OAH Docket No. 12-2500-14490-2
PUC Docket No. P-421/C1-01-1375

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE MINNESOTA PUBLIC UTILITIES COMMISSION

In the Matter of the Commission's
Review and Investigation
Of Qwest's Unbundled Network
Element (UNE) Prices

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FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION

This matter came on for hearing on May 13-17, 2002 and May 20-23, 2002, before Administrative Law Judge Steve M. Mihalchick in the Large Hearing Room of the Minnesota Public Utilities Commission, 200 Metro Square Building, 121 East 7th Place, St. Paul, Minnesota. The record was closed July 5, 2002, upon receipt of post-hearing reply briefs.

John Devaney and Kelly Cameron, Perkins Coie, 607 14th Street NW, Washington, D.C. 20005; and Jason Topp, Qwest Corporation, 200 S. Fifth Street, Room 395, Minneapolis, Minnesota 55402, appeared on behalf of Qwest Corporation (Qwest).

Gregory R. Merz, Gray, Plant, Mooty, Mooty & Bennett, 3400 City Center, 33 S. Sixth St., Minneapolis, Minnesota 55402, appeared for AT&T Communications of the Midwest, Inc. (AT&T) and WorldCom, Inc. (WorldCom). Lesley James Lehr, 638 Summit Avenue, St. Paul, Minnesota 55105, also appeared for WorldCom.

Linda Jensen and Steve Alpert, Assistant Attorney General, Minnesota Attorney General's Office, 525 Park Street, Suite 200, St. Paul, Minnesota 55103, appeared for the Department of Commerce (the Department or DOC).

Michael Bradley and Cecilia Ray, Moss & Barnett, 90 S. Seventh St., Suite 4800, Minneapolis, Minnesota 55402, appeared for Ace Telephone Association; BEVCOMM, Inc.; Hutchinson Telecommunications, Inc.; Mainstreet Communications, Inc.; NorthStar Access, LLC; Otter Tail TelCom, LLC; Paul Bunyan Rural Telephone Cooperative; Tekstar Communications, Inc.; Unitel Communications; U.S. Link, Inc.; and VAL-Ed Joint Venture, LLP, d/b/a 702 Communications (collectively the CLEC Coalition).

K. Megan Doberneck, 7901 Lowry Boulevard, Denver, Colorado 80230, appeared for Covad Communications.

Dan Lipschultz, 400 South Highway 169, Suite 750, Minneapolis, Minnesota 55426, appeared for McLeod USA.

Michael Hoff and Joy Gullikson, Director of External Relations, 10405 Sixth Avenue North, Plymouth, Minnesota 55441, appeared for Onvoy, Inc. (Onvoy).

J. Jeffrey Oxley, 730 Second Avenue South, Suite 1200, Minneapolis, Minnesota 55402, appeared for Eschelon Telecom, Inc.

Marc Fournier appeared on behalf of the staff of the Minnesota Public Utilities Commission.

NOTICE

Notice is hereby given that pursuant to Minn. Stat. § 14.61, and the Rules of Practice of the Public Utilities Commission and the Office of Administrative Hearings, exceptions to this report, if any, by any party adversely affected must be filed by August 12, 2002, and replies to exceptions must be filed by August 19, 2002.

Questions regarding the filing of exceptions should be directed to Dr. Burl Haar, Executive Secretary, Minnesota Public Utilities Commission, Suite 350 Metro Square, 121 Seventh Place East, St. Paul, MN 55101. Exceptions must be specific and stated and numbered separately. Oral argument before a majority of the Commission will be permitted to all parties adversely affected by the Recommendation who request such argument. Such request must accompany the filed exceptions or reply, and an original and 14 copies of each document should be filed with the Commission.

The Minnesota Public Utilities Commission will make the final determination of the matter after the expiration of the period for filing exceptions as set forth above, or after oral argument, if such is requested and had in the matter.

Further notice is hereby given that the Commission may, at its own discretion, accept or reject the Administrative Law Judge's Recommendation and that said Recommendation has no legal effect unless expressly adopted by the Commission as its final order.

STATEMENT OF ISSUES

What prices are just and reasonable for Qwest's unbundled network elements (UNEs)?

Based upon all the proceedings herein, the Administrative Law Judges makes the following:

FINDINGS OF FACT AND CONCLUSIONS OF LAW

Statutory Framework—Jurisdiction and Authority

1. The Telecommunications Act of 1996 conditions entry by a Bell Operating Company (BOC) into the provision of in-region interLATA services upon compliance with certain provisions of 47 U.S.C. § 271. BOCs must apply to the Federal

Communications Commission (FCC) for authorization to provide interLATA services originating in any in-region state. The FCC must issue a written determination on each application no later than 90 days after receiving such application.[1]

2. Section 271 requires the FCC to make various findings before approving BOC entry. In order for the FCC to approve a BOC's application to provide in-region interLATA services, a BOC must first demonstrate, with respect to each state for which it seeks authorization, that it satisfies the requirements of either § 271(c)(1)(A) (Track A) or § 271(c)(1)(B) (Track B).[2] The BOC must also show that (1) it has "fully implemented the competitive checklist" contained in § 271(c)(2)(B); (2) the requested authorization will be carried out in accordance with the requirements of § 272; and (3) the BOC's entry into the in-region interLATA market is "consistent with the public interest, convenience, and necessity." [3] The statute specifies that, unless the FCC finds that these criteria have been satisfied, the FCC shall not approve the requested authorization.

3. Checklist item 2 of § 271 states that a BOC must provide nondiscriminatory access to network elements in accordance with sections 251(c)(3) and 251(d)(1) of the Act.[4] Section 251(c)(3) requires incumbent LECs to provide nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory.[5] Section 252(d)(1) requires that a state commission's determination of the just and reasonable rates for network elements shall be based on the cost of providing the network elements, shall be nondiscriminatory, and may include a reasonable profit.[6] Pursuant to this statutory mandate, the FCC has determined that prices for UNEs must be based on the total element long run incremental cost (TELRIC) of providing those elements.[7]

4. The FCC must consult with the relevant state commission to verify whether the BOC has opened its local markets to competition in compliance with the requirements of § 271(c). State commissions have the responsibility under § 271(d)(2)(B) to advise the FCC whether to grant or deny the BOC's request to provide interLATA service within that state. The FCC has defined the state commission's primary goal as development of a comprehensive factual record concerning BOC compliance with the requirements of section 271 and the status of local competition.[8] With regard to a state commission's pricing determinations, the FCC has held that it will not conduct a *de novo* review of a state's pricing determinations and will reject a BOC's

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[1] 47 U.S.C. § 271, § 271(d)(1)-(3).
[2] *Id.* at § 271(d)(3)(A).
[3] *Id.* at § 271(d)(3)(C).
[4] 47 U.S.C. § 271 (c)(2)(B)(ii)
[5] *Id.* § 251(c)(3).
[6] 47 U.S.C. § 252(d)(1).
[7] *Local Competition First Report and Order*, 11 FCC Rcd at 15844-46 ¶¶ 674-79; 47 C.F.R. §§ 51.501 *et. seq.*
[8] *See Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, to Provide In-Region, InterLATA Services in Michigan*, 12 FCC Rcd 20543 ¶ 30 (1997) (Ameritech Michigan Order).

application on this basis "only if basic TELRIC principles are violated or the state commission makes clear errors in factual findings on matters so substantial that the end result falls outside the range that the reasonable application of TELRIC principles would produce."[9]

Procedural Background

5. On December 2, 1996, the Commission approved the first arbitrated interconnection agreement between AT&T and U S WEST Communications, Inc., Qwest's predecessor. In that order the Commission also commenced a generic cost docket to establish the prices at which U S WEST would provide interconnection, collocation, and unbundled network elements.[10] The matter was referred to the Office of Administrative Hearings for a contested case hearing to investigate the costs of UNEs, unbundling, collocation, interconnection, access to operational support systems (OSS), call completion services, directory assistance, interim number portability, and other related issues.[11]

6. On November 17, 1998, the ALJ issued a Report in the Generic Cost Case recommending use of the HAI model to estimate US WEST's UNE costs, with a number of modifications to engineering and expense inputs; use of the MCI/AT&T Collocation Cost Model to estimate collocation costs, with a modification to the overhead expense factor; and use of the MCI/AT&T non-recurring cost model (NRCM), again with certain modifications.[12] The Commission adopted the Findings, Conclusions, and Recommendations in the ALJ's Report and ordered that a compliance filing be made within 30 days to set forth the resulting rates.[13]

7. On September 11, 2001, the Commission issued a Notice and Order for Hearing in connection with Qwest's compliance with § 271 of the 1996 Act.[14] The Commission referred the matter to the Office of Administrative Hearings for contested case proceedings.

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[9] *Bell Atlantic New York Order,* 15 FCC Rcd at 4084, ¶ 244.

[10] Docket Nos. P-442, 421/M-855, P-5321, 421/M-909, and P-3167, 421/M-729, ORDER RESOLVING ARBITRATION ISSUES AND INITIATING A U S WEST COST PROCEEDING (Dec. 2, 1996).

[11] *In the Matter of a Generic Investigation of U S WEST Communications, Inc.'s Cost of Providing Interconnection and Unbundled Elements*, Docket No. P-442, 5231, 3167, 466, 421/C1-96-1540, NOTICE AND ORDER FOR HEARING (Mar. 12, 1997).

[12] *In the Matter of a Generic Investigation of US WEST Communications, Inc.'s Cost of Providing Interconnection and Unbundled Network Elements*, OAH Docket No. 12-2500-10956-2 (Nov. 17, 1998) (ALJ Report in Generic Cost Case).

[13] *See In the Matter of a Generic Investigation of U S WEST Communications, Inc.'s Cost of Providing Interconnection and Unbundled Network Elements,* Docket Nos. P-442, 421/M-855, P-5321, 421/M-909, and P-3167, 421/M-729, ORDER RESOLVING COST METHODOLOGY, REQUIRING COMPLIANCE FILING, AND INITIATING DEAVERAGING PROCEEDING (May 3, 1999). *See also id.*, ORDER GRANTING RECONSIDERATION, SETTING PRICES AND ORDERING COMPLIANCE FILING (Mar. 15, 2000) (setting prices for a variety of elements not addressed by the models previously adopted); Ex. 252 (Compliance Filing dated June 13, 2000).

[14] *In the Matter of an Investigation Regarding Qwest's Compliance with Section 271 of the Telecommunications Act of 1996 with Respect to the Provision of InterLATA Services Originating in Minnesota*, Docket No. P-421/C1-96-1114, NOTICE AND ORDER FOR HEARING (Sept. 11, 2001).

8. This matter was divided into several specialized dockets; each docket addresses issues arising from a different aspect of the Act's standards for § 271 approval. This docket, No. 1375, is a review of unbundled network elements (UNE) prices, including determination of costing numbers for the items not currently included in interconnection agreements via a TELRIC cost proceeding.[15]

9. On February 13, 2002, the Commission referred to the Office of Administrative Hearings the investigation of prices of the UNEs making up the UNE Platform--the loop, local switching, and shared transport--based on its belief that the previously set prices for these elements may not reflect recent market changes and model improvements. In addition, the Commission sought review of the prices set for unbundled high-capacity loops (DS1, HDSL, and ADSL loops).[16] To promote efficiency, the Commission later urged the OAH to consolidate the investigation of UNE-P prices with the investigation of previously unpriced elements underway in the § 271 cost docket. At the same time, the Commission expressly denied Qwest's request to reconsider all prices for collocation and nonrecurring costs set in the Generic Cost Case.[17] The Commission declined to reconsider the rates previously established for collocation and nonrecurring charges because of the importance of meeting the § 271 filing schedule set by Qwest and because it did not recognize any urgency in re-examining those rates.[18] The OAH consequently merged the 1916 docket into this docket, as requested by the Commission.[19]

Legal Standards and Burden of Proof

10. The FCC has defined the forward-looking economic cost of an element as the sum of TELRIC plus a reasonable allocation of forward-looking common costs.[20] The TELRIC of an element is to be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the incumbent LEC's wire centers.[21] Embedded costs, which are the costs that incumbent LECs have incurred in the past to build their networks, shall not be considered in calculating the forward-looking cost of an element.[22] An incumbent LEC must prove to the state commission that the rates for each element it offers do not exceed the forward-looking economic cost per unit of providing the element, using a cost study that complies with the methodology set forth in

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[15] *Id.*, NOTICE AND ORDER FOR HEARING at 5, 10. The Second UNE Pricing Prehearing Order (Jan. 24, 2002), contains a pricing list that allowed the parties to file evidence as to the application and/or pricing of each listed element.

[16] *In the Matter of AT&T and WorldCom's Request for a Commission Investigation of Qwest's Pricing of Certain Unbundled Network Elements*, Docket No. P-442, 421,3021/M-01-1916, NOTICE AND ORDER FOR HEARING (Feb. 13, 2002).

[17] *Id.*, ORDER URGING CONSOLIDATION OF THE UNE-P DOCKET WITH THE 271 COST DOCKET (Mar. 18, 2002).

[18] *Id.* at 5.

[19] Twelfth Prehearing Order ¶ 15 (Mar. 12, 2002). The 1916 Docket no longer exists as a docket separate from this one.

[20] 47 C.F.R. § 51.505(a).

[21] *Id.* § 51.505(b)(1).

[22] *Id.* § 51.505(d).

47 C.F.R. §§ 51.505 and 51.511.[23] The United States Supreme Court recently upheld the FCC's forward-looking pricing methodology in determining the cost of UNEs.[24]

11. In addition, Minn. Stat. § 237.12, subd. 4, similarly requires that prices for interconnection and network elements for telephone companies with more than 50,000 access lines be based on:

> A forward-looking economic cost methodology which shall include, but is not limited to, consideration of the following:
>
> (1) the use of the most efficient telecommunications technology currently available and the least cost network configuration, given the existing location of the incumbent telephone company's wire centers;
>
> (2) forward-looking depreciation rates;
>
> (3) a reasonable allocation of forward-looking joint and common costs;
>
> (4) forward-looking cost of capital; and
>
> (5) Minnesota tax rates, and where applicable, Minnesota facility placement requirements, Minnesota topography, and Minnesota climate.

12. Qwest at all times bears the burden of proof of compliance with § 271, even if no party challenges its compliance with a particular requirement.25 The standard of proof is the preponderance of the evidence, meaning "the greater weight of evidence, evidence which is more convincing than the evidence which is offered in opposition to it."26

QWEST'S LOOPMOD MODEL.

13. LoopMod replaces the RLCAP model evaluated in the first cost docket. The model has been improved in a number of ways and has moved toward a TELRIC-based methodology to develop the investment for loops. The model calculates investment based upon standard engineering designs for loop networks and the current vendor prices Qwest pays for loop-related facilities in Minnesota. It relies on Minnesota data for line counts and distribution areas ("DAs").

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[23] *Id.* § 51.505(e).
[24] *Verizon Communications, Inc. v. FCC*, 122 S.Ct. 1646 (May 13, 2002).
[25] *In the Matter of the Application of Verizon New England, Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions) and Verizon Global Networks, Inc., for Authorization to Provide In-Region, InterLATA Services in Massachusetts*, 16 FCC Rcd 8988, 8994 ¶ 11 (2001) (Verizon Massachusetts Order).
[26] Minn. R. 1400.7300, subp. 5; Ameritech Michigan Order ¶¶ 45-46.

14. In preparing LoopMod for use in this case, Qwest addressed criticisms of RLCAP in the Generic Cost Case (Generic Cost Case). Qwest witness Richard Buckley described some of the changes as follows:

> LoopMod does not use embedded costs to develop investment;
>
> ICM integrates LoopMod and Qwest's other cost modules to ensure that changes in other cost modules flow through to LoopMod;
>
> The DAs in LoopMod incorporate the densities and distances in actual Minnesota DAs, resulting in distribution investment that is state-specific;
>
> LoopMod uses new data relating to concentrations of Minnesota customers, thereby increasing the accuracy of the model's feeder designs and permitting results diverged at the wire-center level;
>
> LoopMod analyzes each cluster of customers in Minnesota to determine those that should be served by digital loop carrier ("DLC") and selects appropriately sized DLC systems based on demand and application of a system-sizing factor; and
>
> Instead of using planning periods to calculate the amount of feeder plant to build, LoopMod uses cable and DLC sizing factors and applies those factors to demand assumptions to determine the appropriate amount of feeder.[27]

15. LoopMod combines distribution and feeder investment to determine the total investment for outside plant.[28] In the feeder network, LoopMod uses a mix of copper and fiber facilities. User-adjustable inputs establish the most economic, cost-efficient breakpoints between fiber and copper. LoopMod analyzes each route in each Minnesota wire center to determine the demand and the distance from the demand to the central office. Using this Minnesota-specific information, the model sizes the electronics and cables needed to serve demand. By contrast, RLCAP used average values instead of values specifically tailored to individual wire centers.[29]

16. In the distribution network, LoopMod, like RLCAP, still uses five designs or density groups ("DGs") to reflect industry-accepted architectures. LoopMod maps each Minnesota DA to one of the DG designs based on the area of the DA and the size and type of terminals in it. LoopMod also uses the densities and sizes of actual Minnesota DAs to determine the distribution cable lengths for the DAs. To produce investment specific to Minnesota DAs, LoopMod weights the DAs based on their proportionate share of total working lines in the state.

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[27] Ex. 215 (Buckley Direct) at 13-17.
[28] Ex. 215 (Buckley Direct) at 7-9.
[29] Ex. 215 (Buckley Direct) at 6.

17. While many improvements have been made in LoopMod, many of the concerns with the former RLCAP model remain in LoopMod, and LoopMod tends to systematically overestimate Qwest's loop costs. The problems include oversized feeder and distribution networks, lack of support for the engineering assumptions used for various density groups except references to employee opinion, oversized drop lengths, placement percentages based solely on employee opinion, understated sharing percentages, and failure to use any integrated DLC.

18. The loop costs estimated by LoopMod are approximately $75 per line more than Qwest's embedded loop costs. Even use of Commission-ordered inputs only lowers the resulting estimate produced by LoopMod to just a few dollars less than Qwest's embedded investment.[30] This demonstrates the unreliability of results produced by LoopMod.

19. Because LoopMod continues to suffer from many defects, including those previously determined by the Commission to be unacceptable, the Department recommends that LoopMod not be used as a model in this case unless no other model is available to price a particular element. The Administrative Law Judges agree.

THE HAI MODEL, VERSION 5.2a.

Overview

20. The HAI Model, Version 5.2a, is the most recent version of an economic costing model developed at the request of AT&T and WorldCom to be used to estimate the costs that an efficient firm would incur to provide unbundled network elements, universal service and interconnection services. The model estimates the costs that an efficient carrier would incur to provide narrowband, voice-grade telephone service in a manner that is also capable of providing access to advanced services. The model is a "bottom up" model, meaning that it designs a network based on detailed and granular information as to demand, network component capabilities and costs, and expenses.[31] Consistent with TELRIC principles, the model determines costs to serve current demand, as reflected by the most up-to-date, publicly available line counts.[32] Also consistent with TELRIC principles, the model assumes the use of forward-looking network architecture currently being deployed today.[33] The model relies on publicly available information and subject matter expert opinion regarding the availability, capacities, and costs of equipment available in today's marketplace. The model is easy to use and has over 1,400 user-adjustable inputs that make the model flexible and open to review and analysis. The HAI Inputs Portfolio and HAI Model Description provide thorough documentation and support for the model inputs and detailed description of model methodologies and assumptions.[34]

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[30] Ex. 215 (Buckley Direct) at 11.
[31] Ex. 200 (Denney Direct) at 13-14.
[32] Ex. 201 (Denney Rebuttal) at 4–5.
[33] *Id.* at 14–15.
[34] Ex. 200 (Denney Direct) at 15–17, Exs. DKD-2, DKD-3.

