BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Review of	)	
Unbundled Loop and Switching Rates and	)	DOCKET NO. UT-023003
Review of the Deaveraged Zone Rate Structure	)	
	)	
_____	)	

SUPPLEMENTAL DIRECT TESTIMONY OF

THOMAS L. SPINKS

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION STAFF

January 26, 2004

Revised April 2, 2004

Second Revised April 20, 2004

1   **Q.   Please state your name and business address.**

2   A.   My name is Thomas Spinks, my business address is 1300 South Evergreen Park

3   Drive Southwest, P.O. Box 47250, Olympia, Washington 98504. My e-mail

4   address is tspinks@wutc.wa.gov.

5

6   **Q.   By whom are you employed and in what capacity?**

7   A.   I am employed by the Washington Utilities and Transportation Commission as a

8   Regulatory Consultant.

9

10   **Q.   What are your education and experience qualifications?**

11   A.   My qualifications are provided as Exhibit TLS-2.

12

13   **Q.   What is the purpose of your testimony?**

14   A.   I provide updated total element long run incremental cost (TELRIC) estimates for

15   certain unbundled network element (UNE) rate elements and propose

16   deaveraged zone loop costs consistent with the Commission's purpose for this

17   docket. In opening this docket, the Commission intended to "review UNE rates

18   that may be set too high or too low based on their direct costs." *Third*

19   *Supplemental Order*, ¶ 11. I updated the cost estimates primarily by updating to

1   the current version of the generic cost model, using more current line counts and

2   updated loop length studies. I combined these updates with input values

3   previously determined by the Commission to produce the staff cost estimates

4   that I present in this testimony.

5

6   **Q.   How is your testimony organized?**

7   A.   My testimony consists of three sections. First, I testify regarding cost proxy

8   models and recommend that the Commission adopt cost estimates based on the

9   current version of the HAI model. Second, I review prior Commission decisions

10   regarding cost model inputs and discuss changes I made to certain inputs used

11   by the Commission in prior proceedings. Finally, I present cost results including

12   a proposal for deaveraging certain UNE costs into zones.

13

14   <u>**COST PROXY MODELS**</u>

15

16   **Q.   What are cost proxy models?**

17   A.   In the Eighth Supplemental Order in Docket UT-960369, the Commission

18   described a cost model as follows:

1		[A]n analytical model is a simplified representation of some aspects
2		of the real world. Analysts use models to organize the complexity
3		of the real world into some orderly form. Models are, by definition,
4		simplifications or abstractions which omit some information. A
5		model can be a very powerful analytical tool. It can act as a
6		microscope or a telescope which may enable the analyst to focus in
7		on the key aspects of a situation and thereby to solve problems that,
8		in the absence of a model, would be hopelessly complex.
9		

10   *In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements,*

11   *Transport and Termination, and Resale*, Docket Nos. UT-960369 et al., Eighth

12   Supplemental Order, ¶ 21 (April 16, 1998). (Generic Cost Order).

13   At a structural level, cost proxy models are sets of mathematical equations

14   that utilize engineering and network design information to estimate required

15   quantities of materials and labor necessary to provide the service or element of

16   service under study. Once the model estimates the required quantities of

17   materials and labor, it combines these quantities with the unit prices of the

18   materials and labor to produce a total investment required for the service or

19   element. Finally, the model applies cost factors to the total investment to

20   develop monthly recurring charges for the service or element.

21

22   **Q.   What did the Commission decide regarding cost models in the generic cost**

23   **proceeding, Docket Nos. UT-960369 et al?**

1   A.   In the Generic Cost Order, the Commission concluded that none of the current

2   versions of the loop cost models submitted in the proceeding should be adopted

3   for future proceedings. Generic Cost Order, ¶ 35. While the Commission found

4   it could not adopt any of the models, it made plain its continued support for

5   open models, specifically citing the Hatfield and BCPM models. *Id.*, ¶ 36.

6

7   **Q.   What did the Commission decide regarding cost models in the universal**

8   **service proceeding, Docket No. UT-980311(a)?**

9   A.   In the Tenth Supplemental Order in Docket UT-980311(a) the Commission stated

10   that it had considered both the BCPM 3.1 and HAI 5.0a models to be much better

11   cost models than their predecessors. *In the Matter of Determining Costs for*

12   *Universal* Service, Docket No. UT-980311(a), Tenth Supplemental Order, ¶ 36.

