BEFORE THE ARIZONA CORPORATION COMMISSION

WILLIAM A. MUNDELL
Chairman
JIM IRVIN
Commissioner
MARC SPITZER
Commissioner

IN THE MATTER OF INVESTIGATION INTO QWEST CORPORATION'S COMPLIANCE WITH CERTAIN WHOLESALE PRICING REQUIREMENTS FOR UNBUNDLED NETWORK ELEMENTS AND RESALE DISCOUNTS.

DOCKET NO. T-00000A-00-0194 PHASE II-A

QWEST CORPORATION'S EXCEPTIONS TO THE RECOMMENDED PHASE IIA OPINION AND ORDER

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DATED: November 25, 2002

Dated: November 25, 2002

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I. INTRODUCTION

Qwest Corporation ("Qwest") submits these exceptions to the Recommended Phase IIA Opinion and Order ("Recommended Opinion and Order") issued by the Administrative Law Judges on November 8, 2002.

The Telecommunications Act of 1996 ("the Act") requires the Commission to set switching rates "based on the cost . . . of providing [switching],"¹ and this cost must be determined by applying the FCC's TELRIC ("total element long run incremental cost") pricing rules. TELRIC requires rates that are based on the "most efficient technology proven" to be "operationally feasible, currently available,"² and "compatible with the most basic geographical design of the existing network,"³ - a definition supported by both AT&T and the FCC. The rulings in the Recommended Opinion and Order relating to switching fail to comply with these basic requirements. If adopted, these rulings will produce switching rates that are neither cost-based nor TELRIC-compliant.

The Recommended Opinion and Order's violation of these governing cost and pricing rules begins with the adoption of the HAI model, version 5.a, for establishing switching costs and rates. Preliminarily, the Commission's decision to adopt HAI in Phase II of this docket to set rates for other unbundled network elements ("UNEs") provides no basis for adopting the model's switching module here. That module, which was not considered in the prior phase of this proceeding, contains multiple, basic flaws that lead to demonstrably inaccurate estimates of switching costs. The HAI switching module relies heavily on the FCC's universal service cost model, the "Synthesis Model," to estimate switching costs. But that is not a virtue of the module,


² Reply Brief of AT&T Corp. at 16-17, AT&T v. Iowa Utilities Board, (U.S. July 23, 2001) (Nos. 00-590, 00-511, 00-555, 00-587 & 00-682) (emphasis added).

³ Brief for the Petitioners FCC and the United States at 9, Verizon Communications, Inc. v. FCC., (U.S., Apr. 9, 2001) (Nos. 00-511, 00-555, 00-587, 00-590 & 00-602) (emphasis added).
but rather is one of its principal flaws. The FCC developed the Synthesis Model as a tool for determining the relative amounts of universal service funding that states should receive. On multiple occasions, the FCC has emphasized that these universal service cost estimates are fundamentally different from the TELRIC estimates that are required to set UNE rates, and it has specifically cautioned state commissions not to use the model for UNE rate-setting. Because doing so would yield the lowest possible costs (and thus rates), the CLEC sponsors of HAI have instructed its designers to base all of the switching investment in the HAI switching module – and investment is the primary cost-driver in the module – on the Synthesis Model. As a result, the model excludes switching investment that is essential to providing unbundled switching.

"Fill factors," or rates of utilization of switching equipment, are a critical input in calculating switching investment. The HAI model uses a fill rate of 94 percent, which is the exact rate the FCC uses in the Synthesis Model. The proponents of the HAI switching module introduced no evidence in support of the 94 percent fill rates other than the fact that such rate is used in the Synthesis Model. However, the FCC has stated unequivocally that this fill factor "should not be used for setting rates," and it has approved significantly lower fill rates for establishing UNE switching rates.5

Without even addressing the FCC's admonitions against the use of the Synthesis Model for ratemaking purposes in general, and the use of the model's 94 percent fill factor in particular,

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4 See, e.g., Memorandum Opinion and Order, Joint Application by BellSouth Corporation, et al., for Provision of In-Region, InterLATA Services in Georgia and Louisiana, CC Dkt. No. 02-35, FCC 02-147 (rel. May 15, 2002) ("BellSouth Georgia/Louisiana 271 Order") ¶¶ 73, 82; Memorandum Opinion and Order, Application by Verizon New England Inc., et al., for Authorization to Provide In-Region, InterLATA Services in Maine, CC Dkt. No. 02-61, FCC 02-187 (rel. June 19, 2002) ("Verizon Maine 271 Order") ¶ 29, n.107 (same).