21. HAI 5.2a uses geocoded data, where available, that allows customers to be located, for modeling purposes, within 50 feet of their actual locations. In Minnesota, the geocode success rate is approximately 76% of all customer locations for the state as a whole. Thus, the model locates the great majority of Qwest customers using highly accurate geocoded data. For those customers for whom geocoded data is not available, HAI 5.2a uses a road surrogate location method that places customers uniformly along roads in the particular census blocks where they are located. This customer location data, both for geocoded and surrogate locations, is then used to develop clusters of customers that can be served together in an efficiently engineered telephone plant serving area. The clusters are targeted to not exceed 1,800 lines per cluster, and no point in the cluster may be more than two miles from its nearest neighbor. Once the clusters have been identified, the process incorporates state-specific terrain characteristics that increase installation costs based on actual conditions that a carrier would face in placing facilities.[35]

22. The costs produced by the model are based not only on actual customer locations, line counts, and geography, they also incorporate Commission-ordered depreciation lives, a Minnesota-specific labor factor, and Minnesota tax rates. These various state-specific factors make HAI 5.2a an appropriate model for determining costs to provide service to Minnesota customers.

23. The HAI Model has received extensive scrutiny in proceedings before the FCC and before various state commissions, including several previous proceedings before the Minnesota Public Utilities Commission. The model developers have continued to refine and improve the model in response to comments and criticism received in these proceedings.[36] AT&T and WorldCom cite the following as some of the improvements:

> A right angled Minimum Spanning Tree function to calculate distribution distances necessary to connect customers within each of the distribution clusters;
>
> New copper cable sizing inputs that do not vary with density zone, in keeping with fill factor inputs recently prescribed by various state commissions and in recognition of the fact that modularity in cable size leads to effective fill factors that can be significantly less than the corresponding input values;
>
> Modifications to the switching and interoffice module which allow for specification of percentages of various traffic types by switch size and which permit specification of different traffic patterns that may exist where different switch sizes are typically used, such as different breakdown between intra-switch and inter-switch traffic in rural, suburban and urban areas;

[35] *Id.* at 14-23.
[36] *Id.* at 20–21.

Incorporation into the HAI 5.2a switching module the investment values for Bell Operating Company and ICO switches adopted by the FCC in the USF Inputs Order;

Modification to the transmission terminal equipment calculation (per wire center) to ensure that digital cross connect (DCS) investment at tandem locations is properly assigned per line;

Modification to the transmission terminal equipment investment to ensure sufficient DCS investment in areas where multiple SONET rings occupy a single physical ring arrangement; and

Adjustments to the transmission equipment investment inputs to reflect numbers filed by Bell South in the model inputs proceeding.

24. In 1997, engineers validated HAI's engineering inputs by contacting vendors and conducting field surveys. AT&T and WorldCom witness Fassett did so in Minnesota that year. They have not done any further local verification since.[37] Qwest argues that this failure reflects a fundamental failure to keep HAI current and a desire to drive down costs regardless of the evidence. It certainly would have been better if AT&T and WorldCom had done some recent verification. But few existing installations in Minnesota have changed and prices for most network components have gone down, so Qwest's claim of overstating costs is unfounded.

25. Qwest contends that the sponsors of the HAI Model have selected inputs for the purpose of driving down costs. The HAI Model is clearly directed at determining "least-cost" as required for TELRIC pricing, but Qwest's contention is a gross over-statement. Contrary to Qwest's claims, the process of validating and modifying model inputs has been a continuing one, with some input changes having the effect of increasing costs while others have had the effect of decreasing costs.[38]

26. The Department recommends using the HAI 5.2a Model because its earlier version was thoroughly reviewed by all parties and selected by the Commission to create the UNE prices, and for reasons of policy and accuracy.[39] The Department also recommended the model in the Universal Service cost case.[40]

27. The HAI 5.2a Model meets appropriate economic cost modeling requirements, TELRIC principles, and state and federal law. It should be used in Minnesota for all elements for which is produces prices. Except as qualified below, the Commission should adopt the inputs proposed by AT&T and WorldCom with the changes recommended by the Department, including those not commented upon in this report.

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[37] Tr. 1:261.
[38] Ex. 204 (Fassett Direct) at 17-18.
[39] Ex. 284 (Fagerlund Reply) at 12-13.
[40] Ex. 280 (Legursky Reply) at 9, Ex. JWL 9.

Distribution Plant

Right Angle MST Methodology

28. One change made in this version of the HAI Model was the development of an optional right angled Minimum Spanning Tree ("MST") function to calculate distribution route distances. The right angled MST calculates the distances necessary to connect customer locations using a mathematical graph theory that determines distances as if locations within a distribution cluster were connected by "strands" following horizontal and vertical paths in a Cartesian coordinate system. The calculation of the strand distance resulting from the use of the right angle MST function represents the sum of distribution and connecting cable components necessary to provide service to all of the customer locations in any given distribution area.[41]

29. The right angled MST function results in a conservatively high estimate of distribution distance because it does not measure the distance directly to the customers, it goes "around the corner," so to speak. It is the same as a right triangle--the length of the two sides added together is greater than the length of the hypotenuse.[42]

30. In the *USF Inputs Order*, the FCC adopted a route optimizing function that selected the lower of the estimate produced by the MST algorithm or an algorithm similar to the methodology used by early versions of the HAI Model. The FCC was concerned about overstating distribution distances in higher density areas and stated, "we believe that any choice in maximum density clusters in which the minimum spanning tree algorithm is not applied may result in an arbitrary overestimate of costs for some clusters."[43]

31. The Department recommends that HAI 5.2a's MST function be turned off because the MST methodology was "rejected" by the Commission in the Generic Cost Case, but mostly because it shifts cost to the least dense zones from the most dense zones. The Department claims that AT&T and WorldCom and MECC only support this "unproven adjustment" because it lowers the cost in the high density clusters where the majority of their business is located.[44]

32. In the Generic Cost Case, US WEST wanted the HAI model to use the "greater of" an MST calculation or it regular calculation. That was appropriately rejected because it would always calculate too much distribution. In the USF Inputs Order just discussed, the FCC adopted a "lesser of" method to ensure against overstatement in high density areas. Here, AT&T, WorldCom, and MECC do not advocate either kind of one-sided use of the right angled MST. Rather, the model applies the same

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[41] Ex. 200 (Denney Direct) at 25–27.
[42] Ex. 200(Denney Direct) at 26; Ex. 202 (Denney Surrebuttal) at 5–7.
[43] *In the Matter of Federal-State Joint Board on Universal Service and Forward-Looking Mechanism for High Cost Support for Non-Rural LECs,* CC Docket Nos. 96-45 and 97-160, Tenth Report and Order at ¶ 70 (November 2, 1999) ("*USF Inputs Order*").
[44] Contrary to the Department's premise, MECC has several members that serve rural areas.

methodology to all clusters, producing a consistent, somewhat overstated, calculation of route distances.[45]

33. The shift in costs from urban to rural density zones is a policy concern. It was the opposite concern of the FCC, that distribution was being overstated in higher density zones, that caused it to adopt the "lesser of" methodology. If that methodology were applied here, the shift would be even greater. The right angle MST method makes a reasonable approximation of required distribution,[46] and more properly identifies costs. It should be used regardless of which carriers or customers might benefit.

34. Qwest argues that the MST function should not be used because the right angle MST does not navigate around natural and man-made obstacles.[47] The Colorado Public Utilities Commission agreed with that argument, stating:

> The customer placement based on MST is not representative of the real world considerations that are properly taken into account in a TELRIC study. Despite the scorched node approach, TELRIC does not require ignoring other real world limitations or sources of network placement cost such as buildings, rivers, lakes, etc.[48]

35. With all due respect to Colorado, Qwest's argument is specious. The model is a replacement for hiring many network engineers to design a new telephone network for all of Qwest's territory in Minnesota. It doesn't pull out maps and draw lines. It uses thousands of pieces of available data and mathematical calculations to approximate the observations and calculations the engineers would make. It is not trying to install the cable in straight lines through impassible lakes, buildings, highways, and major rivers. It is estimating how much cable would be needed to connect up the customers in areas that have those obstacles and natural routes, just as in the "real world." Then the cost model can calculate how much that cable would cost. As discussed above, the distribution distances calculated using the right angle MST are conservatively high and provide more than enough cable to be installed along and around any such obstacles. Moreover, as found above, the HAI model incorporates state-specific terrain characteristics that increase installation costs based on actual conditions that a carrier would face in placing facilities. Thus, the model produces a reasonably accurate estimate of the cost of the required cable.

36. The Arizona Corporation Commission recently selected the HAI model over Qwest's LoopMod for determining UNE rates and concluded that the HAI model should be run with the MST function turned on. That Commission rejected Qwest's criticisms and found that the "MST function properly reflects legitimate network design

[45] Ex. 202 (Denney Surrebuttal) at 6.
[46] Tr. 1:94–99.
[47] Ex. 254 (Fitzsimmons Rebuttal) at 17.
[48] *In the Matter of QWEST Corporation's Statement of Generally Available Terms and Conditions*, Docket No. 99A-5775, at 42 (CPUC Dec. 21, 2001).

inputs for modeling distribution plant."[49] That Commission observed that because the HAI model's road surrogate method tends to overstate required distribution cable, turning the MST function on produced more accurate cost estimates.[50]

37. The FCC opted to use an MST function because "[t]he technology assumed in the cost study or model must be the least-cost, most efficient, and reasonable technology for providing the supported services that is currently being deployed."[51] The same standard applies here. For the same reason, the HAI 5.2a model should be run with the right angle MST function turned on.[52]

Distribution To New Customers

38. The HAI distribution clusters are developed using customer location data from 1997. In order to reflect current line counts, new lines added since 1997 are located within the clusters created from the 1997 data.[53]

39. HAI's assumption that new customers will be located within existing clusters produces adequate feeder and distribution because new lines have been added primarily where existing customers are located.[54] It was demonstrated at the hearing that HAI appropriately modeled even new housing developments.[55]

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[49] *In the Matter of the Investigation into Qwest Corporation's Compliance with Certain Wholesale Pricing Requirements for Unbundled Network Elements and Resale Discounts*, Docket No. T-00000A-00-0194, AZ CC (June 12, 2002) at 21.

[50] *Id.* at 21-22.

[51] *Inputs Order* at 69.

[52] Qwest contends that FCC's Tenth Report and Order should not be looked to for guidance in this proceeding. Qwest vastly overstates the FCC's cautions. The FCC statement that its USF cost model "should not be relied upon to set rates for UNEs" arises from the fact that the FCC chose to use a nation-wide set of input values. *USF Inputs Order* at ¶¶ 30-32. Thus, for example, the Synthesis Model does not use Qwest's cost of capital or Minnesota's labor rates. However, the cost model and inputs the FCC chose for USF purposes had to meet the same criteria that the models under review in this proceeding must meet. Both models should determine "forward-looking economic costs" in order to "send the correct signals for entry, investment, and innovation." *Id.* at 1, 5. Both models must "use existing incumbent LEC wire center locations in estimating forward-looking cost." *Id.* at ¶12.
Qwest admits as much when it describes the essential TELRIC characteristics of the cost model the Commission should adopt in this proceeding as follows: "In the FCC's words, the 'essential objective' of TELRIC is 'to determine what it would cost, in today's market, to replace the functions of [a network] asset that make it useful,' while simultaneously taking as given 'the most basic geographical design of the exiting network.' By 'replicat[ing] . . . the conditions of a competitive market,' TELRIC is intended to give CLECs appropriate price signals about when it would be efficient to build their own facilities rather than lease the incumbent's existing capacity." Qwest Brief at 3-4 quoting the FCC's *First Report and Order* at ¶ 679. The Synthesis Model and the FCC's recommended inputs are attempting to accomplish much the same work as the instant proceeding.

[53] Tr. 1:88-89.

[54] Tr. 1:89-90.

[55] Ex. 285.

Adjustment For "Dedicated Idle"

40. The Department, joined by Qwest, recommends that the amount of facilities estimated by HAI 5.2a be increased by 4% to account for "dedicated idle."[56] The dedicated idle adjustment was part of the HAI 5.0a Model approved by the Commission in the Generic Cost Case.

41. "Dedicated idle" are loops that are not currently used, but remain connected from the temporarily unoccupied customer premises to the switch, to provide service to a location, such as a vacant apartment, without having to reconnect the piece-parts of the loop.[57] The Department recommends that the HAI 5.2a Model also include dedicated idle loops because a network with dedicated idle, in addition to spare capacity, provides a superior level of service (i.e., quicker installation of service) accompanied by some additional cost (the idle facilities) offset by some lower expense (avoided reconnecting time). An efficient replacement network would include dedicated idle lines, and making the adjustment recommended by the Department recognizes that cost.

42. AT&T and WorldCom argue that this adjustment is unwarranted and will have the effect of unnecessarily inflating costs because there is already plenty of spare capacity in the model. MECC points out that the FCC considered this subject in its *USF Inputs* Order and concluded it was inappropriate to add costs to serve all possible customer locations, including locations that did not currently receive service.[58] The FCC stated:

> [T]he cost of providing service to all currently served households . . . is consistent with a forward-looking cost model, which is designed to estimate the cost of serving current demand. As noted by AT&T and MCI, adopting housing units as the standard would inflate the cost per line by using the highest possible numerator (all occupied and unoccupied housing units) and dividing by the lowest possible denominator (the number of customers with telephones).[59]

43. The dedicated idle adjustment is appropriate. It is not for predicting future demand. It reflects reality—the way an efficient provider maintains its current network.

Outside Plant Inputs

44. The outside plant assumptions and inputs used by HAI 5.2a reflect years of cost modeling efforts by many subject matter experts with extensive experience in the design, construction, and maintenance of local loop networks.[60]

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[56] Tr. 8:165–66.
[57] Department Brief at 11; Tr. 8:11.
[58] *USF Inputs Order* at ¶54.
[59] *Id.* at ¶ 57.
[60] Ex. 204 (Fassett Direct) at 22.

45. As is true of other aspects of the model, the outside plant inputs have been the subject of extensive scrutiny and criticism in proceedings before the FCC. As a result of that scrutiny, the model inputs have continued to be refined over time. In some cases, additional information caused input changes that resulted in higher costs while some changes resulted in lower costs. The HAI 5.2a inputs are reasonable and generally conservative in comparison to the inputs adopted by the FCC for use with its Synthesis Model.[61] The model inputs reflect the design of an economically efficient, forward-looking network. The model uses inputs for placement costs that are based on real world experience.[62]

Structure Sharing

46. "Structure sharing" concerns the degree to which the telephone company cooperates with other utilities to share the costs of placing outside plant.[63] Because placement costs make up a significant part of the costs of constructing the network, an economically-efficient company has a great incentive to share placement costs whenever possible. It is a significant cost issue in this matter. The evidence presented by AT&T and WorldCom appears to create unreasonably low costs while Qwest's evidence creates unreasonably high costs. Neither is very credible.

47. Part of the difficulty is that the concept of sharing in a "scorched node" environment is subject to many plausible interpretations. The FCC stated one tentative interpretation:

> [A]s part of the logical argument that the entire telephone network is to be rebuilt, it is also necessary to assume that the telephone industry will have at least the same opportunity to share the cost of building plant that existed when the plant was first built. We also note that cable and electric utilities continue to deploy service to new customers and replace existing technologies which provides an opportunity for carriers to share structure.[64]

48. Structure sharing is required by more and more local ordinances, and it is used more and more in new developments. So if everything were scorched, all installation would be done in new developments and other utilities would be participating. In that case, there would be a great deal of structure sharing as Qwest built its replacement network. But if Qwest were actually required to replace its entire network in existing areas of cities, and other utilities were not replacing at the same time, there would be very little structure sharing available. Neither extreme produces a reasonable cost. The best theoretical answer is somewhere in the middle.

49. The Department recommends that the structure sharing parameter of 66% from the Generic Cost Case is still the appropriate parameter to use in this case. There

[61] Ex. 204 (Fassett Direct) at 17-18, 23-35.
[62] Ex. 204 (Fassett Direct) at 43-44.
[63] Ex. 204 (Fassett Direct) at 41.
[64] *USF Inputs Order* at ¶ 244, n. 867.

is no one right answer here. In the attempt to establish a fair economic cost, 66% is a fair compromise and a reasonable number.

Buried Placement Costs

50. The buried placement costs used in HAI 5.2a were developed based on the experience of members of the model development team, contractor information, and cost information from other sources such as the National Construction Estimator. Mr. Fassett considers the inputs used are conservative in light of today's competitive construction marketplace.[65]

51. By several measures, the AT&T and WorldCom inputs create very low costs for buried distribution plant. They are substantially lower than those produced by the inputs selected in the Generic Cost Case and the FCC's Synthesis Model.

52. Again, there are widely divergent opinions on the cost of buried placement in today's cities and suburbs. It is more costly than AT&T and WorldCom suggest. The facts have not changed since the Generic Cost Case, and there is no reason to change the inputs determined there. As the Department, and now Qwest, recommend, the Commission should use the buried placement costs it ordered in the Generic Cost Case.

Plant Mix

53. "Plant mix" refers to the proportions of outside plant that is assumed to be aerial, buried, or underground.[66] The HAI Model plant mix inputs provide too much aerial plant. While aerial plant is the least expensive to install, it is strongly opposed by communities and developers because it is unattractive. Based upon information collected in Minnesota's USF proceedings, the Department advocates reducing percentages of both aerial and underground plant, and increasing the percentages of buried plant.[67] The rationale underlying this adjustment is that buried is the preferred placement method, where possible, for a forward-looking network, because buried placement is less expensive placement than underground placement and buried plant is cheaper to maintain than aerial plant.[68] Qwest argues in favor of a significant decrease in the amount of aerial plant and a significant increase in underground, based on what Qwest contends is its actual placement experience in Minnesota.[69] However, Qwest's claims about the placement types that are "currently in use" actually overstate the amount of underground plant.[70]

54. The recommendations made by the Department are based upon a survey it conducted and present current and accurate Minnesota plant mix figures. To assume

[65] Ex. 204 (Fassett Direct) at 43-44.
[66] Ex. 204 (Fassett Direct) at 40.
[67] Ex. 280 (Legursky Reply) at 11.
[68] Tr. 8:75-77.
[69] Qwest Brief at 18.
[70] Ex. 200 (Denney Direct) at 42-44.

a higher percentage of underground plant than proposed by the Department will result in inappropriately inflated placement costs. The Department's recommendations should be adopted.

