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

RECEIVED
AUG 27 2001
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
In the Matter of Petition of Cox Virginia Telecom, Inc., etc.	)	CC Docket No. 00-249
In the Matter of Petition of AT&T Communications of Virginia Inc., etc.	)	CC Docket No. 00-251

VERIZON VIRGINIA INC.

VOLUME II OF II

REBUTTAL TESTIMONY

(Public Version)

- ECONOMIC FOUNDATIONS
- COST OF CAPITAL
- DEPRECIATION
- RATE POLICY
- NON-RECURRING MODEL

AUGUST 27, 2001

Dr. Howard Shelanski
Economic Foundations

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

RECEIVED
AUG 27 2001
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
In the Matter of Petition of Cox Virginia Telecom, Inc., etc.	)	CC Docket No. 00-249
In the Matter of Petition of AT&T Communications of Virginia Inc., etc.	)	CC Docket No. 00-251

VERIZON VIRGINIA INC.

REBUTTAL TESTIMONY OF DR. HOWARD SHELANSKI ON ECONOMIC FOUNDATIONS

AUGUST 27, 2001

TABLE OF CONTENTS

Page

I. THE MODIFIED SYNTHESIS MODEL RESTS NEITHER ON THE CORRECT ECONOMIC PRINCIPLES FOR MEASURING THE EFFICIENT, FORWARD-LOOKING COSTS OF PROVIDING UNEs NOR ON THE BEST ECONOMIC INTERPRETATION OF TELRIC. (JDPL Issues II-1-a to II-1-c; II-2-a to II-2-c) 1

A. The Modified Synthesis Model Is Not Consistent With Correct Economic Principles. 1

B. The Modified Synthesis Model Is Neither Compelled by, Nor Consistent With the Objectives of, TELRIC. 4

II. AT&T/WORLDCOM'S ANALYSIS OF NON-RECURRING COSTS IS INCORRECT. (JDPL Issues II-1-a to II-1-c; II-2-a to II-2-c) 15

A. Non-Recurring Costs Do Not Create a Barrier to Entry and Should be Borne by Those Who Cause Them. 15

B. The Fact that a Cost Is Due to Activities that Might Benefit Multiple Users Over Time Should Not Preclude the ILEC from Recovering the Cost on a Non-Recurring Basis from the Requesting CLEC. 17

C. The Fact that a Firm Should Be Efficient with Respect to all Forward-Looking Costs, Both Recurring and Non-Recurring, Does Not Imply That There Should Be No Differences in the Analyses of the Two Kinds of Costs. 21

D. AT&T/WorldCom's Analysis of Non-Recurring Costs Is Oversimplified. 25

III. SWITCH RATE DESIGN AND USAGE SENSITIVITY (JDPL Issues II-1-a to II-1-c; II-2-a to II-2-c) 26

Q. Are you the same Howard Shelanski who filed direct testimony concerning economic issues on July 31, 2001?

A. Yes.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to address several issues raised in the direct testimony of Terry Murray on behalf of AT&T and WorldCom. Because many aspects of Ms. Murray's testimony are addressed in the accompanying testimony of Dr. Timothy Tardiff, I will restrict my testimony to three specific topics. First, I will explain why the Modified Synthesis Model is not economically appropriate for calculating forward-looking costs for unbundled network elements ("UNEs"). Second, I will discuss why I disagree with Ms. Murray's discussion of non-recurring costs. And third, I will show why I think that Ms. Murray's arguments about the pricing structure for UNEs such as switching are also incorrect.

I. THE MODIFIED SYNTHESIS MODEL RESTS NEITHER ON THE CORRECT ECONOMIC PRINCIPLES FOR MEASURING THE EFFICIENT, FORWARD-LOOKING COSTS OF PROVIDING UNES NOR ON THE BEST ECONOMIC INTERPRETATION OF TELRIC. (JDPL ISSUES II-1-A TO II-1-C; II-2-A TO II-2-C)

A. The Modified Synthesis Model Is Not Consistent With Correct Economic Principles.

Q. Is the Modified Synthesis Model an economically correct cost model for unbundled network elements?

A. No. UNE prices based on forward-looking costs should be set so as to provide appropriate economic incentives for both incumbents and new entrants. Such prices

should, therefore, (1) encourage new entrants to deploy their own or alternative facilities when they can do so at lower forward-looking costs than the incumbent is expected to incur; and (2) provide incumbents with incentives to invest efficiently in their networks over time. UNE prices must accordingly reflect the costs that an efficient firm providing unbundled network elements realistically expects to incur going forward. Prices set below this level will lead to inefficiently high consumption of UNEs by new entrants and deter efficient investment in alternative facilities. Moreover, prices based on an incumbent carrier's expected, forward-looking costs will also be competitively nondiscriminatory because CLECs purchasing UNEs will incur the same forward-looking costs as the incumbent and will receive the benefit of Verizon VA's achievable efficiencies.

