and other utilities, 2) sharing between an ILEC's distribution and feeder facilities, and 3) sharing between an ILEC's feeder and interoffice facilities. The Modified Synthesis Model does not contain explicit input values to account for sharing between distribution and feeder cable structure, although my testimony will explain that some amount of sharing can occur within the Model.

Q. Are AT&T/WorldCom's proposed structure sharing adjustments appropriate?

A. No. Mr. Pitkin's adjustments to the default inputs to reflect the sharing of structure with other utilities and between feeder and distribution facilities are inconsistent with the design assumptions and input values reflected in the Modified Synthesis Model. The Modified Synthesis Model separately designs the network for loop feeder, loop distribution, and inter-office transport based on the assumed demand requirements unique to each. Therefore, the structure costs incorporated in each of these separate designs does not reflect the additional costs that may be required when designing a real-world network based on the demand for all services. Similarly, the Modified Synthesis Model's structure costs do not reflect the additional costs necessary to support the sharing of facilities with other utilities (e.g., IXCs, CLECs, cable TV operators, and municipalities).[99] As such, the Synthesis Model, with or without AT&T/WorldCom's adjustments, does not produce TELRIC-compliant costs for UNEs.

[99] In its Tenth Report and Order, the Commission recognized that issues such as the size and spacing of poles may either require a platform change or may be considered in a future proceeding to address changes to the Model. Tenth Report and Order at ¶ 222, fn. 804.

1

2 **Q. Are Mr. Pitkin's adjustments to the default inputs that reflect sharing of**
3 **structure with other utilities appropriate?**

4 **A:** No. Mr. Pitkin adjusted the Synthesis Model's nationwide average default values
5 for structure sharing with other utilities allegedly to reflect more appropriate
6 forward-looking values for Verizon VA. He claims that these adjustments were
7 made on the basis of Mr. Riolo's recommendation. Surprisingly, however, Mr.
8 Riolo's testimony does not refer to this recommendation or discuss his proposed
9 changes. Thus AT&T/WorldCom has offered no rationale or support whatsoever
10 for changing these input values from their default levels. Predictably, in making
11 this one unsupported change, plant investment is reduced by $293 million and the
12 statewide average loop cost by $0.78.[100]

13

14 In many cases, the input value changes proposed by Mr. Pitkin were taken
15 from the HAI Model. However, Mr. Pitkin did not adjust these input values to
16 reflect the differences in feeder and distribution plant. Additionally, Mr. Pitkin
17 fails to explain why the structure sharing values for UNE cost calculations should
18 be significantly lower than those adopted for use in the federal USF mechanism.

19

20 To appropriately account for sharing of structure with other possible users,
21 the Model must have the capability to reflect the investment in structure made to
22 accommodate other utilities. The Model only looks at the structure needed to

[100] See footnote to Table 1 of my testimony for an explanation of the development of the investment and loop cost change.

meet the ILEC's current demand and sizes the structure accordingly. For example, the Model sizes poles and determines the spacing between poles based on the ILEC's current demand. It does not account for the facilities of other utilities such as electric companies, cable TV companies, CLECs and municipalities.

Further, the sharing must reflect the operating realities in Virginia faced by all possible uses of that structure. Almost without exception, every possible user of the structure needs to also consider available structure type (owned or shared) and the costs they face based on currently available technology, prices, local ordinances, and safety.

These considerations are not reflected in the Modified Synthesis Model's input values for sharing. As a result, Mr. Pitkin's reduction of the sharing values and the associated costs for most underground structure by as much as 50 percent, and for buried structure by as much as 67 percent are inappropriate and unjustified.

Q. Are there other reasons why AT&T/WorldCom's adjustment for structure sharing with other utilities is inappropriate?

A. Yes. Significantly, for buried structure Mr. Pitkin assumes the opportunities for sharing with other utilities will not vary by density zone. However, even the Synthesis Model's default values recognized that there would be no measurable

sharing opportunities in the lowest density zones, and that the amount of sharing opportunities would generally increase with density.

In addition, for aerial structure, Mr. Pitkin assumes that opportunities for sharing with other utilities will reduce an ILEC's pole structure costs by 10 to 25 percent, depending on the density zone. Although sharing of aerial structure does occur, the values proposed by Mr. Pitkin are unrealistic and assume efficiencies that do not exist. Mr. Pitkin's change is nothing more than an attempt to produce artificially low aerial structure costs that will be reflected in the costs produced for the loop and inter-office transport elements.

Q. Can you illustrate how AT&T/WorldCom's improper values for structure sharing with other utilities affect costs?

A. Yes. The following table shows the potential impact that an inaccurate value for structure sharing with other utilities will have on pole costs. For illustrative purposes, a pole investment of $900 and an annual carrying charge of 20 percent will be used.