Drop Lengths and Inside Wire

55. HAI 5.2a includes inputs for drop lengths that vary by density zone, ranging from 50 feet in the four highest density zones to 150 feet in the least dense zone. These drop length inputs assume that setbacks will vary from a low of twenty feet in urban areas to greater distances in more rural areas, with homes generally located closer to the front of the lot.[71] These assumptions are reasonable for Minnesota. The Minnesota statewide average drop length computed by the HAI Model is 74 feet.

56. Qwest witness Dr. Fitzsimmons proposes doubling the HAI Model inputs for drop length, based upon an updated Qwest drop study that produced a nationwide average drop length of 150 feet.[72] Qwest has updated the drop study by including three additional states, again using its installers to estimate drop lengths while on jobs. Other than adding three states, the study results are not new. They indicate drop lengths that appear excessive for the lot sizes they serve. The HAI figures still appear more reasonable on their face. They should be used.

57. MECC recommends that the cost of inside wire in commercial buildings be removed from the loop cost estimate because Qwest is not responsible for this wire under Minn. Stat. § 237.68, subd. 2. Thus, facilities on the customer side of the demarcation point should not be included. While the effect would be very small, the HAI Model can be corrected to exclude inside wire.[73] The Department recommends this adjustment. It should be adopted because it more accurately determines costs.

Cable Sizing Factors

58. HAI 5.2a uses a .75 sizing factor in all density zones. This input was modified from the previous version of the model to reflect, among other things, decisions by some state commissions that have adopted uniform or nearly uniform cable sizing factors across all density zones for use with the HAI Model.[74] In Minnesota, application of the HAI Model's default cable sizing factor yields an effective fill (which takes into account cable modularity) in the copper distribution portion of the network of 48.6%.[75] The Department recommends that these new HAI Model default cable sizing factors be adopted.[76]

59. Qwest criticizes the HAI Model cable sizing factors as decreasing "standby capacity," but does not present any evidence as to why that fill factor is inadequate. On

[71] Ex. 200 (Denney Direct), Ex. DKD-3 at 15.
[72] Ex. 254 (Fitzsimmons Rebuttal) at 43.
[73] Tr. 1:33.
[74] Ex. 200 (Denney Direct), Ex. DKD-3 at 36.
[75] Ex. 204 (Fassett Direct) at 22.
[76] Ex. 280 (Legursky Reply) at 11.

the contrary, the HAI Model provides "a tremendous amount of spare capacity."[77] The .75 sizing factor is appropriate.

Cable Maintenance Factors

60. For cable maintenance factors, the HAI 5.2a as filed uses the expense factors adopted by the FCC for use with its Synthesis Model, including factors related to cable maintenance expenses. Different values were adopted in the Generic Cost Case.

61. Department witness Legursky agrees with AT&T and WorldCom that cable maintenance expenses should be lower in a forward-looking network than in Qwest's embedded network and that the expense factors should reflect the difference in expenses between copper and fiber plant.[78] He recommends that the FCC factors be used to adjust the HAI default factors. Revised Ex. 283, reproduced below, shows Mr. Legursky's calculations.

Table 1 – Cable Maintenance Factors

	A Legursky Run	B Fitzsimmons Proposed
Aerial	0.2138	0.2324
Buried	0.0535	0.0581
Underground	0.0216	0.0190

Table 2 – HAI 5.2a Default

	A Fiber	B Copper	C Total	D % Fiber	E %Copper
Aerial	0.0073	0.0669	0.0742	9.80%	90.20%
Buried	0.0061	0.0446	0.0507	12.00%	88.00%
Underground	0.0084	0.0210	0.0294	28.60%	71.40%

Table 3 - MDOC Proposed

	A Fiber	B Copper
Aerial	0.0210	0.1928
Buried	0.0064	0.0471
Underground	0.0062	0.0154

62. In a forward-looking, efficient network, fiber cable maintenance costs should be lower than copper maintenance costs. Thus, Mr. Legursky's factors should be adopted.[79]

[77] Tr. 8:170-71.
[78] Tr. 8:10-11.
[79] Apparently there is a transposition error in the table that the Department has corrected.

Line Counts

63. Qwest argues that loop costs should be estimated using the most recent line counts available—Qwest's 2001 line counts, which are based on proprietary line counts.[80] Qwest's lines in Minnesota decreased by more than 75,000 from 2000 to 2001. That would increase the loop cost. AT&T and WorldCom support using the most current, publicly-available line counts to estimate costs, even though it increases the loop cost.

64. The Department believes that using the 2000 line counts is a better match for all the inputs used in the model. According to Mr. Legursky, it is critical that data be consistent with respect to time.[81] Data for 2000 has undergone extensive analysis by the Department in the USF proceeding over the past year. While 2001 data has recently become available for ARMIS expenses and Qwest line counts, there has been insufficient time to correlate this new data with other time-sensitive input data used in the model. Therefore, the Department recommends using both 2000 ARMIS and line count data with line counts only for the wire centers with the switch located in Minnesota and a correction to remove clusters incorrectly assigned to Minnesota wire centers. The Department's recommendation is reasonable and should be adopted.

Other Inputs

General Support Asset Expenses

65. HAI 5.2a applies general support expense adjustments to general support costs such as furniture, office equipment, general purpose computers, motor vehicles, and the like. The purpose of these adjustments is to reduce costs associated with general support to the extent those costs are incurred in connection with Qwest's retail operations. The result of the application of this adjustment is an effective general support factor of 8.5%.[82] This adjustment is consistent with the FCC's pricing rules,[83] was adopted by this Commission in the Generic Cost Case and has also been adopted by both the Arizona and Colorado Commissions as reflecting an appropriate allocation of wholesale and retail expenses.[84]

66. Qwest objects strenuously to this adjustment and calls it "entirely illogical." According to Qwest, if Qwest loses a retail customer to a CLEC, it no longer "recovers" the portion of its general support expenses through the retail rates paid by that customer and, accordingly, must "recover" those expenses from the CLEC.[85] But the issue is whether those costs are incurred in connection with Qwest's retail operation.

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[80] Tr. 5:191.
[81] Ex. 281 (Legursky Surreply) at 1-2.
[82] Ex. 202 (Denney Surrebuttal) at 31-32.
[83] 47 C.F.R. § 51.505(c)(2)(i).
[84] Arizona Phase II Order at 25; *In the Matter of US West Communications, Inc.'s Statement of Generally Available Terms and Conditions*, Docket No. 99A-577T, Ruling for Applications on Rehearing, Reargument, or Reconsideration Order at 47 (April 17, 2002).
[85] Qwest Brief at 25–26.

67. The Department recommends that the ALJ and the Commission adopt the HAI 5.2a default calculations for the general support asset allocator as supported by AT&T and WorldCom, as Qwest has not presented sufficient evidence that these calculations result in incorrect forward-looking cost estimates. The Administrative Law Judges agree.

Tax Factor

68. HAI uses a "tax factor" to account for property taxes and the fees and assessments that a carrier must pay to the FCC and state commissions. The default value in the HAI 5.2a model is 3.9 percent, based on 2000 ARMIS data. That is a reduction from the HAI 5.0a default of 5 percent adopted in the Generic Cost Case. Now, AT&T and WorldCom recommend a Minnesota-specific value that results in a significant reduction to 0.41 percent. This is the Minnesota Qwest value, expressed as a percentage of total revenue with revenue and tax data taken from the 2000 ARMIS report 43-03.[86] Dr. Fagerlund agrees that the number is based on Qwest's Minnesota property tax expense in 2000 as reported in the ARMIS data and recommends that the Minnesota specific value of .41 percent be used.[87]

69. Qwest claims that the effect of this reduction is to allow Qwest to recover only about 25% of the taxes within this category that it is currently paying, reducing the total tax expenses from approximately $6 million to approximately $1.5 million.[88] It argues that nothing in the record suggests that the property taxes and state commission and FCC fees that Qwest pays today are declining.

70. It is possible the unusually small fraction is caused by an unusually large denominator: the total revenue figure. If so, the value would not truly reflect the other taxes being paid. Even though the ARMIS data is what Qwest reported and technically supports the 0.41 percent value, it is anomalous, and should not be used. The 3.9 percent default should be used in Minnesota.

Network Operations Adjustment

71. HAI 5.2a applies a 50% network operations adjustment, which is designed to reflect certain cost savings that would result from the economically-efficient operation of a forward-looking telephone network.[89]

72. In the Generic Cost Case, the Department found insufficient evidence for such a large reduction and recommended the value of .85 that was eventually approved by the Commission. The Department continues to recommend the Network Operations

[86] Ex. 200 (Denney Direct) at 54, Ex. DKD-3 (HAI Inputs Portfolio) at § 5.5.3.
[87] Ex. 284 (Fagerlund Reply) at 17.
[88] Tr. 3:201.
[89] Ex. 204 (Fassett Direct) at 38; Ex. 200 (Denney Direct), Ex. DKD-3 at 171-72.

Factor of .85.[90] The 50% factor is too extreme and the 85% factor remains appropriate. It should be used in the model.

Corporate Overhead Factor

73. The HAI Model uses a 10.4% corporate overhead factor, based on AT&T's own overhead expenses. AT&T and WorldCom consider this a conservative estimate of overhead costs that would be incurred by an efficient carrier operating a forward-looking network. It is slightly higher than the 2000 corporate overhead expenses for four other RBOCs, which ranged from a low of 6.4% to a high of 9.5% and an average for the four companies of 7.7%.[91] The Arizona Commission relied on this comparison in adopting HAI 5.2a's 10.4% corporate overhead factor.[92] The Colorado Commission also has adopted the HAI Model's corporate overhead factor.[93]

74. In the Generic Cost Case, the Commission accepted the Department's recommendation and adopted an overhead factor of 13.09%, based on Qwest's historical overhead, adjusted to remove retail expenses and to reflect efficiencies resulting from competition.[94] However, it was essentially an interim determination. Again the Department recommends that 13.09% continue to be used, "[u]ntil an appropriate updated analysis is available." Qwest supports the 13.09%, calling it "still current."

75. It is no longer appropriate to base the overhead factor upon Qwest's experience. Since 1996, Qwest's overhead has been consistently higher than that of other RBOCs. In 2000, it was more than twice the average for the other RBOCs.[95] The comparison with the four RBOCs showing an average of 7.7% is a far better indicator of an efficient RBOC's overhead. Thus, HAI 5.2a's default input of 10.4% is the most reasonable value presented and should be adopted in this case.

TRANSPORT

76. In the Generic Cost Case, the Commission established rates for dedicated interoffice transport (DS0, DS1, and DS3), transport for tandem switching, multiplexing, shared transport, and direct transport.[96] The Commission ordered review of shared transport as an element of the UNE platform,[97] the Administrative Law Judges ordered

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[90] Ex. 284 (Fagerlund Reply) at 18.
[91] Ex. 200 (Denney Direct) at 40.
[92] Arizona Phase II Order at 20-21.
[93] *In the Matter of US West Communications, Inc.'s Statement of Generally Available Terms and Conditions*, Docket No. 99A-577T, Commission Order at 61 (November 13, 2001).
[94] Generic Cost Case ALJ Report of ¶¶ 137-141.
[95] Ex. 200 (Denney Direct) at 40.
[96] Ex. 252.
[97] *In the Matter of AT&T and WorldCom's Request for a Commission Investigation of Qwest's Pricing of Certain Unbundled Network Elements*, Docket No. P-442, 421, 3012/M-01-1916, NOTICE AND ORDER FOR HEARING (Feb. 13, 2002).

review of DS3 rates,[98] and Qwest seeks approval of rates for high-capacity elements (OC-3, -12, and -48) not previously priced.

Qwest ICM Transport Module

77. In this case, Qwest has proposed rates for what it calls "Unbundled Dedicated Interoffice Transport " (UDIT) which, according to Qwest, applies to transport between two Qwest central offices. In addition, Qwest has proposed a second set of rates for transport between a Qwest central office and a CLEC central office, which Qwest refers to as "Extended Unbundled Dedicated Interoffice Transport" (E-UDIT).[99] While Qwest proposes prices for UDIT that include recurring fixed and per-mile charges, the E-UDIT rate proposed by Qwest is a flat per-month charge.

78. Qwest maintains that its ICM transport module reliably estimates the investment in transmission and channel termination equipment needed to provide transport between central offices and other locations and calculates dedicated and switched transport investment.[100] The mileage-sensitive transmission investment includes the cost of fiber facilities and intermediate multiplexing equipment. The fixed channel termination investment includes the electronic equipment located at the switch location (where the route originates and terminates) that converts electronic signals into optical signals, as well as the equipment used to multiplex or de-multiplex the signal.[101] The network configurations and inputs in the transport module are based on the opinions of Qwest SMEs who develop the "standard configurations" used at Qwest along with information from vendor contracts and price lists.[102]

79. Despite its reliance on the standard configurations used in its network, Qwest maintains that its cost model does not use data reflecting embedded plant; it contends that for each point pair and route in Minnesota, the model includes the cost of facilities that would be placed today, not what currently exists in Qwest's network.[103] Qwest's cost witness, however, did not exactly say this. He did say, in describing one of the key inputs in the transport module (utilization factors for each type of equipment), that these factors were developed by dividing total capacity by "the actual number of units being used on the equipment or fiber."[104] With regard to all of its models, Qwest maintains that its SMEs might well choose to place the same facilities in the cost model as currently exist in the network. Qwest also frequently refers to its historical investments as a "benchmark" or "reality check" against modeled costs.[105] It is very clear that Qwest's frame of reference, for all costs including transport, is its existing network.

First UNE Pricing Prehearing Order (Nov. 21, 2001).

[99] *See* Ex. 240 (Brigham Direct), RHB-1 at 6-7; Ex. 209 (Starr Direct) at 16.

[100] *See* Ex. 240 (Brigham Direct) at 34.

[101] *Id.* at 34-35.

[102] *Id.* at 34-36.

[103] *See* Ex. 240 (Brigham Direct) at 35-36.

[104] Ex. 240 (Brigham Direct) at 36.

[105] Tr. 3:200, 207, 216; Tr. 4:61, 130.

80. In addition, the transport rates produced by Qwest's transport module raise concerns about the methodology used to produce those rates. In particular, the per mile rate for DS 3 transport is significantly different for various mileage bands:

Mileage Band	Per Mile Rate
0-8	$79.19
8-25	$31.24
25-50	$ 7.82
over 50	$39.26

81. Thus, the per mile rate for DS 3 transport for distances between 25 and 50 miles is a tenth of the per mile rate for distances from zero to eight miles, a fourth of the rate for distances from eight to 25 miles, and a fifth of the rate for distances greater than 50 miles. This apparent anomaly is the result of the cost study's use of "weightings" of technologies used to provide transport:

> Q. [W]hat happens at mileage band 50 that suddenly causes a 500 percent increase in cost?
>
> A. It's the weightings of the technologies. We're looking at every – what we do in the model is we look at every point pair between two offices in the state of Minnesota. And those point pairs are all assembled, we look at the costs for each of those point pairs, we look at the technologies that would be used to provide service for that point pair, and then what we have to do is we have to convert that into the mileage basis, based on you know, how long it's going to be. And so, for example, there might be one route that's, you know, that fits into the 25 to 50, it has a cost, you have another route that fits into the 8 to 25 and it has a cost.[106]

82. This testimony also suggests that the technologies and "weightings" used by the cost study duplicate Qwest's existing transport network. A replacement network built today with the most efficient technologies would not produce the price fluctuations apparent in Qwest's per-mile transport charges.

83. Dedicated interoffice transport can be used to interconnect to either a distant collocation space, the Qwest switching network, or to an IXC POP in another wire center. Dedicated transport is also used to interconnect a CLEC collocation space with the Qwest switching network or an IXC POP when they are in the same Qwest central office building. Qwest proposes to label dedicated transport "E-UDIT" when

[106] Tr. 5:80–81.

transport is to a CLEC space that is not collocated within a Qwest central office. In all other respects, E-UDIT and UDIT are the same.[107]

84. Qwest maintains, and no party specifically disputes, that the costs are different for interoffice routes vs. routes to CLEC points of presence. The different pricing structure between UDIT and E-UDIT, however, generates inconsistencies that are discriminatory. For example, the monthly recurring cost of a DS3 UDIT in the 0-8 mile band is: fixed - $295.23 and per-mile - $79.19; the monthly recurring cost of a DS3 E-UDIT is $436.20, with no mileage component. This pricing is discriminatory because (1) Qwest takes distance-sensitive costs and averages them, rather than charging on a per-mile basis, as is the case with UDIT;[108] and (2) because, depending on the circumstances, a CLEC required to purchase both UDIT and E-UDIT for transport between two points may face higher costs than would be the case if a single pricing structure applied to both.[109] State commissions in Qwest 271 proceedings in Washington, Colorado and Arizona have all recommended that the distinction between UDIT and E-UDIT be eliminated because there is no basis, either in orders of the FCC or in fact, for pricing differences between UDIT and E-UDIT.[110] Qwest should not distinguish between UDIT and E-UDIT on its SGAT because there is no basis for using different rate structures for what is really the single element otherwise known as dedicated transport.

85. Finally, in modeling the costs of shared transport, Qwest assumes that 37% of toll calls connecting to an IXC go through Qwest's tandem; 9% stay on Qwest's network and are connected through Qwest's tandem; and 54% are calls connected directly between Qwest's end offices. These weightings are based on the number of trunks used for each type of transport "because that's the way those facilities are, in fact, engineered."[111] This method of pricing shared transport gives excessive weight to the most expensive type of transport (end office via the tandem). Off-peak traffic will rarely have to use the local tandem when a direct trunk exists between two offices. By weighting the transport costs by trunks, rather than by minutes of use, transport costs are overstated.[112]

86. Because of their reliance on Qwest's existing network, because of the dual pricing structure for dedicated transport, and because they overstate the costs of shared transport, Qwest's models should not be used to price transport.