An economically correct, forward-looking model for pricing UNEs should therefore seek to estimate the costs that a carrier providing those UNEs, in this case Verizon VA, expects to incur as it efficiently expands and replaces its network over time. As technology changes, firms must decide whether and when to replace existing facilities with more advanced alternatives. Except in the most unusual circumstances, this process is a gradual one, reflecting the fact that it will often be less costly for the firm to operate existing equipment for some time before incurring the sunk costs of purchasing the new technology. In addition, the firm will want to limit its sunk investment in new equipment if it anticipates further technological change that will yield even more efficient facilities in the future. The long-run, forward-looking costs of an efficient firm will therefore reflect a mix of existing network facilities and new technology.

1

2 **Q. Why doesn't the Modified Synthesis Model meet the objectives you describe above?**

3 A. The Modified Synthesis Model does not estimate the forward-looking costs that Verizon
4 VA or any other efficient firm would incur. By instead measuring the costs of a
5 hypothetical, optimal network that is built instantaneously, the Modified Synthesis Model
6 fails to recognize the economics of efficient replacement and expansion of a network and
7 cannot provide the cost signals that firms need to make real entry and investment
8 decisions.

9

10 As the Commission has stated, the Synthesis Model on which the Modified
11 Synthesis Model is based was "designed to determine *relative* cost differences among
12 different states, not actual costs," so as provide a standardized basis for allocating
13 universal service subsidies across states whose networks might have very different
14 characteristics that make cost comparisons difficult.[1/] But to determine real forward-
15 looking costs — which provide the more appropriate basis for UNE pricing — one
16 should not rely on a hypothetical network construct that would fail to reflect the forward-
17 looking costs of the carriers that will be providing network elements and, hence, would
18 fail to provide efficient entry and investment incentives.

19

[1/] *See* Memorandum Opinion and Order, *Application of Verizon New England Inc., et al., for Authorization to Provide In-Region, InterLATA Services in Massachusetts*, 16 FCC Rcd 8988, 9003-04 ¶ 32 (2001).

1 **B. The Modified Synthesis Model Is Neither Compelled by, Nor Consistent**
2 **With the Objectives of, TELRIC.**
3
4 **Q. Is the Modified Synthesis Model's assumption of an instantaneous, blank-slate**
5 **replacement of the network necessary to TELRIC?**
6 A. Not at all. The Modified Synthesis Model that Ms. Murray advocates is premised on the
7 extreme assumption of an instantaneously deployed hypothetical network that is
8 successively replaced every few years when prices are reset. Such a standard is
9 inconsistent with a rule whose stated objective is to provide efficient investment and
10 market entry decisions on a forward-looking basis. To be sure, TELRIC requires that
11 costs be measured on a forward-looking basis that captures efficient deployment of new
12 technology in the network. So some replacement of existing network facilities over time
13 is inherent in a TELRIC model. But to assume that, just because firms must invest
14 efficiently going forward, they must be assumed to immediately and instantaneously
15 replace their entire networks with each successive advance in network technology is both
16 an extreme interpretation of TELRIC and economically incorrect.
17
18 Thus, I disagree with Ms. Murray's statement that any "forward-looking cost
19 methodology, such as the TELRIC methodology, is almost totally divorced from the
20 existing network configuration that Verizon (or any other carrier) deploys."[2/] As
21 explained at length in my direct testimony and in the testimony of Dr. Gordon, the
22 economically correct approach is to estimate Verizon VA's costs of efficiently replacing
23 and expanding its facilities over time, which necessarily means taking account of the

---

2/ Direct Testimony of Ms. Terry Murray at 44.

economic value of its existing network.[3] As a result, a more reasonable application of a model such as TELRIC is to assume that the network is replaced incrementally over a reasonable planning period, as Verizon VA's model assumes in this case. This reflects a reasonable effort to apply correct economic principles within the constraints imposed by TELRIC.

Ms. Murray says "the prices for unbundled network elements should not exceed the costs that Verizon itself bears for comparable uses of network functionalities."[4] That may be correct (depending on whether "costs" are defined properly). But the flip side is certainly correct: prices for UNEs should not be lower than Verizon VA's long-run, forward-looking costs of providing UNEs. Using the Modified Synthesis Model to calculate costs for UNEs would violate that principle.

Q. But what about Ms. Murray's assertion that a "long-run" model should "assume[] away" all existing facilities (Murray Direct Testimony at 46)?

A. As I explained in my direct testimony, while a long-run analysis should allow for the possibility of varying all inputs, that does not mean all inputs are or should in fact be varied.[5] A carrier such as Verizon VA seeking to minimize its costs over the long run would not "assume away" its existing facilities and instantaneously replace them all with

---

[3] *See* Direct Testimony of Dr. Howard Shelanski at 5-20; Direct Testimony of Dr. Kenneth Gordon at 9-17.

[4] Direct Testimony of Ms. Terry Murray at 7.

[5] *See* Direct Testimony of Dr. Howard Shelanski at 8.

today's best technologies. The economically correct analysis is significantly more complex and requires consideration not only of the costs of operating existing facilities as compared to the costs of purchasing and operating new facilities, but also of the effects of uncertain demand and technology (*e.g.*, the possibility that a better technology might be developed in the near future). Thus, the fact that TELRIC is based on a long-run analysis does not imply an instantaneous and complete replacement of the existing network.

