Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

Review of the Commission's Rules Regarding the Pricing of Unbundled Network Elements and the Resale of Service by Incumbent Local Exchange Carriers	))))))	WC Docket No. 03-173

REPLY DECLARATION OF JOSEPH P. RIOLO ON BEHALF OF AT&T CORP.

January 30, 2004

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REPLY DECLARATION OF JOSEPH P. RIOLO

1. My name is Joseph P. Riolo. I am an independent telecommunications consultant. My business address is 102 Roosevelt Drive, East Norwich, NY 11732. I am the same Joseph P. Riolo who submitted a Declaration in this proceeding on December 16, 2003 ("Riolo Opening Decl.").

I. PURPOSE

2. The purpose of this Reply Declaration is to respond to certain issues regarding cost inputs, network routing and construction, and loop conditioning in the comments and supporting declarations submitted by the incumbent local telephone companies ("RBOCs" or "ILECs") on December 16, 2003.

3. Part II addresses the argument made by each of the ILECs that UNE rates should be calculated on the basis of their "actual" utilization rates – a euphemistic reference to their embedded fill factors. In attempting to buttress their ill-conceived argument that their woefully low embedded fill rates should be presumed to reflect the optimally efficient spare capacity, the ILECs rely upon a host of misguided rationalizations. Thus, for example, the ILECs contend that the levels of spare capacity in their embedded networks are required for

churn, maintenance, breakage, and future growth, and that current ratepayers should pay for such growth capacity. The ILECs also contend that a host of other factors – including engineering guidelines, price caps, intermodal competition, and service quality standards – assure that their networks operate at maximally efficient utilization rates.

4. Remarkably, after strenuously arguing that their networks are models of efficiency, the ILECs reverse course and contend that the excessive levels of spare capacity in their networks are required because of their carrier-of-last-resort ("COLR") obligations. And, finally, the ILECs contend that reliance on their embedded fills will result in increased transparency and accuracy in cost calculations. Each of these contentions is meritless, and the Commission should categorically reject any presumption that an incumbent's actual fill factors are efficient and forward-looking.

5. Part II explains that the ILECs' woefully low embedded fill rates cannot possibly reflect the capacity utilization rates of an efficient carrier in a forward-looking environment because they reflect their past practices of building excessive levels of spare capacity in their networks. Despite the ILECs' contrary claims, neither customer churn nor defective equipment can justify the excessive amounts of spare capacity in their networks; and, in all events, the spare capacity due to breakage that is built into most modern day cost models may be sufficient to cover the relatively small amounts of spare capacity required for these purposes.

6. Furthermore, the ILECs' assertion that current ratepayers should pay for growth capacity is incorrect. Cost models should reflect the costs of only that spare capacity that

is required to satisfy current demand. Even if an efficient carrier reasonably concludes that it should carry unused capacity to satisfy further growth, under no circumstances should current ratepayers be saddled with the costs of such growth capacity.

7. Part II also explains that the myriad factors the ILECs claim ensure the operation of their networks at optimally efficient fill levels – including price caps, facilities-based competition, and service quality standards – do nothing of the sort. Thus, reliance on the incumbents' low fill rates would result in inflated UNE rates which reflect the inefficiencies that persist in the incumbents' existing networks. Part II also shows that the incumbents' attempt to justify excessive levels of spare capacity in their networks based upon their carrier-of-last resort obligations is nothing more than a red herring. The ILECs' submissions glaringly omit any evidence to support their claims and, in all events, the universal service contribution fund is the appropriate mechanism for recovery of these costs. Finally, Part II explains that use of the ILECs' embedded fill factors – which reflect the inefficiencies in their networks and which are based upon the ILEC's own incomplete, inaccurate, and unreliable records that the ILECs control and which are subject to manipulation – highlights the absurdity of the ILECs' claims that their actual data will increase transparency and accuracy in cost calculations.

8. Part III addresses the ILECs' claims that UNE rates should be based on their "actual," embedded structure sharing percentages, and that insurmountable difficulties – such as the need for coordination, security, and safety concerns – preclude buried and underground structure sharing arrangements. That section explains that embedded structure sharing percentages should not and must not be used in determining UNE rates because they

reflect the ILECs' historical experience as monopolies when they had absolutely no incentive to engage in structure sharing. Additionally, the ILECs' claims regarding the purported insuperable difficulties which preclude structure sharing are belied by, *inter alia*: (1) the veritable plethora of ordinances and regulations that strongly encourage or require structure sharing; (2) the substantial structure sharing opportunities that exist today and should increase in a forward-looking environment; and (3) the ILECs' participation in coordinating committees which have been highly successful in achieving the level of coordination that the ILECs now contend is impossible to attain.