HAI 5.2a Transport

87. The HAI 5.2a model calculates interoffice transport cost by determining the overall breakdown of traffic per wire center according to the given traffic assumptions and computing the numbers of trunks needed to carry this traffic, based on

[107] Tr. 6:32-33; Ex. 280 (Legursky Direct) at 32.
[108] Ex. 211 (Starr Reply) at 15.
[109] Ex. 209 (Starr Direct) at 17; *see also* Ex. 280 (Legursky Reply) at 33.
[110] Ex. 209 at 18-20.
[111] Tr. 4:163.
[112] Ex. 202 (Denney Surrebuttal) at 29.

fractions of total traffic assumed for interoffice, local direct routing, local tandem routing, intraLATA direct and tandem routing, and access dedicated and tandem routing. The model assumes the use of forward-looking interoffice facilities in the form of interconnected SONET fiber rings. Based on demand for traffic at each wire center and interoffice distances in the fiber rings, the model calculates investments in terminal equipment (which it calls a fixed recurring price for "Transmission Terminal") and cable between offices (which it calls a fixed recurring price for "Transport").[113] The costs are calculated at the DS1 trunk level. The model also can generate per-mile costs, as does Qwest's model, by dividing the per month transport charge by average air miles per interoffice trunk.[114] Shared transport is calculated based on minutes of use: 12.8% IXC through the tandem, 1.9% Qwest end office through the tandem, and 85.3% Qwest end offices direct.[115]

88. Qwest maintains that HAI's transport calculations are inaccurate and unreliable. First, Qwest contends that the HAI sponsors arbitrarily reduced the cost of transport by approximately 90% to eliminate the cost of equipment included in the model for the purpose of pricing DS0 and DS1 transport but not required to provide a DS3 circuit.[116] As noted above, the model calculates the cost of interoffice transport at the DS1 trunk level. These costs are proportionately reduced to price DS0, and proportionately increased to price DS3 transport. The cost of terminal equipment, however, is not handled the same way, nor should it be. The model incorporates DS0/DS1 and DS1/DS3 terminal factors to make these adjustments.[117] Although the HAI 5.2a model and Qwest's transport model compute transport costs differently, the ratio of the cost of DS1 transport to DS3 transport, as calculated by the models, is almost identical, suggesting that the reduction, however made, is not arbitrary.[118]

89. Second, Qwest contends that HAI 5.2a "double counts" special access lines in order to inappropriately reduce the amount of investment used to develop transport costs. The special access lines typically connect the end user to IXC facilities without using Qwest's switch. The HAI 5.2a model does not double count the lines; rather, it splits them between loop and transport costs.[119]

90. Third, Qwest urges that HAI 5.2a must be corrected to ensure that assumptions concerning minutes of use are uniformly applied. It complains that the model improperly uses one demand to size the network and develop the cost of the facilities and another demand as the denominator to determine the unit costs for transport.[120] The model uses peak demand to size and develop the cost of the facilities

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[113] *Id.* at 24.
[114] Ex. 201 (Denney Rebuttal) at 7-8; Ex. 210 (Starr Reply), AS-1 (Joint Price List).
[115] Ex. 200 (Denney Direct) at 7.
[116] *See* Ex. 243 (Brigham Surrebuttal) at 35.
[117] Ex. 202 (Denney Surrebuttal) at 27-28.
[118] *Id.*
[119] Ex. 201 (Denney Rebuttal) at 26.
[120] *See id.* at 41-42.

and total demand as the denominator to determine unit costs for transport.[121] There is nothing improper about the manner in which the model develops per unit costs.

91. Fourth, Qwest argues that HAI 5.2a continues to assume unrealistic rates of structure sharing. As discussed in connection with the unbundled loop, the sharing rate advocated by the Department (66%) is reasonable, and this assumption should be used here as well.

92. Fifth, Qwest maintains that HAI 5.2a improperly creates artificially large economies of scale by assuming that a combined total of only five long distance carriers, CLECs, DLECs and/or wireless carriers are connected to Qwest's network. The HAI 5.2a model assumes, in fact, that there are five entrance facilities at the Qwest tandem, to accommodate access to IXC networks, with other interconnections at Qwest end offices. It does not assume that there will be only five interconnecting companies.[122]

93. The CLEC Coalition contends that neither Qwest's model nor the HAI 5.2a model should be used to set transport rates; instead, it argues that the Commission should set the rate as that contained in the interconnection agreement between Qwest and Eschelon. This is a cost docket. There is no basis for recommending a price simply because it was contained in a negotiated interconnection agreement.

94. The HAI 5.2a model with inputs ordered in this docket should be used to price shared and DS3 dedicated transport, with costs for dedicated transport split into a fixed and a per-mile component as recommended by the Department.[123]

SWITCHING

Qwest's SCM Model

95. In today's telephone networks, a switch is a large, specialized, computer. It has computer hardware such as processors, memory and storage devices, connections (ports), and wires and other linking devices to and from peripheral devices and other computers. It has operating system software that runs the computer and application software that controls call switching and provides features. Switches require periodic hardware and software upgrades to handle higher call volumes and provide more features.

96. Qwest claims that its Switching Cost Model ("SCM") calculates the Minnesota-specific TELRIC for local switching usage, line and trunk ports, and vertical features and includes the realistic costs an efficient carrier would incur to provide switching.124 It calculates end office rates of $.0028333 per minute of use (MOU) and port rates of $2.42 per month, including features.125 AT&T/WorldCom, MECC, and the

[121] Tr. 4:180-81.
[122] Tr. 4:159-61; *see also* Ex. 201 (Denney Rebuttal) at 25-26.
[123] The pricing of high-capacity loops and transport are addressed together in another section of this Report.
[124] Ex. 240 (Brigham Direct) at 31-32.
[125] Qwest Brief at 34; Ex. 241 (Brigham Rebuttal), Ex. RHB-1, §§ 9.11.1 and 9.11.6.

Department all claim that, for various reasons, SCM should not be used to calculate switching costs.

97. To calculate the recurring cost of an analog line port UNE, the SCM essentially totals three cost components: (1) the analog line port, which runs from the switch to the CLEC collocation area; (2) feature cost per line; and (3) “capital lease right to use" fees. Qwest includes the recurring costs of features, rather that stating them separately, in response to requests from CLECs. The feature cost per line is based on an anticipated efficient replacement investment for each feature. Qwest applies cost factors to convert the investment for each feature to a cost per month, aggregates them, and divides by the total Minnesota lines in service to determine a monthly feature cost per line. Qwest estimates the "capital lease right to use fees" by totaling the annual capital lease applications software expenses it incurs, dividing by the total number of forecasted Qwest lines, and then applying costs factors.126

98. In addition to the analog line port, Qwest also used the SCM to develop investment estimates for other port types, including Digital Line Side Port (ISDN-BRI), DS1 digital trunk ports, and DS0 analog trunk ports. The SCM was also used to develop costs for end office call termination and the switching local usage UNE.127

99. The SCM divides the switching investment costs into the fixed monthly port rate and the MOU usage rate based on a ratio of the current switching cost per line to pre-1996 switching component costs. Using this method, Qwest has allocated 56% of the switching costs to the usage charge.128

100. AT&T/WorldCom, MECC, and the Department all object to usage pricing for switching. This debate is not new. In the Local Competition Order issued in 1996,129 the FCC established rules for rate structures. The FCC stated, in relevant part:

> 743. We conclude, as a general rule, that incumbent LECs' rates for interconnection and unbundled elements must recover costs in a manner that reflects the way they are incurred. . . .
>
> . . .
>
> 755. The costs of shared facilities including, but not limited to, much of local switching, tandem switching, transmission facilities between the end office and the tandem switch, and signaling, should be recovered in a manner that efficiently apportions costs among users. Because the cost of capacity is determined by the volume of traffic that the facilities are

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126 Ex. 240 (Brigham Direct) at 93-96.
127 Ex. 240 (Brigham Direct) at 97.
128 Ex. 241 (Brigham Rebuttal) at 51.
129 *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 Interconnection between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, First Report and Order**,** August 1, 1996, (the Local Competition Order)

> able to handle during peak load periods, we believe, as a matter of economic theory, that if usage-sensitive rates are used, then somewhat higher rates should apply to peak period traffic, with lower rates for non-peak usage. The peak load price would be designed to recover at least the cost of the incremental network capacity added to carry peak period traffic. Pricing traffic during peak periods based on the cost of the incremental capacity needed to handle additional traffic would be economically efficient because additional traffic would be placed on the network if and only if the user or interconnecting network is willing to pay the cost of the incremental network capacity required to handle this additional traffic. Such pricing would ensure that a call made during the peak period generates enough revenue to cover the cost of the facilities expansion it requires, and would thus give carriers an incentive to expand and develop the network efficiently. In contrast, off-peak traffic imposes relatively little additional cost because it does not require any incremental capacity to be added to base plant, and consequently, the price for carrying off-peak traffic should be lower.
>
> . . .
>
> 757. We conclude that the practical problems associated with peak-sensitive pricing make it inappropriate for us to require states to impose such a rate structure for unbundled local switching or other shared facilities whose costs vary with capacity. Because we believe that such a structure may be the most economically efficient, however, we do not prohibit states from imposing peak-sensitive pricing. We also expect that parties may be able to negotiate agreements with peak/off-peak differences if the benefits of such distinctions are sufficiently high. **We conclude that states may use either usage-sensitive rates or flat capacity-based rates for shared facilities, if a state finds that such rates reasonably reflect the costs imposed by the various users.** States may consider for guidance rate structures developed in competitive markets for shared facilities. We note that our decisions in this section may benefit small entity entrants in local exchange and exchange access markets by minimizing the extent to which purchasers of interconnection and unbundled access pay rates that diverge from the costs of those facilities and services.

(emphasis added). With specific regard to local switching, ¶ 810 of the Local Competition Order stated:

> 810. We conclude that a combination of a flat-rated charge for line ports, which are dedicated to a single new entrant, **and either a flat-rate or per-minute usage charge for the switching matrix and for trunk ports, which constitute shared facilities**, best reflects the way costs for unbundled local switching are incurred and is therefore reasonable. We find that there is an insufficient basis in the record to conclude that we

should require two flat rates for unbundled local switching charges as proposed by Sprint.

(emphasis added). Thus, usage-based pricing for switching is appropriate if it reflects the costs caused by the users. This cost causation principle is an essential tenet of the TELRIC methodology.[130]

101. MECC notes that recent decisions by the Illinois, Indiana and Wisconsin Commissions required per line pricing rather than usage-based pricing mostly because that is how switches are paid for by the ILECs. That may create a reasonable starting point, a presumption, but the fact that switches and upgrades to switches are purchased by Qwest on a per line basis is not determinative as to how to allocate the cost of that capacity. The method used by the vendor to price the equipment has little to do with identifying the causes of the need for the capacity that equipment provides. Their pricing needs are not the same as Qwest's. Likewise, even if lines are the "binding constraint" on the switch, the question of what caused the need for the lines is still at issue. Ultimately, all need for capacity is caused by usage. The question remains, as noted by the FCC in ¶ 757 of the Local Competition Order, do the proposed rates reasonably reflect the costs imposed by the various users of the shared switch? In this context, the question is whether it is possible to identify any additional capacity requirements caused by peak usage or CLEC customer usage. If so, and if that usage is not simply proportionate to the number of ports on an average basis, it could be appropriate to apply a usage-sensitive charge.

102. In its June 19 decision approving Verizon's 271 application for Maine, the FCC specifically rejected AT&T's challenge to Maine's allocation of local switching costs of 30% to the fixed port element and 70% to the usage-sensitive MOU element.131 The FCC noted that in its Local Competition Order, it had concluded that switching costs should be recovered through a combination of a flat-rated charge for line ports and either a flat-rated or per-minute usage charge for the switching matrix and for trunk ports.132 The FCC also noted that its Synthesis Model and the version of the HAI model originally sponsored by AT&T reflected this same 30/70 allocation.133

103. Expert witnesses Dr. Ankum for MECC, Legursky for the Department, and Gillan for AT&T/WorldCom all concluded that all switching costs should be recovered 100 percent on a per line (port) basis. Dr. Ankum identified three primary factors supporting that recommendation: 1) Switching is purchased on a per line basis; 2) usage is not a binding constraint on the switch; rather, lines are the binding constraint on the switch; and 3) even extreme usage conditions result in only small cost increases.134 As discussed above, these views are not convincing and have been

[130] Ex. 262 (Ankum Rebuttal) at 5, 15; Local Competition Order ¶ 691.
[131] *Verizon Maine 271 Order* ¶¶ 28, 29 ("[w]e do not believe, however, that the Maine Commission's allocation of 30 percent fixed to 70 percent MOU falls outside the a reasonable range").
[132] *Id.* ¶ 29 (citing *Local Competition Order* ¶ 810).
[133] *Id.* at ¶ 30.
[134] Ex. 262 (Ankum Rebuttal) at 20

rejected by the FCC, and by some states. Usage pricing as part of switching rates is not necessarily inconsistent with TELRIC principles.

104. Qwest's evidence supporting the allocation of 56% of switching capacity costs to usage is weak because it is based on very old data. However, based upon the range of percentages that have been advocated and used in various states as described by the FCC in the Verizon Maine 271 Order at ¶¶ 26-29, it appears to be a number that could be reasonable.

105. Even though it is allowable, Qwest has not presented sufficient evidence or reasoning to justify using usage-based pricing here. There seems to be an underlying assumption that CLECs and their customers use their lines more than Qwest and its customers. Qwest's usage-based allocation would shift more cost to the CLECs. That might be appropriate if the assumption is correct, but there is no evidence to support it. On the contrary, the CLEC customers were Qwest customers before, so there is little, if any, effect on total traffic volumes.[135] Finally, Qwest's usage-based pricing is not peak sensitive as the FCC preferred in ¶¶ 755 and 757 of the Local Competition Order. As such, it is less usage sensitive and more just a cost shifting device.

106. Setting switching rates on usage basis raises can be discriminatory. Customers traditionally prefer paying a flat-rate for their local service.[136] If CLECs are required to pay to Qwest a separate charge for each minute of switching that its customers use, but are economically required to charge customers a flat rate, a pricing discrepancy is created that has the potential of reducing the CLECs revenue disproportionately. Because of this, and absent evidence supporting usage-based pricing, it is most reasonable to require CLECs to pay for switching the same way that Qwest does—on a per-line basis. If all Qwest and CLEC customers, especially the larger ones, were billed on a usage basis, the answer could be different. But they are not.

107. Qwest has the burden of proving the validity of its costing model.[137] Cost studies must be submitted in a manner that allows parties to alter the inputs and determine the effect on cost estimates.[138] One of the key requirements of a costing model is that it be transparent and verifiable.[139] Qwest failed to provide the actual current cost it pays for switching, an input needed by the SCM, making it impossible to verify the accuracy of the SCM resulting rates.[140]

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[135] Ex. 214 (Gillan Surrebuttal) at 10.
[136] Tr. 2:64–65.
[137] 47 C.F.R. § 51.505(e).
[138] The FCC recently directed that in upcoming cases to be arbitrated by the FCC, involving Verizon and three CLECs, computerized cost models "must be submitted in a form that allows the Arbitrator and the parties to alter inputs and determine the effect on cost estimates." *Procedures Established for Arbitration of Interconnection Agreements Between Verizon, AT&T, Cox, and WorldCom*, DA 01-270 (February 1, 2001), Paras. A.2.1.i; A.3.1.c.
[139] Ex. 262 (Ankum Rebuttal) at 5.
[140] *Id.* at 12.

108. SCM must be rejected because Qwest did not provide the information needed to verify the results of the model and because the usage-based rates it produces have not been justified for use in Minnesota.

HAI 5.2a Model

Synthesis Model Inputs

109. The switching investments used in HAI 5.2a are based on switching investments calculated by the FCC for use in the FCC's Synthesis Model.[141]

110. Qwest criticizes the use of the switch investment numbers developed by the FCC in its USF Inputs Order, stating, "the FCC has warned that the Synthesis Model and the Inputs Order 'should not be relied upon to set rates for UNEs.'"[142] The FCC actually said that state commissions were not "bound" by the conclusions reached in the USF Inputs Order and did not preclude state commissions from adopting the same inputs as those chosen by the FCC when it was otherwise appropriate to do so.[143] As noted in Finding No. 102 above, in the Verizon Maine 271 Order, the FCC approved Maine's adoption of the 30% usage input from the Synthesis Model, so it is permissible to do so.

111. It is reasonable here to use switching investment inputs that are the same as those adopted by the FCC for use in its Synthesis Model. The market for switches is a national market. Qwest purchases the majority of its switches from two switch vendors--Lucent and Nortel--that sell switches to ILECs nationwide.[144] Qwest does, or should, pay about the same price for switches as other ILECs. The extensive efforts undertaken by the FCC to develop the switching cost investments used as inputs to the Synthesis Model are described in detail in the USF Inputs Order,[145] and subject to review by any party. Finally, the FCC's switching cost inputs significantly exceed what Qwest would actually pay for switches today.[146] Thus, the switching input values from the FCC Synthesis Model are appropriate forward-looking inputs for the HAI model.

Usage-based pricing

112. HAI 5.2a, as filed by AT&T/WorldCom in this docket, allocated zero percent to usage. However, it is possible in HAI 5.2a to set an input to allocate any specified amount to the usage portion. For reasons discussed above, the allocation to usage-based pricing should remain at zero.

[141] Ex. 202 (Denney Surrebuttal) at 13.
[142] Qwest Brief at 8.
[143] *USF Inputs Order* at 32.
[144] Tr. 5:131-32; Tr. 6:82-83.
[145] *USF Inputs Order* at ¶¶ 296-314.
[146] Tr. 8:100-01.

Switch Port Fill factor

113. HAI 5.2a as filed assumes fill factors for local switches of 94% based upon the industry experience and expertise of the HAI Model developers and the opinions of subject matter experts.[147] It is consistent with the fill factor determined by the FCC to be reasonable for purposes of universal service funding.[148] The Department originally supported the 98% factor from HAI 5.0a default and the Generic Cost Case, but now agrees with the AT&T/WorldCom analysis and recommends a factor of 94%.[149] Qwest recommends 80% as more realistic.

114. Qwest again claims that the FCC has rejected use of a Synthesis Model input, the 94% fill factor, for setting UNE prices. Actually, the FCC held that the record in the Verizon Vermont 271 Order case was insufficient for comparing the fill factors ordered by the Vermont Commission and the fill factors used in the Synthesis Model, not that a 94% fill factor was inappropriate for setting UNE prices.[150] Moreover, as just found, the HAI 5.2a developers relied on industry experience and expertise in developing the 94% number, not just the FCC number.

115. Qwest also claims that the fill factor used by the HAI Model does not provide for sufficient spare capacity for administrative purposes.[151] But "administrative capacity" is the spare capacity necessary to perform testing and the amount of capacity needed for testing is very small—perhaps a dozen lines on a 10,000 or 20,000 line capacity switch. That is less than 1%. Further, because switches can be quickly and easily upgraded by adding additional cards, a limited amount of spare capacity is necessary. So long as a switch includes enough "slots" to accommodate additional cards, there is no reason to reflect the costs of cards necessary to serve future demand as part of the current investment.[152]

116. The 94% fill factor is appropriate and no change is required.

Growth Lines and Upgrades

117. HAI 5.2a does not include any additional costs relating to growth lines that may be added to a switch in the future, nor does it include costs associated with switch upgrades that may become necessary in the future.

118. Qwest urges the Commission to "join the FCC and the D.C. Circuit by including in base switching rates the cost not merely of new switches, but also of additional lines required to meet demand." Qwest quotes the D.C. Circuit as stating,

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[147] Ex. 200 (Denney Direct), DKD-3 at 84.
[148] *USF Inputs Order* at ¶ 330.
[149] Department Reply Brief at 9.
[150] *In the Matter of Verizon New England, Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions), Verizon Global Networks Inc., and Verizon Select Services Inc., for Authorization to Provide In-Region, InterLATA Services in Vermont*, CC Docket No. 02-7 (April 17, 2002) at ¶ 36.
[151] Qwest Brief at 42.
[152] Tr. 8:93–96.