5 Memorandum Opinion and Order, In the Matter of Application by Verizon New England Inc., et al., for Authorization to Provide In-Region, InterLATA Services in Vermont, CC Dkt. No. 02-7, FCC 02-118 (rel. April 17, 2002) ("Verizon Vermont 271 Order") ¶ 36 (emphasis added). Instead of relying on the Inputs Order fill factor, the FCC approved Verizon switching rates based upon fill rates of 72% for IDLC lines and 81% for analog lines. Id. Qwest's proposal to reduce the average HAI fill rate for switching from 94% to 80% is more favorable to CLECs than these FCC-approved fill rates.
the Recommended Opinion and Order does exactly that. That decision is both erroneous and material. Indeed, as is clear from the FCC's rejection of the 94 percent fill factor and approval of substantially lower fill factors for ratemaking purposes, a 94 percent fill factor overstates by a large amount the utilization rate for switching equipment that an efficient carrier can reasonably accommodate without compromising service. It is telling that the CLEC sponsors of HAI, AT&T Communications ("AT&T") and WorldCom, Inc. ("WorldCom"), did not identify a single carrier that operates its switches at anywhere near a fill rate of 94 percent. In sum, there is no evidence, much less substantial evidence, to support the adoption of a cost model that assumes a fill rate of 94 percent. The FCC's statements could not be clearer that the Synthesis Model, upon which the CLEC sponsors of the model rely, does not fill this evidentiary void.

In addition to using this inflated fill factor, the HAI model adopted by the Recommended Opinion and Order excludes large amounts of investment that any efficient carrier must incur to provide switching. This investment includes the costs associated with adding switch upgrades and growth lines to switches – costs that the FCC has recognized are appropriate to include in setting TELRIC switching rates. Even AT&T's and WorldCom's witnesses conceded that the costs of upgrades are essential switching costs for any carrier that desires to remain competitive.6 Again, the exclusion of these costs is based on the very same Synthesis Model that the FCC has stated should not be used in a ratemaking proceeding such as this.

For these reasons, the Commission should not adopt the HAI switching module and, instead, should use Qwest's Switching Cost Model ("SCM") to set rates for switching. As discussed below, unlike HAI, SCM develops switching costs that are specific to Arizona and that reflect the costs of currently available, state-of-the-art switching technology. Adoption of SCM will ensure that the switching rates the Commission ultimately adopts reflect all the forward-looking costs of providing switching, as the Act and the FCC require. Alternatively, if the

6 See Tr. at 316 (Chandler Cross); Tr. at 352 (Kelley Cross).
Commission adopts the HAI switching module, it should modify the inputs relating to fill factors, growth lines, and switch upgrades in accordance with the discussion that follows.\(^7\)

II. EXCEPTIONS

A. The Commission Should Reject the ALJ's Adoption Of The HAI Model For Switching Or, Alternatively, Should Correct Inputs To The HAI Switching Module.

1. The Commission Should Reject the HAI Model Because It Does Not Produce Accurate Estimates For Switching.

In the evidence and briefs submitted to the ALJs, Qwest presented two fundamental reasons why the Commission should not adopt HAI for switching. First, the model improperly relies almost exclusively on the FCC's universal service \textit{Inputs Order}\(^8\) and the related Synthesis Model for switching costs and rates. Second, HAI materially underestimates switching costs in a manner plainly inconsistent with TELRIC by omitting large amounts of essential switching investment. The Recommended Opinion and Order fails to respond meaningfully to either of these basic flaws in HAI. Indeed, it provides no reasoned explanation at all. It states merely that the ALJs

\(^7\) Qwest also takes exception to the rulings in the Recommended Opinion and Order relating to the fill rate for remote collocation (Recommended Opinion and Order at 10-11) and the number of tandem trunks that should be used to calculate rates for tandem switching (Recommended Opinion and Order at 18-19). Qwest's exceptions to these issues are set forth below.

Qwest also is mindful of the Commission's desire for prompt implementation of the final rates that eventually will result from this phase of the docket. There do not appear to be any significant impediments to prompt implementation. The only possible impediment that Qwest foresees involves implementing the rates for shared transport. Qwest's rate for shared transport combines the costs for transport and tandem switching into a single rate. Qwest's use of a combined rate instead of separate rates for transport and tandem switching eliminates the possibility of CLECs being charged different rates for shared transport depending upon how a call is routed in the network. In cost proceedings in other states, AT&T and WorldCom have agreed to this combined rate approach, and Qwest expects they would agree to the same approach here. However, if the CLECs and the Commission were to demand separate charges for shared transport, that would require significant modifications to Qwest's billing practices and systems and, therefore, could delay implementation of the shared transport rates.

see no reason to depart from our prior Decision in this docket and we, therefore, adopt the HAI model proposed by Staff and the CLECs for purposes of establishing rate elements for the switching issues addressed in this Order.9

To the extent this statement can be regarded as an explanation, it is, with all due respect to the ALJs, simply wrong. The "prior Decision" to which this statement relates – which itself was unsupported by sound reasoning – did not concern the switching module and inputs that are at issue here, but rather different modules, evidence and inputs.