TABLE 4
Impact of Mr. Pitkin's Change on
Aerial Structure Sharing With Other Utilities

Density (Up to 2550 Lines/Square Mile)	Synthesis Model Default	AT&T/WorldCom's Input Change
Annual Cost of Pole	$180	$180
Percent of Cost Assigned to ILEC	50%	25%

Density (Up to 2550 Lines/Square Mile)	Synthesis Model Default	AT&T/WorldCom's Input Change
Annual cost after sharing	$90	$45

As this table shows, Mr. Pitkin's adjusted sharing fraction produces a yearly cost per-pole of only $45 or 25 percent of the cost of the pole. This is only half the amount produced using the more reasonable sharing values in the Synthesis Model's default assumptions.

Q. Is AT&T/WorldCom's downward adjustment in feeder structure investment appropriate?

A. No. Following Mr. Riolo's recommendation,[101] Mr. Pitkin further reduces the feeder investment by adjusting the default input values for aerial, underground and buried structure by 40 percent to reflect the alleged level of structure sharing between feeder and distribution plant in Virginia. Ostensibly, Mr. Pitkin bases the need for such an adjustment on the simplistic assumption that, in instances where feeder and distribution cables follow the same route, the cables will share the same structure.

While this is generally true for aerial feeder applications, the amount of feeder cable on aerial structure is relatively small. Typically, feeder cable is placed underground, while distribution cable is mostly aerial or buried. As a result, the sharing of structure is precluded in many instances. Yet, Mr. Riolo

[101] Riolo Direct Testimony at p. 12.

1 offers no quantifiable or verifiable support for his assumption that a significant
2 amount of structure is shared in Virginia.[102] Furthermore, Mr. Riolo's
3 recommendation is at odds with his own testimony, in which he stated that the
4 preponderance of feeder cable is placed underground, but that very little
5 underground distribution exists.[103]
6
7 **Q. Have any other state Commissions adopted Mr. Pitkin's structure sharing**
8 **reduction?**
9 **A.** No. Mr. Pitkin proposed a similar adjustment in the Georgia USF proceeding
10 and, as in Virginia, relied on data underlying BellSouth's cost model. However,
11 in Georgia, BellSouth indicated that it was correcting its model to capture the
12 appropriate structure sharing realities, such as those I mentioned above. As the
13 Georgia Public Service Commission recognized, Mr. Pitkin's proposed structure
14 sharing adjustment is inappropriate.
15 **Q. Does Mr. Pitkin's failure to use a coding change to implement the 40 percent**
16 **structure sharing reduction create a problem?**
17 **A.** Yes. In its February 16, 2000 *ex parte* filed with the Commission,
18 AT&T/WorldCom identified structure sharing between feeder and distribution
19 facilities as a change that should be made to the Synthesis Model. At that time,
20 AT&T/WorldCom indicated that the proposed solution would require significant

[102] Indeed, Mr. Riolo's recommendation is premised on data from other states. Riolo Direct Testimony at pgs. 11-12.

[103] Riolo Direct Testimony at p 39.

modifications to the Synthesis Model's code. Mr. Pitkin, however, did not change the Model's code, but rather reduced the default input values for feeder structure and placement costs. This method of accounting for structure sharing, to the extent any change is required, is wrong and inconsistent with the Model's logic that reflects sharing of structure between the feeder and inter-office transport elements.

To reflect structure sharing between feeder and inter-office facilities, Mr. Pitkin causes the Model to reduce the structure investment for both feeder and inter-office facilities based on a user adjustable input value that reflects the shared portion of the structure. The shared or common structure amount is then apportioned back to feeder and inter-office elements. Underlying the Model's logic is the reasonable premise that the shared structure (pole, manhole, etc.) costs the same regardless of where it is deployed in the network. Mr. Pitkin, however, introduces a bias into the Model's logic with the absurd assumption that the same structure costs 40 percent less when used to support feeder facilities.

Q. Would the use of national structure sharing default values be more appropriate?

A. No. In adopting national default values for the federal USF mechanism, the Commission recognized, "More than with other input values, our determination of

structure sharing percentages requires a degree of predictive judgment."[104] The Commission recognized the differing opinions regarding the sharing opportunities that may exist as a result of the "scorched node" network design reflected in the Model[105] and anticipated that this issue would be revisited in future proceedings on the Model.

TELRIC-compliant costs for UNEs must be based on the sharing opportunities that Verizon VA and other efficient providers actually experience. AT&T/WorldCom fails to appreciate the importance of accurately reflecting real-world sharing opportunities by relying on unrealistic and inappropriate assumptions derived from a hypothetical network dropped into place overnight.

2. Road Factor

Q. What is a road factor and why is it used in the Modified Synthesis Model?

A. The road factor is a value that allows the Synthesis Model to adjust up or down its calculation of structure or route miles as well as cable length (sheath miles) to reflect more closely the actual route miles that structure and cable follow. The Model contains separate road factors for feeder and distribution plant. Structure or route distance is comparable to sheath (cable) distance when there is a single cable along the route. Road factors should be determined by means of an

[104] Tenth Report and Order at ¶ 245.