13   However, the Commission concluded that both models were still flawed and

14   neither provided accurate estimates of the costs of providing telecommunication

15   services in Washington. *Id.*, ¶ 331. The Commission identified one area of

16   particular concern—the failure of both models to pass the Minimum Spanning

17   Tree (MST) test in the least dense zone. *Id.*, ¶¶ 124-42.

18

1   **Q.   Which cost model will Staff use to develop revised loop cost estimates?**

2   A.   Staff continues to believe that the HAI model best meets the Commission's

3   criteria that cost models be transparent, rational, stable, consistent, and have an

4   understandable approach. *See, e.g., Washington Utils. & Transp. Comm'n v. US*

5   *West Communications, Inc.*, Docket No. UT-950200, Ninth Supplemental Order at

6   80-86 (April 11, 1996); *Washington Utils. & Transp. Comm'n v. US West*

7   *Communications, Inc.*, Docket Nos. UT-941464, et al., Fourth Supplemental Order

8   Rejecting Tariff Filings and Ordering Refiling; Granting Complaints, In Part, at

9   88-91 (Oct. 31, 1995).

10   At the beginning of this docket, in early 2002, the current version of the

11   model was HAI 5.2a. HAI 5.2a included several important modifications from

12   the HAI 5.0a version that Staff had used in the universal service cost proceeding,

13   which are discussed below. In March 2003, staff obtained a preliminary version

14   of HAI 5.3 which was used to estimate costs in its filing of June 26, 2003 in this

15   docket. In this supplemental direct testimony, Staff is using the HAI 5.3 that

16   was submitted by AT&T/Worldcom witness Mark Bryant in his testimony dated

17   June 26, 2003, Exhibit MTB-4. I provide initial UNE cost estimates for Verizon

18   using this version of the HAI model. Staff expects that AT&T/MCI refiling will

19   further update the model and include revised cluster data. Staff will review the

1   changes AT&T/MCI made to the model and update the cost estimates later in the

2   proceeding, as appropriate.

3

4   **Q.   How did the HAI 5.2a address the Commission's concerns about the cost**

5   **models used in prior proceedings?**

6   A.   The HAI model documentation describes the changes between the HAI 5.0 and

7   the HAI 5.2(a) in section 2 of the documentation. One of the changes to the

8   distribution module includes an option to ensure that the model produces

9   enough distribution route distance to reach the corners of cluster rectangles

10   where customers may be located. This change addresses the MST issue. In

11   addition, Staff has modified the distribution module to adjust automatically

12   distance-sensitive investments for differences between the average loop length

13   produced by the model and the average loop lengths reported by each ILEC.

14   The HAI model documentation also states that the switching module has been

15   modified to incorporate host and remote wirecenters automatically, and to

16   incorporate the investment values for Bell Operating Companies and ICO

17   switches adopted by the FCC in the USF inputs order. Finally, the expense

18   module has been revised to incorporate the effect of deferred taxes on cost,

1   which the Commission had found appropriate in the Tenth Supplemental Order

2   in Docket UT-960369 et al., as well as Equal Life Group depreciation.

3

4   **Q.   What are the differences between the HAI 5.2a and HAI 5.3 models?**

5   In addition to retaining the changes made in 5.2a that I previously discussed, the

6   HAI 5.3 explicitly models high capacity loops in the network.

7

8   **HAI COST MODEL INPUTS**

9

10   **Q.   What issues have been identified with the HAI model inputs in past**

11   **proceedings?**

12   A.   In Docket UT-960369 et al., where the parties presented the Hatfield Model 3.1,

13   the Commission identified issues with the methods used by the Hatfield team to

14   collect data from outside plant contractors, drop costs and lengths, the

15   fiber/copper breakpoint, special access loops, customer location accuracy and

16   resulting loop lengths, switching costs, and a number of other user-adjustable

17   input choices. In Docket UT-980311(a), the universal service cost docket, the

18   Commission identified input issues with the HAI 5.0a including structure mix,

1   structure sharing, failure to meet minimum spanning tree lengths, and switching

2   investment levels.