Absent evidence independent of the Synthesis Model and the Inputs Order supporting the reasonableness of the module and inputs adopted by the ALJs, the Commission should not adopt the Recommended Opinion and Order. Despite the FCC's repeated statements that the Inputs Order should not be used to establish rates for UNEs, it is undisputed that HAI relies almost exclusively on that Order for switching costs and rates. HAI is incapable of developing switching investment. Therefore, the modelers have simply plugged into the model the switching investment numbers – not the underlying data – the FCC developed in the Inputs Order. Mr. Chandler, the AT&T/WorldCom witness who sponsored the HAI switching module, acknowledged that he has never even seen the data that underlie the FCC investment figures, and he could not answer the most basic questions about those data.10

The FCC has consistently said that determinations in the Inputs Order in general, and with respect to switching in particular, should not be used in determining UNE rates. Specifically, the FCC has warned that the Synthesis Model and the Inputs Order "should not be relied upon to set rates for UNEs."11 The FCC's warning recognizes that estimating the costs of

9 Recommended Opinion and Order at 6.

10 See Tr. 314-15 (Chandler Cross).

11 Memorandum Opinion and Order, In the Matter of Joint Application by SBC Communications Inc., et al., for Provision of In-Region, InterLATA Services in Kansas and Oklahoma, CC Docket No. 00-217, FCC 01-29, ¶ 84 (rel. Jan. 22, 2001) ("SBC Kansas/Oklahoma 271 Order"); see also Verizon Vermont 271 Order ¶ 36; BellSouth Georgia/Louisiana 271 Order ¶ 82.
local exchange service for the purpose of allocating universal service subsidy funds – the function of the FCC's Synthesis Model and the Inputs Order – is fundamentally different from determining the TELRICs of specifically defined UNEs. Moreover, to calculate Arizona UNE costs, inputs specific to Arizona should be used instead of the FCC's nationwide inputs for universal service funding.

Against this background, it is hardly surprising that the ALJs did not explain their decision and their rejection of Qwest's arguments: there is no sustainable explanation. The result of these errors is a determination that the switching cost that would be incurred by a carrier building a replacement network in Arizona would be only about 30 percent of the switching investment made by Qwest in Arizona.12 In contrast to HAI, Qwest's SCM actually calculates the Arizona-specific TELRIC for local switching usage, line and trunk ports, and vertical features, rather than merely adopting inputs based on FCC orders developed for an entirely different purpose and repudiated by that agency for the kind of ratemaking in which the Commission is engaged here. SCM includes the realistic costs an efficient carrier would incur to provide switching. SCM calculates efficient, realistic levels of forward-looking investment by using the prices that switch manufacturers are charging today. SCM's investment calculations are specifically tailored to the characteristics of each switch location in Arizona and, consistent with the FCC's pricing rules, reflect the reasonably anticipated Arizona-specific usage of switching facilities.13

Accordingly, SCM's investment reflects: (1) the number of switches needed to provide service in Arizona; (2) the number of lines associated with each switch in Arizona; (3) the average number of calls per line for each Arizona switch; (4) the CCS per line for each switch in

12 Qwest is not claiming that its actual investment is the standard. But the enormous disparity described above is at least some evidence that the costs recognized by HAI are unreasonable. The abundant evidence submitted by Qwest with respect to the forward-looking costs of switching confirms this fact.

13 See, e.g., Tr. at 190 (Brigham Redirect).
the state; and (5) the reasonably anticipated rate of growth for each switch. These inputs directly affect the design and size of the switches that SCM includes, which, in turn, dictate the amount of investment the model includes. Because these inputs are specific to Arizona, the investment the model produces is also Arizona-specific.

In rejecting SCM, the ALJs do not provide any analysis of the model. They state only that they will not deviate from their conclusion in Phase II of this docket that "Qwest's ICM (which includes the SCM switching module) is based primarily on its embedded network and costs and fails to adequately incorporate efficiencies that should be recognized in a TELRIC environment."\(^{14}\) This conclusory statement is not supported by any discussion of the evidence presented in this phase of the docket. The ALJs do not even identify a single network assumption or cost in SCM that is supposedly "embedded" or any "efficiencies" that the model allegedly fails to include. In fact, the evidence supports precisely the opposite conclusion – SCM uses currently available, forward-looking switching equipment. In Phase II of this docket, the ALJs did not examine SCM and, based on the lack of any meaningful analysis of the model in the Recommended Opinion and Order, it appears that the ALJs also did not examine SCM in this phase either. They simply relied on their prior, inapposite decision.

As Mr. Brigham testified, the primary cost drivers in SCM's calculation of investment for switching are: (1) the prices that switching vendors charge for switches; (2) the busy-hour demand per line and per trunk within a switch; (3) the number of lines a switch serves (again issues of processor and memory size); and (4) the trunk to line ratio (i.e., the size of the ports which are the equivalent of the plugs for peripherals and modems on a personal computer) required to meet the demand at the switch.\(^{15}\) For each of these inputs, the SCM uses forward-looking assumptions that are not only specific to Arizona but are also specific to every switch.

