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November 26, 2008

Via ECFS

Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, SW
Washington, DC 20554

Re: Declaration of August H. Ankum, Ph.D. and Olesya Denney, Ph.D. on Behalf of PAETEC
WC Docket Nos. 03-109, 04-36, 05-337, and 06-122;
CC Docket Nos. 96-45, 96-98, 99-68, 99-200, and 01-92

Dear Ms. Dortch:

On behalf of PAETEC Communications, Inc. ("PAETEC"), attached for filing in the above-referenced dockets is the Declaration of August H. Ankum, Ph.D. and Olesya Denney, Ph.D.

Should you have any questions, please do not hesitate to contact me.

Respectfully submitted,

/s/ electronically signed

Tamar E. Finn

Attachment

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

In the Matter of	)	WC Docket No. 05-337
	)	
High-Cost Universal Service Support	)	CC Docket No. 96-45
	)	
Federal-State Joint Board on Universal Service	)	WC Docket No. 03-109
Lifeline and Link Up	)	
	)	
Universal Service Contribution Methodology	)	WC Docket No. 06-122
	)	
Numbering Resource Optimization	)	CC Docket No. 99-200
	)	
Implementation of the Local Competition	)	CC Docket No. 96-98
	)	
Provisions in the Telecommunications Act of 1996	)	CC Docket No. 01-92
	)	
Developing a Unified Intercarrier Compensation	)	CC Docket No. 99-68
Regime	)	
	)	
Intercarrier Compensation for ISP-Bound Traffic	)	WC Docket No. 04-36
IP-Enabled Services	)	

DECLARATION OF

AUGUST H. ANKUM, PH.D. and OLESYA DENNEY, PH.D.

ON BEHALF OF PAETEC

November 26, 2008

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DECLARATION OF
AUGUST H. ANKUM, PH.D., OLESYA DENNEY, PH.D. AND MICHAEL STARKEY

We, August Ankum, Ph.D. and Olesya Denney, Ph.D., hereby declare the following:

I. INTRODUCTION

A. Qualifications

1. My name is August H. Ankum, and my business address is 1027 Arch, Suite 304, Philadelphia, PA, 19107. I currently serve as Senior Vice President with QSI Consulting, Inc. ("QSI").

2. My name is Olesya Denney, and my business address is 6110 Cheshire Lane N, Plymouth, MN, 55446. I currently serve as a Senior Consultant with QSI Consulting, Inc. ("QSI").

3. This Declaration was prepared on behalf of PAETEC Communications, Inc. ("PAETEC"). We have been asked by PAETEC to respond to a number of the issues raised by the Federal Communications Commission ("FCC" or "the Commission") in its November 5, 2008 Further Notice of Proposed Rulemaking ("FNPRM") related to proper cost methodologies used to establish prices for inter-carrier compensation.

B. Purpose

4. In ¶ 41 of its FNPRM, the Commission solicits comments on two questions:

> First, should the additional cost standard utilized under § 252(d)(2) of the Act be: (i) the existing TELRIC standard; or (ii) the incremental cost standard described in the draft order? Second,

> should the terminating rate for all § 251(b)(5) traffic be set as: (i) a single, statewide rate; or (ii) a single rate per operating company?

5. We will address these questions within the larger context of the Commission's FNPRM.

C. Summary

6. We disagree with the proposals in Appendices A and C to the FNPRM that would adopt a new, incremental cost standard to replace TELRIC for the transparent purposes of driving down and establishing an effective cap on rates for traffic terminated on behalf of other carriers. Likewise, we disagree with the proposals to set traffic termination rates on an industry-wide basis applicable to all carriers within a given state.

7. As a preliminary matter, we note that the reasoning proffered in support of these proposals is unsound, and both preliminary conclusions appear to sacrifice sound economics in favor of contrived cost methodology instructions for purposes of achieving a preconceived outcome – i.e., the lowest traffic termination rates imaginable:

> Available evidence suggests that the incremental costs of terminating traffic, as determined using this methodology, are likely to be *extremely close to zero*. (FNPRM App. A at ¶ 273.) (Emphasis.)

8. In this Declaration, we show that this approach must be rejected for a large number of reasons, the most prominent of which may be summarized as follows.

9. ***Internal Inconsistency.*** The Commission's method suffers from numerous internal inconsistencies and key methodological errors.

10. As just one example, the Commission's desired result – near "zero" costs – would not be all that surprising under a *short run marginal* cost standard, but the Commission does not contemplate a short run cost standard; to the contrary, it expressly reaffirms the continued use of a *long run incremental* cost standard. The FNPRM fails to recognize that under a long run incremental cost standard, even under the Faulhaber formulation, the costs of terminating massive volumes of traffic are significant. Under the Commission's proposal, the long run incremental costs at issue are defined as the *total volume of all terminating traffic* on the public switched network in a state:

> First, states will need to evaluate a forward-looking economic cost analysis of a stand-alone network that performs *all* functions of a modern telecommunications network, including transport and termination of other carriers' traffic. Second, states will need to evaluate a forward looking economic cost analysis of a stand-alone network that performs *all the same functions except for the transport and termination of other carriers' traffic*. Third, states must compare the costs of these two networks. The *difference between the costs of the two networks* is the additional costs of termination of traffic subject to the "additional costs" standard we adopt in this order. (FNPRM App. A at ¶ 271.)