Q. Is an instantaneous replacement model such as the Modified Synthesis Model more likely to be efficient and to minimize costs over the long run?

A. No. The Modified Synthesis Model produces the costs of a hypothetical network built instantaneously to serve existing demand using the most efficient technologies available today. But such a construct has nothing to do with real-world economic decision making, at least not by efficient firms. No rational firm would, except under the most extreme and unusual conditions, discard its existing network and rebuild it with momentarily optimal parameters. To do so would likely raise long-run costs. For example, optimizing capacity for demand today will prove inefficient if demand rises later. Carrying spare capacity is often a current cost that saves greater costs (*e.g.*, digging up streets) in the future. Moreover, rushing to put in today's best technology will create stranded costs if tomorrow a yet more efficient technology emerges. Thus, even if an instantaneous replacement model would produce lower short-run costs at this moment, it would likely waste valuable resources and lead to higher costs over time.

It appears that what the proponents of the Modified Synthesis Model seek is a rule that captures any benefits that would arise from having the best available technology fully deployed in ILEC networks but that does not recognize some of the costs entailed in full network replacement. In other words, Ms. Murray appears to be proposing that UNE prices should reflect the benefits of the best-available technology without reflecting all the capital and depreciation costs that would truly be involved in deploying that technology throughout a given network. It models the cost of a hybrid network that combines the lower depreciation and capital costs of a network that efficiently retains existing technology with the lower short-run costs of the new technology. But a correct efficiency calculation does not mix and match in this way: it compares the short-run costs of the existing technology with *all* the forward-looking costs of the new technology, and only switches over if the latter are lower than the former. The key point here is that, if the incumbent has made an efficient decision not to replace a network element (either today or over an economically reasonable future planning period), it has done so because the long-run costs of retaining the existing technology are *lower* on a forward-looking basis than the costs of replacing it with the new technology. It makes no sense, then, to further lower the incumbent's UNE prices to reflect the short-run cost efficiencies of the new technology that it has appropriately determined not to install. An efficient carrier does not necessarily switch just because the short-run costs of new technology are lower than those of existing technology.

As a result, the model propounded by Ms. Murray, does not actually measure the TELRIC of any real piece of network equipment and instead understates forward-looking

costs. The model does not capture the long-run costs of the new technology that it assumes is instantaneously deployed because it does not include the capital and depreciation costs of replacing the existing plant with all new technology. The result would be that both new entrants deciding whether to build their own networks and incumbents deciding whether to replace their existing facilities have distorted incentives. A new carrier thinking of building the best available network would anticipate that it could purchase UNEs at prices that do not fully include the capital and depreciation costs it would incur in building a new network, thus making UNEs a cheaper, although not more socially efficient, alternative. Meanwhile, an incumbent carrier deciding whether to replace existing plant would have to anticipate that new technology would not only reduce the capital value of its existing network, but reduce its ability to fully recover the costs of the new technology as well. New firms would accordingly under-invest in new facilities, and incumbent firms would tend to under-invest as well.

Q. What would have to be done to fix this inconsistency between the Modified Synthesis Model and TELRIC and to reflect the long-run, incremental costs of total network replacement?

A. Even assuming the various other problems identified by Verizon VA's other witnesses could be and were corrected, as the discussion above suggests, the capital and depreciation costs of fully deploying the new technology would have to be factored in to the Modified Synthesis Model. This modification has not been made to the Modified Synthesis Model and is not rendered moot by the changes that AT&T/WorldCom and their witnesses suggest are adequate to convert that model from one used for allocating

universal service subsidies to one appropriate for setting UNE prices. As Dr. Tardiff explains, merely taking a hypothetical, generic model and introducing some state-specific inputs is not sufficient to correct the inadequacies of the Synthesis Model for TELRIC purposes.[6]

More specifically, even assuming for argument's sake that the Modified Synthesis Model's assumptions of an instantaneous, perfectly sized network were consistent with TELRIC, more fundamental changes would have to be made in the model to reflect the increased risks associated with the Modified Synthesis Model's methodology. Those changes would include shorter depreciation lives and increased cost of capital because, among other things, the risk of stranded investment would be significantly higher, particularly if the network is assumed to be instantaneously replaced yet again with all the newest technologies when prices are reset every 3-4 years. While any model that bases UNE prices on expected future costs, as opposed to current efficient costs, increases the risks and capital costs of forward-looking investment, the problem is greatly exacerbated with the hypothetical network assumptions of the Modified Synthesis Model.

Q. Why does the Modified Synthesis Model not fully account for the risks faced by a real-world carrier?

A. As I explained in my direct testimony, any time a firm will incur sunk costs in a changing and uncertain economic environment, it must build a risk premium into its cost analysis.[7]

---

[6] *See* Rebuttal Testimony of Dr. Timothy Tardiff §§ II-III.

[7] *See* Direct Testimony of Dr. Howard Shelanski at 13-14.