"the [FCC] reasonably concluded" that "inclusion of growth additions" "did not violate TELRIC."153 In its reply brief, Qwest claims that the DC Circuit held that including growth lines "is consistent with TELRIC."154 Neither claim is accurate. The DC Circuit was reviewing the Verizon NY 271 Order, which did not address "growth additions" at all. Rather, it addressed switch discounts, which was a new argument by AT&T that had been raised before the New York Public Service Commission on a request for reconsideration and which the NYPSC refused to consider in isolation until it did a comprehensive review of switching costs. The FCC held that the NYPSC's refusal was appropriate under the circumstances and did not violate TELRIC.155 The DC Circuit held that the "growth additions" argument AT&T was making to it was largely a corollary of AT&T's "discount" argument and concluded, in full:

> Accordingly, we think the Commission reasonably concluded that because failure to reflect discounts did not violate TELRIC, inclusion of growth additions did not either.[156]

Thus the DC Circuit upheld the FCC's holding that the NYPSC did not violate TELRIC by refusing to consider AT&T's new discount argument immediately, and held that the same conclusion should be applied to AT&T's even newer growth additions argument. In other words, it does not violate TELRIC to refuse to immediately address every new pricing issue that is raised. Contrary to Qwest's assertion here, neither the DC Circuit nor the FCC, nor the NYPSC for that matter, addressed the merits of the affects of discounts or growth lines at all because AT&T did not raise those issues in time.

119. Between 1996 and 2000, Qwest spent $235 million (or $3.71 per line per year) to upgrade its digital switches, adding features and functions that Minnesota CLECs and their customers are using today. Qwest asks that the $3.71 be added, which would increase the HAI 5.2b produced rate by $0.72.[157]

120. AT&T/WorldCom contend growth line and upgrade costs should not be included in a TELRIC cost model. TELRIC principles assume that the network will be constructed using the forward-looking, economically efficient technology then available. Thus, switches assumed by a TELRIC model will include all available features and functionalities, including capabilities necessary to meet government mandates. As the FCC found, in rejecting a similar argument for inclusion of switch upgrade costs in the switching calculations for the Synthesis Model, "The model platform we adopted is intended to use the most cost-effective, forward looking technology available at a particular period in time."[158]

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[153] Qwest Brief at 40-41, citing *AT&T Corp. v. F.C.C.*, 220 F.3d 607, 618 (D.C. Cir 2000).
[154] Qwest Reply Brief at 21.
[155] *Verizon NY 271 Order*, ¶ 245.
[156] *AT&T Corp. v. F.C.C.*, 220 F.3d 607, 618 (D.C. Cir 2000).
[157] Ex. 241 (Brigham Rebuttal) at 41-44.
[158] *USF Inputs Order* at ¶ 317.

121. Typically, Qwest does not begin to upgrade a switch until the switch has been in service for three years.[159] Similarly, the costs for "growth lines" do not begin to be incurred until after the switch has been in service for three years.[160]

122. Since even new switches will eventually have to be upgraded, and because the TELRIC method does not include any upgrade costs for older switches (because there are none), some addition for upgrade costs might be appropriate. But as previously noted, Mr. Legursky has testified that the inputs used by the HAI Model actually overestimate switch costs, more than compensating for growth and upgrades. Mr. Legursky's testimony was, again, the most credible testimony presented. His numbers were based on current experience, were well-explained, and were reasonable. No adjustments should be made for growth lines or upgrades.

DLC Adjustment

123. HAI 5.2a as filed makes an adjustment to end office switching investment to capture cost savings that result from the deployment of digital loop carrier systems ("DLC"). This adjustment accounts for the fact that lines served by IDLC do not use the main distribution frame and that such lines use a switch port termination that is cheaper than an analog line interface. Switching investments used in HAI 5.2a have an implicit assumption of 18.3% DLC lines. However, because DLC is forward-looking technology, forward-looking cost studies usually assume a much higher DLC penetration rate. The HAI Model estimates 57.5% DLC penetration in Minnesota and, accordingly, applies a $30 per line offset to DLC lines in excess of 18.3%.161

124. The Department supports the HAI 5.2a default value of $30 per line, stating that it results from the fact that line cards are not required in both the switch and remote terminal for DLC-served lines.162 The Department also argues that the cost basis for the adjustment appears in the HAI 5.2a Inputs Portfolio.163

125. Qwest argues that the HAI 5.2a DLC adjustment should be set to zero because the adjustment was not adopted by the FCC in its Synthesis Model.164 But the evidence that DLC switching is less expensive per line than analog switching and that DLC penetration in a forward-looking network would be well in excess of 18.3% appears to be correct, and Qwest offered no evidence to rebut it. Changing the adjustment to zero would overstate switching investment for a forward-looking network.165

126. Qwest points to the $881 million it has booked for switching investment in Minnesota as an indicator that HAI 5.2a produces a highly suspect TELRIC estimate for

[159] Tr. 4:138.
[160] Tr. 4:148-49; Ex. 241 (Brigham Rebuttal) at 44-45.
[161] Ex. 202 (Denney Surrebuttal) at 15–16 and DKD-3 at 85.
[162] Ex. 280 (Legursky Reply), attached Ex. MDOC-1.1 at 21.
[163] Department Reply Brief at 10.
[164] Ex. 241 (Brigham Rebuttal) at 36; Tr. 4:121–23.
[165] Tr. 1:124–125.

switching costs that should be rejected entirely or adjusted by modifying certain inputs.166 Qwest's embedded costs provide very little guidance in determining the economic value of its switching today. Costs are down greatly,167 there is little reason to believe Qwest historically operated as efficiently as is required in today's market, and the books may reflect retired equipment or other items that should not be considered. More importantly, as already discussed, the evidence is that the HAI switching inputs exceed the prices Qwest would pay today. The true reality is that the HAI switching costs are more than reasonable.

HIGH-CAPACITY LOOPS

DSL and DS1 Loops

127. Digital subscriber line (DSL) technologies are transmission technologies used on circuits that run between a customer's premises and the central office.[168] Qwest's ICM/NAC model, and specifically the Loop Mod (study no. 6126) and Hicap UNE Recurring cost study (no. 6171), generate prices for these elements. According to Qwest's models, the xDSL/ADSL "capable" loop is the same price as that generated for a two-wire and four-wire loop, which would be "capable" of providing DSL or ADSL service if a CLEC provides the necessary electronic equipment (HDSL transmitter and receiver on each end). The model generates a price for Qwest's DS1 loops (which include the electronics) of approximately $98 to $99, depending on density zone.

128. The NAC model separately calculates DS1 and DS3 investments using eight different architectures that Qwest maintains are "forward-looking" but are nonetheless based on Qwest's current network designs. The installed investment for termination and multiplexing equipment associated with each architecture is then determined, and equipment capacities and utilization factors are applied to obtain a unit investment for each architecture. Fiber optic and copper cable investments are derived from Loop Mod. The NAC program adds the fiber and copper investment to the terminating and multiplexing equipment to yield an investment for each DS1 and DS3 architecture. The final investments are developed by Qwest SMEs based on a weighting of the relevant architectures.[169]

129. Qwest's DS1 loop model uses six different DS1 design architectures based on Qwest's current network designs. Qwest then applies a weighting factor to reflect the percentage of each DS1 design architecture. For example, Qwest SMEs have estimated that office repeater bay architecture would be used 8% of the time, when a forward-looking network would never deploy architecture that is left over from T-

166 *See* Ex. 241 (Brigham Rebuttal) at 29-47.
167 Ex. 202 (Denney Surrebuttal) at 14; Ex. 245 at I-28.
168 "xDSL" denotes a variable meant to encompass the various types of DSL technologies.
169 Ex. 240 (Brigham Direct) at 76-77.

1 technology.[170] In addition, the study relies on inflated loop investments from Loop Mod.[171]

130. The HAI xDSL adjunct model estimates Qwest's costs of all components necessary to provide DS1 loops (using only HDSL technology), ADSL- and HDSL-capable and equipped loops, and ADSL and HDSL service. The model considers both conventional and splitterless ADSL, and both four-wire and two-wire versions of HDSL. The model operates as an adjunct to HAI 5.2a in that it uses certain cost and cost factor outputs produced by HAI 5.2a as inputs to the calculation of xDSL results.[172]

131. The HAI adjunct model assumes that two-wire loops capable of supporting ADSL and HDSL-2 are the same as the cost of two-wire loops estimated by HAI 5.2a. The cost of the four-wire loops is calculated as a multiple of the two-wire cost; the multiple is one of the user inputs to the adjunct model. In the case of loops provisioned over DLC feeder, there are additional costs associated with common equipment required in the DLC remote terminal to support xDSL. These and the costs of equipping DS1 and xDSL circuits are added to the unbundled loop costs from the 5.2a UNE results to produce DS1 loop costs and total xDSL costs.

132. Many of the inputs relating to the cost of xDSL equipment have no backup documentation (although the values are contained in the model) because of proprietary concerns by vendors.[173] The model generates a price per line per month for HDSL capable/four-wire loop; when the cost of HDSL terminal units is added, the model generates a statewide average price for DS1-equipped loops of $37.01.[174]

133. Qwest contends that the adjunct model should not be used because it lacks adequate documentation for the investment expense and is based on nothing more than opinions of SMEs. Better documentation to support the prices would unquestionably improve confidence in the model; but the lack of it does not, as Qwest claims, make the model wholly unverifiable. The Department's technical witness confirmed the validity of the adjunct model prices,[175] and Qwest, despite its greater access to the market, provided no alternative pricing for any component. Qwest's criticisms are limited to the lack of pricing documentation; it presented no evidence that the prices themselves were inadequate.

134. Qwest also criticizes the adjunct model's reliance on a single architecture, HDSL, maintaining that an efficient network would use multiple technologies. This argument is misplaced. Although Qwest might well use multiple architectures to provide DSL service, the only reason to consider alternatives, from a cost modeling perspective, is if those other technologies enable the service to be provided at a lower cost.[176] Qwest

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[170] Tr. 8:15-16.
[171] Ex. 201 (Denney Rebuttal) at 24-26
[172] Ex. 200 (Denney Direct) at 68.
[173] *Id.* at 69.
[174] This price will change to reflect different inputs selected for use in HAI 5.2a for pricing the loops.
[175] Tr. 8:88-90, 124-25.
[176] Tr. 8:23-24.

has offered no evidence to suggest that its alternative architectures produce lower overall prices or that the prices generated by the adjunct model are too high.[177]

135. Qwest also maintains that the adjunct model overstates the capacity of an ATM switch, ignoring virtual connection and port capacity. First, Qwest contends that the port capacity of the ATM switch assumed by the adjunct model is 16 DS3s. The switch assumed by the model accepts a variety of network modules, however, which allow port capacity to be increased to 96,000 lines. Qwest also contends that the ATM switch limits the number of virtual connections to 16,000. The assumption by Qwest is that each ADSL customer requires a unique virtual connection, whereas the model assumes that traffic bound for a given internet service provider is combined and requires a single virtual connection per central office. The model provides adequately for both port capacity and number of virtual connections.[178]

136. Overall Qwest's model is a less reliable method of estimating the costs of providing high-capacity loops because of its reliance on the structure of its existing network and its clear overstatement of loop costs. The HAI adjunct model more reasonably estimates these costs using a forward-looking architecture. The HAI adjunct model should be used to price DSL and DS1-equipped loops.

DS3 and Higher-Capacity Loops

137. The HAI 5.2a model does not produce a price for DS3 or higher-capacity loops. Qwest's ICM/NAC model, and specifically the Hicap UNE Recurring cost study (no. 6171) and the OC-n Capable Loop cost study (no. 6213), are the only models in the record that generate prices for these elements. The other parties have proposed that prices can be set for these elements using the Qwest models with certain changed assumptions.

138. First, the Department recommends adjusting Qwest's study to remove use of the total investment factor (TIF). The TIF factor represents the additional amounts added to basic material costs to obtain engineered, furnished, and installed amounts for circuit investment.[179] This factor is calculated as a ratio of material investment to Qwest's actual installation costs, and Qwest maintains that this is a "forward-looking cost estimate based on Qwest's actual experience installing equipment."[180] The record does not suggest that Qwest's actual costs would reflect those of a forward-looking network. The TIF factor should be replaced with the ratio of basic material costs/installation expense produced by the HAI 5.2a model for DS1 loops; and if it cannot be replaced in this manner or in some comparable manner to estimate forward-looking installation costs, then it should be eliminated.

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[177] Qwest says only that different technologies may provide the least-cost solution "in different areas." Ex. 243 (Brigham Rebuttal) at 52.
[178] Ex. 202 (Denney Surrebuttal) at 35-36.
[179] Ex. 243 (Brigham Surrebuttal) at 56.
[180] Qwest Brief at 48.

139. Second, the Department recommends reducing overhead expense to the level approved in the Generic Cost Case (13.09%). As noted above, the Administrative Law Judges have recommended that the default overhead factor of (10.4%) should be used instead. Qwest disputes that the overhead factor should be applied to accounts other than the 6700 accounts.[181] The Department does not respond to this criticism. Qwest should revise its model, using the Department's suggested method, but applying the HAI 5.2a overhead factor, the network operations expense factor, and any other approved inputs that would apply to the appropriate accounts. The same changes should be made for DS3 loops, OC-3 to -48 loops, and OC-3 to -48 UDIT.

140. The results using the Department's suggested method are illustrated in the following tables, but the Department values may be somewhat different after the above revisions are made to the TIF factor and the expense accounts:

UNE DS3	Qwest Value	Department Value
Zone 1	$698.94	$550.92
Zone 2	$704.96	$555.67
Zone 3	$701.49	$552.93
Zone 4	$815.61	$642.88

UNE	Qwest Value	Department Value[182]
OC-3		
Zone 1	$706.93	$557.22
Zone 2	$721.23	$568.49
Zone 3	$718.31	$566.19
Zone 4	$814.18	$641.75
OC-12		
Zone 1	$1,120.16	$882.94
Zone 2	$1,134.46	$894.21
Zone 3	$1,131.54	$891.90
Zone 4	$1,227.41	$967.47
OC-48		
Zone 1	$3,506.75	$2,764.10
Zone 2	$3,521.05	$2,775.37
Zone 3	$3,518.13	$2,773.07
Zone 4	$3,614.00	$2,848.63

[181] *Id.* at 65-66.
[182] *Id.* at 67.

UNE UDIT	Qwest Value Fixed	Per-mile	Department Value Fixed	Per-mile
OC-3				
0 - 8 Miles	$714.41	$40.89	$563.11	$32.23
8 - 25 Miles	$714.41	$41.87	$563.11	$33.00
25 - 50 Miles	$714.41	$46.91	$563.11	$36.98
Over 50 Miles	$714.41	$62.95	$563.11	$49.62
OC-12				
0 - 8 Miles	$2,026.52	$81.18	$1,597.35	$63.99
8 - 25 Miles	$2,026.52	$83.11	$1,597.35	$65.51
25 - 50 Miles	$2,026.52	$93.13	$1,597.35	$73.41
Over 50 Miles	$2,026.52	$127.44	$1,597.35	$100.45
OC-48				
0 - 8 Miles	$4,138.35	$205.30	$3,261.94	$161.82
8 - 25 Miles	$4,138.35	$210.19	$3,261.94	$165.68
25 - 50 Miles	$4,138.35	$235.52	$3,261.94	$185.64
Over 50 Miles	$4,138.35	$324.12	$3,261.94	$255.48

141. AT&T recommends further adjustments to eliminate the maintenance fill factor and to "reflect economies of scale" that are consistent with economies of scale assumed in Qwest's entrance facility cost study. AT&T did not specify how it would make such adjustments, so the record does not permit analysis of whether they would be appropriate.

NONRECURRING CHARGES

142. In the Generic Cost Case, the Commission adopted the NRCM, sponsored by AT&T and MCI, to be used in setting nonrecurring charges ("NRCs") for network elements and interconnection. Qwest has vigorously argued that the prices set by the NRCM are inadequate and should be re-visited in this proceeding. In fact, a central premise of its advocacy regarding NRCs is that the basic installation rate ordered by the Commission is inadequate and that it is necessary for the Commission to reexamine all NRCs.[183] The Commission has declined to do so, and such a "reexamination" is consequently beyond the scope of this proceeding.

143. "Flow through" measures the amount of human intervention, as opposed to electronic processing, required to provision orders for UNEs. Because human intervention has the effect of significantly increasing provisioning costs, the extent to which orders "flow through" plays an important role in establishing NRCs.[184] In the Generic Cost Case, the Commission approved a flow-through rate of 98% for POTS

[183] Qwest Brief at 52.

[184] *See* ALJ Report in Generic Cost Case at ¶ 250.

and resale services and 95.4% for complex and designed services.[185] The ALJ's Report in the Generic Cost Case discusses in detail the evidence supporting these flow-through rates.[186] These flow-through rates previously approved by the Commission continue to be reasonable in light of the databases and electronic processes that should be available in a forward-looking network.[187]

144. Qwest's NRC models assume a lower flow-through rate of 85% applicable to activities performed by the Interconnection Service Center ("ISC") in connection with the provisioning of two wire and four wire loops.[188] For other activities, the flow-through rate assumed is significantly lower than 85%.[189]

145. There are several other ways in which Qwest's NRC cost studies fail to reflect costs that would be incurred through the use of economically-efficient, forward-looking processes.[190] The inputs for Qwest's NRC studies are based on Qwest's current experience with processing orders and provisioning network plant, using processes that Qwest follows today and, in some cases, processes that are scheduled to be implemented.[191] Consequently, a substantial portion of the direct costs calculated for many elements in Qwest's NRC studies are attributable to Qwest's use of inefficient manual processes, typically performed in the Interconnection Service Center or the Collocation Project Management Center (CPMC). A few examples demonstrate that Qwest's NRC studies include overstated times, unnecessary tasks, and exaggerated costs, and should not be used to set nonrecurring rates.

146. For certain elements, Qwest's NRC cost study includes costs associated with activities to be performed by the "Service Delivery Coordinator" in its Interconnection Service Center.[192] The portion of the cost study relating to activities performed by the Service Delivery Coordinator in connection with the provisioning, for example, of the CLEC to CLEC cross connection, assumes in calculating the cost of adding the element (1) that only 25% of the requests for this element will be received electronically; (2) that each element must be ordered via a separate Access Service Request (ASR); (3) that for each ASR received, the Service Delivery Coordinator will spend 15 minutes determining whether the CLEC placing the order is certified to provide service and an interconnection agreement with Qwest; (4) that for each ASR received, the Service Delivery Coordinator will take another 25 minutes to check contract terms, intervals, and various billing checklists. To disconnect this element, the model includes another 10 minutes to check contract terms and 15 minutes to check billing checklists.[193] Accordingly, Qwest's NRC cost study assumes that, if a CLEC submits, at the same time, three separate orders for CLEC-to-CLEC cross connections,

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[185] *Id.* at ¶ 287; Order Resolving Cost Methodology at 16.
[186] *See* ALJ Report in Generic Cost Case at ¶¶ 250-253, 273-289.
[187] *See* Ex. 206 (Fassett Rebuttal) at 26–62.
[188] Ex. 240 (Brigham Direct) at 85, n. 34.
[189] *See id.*, RHB-3, Cost Study No. 6204.
[190] *See* Ex. 206 (Fassett Rebuttal) at 37–74.
[191] Ex. 240 at 46.
[192] *See, e.g.*, Ex. 240 (Brigham Direct), RBH-5 at Tab 13.
[193] *Id.* at RHB-3(Minnesota Docket NRC Workpapers, Details Output); Tr. 4:199–214.

the Service Delivery Coordinator will spend, for each order, 15 minutes determining whether the CLEC has a contract, another 10 minutes ascertaining other contract terms, and 15 minutes checking various billing checklists.

