10 Q. DOES THAT CONCLUDE YOUR TESTIMONY?

11 A. Yes.

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1 BY MR. MELSON:

2 Q Mr. Price -- I have this mental block, there
3 are two "Dons" and I can't keep their last names
4 straight -- Mr. Wood, would you please summarize your
5 direct and rebuttal testimony.

6 A Yes, I will. Well, I'll hesitate to
7 attribute that confusion to your advanced years,
8 Mr. Melson. (Laughter)

9 CHAIRMAN CLARK: Did you say his advanced
10 age?

11 MR. MELSON: Yes. Touche.

12 A Good morning, Commissioners. In the
13 interest of time let me tell you first of all that in
14 a sense nothing has changed since I saw you last week
15 in the regard that the Hatfield Model continues to
16 represent the most accurate, and ultimately the only
17 verifiable source of cost data that you have on which
18 you have to set prices for unbundled network elements.

19 And I want to emphasize again, because I
20 don't think this can be overstated, the importance of
21 actually having this detailed discussion about the
22 merits of the model, the specific calculations and its
23 inputs is an unprecedented process, and it's only
24 possible because this model has been provided in a
25 publicly available form with publicly available input.

1 Of course, with a public model we expect some
2 criticism and we've gotten some.

3 Again, I think in this case, as in the last
4 one, the type of criticism indicates that really the
5 difficulty that the companies are having, the
6 incumbent companies, finding relevant flaws with the
7 version of the model that we filed.

8 Dr. Duncan, on behalf of GTE, has filed some
9 criticisms of the Hatfield Model and they really fall
10 into three basic categories.

11 First of all, he spends quite a bit of time
12 criticizing a model that isn't being presented here.
13 He lays out some criticisms of the original version of
14 the benchmark cost model, what we've come to call BCM1
15 that was originally released over 18 months ago.

16 That version of that model is not being
17 presented by any party in this proceeding to my
18 knowledge. It is not a basis for the Hatfield Model,
19 and Dr. Duncan's criticisms of that model are in no
20 way relevant to the model being considered here.

21 The second category is that he wants to
22 change some economic costing principles, principles
23 that this Commission has accepted and used as recently
24 as the interconnection cases. Specifically Dr. Duncan
25 takes exception to the fact that the Hatfield Model

1 doesn't model or doesn't report GTE's quote/unquote
2 "actual costs or embedded costs." Certainly it does
3 not do that. Its not intended to be an embedded cost
4 model. It was intended to be a forward-looking
5 economic cost model and that's exactly what it does.

6 And the third category of Dr. Duncan's
7 criticisms, there really is one in this category and
8 I'm not sure how to describe it. I think the words
9 "ridiculous" and "silly" probably apply, but I
10 hesitate to use those.

11 What Dr. Duncan has argued is essentially
12 this: That any cost model that you consider should be
13 subjected to a process he calls external verification.
14 And essentially the way he says you should do that is
15 that you should look at the results of those models
16 and compare them to the results of GTE's model and
17 BellSouth's model. If these results are different
18 somehow, you must a) reject them out of hand with no
19 further consideration, or b) do what we call scale the
20 results. If the Hatfield Model, or any other new
21 model produces a lower number, you need to scale those
22 numbers up to be consistent with GTE Florida's, or
23 BellSouth's or any other incumbent local exchange
24 company.

25 In other words, in Dr. Duncan's theory truth

1 is really a matter of popular vote. Whoever has the
2 most cost studies that purport to show costs at a
3 certain level wins hands down with no further
4 consideration.

5 That type of process, if you adopt it, it
6 would essentially foreclose the ability of any other
7 party to ever come before you with cost data other
8 than the incumbents. And I urge you not to adopt that
9 process but to consider all of the information before
10 you. And that concludes my summary.

11 Q Thank you, Mr. Wood.

12 MR. MELSON: Mr. Wood is available for
13 cross.

14 CHAIRMAN CLARK: Mr. Fuhr.

15 CROSS EXAMINATION

16 BY MR. FUHR:

17 Q Good morning, Mr. Wood. My name is Ed Fuhr.

18 A Good morning, Mr. Fuhr. Nice to meet you,
19 sir.

20 Q Nice to meet you.

21 Let me pick up with a couple of points you
22 had in your summary which I think are also found in
23 your testimony.

24 You made a point in your summary that the
25 cost model that you have presented here is the only

1 verifiable cost model. I believe that's what you said;
2 is that right?