[105] Tenth Report and Order at ¶ 244, fn. 840.

empirical study of distances between geographic points developed by the Model's distance algorithm and the actual road distances.[106] The Synthesis Model's default road factor values for both feeder and distribution are 1.0, meaning that the Model's calculations are not adjusted up or down.

Q. Is Mr. Pitkin's road factor adjustment appropriate?

A. No. Mr. Pitkin claims that he adjusted the distribution road factor from 1.0 to 0.9 to correct for an alleged overstatement in cable and structure caused by exaggerated customer dispersion.[107] Mr. Pitkin cites a BellSouth study and an Order of the Kansas Public Service Commission to justify his change.[108] However, Mr. Pitkin fails to compare Verizon VA's actual cable sheath miles for Virginia to cable sheath distances produced by the Model's algorithms to determine if his reduction was warranted. If he had done so, Mr. Pitkin would have found that the Modified Synthesis Model generated less than 85 percent of the actual cable sheath miles in VA.[109]

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[106] HCPM Documentation at p. 12.

[107] Pitkin Direct Testimony at p. 18.

[108] *Id.* at p. 21.

[109] ARMIS 43-08 Report, Table 1 data shows a total of 365,458,154 sheath feet of cable, whereas the Modified Synthesis Model generates 310,434,382 sheath feet.

1 Mr. Pitkin thus ignores the Commission's recommendation that any
2 change to the road factor should be based on an empirical state study.[110] Instead,
3 he bases his change on data that showed the modeled sheath feet in Kansas
4 exceeded the actual amount of sheath feet. The same computation when made for
5 Verizon VA reflects the exact opposite relationship, thereby mandating a road
6 factor above 1.0, not below as Mr. Pitkin has done.
7
8 Mr. Pitkin's change to the road factor causes the Model to underestimate
9 cost. The reduction in the road factor from 1.0 to 0.9 causes a significant
10 reduction in distribution facilities including drop wire. Combined with the
11 significant reduction in route feet caused by Mr. Pitkin's coding changes and the
12 double-counting referred to in Dr. Tardiff's testimony. Mr. Pitkin's change to the
13 road factor from 1.0 to .9 results in a decrease in plant investment by more than
14 $107 million and a decrease in loop cost by $0.29.[111] As is so often the case, Mr.
15 Pitkin's change is based solely on his own opinion, empirical data, and has the
16 effect of significantly reducing the cost estimates produced.
17
18 **Q. Are there other reasons why AT&T/WorldCom's road factor adjustment is**
19 **inappropriate?**

---

[110] HCPM Documentation at p. 12. Also, the Commission concluded that a road factor of 1.0 should be used in the Synthesis Model. Tenth Report and Order at ¶ 82.

[111] See footnote to Table 1 of my testimony for an explanation of the development of the investment and loop cost change.

1 **A.** Yes. Over 80 percent of the OSP loop network modeled is comprised of
2 distribution facilities, which in the real world are built to specific sizing factors at
3 the time of installation with no intention of augmentation. As a result, only on
4 rare occasions, will it be necessary to overlay further distribution cable on an
5 existing route. Thus, modeled sheath distances should be comparable to actual
6 sheath distances. Any suggestion that AT&T/WorldCom's road factor reduction
7 is appropriate because Verizon VA is significantly over lashing[112] is absurd.
8
9 In addition, when upgrading their feeder network over the past 10 years or
10 so, ILECs have replaced copper cables with fiber facilities, and have removed the
11 copper cable because of its salvage value. Therefore, any suggestion that Verizon
12 VA's amount of cable sheath is exaggerated and should be reduced is unrealistic
13 and unfounded. In fact, the road factor should have been increased to reflect the
14 Modified Synthesis Model's understatement of OSP facilities.

15 **3. Drop Length**

16
17 **Q. Does the Modified Synthesis Model produce a realistic average drop length?**
18 **A.** No. AT&T/WorldCom has significantly understated the average drop length as a
19 result of its changes to the Modified Synthesis Model. When the Synthesis Model
20 is run with the Commission's default input values and 1998 values demand for
21 Verizon VA, the average drop length is 51.9 feet. I believe an average drop
22 length of 51.9 feet is also understated. An analysis of AT&T/WorldCom's Model

[112] Over lashing occurs when a new aerial cable is attached to an existing aerial cable rather than being strung separately on a pole.

outputs shows an average drop length of only 23.8 feet -- less than 50 percent of the average drop length in the default run. This is a ridiculously low drop length, even for small dense clusters.