Contrary to the purpose of lowering terminating rates toward zero, the *total volume of all terminating traffic* will undoubtedly represent an enormous segment of total demand, thereby requiring substantial "additional investment" to handle the "additional costs" of terminating so much traffic.

11. In fact, the total volume of terminating traffic is so massive that the two networks to which the Commission refers in the preceding quotation will be radically different in terms of both scale and capacity. The network that does *not* need to terminate traffic will be *much* smaller (approximately one-half[1] of) than the network that is tasked with both origination *and* termination of traffic. And because the differences between the two networks are so great in terms of scale and capacity, their costs will be significantly different as well. Under the Commission's proposed methodology, and despite the clear intent to drive termination pricing toward zero, this significant difference would represent the (much larger than zero) "additional costs" of termination.

12. This inconsistency is highlighted in the FNPRM's claim that softswitches are scalable. Scalability does not simply imply that growth can be accommodated for "free." Scalability means that switch facilities are grown commensurably with growth in demand (traffic): i.e., the addition or subtraction of massive volumes of traffic will have a commensurate cost impact in terms of adding softswitch capacity -- and this cost impact would be far from "zero." Such inconsistencies in the methodology will cause significant problems and confusion at the state level where this methodology is to be implemented.

13. ***Faulty Input Assumptions***. To maintain its reliance on long run incremental costs while at the same time achieving its objective of near zero rates, the proposal would mandate various input assumptions that do not pass muster as

[1] While for purposes of this discussion, we are ignoring on-net, intra-switch calling, this does not materially impact our conclusion that there is a significant difference between a network that terminates and originates traffic and a network that only originates traffic.

part of a proper cost methodology for this industry (e.g., prohibitions against recovery of shared or common costs, limiting the increment of study to only a segment of total demand, assuming a 100% softswitch network when years will pass before such a network will exist, etc.). Thus, the proposal is not only internally inconsistent but would also opportunistically turn proper cost methodology concepts on their head to achieve a desired outcome.

14. ***Lack of Evidentiary Basis.*** Our firm has participated in hundreds of cost proceedings, and has built and audited literally hundreds of cost models, including (of pertinence to the Commission's "forward-looking" proposal) cost models for CLECs with softswitches. We are perplexed by any assertion that the "available evidence" suggests that the incremental costs of terminating telephone calls are likely "*extremely close to zero.*" Having reviewed the FNPRM, we found that there is in fact little, if any, reliable "evidence" in the record (or elsewhere) that would lead to such a conclusion.

15. For example, a key assumption in the proposed methodology is that 100% of the network should be modeled based upon a softswitch architecture that, moreover, is largely non-traffic sensitive. (FNPRM App. A at ¶272) This is a remarkable and radical edict, and a notable departure from the "forward looking" switched network assumptions previously adopted by both the Commission in establishing universal support mechanisms, as well as state utility commissions in setting UNE rates, which have calculated switching costs on TDM/circuit based technologies and with significant portions of traffic sensitive costs. Such a radical change must be backed up by a solid and

extensive evidentiary basis, and yet the FNPRM offers very little to support its proposals.

16. Instead, the "available evidence" regarding softswitches, their relative costs in relation to circuit switches, and the degree to which those switches are assumed to be traffic (or non-traffic) sensitive appears to come largely from a *single* AT&T letter, which in turn cites an analysis by a single AT&T in-house economist (Dr. Currie). (FNPRM App. A at ¶ 257.) Dr. Currie's analysis, however, was never intended to support such a landmark shift in intercarrier compensation, but rather was put forward to address a narrow issue in a Michigan cost proceeding concerning a small number of rural LECs. The AT&T letter and Dr. Currie's testimony provide very little detail about the costs and architecture of softswitches. Most importantly, Dr. Currie's testimony *never considered or could possibly have imagined* the incremental costs of softswitches in the context of the Faulhaber formulation, which involves massive volumes of terminating traffic. The truth is, Dr. Currie's analysis neither supports the Commission's analysis, nor its conclusions.

17. ***Recommendations.*** We urge a different course. The TELRIC methodology has been used repeatedly in every jurisdiction in the country, and has withstood the scrutiny of numerous federal courts. It is a "tried and true" method of estimating forward-looking costs and should continue to serve as the Commission's primary tool for establishing rates charged between carriers. At a time when the Commission is considering substantial changes to the structure of intercarrier compensation and universal service, it should

avoid adopting an experimental cost methodology based upon little more than comments provided on just a few weeks' notice. Furthermore, abandoning TELRIC for the sole purpose of setting terminating compensation rates will result in a slew of unintended consequences likely to impact all facets of the telecommunications marketplace.