147. These assumptions are unreasonable. The simple task of verifying whether a CLEC has an interconnection agreement is precisely the type of function that one would expect to be performed automatically, using electronic systems. Qwest has no such system in place.[194] Further, the cost study assumes no economies associated with the performing of repetitive tasks. The process described above cannot be reasonably characterized as either efficient or forward-looking.

148. Qwest NRC cost studies also assume another category of activities that are performed by Qwest's CPMC in connection with orders for unbundled dark fiber. Activities include the printing out of paper copies of e-mails and electronic order forms and making up a hand copy file to be provided, along with an electronic copy of these documents, to the engineer who performs a records inquiry.[195] The purported rationale for maintaining both physical and electronic files is that often Qwest's databases do not have the ability and/or space to allow for the entry of notes and other pertinent information and that the physical file is more easily updated with new information that becomes available.[196] The duplicative busy-work described as the function of the CPMC plainly does not reflect the use of efficient, forward-looking systems.

149. Qwest's NRC cost studies also assume that it will take two hours for a Qwest engineer to research Qwest's databases in order to determine the availability of dark fiber between two Qwest central offices.[197] The record demonstrates, however, that the work has been done in approximately one quarter of the amount of time assumed by Qwest's cost studies.[198] Furthermore, Qwest's cost studies relating to such records inquiries also assume no economies associated with repetitive tasks. Thus, if a Qwest engineer performs a records inquiry for a CLEC for a particular route on day one, the model assumes that the same amount of time will be spent on day two researching a request for the same route made by a different CLEC.[199]

150. Although Qwest claims that its inventory of dark fiber is reflected in its TIRKS database, Qwest does not rely on that database when provisioning "complex" orders for dark fiber (*i.e.*, orders requiring a splice). Rather, for any complex order for unbundled dark fiber, Qwest requires not only a record inquiry but a "field verification" as well.[200] This field verification process entails a Qwest technician going out into the field to verify that the information reflected in the database is, in fact, correct. The claimed justification for requiring this field verification is that information contained in the database may be inaccurate because, for example, a car may have run into the cabinet

[194] Tr. 4:212.
[195] Tr. 3:143–46.
[196] Tr. 3:190.
[197] Tr. 3:160-61.
[198] Tr. 3:171–72.
[199] Tr. 3:162-65.
[200] Tr. 3:140.

where the fiber is contained.[201] Qwest further maintains that no amount of updating of its databases will reduce the need for field verifications.[202] This cannot be described as an model of efficient, forward-looking processes.

151. Qwest has similar field verification requirements that it applies to requests for access to poles and conduits. Thus, Qwest's cost studies assume that, any time a CLEC makes a request for access to a pole, a Qwest technician must go out into the field to verify the pole number, street code and ownership.[203] Qwest also performs field verifications in response to requests for access to conduits, which entails a Qwest employee physically going to one or more Qwest manholes to prepare a sketch of the conduit structure on the manhole wall.[204] These verifications are the kinds of tasks that one should expect, in a forward-looking network, to be completed using electronic databases.[205]

152. In short, the evidence demonstrates that the methodology and assumptions used by Qwest's NRC do not produce reasonable cost estimates. No party other than Qwest submitted a model for nonrecurring costs. Nonetheless, the other parties have proposed that prices can be set for certain elements using either (1) the Qwest models, with certain changed assumptions; (2) the methodology used in the Generic Cost Case, with appropriate modifications; or (3) the prices set in the Generic Cost Case.

153. Any discussion of Qwest's proposed NRCs through the entries on its price lists is complicated by the differing content of the price lists. The list labeled Revised RHB-1 contains a list of Qwest's proposed prices for elements addressed in this proceeding; the list labeled RHB-2 contains some but not all SGAT prices, including the prices proposed in this proceeding, and the existing prices set previously.[206] The following elements appear on RHB-1 with proposed NRCs, but were not included on the Second UNE Pricing Prehearing Order; they are consequently beyond the scope of this proceeding: Dark fiber splice (9.7.8); and LMC Loop DS0 and DS1 (9.23.4 and 9.23.5).

Transfer/Conversion Charges

154. Qwest has proposed the following NRCs for billing transfer or conversion charges:

> *CTC for private line and advanced services (6.2.2 and 6.2.3)*. Qwest proposes NRCs of $41.48 and $53.25, respectively, for the costs incurred in changing these billing records. In the Generic Cost Case, the Commission approved a charge of $0.41 for transfer charges for POTS service. Qwest maintains that these higher rates are justified for private

[201] Tr. 3:140-41.
[202] Tr. 3:188-89.
[203] Ex. 240 (Brigham Direct) at RHB-5, Tab 150.
[204] Ex. 231 (Weidenbach Surrebuttal) at 20-21.
[205] Tr. 3:155-57.
[206] Ex. 240 (Brigham Direct) at 15.

line and advanced services because more manual processing is involved. In fact, the bulk of the direct costs for these elements are manual processing activities in the Interconnection Service Center or by the Interprise Account Consultant, involving screening, typing changes, and faxing.[207] These costs would not be incurred in an efficient, forward-looking network. If Qwest can adjust its model to delete these manual activities and to use appropriate inputs approved in this docket or the Generic Cost Case (flow-through, overhead, and any other inputs that would be applicable), then it should do so; otherwise, the rate approved for transfer of POTS service should apply.

UNE-P conversion/connection charge (9.23.2 and 9.23.3). Qwest proposes this charge for a CLEC's conversion of an existing POTS, PBX DID, or ISDN PRI service to the UNE-P billing platform and for installation of UNE-P POTS services, and for a new connection to the UNE-P billing platform. These same activities were priced in the Generic Cost Case as the UNE-P Conversion and New Connection NRCs ($0.67). Qwest has failed to demonstrate that the proposed new charges cover costs that were not included in the approved element.

*UNE-P conversion from Private Line (9.23.6)***.** This is another proposed charge ($33.07) that is intended to cover the costs of reassigning billing responsibility when a service is converted from private line to the UNE-P. This element was not priced in the Generic Cost Case; however, it is substantially equivalent to the work functions involved in UNE-P conversion/connection charges above. If Qwest can adjust its model to delete the manual activities and to use appropriate inputs approved in this docket or the Generic Cost Case (flow-through, overhead, and any other inputs that would be applicable), then it should do so; otherwise, the NRCs approved for UNE-P conversion/connection should apply.

Customized routing (9.13*)*

155. Qwest has proposed NRCs for Operator Services (OS) and Directory Assistance (DA) trunking on a per line class code and a per switch basis.[208] In a related docket, however, the Administrative Law Judges and the Commission have determined that Qwest should price OS/DA as unbundled network elements because Qwest has failed to accommodate technologies used for custom routing and has failed to provide standard pricing or standard service intervals.[209] Consequently, there is no need to price these elements of custom routing at this time.

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[207] Ex. 240 (Brigham Direct), RHB-3 (Minnesota Docket NRC Workpapers, Details Output).
[208] Ex. 240 at 99.
[209] *See In the Matter of a Commission Investigation into Qwest's Compliance with Section 271(c)(2)(B) of the Telecommunications Act of 1996; Checklist Items 3, 7, 8, 9, 10, and 12,* OAH Docket No. 12-2500-14485-2, PUC Docket No. P-421/C1-01-1370, REPORT OF THE ADMINISTRATIVE LAW JUDGE (May 8, 2002) at ¶¶ 102-04.

Loop Installation Options (9.2.4 through 9.2.7)

156. In the Generic Cost Case the Commission set rates using the NRCM for basic installation of various types of loops – $2.38 for a two-wire analog loop, $13.77 for a four-wire (DS0) loop, and $25.22 for a DS1 loop. In this proceeding, Qwest has proposed prices for what it refers to as additional "installation options:" basic installation with performance testing, basic installation with cooperative testing, and coordinated installation with/without cooperative testing.[210]

157. According to Qwest, the rationale behind these new rates is that they are intended to capture costs for activities that Qwest must perform "over and above" basic installation.[211] The basic installation price set in the Generic Cost Case includes testing to ensure continuity to the end-user's NID.[212] Qwest has defined "basic installation with performance testing" to include the additional task of providing the testing results by e-mail or telephone to the CLEC.[213] "Basic installation with cooperative testing" involves a Qwest technician placing a tone or short across the circuit so that the CLEC can conduct testing at its end. Extra costs are the phone call and the testing.[214] Coordinated installation (with and without cooperative testing) is installation that is coordinated between Qwest and the CLEC to take place at a particular time.[215]

158. The rates proposed by Qwest for these additional installation options are calculated without regard to the rate established for basic installation in the Generic Cost Case. Instead, Qwest has calculated what it believes to be the correct installation price for basic installation and added to that the extra costs necessary to provide each option. This proposal is directly contrary to the Commission's decision that it would not revisit the NRCs established in the Generic Cost Case.[216]

159. Thus, although the Commission has ordered that Qwest may charge only $2.38 for basic installation of a 2-wire loop, Qwest proposes to charge $203.04 if it provides to the CLEC, by e-mail or telephone, the results of the test (the performance testing option).[217] Qwest has proposed the same rate, $203.04, for "basic install with cooperative testing," which suggests that the additional effort cooperative testing entails is similarly minimal.

160. Covad contends that it orders basic installation with cooperative testing because of Qwest's regular and routine failure to provide good loops, and that CLECs should not be charged for testing that is necessary to ensure delivery of working loops. Covad's witness, however, was not able to quantify the number of bad loops received except to say that between 15% to 25% of loops delivered required some repair during

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[210] *See* Ex. 240 (Brigham Direct), RHB-1 at 9.2.4. Qwest has proposed a similar set of installation options for DS1, DS3, and OC-3, -12, and -48 loop installations.
[211] *See* Ex. 240 at 80-81.
[212] Ex. 221 at 8.
[213] Tr. 2:202.
[214] Ex. 221 at 9.
[215] *Id.* at 10.
[216] *Id.* at 83–84.
[217] *See* Ex. 240 (Brigham Direct), RHB-1 (revised).

cooperative testing.[218] This testimony suggests, therefore, that 75% to 85% of loops delivered to Covad were good, and that Qwest does in fact engage in some amount of work activity during the testing process for those loops that should be accounted for in pricing the installation.

161. A number of adjustments are necessary to make Qwest's proposed rates for additional installation options consistent with TELRIC methodology. AT&T has proposed adjusting the Qwest rates by deleting the manual activities and using the approved NRCs for installation and disconnection, as well as using the flow-through rates, overhead factor, and activities per dispatch inputs approved in this docket or in the Generic Cost Case. These adjustments, as applied to Qwest's price for coordinated installation with cooperative testing ($244.51), result in a rate of approximately $16.95.[219] Qwest should be permitted to charge for these installation options if it makes similar adjustments in all its proposed NRCs for loop installation.

Installation of DS3, OCn Loop (9.2.6, 9.2.7) and Transport (9.6)

162. As noted above, the Commission established an NRC for DS1 loop installation of $25.22 in the Generic Cost Case. Qwest has acknowledged that the work activities necessary to install DS3 and OCn loops are the same as for DS1 loops.[220] The Commission also established NRCs of $12.85 for DS1 and DS3 unbundled dedicated interoffice transport ("UDIT").[221] Qwest has also acknowledged that activities to install DS3 and OCn UDIT are the same as for DS1 UDIT.[222]

163. Nonetheless, Qwest has proposed installation rates for high-capacity loops and UDIT that are far in excess of the DS1 installation NRCs that the Commission ordered in the Generic Cost Case. For example, the basic installation rate Qwest proposes for DS3 loops is $181.51, with charges ranging up to $361.18 for coordinated installation with cooperative testing; the proposed NRCs for UDIT and E-UDIT are $364.46 and $424.86. respectively. These proposed rates are based solely on Qwest's claim that the NRCs established in the Generic Cost Case are inadequate. Because the work activities to install high-capacity loops and UDIT are the same, regardless of the capacity of the specific facility, it would be unreasonable to establish installation rates for DS3 and OCn loops and transport that are different from the DS1 installation rates set in the Generic Cost Case. The basic installation rates should be the same, for both loop and transport, as those set for DS1 installation in the Generic Cost Case.[223]

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[218] Tr. 7:55.
[219] Ex. 211 (Starr Reply) at 8–10; *id*., AS-2.
[220] Ex. 241 (Brigham Rebuttal) at 76–77; Tr. 4:191.
[221] Ex. 2xx, Compliance Filing dated June 13, 2000 in Docket No. C-96-1540.
[222] *Id.* at 83–84; Tr. 4:191.
[223] These approved basic rates should be used in revising Qwest's rates for installation options, as indicated above.

Enhanced Extended Loop (9.23.7.1 to 9.23.7.4*)*

164. Qwest proposes NRCs for Enhanced Extended Loop, which is a combination of loop (2-wire, 4-wire, DS1, and DS3) and UDIT. Qwest proposes recurring charges for EEL elements that are the same as its recurring charges for loops; however, the proposed NRCs for EEL elements are higher than those for basic loop installation. The NRCs for basic loop installation should be the same for the corresponding EEL elements.

Disconnection Charges

165. In the Generic Cost Case, the Commission ordered separate installation and disconnection charges. Qwest has proposed an NRC in this case that includes combined installation and disconnection charges.[224] Installation and disconnection should be charged separately as established in the Generic Cost Case.

Conduit Search

166. For the purpose of checking whether there is conduit space available between two points, Qwest has proposed an Innerduct Inquiry Fee (10.8.2) of $400.94 per mile. While Qwest's database may not be reliable, CLECs should not have to pay for Qwest's failure to maintain the database reliably. Qwest should not be permitted to assess this additional charge for confirming what should already be in its database.

All Other NRCs

167. Any elements for which the NRCs are not specifically discussed in this report[225] should be treated as follows: If Qwest can adjust its cost study as indicated above, to delete manual activities and unnecessary field verifications and to use appropriate inputs approved in this docket or the Generic Cost Case (flow-through, overhead, and any other inputs that would be applicable), then it should do so in a compliance filing; otherwise, the NRC should be set at zero.

COLLOCATION

168. In the Generic Cost Case, the ALJ recommended and the Commission adopted the AT&T/MCI Collocation Cost Model, which developed prices based on the way a hypothetical, efficiently-designed network would charge for collocation. As noted above, the Commission declined to reconsider the collocation rates established in the

[224] Tr. 4:219–20.

[225] This includes, but is not limited to, NRCs for CLEC to CLEC cross connect (8.7.5); Intra-Building Cable (9.3.3), DS1 Capable Feeder Loop (9.3.4); Field Connection Point ((9.3.8); UDIT Rearrangement (9.6.10); Local tandem switching (9.10); Digital trunk ports (9.11.4); DS0 Analog Trunk Port (9.11.5; Unbundled Packet Switching (9.24); Local Number Portability (10.1.2); and Access to Poles, Ducts, and Rights of Way (10.8).

Generic Cost Case because of the importance of meeting the § 271 filing schedule set by Qwest and because it did not recognize any urgency in re-examining those rates.[226]

169. The scope of this proceeding is accordingly limited to the pricing of collocation elements that were not priced in the Generic Cost Case. Qwest states that it has "filed cost data" for the following collocation elements: 48 volt DC power cables; terminations; virtual collocation labor; space inquiry report; cageless space construction; space option administration fee; remote terminal collocation; CLEC to CLEC collocation; and microwave collocation entrance facilities.[227] In pursuit of its argument that all collocation prices should be revised, Qwest also provided cost data for all elements priced in its Collocation Model.[228]

170. Qwest maintains that its Collocation Model ("CM") produces forward-looking rates. The model is based on a Qwest study of 41 actual cageless collocation jobs used to determine the average cost of installing a cageless collocation site. The typical lengths of power cables, engineering expense, and material costs were all based on these jobs. The sample included only cageless jobs that were completed prior to May 1999. Qwest subject matter experts (SMEs) added data for caged collocations to reflect the "standard caged collocation environment."[229] Qwest maintains that it then adjusted these averages to anticipate the likely improvements of an efficient carrier on a forward-looking basis, by assuming more internal labor (at lower cost) and placement of intermediate power distribution bays to reduce cable lengths. Qwest also increased the level of shared equipment, such as cable racking, to assume that more than 50% of the equipment is shared by Qwest. After direct recurring and nonrecurring costs were developed, annual cost factors were applied to the direct costs to develop what Qwest maintains are TELRIC and TELRIC plus common results.[230]

171. Although Qwest is highly critical of the AT&T/MCI CCM and maintains it is obsolete in part because it is based on a cost study done in 1997,[231] Qwest maintains that its study, based on jobs completed before May 1999, is nonetheless a reliable estimate of forward-looking TELRIC because there is no new technology for collocation elements that would significantly change costs between 1999 and 2002: "power cables installed in 2002 look like power cables installed in 1999."[232] Similarly, there is no evidence in the record that costs for collocation elements changed between 1997 and 1999. Qwest has failed to prove that the AT&T/MCI model adopted by the Commission is unreliable based on its use of 1997 data.

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[226] *In the Matter of the Commission's Review and Investigation of Certain Unbundled Network Element Prices of Qwest*, Docket No. P-442,421,3012/M-01-1916, ORDER URGING CONSOLIDATION OF THE UNE-P DOCKET WITH THE 271 COST DOCKET (Mar. 18, 2002) at 5.

[227] Ex. 240 at 50.

[228] The Collocation Model is included in Ex. 240, RHB-4, and the study results (study no. 6121) are in Ex. 240, RHB-3. This model was used to calculate costs for power delivery, terminations, and virtual collocation labor. Remote Terminal Collocation and CLEC to CLEC collocation are in separate studies.

[229] Ex. 240 at 58.

[230] *Id.* at 55-56.

[231] *Id.* at 53.

[232] *Id.* at 62.

172. Qwest asserts that its collocation assumptions and elements reflect "real world deployment" of collocation; it has done no analysis to determine whether collocation architectures that currently exist are efficient or use currently available technology.[233] This approach is inconsistent with the 1996 Act. The purpose of TELRIC pricing is not to determine what Qwest's costs are or will be, but to determine the costs of an efficient telecommunications provider. One of the basic assumptions of TELRIC is that the network will be rebuilt entirely using forward-looking technology.[234] The adjustments that Qwest has made to its model to "anticipate the likely improvements of an efficient carrier" are minimal "top down" changes to its existing network, as opposed to the modeling of a network designed from scratch to be an efficient telecommunications carrier. In the Generic Cost Case, the ALJ rejected the Qwest collocation model as including too many embedded costs and inefficient processes:

> Moving local telephone service into a competitive market creates the expectation that processes will change to reflect the need for efficiency. Building costs into the collocation rate that are based on inefficient processes raise barriers to entry into local competition for CLECs and reduce the incentive to update processes for ILECs. . . .[235]

173. Qwest's persistence in designing a cost model that is weighted so heavily in favor of its existing architecture and inefficient processes must be viewed as a continuing effort to recover embedded costs. There is no reason on this record to accept that Qwest's actual, real-world collocation costs bear any relationship to the costs that an efficient telecommunications provider would incur in a network built from scratch.

174. Again, the evidence demonstrates that the methodology and assumptions used by Qwest's Collocation Model cannot be relied upon to produce reasonable cost estimates. No party other than Qwest submitted a model for collocation costs. The parties have proposed that prices can be set for certain elements using either (1) the Qwest models, with certain changed assumptions; or (2) the methodology used in the Generic Cost Case, with appropriate modifications.[236]

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[233] Tr. 3:122, 186.