3 A Yes, sir, I think that's right.

4 Q And I think you said that the reason that is
5 the case is because it is the only model that has been
6 publicly available with all of the backup
7 documentation inputs and other data publicly
8 available; is that correct?

9 A That's certainly one of the primary factors
10 leading to that conclusion, yes, sir.

11 Q The model that we're talking about here is
12 one that has been in a state of evolution for some
13 period of time; is that right?

14 A Well, I think it's evolved as all cost
15 models evolve and as they should evolve. It has
16 incorporated the best information that's available
17 over time. It's been changed to incorporate some new
18 features that the users requested of the developer, so
19 just as GTE's cost models evolve over time, so has
20 this one, as they should.

21 Q So you don't criticize GTE's cost study for
22 the fact that they have changed?

23 A Not for the fact they have changed, no.

24 Q Before we track a little bit of this
25 evolution in the cost models, let's take one step

1 back. When did you first become involved with the
2 Hatfield cost models?

3 A I was first asked by AT&T and MCI to
4 evaluate the model spring of this year at or about the
5 time that the filings were made with the FCC using
6 Release 1 of the model.

7 Q And Release 1, when you say that, you are
8 referring to Release 1 of Version 2.2?

9 A That's right.

10 Q Of the Hatfield cost model?

11 A Let me amend my previous answer slightly
12 because I don't want to mislead you.

13 I also sponsored some Hatfield Model results
14 I believe as early as March of this year in some North
15 Carolina proceedings. As early as March I was
16 involved in evaluating and using the model.

17 Q Going back to March, were you involved in
18 any way in the creation of the Hatfield cost model?

19 A I'm not a developer of the model. I have
20 given feedback to the developers themselves in a
21 ongoing process, especially with regard to the updates
22 that were included in Release 2.

23 I certainly don't want to hold myself out as
24 being responsible for all of the upgrades, but I did
25 give feedback to the model developers about some

1 things that I would like on see in the new release and
2 they did incorporate some of those.

3 Q When was the first Hatfield Model version
4 released?

5 A The original -- that's hard to pin a date
6 on. The original Hatfield Model, which didn't have a
7 version number, is at least 18 months, probably more
8 like 24 months, old in its original format. I don't
9 recall exactly when the original results were
10 presented to the FCC. It's been quite some time.

11 Q Prior to that there were some models known
12 as benchmark cost models; is that correct?

13 A I think concurrent with that there was --
14 the benchmark cost model was developed. They were
15 developed independently originally at about the same
16 time.

17 Q And that model, too, has gone through a
18 number of different evolutions and different
19 releases -- I don't think they actually called them a
20 release, but in effect there have been different
21 releases of that model; is that correct?

22 A That's right. The original four developers
23 of the benchmark cost model have since split into
24 essentially two groups, and both have done their own
25 updates so there are, I guess, what you would

1 characterize as competing versions of those upgrades
2 but that model continues to evolve as well.

3 Q Were you involved in any way in the creation
4 or the development of any of those benchmark cost
5 models?

6 A No.

7 Q You described or indicated that you had some
8 opportunity to present some input to the developers of
9 the Hatfield Model; is that correct?

10 A That's right.

11 Q And was that input input that you provided
12 prior to the release of the very first version?

13 A Oh, no. No. As I describe before, this
14 was -- this was a process after AT&T and MCI asked me
15 to review the model as an independent cost analyst, if
16 you will, and to evaluate the merits of it. And I had
17 a series of meetings with the developers of the model,
18 in which they explained concepts to them. This is
19 prior to the documentation being available, in which I
20 got some explanations of how the model worked and some
21 level of detail. And I was able to give them some
22 feedback in that process. It was a fairly informal
23 give-and-take process over a period of some number of
24 months.

25 Q In that exchange that went back and forth,

1 who was on the other side? With whom were you
2 communicating your thoughts?

3 A Well, certainly Dr. Mercer was one of the
4 presenters. Dick Chandler, who is also a Hatfield
5 Associates, Inc. employee, who was very intimately
6 involved in the model development.

7 Q Dr. Mercer is with Hatfield & Associates?

8 A That's right. That's right.

9 Q I think he's the principal of that company?

10 A He's a principal of that company, that's
11 right.

12 Q Have you had an opportunity to have meetings
13 and discussions with a Mr. Donovan?

14 A I have discussed the model with
15 Dr. Donovan -- he was not present on all of those
16 occasions. He was present at at least two of them,
17 most recently in Denver, probably six weeks ago or so
18 I talked to him.