II. Question One: Should the additional cost standard utilized under § 252(d)(2) of the Act be: (i) the existing TELRIC standard; or (ii) the incremental cost standard described in the draft order?

A. TELRIC Is Sound and Consistent With the Nation's Current Overall Federal and State Regulatory Framework, Whereas the New Standard is Untested and Would Have a Significant Adverse Impact on State Regulatory Efforts

18. As the Commission has recognized in the past, the TELRIC is an incremental cost standard defined by reference to certain underlying assumptions, including the time period under consideration, the size of the increment of output, technology choices, and the cost measure being "economic cost."[2]

19. The recently proposed incremental cost standard, however, is based on a number of assumptions that are unreasonable, internally inconsistent or simply incorrect. We therefore recommend that the Commission maintain the more mature and theoretically sound TELRIC standard.

20. The courts and federal and state regulators have developed a robust record on virtually all aspects of the TELRIC standard. By contrast, the Commission's proposed incremental cost standard -- which would be implemented on the

[2] *Local Competition First Report and Order*, 11 FCC Rcd at 16012, ¶ 675.

basis of a truncated comment period with even less time for review of those comments -- will undoubtedly lead to much controversy and litigation. If reform is the objective, the Commission should focus its efforts upon implementing structural reform with respect to intercarrier compensation, rather than trying to "test drive" an experimental methodology at the same time.[3] The TELRIC standard ensures that, in such implementation proceedings, state commissions can draw on deep experience and well-considered precedents while otherwise addressing and implementing reforms as directed by the Commission. Further, TELRIC will create a far more consistent cost and pricing framework across various other ILEC products and regulatory provisions – products and provisions that rely on TELRIC (or, at least, "total") ILEC costs. Indeed, as explained below, the Commission's proposed incremental cost standard, which is intended to gravitate toward zero costs, by contrast, will potentially jeopardize many existing federal and state provisions that also rely on an incremental cost standard, but are meaningful only because incremental costs are *not* zero.

21. For example, Illinois law requires all certified carriers, both incumbent and competitive, to price their services above *their own* Long Run Service Incremental Cost ("LRSIC") of the service in question. Part 791.20 of the Illinois Administrative Code defines LRSIC as "the long-run service

[3] This is not to weigh in on the Commission's authority to mandate change with respect to any particular type of traffic or the structure of intercarrier compensation generally -- those are legal issues that go far beyond the scope of this analysis. Rather, we simply mean to say that if the Commission is determined to reform intercarrier compensation as proposed in the FNPRM, it should not require states both to undertake the structural reforms proposed *and at the same time* compel the states to struggle with implementing entirely rewritten pricing rules.

incremental cost of a service is the forward-looking additional costs *incurred by the telecommunications carrier* to provide the entire output of the service…." Part 791 goes on to define with particularity the manner by which a proper LRSIC study must be accomplished and to identify subsidies where rates do not exceed their LRSIC (Part 791.90). This part of the Illinois code has been in place for nearly 20 years and has withstood substantial changes in the telecommunications industry. However, were the Commission to require carriers to price traffic termination services at the new incremental cost standard embodied in the FNPRM based upon a state-wide model generating a generic rate for all carriers – even for intrastate termination services – some carriers would almost certainly, and immediately, be in violation of the LRSIC methodology because the rate resulting from that model could likely be lower than their LRSIC costs. There are undoubtedly numerous other states that would face similar conflicts

22. Thus, the Commission's proposed incremental cost standard may have unintended consequences on, and indeed may undermine, the much broader legal and regulatory framework -- including state regulations that protect competitors and consumers against possible anticompetitive subsidies and pricing practices. This unintended effect is particularly inopportune as many ILECs are being granted increased pricing flexibility as a result in part of having been found or deemed to satisfy such competitive measures.

23. Other complications would arise as well if implementation of the proposed cost standard were required. For example, the implementation methodology

would appear to require consideration of the networks of all carriers including large ILECs, wireless carriers, competitors, small/rural carriers and cable TV providers in developing the final rate. There are major differences between these networks which cannot be easily "assumed away" by forward looking assumptions.

24. The Commission's proposed methodology could also impose significant burdens on state commissions in terms of data collection and analysis. For example, to develop a statewide model, each state commission will have to incorporate or otherwise take into account the disparate networks of incumbents, competitive local exchange carriers, rural carriers, wireless carriers, and cable companies. Other questions that state commissions will struggle with would include whether -- given that the methodology apparently presumes that a softswitch platform can serve a large territory such as a state -- should the model ignore current wire center locations? Whose responsibility will it be to construct, or fund, a model given that a model may be applicable to all carriers? Indeed, it is quite possible that fifty different states may give fifty different answers to these and other questions. The process simply seems overly complex and administratively wasteful when the state commissions have already expended resources on answering similar questions and resolving similar issues in the context of administering over a decade of TELRIC proceedings.