[234] Tr. 3:216, 220.

[235] *In the Matter of a Generic Investigation of US WEST Communications, Inc.'s Cost of providing Interconnection and Unbundled Network Elements,* OAH Docket No. 12-2500-10956-2 (Nov. 18, 1998), at ¶ 236.

[236] "Transfer of Responsibility Assessment and Network Systems Administration Fee (8.1.17)" appears on RHB-1 as a proposed collocation NRC, but was not included on the Second UNE Pricing Prehearing Order; it is consequently beyond the scope of this proceeding. "Collocation - Quote Preparation Fee (8.3.1)" for virtual collocation was not included on the pricing list because it is already included in the Planning charge. In addition, Qwest agreed to remove "Extension Technology charges (9.2.2.5)" along with "Call out for Project Coordinated Cuts" from its SGAT. *See* Second UNE Pricing Prehearing Order ¶¶ 6, 12 (Jan. 24, 2002). Qwest should correct its SGAT accordingly.

Terminations (8.1.8)

175. Terminations provide the connection between the CLEC collocation space and the intermediate distribution frame. In the Generic Cost Case, the Commission established rates for voice grade, DS1, and DS3 circuits (terminations). The voice grade circuits were priced on a per 100 pair basis, and DS1 circuits were priced per 28 DS1s. Qwest has agreed to provide single terminations if requested, and it has filed cost data for single voice channel and DS1 terminations.[237] Its collocation model generates monthly recurring charges and NRCs for these single terminations that appear to be disproportionately higher than those the Commission approved for block terminations. Qwest should use the methodology and inputs for the collocation model approved in the Generic Cost Case, making appropriate modifications as necessary, to price the single terminations for voice grade and DS1 circuits.

Space Inquiry Report (8.1.14)

176. In 1999 the FCC determined that ILECs must provide space availability reports to CLECs upon request and that ILECs should be allowed to recover the costs associated with these reports.[238] Accordingly, Qwest proposes a Space Availability Charge of $345.95, assessed when Qwest provides a Space Inquiry Report. This optional report provides CLECs with information regarding the existing collocation conditions within an office, and the charge for the space inquiry report applies on a "per office" basis each time a CLEC requests a report.[239] Qwest's proposed NRC for the space availability report includes five hours of time to check availability in the central office and process the report.[240] This appears to be an excessive amount of time to process information that should be available quickly in an efficient, forward-looking network. Qwest should revise its model to delete manual activities and to use inputs approved in this docket or the Generic Cost Case, including but not limited to overhead.[241]

Space Option Administration fee (8.1.16)

177. Qwest proposes a Space Option Administration Fee of $1,165.75, which would permit CLECs to reserve space for future collocation needs. This element was not included in the previous cost docket. Space options are subject to first right of refusal requests by other parties with firm collocation orders. According to the study associated with this fee (No. 6218), a substantial portion of the direct costs are for processing of the application and project management/scheduling time (seven hours).

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[237] Ex. 240 at 64.

[238] *See* First Report and Order, *In the Matters of Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147 ¶58 (rel. March 31, 1999).

[239] *See* Ex. 240 (Brigham Direct) at 69-71.

[240] *See* Ex. 240, RHB-3 (Minnesota Docket, Collocation cost studies).

[241] In the category of "All Collocation," Qwest proposes an NRC for Inspector labor per half hour. In the Second UNE Pricing Prehearing Order, this element was to be priced under Virtual Collocation. Qwest has not explained how this charge would be applied to all collocation elements or offered any method of determining whether such costs are already included in the elements that are priced. Accordingly, Qwest should not be permitted to recover this labor charge.

Again, this appears to be an excessive amount of time to process information that should be available quickly in an efficient, forward-looking network. Qwest should revise its model to delete manual processing activities and to use any applicable inputs approved in this docket or the Generic Cost Case, including but not limited to overhead.

Power Delivery (8.2.2 and 8.2.4)

178. Power cables are dedicated to a given CLEC and provide power from the Battery Distribution Fuse Board (BDFB) or the main power board to the CLEC collocation space.[242] In the Generic Cost Case, the Commission established NRCs using the AT&T/MCI Collocation Model for power delivery of 20-amp, 50-amp, and 100-amp service per feed. In recommending this model, the ALJ rejected US WEST's per-foot, per feed prices, in favor of assumed lengths of 35 feet for caged collocation and 40 feet for virtual/cageless collocation, which were intended to encourage efficient siting decisions. The model also assumed that all power cables would run to the collocation from the BDFB, not the main power board, because the investments required to deliver power between the -48V power plant and the BDFB are included in modeling the power consumption charge.[243] The model generated no recurring charges for power delivery.

179. In this proceeding, Qwest has proposed recurring rates and NRCs for 30-, 40-, 60-, 200-, 300-, and 400-amp DC power cables. Qwest has proposed NRCs for DC power cable costs for each cable size, based on the average cable length in its study of collocation jobs, for both caged and cageless collocation.[244] For collocations connected to the BDFB (30-, 40, and some 60-amp service), its study assumes each feed is 83 feet (caged) and 71 feet (cageless). For power delivery in larger amperages, Qwest assumes 183 feet of cable from the power board to the collocation (60-, 200-, 300-, and 400-amp service).[245] The following chart summarizes the proposed NRCs:

Power Feed NRCs

Amps	Generic Cost Case Rate	New Qwest Rate
20	164.28	
30 Caged		6,114.20
40 Caged		7,311.09
50	214.28	
60 Caged		12,068.78
100	279.27	
200		36,560.28

[242] *See* Ex. 229 (Weidenbach Direct) at 7-10; *see also* Ex. 240 (Brigham Direct) at 63.
[243] *In the Matter of Onvoy, Inc.'s Complaint Against Qwest and Request for Expedited Hearing*, ALJ Report ¶ 52.
[244] DC power cable costs set in the previous cost docket do not distinguish between caged and cageless collocation. Both Qwest and the Department recommend separate prices for caged and cageless collocation, because the average cable distances are different.
[245] Ex. 231 (Weidenbach Surrebuttal) at 26-27. Qwest notes that it no longer proposes power delivery rates on a per-foot basis, but instead proposes rates on a "per-cable" basis. The cable lengths, however, are still much longer than those accepted in the Generic Cost Case. Qwest maintains that it will correct its SGAT to eliminate the reference to prices on a per-foot basis. Ex. 240 (Brigham Direct) at 63.

300	57,488.94
400	81,626.67
30 Cageless	5,083.56
40 Cageless	6,139.73
60 Cageless	7,740.05

180. Qwest, Onvoy, and the Department recently participated in a contested case proceeding to determine appropriate prices for certain amperages of power delivery that were not priced in the Generic Cost Case. In that proceeding, the Department recommended that prices be set based on modifications to the AT&T/MCI methodology as follows: For 40 amps to cageless collocations, the Department assumed the 40-foot cable length contained in the model for virtual collocation; assumed 0.25V voltage drop to size the cable at 2/0; and used cable prices from the model's back-up documentation to obtain a final proposed rate of $300.46 per feed. For delivery of 200 amps to caged collocations, the Department assumed the model's 35-foot cable length; assumed 0.25V voltage drop to size the cable at 750 MCM; assumed 6.27 hours for installation based on RS Means data for the cable size; and used cable prices from the model's backup documentation to obtain a final proposed rate of $1,383.61 for 200-amp power. The ALJ accepted the Department's testimony, and the Commission recently adopted these recommendations and ordered these prices.[246]

181. In this proceeding, the Department again recommends (through the same witness) using the AT&T/MCI model, modified as necessary, to price power cables. Although the Department advocates use of the same general method, it has changed a number of assumptions that were used to develop cable prices in the *Onvoy* matter, without providing any explanation for why those changes were made. Here, the witness assumed a 0.72V voltage drop to size the cable; and he used different assumptions for installation time for the higher amperages (200, 300, and 400 amps).[247] The Department's witness also used a different method for determining cable price, but this difference was explained: in cases where the AT&T/MCI model's back-up documentation had no price for the applicable cable size, he developed a proxy ratio of the model's prices to Qwest's prices, then multiplied Qwest's prices by the proxy ratio to fill in the missing numbers.[248] This method for pricing cables is a sound method of filling in the gaps in the documentation.

182. As a consequence of the changed assumptions regarding voltage drop, cable size, and installation time, the costs recommended by the Department in this proceeding are lower than those approved by the Commission in the *Onvoy* matter. Here, the Department recommends a price of $230.94 for 40-amp service to cageless collocations, as opposed to the $300.46 price approved in *Onvoy*; and it recommends a

[246] *In the Matter of Onvoy, Inc.'s Complaint Against Qwest and Request for Expedited Hearing*, Docket No. P-421/C-01-1896, ORDER RESOLVING COMPLAINT, SETTING COLLOCATION PRICES, AND SETTING PROCEDURAL SCHEDULE, (July 3, 2002).
[247] Ex. 280 at 21-22; *id.* at JWL-3-5.
[248] Ex. 280, JWL-5.

price of $469.74 for 200-amp service to caged collocations, as opposed to the $1,383.61 price approved in *Onvoy:*[249]

Amps	Type	DOC Proposed NRC	Qwest Proposed NRC
30	Caged	175.94	6,114.20
40	Caged	175.94	7,311.09
60	Caged	214.28	12,068.78
200	Caged	469.74	36,560.28
300	Caged	753.30	57,488.94
400	Caged	1,315.42	81,626.67
30	Cageless	187.13	5,083.56
40	Cageless	230.94	6,139.73
60	Cageless	291.89	7,740.05

183. In the absence of any explanation from the Department about its changed positions, the record does not permit the conclusion that the prices advocated by the Department in this proceeding are reasonable. In the interest of promoting consistency and predictability, values that are important to establishing and maintaining competition in the local service market, the Administrative Law Judges conclude that the same assumptions that the Department used to generate nonrecurring costs in the *Onvoy* matter, which the Commission approved just a few weeks ago, should also be used to price power cables in this proceeding. The Department should re-run its calculations using a 0.25V voltage drop to size the cable; using R.S. Means data for the source of installation times; and using its method for pricing cable. No recurring costs should be established for power cables.

Virtual Collocation Labor (8.3)

184. Qwest proposes NRCs for training (8.3.4), engineering (8.3.5) and installation labor (8.3.6) for virtual collocation, based on labor rates for Qwest personnel who perform each function.[250] Rates for virtual collocation labor were not set in the previous cost docket. There is no dispute that Qwest labor (e.g., training, engineering, installation) is required if a CLEC requests virtual collocation.[251] No party has articulated any specific concerns about Qwest's labor rates, but they do object to Qwest's proposal to charge in half-hour increments. In the Generic Cost Case, maintenance labor charges were approved in quarter-hour increments. Qwest should be permitted to charge its proposed rates if it does so in quarter-hour increments.

[249] *Id.*
[250] Qwest Brief, p. 57.
[251] *See id.* at 65.

Cageless Space Construction (8.4.2)

185. Although Qwest states that it is filing cost data for cageless space construction,[252] it does not address this element of collocation anywhere in the testimony of its cost witnesses. During the hearing, Qwest's witness testified that no costs were filed for cageless space construction because this cost was included in other elements priced in the Generic Cost Case.[253] Nonetheless, Qwest listed cageless space construction on its price list indicating that both the recurring and nonrecurring costs were "ICB."[254]

186. Both of these positions are entirely inconsistent with Qwest's testimony in the *Onvoy* matter, in which Qwest contended that cageless space construction was *not* priced in the Generic Cost Case. In *Onvoy*, Qwest developed and proposed a monthly recurring cost of $14.72 per bay using the AT&T/MCI model; the ALJ accepted Qwest's testimony, and the Commission subsequently adopted the ALJ's recommendation, approved this price, and allowed Qwest to bill for it both retroactively and prospectively.[255] The Department agreed with Qwest that these costs were not included in any other element priced in the Generic Cost Case, and it did not disagree with the manner in which Qwest calculated its price.[256]

187. There is no explanation for Qwest's inconsistency on this issue. Because the Administrative Law Judges believe that the result in *Onvoy* was correct, regardless of Qwest's current position, the price for cageless space construction approved in the *Onvoy* matter ($14.72 per bay) should apply to all CLECs. No price should be set for cageless site preparation, which should be removed from Qwest's SGAT.

188. Qwest took a similarly inconsistent position on the nonrecurring charge for an entrance facility.[257] In the *Onvoy* matter, Qwest contended that the price set in the Generic Cost Case, $1,124.21, did *not* include the cost of cable from the manhole to the point of interconnection in the collocation space. Again, the Department did not dispute that the fiber was not priced in the AT&T/MCI model, nor did it criticize the reasonableness of the cable price proposed by Qwest: $1,300.53.[258] The ALJ accepted Qwest's testimony, and the Commission subsequently adopted this recommendation and approved the fiber price. In this case, the § 271 docket, Qwest failed to propose any price for entrance facility fiber and took the position that it was obligated to use only the $1,124.21 price set in the Generic Cost Docket.[259] Again, because the Administrative Law Judges believe the result in *Onvoy* was correct,

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[252] Ex. 240 at 50.
[253] Tr. 5:45-49.
[254] Ex. 240, RHB-2, § 8.4.2. *See also id.* §8.4.3 (cageless site preparation recurring costs and NRCs are listed as ICB.
[255] *Onvoy,* ORDER RESOLVING COMPLAINT, SETTING COLLOCATION PRICES, AND SETTING PROCEDURAL SCHEDULE, (July 3, 2002).
[256] ALJ Order ¶ 83.
[257] Tr. 5:58.
[258] ALJ Order at ¶¶ 57-58.
[259] Tr. 5:58.

regardless of Qwest's current position, the price for entrance facility fiber approved in the *Onvoy* matter should be applied to all CLECs.

Remote Terminal Collocation (8.6)

189. The parties vigorously dispute whether Qwest's network architecture for unbundled packet switching and remote terminal collocation are efficient or whether these elements should be offered using NGDLC architecture.[260] The Department and Covad correctly assert that the issue whether these elements are satisfactory is being evaluated in the Line Sharing over DLC case.[261]

190. For purposes of this docket, the only issue is whether Qwest's proposed charges for collocation space, terminations, and labor are appropriate. Qwest proposes monthly recurring charges and NRCs for remote terminal collocation that include the cost of collocation space and FDI terminations (cost study no. 6220). The virtual remote terminal cost study (No. 6221) includes additional labor elements for virtual remote collocation.[262]

191. Qwest should use the collocation methodology and inputs approved in this docket or in the Generic Cost Case, making appropriate modifications as necessary, to price the recurring charges and NRCs for space and FDI terminations. With regard to virtual remote terminal collocation, no party has articulated any specific concerns about Qwest's labor rates other than the objection to charging in half-hour increments. Qwest should be permitted to charge its proposed rates if it does so in quarter-hour increments.

192. Finally, it is not clear from the record how Qwest intends to charge for DC power at the remote collocations. Qwest has proposed no power charge specific to remote terminal collocations, although the space charge does include the cost of "access" to power.[263] Qwest documents indicate that DC power of 60 amps should be available at remote terminals.[264] Qwest should develop a price for DC power delivery of 60 amps based on the model used to price power delivery in this docket and the Generic Cost Case, adapted as necessary for the remote terminal. Until it does so, the charge for 60-amp power to a caged collocation should apply.

CLEC to CLEC Collocation (8.7)

193. Direct CLEC to CLEC interconnection allows one CLEC to directly interconnect with another CLEC within the same Qwest central office. CLEC to CLEC

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[260] Within the industry, remote terminal collocation refers to a digital loop carrier (DLC) remote terminal. In contrast, Qwest defines remote terminal collocation as collocation at a feeder distribution interface (FDI). Tr. 3:96-97.Collocating a digital subscriber line access multiplexer (DSLAM) at the DLC would permit a CLEC to use one DSLAM to serve all end users off the FDIs served by the DLC, as opposed to using a DSLAM at each FDI. Tr. 4:100.

[261] Docket No. P421/CI-02-293.

[262] *Id.* at 65-67.

[263] Tr. 7:116.

[264] Ex. 234.

interconnections may involve physical to physical, physical to virtual, or virtual to virtual collocation. Qwest proposes a flat charge design fee that is not based on its cost study for this element (no. 6217) but is based instead on a price developed in the Generic Cost Case. There, the Commission approved an element called "Planning (equipment and cabling)" in the amount of $4,323.59 for cageless and virtual collocation. An additional charge for "Planning (subsequent requests for cabling only)" in the amount of $1,310.18 was set.[265] Qwest now proposes to charge the $1,310.18 as a flat charge design fee for CLEC to CLEC collocation, even if the connection is ordered at the same time as the original collocation. The CLEC Coalition maintains first that the charge is based on an inefficient process that is not forward-looking. On the contrary, the charge was based on a model the Commission approved as being properly TELRIC-based. Second, the CLEC Coalition argues that the charge should not apply when the request for cross-connection is ordered with the initial collocation. The compliance filing from the Generic Cost Case makes clear that this charge should apply only to a request that is "subsequent" to the initial collocation request. It should not apply when the request is submitted with the initial collocation request.

194. Qwest's collocation cost study develops recurring costs for cable racking and NRCs for virtual connections (labor charges) and cable hole (labor and materials to open and close the cable hole between floors). The CLEC Coalition argues that the charges for cable racking should apply only to racking that is not in place and is newly installed when requested by the CLEC. This issue is really a matter of whether the sharing assumption Qwest used in its model is adequate. It appears from the cost study that Qwest assumed that 5% of requests would require new cable racking, to be shared among three CLECs.[266] If a different sharing assumption was used in the Generic Cost Case for development of the cable racking charge approved there, Qwest should use it. If no other sharing assumptions are available, Qwest should be permitted to use its own. All other NRCs for this element should be priced using the collocation methodology and inputs approved in this docket or the Generic Cost Case, modified as necessary.

Microwave Collocation Entrance Facilities (8.8)

195. Microwave entrance facilities allow a CLEC to access CLEC transmission equipment collocated on or inside Qwest premises via a microwave antenna placed on the roof of the premises. This offering was not addressed in the previous cost docket.[267] Through its Microwave Entrance Facilities study (no. 6224), Qwest maintains that an ICB charge is necessary for many elements of microwave collocation. Qwest should use the collocation methodology and inputs approved in this docket or in the Generic Cost Case, modified as necessary, to provide a fixed price for as many components as possible. Qwest should also substantiate the need for ICB pricing, where necessary, in its compliance filing.

[265] Ex. 252, Compliance Filing dated June 13, 2000.
[266] Ex. 231(Weidenbach Surrebuttal) at 12-13.
[267] *Id.* at 72-73.

MISCELLANEOUS CHARGES (9.20)

196. Qwest has identified a number of miscellaneous charges (in half-hour increments, as opposed to quarter-hour increments approved in the Generic Cost Case[268]) relating to additional engineering, labor, testing, and maintenance. Some, but not all, are listed for pricing in the Second UNE Pricing Prehearing Order. Many of these charges relate to troubles on the line. Qwest's list is modeled on its FCC tariff charges, as opposed to any cost study based on TELRIC methodology. Qwest has failed to explain how these charges would be applied, such as how it would distinguish between situations when such costs are already included in element prices, or when "additional" engineering, labor, testing, or maintenance justifiably would be required. Qwest has clarified only that none of these charges would apply if trouble were found on Qwest's side of the network.[269] Qwest has failed to adequately explain the application of these charges, and they should be deleted from its SGAT.