Q. What supporting information is there to show that AT&T/WorldCom's average drop length is too low?

A. Earlier this summer, AT&T filed the HAI Model in a UNE proceeding. The Drop Distance used in the HAI Model is 150 feet for the two smallest density zones (0-5 and 5-100 lines per square mile), 100 feet for the next two density zones (100-200 and 200-650 lines per square mile) and 50 feet for the five largest density zones.[113] The supporting information states that:

> HM 5.2a-MA assumes that drops are run from the front of the property line. House and building set-backs therefore determine drop length. Set-backs range from as low as 20 feet, in certain urban cases, to longer distances in more rural settings.... The last nationwide study of actual loops produced results indicating that the average drop length is 73 feet.[114]

Interestingly, the same document Dr. Mercer cites for the 73 foot average drop length also states that the "average service wire (drop) length for DLC loops is 154 feet."[115] These differences cannot be explained or reconciled by simply the geographical differences between the two states.

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[113] Before the Commonwealth of Massachusetts Department of Telecommunications and Energy, D.T.E. 01-20, *Direct Testimony of Robert A. Mercer* (May 8, 2001) at Exhibit 3, p. 15.

[114] *Id.*

[115] Telcordia Notes on the Network, Issue 4 (Oct. 2000) at pgs. 12-17.

1 **Q. What causes the Modified Synthesis Model to understate drop length?**

2 **A.** There are several reasons why the average drop length is so unrealistically short.
3 First, AT&T/WorldCom incorrectly reduced the road factor from 1.0 to 0.9 based
4 upon Kansas-specific data that is the opposite of the conditions in Virginia.
5 AT&T/WorldCom's only basis for the proposed change is a Kansas Commission
6 Order that is inapplicable to Virginia and therefore there is no basis for changing
7 this default factor in Virginia. Even if the road factor for Kansas were applicable
8 to Virginia, there is no reason to think that an overstated dispersion of customer
9 locations along roads would overstate the distance of the customer locations from
10 the road frontage.
11
12 Similarly, AT&T/WorldCom's other Model changes, such as the
13 inaccurate year 2002 forecast of Verizon VA special access line data, have also
14 contributed to the drastic reduction in the average drop length. It is evident that
15 the theoretical nature of the Model and AT&T/WorldCom's inappropriate changes
16 create absurd results that bear no reasonable resemblance to an ILEC's actual
17 experiences. There is no justification for making these changes and reducing the
18 drop length.

19 **4. Plant Mix And DLC Cost Inputs**

20

21 **Q. How does the Modified Synthesis Model account for plant mix?**

22 **A.** Plant mix represents that proportion of the total cable plant comprised of aerial,
23 underground, or buried cable. The Modified Synthesis Model contains tables

1 populated with Commission default values that specify for each type of feeder and
2 distribution cable a plant mix by density zone. A separate mix is also shown for
3 cooper feeder cable and for fiber feeder cable. Any change in this mix will affect
4 OSP, and consequently loop investment.
5
6 **Q. Is Mr. Riolo's plant mix adjustment appropriate?**
7 **A.** No. Mr. Riolo attempts to justify a change in plant mix based on a flawed
8 interpretation of plant mix data. In his direct testimony, Mr. Riolo includes a
9 table that shows his breakdown of distribution plant structure mix, which is
10 reprinted below.[116]
11

[116] Riolo Direct Testimony at p. 40.

TABLE 5

Mr. Riolo's Untitled Table

Distribution Cable Structure Type				
Density	Aerial		Buried	Underground
(lines/sq. mi.)	Pole line	Intra-Bldg		
0-53	35%		64%	1%
5-100	35%		64%	1%
100-200	35%		64%	1%
200-650	35%		64%	1%
650-850	35%		64%	1%
850-2,550	35%		64%	1%
2,550-5,000	35%		60%	5%
5,000-10,000	25%	35%	35%	5%
10,000+	20%	65%	5%	10%

Source: Import from Mr. Rio's Direct Testimony, page 40.

In examining the highest density zone (10,000+) in this table, Mr. Riolo suggests that aerial cable represents 85 percent of the total distribution structure mix for the highest density urban area. The Commission has clearly stated that the Synthesis Model was not designed to consider or include intra-building riser cable when determining its loop costs. Not surprisingly, the Synthesis Model's default value assumes that 10 percent of the distribution structure mix for this density zone is aerial. However, Mr. Riolo's table reveals that the preponderance of Mr. Riolo's aerial infrastructure is comprised of intra-building cable. In making this change, Mr. Riolo causes plant investment to drop by $365 million and the loop cost to be understated by $0.59.[117] Just as the Commission rejected a similar AT&T

[117] See footnote to Table 1 for an explanation of the development of the investment and loop cost change.

proposal in the Tenth Report and Order, the Commission should reject Mr. Riolo's unrealistic and unfounded plant mix assumption.[118]

Q. Is use of a national plant mix default value more appropriate?

A. Not necessarily, but in the absence of Verizon VA-specific plant mix information, the Commission's default values for plant mix are more appropriate than the unrealistic, self-serving values proffered by AT&T/WorldCom. Each ILEC determines the proper mix of OSP after considering a number of factors, including existing structure, governmental policies, local weather, potential roadside hazards, and possible rodent damage on a location-by-location basis, not on the basis of density zones.[119] The Modified Synthesis Model ignores all of these factors. However, using the correct variation in plant mix is critical when calculating UNE costs because so many of the Modified Synthesis Model's loop costs are influenced by this variable.