19 Q He is an informal consultant to Dr. Mercer
20 and people at Hatfield & Associates; is that right?

21 A I don't know about formal or informal. They
22 have contracted with him to provide some expertise and
23 they have utilized some of his experience.

24 Q When you first received the Hatfield Model,
25 what did you actually receive to look at?

1 A The first time around I actually received
2 lots of paper. And if you've looked through the
3 software, you can get an idea of how much paper we're
4 talking about.

5 Subsequent to that, I was able to actually
6 as the model was set up at a number of regional
7 locations, the Deloitte-Touche consulting folks were
8 working on it at that time and were running the model,
9 I was able to sit down with them and actually work
10 through all of the software, starting with Release 1,
11 and including the development leading up to Release 2.

12 Q Prior to the time you looked at Release 1,
13 had you ever before developed or worked with a cost
14 model that was as complicated in terms of the number
15 of inputs and the scope of what it was attempting to
16 model as what you had before you in this instance?

17 A I think the answer is no both in terms of
18 what I've worked with and what I have seen purely
19 because the Hatfield Model is national in scope. And
20 when you look at the underlying data, that there are
21 over a million data cells, is because it actually
22 incorporates the data from 49 states. So it is
23 certainly broader in scope in the sense that it
24 includes all of that data in one package, versus most
25 cost models which you actually load the data in on a

1 state and regional basis. So it's broad in that
2 regard.

3 Q So is it fair to say that your -- the time
4 at which you first became extensively involved with
5 the Hatfield cost model was two to three months ago?

6 A I think it's been an little longer than that
7 now. I certainly reviewed it carefully before I
8 sponsored some results in North Carolina in March, and
9 then, of course, I have been heavily involved since
10 then. So it's been probably over the last six, seven
11 months is the proper way to characterize it.

12 Q Would you agree that at the time you first
13 became involved with the Hatfield cost model, that it
14 was not a model that had made available publicly a lot
15 of information with respect to its inputs, structure,
16 data, etcetera?

17 A Well, I'm not sure I can agree with that.
18 The Release 1 of the model was publicly available in
19 terms of the software that could be obtained from
20 ITC, the same source as Release 2.

21 Certainly there has been work since then in
22 efforts to create instructions on running the model; a
23 complete set of documentation for the model and input
24 lists. And that work continues. We want this to be
25 as easy to review as possible and I think it should

1 be. But all of that work was not done on Day One.
2 It's continued to be done over time but the entire
3 model was available.

4 Q When was a description of all of the inputs
5 to the model first made available to the public, if
6 that has occurred to date?

7 A Well, I think it has occurred to date and I
8 think we have provided it to the Staff and to GTE in
9 this proceeding.

10 Prior to that, when I filed my original
11 version of my testimony I attached I think DJW-2 is
12 the best available data that we had at that time in
13 terms of a list of inputs.

14 I think the difference in that version and
15 what is being provided now is not the content but
16 rather the user friendliness of it. DJW-2 is, quite
17 frankly, a bit cluttered, because it's a printout of
18 some work papers fairly literally. Over time we've
19 been able to make that a little more user friendly,
20 but the data hasn't changed.

21 Q One of the sets of documents that I have in
22 front of me here is one called "Hatfield Model,
23 Version 2.2 Release 2 Input Summary", and then it says
24 "Attachment RAM-3." That is a summary of the inputs
25 that are contained in Release 2 of the Hatfield Model;

1 is that correct?

2 A That's right.

3 Q Do you know when this summary of the inputs
4 was first made available to the public and to GTE?

5 A I don't know when it was first made public.
6 We provided it here on the date of my deposition and
7 at that time it had only been available for a few
8 days. We wanted to get it here as quickly as possible
9 and that's why you see the header RAM-3, which is
10 something that carried over in the copying from the
11 fact this was originally an attachment to Robert A.
12 Mercer's testimony, I believe, in New Jersey.

13 So at that time -- in the interest of
14 providing things as quickly as we could we
15 unfortunately provided some things with the header
16 from another case, but --

17 Q And the reason you believe that the
18 production of these inputs is important is outlined in
19 your direct testimony on Page 7, Lines 12 through 14,
20 where you state "In summary, a fundamental issue with
21 any cost study is the integrity of the assumptions,
22 calculations and input values used to develop the
23 ultimate outputs." Is that right?