\(^{14}\) Recommended Opinion and Order at 6.

\(^{15}\) See Ex. Qwest-1 (Brigham Direct) at 12.
location in the state.\textsuperscript{16} Thus, SCM uses current, state-of-the-art digital switching technology and related investment.\textsuperscript{17} There is nothing whatever "embedded" about this approach; to the contrary, it is precisely the type of forward-looking cost estimate that TELRIC requires.

Finally, in the Phase II Opinion and Order in this docket, the Commission emphasized the importance of using Arizona-specific data to calculate UNE costs.\textsuperscript{18} But HAI uses national averages to calculate switching costs. Again, the ALJs fail to offer any explanation that would assist this Commission in reconciling this glaring inconsistency. Accordingly, the Commission should adopt the Arizona-specific SCM instead of HAI.

2. The Recommended Opinion and Order Adopts Incorrect Fill Rates.

If the Commission adopts the ALJs' recommendation to use HAI for switching costs and rates, it should require substantial changes to HAI's switching inputs. These changes are essential to account for the model's exclusion of large amounts of switching investment. The first, and perhaps most important, change relates to the HAI 94 percent switch port fill factor that the ALJs adopted. This recommendation of an 94 percent fill factor is based on the orders and models that the FCC has repudiated for ratemaking purposes, is supported by no other evidence, and is affirmatively contradicted by evidence in the record submitted by Qwest.\textsuperscript{19}

The ALJs' one-paragraph analysis of switching fill begins and ends with the premise that TELRIC does not permit including any extra capacity in a switching network to accommodate growth.\textsuperscript{19} According to the ALJs, allowing for growth in a TELRIC network "would not be reflective of an efficient provider in a competitive market."\textsuperscript{20} This is simply wrong, as the FCC's

\textsuperscript{16} See Tr. at 190 (Brigham Redirect).

\textsuperscript{17} See Tr. 44 (Brigham Cross).

\textsuperscript{18} See, e.g., Phase II Opinion and Order, Investigation into Qwest Corporation's Compliance with Certain Wholesale Pricing Requirements for Unbundled Network Elements and Resale Discounts, Dkt. No. T-00000A-00-0194, Decision No. 64922 (June 12, 2002) at 15, 18-19, 26.

\textsuperscript{19} See Recommended Opinion and Order at 8.

\textsuperscript{20} Id.
orders make clear. Beginning with its First Local Interconnection Order, the FCC has made it clear that TELRIC requires allowing for "projected usage" of a network element.\footnote{First Report and Order, \textit{In the Matter of the Implementation of the Local Competition Provisions of the Telecommunications Act of 1996}, CC Dkt. Nos. 96-98 & 95-185, FCC 96-325 (rel. Aug. 6, 1996) ("Local Competition Order") \S 682 (emphasis added). In particular, the FCC states in paragraph 682 that Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element.} In its recent order relating to BellSouth's section 271 application for entry into the long distance markets in Georgia and Louisiana, the FCC emphasized this TELRIC principle in the specific context of switching rates: "The state commission may reasonably take into account that there will be \textit{growth in the network in the future} . . . ."\footnote{BellSouth Georgia/Louisiana 271 Order \S 82.} The ALJs' ruling assumes precisely the opposite – that TELRIC precludes allowing for future growth in the network.

In addition to violating these FCC pronouncements, the ALJs' ruling on fill factors is premised on a patently unrealistic and unsupported assumption of how "efficient carriers" operate. As even the Joint Interveners agree, an efficient provider should always maintain at least 5 percent spare capacity for administrative purposes.\footnote{See Tr. at 369-71 (Chandler Cross).} Therefore, a 94 percent fill rate allows only 1 percent spare capacity for growth, which is a wholly implausible engineering scenario.\footnote{See Ex. Qwest-2 (Brigham Surrebuttal) at 31.} A switching network designed at this maximum capacity would be exhausted with only the slightest increase in demand. This would lead to busy signals, call blocking, and an inability to provide service to new customers. That is why neither the CLECs nor the ALJs are
able to cite any carrier that operates switches at a 94 percent fill rate. Indeed, in a recent proceeding in Minnesota, AT&T acknowledged that it operates its switches with a fill rate of 50 percent—something that one would hardly expect to see in a long distance market that is as "intensely competitive" as AT&T claims.

The ALJs also have ignored the FCC's specific ruling that the 94 percent fill rate in the Synthesis Model should not be used to set UNE switching rates. In the Verizon Vermont Order, the FCC could not have made its position clearer when it specifically rejected AT&T's argument that Verizon's switching rates should be calculated using the 94 percent fill factor from the Inputs Order:

AT&T's only evidence to support this claim is that "the Synthesis Model uses a 94 percent fill factor." This record is insufficient for us to determine whether AT&T is making a valid comparison between Verizon's Vermont fill factors and the Synthesis Model fill factors, which we have indicated should not be used for setting rates.