The greater the uncertainty of the environment in which that sunk investment is made, the higher the risk premium that figures into the firm's capital costs. *Un*anticipated technological change is not factored into depreciation and thus causes some sunk costs to be unrecoverable. Similarly, a firm always faces the possibility that demand will not materialize as anticipated and that the prices it can charge for the goods or services at issue will not cover sunk costs. Finally, as the Commission noted in its brief to the Supreme Court, "an appropriate cost of capital determination takes into account not only existing competitive risks . . . but also risks associated with the regulatory regime to which a firm is subject."[8/]

The Modified Synthesis Model contains no provision for such risks, even though under the model's instantaneous full-replacement scenario the exposure to such risk and uncertainty is much higher than in an incremental replacement model, and thus requires a correspondingly higher risk premium on the cost side of the investment analysis. A consequence of this is that the anticipated rate of return would have to be higher to induce investment under a complete replacement model than under a model of incremental replacement.

Ms. Murray's argument that a firm should not be "guaranteed" recovery of its costs[9/] thus misses the point. The real issue is the level of risk faced by Verizon VA,

---

[8/] *See* Reply Brief for Petitioners United States and the Federal Communications Commission at 12 n.8, *Verizon Communications, Inc. v. FCC* (U.S. filed July 2001) (No. 00-511).

[9/] *See* Direct Testimony of Ms. Terry Murray at 8-9.

which in turn will inform the rate of return required to attract capital. The instantaneous replacement approach of the Modified Synthesis Model increases risk beyond what a rational, efficient carrier would face and accordingly would require a higher cost of capital.

Q. Does the Modified Synthesis Model appropriately account for depreciation costs?

A. No. A complete replacement model (like the Modified Synthesis Model) is likely to be less efficient than incremental replacement in part because the depreciation costs in a model of instantaneous and complete network replacement would be quite high.[10/] Indeed, a firm would not invest in new technology unless it thought it could fully recover its costs of that technology before having to replace it. As Dr. Lacey explained in his direct testimony on behalf of Verizon VA, the appropriate depreciation life for an asset that will frequently have to be replaced is the time until the next event that triggers replacement.[11/] Where technological change is frequent, depreciation lives under a total replacement model such as the Modified Synthesis Model will be short and the rate of depreciation will be high in order for the firm fully to recover its investment during the allowable interval. When assets are not assumed to be replaced each time technology changes, their economic lives can be longer and period-by-period depreciation costs decline. The Modified Synthesis Model does not appropriately account for the increased depreciation costs that would result from its assumption of instantaneous and complete network replacement.

10/ *See* Direct Testimony of Dr. Howard Shelanski at 14-15.

11/ *See* Direct Testimony of Dr. John Lacey at 8.

1

2 **Q. Is there an interpretation of TELRIC that mitigates the distortions you discuss**

3 **above and that is more consistent with correct economic principles?**

4 A. Yes. As I mentioned above and Dr. Gordon and I explained in our respective direct

5 testimony, a model that assumes efficient, incremental replacement of existing network

6 facilities and bases UNE prices on the expected costs of the network over an

7 economically reasonable planning period both complies with TELRIC principles and

8 better comports with economic principles (within the constraints imposed by TELRIC).

9 Such a model is forward-looking and at the same time comes closer to measuring costs

10 that a carrier reasonably expects to incur in the future, as opposed to the costs of a

11 network that will never, in fact, exist.

12

13 **Q. How, in a correct forward-looking model, should the costs of "spare" capacity built**

14 **for future demand be recovered?**

15 A. The current costs of capacity built in anticipation of future demand should factor in to

16 current prices, and to the extent Ms. Murray argues to the contrary, I disagree.[12/] The

17 depreciation and capital costs, and often too the operating and maintenance costs, of

18 efficient excess capacity are incurred from the moment the investment is made; those

19 costs do not somehow go on hold until there is actually demand for such capacity. If the

20 firm has invested efficiently for the future, then it has calculated that the net present value

---

[12/] *See* Direct Testimony of Ms. Terry Murray at 7-8 ("If any 'growth' spare is included in sizing the network, the total quantity of demand over which costs are unitized must reflect both the current and 'growth' demand, so that current customers do not subsidize the costs of providing plant for future customers.")

(NPV) of the costs of excess capacity built today in anticipation of future demand conditions are lower than the NPV of waiting to build that capacity later. As Ms. Murray acknowledges, such "growth spare" should be included in a long-run cost model.[13] But it would then be contrary to long-run efficiency and to the objectives of TELRIC to prevent a firm from recovering those efficient, long-run costs just because they reflect investment made in rational anticipation of future conditions. Prices based on such costs reflect the cost structure of an efficient firm, do not contain any costs that the incumbent itself does not incur, and reflect nothing more than what the entrant itself would do if operating its own network efficiently.

There is thus no economic basis for restricting UNE prices to the short-run costs of capacity actually used today. If, as Ms. Murray suggests, UNE prices were so restricted, those prices would prevent the incumbent from recovering efficiently incurred capital and depreciation costs, as well as operating and maintenance costs, for the equipment installed based on efficient, forward-looking estimates.

Moreover, contrary to Ms. Murray's claim, prices based on the long-run, incremental costs of the incumbent would not cause current users of the network to "subsidize" capacity for future users.[14] At every point in time, the forward-looking costs of a carrier reflect investment for the future, and, so long as that investment is efficient, the current costs it generates should be recovered through current prices. Today's

---

[13] *Id.* at 7.