In the Tenth Report and Order, the Commission stated:

> we continue to believe that varying plant mix by state, study area or region of the country may more accurately reflect variations in forward-looking costs. . . in the future of the model proceeding.[120]

[118] Tenth Report and Order at ¶¶ 237-238.

[119] Lucent Technologies "Outside Plant Engineering Handbook" at Section 3, pgs. 3.1–3.6.

[120] Tenth Report and Order at ¶ 93.

1

2 The Commission recognized that it was more appropriate to use state-specific
3 plant mix instead of national values. AT&T/WorldCom's allegedly state-specific
4 plant mix is unsupported, undocumented and inconsistent with the Commission's
5 emphasis on data that are verifiable.

6

7 **Q. Does AT&T/WorldCom provide credible data to support its modification of**
8 **DLC input values?**

9 A. No. Mr. Riolo significantly reduced the Commission's default DLC hardware
10 inputs -- values that were based on empirical data compiled by the Commission --
11 and replaced them with costs based either on an alleged research report that Mr.
12 Riolo neither described nor disclosed or on the alleged personal experience of
13 purchasing DLC equipment. In making this one change, Mr. Riolo reduces plant
14 investment by $99 million and understates loop costs by $0.26. Mr. Riolo
15 reduced these values despite the fact that the Commission disagreed with his
16 claim that the Synthesis Model's default costs were overstated.[121] By failing to
17 provide any documentation to support his revised prices, Mr. Riolo effectively
18 asks Verizon VA and the Commission to accept him at his word. The
19 Commission has emphasized that data used in the Synthesis Model should be

[121] Tenth Report and Order at ¶¶ 278-279.

1 based on publicly available information and not on unverifiable and
2 unsupportable expert opinion.[122] Mr. Riolo ignores this directive completely.

3 **5. AT&T/WorldCom's Updates To The ARMIS Input Data**
4 **Exacerbate Cost Understatements And Distort UNE Cost**
5 **Estimates**

6 **a) ARMIS 2000 Plant-Specific Data**

7

8 **Q. Has Mr. Pitkin properly utilized Verizon VA ARMIS 2000 plant-specific**
9 **data in the Modified Synthesis Model?**
10 **A.** Absolutely not. Although Verizon VA ARMIS 2000 plant-specific data has been
11 included in the Model, Mr. Pitkin did not actually use these data. Therefore, the
12 Model does not reflect plant-specific investment and year 2000 expense levels for
13 Verizon VA. Mr. Pitkin's use of Verizon VA 2000 ARMIS data has absolutely
14 no effect on the Model's calculation of the investment or expenses for plant-
15 specific OSP, central office switching, or transmission facilities.

16 **b) General Support**

17 **Q. Why is it important to calculate General Support requirements for UNEs?**
18 **A.** General Support consists of accounts for such items as land and buildings, motor
19 vehicles, furniture, office equipment, and general-purpose computers. ARMIS
20 reported a value for Verizon VA in the year 2000 of $738.8 million for the
21 investment accounts and $94.8 million for the expense accounts. These
22 investments and expenses, as the account names imply, support a broad range of

[122] The Commission previously rejected efforts by AT&T/WorldCom to introduce values based solely on expert opinion. Tenth Report and Order at ¶¶ 115, 165, 171 and 172.

1 services, including the delivery of UNEs. These investments and expenses,
2 however, cannot be directly attributed to specific services. Therefore,
3 determination of accurate UNE costs requires an assignment of General Support
4 investments and expenses to individual UNEs. The Modified Synthesis Model is
5 incapable of making such an assignment.
6
7 **Q. Does the Modified Synthesis Model accurately use the Verizon VA 2000**
8 **ARMIS data when calculating the investment ratios for each General**
9 **Support facility account?**
10 **A.** No. Mr. Pitkin did not change the Modified Synthesis Model logic, and thus the
11 use of the Verizon VA 2000 ARMIS data actually compounds errors recognized
12 by the Commission and further distorts the use of forecasted Verizon VA-specific
13 data in the Model. The Commission has already recognized the following errors
14 as issues that should be considered in future updates to the Synthesis Model: the
15 use of embedded investment ratios rather than current investment[123] and the
16 omission of land investment required to support General Support structures
17 (garages, operations centers, etc.).[124]
18
19 **Q. Do you have any other concerns about the Modified Synthesis Model's ability**
20 **to calculate General Support requirements for UNEs?**

---

[123] Tenth Report and Order at ¶ 415.