9. Part IV addresses the ILECs' contention that their embedded outside plant mix is a reasonable proxy for the forward-looking mix of an efficient new entrant. As that section explains, the ILECs' embedded outside plant mix is not forward-looking at all because it is significantly constrained by the incumbents' *ad hoc* outside plant decisions and the manufacturing processes, technologies, materials and tools that existed at the time the plant was deployed. Moreover, given the inherent unreliability of outside plant records, the Commission must and should be highly skeptical of any claims that the incumbents' reported outside plant mix data accurately reflect their actual outside plant mix percentages. And because ILECs alone possess the data on their embedded structure mix, reliance on the incumbents "actual," embedded data would place CLECs and regulators at a substantial disadvantage in verifying the accuracy of the ILECs' claims.

10. Part V addresses the assertions of the ILECs that their embedded placement costs should be used in calculating UNE prices. Contrary to the ILECs' claims, their

embedded placement costs are not forward-looking at all because they too are constrained by the limitations of the embedded networks, including the inefficiencies in network routing, manufacturing and technology options, and costs of labor and equipment at the time of plant deployment. Additionally, because the ILECs' outside plant records are unreliable, incomplete, and inaccurate, the ILECs' claims that the use of "actual" data will result in greater accuracy in cost calculations are purely illusory. And, once again, because the ILECs are the only entities that possess their actual placement costs, CLECs and regulators would be severely handicapped in verifying the ILECs' data – data which could be subject to manipulation by the ILECs whenever they see fit.

11. Part VI addresses the assertions of certain ILECs regarding the propriety of assessing separate charges for loop conditioning. The ILECs' assertions that CLECs should be required to pay such charges because they caused the ILECs to incur them are flatly wrong. The *ILECs* cause such charges to occur, due to their failure to implement decades-old industry guidelines that call for the elimination of load coils and excessive bridged taps. Furthermore, BellSouth's argument that conditioning charges are needed as a "financial incentive to judiciously request conditioning" is illogical. CLECs would not request conditioning that was unnecessary, because doing so would substantially delay provisioning and increase the CLEC's internal costs. There is also no basis for BellSouth's suggestion that "excessive" requests for loop conditioning would damage its voice grade network. To the contrary, loop conditioning can, and does, improve the quality of that network.

12. Part VII responds to Qwest's assertion that a cross-connect, once installed, cannot always be used for succeeding customers. Situations where a cross-connect cannot be used by a subsequent customer are rare. Generally, when a customer vacates the premises, the cross-connect stays in place.

II. FILL FACTORS

13. Each of the ILECs urges this Commission to adopt the simplifying presumption that their "actual," embedded fills reflect the optimal utilization rates of an efficient carrier in a forward-looking network.[1] The Commission should not rise to the bait. There is no legitimate basis for any such "presumption," and the Commission should soundly reject the ILECs' invitation to permanently anchor UNE rates to the incumbents' woefully low and inefficient embedded fill factors.

14. As AT&T demonstrated in its opening comments, the embedded fill levels in the ILECs' existing networks are not and should not be used as the basis for calculating UNE rates.[2] Indeed, the Commission's Wireline Competition Bureau and State commissions have

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[1] *See, e.g.,* Verizon at v (prices "must reflect . . . actual levels of fill"), 43 ("[t]he Commission should provide that . . . 'fill' levels reflected in UNE rates are consistent with . . . actual network experience"); SBC at 64 ("actual . . . fills are the *only* reliable evidence of the fills that are demonstrably achievable"); BellSouth at 27 ("the Commission should adopt guidelines that require State commissions to consider recent ILEC utilization rates"); Qwest at 43 ("the Commission should also establish a rebuttable presumption in favor of using the ILEC's actual . . . fill factors").