This statement vividly confirms that the Synthesis Model's use of the 94 percent fill factor has no evidentiary value in this proceeding.

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25 HAI's 94% fill rate also does not include any modularity fill, which is the spare capacity that results from carriers having to purchase switching equipment with fixed levels of capacity. Because switch vendors sell their equipment in fixed incremental units, carriers typically must buy more capacity than they need at the time of the purchase. Switch fill rates must account for the excess capacity that results from this practical reality.

26 See Testimony of Douglas Denney on behalf of AT&T/WorldCom in In the Matter of the Minnesota Commission's Review and Investigation of Qwest's Unbundled Network Element (UNE) Prices, MN PUC Docket No. P-421/CI-01-1375, OAH Docket No. 12-2500-14490-2. In testimony that he provided on May 13, 2002, Mr. Denney stated that AT&T operates at "around 50 percent" because it is "anticipating future demand." MN Tr. 1:127-28 (Denney Cross).

27 Verizon Vermont 271 Order ¶ 36 (emphasis added). As mentioned earlier, instead of relying on the Inputs Order fill factor, the FCC approved Verizon switching rates based upon fill rates of 72% for IDLC lines and 81% for analog lines. Id. Qwest's proposal to reduce the average HAI fill rate for switching from 94% to 80% is more favorable to CLECs than these FCC-approved fill rates.
In support of the 94 percent fill rate, the ALJs assert that a lower fill would "unfairly burden current customers by requiring them to in effect subsidize future customers." However, a fill rate of less than 94% would directly benefit today's customers by eliminating the call blocking and busy signals that would otherwise result. Including the costs of a lower fill rate in TELRIC rates is not a subsidy of future customers but, instead, is essential to reflect the costs that an efficient carrier in a competitive environment must incur to provide an acceptable level of service. Indeed, if the FCC were concerned that fill rates below 94% would result in such a subsidy, as the ALJs suggest, it never would have approved the substantially lower fill rates of carriers that have received section 271 approval.

Finally, by excluding investment for growth lines, the ALJs have compounded the network problems that would arise from a 94 percent fill factor. No provider can operate at a 94 percent fill without continually adding "growth" lines to meet increases in demand. Qwest's proposed fill factor of 80 percent reflects the fill of an efficient carrier. Indeed, Qwest's actual Arizona fill rate of 43 percent for digital lines and 80 percent for analog lines demonstrates that the use of an 80 percent overall fill is conservative – that, if anything, it understates switching investment. Accordingly, the Commission should reject the ALJs' recommended 94 percent fill factor and adopt the 80 percent fill rate that Qwest proposed.

3. **The Recommended Opinion and Order Fails to Include Costs Associated with Growth Lines.**

The ALJs refused to include "Qwest's proposed 'growth additive' rates" which properly account for costs associated with so-called growth lines. As grounds for this recommendation, the ALJs claim that Qwest's proposed growth rates "do not properly reflect TELRIC principles associated with an efficient provider" because such costs "would unfairly burden current

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28 Opinion and Order at 8.
29 *See* Qwest-5 (Fleming Rebuttal) at 92-93.
30 Recommended Opinion and Order at 8.
customers by requiring them to in effect subsidize future customers."\textsuperscript{31} That statement reflects a profound misunderstanding of TELRIC and the operations of an efficient carrier.

First, adding capacity to a switch in the form of growth lines is not only an efficient way to operate a network but also an imperative for any carrier operating in a competitive market. As Mr. Brigham explained, to avoid (as the ALJs recommend) having to add incremental capacity to a new or existing switch by purchasing growth lines, a carrier must either (a) continuously replace its switches, or (b) purchase more initial lines than are needed when purchasing new switches.\textsuperscript{32} Each of these alternatives is far less efficient than purchasing a switch with sufficient capacity to serve current demand plus a reasonable allowance for administrative needs, equipment modularity, and growth, and adding new lines when required by growth in demand. Indeed, the FCC has repeatedly endorsed this approach.\textsuperscript{33} The need to add growth lines is particularly compounded when, as the ALJs believe here, the switch is expected to operate at 94 percent of capacity.\textsuperscript{34}

Second, contrary to the ALJs' assertion, the FCC and the United States Court of Appeals for the D.C. Circuit have concluded that inclusion of growth lines in switching cost studies complies with TELRIC. In its \textit{Bell Atlantic New York 271 Order}, the FCC explicitly rejected AT&T's argument "that TELRIC does not permit recovery of the cost of 'augmented switches,'

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\textsuperscript{31} \textit{Id.}

\textsuperscript{32} \textit{See} Ex. Qwest-2 (Brigham Surrebuttal) at 28.