B. The Commission Ignores That Carriers Use TELRIC-based UNEs or ILEC Special Access Services in Terminating Traffic

25. The Commission asserts that TELRIC-based rates represent an upper bound on rates developed using an incremental cost methodology:

> These [TELRIC-based] estimates, by definition, will significantly exceed incremental cost estimates using the Faulhaber definition; therefore they provide an upper bound on the rates that may result under a Faulhaber approach to incremental cost. (FNPRM App. A at ¶ 254.)

26. This conclusion is incorrect because it ignores that TELRIC-based UNEs and even higher-priced special access services are often used by a majority of competing carriers to route traffic, including terminating traffic, from their switches to collocation spaces. For example, non-ILEC carriers often use a network architecture that employs fewer switches than the ILECs (per geographic area) and instead rely more on leased transport and leased collocation facilities to terminate traffic. When they are leased from ILECs, collocation and transport may be priced at TELRIC pursuant to § 251(c)(2) of the Act. Or where UNE transport is not available per the Commission's Triennial Review Remand Order or other rulings, carriers usually must pay special access prices for transport. Importantly, it is our understanding based upon years of experience and analysis of cost studies that much of the transport and collocation costs in a CLEC network are usage sensitive and will vary with the total volume of terminating traffic; thus, these costs are part of the "additional costs" of terminating traffic. In fact, these TELRIC-based and/or special access-based transport and collocation costs are often driven by AT&T or Verizon, since they have a hand in setting rates for UNEs and

access services of terminating traffic under any cost methodology. However, the Commission apparently overlooked these costs in claiming that TELRIC estimates must represent an upper bound on termination costs.

27. Thus, even as calculated under the proposed incremental cost method using the Faulhaber definition, TELRIC is *not* an upper bound on termination costs. Rather, particularly where UNEs and/or special access services are used in the termination of traffic, TELRIC could be a *lower* bound.

C. Softswitch Costs Are Mostly Traffic Sensitive

28. The Commission asserts that costs of terminating traffic "as determined using this [additional cost] methodology, are likely to be extremely close to zero." (FNPRM App. A at ¶ 273.)

29. This assertion rests in significant part on the assumption that the costs of softswitches are mostly *non-traffic* sensitive. This assumption is at odds, however, with our extensive experience in modeling the costs associated with softswitches and relevant evidence in this proceeding. In actuality, the costs of softswitches are mostly *traffic* sensitive.

30. To see that the costs of softswitches are traffic sensitive, it is useful to first define the term. In simple terms: costs are traffic sensitive if they vary with the volume of traffic. In more formal terms, costs are traffic sensitive if (Δ Total Costs/ Δ Traffic Volumes) > 0.

31. Therefore, the critical question is as follows: Do the costs associated with softswitches increase when the volume of terminating traffic on a network

increases from zero to current levels? (Recall that "total traffic terminating from other carriers" is the increment of traffic that the Commission is directing states to examine. (*See* FNPRM App. A at ¶ 271.)) The answer to this question is "yes" -- switch costs certainly increase, and quite considerably so.

32. The softswitch is in effect a specialized router that accepts traffic from and directs traffic to high-capacity ports (generally DS3 or above). While some very small number of those ports may be dedicated to specific customers or end users, for the most part these ports are *shared facilities* that accommodate large volumes of traffic of disparate nature (local, long distance, international, etc.).

33. Because the softswitch is notably scalable, its capacity can be expanded to accommodate growth in traffic volumes.[4] If one needs to accommodate more traffic, more resources are needed (e.g., ports) and likewise, when traffic increases over a larger range, more softswitches are needed. Given that under the Faulhaber formulation contemplated by the Commission, the increase in traffic is an enormous increment of total demand (i.e., all inter-network terminating traffic), an enormous expansion of the softswitch network would be required. This is, as discussed below, especially true for competitive carriers who have far less intra-network traffic than do more mature incumbent networks.

[4] The Commission recognizes this somewhat unique aspect of the softswitch at ¶ 271 of its FNPRM.

34. Under this scenario – massive increases of traffic volumes – the softswitch's capacity and costs expand significantly with growth in traffic volumes. While this strong relationship may not hold over a small range of traffic on a particular softswitch that serves a particular geographic area, it does hold for the scenario at hand – the Faulhaber formulation – which involves *massive* volumes of traffic.[5]

35. In fact, over the huge range of traffic increases that states would be directed to consider in conducting their cost studies under the proposed new methodology, there is very little in the softswitch network that would be fixed and invariant with traffic. Indeed, if the addition of terminating traffic caused the total volume of traffic on the network to double, then one would expect to find a near doubling of softswitch capacity and softswitch costs (except for some natural economies of scale associated with lower prices associated with larger volumes, central office space, power, etc.).