24 A Yes.

25 Q And at the time that you made this statement

1 in your direct testimony of August 26th, 1996, this
2 summary chart of the inputs had not yet been publicly
3 disclosed, correct?

4 A Well, it hadn't yet been developed. It
5 wasn't a question of disclosure. It was disclosed
6 probably the very day it was completed.

7 What I'm referring to here is the integrity
8 of the assumptions, calculations and inputs. It's not
9 something that suddenly came about when that
10 particular document was created. I believe those
11 inputs, calculations and assumptions had integrity far
12 in advance of that particular document.

13 Q But I understood you to say in your opening
14 summary here that the way that you verified that
15 integrity is if all of that information is publicly
16 available?

17 A That's right. And it has been in the model
18 software in that release for some number of months.

19 Q But the underlying -- I didn't mean to
20 interrupt.

21 A I'm sorry. I just want to be clear. We're
22 not talking about data that suddenly came into
23 existence when this document was created. The
24 document was created in an effort to make access to
25 this data as user friendly as possible, for lack of a

1 better term. But the data was available well in
2 advance of that to anyone who had the software and
3 asked for the software. And it was certainly
4 available to me in my analysis, and presumably to GTE
5 as well.

6 Q Prior to this presentation, information
7 contained in the Input Summary Attachment RAM-3, had
8 AT&T ever disclosed what the underlying source was for
9 the information or for the values that they had
10 assigned to the different inputs?

11 A Oh, absolutely.

12 Q And when and where had that been disclosed?

13 A It's been disclosed to anyone who has asked,
14 quite frankly. And that asking has taken the form of
15 data requests in a number of these state proceedings.
16 It's taken the form of depositions in a number of
17 these state proceedings.

18 Quite frankly, the document we were
19 referring to was created because these questions kept
20 coming up over time. There certainly seemed to be a
21 lot of interest in this and we thought that getting
22 that put down in one place would move that process
23 along a little bit.

24 Q Isn't it true that the concern with getting
25 more information publicly available is a concern that

1 you took to the creators and developers of this model
2 and to AT&T earlier this summer?

3 A I'm not sure what you mean. Do you mean the
4 reason that they made it publicly available is because
5 I told them they should?

6 Q You cannot speak, I assume, for why AT&T
7 makes a decision.

8 My question to you is simply isn't it fair
9 to say that earlier this summer you expressed concerns
10 to AT&T, and/or the developers of this model, that
11 they had not made publicly available sufficient
12 information with respect to the inputs and the values
13 that were being assigned to the inputs of this model?

14 A No, I don't recall expressing that concern.
15 I think the underlying principle of this model that it
16 be open and available, both in terms of the software
17 itself and all of the inputs, has been an underlying
18 principle that predates my involvement by quite
19 sometime. I certainly made some recommendations on
20 user friendliness.

21 For example, there's a graphical interface
22 to the model now that makes it much easier to change
23 inputs and run sensitivity analyses. I suggested I
24 was not the only person to suggest, but I was among
25 the group of people who suggested that that would be

1 incorporated and released, too, to make that process a
2 little easier. And they did that.

3 But the public nature of the model in that
4 decision is -- was made very, very early on in the
5 process, as I understand it.

6 Q So is it fair to say then that at the time
7 you filed your direct testimony and throughout your
8 involvement with this model in the last several
9 months, you have at no point had any concern with
10 respect to the amount of information that had been
11 publicly disclosed with respect to the inputs and
12 values to be assigned to those inputs?

13 A No, sir, simply because all of the
14 information had been publicly disclosed even prior to
15 that date, so there were no concerns to be had.

16 Q I think that's what I said. The question
17 was so is it fair to say you had no concerns then from
18 the time of your involvement with the Hatfield Model
19 until today with respect to the adequacy of the
20 information that had been disclosed with respect to
21 the inputs and the values that were being assigned to
22 those inputs?

23 A As I understand your question the answer is
24 yes, because this information has been available.
25 I've certainly argued for steps, efforts to make it

1 more user friendly, but it's all been there from the
2 beginning.