[2] Riolo Opening Decl. ¶¶ 36-52.

properly rejected the use of embedded utilization rates in calculating UNE prices.[3] And there is no sound basis upon which the ILECs can legitimately contend that their actual achieved fill factors equal the utilization rates that an efficient carrier would achieve in a forward-looking environment.[4]

15. As AT&T has shown, the ILECs' legacy networks reflect decades of piecemeal expansion and the historical practice of incumbents to construct excess levels of spare capacity in their networks.[5] Additionally, the ILECs' existing patchwork networks contain older, less efficient DLC equipment and were built based on engineering technologies that are now obsolete. As a consequence, the incumbents' embedded fill factors cannot possibly reflect the utilization rates that could be achieved by an efficient carrier using more efficient DLC equipment and engineering technologies that permit higher fill rates.[6] As AT&T also has explained, because the ILECs' embedded networks contain spare capacity reserved for future growth, the costs of such spare capacity cannot properly be borne by current ratepayers.[7]

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[3] AT&T at 66-67; Riolo Opening Decl. ¶ 36.

[4] Verizon is thus wrong in asserting that "real-world fills 'are exactly the right figures to use' when setting UNE rates." Verizon at 46 (quoting *AT&T Communications, Inc. v. Illinois Bell Tel. Co.*, 349 F.3d 402, 411 (7th Cir. 2003). In any event, Verizon's quotation of the Seventh Circuit's recent decision is highly selective. The court stated that "*If SBC's current fill factors are the efficient ones (or are within the range that a student of the subject might think a reasonable estimate of that figure*), then they are exactly the right figures to use." *AT&T Communications, Inc.*, 349 F.3d at 411 (emphasis added). As explained herein and in my Opening Declaration, the ILECs' existing fills are neither efficient nor within the range that would be considered a reasonable estimate of efficient fills. Riolo Opening Decl. ¶¶ 36-52.

[5] Riolo Opening Decl. ¶ 82.

[6] *Id.* ¶ 44.

[7] AT&T at 64-66; Riolo Opening Decl. ¶ 15; Willig Opening Decl. ¶¶ 87-89.

Moreover, if the ILECs' embedded fill factors are presumed to be dispositive regardless of efficiency, the ILECs would have every incentive to install excessively high levels of capacity in their networks. Nothing in the incumbents' comments alters these conclusions.

16. In urging adoption of embedded fill rates as the framework for analysis, the ILECs rely on a kitchen-sink variety of arguments that purportedly show that their reported actual fill factors are suitable proxies for forward-looking utilization rates. Thus, for example, the ILECs contend that UNE rates should be calculated based upon the embedded fills in the ILECs' existing networks because: (1) their existing utilization rates reflect the appropriate levels of spare capacity for churn, maintenance, breakage, and growth; (2) the ILECs' engineering guidelines assure that their embedded networks produce optimally efficient utilization rates; (3) their embedded fill levels have remained stable over time, thereby demonstrating the efficiency of their capacity utilization rates; (4) price cap regulation, facilities-based competition, and service quality standards incent ILECs to design outside plant networks with maximally efficient amounts of spare capacity; and (5) their COLR obligations mandate that they maintain the excessive levels of spare capacity in their networks. Alternatively, the ILECs contend that reliance on embedded fill rates will yield predictability and accuracy in cost calculations and eliminate any "guesswork" by State commissions. As demonstrated in more detail below, each of these arguments is devoid of merit.

17. **Breakage, Customer Churn and Maintenance**. In attempting to justify the excessive levels of spare capacity in their embedded networks, the RBOCs contend that their

actual fill levels are eminently reasonable because they are the product of "real-world constraints," such as breakage, churn and maintenance.[8] This justification is baseless.[9]

18. It is indisputable that breakage – the manufacturing constraints that limit cable to discrete sizes – is a reality in the industry. It is equally clear that this phenomenon is amply accounted for by modern cost models, which assume the cost of actual equipment.[10] Importantly, however, the spare capacity attributable to breakage that is built into cost models is often sufficient to accommodate the relatively small amounts of spare capacity required as a result of churn and maintenance.[11]

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[8] *See, e.g.,* Verizon at 43-44; Qwest at 39; SBC at 66-67.

[9] AT&T at 62-63; Riolo Opening Decl. ¶¶ 19-30; Murray Essay at 5-11.

[10] Riolo Opening Decl. ¶ 30.