\textsuperscript{33} \textit{See} Memorandum Opinion and Order, \textit{Joint Application of BellSouth Corporation, et al., for Provision of In-Region, InterLATA Services in Alabama, Kentucky, Mississippi, North Carolina, and South Carolina}, WC Dkt. No. 02-150, FCC 02-260 (rel. Sept. 18, 2002) (\textit{BellSouth Alabama/Kentucky 271 Order}) \textsuperscript{¶} 84 (noting that "it may not be cost-effective to acquire all of the projected switching capacity needed over the life of the switch at the outset"); \textit{see also} BellSouth Georgia/Louisiana 271 Order \textsuperscript{¶} 82 (same); Memorandum Opinion and Order, \textit{Application by Verizon New Jersey Inc., et al., for Authorization to Provide In-Region, InterLATA Services in New Jersey}, WC Dkt. No. 02-67, FCC 02-189 (rel. June 24, 2002) (\textit{Verizon New Jersey 271 Order}) \textsuperscript{¶} 43 (same).

\textsuperscript{34} \textit{See} Ex. Qwest-2 (Brigham Surrebuttal) at 28-32.
which are existing switches with capacity upgrades." AT&T appealed this issue to the D.C.
Circuit, which similarly rejected AT&T's claim, concluding that "the Commission reasonably
concluded" that "inclusion of growth additions . . . did not violate TELRIC." Joint Intervenors'
repeated attempt to raise this same issue in subsequent section 271 cases have been similarly
rebuffed. The Recommended Opinion and Order inexplicably ignores these directly relevant
decisions of the FCC and D.C. Circuit.

The Commission should 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. Contrary to the claims of AT&T and WorldCom, there is nothing "unfair" or
uneconomic" about developing costs based on purchases of both new switches and additional
lines. Indeed, in proceedings in California, AT&T conceded that using a mix of new and growth
lines to determine costs is appropriate. Adding capacity to a switch in the form of growth lines
is not only an efficient way to operate a network but also an imperative for any carrier operating
in a competitive market. No carrier would survive without the ability to add growth lines to meet

35 Memorandum Opinion and Order, Application by Bell Atlantic New York for Authorization
under Section 271 of the Communications At to Provide In-Region, InterLATA Service in the State of

36 See AT&T Corp. v. FCC, 220 F.3d 607, 617-18 (D.C. Cir. 2000).

37 See, e.g., BellSouth Georgia/Louisiana 271 Order ¶ 82; Verizon New Jersey 271 Order ¶ 43;
Verizon Massachusetts 271 Order ¶ 33; Memorandum Opinion and Order, Joint Application by SBC
Communications, Inc., et al., for Provision of In-Region, InterLATA Services in Kansas and Oklahoma,

38 See Interim Order, In re Open Access to Bottleneck Services and a Framework for Network
Architecture Development of Dominant Carrier Networks, Ratemaking Proceeding 93-02-106, Decision
Catherine Petzinger, noting that "the discount percentage input should reflect the mix of new switch and
growth lines that the [incumbent] actually plans and has committed to purchase").
new demand. And, no responsible carrier would want or be permitted to deny service to a new
customer on the ground that it is imprudent to pay to add higher-cost growth lines to a switch.39

4. The Recommended Opinion and Order's Exclusion of Switch Upgrade Costs Is Clear Error.

Although conceding that switch upgrades "may be a cost of doing business," the
Recommended Opinion and Order nevertheless proposes the exclusion of such costs from
switching rates in Arizona.40 According to the ALJs, these costs are "speculative" and their
inclusion is contrary to the FCC's Inputs Order.41 The ALJs are incorrect.

First, that carriers incur upgrade costs is not "speculative." Indeed, the record shows that
carriers in Arizona reasonably incur switch upgrade costs as a part of the ongoing costs of doing business. On behalf of the Joint Interveners, both Mr. Chandler and Mr. Kelley agree that switch upgrades are a legitimate cost of doing business.42 During the hearing, Mr. Chandler admitted that switch vendors routinely issue switch upgrades approximately every two years and that to stay competitive and current with legal requirements, telecommunications carriers routinely

39 See Ex. Qwest-2 (Brigham Surrebuttal) at 27-29. Contrary to the claims of the CLECs, the
FCC has confirmed that growth lines cost more than new or initial lines because "vendors offer a higher
discount rate for new switches and a lower discount for growth." BellSouth Alabama/Kentucky 271
Order ¶ 83; see also BellSouth Georgia/Louisiana 271 Order ¶ 82 (noting that "the [FCC] has taken
notice that other states have concluded that costs should be recovered based on carrier vendor contracts
that applied a larger discount for new switches and smaller discounts for growth").