3 Q We are now looking at Release 2 of
4 Version 2.2 of this model, correct?

5 A That's right.

6 Q And just very briefly, there was first --
7 was it actually called Version 1 or was it unnumbered?

8 A It was unnumbered and it was purely an
9 universal service calculation model.

10 Q Next came Version 2.2 Release 1?

11 A That's right. Which is a -- was purely an
12 unbundled element calculation model.

13 Q Next came the release that we have before us
14 here, Release 2 of Version 2.2 of the model, correct?

15 A That's right. And it combines the features
16 of both. It calculates both universal service
17 calculations and unbundled network element costs.

18 Q And that issuance of Release 2 as a
19 replacement for, or an enhancement of Release 1
20 occurred when?

21 A I believe this is -- the final release on
22 this one was August 20th.

23 Q Of 1996?

24 A That's right.

25 Q You indicated that Release 2 is an

1 enhancement of Release 1 in that it attempts to
2 present some additional information that was not
3 presented in Release 1; is that right?

4 A Well, there are two primary enhancements in
5 Release 2. One is that it combines both the unbundled
6 network element cost calculations and the universal
7 service cost calculation in one model, which was
8 previously unavailable.

9 The other thing Release 2 does is that it
10 goes through and substitutes the BCM1 process with
11 what is called the BCM-PLUS process, which is a series
12 of corrections to the calculations in BCM1.

13 Q Let me see if I follow you right.

14 Release 1 of the Hatfield Model had as a key
15 component BCM1, correct?

16 A That's correct.

17 Q And would you explain just briefly how it is
18 that that was a key component of that Hatfield Model?

19 A Certainly, and we can probably do it with
20 the chart.

21 Early on what are described here as the data
22 and loop modules in this cost development process were
23 based on the BCM1 model, which means that those two
24 modules relied on BCM1 calculations to calculate total
25 loop lengths, and then the investments associated with

1 the length for feeder and for distribution. Those two
2 modules in the current version of the model now
3 incorporate what has been called BCM-PLUS, which is a
4 refinement to BCM1.

5 Q Did Release 1 of the Hatfield Model take any
6 values or numbers out of BCM1?

7 A Did it exclude some information or did it
8 utilize some information?

9 Q Did it utilize any?

10 A Yes, it did.

11 Q And do you know how many values it utilized?

12 A Oh, how many in total, no. Essentially all
13 of the information in those two modules, what is
14 called the data modules which calculates the
15 characteristics and the lengths for feeder and
16 distribution, and the loop module, which then makes
17 the investment calculations.

18 Q In August of this year, and I forget what
19 the exact date was you mentioned, Release 2 comes out
20 and it then utilizes as its key component something
21 called BCM-PLUS, correct?

22 A That's right. BCM-PLUS is refinement to
23 BCM1. The two incumbent LEC developed --
24 co-developers of BCM1, United and US West, similarly
25 came out with BCM2, which at least purports to make

1 the same type of refinements to BCM1. There was
2 general agreement by all the sponsors of BCM1 that
3 there was a solid model here but some refinements
4 needed to be made. While they have been done
5 individually, two co-sponsors, they both essentially
6 made the same refinements.

7 Q The image I have in my mind, and correct me
8 if I'm wrong, is you have BCM1 and that that ends up
9 generating as a replacement BCM-PLUS on the one hand
10 and on the other hand, another group of people created
11 BCM2; is that right?

12 A That's correct.

13 Q And AT&T was involved in the development of
14 BCM-PLUS?

15 A MCI was involved in the development of
16 BCM-PLUS.

17 Q Was AT&T involved in the development of
18 either one of those two?

19 A I don't believe AT&T was directly involved
20 in either the original BCM. They certainly were not a
21 co-sponsor of the original BCM. I don't believe they
22 were involved in the BCM-PLUS refinements. They
23 certainly had been a co-sponsor of the Hatfield
24 efforts creating this entire model.

25 Q And is it fair to say that just as the

1 Hatfield Model has gone through various iterations of
2 enhancements, that the BCM-PLUS and the BCM2 are
3 enhancements of what had been BCM1?

4 A That's fair, yes.

5 Q And the Hatfield Model that we have here
6 today, Release 2, has as a key component of its
7 structure BCM-PLUS; is that correct?

8 A That's correct.

9 Q It does not utilize what is in BCM2 per se,
10 correct?

11 A Not per se. If you compare them and lay
12 them down side-by-side you find these are pretty sharp
13 people working on essentially the same set of problems
14 and you find that they have come to some very similar
15 solutions. As I indicated in my testimony, the
16 switching investment curve, for example, that was
17 originally put into this version of the Hatfield Model
18 has since been also included in a virtually identical
19 form in BCM2. So they found some very similar
20 solutions to the same set of problems.