36. Further, the Commission's own methodology and assumptions regarding the nature of softswitches become muddled as it attempts to rebut a NuVox *Ex Parte*:

> NuVox claims that the absence of line cards in softswitches is evidence that all switch costs are traffic sensitive. This analysis ignores the potentially large fixed costs associated with a softswitch that are not related to line ports. Since softswitches resemble small computers, the appropriate analogy for estimating

[5] As discussed, the Faulhaber formulation involves increasing the volume of traffic on the public switched network by the total volume of traffic terminating from other carriers, which for a large state may be hundreds of millions of minutes per day. The Commission provides the following description of the Faulhaber formula: "The incremental cost of any individual product j contained in N can then be represented by the value IC(j) = C(N) – C(N – j), where C(N – j) represents the stand alone cost of producing every product in the set N except product j." (FNPRM App. at 248.)

> incremental cost would be the cost of additional memory cards, which could be inserted into the CPU. (FNPRM App. A at ¶ 259.)

37. Of course, there are certain processor related costs associated with the softswitch that may not vary over a *small* range of traffic. But that observation is irrelevant because the new methodology proposed by the Commission assumes a *massive change* in the total volume of traffic. This requires not only an expansion on existing switches but a network with many more switches. There are no relevant fixed costs in that context.[6] As an example, a carrier that accommodates 1 billion minutes of use a day will need a much larger network with more switches than a carrier that accommodates 0.5 billion minutes day.

38. The FNPRM also appears to confuse which components of the network are generally traffic sensitive. For example, the Commission notes:

> We recognize that the incremental cost of terminating traffic may include certain non-traffic-sensitive costs, such as the cost of a *trunk port*. Consistent with cost-causation principles, however, such non-traffic-sensitive costs may not be recovered through per-minute charges, but must rather be recovered through flat-rated monthly charges associated with interconnection trunks. (FNPRM App. A. note 717.) (Emphasis added.)

39. Any assertion that the "cost of a trunk port" is non-traffic sensitive is startling. To our knowledge, shared trunk port costs have never been treated as non-traffic sensitive in state or federal cost proceedings. Because shared ports are a common resource, as traffic volumes on the switch increase, the number of

[6] Moreover, the Commission also assumes a long run situation, so that the network will be appropriately sized and the number of softswitches matches the volume of traffic that needs to be accommodated (i.e., there will be no blockage of calls).

trunk ports must also increase in a direct relationship. For this reason, there are few costs that are so plainly traffic sensitive as trunk port costs.

D. Ignoring Shared and Common Costs Will Lead to Distortions and Arbitrage

40. The proposed new methodology would prohibit inclusion of any shared and common costs in calculating the cost of terminating traffic. Such an edict is without empirical basis. For example, the proposal fails to consider whether massive changes in terminating volumes might cause increases in shared and common costs. Likewise, the Commission provides no explanation as to why some services under its regulatory jurisdiction should bear the load of shared and common costs (i.e., UNEs), while others should be specifically precluded from recovering those costs, even though the stated objective – compensatory rates – is the same.

41. Exclusion of all shared and common costs would be in error for several reasons. First, some "shared and common" expense, such as those related to product management, collections and/or legal expense, can reasonably be attributed to intercarrier compensation. Second, while larger carriers may be able to easily absorb their "shared and common cost of transport and termination" -- the cost that would be assigned to transport and termination under TELRIC and other "total cost" standards -- by recovering them from other products without any significant rate impact, smaller companies for which terminating access and reciprocal compensation constitute a large portion of total revenue would require significant rate "re-balancing" in order

to find themselves in the same position. Third, smaller companies have a relatively smaller portion of traffic terminating "intra-company" compared to large companies (such as AT&T and Verizon). This means that smaller companies have much less of an ability to recoup unrecovered shared and common costs from other traffic[7] (because there is so much less of it.)

E. The Proposed Incremental Cost Requirement of a 100% Soft Switch Based Network Is Misguided

42. The new proposal would require statewide studies to be based upon the assumed use of softswitches:

> We offer further guidance regarding specific aspects of these cost studies. First, these cost studies *must* use the least cost, most efficient network technology. We find that the least cost, most efficient switch today is a *softswitch*. (FNPRM App. A at ¶ 272.) (Emphasis added.)

43. This imperative is inappropriate for a number of reasons. First, and foremost, the Commission ignores that, even when they request to do so, CLECs and other carriers are often not permitted to interconnect based on the IP-enabled format inherent in softswitches. In fact, AT&T, Qwest and Verizon have *all* prohibited competitive carriers from interconnecting with their networks for the exchange of local or long distance traffic using IP based signaling.[8]. It is

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[7] The costs of intraswitch, on-net calling may be recovered by large ILECs through flat-rated, end-user charges.