3

4 **Q.   What changes did you make to the default inputs in the HAI 5.3?**

5 A.   I adopted the input choices that the Commission found appropriate in Dockets

6   Nos. UT-960369 and UT-980311(a), with certain exceptions discussed below.

7   Exhibit__(TLS-8) shows the differences between the HAI 5.3 default inputs and

8   the inputs I used in developing the updated UNE costs for Qwest and Verizon in

9   this docket.

10

11 **Q.   Please describe the changes you made to input values that varied from inputs**

12   **used in prior Commission decisions.**

13 A.   In the Verizon run, I updated depreciation lives and salvage values to reflect

14   lives and salvage values authorized by the Commission in Docket UT-992009. In

15   this docket, I did not make input adjustments for Special Access lines that the

16   Commission made in prior cases because HAI 5.3 now explicitly models high

17   capacity services. I did not make input adjustments for switching costs that the

18   Commission made in prior cases because the HAI uses more recent switch cost

19   data from a FCC study. I did not adjust inputs for hard/soft rock placement

1		multipliers as the Commission had done in Docket UT-980311(a) because the
2		HAI placement multipliers have been increased and cannot be input on a density
3		zone basis. Finally, I did not make the same adjustments for cable costs that the
4		Staff had proposed and the Commission had accepted in prior cases, because the
5		HAI cable cost inputs reflect more current cable cost information.
6		
7	**Q.**	**Did Staff make any adjustments to the cost of capital or depreciation rates as a**
8		**result of the FCC's Triennial Review Order?**
9	A.	No adjustments to either input are included in the cost results presented later in
10		this testimony. However, the cost results are reported for the statewide average
11		loop rate assuming a one and two percent change in the cost of equity in order to
12		understand the magnitude of cost change that would occur when the cost of
13		equity is increased.
14		
15	**Q.**	**Why didn't you make adjustments for cost of capital?**
16	A.	The FCC clarifies that two types of risk should be reflected in the cost of capital.
17		First, the cost of capital should reflect the overall risks of a competitive market.
18		In this type of market, all facility-based carriers would face the risk of losing
19		customers to other facility-based carriers, and that risk should be reflected in the

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1   TELRIC prices. *In the Matter of the Section 251 Unbundling Obligations of Incumbent*

2   *Local Exchange Carriers, et al.*, CC Docket Nos. 01-338 *et al.*, Report and Order on

3   Remand and Further Notice of Proposed Rulemaking, FCC 03-36, 18 FCC Rcd.

4   16,978, ¶ 680 (2003) ("TRO") Second, the FCC clarifies that the TELRIC cost of

5   capital should reflect any unique risks associated with new services that might be

6   provided over certain types of facilities. TRO, ¶ 683.) Verizon filed testimony

7   earlier in this proceeding urging the Commission to use a cost of capital based on

8   a broad study of competition in the nation-wide market and asks that the

9   Commission apply the result in Washington State. In the context of determining

10   the cost of capital for Washington TELRIC UNEs, Staff believes that Verizon

11   needs to demonstrate the degree of competitive risk it faces in Washington

12   before determining the cost of capital to be used for setting TELRIC rates in

13   Washington. CLECs operating in Washington should not have to pay rates in

14   Washington based on competitive risks that Verizon faces on the East Coast or in

15   California. A second problem with implementing the FCC's decision concerns

16   how the unique risks should be taken into account in the cost models, which

17   currently apply a single cost of capital to all investments. In order to reflect

18   unique risks, the cost models need to be modified to allow a different cost of

19   capital to be applied to different types of plant and equipment used to provide

1   the "riskier" services or plant types. Finally, Staff raises the question that if the

2   Commission is going to allow a higher cost of capital for unique risks, shouldn't

3   the Commission also consider applying a lower cost of capital to plant that is

4   "uniquely less risky," such as distribution loop plant, which is a monopoly

5   bottleneck to the network. Therefore, before making recommendations as to how

6   the Commission should implement the FCC directive, staff will first review other

7   parties' views on the matter.