21 Q Would it be fair to summarize as would be
22 true with any evolving cost model, there are
23 substantial similarities between what is in the
24 Hatfield Model, Release 2 and Release 1, just as there
25 are substantial similarities is in what is found in

1 BCM-PLUS and BCM2, vis-a-vis what is in BCM1?

2 A If I understand your answer correctly, yes,
3 there will be similarities in the stuff -- well, the
4 good stuff is retained and the bad stuff is replaced.

5 Q It has now been a month and a half since
6 Release 2 came out?

7 A That's right.

8 Q Is there any discussion of Release 3?

9 A The only discussion that I've heard has
10 focused not on any corrections that have been
11 identified in Release 2, but there is some interest,
12 as I understand, on behalf of AT&T and MCI to include
13 some additional features and some additional unbundled
14 elements. I don't know specifically what they have
15 asked for, but I understand to the extent there is
16 additional work going on, it's to expand the scope of
17 the model in terms of the outputs.

18 Q Who was involved in that network?

19 A I believe it's the same original Hatfield
20 development team --

21 Q Dr. Mercer and his group?

22 A And his team, that's right. To the extent
23 they have added or subtracted some people, I'm really
24 not involved in that process.

25 Q Would you identify each of the additional

1 features that you understand are being considered for
2 Release 3 of the Hatfield Model?

3 A That's what I just said, I don't know what
4 the two parties have asked for.

5 My understanding is that they are looking at
6 some additional features and some additional unbundled
7 network functions but I don't know what those are.

8 Q Do you know anything further about what is
9 intended to be included in Release 3 other than what
10 you have just disclosed?

11 A No, sir, I'm afraid that's the limit of my
12 knowledge.

13 Q Have you involved or have you been asked to
14 be involved in development of Release 3?

15 A I have not been asked to be involved in the
16 development, just as I wasn't asked to be involved in
17 the development of this version. I will certainly
18 tell you to the extent these two companies ask me in
19 the future to sponsor a Release 3, then I would insist
20 that we go through the same process we did this time,
21 and that is that they present maybe the detailed
22 information and let me have some feedback. Because I
23 have been at the cost business for a while and I'm
24 very selective about what models I endorse.

25 Q When you describe the changes that have been

1 made to Release 1 in coming up with Release 2, you
2 identified the graphical interface and the fact that
3 the model was being asked to provide some additional
4 outputs that Release 1 simply was not capable of
5 doing; is that correct?

6 A That's right. Release 2 combines some
7 capabilities of the first two versions into one model.

8 Q Now, Release 2 also contains some additional
9 changes from Release 1, though, does it not?

10 A Let me see if I can summarize what has
11 changed.

12 The interface is certainly new. There have
13 been refinements to incorporate BCM-PLUS as we
14 discussed. There have been refinements throughout.
15 Again, this is a model that's as a basic principle
16 going forward, it's based on the best available public
17 data. To the extent that new publicly available data
18 gets identified, it gets incorporated if it meets the
19 requirements. So it's fair to say that there have
20 been quite a few changes, some more major than others.
21 Certainly the BCM1 to BCM-PLUS is probably the most
22 significant change.

23 Q And you got it where I was headed. A number
24 of the data points or inputs that had been in Release
25 1 were revised in Release 2, correct?

1 A That's right. Again, this is an ongoing
2 process of best available data.

3 Q Do you know how many of those inputs were
4 changed?

5 A In total, no, I would have no idea.

6 Q I probably should give you some perspective.
7 Do you know how many inputs are in the model overall?

8 A If we talk about user definable inputs
9 versus the raw census data and the raw U.S. geological
10 survey data, we're talking on the order of about 400,
11 I believe.

12 Q If you include -- strike that.

13 It is your understanding there the Hatfield
14 Model contains some approximately 400 inputs that the
15 user of the model can change; is that correct?

16 A That's right. Something we may have left
17 off the list on the differences on Release 1 and
18 Release 2, and one of the significant differences
19 between this model and BCM1 is that there has been an
20 effort to make sure that all of those input values can
21 be changeable by the user.