[14] *Id.* at 8.

customers should pay for efficient investment in anticipation of tomorrow's growth, just as tomorrow's customers should bear the costs of efficient investment in capacity for the period after.

Implicit in Ms. Murray's analysis is the possibility that today's UNE customers will not be purchasing UNEs tomorrow and, hence, will not benefit from the costs incurred today in anticipation of tomorrow's needs. But, so long as the forward-looking investments are rationally and, from today's standpoint, efficiently made, then today's UNE purchasers should not be freed from the forward-looking costs of reasonably predicted future demand just because they might unpredictably decide not to be part of such demand. To say that current users should not pay a forward-looking share of spare capacity costs is to place all the risk of future demand conditions on the incumbent rather than having that risk shared efficiently by those for whose benefit it is undertaken in the first place. The alternative is to risk extremely high UNE prices in the future or under-recovery of efficient, forward-looking costs by the ILEC. This, in turn, would raise current capital costs.

II. AT&T/WORLDCOM'S ANALYSIS OF NON-RECURRING COSTS IS INCORRECT. (JDPL Issues II-1-a to II-1-c; II-2-a to II-2-c)

A. Non-Recurring Costs Do Not Create a Barrier to Entry and Should be Borne by Those Who Cause Them.

Q. Ms. Murray characterizes non-recurring costs as an "additional hurdle" to market entry by CLECs and argues for limitation on the ILEC's ability to recover those costs in the manner that they are incurred (Murray Direct Testimony at 24-25). Do you agree?

A. No. As an economic matter, the limitations Ms. Murray suggests are unwarranted. Non-recurring costs (NRCs) are caused by the CLEC, and it is appropriate that they pay these costs and bear the risk of not recovering them from customers. It may be true, as Ms. Murray argues, that a CLEC might not recover non-recurring costs if it loses the customer at issue or exits the local exchange business (though they can avoid even that risk if they charge an up-front "connection fee" like many carriers do). But this risk of failing to recover sunk costs is the same risk that any firm runs in almost any line of business. If the ILEC incurs a non-recurring cost in connection with, for example, providing a loop, and can only charge the CLEC for that cost as part of recurring charges, then the risk of non-recovery does not go away. It is simply transferred from the CLEC that caused it to the ILEC that was required to incur it. If the ILEC must bear the risk of recovering the CLEC's NRCs, then UNE costs would likely increase as capital costs rose to reflect the enhanced risk factor of NRC non-recovery.

1 **Q. But what about Ms. Murray's apparent suggestion that NRCs are competitively**
2 **discriminatory (Murray Direct Testimony at 27-28)?**
3 A. Ms. Murray argues that NRCs impose a burden on CLECs that is discriminatory in its
4 effect because ILECs themselves do not incur the same costs if they continue to serve an
5 existing customer. Meanwhile, if a CLEC takes over serving that customer, it does incur
6 the NRC of having that customer switched over. Even where this is true, there is no basis
7 for preventing the ILEC from recovering the NRC on a non-recurring basis from the
8 CLEC. First, someone must bear the cost of the CLEC's customer acquisition. If the
9 CLEC, which is causing the NRC through entry over the incumbent's facilities, does not
10 pay that cost, then it is not bearing the full costs of its entry and will not make efficient
11 entry decisions. If the CLEC cannot offer customers service on terms sufficiently
12 attractive to overcome the NRC that the CLEC must recover, then the costs of entry by
13 that CLEC are greater than the benefits and it is not an efficient competitor.
14
15 Second, a new entrant in almost any industry will have to incur costs that the
16 incumbent has already borne and need not incur again going forward, and nobody would
17 suggest that anyone except the entrant bear those costs. To be sure, those non-recurring
18 costs generally do not relate to the facilities or operations of incumbent firms. But it
19 makes no analytic difference whether the entrant's NRCs are costs of their own facilities
20 or costs of the incumbent firms whose networks the entrant has chosen to use. If the
21 costs are caused by the CLEC's activities and are efficiently incurred by the ILEC, then
22 the CLEC should bear those costs, should pay for them in the manner in which they are
23 incurred, and should bear the risk of their non-recovery.

Finally, it is not true that ILECs do not incur the non-recurring costs that CLECs incur. When a retail customer signs up with an ILEC (or moves from a CLEC to an ILEC), the ILEC, too, will incur non-recurring costs associated with fulfilling the customer's order. CLECs and ILECs alike are free to determine how best to recover these NRCs from retail customers, whether as part of their overall charges or as an up-front connection fee.

B. The Fact that a Cost Is Due to Activities that Might Benefit Multiple Users Over Time Should Not Preclude the ILEC from Recovering the Cost on a Non-Recurring Basis from the Requesting CLEC.

Q. AT&T/WorldCom suggest that a cost cannot be non-recurring if the "the cost, once incurred, is for facilities that can be reused to provide service to a subsequent customer without change" (Murray Direct Testimony at 29).[15] Do you agree?