8

9   **Q.   Why didn't you make adjustments to depreciation rates?**

10   **A.**   In the TRO, the FCC first states that it rejects the ILEC proposals to require the

11   use of financial depreciation rates in TELRIC studies. TRO, ¶688. The FCC then

12   clarifies its rules with respect to the rate at which an asset is depreciated over its

13   useful life by saying that under the "economic depreciation" requirement, a

14   carrier may accelerate recovery of the initial capital outlay for an asset over its

15   useful life to reflect any anticipated decline in its value. *Id.* at ¶690. The FCC

16   further points out that a number of issues would first have to be resolved prior to

17   implementing such a proposal including how to measure the anticipated decline

18   in value, how UNE prices should be structured to reflect decreases in

19   depreciation over time and whether levelizing depreciation rates over time as

1   cost models currently do diminishes the effectiveness or eliminates the intended

2   effect of the acceleration. TRO at ¶691. Plainly, the clarification does not require

3   the Commission to change the depreciation rates used in the calculation of

4   TELRIC. In addition, Staff has a number of questions about whether Verizon's

5   asset lives and depreciation rates should first be updated, to which investments

6   (i.e. new vs. embedded) the clarified rule would apply , and how the UNE cost

7   models can be modified to apply any accelerated method.

8

9   **COST MODEL RESULTS AND DEAVERAGING PROPOSALS**

10 **Q.   What network element costs did you estimate using the HAI model?**

11 A.   I estimate the costs for the following network elements, which are set forth in

12   Attachment A of the Third Supplemental Order in this docket:

13   2 and 4-wire analog loops

14   2-wire non-loaded loops

15   Sub-loops

16   NID

17   Analog Port w/local switching

18

1 **Q.** **How does Staff propose that wirecenter costs be deaveraged into zones?**

2 A. Staff proposes to continue using the five zone method that the Commission

3   adopted in Phase 3 of Docket UT-960369. In the testimony filed last June, Staff

4   used an AT&T optimization program to develop zone costs. Since that time,

5   Staff has developed its own optimization based minimizing the sum of squared

6   error. Supporting testimony for the new optimization program will be provided

7   by staff witness Dr. Blackmon in the Qwest deaveraging testimony due February

8   7, 2004. The program used to develop the zones is included in Ex._TLS-7, the

9   Staff revised workpapers exhibit.

10

11 **Q.** **What are the proposed statewide average and zone rates for 2-wire analog**

12   **loops?**

13 A. The deaveraged zone loop rates for Verizon, are as follows:

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Verizon	$11.41	$18.38	$39.44	$80.77	$157.69

16   Exhibit__(TLS-9) shows the wirecenter assignments to each zone. The statewide

17   average 2-wire analog loop costs is estimated to be $16.30 for Verizon. If the cost

18   of equity is increased by one percent, the statewide average loop rate would

19   increase to $16.75, and if the cost of equity is increased two percent, the statewide

1		average loop rate would increase to $17.20. The supporting calculations are
2		found in file Vz_calcs_rev.xls under tabs "ave.loop cost" and "5_zones" in the
3		staff workpapers CD-ROM.
4		
5	**Q.**	**What are your proposed zone rates for 4-wire analog loops?**
6	A.	I developed the 4-wire loop rates using the 1.50 factor for Verizon that the
7		Commission ordered in Docket UT-960369, which are as follows:

8

	Zone 1	Zone 2	Zone 3	Zone4	Zone 5
9 Verizon	$17.11	$27.57	$59.16	$121.15	$236.53

10

11 **Q.** **What rates do you propose for non-loaded loops?**

12 A. The non-loaded loop rates are shown as follows:

13

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
14 Verizon	$6.43	$12.74	$31.11	$65.40	$134.23

15 The supporting calculations are found in file Vz_calcs_rev.xls under tab

16 "NL_loops" in the staff workpapers CD-ROM.

17

18 **Q.** **What ratios do you propose for sub-loop elements?**

19 A. The Verizon feeder and distribution ratios are shown as follows:

1   **Verizon**

2   Zone 1   Zone 2   Zone 3   Zone 4   Zone 5

3   Feeder   .379   .341   .403   .477   .565

4   Distribution .621   .659   .597   .523   .435

5   The supporting calculations are found in file Vz_calcs_rev.xls under tab

6   "subloops" in the staff workpapers CD-ROM.