22 Previously, and this is a frustration I have
23 had looking at other cost models, even where you can
24 get access to the data and get to the software, you
25 find cells locked or you find yourself unable to

1 change values for some other reason. There was an
2 effort here to make sure all of these values could be
3 adjusted.

4 Q When you say you had a frustration with
5 cells being locked, would you explain what you mean?

6 A Sure. I guess I've spent eight or nine
7 years looking at cost studies performed by not just
8 GTE but all of the RBOCs and some other Tier 1's.
9 It's been very difficult to get, even on a proprietary
10 treatment basis, copies of actual software, if not
11 impossible. It's been very difficult to get
12 documentation at the level that you see, I think, in
13 DJW-4. Certainly the types of list of inputs in the
14 document that we were discussing previously have not
15 been available. But even in the limited instances of
16 model review, SCIS as an example, which I looked at in
17 the FCC ONA proceeding, which I understand GTE relies
18 on, the model that was provided to us either had
19 blanked out entirely some input fields so you couldn't
20 see them, or it had the values essentially locked in
21 place so you couldn't change them.

22 That makes it very difficult to run a
23 sensitivity analysis if you can't change the values.
24 And that, of course, was our intended purpose in
25 reviewing the model.

1 So one of the significant differences here
2 in this release is that those values are user
3 changeable and I think that's pretty important.

4 Q Let me ask you about two concepts and ask
5 you to explain how they relate to what you just said?

6 A Certainly.

7 Q The first one is, it is possible in
8 recreating a model or a spreadsheet to hardwire some
9 of the values that are assigned to inputs, correct?

10 A That's right.

11 Q And by hardwiring a value to an input, that
12 in effect means that the user -- someone who takes
13 that model cannot change the value that the creator of
14 the model assigned to that input; is that correct?

15 A We can use hardwire to mean that, yeah.
16 That's a pretty standard concept. I'll use your term.

17 Q What I understand you to say with respect to
18 your generic criticism of cost models is that models
19 that contain cells or inputs that are hardwired in
20 this matter may get harder to verify, do rate
21 sensitivity analysis of the inputs on that type of
22 model; is that correct?

23 A That's a little broader than what I said.
24 Certainly there are certain cells that should be
25 locked. For example, the underlying census data in

1 this model shouldn't be changed. Sensus data is what
2 it is. To the extent that someone went in and -- to
3 use the technical term -- monkeyed around with it, I
4 don't think that would be part of any productive
5 process that I identify. The US geological survey
6 data would also fall into that category.

7 Other assumptions and other types of inputs,
8 cost per foot of cable for example, that sort of
9 thing, that is the category of inputs that ought to be
10 user definable in a model if somebody is going to
11 fully evaluate it and be able to do the sensitivity
12 analysis that they need to do. I would divide that
13 data into two categories.

14 Q Okay. The second concept that I believe you
15 were alluding to earlier is the ability of the author
16 or creator of a model to put a password protection on
17 a cell or variable in a model; is that correct?

18 A Well, I guess that's one way that it could
19 be done, depending on the software that is underlying
20 the model.

21 Q I think the word you may have used before
22 was "blocked".

23 A And I'm not sure what it's actually called
24 in Excel because I'm, unfortunately, an old Lotus user
25 by training. And in the old days in Lotus Symphony it

1 was called self-protect, I think. But at any rate it
2 is possible through whatever means depending on the
3 software, to lock hardware protect, whatever you want
4 to call it -- some of those cells.

5 Q Does password protecting a cell in Excel or
6 doing the equivalent in some of the other software
7 you're familiar with, have any effect other than
8 preventing the user who takes that model from changing
9 the value that is assigned to that input?

10 A It shouldn't. You should still be able to
11 see the value, although I guess it's possible that you
12 could mask it as well, and that's been a problem in
13 the review of some of the studies that I've tried to
14 look at. It should be possible to lock the value in
15 place and still permit it to be viewed.

16 Q Is it possible that in password protecting
17 cells in a model that you can undermine the user's
18 ability to audit the model because you cannot track
19 through the model how it changed in this input in Cell
20 A-1, goes through and has effects on Cells B-2, D-8 or
21 any other cell?

22 A I think the only answer I can give you to
23 that is it depends on the software.

24 Q And to the extent that Excel has that
25 ability, that is something that you're just not

1 familiar with.

2 A Well, it certainly has the ability to trace
3 through, from one work paper to another, the sources
4 of cells -- whatever that trace function is called in
5 Excel, and it's called something different in other
6 software.