[11] AT&T at 63-64; Riolo Opening Decl. ¶ 30. In its discussion on breakage or lumpy capacity, Qwest contends that CLEC proposals for higher fill factors, particularly those for high capacity loops, are wholly unrealistic because they ignore that "the per-unit costs of using high capacity equipment with moderate fills are lower than those incurred by using low-capacity equipment with higher fills." Qwest at 40. This argument is specious for several reasons. First, to the best of my knowledge, Qwest has not based its proposed UNE rates or fill factors on the premise that the lowest-cost equipment purchased by an efficient carrier would result in fill factors lower than those produced by more expensive equipment. Second, Qwest's argument is based on the premise that in computing fill factors, AT&T and other CLECs have selected the facilities for the forward-looking network first, before determining the appropriate fill factors. *See* Qwest at 40 n. 105. Generally, however, the CLECs have first determined the appropriate amount of capacity needed to meet current demand and then used their cost models to determine the particular equipment that would meet those needs. Third, Qwest assumes that when an efficient carrier purchases new facilities with a higher *potential* capacity, it will immediately equip those facilities with the *maximum* potential capability, and that the resulting fill of the new facilities will therefore be low. *See id.* That, however, may not always be the case. For example, a carrier can vary the capacity of an OC-48 ADM according to the number of Add/Drop cards that it inserts into the "tributary shelf" of that facility. If the carrier uses a limited number of cards (because, for example, it does not currently need the full capacity of the OC-48 ADM), the actual capacity of the OC-48 ADM will be correspondingly limited. Thus, depending upon the

(footnote continued on next page)

19. In that connection, the ILECs' assertion that the high levels of spare capacity in their current networks are due to churn is nonsensical. Customer churn cannot justify the excessive levels of spare capacity in the ILECs' current networks. As AT&T explained in its opening comments, a significant amount of churn is essentially self-canceling and produces no change in demand for telephone capacity.[12] And even when a location is vacant between occupants, the line is still active on a limited basis, and the status of the cable pair in the numerator of the fill ratio is simply changed from "working" to "idle assigned."[13] Thus, the ILECs' assertion that churn necessarily increases the amounts of spare capacity beyond planned levels is incorrect.[14] Moreover, the one source of churn that theoretically could cause short-term fluctuations in line demand – the ordering of additional residential telephone lines at existing locations – is decreasing as customers increasingly use a single telephone line for both telephone and broadband services.[15]

(footnote continued from previous page)
number of cards with which it is equipped, the OC-48 ADM may have a relatively high fill factor. Fourth, many of the facilities cited by Qwest have no bearing on proper fills for *copper* distribution fills and *copper* feeder fills. *See* Qwest at 40. DS-3 circuits, for example, are entirely fiber – not copper. OCn loops (including OC3, OC12, and OC48) facilities also are fiber. Even in the calculation of fiber feeder fills, the particular OCn loop has no impact on the fiber feeder fill, because fiber optic multiplexers typically operate on one "send" fiber and one "receive" fiber. Riolo Opening Decl. ¶ 64. Thus, in calculating fiber feeder, engineers simply count OCn loops as working fiber, since such loops vary only according to the speed of the signal transmitted over them.

[12] AT&T at 62; Riolo Opening Decl. ¶ 21.

[13] Riolo Opening Decl. ¶ 22.

[14] *See* Verizon at 45; SBC at 67; Riolo Opening Decl. ¶¶ 20-24.

[15] Riolo Opening Decl. ¶ 23.

20. Equally infirm is the ILECs' argument that the extravagantly high levels of spare capacity reflected in their embedded fill rates are required in a forward-looking network for maintenance due to defective equipment.[16] As AT&T has shown, the embedded networks of the ILECs contain nontrivial amounts of defective pairs.[17] However, equipment currently produced by manufacturers has failure rates that are close to zero, and an efficient new carrier would not construct plant containing the high levels of defective plant in the ILECs' embedded networks.[18] Furthermore, as AT&T has explained, a contestable market simply would not permit an incumbent to recover the costs of such high equipment failure rates from ratepayers.[19]

21. **Growth and Cost Attribution**. To defend their unreasonably low embedded fill factors, the ILECs also contend that the large amounts of spare capacity reflected in their actual fill rates are required to accommodate future growth, and that current ratepayers should pay for such spare capacity.[20] These arguments are fatally flawed.

22. Although an efficient carrier may reasonably conclude that it should carry an amount of currently unused capacity for future growth, the costs of such growth spare should not be recovered from current ratepayers. Indeed, this Commission has rejected the notion that fill factors should reflect ultimate demand, finding that "forecasting ultimate demand [is] too

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[16] *See* SBC at 66; Verizon at 44.

[17] Riolo Opening Decl. ¶¶ 25-26.

[18] *Id.* ¶ 27.

[19] *See* AT&T at 63.

[20] *See* Qwest at 41; Verizon at 45-46; SBC at 66-67.

speculative."[21] And the RBOCs' submissions have offered no justifiable reason why current ratepayers should be required to subsidize the *future* ratepayers on whose behalf the future growth spare capacity is built.