7

8   Q.   **What rates do you propose for ports with local switching?**

9   A.   The proposed rates for ports including flat-rated local switching are as follows:

10   Zone 1   Zone 2   Zone 3   Zone 4   Zone 5

11   Verizon $2.86 $3.43 $5.20 $10.75 $9.39

12

13   The tariffed port rate is currently $1.34 for both Qwest and Verizon. The reason

14   for the increase in the port rate between this study and prior studies is that flat-

15   rated usage is now included in the port rate in the HAI 5.3 model. This change to

16   the model is consistent with prior Staff testimony in the pricing phase of the

17   earlier generic proceeding and is consistent with the Commission's Seventeenth

18   Supplemental Order in Docket UT-960369 et al., where the Commission stated:

19   "The Commission prefers a capacity-charge concept because it better reflects the

1   cost structure of the telecommunications network." *In the Matter of the Pricing*

2   *Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and*

3   *Resale*, Docket Nos. UT-960369 et al., Eighth Supplemental Order, at 5 (Aug. 30,

4   1999). Staff recommends the Commission adopt the port charges that include a

5   flat-rated usage charge. In addition, as can be seen from the rate spread between

6   zones, there are material differences in costs between zones. Therefore, I also

7   propose that the combined port and switching rate element be deaveraged into

8   five zones. The supporting calculations are found in file Vz_calcs_rev.xls under

9   tab "port_sw_cost" in the staff workpapers CD-ROM.

10

11   **Q.   What rates do you propose for the NID?**

12   A.   The monthly rate for the NID is $.40 for Verizon. The supporting calculations are

13   found in file Vz_calcs_rev.xls under tab "NID" in the staff workpapers CD-ROM.

14

15   ~~Q.   Is Staff also proposing additional wirecenter deaveraging?~~

16   ~~A.   Yes, Staff is proposing that certain wirecenters exhibiting a strong core-fringe~~

17   ~~cost relationship be further deaveraged into a core and fringe zone scheme rather~~

18   ~~than the entire wirecenter being assigned to a single zone. The genesis for this~~

19   ~~proposal is a Petition that was filed with the WUTC by Fairpoint~~

1   Communications on September 4, 2001 (UT-011220-P) petitioning the

2   Commission to change the zone classifications for certain wirecenters. The

3   petition identified nine Qwest wirecenters that were characterized as large,

4   exceeding 100 square miles, with dense urban cores having sufficient access lines

5   to qualify for inclusion in a less costly density zone. The wirecenters identified

6   in the petition are Aberdeen, Bellingham, Lacey, Moses Lake, Olympia, Pasco,

7   Port Angeles, Walla Walla, and Yakima. While the petition was withdrawn

8   shortly after it was filed and Fairpoint has since ceased doing business in

9   Washington, the issue raised in the petition is important for competition in

10   Washington and the Commission should consider it in this proceeding.

11

12   **Q.   What was the issue raised by Fairpoint's petition?**

13   A.   CLECs that operate in areas outside the high-density Seattle-Tacoma

14   metropolitan area pay higher unbundled loop rates because the wirecenters are

15   classified in higher cost density zones. There are a number of wirecenters

16   serving mid-size cities like Olympia, Pasco, and Port Angeles where the

17   population size and density are such that loop costs should be low enough to

18   allow the CLEC to compete in the city. However, the service area of the

19   wirecenters serving these cities also serves a large rural area such that the

1   average loop cost in the wirecenter results in a zone 4 or 5 classification, which

2   are the two highest cost zones in the state. This makes it uneconomic for the

3   CLEC to operate in the lower cost, denser areas in the cities. Staff is concerned

4   with the inability of CLECs to compete in areas where population size and

5   density should allow them to operate economically because meaningful

6   competition will not occur in these areas of the state where market entry is

7   justified economically. In order to address this concern, Staff is proposes that

8   certain wirecenters be disaggregated into core and fringe zones.

9

10   Q.   How do you propose the Commission determine the core and fringe zone

11   boundaries?

12   A.   The Commission should determine the core area as the area defined by the city

13   limits of the city contained in the wirecenter and the fringe area as the area

14   outside the city limits but within the wirecenter serving area.