A. No. A CLEC should not be able to avoid paying a one-time expense that it has caused the ILEC just because some other user might someday benefit from that expense. In fact, the Commission has expressly made clear that a cost can be non-recurring even if the activity causing the cost might subsequently benefit other carriers.[16]

---

[15] *See also* Direct Testimony of Mr. Richard Walsh at 9 (whether a cost is non-recurring depends on "whether the benefits derived from an activity can be shared by multiple users over time or whether the activity provides a benefit only to the CLEC placing the request").

[16] First Report and Order, *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, 11 FCC Rcd 15499, 15874 ¶ 751 (1996).

Verizon VA's cost-causation standard for non-recurring charges, on the other hand, is grounded in the Commission's well-established principles. The Commission has stated, with respect to UNEs in particular, that "as a general rule, . . . incumbent LECs' rates for interconnection and unbundled elements must recover costs in a manner that reflects the way they are incurred."[17] This is consistent with the Commission's longstanding position on non-recurring costs, as explained more fully nearly a decade before the *Local Competition Order*:

> We define non-recurring costs as the one-time expenses incurred, upon the request of a customer, in installing, moving, rearranging or terminating an access service from the initial receipt of a service order to the point at which service is provided or terminated, as the case may be. . . .
>
> We see no reason why the LECs should not recover through an NRC their full one-time costs of providing, terminating or modifying an access service. This is consistent with our policies encouraging the recovery of costs from cost causers and would reduce the subsidy of short-term users by longer term customers.[18]

Non-recurring costs, unlike recurring costs, are incurred in response to a specific event by a specific cost-causer, and involve easily identifiable, concrete costs. The most efficient and appropriate means of recovering such costs is through a one-time charge to the cost-causer. It would be inefficient and impractical to spread such a concrete expense over an

---

[17] *Id.* at 15874 ¶ 743.

[18] Memorandum Opinion and Order, *In the Matter of Investigation of Interstate Access Tariff Non-Recurring Charges*, 2 FCC Rcd 3498, 3501-02 ¶¶ 32-33 (1987). *See also* Order, *In the Matter of MCI Telecommunications Corp. Application for Review*, 12 FCC Rcd 16565, 16571 ¶ 12 (1997) ("Commission policy favors economically efficient prices that reflect the manner in which costs are incurred. A LEC that must make a non-recurring expenditure to provide 500 access service should not generally be forced to recover its costs as if it were using technology that causes a recurring charge. Such a mechanism would distort the prices paid by access customers.") (footnote omitted).

estimate of future usage, which could later prove to understate or exaggerate costs. Moreover, failing to recover the costs from the cost-causer typically creates perverse economic incentives and uneconomic behavior by the CLECs. In order to ensure that the CLEC has the correct incentives to target customers, invest in facilities, and establish efficient prices, it should be required to pay the full amount of the costs that are a direct result of its actions.

Q. What effect would AT&T/WorldCom's proposal have on the relative risks faced by the ILEC and the CLEC?

A. By seeking to require ILECs to recover non-recurring costs through recurring charges, what AT&T/WorldCom are really asking is that ILECs bear the risk of the CLEC's decision to serve a customer. Take, for example, Ms. Murray's discussion of line conditioning. She argues that the costs of conditioning should be deemed recurring on the theory that subsequent providers of DSL service might also benefit from the line conditioning performed initially at the CLEC's request. But here the activity undertaken by the ILEC is not the provision of the underlying UNE, but something the CLEC needs to provide a particular service over the otherwise functional element. There is no assurance that the CLEC will continue to lease the loop long enough to pay for the cost of line conditioning if that cost is recovered on a recurring basis, or that another CLEC will subsequently choose to use the loop to provide DSL service. As a result, there is no assurance that, if the requesting CLEC does not pay the line conditioning cost on a non-recurring basis, the ILEC will ever be able to recover the costs over time from its own service offerings or from any other carrier.

This risk shifting from the CLEC to the ILEC is economically inappropriate. The requesting CLEC itself should bear the risk that it will lose the customer and not recover that NRC. Otherwise the CLEC will not fully consider the long-run costs of serving customers, will have incentive to over-expand, and will shift substantial risks of its own business decisions to the ILEC and, perhaps, to future carriers. Conversely, by shifting substantial risks onto the ILECs, AT&T/WorldCom's proposal would require the ILEC's cost of capital to increase.

Q. Would AT&T/WorldCom's proposal create significant practical difficulties?

A. Yes. AT&T/WorldCom's argument raises, but does not begin to answer, a slew of practical questions. For example, how much of a mark-up over the TELRIC loop cost should an ILEC be able to charge a future CLEC for the loop conditioning requested by a different CLEC today? What if the next CLEC only wants to provide voice and not DSL? Should the price for the loop in question differ depending on use? TELRIC does not provide for such mark-ups or service restrictions. Finally, it is the CLEC that is deciding to provide DSL service today and to ask the ILEC to condition the loop. But what if technology changes soon and the loop would not have to be conditioned for DSL service to be offered? If the ILEC cannot recover the conditioning costs on a non-recurring basis just because a future provider might also benefit from the conditioning, then the ILEC is again being asked to bear all the risk of non-recovery due to technological change.