[124] Tenth Report and Order at ¶ 417, fn. 1273.

1 A. Yes. The Model uses an allocator to reduce the General Support investment not
2 associated with the service supported by the federal USF mechanism. As such, it
3 removes that portion of General Support attributable to toll and special access
4 services.

5 **c) Forecasted Year 2002 Demand Data**

6

7 **Q. Why did Mr. Pitkin attempt to forecast Verizon VA 2002 ARMIS demand**
8 **data?**

9 A. Mr. Pitkin testified that he projected line and usage demand to year 2002 to
10 account for growth in demand during the past several years and to update the
11 default 1998 data used in the Synthesis Model. His rationale for forecasting to
12 year 2002 was that it represented the mid-point of a three-year period in which he
13 felt that the UNE rates developed in this proceeding would be in effect.

14

15 **Q. Do you have concerns with Mr. Pitkin's method for forecasting Verizon VA**
16 **2002 ARMIS demand data and his use of the forecasted data in the Modified**
17 **Synthesis Model?**

18 A. Yes. I have several significant concerns regarding the manner in which Mr.
19 Pitkin forecasted and used Verizon VA's 2002 ARMIS demand data in the
20 Model. Mr. Pitkin's method is nothing more than a mathematical exercise to
21 produce an unreliable estimate of billable lines. Even a cursory analysis of the
22 data used in Mr. Pitkin's forecast shows that his 6-year average includes vintage

1 data that should be excluded.[125] Additionally, the growth rates for many of the
2 individual demand categories do not reflect the most recent growth rates or trends.
3
4 Further, the growth rates used by Mr. Pitkin distort the demand
5 relationships between services. For example, the data show that the actual year
6 2000 growth rate for local DEMs was 5.8 percent for local traffic, 5.8 for
7 intraLATA traffic, and 3.31 percent for interLATA traffic. Mr. Pitkin, however,
8 applied a significantly higher average annualized growth rate of 9.68 percent for
9 local traffic, 4.4 percent for intraLATA traffic, and 6.2 percent for interLATA
10 traffic.
11
12 Similarly, the data show that the growth rate in switched lines for
13 residence and business has been declining, with the actual growth for the year
14 2000 being less than 1 percent. Nevertheless, Mr. Pitkin applied an annualized
15 growth rate of approximately 4.5 percent to switched lines to estimate year 2002
16 values.
17
18 Even if the flaws contained in Mr. Pitkin's exhibit were corrected, the
19 Modified Synthesis Model would not provide appropriate demand values for use
20 in UNE cost calculations. Mr. Pitkin ignores the types of considerations typically
21 used by ILECs to develop demand forecasts, which recognize, for example, local

[125] AT&T/WorldCom Cost Model Documentation at Attachment D.

1 economic conditions, requests for building permits, community demographics,
2 and the life-cycle phase of services.
3
4 **Q. Do you have any concerns with the use of forecasted 2002 Verizon VA**
5 **ARMIS demand data in the Modified Synthesis Model when calculating**
6 **UNE costs?**
7 **A.** Yes. Demand data is one of the most significant factors used by the Modified
8 Synthesis Model in determining investments and expenses for OSP, switching,
9 and transmission facilities. When developing the Synthesis Model, the
10 Commission received considerable public input and made decisions that reflect
11 the Model's exclusive purpose -- determining relative cost relationships among
12 states to apportion the federal fund. The Model was not designed to develop
13 company and state-specific cost estimates. Given the Synthesis Model's limited
14 purpose and use, the Commission may have accepted distortions in the vintage of
15 input values and between classes of service. Such distortions, however, are
16 unacceptable when developing the demand values used to calculate state-specific
17 UNE costs.
18
19 All values, including demand, must be consistent with the purpose for
20 which they are employed, as well as with the assumptions incorporated into the
21 logic of the Modified Synthesis Model. For example, Verizon VA's ARMIS line
22 values are the result of the technologies and associated efficiencies in Verizon

VA's actual network. When different demand levels are employed, the Model creates a network that is incapable of providing the requested services. Any attempt to update demand data in isolation, as Mr. Pitkin proposes, only serves to further distort the results produced by the Model.

Q. What distortions are created by using forecasted 2002 Verizon VA demand data in the Synthesis Model?

A. The Synthesis Model does not include a method for updating its customer location database to reflect Mr. Pitkin's forecasted year 2002 ARMIS demand data, and does not have the mechanized logic to assign forecasted statewide lines to individual wire centers. Therefore, estimates of year 2002 ARMIS line counts at the wire center level, both total amounts and service-specific amounts, have been developed outside the Model. These deficiencies effectively result in the Synthesis Model treating all line growth between the 1997 customer location database and the forecasted year 2002 ARMIS line demand data as additional lines. Significantly, treating all growth as additional lines results in the exclusion of actual primary line growth because of the mismatched data vintages. Table 6 shows the erroneous line counts for residence exchange service resulting from the inappropriate use of this forecasted ARMIS demand data.