15

16   Q.   How did you separate wirecenter costs into the core and fringe zones?

17   A.   The HAI model produces cost output disaggregated to the cluster level. The

18   cluster data represent serving areas for groups of customer locations, and the

19   clusters are identified by the census block groups (CBGs) in which they are

1   ~~located. The loop cost outputs by clusters are first identified from the HAI 5.2(a)[1]~~

2   ~~model workfile. The cluster loop cost data are then separated between clusters~~

3   ~~contained inside, outside, and spanning the city limits, then reaggregated to~~

4   ~~develop loop costs for serving within the city limits versus outside the city limits.~~

5   ~~The core and fringe area costs were then determined for Qwest and Verizon~~

6   ~~wirecenters, and Staff selected wirecenters that exhibited a strong difference~~

7   ~~between core and fringe area costs for disaggregation. For Qwest, 15 wirecenters~~

8   ~~covering 13 cities qualified for inclusion while Verizon had none. The Qwest~~

9   ~~wirecenters that qualified for further deaveraging were placed into the~~

10   ~~appropriate zones by separately including the core and fringe costs and lines in~~

11   ~~the staff's zone optimizer program. Further testimony on the core-fringe~~

12   ~~deaveraging proposal will be provided on February 7, 2004.~~

13

14   ~~**Q.**   **How did you identify the location of the loop cost cluster data relative to the**~~

15   ~~**city limits?**~~

16   ~~A.   Staff used the ArcView 3.2a GIS software program along with Bureau of Census~~

17   ~~data for census block groups (CBGs) and Washington State Department of~~

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[1] The HAI 5.3 does not include an updated cluster module for determining cluster loop costs so cluster investment values were calculated using HAI 5.2 cluster module. The calculations are shown in Exhibit TLS-3, the Staff Workpapers.

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1   Transportation data on city boundaries and roads to accurately locate city limits,

2   census block groups and cluster data relative to one another. The CBG data layer

3   is overlaid with the city boundary data layer to identify CBGs relative to the city

4   limits. The cluster data centroids and cluster areas are projected and overlaid on

5   the city and CBG data to determine whether they are correctly located and to

6   visually determine whether clusters are contained wholly or partially within city

7   limits. The software, files and data used for the analysis are provided on the

8   Staff Workpapers CD-ROM. Maps showing the city limits, CBGs and cluster

9   centroids for the selected wirecenters are shown in the file "MAPS.pdf" in the

10   Staff workpapers.

11

12   **Q.   Were any of the cluster data you examined found to be incorrectly located?**

13   A.   Yes. Each data cluster position is located by its bearing and distance from the

14   wirecenter. After determining the necessary adjustments to properly project the

15   clusters, the location of the cluster centroid was checked to see if it was located in

16   the CBG it is assigned to. For each wirecenter where core-fringe deaveraging is

17   being proposed, I checked the cluster locations to see if they were located within

18   its assigned CBG. I found two kinds of location errors associated with data

19   clusters that were not correctly located. The first is rotation error. Rotation

1   ~~errors are noted when a cluster is not correctly located but it can be moved to its~~

2   ~~proper location by changing only the bearing angle. This type of error does not~~

3   ~~cause any change in cost if it is corrected. The second type of error occurs when~~

4   ~~the cluster cannot be properly located unless the radial distance between the~~

5   ~~wirecenter and the cluster is changed. If the radial distance of a cluster needs to~~

6   ~~be changed to properly locate the cluster, the cost of the cluster will also be~~

7   ~~higher or lower depending on whether the correct radial distance is closer or~~

8   ~~farther from the wirecenter. With the exception of the Aberdeen wirecenter,~~

9   ~~there were very few errors in the clusters involving changes to radial distance.~~

10   ~~The Aberdeen wirecenter had 16 clusters that were incorrectly located such that~~

11   ~~the radial distance had to be adjusted. In order to correct the radial distance~~

12   ~~measurement, I used the software program measuring tool to measure the~~

13   ~~correct distance between the wirecenter and the CBG associated with the cluster.~~

14   ~~The cluster data base file was then updated with the revised radial distances to~~

15   ~~calculate corrected cost estimates.~~

16

1 **Q.** **Do you have any further testimony at this time?**

2 A.   No.