40 See Recommended Opinion and Order at 10.

41 See id. at 9-10.

42 See Ex. AT&T-10 (Kelley Rebuttal) at 3. Switch upgrades generally stem from either
increased demand for greater switch functionality or, more commonly, legislative and regulatory
mandates that are part of the environment in which the providing carrier operates. Specifically, the
increase in demand or the legislative mandates force Qwest to upgrade its operating system software.
This software upgrade, in turn, often requires corresponding operating hardware upgrades such as
additions to existing processing capacity, memory, and storage. After multiple upgrades, the capacity of
the processor is often exceeded requiring additional hardware upgrades. These are simple lifecycle costs
of switches that are within the TELRIC definition of "replacement costs."
purchase these upgrades. Mr. Kelley also recognized that switch upgrades are essential in the telecommunications industry.

In the face of this evidence, Joint Intervenors and the Recommended Opinion and Order turn once again for support to the FCC's Inputs Order. However, as noted above, the FCC has made it clear that the Synthesis Model cannot be relied upon for use in determining the costs of interconnection and UNEs. The FCC had good reasons for rejecting the use of the Synthesis Model for to determine the costs of and rates for unbundled switching. Specifically, the FCC's Inputs Order algorithm does not include the ongoing upgrade investments necessary to keep a switch technologically current once it is installed. As set forth in Appendix C of the Inputs Order, the FCC's algorithm results from a regression analysis performed on data from depreciation rate reports filed by LECs for switches installed from 1983 to 1995 and upon similar data from LEC reports to the RUS. However, a large portion (70 percent) of the nearly 3,600 observations were excluded from the study data so that only 1,085 observations were actually employed. Most of the excluded observations were from switches installed more than three years prior to the reporting of their book-value costs. The FCC only tried to reflect the cost associated with the purchase of a new switch; the investment associated with upgrades was intentionally omitted. Although this sort of "rough justice" may be acceptable for the purpose of allocating universal service support, as the FCC and the courts have confirmed, it clearly is not appropriate for developing UNE rates.

Second, the HAI model also does not include the cost of vertical features implemented after 1995 or any of Qwest's applications software expenses after 1992. By excluding these costs from the data that the FCC used to estimate its switch expenses, the FCC set an improper cost for switches that does not include the cost of features. As mentioned above, the FCC relied on data

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43 See Tr. at 315-16 (Chandler Cross).

44 See Tr. at 353 (Kelley Cross).

45 See Recommended Opinion and Order at 9-10.
from 1983 through 1995 to develop its switching investment. These data, therefore, do not include vertical features costs after 1995. When questioned about the FCC's exclusion of data after 1995, Mr. Kelley admitted that because the FCC excluded these costs for the purposes of allocating universal service support, the HAI model likewise does not include vertical features costs after 1995.46

Similarly, the FCC's algorithm does not account for the applications software costs that any provider incurs. The FCC admittedly created its switch costs using historical data, but it failed to include the cost for features and other application software. Thus, relying on FCC upgrade costs will not provide the proper estimate of life cycle expenses for software and features.

Third, these costs are real – they are not speculative. The record establishes that Qwest has been forced to invest a substantial amount of money in switch upgrades and any efficient provider would continue to incur these upgrade costs in the future.47 In the four years ending December 2000, Qwest spent over $235 million upgrading its digital switches, which translates to $3.71 per line per year.48

Fourth, because an efficient carrier building and operating a replacement network will incur switch upgrade costs, the HAI model's failure to recognize any upgrade expenses violates TELRIC. If the costs associated with switch upgrades are not included in TELRIC studies for switching, Qwest will not recover these legitimately incurred costs, even though it will incur upgrade costs on a forward-looking basis. Indeed, the Joint Intervenors admit that excluding switch upgrade costs from the switching rates will allow CLECs to use upgrades for free until rates are adjusted by the Commission.49

46 See Tr. at 351 (Kelley Cross).
47 See Ex. Qwest-2 (Brigham Surrebuttal) at 23-25.
48 Id. at 24.
49 See Tr. at 354-55 (Kelley Cross).
Finally, rather than "extending the life [of a switch] beyond the 10-year economic life assumed in the HAI model," switch upgrades must be assumed as part and parcel of that 10-year life cycle. If Qwest did not upgrade its switches, they would need to be replaced sooner than 10 years to serve customers and provide adequate service given rising demand for service and features.\(^5\) In short, a 10 year life requires including all the lifecycle costs, such as upgrades, for ten years.

For the reasons stated above, upgrade costs should be included in the estimates of switching costs. The Recommended Opinion and Order's exclusion of these costs should be rejected.