UNBUNDLED DARK FIBER (9.7)

197. In the Generic Cost Case, the Commission approved a UDF cost element of $0.002 per foot for a pair of dark fibers.[270] Qwest is now proposing two new rates for UDF at $120.36 per-mile per pair.[271] Qwest now labels the approved rate “UDF-Interoffice facilities” (UDF-IOF); Qwest also has a new cost element called “UDF-Loop and Extended” UDF (E-UDF).[272]

198. Qwest proposes recurring and nonrecurring unbundled dark fiber ("UDF") rates for *loop* dark fiber elements. The UDF loop provides a single fiber or a pair of optical fibers, without electronic terminating equipment, between a wire center and a customer location. The fibers are connected to an FDP or functional equivalent in the wire centers or customer locations.[273] Recurring dark fiber costs are calculated in the dark fiber cost study (no. 6202).[274] Qwest has calculated its nonrecurring costs associated with dark fiber inquiries, quote preparation, and engineering in its NRC model (study no. 6204).[275]

199. The dark fiber in Qwest's new UNE is virtually indistinguishable from the UNE with an approved rate. Qwest concedes that there is no difference in the

[268] The Commission approved a rate for Equipment Maintenance labor and ordered that it be charged in 15-minute increments. Ex. 252.
[269] Tr. 7:125-30.
[270] Qwest should revise § 9.7.4 of RHB-2 to eliminate references to per-mile rates for UDF. The Commission approved a price for UDF per foot, not per mile.
[271] Ex. 280 at 25.
[272] Ex. 240, RHB-2 (§§ 9.7.4-9.7.6).
[273] *See* Ex. 240 (Brigham Direct) at 88-91; Ex. 229 (Weidenbach) at 11-22.
[274] *See* Ex. 240 (Brigham Direct), RHB-3.
[275] *See* Ex. 240 at 90-91, RHB-3; *see also* Ex. 229 (Weidenbach Direct) at 13-22; Ex. 230 (Weidenbach Rebuttal) at 2-5; Ex. 231 (Weidenbach Surrebuttal) at 2-10, 14-17.

functionality of the fiber, and it cannot effectively distinguish when it should be considered interoffice fiber vs. loop fiber.[276]

200. Charging different rates for fiber in this manner also appears to be discriminatory, in that a CLEC might be charged a higher rate for fiber, depending on where the CLEC is located. If CLEC A is currently collocated in Qwest Central Offices X and Y (ten miles apart), and if, for space reasons, CLEC B is collocated in Qwest Central Office Y and another location 8 miles from central office X, CLEC A would pay $105.60 per month for UDF fibers between its two locations, while CLEC B would pay $740.42 for shorter UDF fibers between its two locations.

201. CLECs have no input into where collocations will be placed in Qwest's network.[277] The distinction Qwest proposes could subject CLECs to excessive and discriminatory pricing, in addition to being difficult to apply given that the functionality of the fiber is the same. Qwest's attempt to distinguish between "loop" and interoffice fiber appears to be an effort to reprice an element already priced in the Generic Cost Case. The definition of UDF from the Generic Cost Case should not be reclassified in the way Qwest proposes; Qwest should delete its proposals for UDF loop fiber from its SGAT (sections 9.7.5 “UDF-Loop” and 9.7.6 “E-UDF”) in their entirety. Section 9.7.4 is sufficient, if the label UDF-IOF is simply called UDF, as it was in the Generic Cost Case.

202. Qwest also has proposed nonrecurring charges for an initial record inquiry (simple and complex), field verification and quote preparation, and field verification (engineering verification) for UDF. For the reasons noted above in the discussion of Qwest's NRC model, its cost studies are not reliable and should not be used.

203. Based on its experience in visiting Qwest's Rochester engineering center, the Department maintains that the Qwest engineer demonstrating the TIRKS system was able to determine availability for several routes in less than one-half hour.[278] The Department recommends that in lieu of Qwest's time estimations of 120 and 150 minutes for simple and complex records inquiries, respectively, the cost study should assume 30 minutes for a simple request and 40 minutes for a complex request. The engineer witness for the CLEC Coalition made a similar recommendation.[279] Qwest should revise its records inquiry NRCs using these assumptions for engineering time, along with any other approved inputs. The proposed engineering and field verification NRCs should be eliminated entirely as they reflect work that would be unnecessary in a forward-looking network.[280]

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[276] Tr. 3:179-81.
[277] Tr. 3:116.
[278] Tr. 8:145-46.
[279] Tr. 6:214-16.
[280] Qwest contends that some amount of field verification would be necessary in any forward-looking network, which is true, but it does not make Qwest's model compliant with TELRIC or its proposed prices reasonable. Qwest has the burden of proof, and it cannot meet the burden by offering an improperly inflated price and then arguing that some unspecified portion of it is legitimate.

SS7 CHARGES (9.14)

204. In the Generic Cost Case, the Commission established prices for several SS7 signaling elements, including ISUP and TCAP messages. Qwest proposes that a new rate for these SS7 signaling elements be set.[281] SS7 signaling is not identified as an element to be priced in the Second UNE Pricing Prehearing Order. Pricing of SS7 signaling is therefore not within the scope of this proceeding. According to the Prehearing Order, the only issue to be addressed is Qwest's application of SS7 charges.

205. After much equivocal and contradictory testimony, Qwest established, in contradiction to its SGAT, that the SS7 signaling charge would apply only when a CLEC call terminates to Qwest when Qwest's SS7 signaling is used.[282] The record reflects, however, that Qwest's signaling system and a CLEC's signaling system must reciprocally transmit signals to set up, complete and tear down calls, regardless of whether a Qwest end user is calling a CLEC or vice versa. Qwest has not proposed a reciprocal compensation arrangement with carriers whose SS7 network Qwest must use in order to complete calls, even though the 1996 Act requires "reciprocal compensation arrangements for the transport and termination of telecommunications."[283] Before Qwest may impose SS7 usage charges on any customer, Qwest should address whether reciprocal charges would be appropriate.

CATEGORY 11 MECHANIZED RECORD CHARGE (7.9.4)

206. Category 11 records are records of calls made by the customers of IXCs that access and transit the local network. The records are used by CLECs and ILECs to bill IXCs for access charges.[284] Although Qwest maintains that it is "optional" for CLECs to obtain these records from Qwest, there is no other practical source for them. Qwest's proposed alternative, that CLECs could, on a constantly recurring basis, seek these records from any IXC whose calls might transit the network, is anticompetitive and discriminatory. Qwest has the information and uses it to bill access charges for itself.

207. Pursuant to Qwest's wholesale product catalog, Qwest and CLECs are to exchange these records using category 11-01 series access usage records and category 11-50 summary usage records.[285] Qwest's SGAT also requires CLECs to exchange access records with Qwest (§§ 7.5 and 7.6), and its SGAT appears to contemplate that Qwest will provide its electronic Daily Usage Record file (DUF) for this purpose, with a per-record charge of $0.00110. In this docket, Qwest proposes a mechanized record charge of $0.001644.

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[281] Ex. 240 at 98.
[282] Tr. 7:222.
[283] 47 USC § 251(b)(5).
[284] Ex. 279.
[285] *Id.*

208. Qwest has failed to demonstrate how this charge would be applied and how it relates to other charges in its SGAT.[286] Until Qwest files adequate application information, so that its cost study can be properly analyzed, the parties should each bear their own expenses of exchanging this data.

LINE SHARING AND UNBUNDLED PACKET SWITCHING (UPS)

209. Traditionally, DSL technologies have been deployed on loops that are copper end-to-end from the central office to the customer premises ("home run copper"). Some types of DSL may be deployed on hybrid loops that are copper from the customer's premises to a mid-point equipment location, known as a remote terminal (RT), where signals are combined and transmitted over fiber optics from the RT to the central office ("fiber-fed loops").

210. Qwest and other ILECs have deployed fiber-fed loops and plan to increase their deployment of fiber-fed loops in the future. Qwest has proposed two mechanisms by which companies can work around the presence of fiber in order to provide DSL service: (1) In limited circumstances, Qwest will provide access to its packet switched network; or (2) companies, whether CLECs or data LECs, can collocate DSLAMs[287] at a "DA Hotel" at or near an FDI.[288] Qwest is obligated to provide access to its packet switched network only where Qwest is providing a similar service to its own retail customers through remote DSLAMs at the end of Qwest fiber feeder. In addition, there must be no space for a CLEC to collocate a similar DSLAM and no alternative DSL service through a direct copper loop between the customer and the CLEC. Qwest has had only two applications for remote terminal collocation in its region, none in Minnesota. Only one CLEC in Qwest's region has collocated at a remote terminal.[289] Covad maintains that these options are competitively unworkable and is seeking a broader offering of this and perhaps other UNEs in the Line Sharing Over DLC docket.[290]

211. In this docket, Qwest is proposing prices for a UNE consisting of the following physical facilities: an ATM port, a virtual channel between the central office and the remote collocation hotel, and DSLAM functionality at the collocation hotel. Qwest's UPS costs and associated rates are, in large part, based on its DA Hotel network architecture. Qwest's cost study estimates the cost of overlaying remote DSLAMs on its existing network by installing cabinets at FDIs serving loops with fiber feeder running to a DLC terminal. The DSLAM then converts the digital fiber signal to copper for the final leg to the customer. Qwest's study indicates that the recurring cost of a customer channel is $23.78, DSLAM functionality is $20.42, and the ATM port is

[286] Tr. 7:202-13.
[287] A DSLAM multiplexes many DSL lines onto higher-speed circuits (DS3 or faster) and delivers them to a data network. Ex. 280 at 69.
[288] This is what Qwest calls "remote terminal collocation," the pricing for which is addressed in the Collocation section of this Report.
[289] Tr. 3:85.
[290] No. CI-02-293.

$157.56 for DS1 and $270.74 for DS3.[291] Qwest developed these rates for the purpose of permitting Qwest to recover the costs of DSLAMs it has actually employed.[292]

212. Qwest's cost model does not even purport to rebuild the network using the most efficient technology available; it is expressly based on an overlay of Qwest's existing network. Qwest's model clearly fails to comply with TELRIC methodology and should not be used to price UPS.

213. The HAI 5.2a adjunct model generates recurring rates for two UPS elements: (1) DSLAM functionality ($7.01) and (2) the UPS interface port ($155.59 for a DS3). It does not produce a rate for the customer channel or DS1 interface port.

214. In addition to the arguments addressing the adjunct model generally (lack of documentation for the price of equipment, and the capacity of the ATM switch, both of which are addressed above), Qwest also argues that the adjunct model lacks factual basis for assuming that 98,205 ADSL lines in Minnesota are served by a DSLAM at a remote terminal, when in fact Qwest had only 6,598 such lines in this state at the end of 2001.[293] When the adjunct model was run, the modelers assumed (without knowledge of Qwest's actual numbers) 10% ADSL penetration for lines served by a remote terminal.[294] This is an adjustable input in the model, and it could be run using different numbers.

215. Covad argues that Qwest should have used a different network architecture to price UPS in which the DSLAM is a line card in a next generation digital loop carrier (NGDLC), which provides a digital signal over the copper between the DLC and the customer premises without the expense of building a DA hotel or installing a stand-alone DSLAM.[295] Covad filed no cost study of its own, but it contends that Qwest's prices are three times higher than they would be using NGDLC architecture, based on SBC's "Project Pronto" rates for UPS. Covad argues that if Qwest placed the DSLAM higher in the network, both Covad and Qwest would be able to serve more customers per DSLAM and thus the price of UPS would be reduced.[296]

216. Covad also contends that Qwest's provision of UPS may be discriminatory, because Qwest utilizes its packet switched network to provide an end-to-end service to its customers, whereas CLECs using UPS get only transmission and DSLAM functionality between the central office and the remote terminal – the “last half-mile” to the end user is not included even though it apparently is for Qwest.[297] Covad

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[291] Ex. 240 (Brigham Direct), RHB-1. Qwest has also proposed NRCs for the customer channel and switch ports. On its list of proposed prices, there is no NRC for DSLAM functionality. Ex. 240, RHB-1. On its SGAT, however, Qwest proposes an ICB NRC for DSLAM functionality "because Qwest hasn't had a request for it." Ex. 240, RHB-2 9.24.1; Tr. 7:82-83. There does not appear to be any justification for charging an NRC to a CLEC for using DSLAM functionality that is already at the remote terminal. Tr. 7:82.

[292] Tr. 7:81.

[293] Ex. 241 (Brigham Rebuttal) at 23.

[294] Tr. 1:75.

[295] Tr. 7:15-17; Tr. 7:41-42.

[296] Tr. 8:131; Tr. 9: 27; Ex. 286 at 15-22.

[297] *Id.* at 92-93.

also argues that Qwest's UPS product is incomplete because it does not specify a bit rate. Qwest responds that a CLEC can run whatever rate it wants through the virtual channel which shares a digital pipe with other Qwest and CLEC services between the DSLAM and the ATM switch port. At peak times, all services in a virtual channel may face restricted bandwidth.[298] If Covad wants a committed bit rate, it need only order a subloop feeder of the appropriate size to connect the DSLAM to the ATM port and a dedicated loop of the same size. Shared loops are free in Minnesota.[299] In short, Qwest argues that it provides an end-to-end service, which can be configured to provide committed bit rate service through the purchase of the proper UNEs.

217. Whether Qwest provides adequate access to fiber-fed loops and whether it should provide access to its packet switched network at a different place or in a different manner is to be decided in the Line Sharing docket. Depending on the decisions in that docket, Qwest's UPS and/or remote terminal collocation rates may have to be revised. For the purpose of pricing UPS in this docket, however, the evidence is insufficient to conclude that Covad's proposed architecture would be more appropriate than that assumed in the HAI adjunct model, which is an actual cost model that is in the record.

218. The HAI adjunct model should be used to price UPS. The per-line investment should be calculated based on the 6,598 ADSL lines that Qwest currently has in Minnesota. It may be turn out to be the case that other numbers would be appropriate, such as Qwest's projected penetration or the number of customers that could be served using the technology, but those decisions will be made in the Line Sharing Docket. For elements of UPS that are not priced by the HAI adjunct model, Qwest should revise its model using inputs approved in this docket or the Generic Cost Case, such as flow-through, overhead factor, network operations factor, and any other applicable inputs.

PROCEDURAL RECOMMENDATIONS

219. Several parties have requested procedural recommendations for implementing the Commission's pricing decisions in this docket.

Pricing of OS/DA and CNAM Bulk Download

220. In a related docket, the Administrative Law Judges recommended that (1) Qwest be required to provide OS/DA at cost-based rates until such time as it accommodates the custom routing technology that would enable CLECs to self-provision these services; and (2) Qwest be required to provide bulk download of the CNAM database at cost-based rates.[300] The record in this docket will remain open to allow the filing of a supplemental report addressing these issues. In a recent prehearing

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[298] *See, e.g.,* Tr. 7:88-90.

[299] Ex. 240 (Brigham Direct), Ex. RHB-1.

[300] In the Matter of a Commission Investigation Into Qwest's compliance with Section 271(c)(2)(B) of the Telecommunications Act of 1996; Checklist Items 3, 7, 8, 9, 10, and 12, OAH Docket No. 12-2500-14485-2, ALJ REPORT (May 8, 2002).

conference, a two-day hearing was scheduled for October 16-17, 2002, with a supplemental report due November 15, 2002.[301]

True-Up

221. The Commission has ordered that all rates under review in this docket, except for DS3 rates, are interim and subject to true-up once final rates are established.[302] All rates approved in this proceeding (except for DS3) are subject to the true-up. A schedule for conducting the true-up should include a date by which Qwest must provide its proposed true-up to CLECs; a date by which CLECs must notify Qwest of their agreement or disagreement with specific proposals; a date by which Qwest must report to the Commission that all true-ups have been finalized; and a date by which Qwest must issue any credits or adjustments based on the true-up. The process should take no more than six months. Qwest must promptly bring any disputes to the Commission's attention for resolution within this timeframe.

Process for Obtaining Commission Approval of New Prices

222. There should be an established process for obtaining Commission approval of any element not priced in the Generic Cost Case or in this proceeding. There is clearly a need for a procedure to establish new UNE prices or to modify discrete prices without waiting for resource-intensive generic cost cases.

223. *Qwest's SGAT.* The inclusion of a price in Qwest's SGAT is not adequate authority for Qwest to charge the rate to a CLEC. In addition, the SGAT typically does not contain an adequate description of Qwest's proposed application of a rate. The SGAT must conform to the decisions made by the Commission in this and the Generic Cost Case, and it should indicate expressly which prices have been approved by the Commission.

224. *Market-Based Rates.* Although Qwest previously filed market-based rates for local switching and vertical features in certain Minnesota exchanges, it did not include market-based UNE prices for local switching and vertical features in this docket. While the FCC may permit market-based rates under certain circumstances, Qwest should not be permitted to charge any market-based rate without first obtaining approval from the Commission.

225. *Prices Under Development.* Qwest's SGAT contains a number of elements for which it indicates that prices are "under development." For a UNE or process that has not previously been offered in Minnesota, Qwest may obtain approval by filing for review of the price within 60 days of offering the price to a CLEC in Minnesota. For a UNE or process that has been offered in Minnesota, but for which no price has been developed, Qwest should first obtain approval from the Commission by filing for review of the price before charging it.

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[301] Sixth UNE Pricing Prehearing Order (July 29, 2002).

[302] *In the Matter of the Commission Review and Investigation of Qwest's Unbundled Network Elements UNE Prices*, Docket No. P-421/CI-01-1375, ORDER ESTABLISHING INTERIM RATES (April 4, 2002).

226. *ICB Prices.* Qwest should not be permitted to charge any ICB price unless the Commission has specifically approved it.[303] If a CLEC requests an element that is on Qwest's SGAT as ICB and has not been approved as such by the Commission, Qwest should either develop a cost-based price or substantiate the need for ICB pricing, and file it with the Commission for review within 60 days of offering the price to a CLEC in Minnesota.

227. *New UNE Prices.* Qwest should be required to file a cost-based price, together with an adequate description of its application, for review by the Commission within 60 days of offering the price to a CLEC in Minnesota. Qwest may immediately charge any rates negotiated voluntarily through an interconnection agreement, provided the interconnection agreement is filed for review by the Commission within 60 days.

RECOMMENDATIONS

IT IS RESPECTFULLY RECOMMENDED that the Public Utilities Commission issue an Order:

1. Adopting the foregoing Findings and Conclusions.

2. Requiring compliance runs as recommended by the Department.

3. Reporting its Findings and Conclusions to the Federal Communications Commission.

Dated August 2, 2002

STEVE M. MIHALCHICK
KATHLEEN A. SHEEHY
Administrative Law Judges

[303] For example, "Central Office Security Infrastructure (§ 8.1.9)" appears on RHB-2 with ICB pricing. Qwest was unable to explain how Qwest would charge for this element. Tr. 5:71-72; 3:119. Qwest should remove this item from its SGAT until it has obtained approval for ICB pricing.