C. The Fact that a Firm Should Be Efficient with Respect to all Forward-Looking Costs, Both Recurring and Non-Recurring, Does Not Imply That There Should Be No Differences in the Analyses of the Two Kinds of Costs.

Q. Should the analysis of recurring and non-recurring costs be based on identical assumptions?

A. Recurring and non-recurring costs are inherently different. As I explained in my direct testimony, the mere existence of a new technology can lower recurring costs whether or not it is efficient yet for the carrier actually to deploy that new technology, because the innovation may reduce the value (and hence the depreciation costs) of existing facilities.[19/] But the mere existence of new technology has no effect on the labor and other non-recurring costs a carrier incurs in connecting a CLEC to its existing facilities. Thus, it should not be surprising if there are differences in the cost models for recurring and non-recurring charges.

This is not to say that Verizon VA is trying to charge CLECs its historical or current costs of performing the non-recurring activities they request. In both its recurring and non-recurring cost studies, Verizon VA assumes that the most efficient, forward-looking technology mix is being deployed. However, in the case of the recurring cost study, Verizon VA assumes this technology mix is deployed network-wide partly because it believed it was required to do so under the Commission's interpretation of TELRIC. But while the existence of new technologies arguably will constrain, at least to some extent, the value of existing technologies, the mere existence of newer technologies does nothing to lower the non-recurring costs Verizon VA will incur going forward. Verizon

---

19/ *See* Direct Testimony of Dr. Shelanski at 33-35.

VA's NRC model is thus forward-looking and, moreover, entirely consistent with the economic principles discussed in both my, and Dr. Gordon's, direct testimony.

A consequence of the assumptions made in Verizon VA's recurring cost model is that the model likely understates the company's forward-looking UNE costs. Verizon VA's NRC model differs in that, while still forward-looking, it tries to measure the non-recurring costs that Verizon VA truly expects to incur in the future as it efficiently expands and replaces its network over time. Indeed, Verizon VA's NRC model actually assumes that the network contains the technology that will be in place at the *end* of the forward-looking study period (rather than a "weighted average" of what would be in place during the study period). Thus, the difference between the recurring and non-recurring cost model is not one that inflates the non-recurring costs above efficient, forward-looking costs, which was the concern implicit in the agency statements quoted by Ms. Murray.

Q. Does Verizon VA's NRC model lead to double-recovery as Ms. Murray contends (Direct Testimony of Ms. Murray at 47-52)?

A. No. Ms. Murray's analogy to the replacement of an old car is fundamentally flawed.[20/] I agree that a company that has an old car will not have incentive to replace it, even when efficient to do so, if it can pass on the costs of keeping the car running to another user. But that point has nothing to do with TELRIC or with Verizon VA's cost model. In Ms. Murray's example, she posits a situation in which someone is guaranteed recovery of

[20/] *See* Direct Testimony of Ms. Terry Murray at 51-52.

some *recurring* costs of the older, inefficient car (*i.e.*, the "cost of all repairs needed to keep the car running"), and thus has no incentive to buy the newer car. But Verizon VA's cost model seeks to recover all recurring costs assuming network-wide deployment of the efficient, forward-looking technologies it expects to deploy. It does not measure any recurring costs of the current ("old" in Ms. Murray's example) network. Ms. Murray's example thus does not illustrate the case at issue in these proceedings. There is no prospect that Verizon VA's cost studies will allow recovery of the costs of keeping the old network running, which is the concern to which Ms. Murray addresses her example.

Ms. Murray's computer analogy is even more inapposite.[21/] Verizon VA is not proposing to recover the costs of the new technology plus the costs of converting the old technology to the new standard. Put in terms of Ms. Murray's computer analogy, Verizon is not saying, as Ms. Murray argues, that "we'll give you the 1GHz computer for $1200 and then the one-time required upgrade for an additional $400." Instead, the correct analogy is that Verizon VA is offering the 800 MHz capability at a forward-looking cost-based price that is *less* than $1200 and offering the $400 upgrade to 1 GHz on a NRC basis where it is needed. In fact, if Ms. Murray is correct in assuming that the forward-looking cost of the older computer is $800,[22/] then that is the price Verizon VA will charge for that computer. And the addition of a $400 NRC for an upgrade to 1 GHz brings the price to exactly $1200. But it is important to note that it may be efficient for the ILEC not to replace the old computers even if their forward-looking cost is higher

---

21/ *See id.* at 53-55.

22/ *Id.* at 54.

than $800. Retaining the old 800 MHz computers might be efficient if that capacity is adequate for many users and the forward-looking cost is less than $1200. For then, instead of having to pay $1200 for every computer they use, users can pay less than $1200 where 800 MHz will suffice and pay for the extra power only when necessary.

In terms of the telephone network, Verizon VA has not found that it would make sense to replace all old copper loops with next-generation digital loop carrier. If it did, it would have to charge all UNE loop users the high costs of such total replacement (including higher depreciation and capital costs). Instead, Verizon VA is replacing its loop plant incrementally and efficiently, and those firms that wish to run advanced applications may have to pay NRCs to upgrade some of the old equipment retained in the network. But they are paying such NRCs on top of recurring charges that are lower than those that the new equipment would entail, and they are doing so only on some loops while being spared having to pay the costs of replacement for loops over which they are not providing advanced services. Under the full replacement model advocated by AT&T/WorldCom, if capital costs were properly calculated and adjusted for risk, all loops would likely be more costly than in Verizon VA's model. Moreover, Verizon VA, because it provides a mix of conventional and advanced services over its own network, has no incentive strategically to substitute charging NRCs for loop conditioning instead of investing efficiently to replace loops with technology that obviates the need for non-recurring activities.