B. **The Commission Should Reject the ALJs' Recommendation Regarding Fill Factors Associated with Remote Collocation.**

As Qwest noted in its post-hearing briefing, remote terminal ("RT") collocation provides space to CLECs in available remote cabinets on a Standard Mounting Unit ("SMU") level. The space includes access to AC/DC power, heat dissipation, and Feeder Distribution Interface ("FDI") terminations.\(^5\) RT collocation allows CLECs to access Digital Subscriber Line ("DSL") customers that normally are beyond the technical limits of the CLECs' collocation at the central office. DSL service can only be provided within 18 Kilo feet of a DSLAM.\(^5\) RT collocation allows CLECs to place their equipment in Qwest owned or leased Outside Plant Structures, such as a DA Hotel, in order to convert the digital signal in the fiber feeder to DSL over the copper distribution to the customer at a point less than 18,000 feet from the customer.\(^5\) In most instances, RT collocation is the only method available to Qwest and CLECs to access customers

\(^5\) See Ex. Qwest-2 (Brigham Surrebuttal) at 26-27.

\(^5\) See Ex. Qwest-11 (Malone Direct) at 12.

\(^5\) See Ex. WorldCom-5 (Morrison Rebuttal) at 6.

\(^5\) See Ex. Qwest-9 (Hubbard Surrebuttal) at 9.
beyond the distance limitations of the central office. Through RT collocation, both Qwest and CLECs are able to access the same universe of customers.54

In Qwest's experience, fill rates of RT collocation facilities are extremely low because each remote terminal serves only a fixed number of homes, relatively few CLECs place DA in any particular DA Hotel.55 Indeed, since Qwest began formally offering RT collocation in February 2001, only one CLEC has ordered RT collocation in Qwest's region, and that CLEC has ordered collocation at only two sites.56 Against this backdrop, the 33 percent fill rate assumed in Qwest's RT collocation studies is reasonable and should be adopted.

Relying on the analysis of Staff witness, Mr. Dunkel, the Recommended Opinion and Order argues that this rate is too low and that it should be raised to 61.25 percent.57 Mr. Dunkel bases his proposed rate on equipment that is not comparable to RT collocation equipment. This approach is inflated and will penalize Qwest for trying to comply with its obligation to ensure that CLECs have ready access to RT collocation. Buried distribution and feeder cable fills (relied on by Staff witness, Mr. Dunkel) have little in common with a remote terminal collocation cabinet and there is no reason to believe that these distinct types of facilities should have the same fill rates.58 To realize the type of fills recommended by the ALJs here, CLECs need to use part of Qwest's area on a space available basis, not require a 15 percent CLEC set aside (which seems currently unacceptable to at least some CLECs), and take the risk that no space might be open. Thus, the Commission should adopt Qwest's RT fill rates.

54 See Tr. at 393 (Morrison Cross).
55 See Tr. at 398 (Morrison Cross).
56 See Ex. Qwest-2 (Brigham Surrebuttal) at 11-12.
57 See Recommended Opinion and Order at 10-11.
58 See Ex. Qwest-2 (Brigham Surrebuttal) at 19.
C. The Commission Should Reject the Recommended Opinion and Order Regarding Trunk Counts Associated with Tandem Switching.

Based on the testimony of one of the Joint Intervenors' witnesses, Mr. Chandler, the ALJs recommend adoption of the HAI model's assumption of 31,125 tandem trunks.59 According to the ALJs, Mr. Chandler's "corrections" to Qwest's witness Mr. Fleming's "mistaken" trunk count assumption of 97,000 trunks produces a trunk count that is less than that included in the HAI model.60

The Recommended Opinion and Order does not, however, address Mr. Brigham's testimony which points out at least two critical errors in Mr. Chandler's "corrections." As Mr. Brigham notes, Mr. Chandler erroneously assumes only one trunk port in his tandem switch costs, even though the service at issue in this proceeding (local interconnection trunks, or "LIS" trunks) require two trunk ports.61 Moreover, Mr. Chandler significantly underestimates the percentage of tandem traffic to local traffic in Arizona, assuming a 2 percent "tandem fraction of local" percentage when the actual Arizona percentage is over three times that – 7 percent.62 Adjusting Mr. Chandler's "correction" for these errors alone demonstrates that the HAI model's tandem trunk count assumption improperly underestimates number of tandem trunks and, thus, tandem switching costs.

As Mr. Brigham points out, these errors are in addition to HAI's erroneous assumptions regarding busy hour cent-call seconds (BH CCS) and trunk fills. The model assumes a BH CCS per trunk that is unrealistically high and a trunk fill factor of 100 percent.63 Both of these

59 See Recommended Opinion and Order at 18-19.

60 Id. at 19.

61 See Ex. Qwest-2 (Brigham Surrebuttal) at 39.

62 See id.

63 See id. at 39-40.
assumptions serve to underestimate the number of trunks needed. As with Mr. Brigham's criticisms of Mr. Chandler's "corrections," the Recommended Opinion and Order ignores these flaws in the HAI model.

III. CONCLUSION

For the reasons stated, the Commission should reject those portions of the ALJs' Recommended Opinion and Order discussed above and adopt Qwest's proposed rates for switching, remote collocation, custom routing, and unbundled packet switching.

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64 Id.
DATED: November 25, 2002

Respectfully submitted,

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