23. Thus, for example, Verizon contends that, in rejecting its proposed embedded distribution fill factors, the *Virginia Arbitration Order* improperly found that current ratepayers should not bear the costs of Verizon's embedded spare capacity which is designed to meet future growth in demand.[22] In attempting to defend its embedded utilization rate, Verizon insists that no portion of spare capacity costs should be recoverable from "future users" rather than current ratepayers because "on average" utilization in the network "remains stable over the long run."[23] However, this argument is simply a reprise of an argument that the *Virginia Arbitration Order* properly rejected.

24. In the *Virginia Arbitration Proceeding*, AT&T explained that, when Verizon constructs its real network, it provides substantial spare capacity for growth and then presumes that such growth will continue into the future.[24] AT&T also explained that, when that growth occurs, some of the spare capacity will be used up; however, Verizon's model priced UNEs as if the level of spare capacity was constant.[25] AT&T also pointed out, however, that

[21] *See Virginia Arbitration Order* ¶ 254 (footnote omitted).

[22] Verizon at 45-46.

[23] *Id.* at 46.

[24] *Virginia Arbitration Proceeding,* Joint Initial Post-Hearing Brief of WorldCom, Inc. and AT&T on Pricing Issues at 148-149.

[25] *Id.* at 148.

Verizon modeled its distribution plant to meet current and future demand, but then calculated unit costs by using current demand in the denominator of its calculation.[26] Thus, Verizon's cost model charged present customers for capacity that will be used by future customers and then also charged future customers for that capacity.[27]

25. Consistent with its approach here, Verizon contended that no portion of the costs of spare capacity should be recoverable from future ratepayers because the average utilization rates in the network have remained stable.[28] This argument is both incorrect and irrelevant. As AT&T explained in the *Virginia Arbitration Proceeding*, Verizon's argument makes no sense with respect to the costing of distribution plant, which is sized to meet *ultimate* demand.[29] AT&T explained that the concept of "sizing demand" within a given distribution area means that "'capacity is installed at once initially.'"[30] And Verizon's argument is irrelevant because Verizon confuses the average utilization of the network *in the aggregate* with the utilization of *individual* loops, serving areas or other subcomponents of the network – the level at which Verizon makes plant-sizing decisions and offers units of capacity for sale to CLECs and other ratepayers.[31]

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[26] *Virginia Arbitration Proceeding*, AT&T/WCOM Exh. 11P (Murray Reb.) at 32.

[27] *Id.*

[28] *Virginia Arbitration Proceeding*, Verizon Cost Br. at 108.

[29] *Virginia Arbitration Proceeding*, AT&T/WorldCom Reply Post-Hearing Brief on Pricing Issues at 65.

[30] *Id.*

[31] *Id.* at 65-66.

26. AT&T also explained that, at that disaggregated level, Verizon clearly sizes its plant in the expectation that demand will tend to grow over time, and that capacity utilization *for a given set of facilities* will tend to trend upward until the capacity is reinforced.[32] AT&T also noted that, under Verizon's approach, when a previously idle loop is brought into revenue-generating service by increased demand, the new customer does not receive credit for whatever contribution that prior ratepayers may have made to the cost of that loop when it was merely idle capacity. AT&T argued further that charging current ratepayers for spare capacity that is expected to go into future revenue-generating service produces double-recovery of costs and requires current ratepayers to cover costs they did not cause.[33] The *Virginia Arbitration Order* properly concluded that "[j]ust as the Commission found it inappropriate to include in universal service support the costs of building outside plant to meet uncertain ten- or twenty-year demand projections, it is inappropriate for [the CLECs] to bear the cost today of building plant for uncertain ultimate demand."[34]

27. Accordingly, fill factors must and should be set by determining the appropriate amount of spare capacity that is required to meet current demand. As this Commission has already concluded, "[i]f we were to calculate the costs of a network that would serve all potential customers, it would not be consistent to calculate the cost per line by using current customer demand. In other words, it would not be consistent to estimate the cost per line

[32] *Id.*

[33] *Virginia Arbitration Proceeding*, AT&T/WCOM Ex. 20 (Murray Surreb.) at 38-41.

[34] *Virginia Arbitration Order* ¶ 254.

by dividing the total cost of serving all potential customers by the number of lines currently served."[35] Moreover, even if it is assumed counterfactually that the costs of spare capacity for future growth should be borne by current ratepayers, as AT&T has pointed out, the amount of growth capacity would have to be discounted substantially since, *inter alia*, DSL and wireless technology have reduced demand for second lines.[36]

28. **Engineering Guidelines**. The ILECs contend that their current fill levels are efficient because they are based upon network engineering guidelines which set forth the efficient levels of spare capacity that engineers must build into their networks.[37] These arguments are demonstrably unsound.