7 Q And can you turn off that trace function by
8 using a password protection?

9 A I don't know in Excel.

10 Q Are you aware as to whether the Hatfield
11 Model has used password protection to, in fact, turn
12 off that tracing ability with respect to many of its
13 inputs and values? I believe the software that I have
14 worked with is the same version that's been made
15 available publicly. And I can tell you from my
16 experience I have not run into a tracing problem.
17 That's not to say that somewhere deep in the bowels of
18 this thing there isn't one, but I have not run into
19 that.

20 Q Let me see again if I can just summarize.
21 The model software that you were provided does not to
22 your knowledge, at least, contain any password
23 protection of any of its cells, correct?

24 A No, sir, that's not what I said. What I
25 said was that there was nothing that had been done to

1 it that inhibits the ability of an user to sit down at
2 the screen and work through the work papers and trace
3 these things.

4 Now, I will readily confess to be an Excel
5 hacker, rather than an Excel user. And I may not be
6 doing these things in as mechanized a way as they
7 could be done. I may be a little more manual in my
8 orientation and that may -- in a sense I may be doing
9 it the hard way. I don't know if that's true. But I
10 haven't seen the problem. If there's a problem with
11 the mechanized function, that's news to me.

12 Q Would you describe the importance of the
13 ability to trace through a model in the manner that
14 you just described in auditing and verifying its
15 merits?

16 A I guess the best answer is that it depends.
17 If you have no other data available, it's relatively
18 more important. Certainly to the extent that you have
19 additional data besides the software that describes
20 those calculation processes to you, the importance of
21 the software in evaluating the merits is
22 correspondingly less. Of course, the more external
23 data you have, the less important. But it's a process
24 that I use from time to time.

25 Q Would you agree that in a model that

1 contains more than 1 million cells and more than -- or
2 approximately 400 different inputs, the ability to
3 trace through the model, how a change in Cell A-1
4 affects other cells is something that is very
5 important in being able to audit and understand the
6 accuracy and merits of that model?

7 A The answer is yes, but let me give you two
8 clarifications on that yes.

9 One is that when we're talking about
10 a million cells, we're talking about the fact that
11 there's data for 49 states in here. If we were
12 looking at a version of the model that had been pared
13 back to a state-specific or company-specific version
14 we'd be dealing with far fewer cells than that.

15 The second is really the answer I gave you
16 before, the ability to work through is going to
17 depend -- and the importance of that ability is going
18 to depend on how much other data you have. And if
19 there is a documented description of a calculation in
20 some detail, you can evaluate the merits; is that the
21 right way to calculate a certain cost, or is it not
22 without having to resort through the tracing function,
23 which is, quite frankly, not the fast way to do
24 things.

25 Q Based on your understanding of Excel, at

1 least?

2 A Well, it's not the fast way in any software
3 even the ones I'm more familiar with where you can use
4 more mechanized functions, it's still not the best or
5 fastest way to get at the data if you have other
6 choices.

7 Q You indicated that there is data that can be
8 hardwired in a model and you mentioned some of the
9 census data?

10 A That's right.

11 Q And I believe you also mentioned data from
12 the US Geological Society.

13 A Survey. That's right.

14 Q Has that data been hardwired in this model?

15 A Again, subject to our understanding on the
16 term, I think it has been protected in a way because
17 that's not data that should be changed by the end user
18 to run a sensitivity analysis.

19 Q And, in fact, it's data that cannot be
20 changed is your understanding, correct?

21 A Well, it's certainly data that should not be
22 changed. It's my understanding that it cannot,
23 although I'll confess to you I haven't tried because
24 it's not something that anyone ought to be doing.

25 Q Are you aware as to whether there is any

1 other data or inputs that have been hardwired in this
2 matter or by one means or another made so that the
3 user of the model cannot change the value that is
4 assigned to that input?

5 Q If I'm forgetting something else that falls
6 into that category of things that shouldn't be
7 changed, then I apologize, but I think the answer is
8 that I don't believe so. Certainly the intention here
9 is for the input variables, as they are listed in
10 Attachment C of the documentation, to be all user
11 definable.

12 That was an effort that was made between
13 Release 1 and Release 2. It was my understanding that
14 it was a successful effort. If you have an example of
15 where it wasn't, I'll certainly take it to the
16 developers and get that worked on.

17 (Transcript continues in Volume 15.)

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