[8] Declaration of August Ankum, Ph.D., Keith Coker, and James D. Webber on behalf of NuVox,, attached to Letter from John J. Heitmann, Counsel for NuVox, to Marlene H. Dortch, Secretary, FCC, CC Docket No. 01-92 (filed Oct. 24, 2008) (NuVox Oct. 24, 2008 *Ex Parte* Letter). At paragraph 46, Mr. Coker, Chief Technical Officer for NuVox, states, based on personal experience:

highly inappropriate to order a cost methodology that is so deeply out of touch with actual practices in the industry.

44. Second, there are numerous reasons why a hybrid architecture will remain the norm -- even in the most advanced telecommunications network -- for a long time to come. Indeed, AT&T itself has in recent proceedings opposed basing its own costs on the assume use of softswitches for such reasons. AT&T's witnesses last year filed testimony supporting a forward-looking network based on a 100% circuit-switched network, i.e., 0% softswitches.[9] Moreover, AT&T has insisted in another proceeding that *a combination of* circuit switches and softswitches would most likely represent an optimal assumption:

> It is quite possible that in certain situations, the appropriate answer from a network perspective for the use of softswitching is that it is implemented *in combination with* a circuit-based switching solution. In other words, instead of requiring remote terminals everywhere, as discussed above, utilizing both types of switches *might make the most sense from a network architecture perspective*. Moreover, it is also *likely* that customer-specific requirements within a wire center may be the driver for using more than one type of switch. *The bottom line is that the use of a single type of switch – either softswitch or circuit switched – may not be the appropriate answer given the requirements for the network placed by customers*.[10]

Next, it is also important to note that all large ILECs ***refuse to interconnect*** on an IP basis. AT&T, Qwest and Verizon have all prohibited competitive carriers from interconnecting with their networks for the passage of local or long distance traffic using Internet Protocol ("IP") based signaling. As such, AT&T's assumption that 100% of traffic termination could be accommodated by softswitch platforms falls flat when you consider that AT&T will not accept CLEC traffic (either for local or long distance purposes) using the native IP-enabled format of those same softswitches.

[9] Texas PUC Docket No. 34723 *Petition for Review of Monthly Per Line Support Amounts from the Texas High Cost Universal Support Plan Pursuant to PURA § 56.031 and Subst. R. 26.403*. ("Texas USF Docket") Testimony of AT&T witness Steve Turner (November 16, 2007) at 13.

[10] Texas PUC Project No. 34293, Letter by Mike Lieberman and Steve Turner on behalf of AT&T, at 2 (emphasis added) (July 10, 2007).

45. In fact, AT&T has noted in one of these proceedings that softswitches may not always be the most efficient solution:

> A critical concept to consider from a modeling perspective with softswitching is the types of interfaces that are available on the softswitch. According to our preliminary research, softswitches do not have what are commonly referred to as analog interface cards. Analog interface cards are found in a circuit-based switch and are used to signal and provide power to POTS lines that are served exclusively over copper. According to our preliminary investigation, with a softswitch, *all lines* must be on a digital loop carrier or its equivalent to take the analog lines and place them in a format that will interface with the softswitch.[11]

46. In the same proceeding, Embarq added that "[t]o date, no connecting wireless or major IXC has requested an IP interconnection arrangement"[12] and that an IP switching network still "[r]equires interface to the existing PSTN networks as significant volumes of traffic will continue to be TDM for many years."[13]

47. Thus, the proposed assumption of 100% softswitches is contrary to the reality that a significant portion of carriers would continue using TDM protocol, and the fact that a significant number of end user lines will continue to enter the switch through an analog port and require analog termination for the foreseeable future. Such factors cannot be ignored in considering whether an all-softswitch network is truly the most efficient architecture.

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[11] Texas PUC Project No. 34293, Letter by Mike Lieberman and Steve Turner on behalf of AT&T, at 1 (emphasis added) (July 10, 2007).

[12] *Embarq's Presentation in Texas PUC Project No. 34293* at 7. See also *Currie Affidavit* ¶ 24 ("Because the interexchange network with which a softswitch needs to interconnect is generally circuit-based rather than packet-based, the softswitch uses Time Division Multiplex ("TDM") cards for the provision of non-Internet-protocol inter-switch trunking."). While Dr. Currie makes this statement to describe MECA's cost study, he appears to agree with this statement. Further, in ¶ 53 he also notes that "AT&T Michigan has not contested in this proceeding that the investment associated with TDM cards is traffic sensitive."

[13] *Embarq's Presentation in Texas PUC Project No. 34293* at 7.