29. The ILECs' arguments suggest that engineering guidelines are highly inflexible documents containing rigid cable requirements which are strictly adhered to by their engineers. Despite the ILECs' contrary suggestions, far from requiring the ILECs' currently low fill levels, engineering guidelines leave the ILECs' engineers considerable discretion in determining optimal plant capacity.[38] And sound engineering practices encourage the maximization of outside plant to the greatest extent possible.

30. **Stability of Fill Levels**. The RBOCs also contend that their current fill levels are efficient because they have remained relatively stable, and are unlikely to change

[35] *Universal Service Order* ¶ 58.

[36] AT&T at 66; Riolo Opening Decl. ¶ 23.

[37] *See, e.g.*, Verizon at 43; SBC at 64.

[38] Riolo Opening Decl. ¶ 57.

significantly on a forward-looking basis.[39] Even assuming that the RBOCs' fill levels have remained "stable,"[40] however, that "stability" simply demonstrates the *inefficiencies* of their current fills – and the ineffectiveness of price caps and other factors that, the RBOCs contend, cause them to be efficient.

31. Given the low levels of fills in the ILECs' current networks, the fact that fill levels have remained "stable" shows that they are installing too much capacity in their networks. For example, BellSouth's data (if accurate) show that its copper distribution fills have *never* exceeded 50 percent in any of the States in its region between 1998 and 2002, and fell below 40 percent in almost half of those States in 2002.[41] Similarly, BellSouth's copper feeder fills have consistently been below 65.31 percent.[42]

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[39] *See, e.g.,* Verizon at 44-45; BellSouth at 27.

[40] Verizon provides no data in support of its claim that its fills have remained relatively stable. Verizon at 44-45. Although BellSouth provides data on its copper distribution and copper feeder fills (but not its fiber feeder fills), it does not describe the methodology that it used or the points in its network where it measured the fills. As I have previously shown, the manner in which ILECs have measured fills in the past has rendered their claimed fills unreliable. *See, e.g.,* Riolo Opening Decl. ¶ 50.

[41] *See* BellSouth, Exh. 4, "Copper Distribution Pairs."

[42] BellSouth, Exh. 4, "Copper Feeder Pairs." BellSouth provided no description of the methodology or formula that it used to calculate the copper distribution and copper feeder fill factors that it included with its Comments. *See* BellSouth at 27 & Exh. 4. Thus, it is not possible to determine whether, for example, BellSouth included working pairs, idle assigned pairs, and defective pairs in the numerator of its calculation, as would be required under standard engineering principles. Riolo Opening Decl. ¶ 22. Nor does BellSouth describe the points in its network where it measured these fills. *See id.* at ¶¶ 50-51 (describing flaws in ILECs' approach of measuring copper distribution utilization rates at the serving area interface, and of measuring copper feeder fill at the vertical side of the Main Distribution Frame).

32. Moreover, implicit in the ILECs' arguments touting the stability of their fill factors is the notion that an efficient carrier automatically adds capacity to its network whenever it places facilities into service.[43] This assumption is incorrect. An efficient carrier would not blindly augment its network each time it places previously unused capacity into service, but rather would seek to increase utilization to the maximum extent possible to avoid the costs of idle capacity. Verizon's admission that its spare capacity remains "stable" because it augments the network whenever unused capacity is placed into service merely confirms that Verizon's utilization rates are demonstrably inefficient.

33. **Incentives That Maximize Fills.** The RBOCs assert that a variety of factors – including price caps, competition, and service quality standards – give them strong incentives to maintain optimally efficient fills and to minimize excess capacity.[44] This argument is fundamentally infirm.

34. *Price Caps.* The ILECs contend that the existence of price cap regulation has given ILECs strong incentives to maximize fill levels because excess spare capacity would

[43] *See* Verizon at 46. Low fill levels can only remain "stable" if the ILEC consciously elects to add increasingly more spare capacity over time than is used. The denominator of the fill ratio consists of total available pairs. Because the total available pairs increase over time as additional capacity is added to the network, in order to achieve a "stable" level of spare capacity as Verizon claims, it would have to augment its network with more than the previously idle capacity that is being placed into service. For example, if there are 100 pairs of spare capacity in a route served by 1,000 available pairs, the percentage of spare capacity would be 10% (100/1000). Assume further that the 100 pairs of unused capacity are placed into service. In order to achieve a stable level of spare capacity (*i.e.*, 10%), as Verizon claims, it would have to add 110 pairs to the network (110/1000 + 100) – more than the 100 pairs that were placed into service.