1 **D. AT&T/WorldCom's Analysis of Non-Recurring Costs Is Oversimplified.**
2
3 **Q. Should forward-looking non-recurring costs always assume deployment of**
4 **automated processes?**
5 A. Non-recurring cost analysis should focus on costs, not on technology. An efficient
6 economic analysis asks which technology will be lowest cost for a given activity; it does
7 not start with the mandate that a particular technology that might be lower cost in some
8 situations always be used. Ms. Murray's analysis of non-recurring costs is thus
9 oversimplified. For example, she asserts that a system that more often permits ordering
10 and provisioning of UNEs to occur electronically than another system allows for is by
11 definition more efficient.[23/] But the required analysis is more complex. Depending on
12 the volume of orders for a particular element and the costs/complexity of automating the
13 ordering/provisioning process for that element, it may in fact be less costly simply to
14 handle the ordering/provisioning of that element manually rather than go to the expense
15 of creating an automated system for doing so. This is particularly true if the automation
16 costs at issue have benefits only for UNE provisioning, given that the volume and
17 distribution of future demand for such UNEs is uncertain, as is the future path of OSS
18 technology changes. The decision of how to automate support systems is thus subject to
19 the very same economic analysis that applies to upgrading and expanding the telephone
20 network itself.
21

23/ *See* Direct Testimony of Ms. Terry Murray at 34.

III. SWITCH RATE DESIGN AND USAGE SENSITIVITY (JDPL Issues II-1-a to II-1-c; II-2-a to II-2-c)

Q. Should switching charges be completely flat-rated or be usage-based?

A. Switching costs should be recovered in the same way they accrue. Thus, switching charges should be usage-based to the extent switching costs are traffic sensitive. I understand from the testimony of Mr. West and Mr. Murphy that many switching costs are in fact incurred on a usage sensitive basis.[24/] It would consequently be economically inefficient for a carrier to recover all switching costs through a flat, per-port charge. Several pathologies arise if traffic-sensitive costs are recovered through flat-rate prices. First, users of unbundled switching would have no incentive to modify usage as costs rise. Second, high-volume users would have their consumption subsidized by lower-volume users forced to pay the same fixed charge. And third, comparisons of the relative benefits of buying unbundled switching versus purchasing one's own switches would occur without the benefits of proper cost signals. For these reasons among others, it is generally accepted among economists that traffic-sensitive costs should be recovered through usage-based prices.

Ms. Murray raises the concern that traffic sensitive prices for switching could lead to over-recovery of switching costs by an ILEC.[25/] The example she uses to illustrate the possibility is one in which Verizon VA's prices for unbundled switching exactly recover its forward-looking costs of switching at 1996 volumes of usage. She then supposes that

---

24/ *See* Rebuttal Testimony of Mr. Frank Murphy § III.C; Rebuttal Testimony of Mr. Harold West § II.

25/ Direct Testimony of Ms. Terry Murray at 15-16.

switch use increases dramatically by 2000 while the forward-looking costs do not. Under such a situation, the 1996 prices would be too high, she argues, because when multiplied by the 2000 volumes, the revenues would exceed costs. There are two initial problems for this example's relevance to the case at issue. First, it assumes that a "significant level" of switching costs are not usage sensitive. But if switching costs are significantly usage sensitive, as evidence on the record reflects, then no over-recovery necessarily results in Ms. Murray's example. Indeed, to the extent switching costs are usage sensitive, the scenario she posits in which demand for switching increases without a corresponding increase in the forward-looking costs of switching is one that could not occur. Second, even if enough switching costs are capacity-driven to make over-recovery possible as usage increases over time, traffic-sensitive charges may still be comparatively efficient because of the usage-based portion of switching costs. Ms. Murray's example implicitly assumes that regulators would make no adjustments for the shifting usage parameters over time. But adjustment over time is part of the TELRIC scheme, and there is no reason to think the ILECs would receive a windfall as unbundled switching increased.

From my understanding of Mr. West's testimony, Verizon VA has two switching related charges: a port-based charge for the non-traffic-sensitive costs of switching and a usage-based charge for the traffic sensitive portion.[26/] This two-part pricing structure makes the kind of over-recovery discussed by Ms. Murray most unlikely. The increase in usage she posits in her example would not raise the revenues from the per-port charge,

[26/] Rebuttal Testimony of Mr. Harold West § II.

but only on the traffic-sensitive portion of switching. This accords with the economic principle that costs should be recovered as they are incurred and makes a traffic-sensitive component of switching charges efficient.

Declaration of Howard Shelanski

I declare under penalty of perjury that the foregoing is true and correct. Executed this 23rd day of August , 2001.

Howard A. Shelanski

Howard Shelanski