48. Third, the proposed methodology fails to address the costs of network components needed for the IP to TDM conversions that will allow the softswitch to interface with a largely TDM/circuit based public switched network. That is, even if a carrier is 100% softswitch based, it will still need to interconnect with TDM based providers and networks -- and since IP-to-IP interconnections are not generally available as discussed above, that means the softswitch-based carrier will need to absorb those costs. To the extent that this causes the 100% softswitch based carrier to incur "additional costs," those costs are outside the control of an individual company that actually adopted the softswitch technology and should legitimately be reflected in intercarrier compensation rates. While in a sense, this a cost input issue (for which state commissions could make adjustments), the proposal and its insistence on near zero costs seems to preclude considerations of these types of costs.

49. Last, even assuming that the network is comprised entirely of softswitch technology, implementing it solely within the context of call termination while leaving all wholesale switching elements and USF cost studies to rely upon circuit switched infrastructure would result in a glaring inconsistency in the regulatory framework. The softswitch assumption envisioned by the Commission would be employed for the purpose of (presumably) lowering intercarrier compensation rates, while UNE and "USF" costs (costs determined for the purposes of federal and state USF support) rest upon different assumptions and are left unaffected. This inconsistency will further handicap CLECs, since they are unlikely to be beneficiaries of USF subsidies

but will continue to pay for wholesale switching elements and make contributions to universal service funds.

III. Question Two: Should the terminating rate for all § 251(b)(5) traffic be set as: (i) a single, statewide rate; or (ii) a single rate per operating company?

A. A Single, Unified Statewide Average Rate Is Not Just and Reasonable

50. The Commission's proposal would result in rates that are so highly averaged that they could not possibly be just and reasonable for the wide variety of carriers to which those rates would apply. In view of this, neither a single, statewide rate, nor a single rate per operating company is appropriate.[14]

51. The Commission's own discussion of lawful rates underscores the problem of applying a statewide average rate or operating company wide rate to all carriers:

> Moreover our decision to adopt a unified intercarrier compensation methodology is in no way arbitrary or adopted with any confiscatory purpose. In fact, the determinations made in this order reveal just the contrary, our decision to raise the cap on SLCs, our referral to the Federal-State Joint Board on Separations (Separations Joint Board) of the issue of whether to allow additional increases in SLC caps in Part V.C below, and our acknowledgment of the ability of a carrier to establish entitlement to supplemental universal service to help ensure that carriers can maintain their financial integrity. Although in most cases the rates for intrastate and interstate terminating access will drop substantially, that alone is not the test for whether a taking has occurred; rather, a primary consideration for takings claims is whether the rates ultimately adopted will produce *a reasonable return sufficient to enable a company to maintain its financial integrity*. (FNPRM, App. A at ¶ 267 and 268) (Emphasis added.)

[14] The Commission also proposes to eliminate the ability of carriers to demonstrate their own costs.

52. Thus, according to the Commission, the essential consideration is whether resulting rates will produce returns "sufficient to enable *a* company to *maintain its financial integrity."*

53. It seems highly improbable that regulators can establish *a single rate* that is just and reasonable *for vastly different companies*. As with TELRIC-based UNE costs and rates, the Commission must recognize company-specific cost and rate deaveraging, so as to permit the rates to reflect company-specific conditions. Consider, for example, that within its merger-related conditions for AT&T, while the FCC required AT&T to "port" interconnection agreement *terms and conditions* from one state to another, it specifically did not require that AT&T "port" *rates* from one jurisdiction to another, and AT&T's UNE rates and interconnection agreements continue to vary from state to state. This was a clear acknowledgment on the part of both AT&T (and presumably the Commission in accepting and approving the conditions) that costs can differ between geographies. Likewise, costs differ between carriers (e.g. state commissions have been loath to adopt UNE rates from one carrier to be used by another – even within the same geographic area).

54. While the Commission may envision some "mechanisms" to help make up shortfalls relating to a unified averaged rate,[15] it is less than clear how and whether such other mechanisms would truly address such concerns. In addition, even if such mechanisms were available, this does not necessarily solve the underlying threat that highly averaged rates will pose to companies'

[15] FNPRM App. A at ¶ 267 and ¶ 268

financial integrity. First, there would appear to be little benefit distorting prices to such an extent that regulatory construct mechanisms are required to enable companies to maintain their "financial integrity." It is one thing to establish explicit subsidies to *eliminate* existing implicit subsidies (as mandated by § 254 of the Act) while promoting a statutory objective such as universal service, but it is quite another to yet further increase universal service subsidies or create new mechanisms to maintain the "financial integrity" of companies imperiled by poorly structured intercarrier compensation policies.

55. Second, not all companies receive universal service subsidies, and it is not clear what other "mechanisms" might support those other carriers who are affected by the proposed reform. Thus, the Commission's proposal for additional subsidies would only further imperil the "financial integrity" of those carriers that do not receive subsidies themselves.