[44] *See, e.g.*, Shelanski (Verizon) Decl. ¶¶ 51-52; SBC at 65.

increase the ILECs' investment costs without providing corresponding increased revenues.[45] As AT&T's opening and reply comments explain, however, the advent of price caps has not eliminated the ILECs' incentives to overbuild their networks.[46] As AT&T has shown, price cap regulation is not equivalent to effective competition, and the various loopholes contained therein effectively permit incumbents to preserve the inefficiencies in their networks. Thus, the notion that price caps assure that incumbents operate at optimally efficient fill rates is absurd.[47]

35. As AT&T also has explained, even assuming counterfactually that price caps provide ILECs with the same strong incentives to operate a network as efficiently as a carrier subject to effective competition, the ILECs are necessarily constrained by the prior, sunk nature of their investments in outside plant.[48] The vast majority of the outside plant in the incumbents' existing networks was deployed under prior rate-of-return regulation that provided strong incentives for ILECs to deploy excess capacity in their networks. Because of the sunk nature of this investment, the ILECs have not eliminated the excess capacity from their networks because the costs of carrying such capacity are substantially less than the costs of removal.[49] Moreover, where demand has been stagnant or declining, excess capacity in the incumbents' existing networks will persist.[50]

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[45] Shelanski (Verizon) Decl. ¶ 51; SBC at 65.

[46] *See* AT&T at 48-50.

[47] *See* AT&T at 7-8.

[48] AT&T at 50-51.

[49] *Id.*

[50] *Id.*

36. Because of the ILECs' prior sunk investment in outside plant, their networks cannot be expected to have adopted practices and procedures that minimize the levels of spare capacity. For example, because their investment in less efficient DLC equipment is sunk, the incumbents continue to maintain in their networks older, less efficient DLC equipment instead of newer GR-303 compatible DLC equipment which would permit incumbents to operate at higher levels of utilization.[51] Similarly, a number of ILECs have replaced copper with fiber in substantial portions of their networks in order to move customers using DSL from copper to fiber – a step that is intended to improve the quality of DSL service and the ILECs' competitive position. Nonetheless, the ILECs have left the replaced copper capacity "in place" as spare capacity, even though the ILECs' copper fill levels declined as a result. Furthermore, now that the Commission has denied access to certain broadband capabilities of many UNEs, this architecture plainly includes far more capacity than is required to provide the UNEs that CLECs are allowed to purchase.[52]

37. *Intermodal Competition.* The ILECs contend that their embedded utilization rates can be presumed to be optimally efficient because they are already subject to effective competition from existing facilities-based carriers, and that this increased competition is likely to cause their utilization rates to decline.[53] This argument is erroneous and illogical.

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[51] Riolo Opening Decl. ¶ 44.

[52] AT&T at 52.

[53] SBC at 68-69; Verizon at 19-24, 45.

38. As explained in the Willig Reply Declaration, the Commission in the *Triennial Review Order* has already determined that, in general, there are no alternative providers of the network elements at issue. As a consequence, the ILECs' contention that they are already subject to the rigors of competition from facilities-based carriers (and, thus, can be presumed to have maximized their utilization rates) falls of its own weight.

39. Furthermore, if, as the ILECs suggest, fill levels are likely to *decrease* in the future as a result of intermodal competition,[54] considerations of efficiency would dictate that the ILECs decrease their costs per line by *increasing* their current fills – rather than keeping them stable – and reduce the current amount of spare capacity in their networks. As Mr. Klick explains in his Reply Declaration, the ILECs' arguments are imbued with other inconsistencies. As Mr. Klick explains, if, as the ILECs contend, existing facilities-based competition has resulted in declining fills in the ILECs' networks, it is irrational for the ILECs to assert – as they do here – that UNE prices should be increased to promote *additional* intermodal competition.

40. *Service Quality Standards*. The ILECs also contend that service quality standards give ILECs "strong incentives to design and operate their networks with efficient levels of spare capacity,"[55] and that service quality would deteriorate if the ILECs operated at rates higher than their embedded fill levels.[56] These arguments border on the frivolous.

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[54] Verizon at 45.