TABLE 6

Residence Primary and Additional Lines

Source	Residential Lines	Residential Additional Lines	Residential Primary Lines (1997 Households)
Synthesis Model Default (1998)	2,172,976	290,382[2]	1,882,594
Pitkin Forecast (2002)	2,394,067	530,791	1,863,276
Change	221,091	240,409	(19,318)

Source: HAI Expense Module Notes:

1. Like residential households, business customer locations are held at the default 1997 level in the Modified Synthesis Model.
2. 1998 additional lines are based on TNS estimates; therefore, they might not be representative of actual values.

This table demonstrates the distortions created by Mr. Pitkin's year 2002 demand forecast. Specifically, the table shows the number of residential lines obtained from the Synthesis Model's 1998 default data and from Mr. Pitkin's year 2002 residential line forecast. Interestingly, the Synthesis Model's 221,000 increase in total residential lines results in an increase of 240,000 residential additional lines and a loss of 19,000 residential primary lines. This result illustrates an anomaly in the Synthesis Model. The Model is not only treating all residential line growth as additional lines, but it is also having the absurd effect of reclassifying existing primary residential lines to secondary lines. This overstatement of additional lines results in artificial efficiencies in the loop design and a significant understatement of loop costs.

Q. What impact does the input flaws you just described have on the Model 's results?

A. Each of the input flaws I have identified will, to varying degrees, result in unrealistic, unsupportable and underestimated costs. AT&T/WorldCom consistently misuses data sources and selects from alternative input sources with the sole purpose of producing the lowest possible cost result. The Modified Synthesis Model's inputs represent nationwide values that are derived from calculations of different vintages. TNS customer location data are based on pre-1998 sources, with some from 1990, while the road segment data used by TNS are from 1995. By using these older sources for customer locations with line counts projected a year into the future, the Model produces unrealistically low cost estimates.

Some of the relevant investments are simply ignored. Often times, the Modified Synthesis Model developers have selected nationwide input data when Virginia-specific data is available. This further distorts costs in a downward direction.

- The Modified Synthesis Model uses a 100 percent utilization factor for fiber strand, which is unrealistic and works to minimize costs.

- The Modified Synthesis Model uses an unreasonably low $8 per-line for MDF and power investment, which should have been at least $45 per-line according to the updated source.

- The Modified Synthesis Model understates central office construction costs.

- The Modified Synthesis Model uses unrealistic structure sharing inputs that lower loop costs by $0.78 per loop and reduce the plant investment by $293 million.

- The Modified Synthesis Model erroneously reduces the Synthesis Model's road factor default input from 1.0 to .9, and thereby decreases the cost of the loop by $0.29 and reduces the plant investment by $107 million.

- The Modified Synthesis Model's use of incorrect plant mix reduces the cost of the loop by $0.59 and reduces the plant investment by $365 million.

- The Modified Synthesis Model uses unsupported DLC inputs that reduce the cost of the loop by $0.26 and reduce the plant investment by $99 million. Collectively, the impact of the selection of input values by AT&T/WorldCom produces costs that are vastly understated.

V. DISCREPANCIES IN NETWORK DESIGN AND PROVISIONING OF UNES BETWEEN THE SYNTHESIS MODEL AND AT&T/WORLDCOM'S NON-RECURRING COST MODEL (JDPL ISSUES II-1 TO 11-1-C; II-2 TO II-2-C)

Q. Is the Modified Synthesis Model consistent with AT&T/WorldCom's Non-Recurring Cost Model?

A. No. The Modified Synthesis Model is inconsistent with the AT&T/WorldCom's Non-Recurring Cost Model ("NRCM") sponsored by Mr. Richard Walsh.[126]

1 **Q. Do the Modified Synthesis Model and the NRCM account for all of the**
2 **forward-looking costs of providing UNEs to CLECs?**

3 A. No. As Mr. Peduto, Mr. Curbelo and Mr. White explain in their rebuttal
4 testimony, the NRCM submitted by AT&T/WorldCom makes several
5 assumptions that are intentionally (and unrealistically) designed to drive down or
6 eliminate non-recurring costs. In many cases, this is done through assumptions
7 concerning forward-looking technology or plant that is neither included nor
8 accounted for at all in the Modified Synthesis Model. For example, the NRCM
9 assumes 100 percent dedicated OSP with every distribution pair connected to a
10 feeder pair; but the Modified Synthesis Model does not account for the significant
11 additional investment in feeder plant that would necessarily have to exist to
12 produce the cost savings reflected in the NRCM. Similarly, the NRCM assumes
13 100 percent Dedicated Inside Plant ("DIP"); but the Modified Synthesis Model
14 does not account for the additional investment that would be needed to produce
15 100 percent DIP. The NRCM also assumes cost savings that would require the
16 development of new OSS and the substantial modification of existing OSS. Not
17 only does the Modified Synthesis Model fail to account for these additional costs,
18 but it actually assumes that General Support costs (which include OSS) are
19 reduced by almost 70 percent of the current level of investment.[127]