B. A Single, Unified Statewide Average Rate Represents a Perverse Incentive Structure

56. The Commission also defends its averaging proposals by noting that ". . . setting rates based on the costs of the current, least cost, most efficient technology creates incentives for carriers with less efficient networks to migrate more quickly to those more efficient technologies." (FNPRM App. A at ¶ 274.) However, the issue is not that simple. Consider the same notion within a TELRIC construct. Within a TELRIC study, the requirement for forward-looking technology substitution offers a technology choice for the

ILEC that is *endogenous* to the ILEC. In the face of TELRIC-based rates, an ILEC can decide either to adopt the new technology or to stick with its embedded technology (if its embedded costs are lower). Either way, the choice is endogenous to the ILEC, which ensures that the TELRIC rates are *compensatory* (and, thus, just and reasonable.) Also, TELRIC based rates (and the forward-looking technology assumption) serve as a *competitive market standard* that guides the ILEC toward efficient choices for providing UNEs.

57. To the contrary, the Commission's 100% softswitch-based network assumption is *not* totally endogenous to the terminating carrier. As noted above, a 100% softswitch-based provider will still incur additional costs for terminating traffic from a provider that has opted to maintain its TDM/circuit switch-based switches. This means that the technology choices – and, thus, some of the costs – are in part determined by carriers other than the terminating carrier: i.e., the technology choice is in part *exogenous*. Because the technology choice is exogenous – i.e., beyond the control of the terminating carrier – the rates may *not be compensatory* (as the terminating carrier may have no choice but to incur additional costs to accommodate the outdated technology choices of other carriers.) This also means that the Commission's 100% softswitch-based network assumption does *not set a competitive market standard*.

58. In short, a carrier that opts for a 100% softswitch-based network will incur additional costs when it needs to terminate traffic for TDM/circuit switch-

based providers and without the ability to recover those additional costs, its ultimate rates are likely to be even further away from necessary compensatory levels. Because the real-world adopters of softswitch technologies are more prevalently CLECs, the Commission's costing proposal (if interpreted as if to disallow recovery of TDM to IP handoff) would disproportionately hurt competitive carriers.

C. The Foundation of the New Standard is Internally Inconsistent

59. The new proposal must finally be rejected because it rests upon internally inconsistent arguments and theories. First, the Commission reasons that because the softswitch is "easily scalable," it is appropriate to set *one statewide average rate*:

> We also require each state to set *a single, uniform rate for all carriers in that state* through their pricing proceedings. We find this approach warranted for several reasons. First, softswitches are *easily scalable*, and thus the incremental cost of termination does not vary with the number of lines the switch serves. (FNPRM App. At 274.)

This statement is illustrated as follows:

Assertion 1: Switch is scalable, costs increase with costs and unit costs stay constant, justifying a single, uniform statewide average rate.			
	MOUs	Total Switch Costs	Unit (MOU) Switch Costs
Company A	1,000,000	$1,000	$0.001
Company B	2,000,000	$2,000	$0.001

Thus, the Commission's scenario works as follows: as traffic volumes increase and, because the softswitch is scalable, costs go up proportional with

the volume of traffic. This means, according to the Commission, that unit costs stay the same, justifying a single, uniform rate for all carrier in the state (because size does not matter.)

60. By contrast, if costs were fixed (and would not vary with traffic), the table would look as follows:

Switch costs are fixed, costs do not increase, and unit costs decline as traffic volumes increase. This invalidates the claim that a single, uniform statewide average rate is justified.			
	MOUs	Total Switch Costs	Unit (MOU) Costs
Company A	1,000,000	$1,000	$0.001
Company B	2,000,000	$1,000	$0.0005

In this situation, because costs are fixed, unit costs go down as traffic volumes increase, and the smaller company has higher unit costs. Under this scenario, a single, uniform statewide average rate would not have been justified.

61. The contradiction emerges when the Commission then asserts that the costs of the softswitch are mostly non-traffic sensitive and the traffic sensitive costs are "possibly zero":

> Although we do not necessarily accept the precise estimates contained in AT&T's *ex parte* letter, we note that its analysis suggests that the incremental *traffic-sensitive costs of modern softswitches* are likely to be significantly lower than those of circuit switches and *possibly zero*, both because the investment cost per line is lower and because the percentage of traffic-sensitive costs to total costs is lower for modern softswitches. (FNPRM App. A at 257.)

62. This, of course, directly contradicts the earlier claim, used to justify a single, uniform statewide average rate -- that costs increase linearly. The proposed

methodology therefore falls under its own weight, and cannot serve as the basis for adoption of a uniform statewide rate.[16]

[16] The Commission also found that the costs of terminating traffic does not vary with the number of lines served. Thus, unless total switch costs are zero overall, this means that costs must vary with traffic volumes. In any event, either costs do or don't increase with volume, but it cannot work in both ways.

VERIFICATION

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 26 day of November, 2008.

August ~~H. Ankum, Ph.D.~~

VERIFICATION

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 26 day of November, 2008.

Olesya Denney, Ph.D.