[55] SBC at 5.

[56] *Id.* at 66; SBC, Exh. A at 25-26; Verizon at 44 n.84.

41. Service quality requirements and performance metrics specify no minimum, or maximum, levels of spare capacity that an ILEC must maintain. Instead, they establish parity or benchmark standards for other aspects of the ILEC's performance that the ILEC must meet. For purposes of determining whether the ILEC satisfies those standards, the level of its capacity is immaterial. For example, a carrier with excessive amounts of spare capacity in its network could satisfy the Indiana standards cited by SBC (completion of 90 percent of installation orders within 5 days and generation of fewer than 10 trouble reports annually per 100 lines).[57]

42. Furthermore, the ILECs have provided no empirical cost-benefit or optimization analysis to support their blanket assertion that the operation of a network with fill levels higher than their embedded fill rates would spawn a loss of efficiency and degradation of service.[58] In the absence of such analysis, the ILECs' arguments are nothing more than empty rhetoric. Indeed, I have previously shown that, even at relatively high fill levels, a carrier has sufficient spare capacity to satisfy current demand. Contrary to SBC's suggestion, even at distribution fills of 75 percent (or even higher)[59] a carrier would have sufficient capacity to address maintenance and churn.

43. **COLR Obligations**. Ironically, after heralding their networks as models of efficiency, the ILECs contend that the excessive levels of capacity in their networks are

[57] *See* SBC at 68.

[58] *See, e.g.*, Verizon at 44 n. 84; SBC at 66, 68.

[59] *See* SBC at 65-66.

required to satisfy their COLR obligations.[60] This contention suffers from a number of fundamental infirmities.

44. First, the ILECs' reliance on their status as "carriers of last resort" is nothing more than a variant of their discredited claim that fill factors should be based on ultimate demand.[61] Second, the ILECs' submissions are bereft of any evidence to support their contention that State commissions are somehow requiring them to maintain the bloated levels of spare capacity in their networks. Third, even assuming *arguendo* that the ILECs' assertions are true, these costs should be recovered through the universal service contribution fund, rather than wholesale UNE rates.

45. **Transparency.** Perhaps recognizing the inadequacy of the justifications that the ILECs have offered for their current low fills, SBC rationalizes that the use of "actual fills" would "promote predictability and administrative economy" by reducing the State commissions' discretion to engage in "guessing games" regarding the appropriate utilization rates that should be used in calculating UNE rates.[62] However, the mechanical application of embedded fills reflecting the excessive amounts of capacity in the incumbents' existing network would simply result in overly inflated UNE rates which reflect the inherent inefficiencies that persist in the ILECs' networks.

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[60] Verizon at 45; SBC at 67-68; BellSouth at 8; NERA (BellSouth) Decl. ¶¶ 22-25.

[61] Riolo Opening Decl. ¶ 67. SBC's own witnesses acknowledge that the ILECs' networks are designed to satisfy "ultimate" demand. *See* SBC, Exh. A at 25 ("In the real network . . . the distribution plant is designed to satisfy 'ultimate' demand").

[62] *See* SBC at 69.

46. Nor is it true – as the ILECs suggest – that the use of the ILECs' reported embedded fills will spawn greater accuracy in cost calculations than the Commission's TELRIC rules. As AT&T has explained, the ILECs' distribution plant records are hopelessly inaccurate.[63] The inherent unreliability of the ILECs' distribution plant records, in combination with the flawed methodology they use when measuring fills in their networks, demonstrates the absurdity of any suggestion that the ILECs' reported embedded fill levels accurately depict their actual utilization rates.[64]

47. To make matters worse, the use of the ILECs' reported embedded fill factors would render UNE cost calculations less verifiable. Because the ILECs are in sole possession of the data on their embedded fill factors, CLECs are at a substantial disadvantage in attempting to verify the ILECs' embedded fill factors. As explained in the Willig Reply Declaration, because of the asymmetry of available information, the ILECs have every incentive to manipulate the data as they see fit.[65] Thus, reliance on the ILECs' low embedded fill factors would not only result in costs well in excess of those required to serve current demand efficiently, but it would also place CLECs (as well as regulators) at a substantial informational disadvantage without improving the accuracy of TELRIC calculations.[66]

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[63] *See* Klick Opening Decl. ¶¶ 62-67.

[64] *Id.*; Riolo Opening Decl. ¶ 50.

[65] *See also* AT&T at 29-30.

[66] *See* AT&T at 39; Klick Opening Decl. at ¶ 51.