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[126] Before the Federal Communications Commission, CC Docket Nos. 00-218, -249, -251, *Direct Testimony of Richard J. Walsh* (July 31, 2001) at pgs. 36-37.

[127] Before the Federal Communications Commission, CC Docket Nos. 00-218, -249, -251, *Rebuttal Testimony of Timothy J. Tardiff* (Aug. 27, 2001) at Table 3.

More generally, the NRCM achieves cost reductions by assuming that many activities associated with the ordering and provisioning of UNEs are not required because equipment and facilities are already in-place and ready to provide service. The NRCM accounts for any costs associated with this "ready to serve" status by considering them to be recurring costs. In contrast, the Modified Synthesis Model is able to produce artificially low costs by consistently taking advantage of the cost efficiencies of a "ready to service" network without incorporating the design or the cost associated with such a network.

Q. Are there any other discrepancies between the Modified Synthesis Model and the NRCM?

A. Yes. As Mr. Peduto and Mr. Curbelo explain, AT&T/WorldCom's NRCM attempts to lower the costs of provisioning stand-alone copper loops by making unsupported assertions about how loops can be provisioned electronically. The NRCM assumes the existence of a Channelized DS-1 Virtual Feeder to RT Install, DS-1 Loop to Customer Premise Install, and DS-3 Loop to Customer Premise Install. However, when examining the Modified Synthesis Model, I was unable to find any reference to the costs for such facilities. In effect, AT&T/WorldCom's NRCM assumes the existence of facilities without accounting for the underlying costs.

VI. RECOMMENDATIONS
(JDPL ISSUES II-1 TO 11-1-C; II-2 TO II-2-C)

Q. Please summarize the results of your analysis of the Synthesis Model and the Modified Synthesis Model.

A. The Synthesis Model platform and inputs were adopted to identify the relative difference in the total service local run incremental cost ("TSLRIC") between states for the narrowly-defined services supported by the federal USF mechanism. In contrast, TELRIC estimates for UNEs must be company-specific and state-specific. Neither the Synthesis Model, nor the Modified Synthesis Model, are capable of accurately determining the forward-looking UNE costs that Verizon VA would incur.

Although the Model designs a hypothetical network allegedly capable of provisioning narrowly-defined core services supported by the federal USF mechanism, it is not capable of properly provisioning those UNEs defined by the Commission, and is incapable of reflecting all of the services provided by Verizon VA. The Model also assumes that demand is only for the core USF services; as a result, all special access services including DS-1 and higher speed services used to access IXC networks are improperly provisioned over a mostly copper-based network. Furthermore, the Modified Synthesis Model fails to adhere to, or implement, many of the standard engineering principles, planning guidelines, optimization routines and inputs necessary to accurately calculate Verizon VA's costs of provisioning UNEs.

The Model also establishes incorrect customer dispersion and service requirements because of mixed vintages of data, and thus treats all growth as additional lines and reflects unrealistic network efficiencies.

The HAI Model modules used in the switch and IOF network portion of the Modified Synthesis Model cannot reflect the cost differences in UNEs that are provisioned over these facilities. The values employed for many investment and expense calculations employ nationwide average values that reflect different vintages and are incapable of calculating the actual cost of provisioning a UNE in any given state. In sum, the Commission's repeated claims that the Synthesis Model cannot identify actual costs for state UNE or USF proceedings are true. AT&T/WorldCom has elected to ignore this fact in sponsoring the Modified Synthesis Model in this proceeding. The Commission, however, should not.

Q. What recommendations do you have for this Commission?

A. My testimony has established that the Modified Synthesis Model proposed by AT&T/WorldCom is riddled with platform and input flaws and violates numerous TELRIC principles, including failing to recognize known demand. The Modified Synthesis Model is simply not capable of producing realistic UNE cost estimates that reflect the costs an efficient carrier would incur. It is clear that AT&T/ WorldCom intended for the Model to serve only one purpose: produce the lowest cost estimates possible regardless of the fact that the network designed will not function. For these basic reasons, and all the others included in my testimony and

1 the testimony of Dr. Tardiff, this Commission should reject AT&T/WorldCom's

2 Modified Synthesis Model for purposes of estimating UNE costs in Virginia.

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4 **Q. Does this conclude your rebuttal testimony?**

5 **A.** Yes.

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