
In the Matter of an Investigation) DOCKET NO. 94-999-01
Into Collocation and Expanded) PHASE II
Interconnection) REPORT AND ORDER

ISSUED: April 8, 1998

SHORT TITLE

Phase II: USWC's Unbundled Network Element Prices Based on TELRIC

SYNOPSIS

The cost of an unbundled network element, the local loop, based on record evidence in Phase II of this Docket is approximately \$20.00. We set the price of the unbundled loop at \$20.00. Choice of a Total Element Long-Run Incremental Cost (TELRIC) model, the values of its input assumptions, and other cost-modeling matters such as loop conditioning and nonrecurring costs are deferred to a later phase of the Docket.

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By the Commission:

I. PROCEDURAL HISTORY

We have previously provided a procedural history for these proceedings in our Order issued October 24, 1997, in Phase I of this Docket dealing with wholesale discount rates based on avoided retail costs. We will not repeat that history here, but will supplement it for the proceedings involved in Phase II of this Docket, dealing with the costs and pricing of US West's unbundled loops.

Parties filed written testimony on unbundled loop facilities and associated costing models in March, April and May, 1997. Hearings for Phase II unbundled loop issues were held May 12 - 16, 1997. Some testimony associated with total element long-run incremental cost (TELRIC) modeling was presented at hearings held in May, 1996. However, testimony directed to unbundled loop matters and loop cost modeling was presented at the later hearing dates. As testimony was presented at the May 12 - 16, 1997 hearings, we determined that further information was necessary to assess the sensitivity of cost-model results to variations in input assumptions. The parties submitted their sensitivity

results to the Commission on June 12, 1997, and July 9, 1997. Further hearings were held July 29, 1997. Post hearing briefs were filed on August 22, 1997.

II. SCOPE

In Phase II of this Docket we establish the price for an unbundled network element, the loop, which is the part of the telecommunications network connecting the retail, or "end-user" customer to a central office. The costing method, generally in the form of contending cost-estimation models, the proposed use of embedded costs, and the cost-price relationship, are subjects of dispute. Our decisions are guided by public policy objectives, criteria for independent evaluation of contending cost-estimation models, and parallel proceedings underway both here and at the Federal Communications Commission (FCC).

A. PUBLIC POLICY OBJECTIVES

Section 251 (d) (1) of the 1996 Federal Act requires a price, or rate, determined "without reference to a rate-of-return or other rate-base proceeding," which must be nondiscriminatory and based on cost. "Cost" may include a "reasonable profit." The 1995 State Act requires us to consider total service long-run incremental cost (TSLRIC) when establishing rates for service, but leaves room for other factors, like universal service, to influence our ratemaking decisions. (54-8b-3.3) Both Acts call for just and reasonable rates.

In its rulemaking⁽¹⁾ to implement the 1996 Federal Act, the FCC defines "cost" as forward-looking economic cost.⁽²⁾ The FCC accepts the economist's rationale that prices based on forward-looking economic cost will promote competition in the industry the appropriate way, through economically efficient entry of new firms. The 1995 State Act had already directed us to consider a variant of forward-looking economic cost, TSLRIC, as a basis for pricing retail services. With attention now on unbundled network elements, not retail services, the FCC Rules call for a different version of forward-looking economic cost, TELRIC, to be used for pricing them.

The FCC Rules prescribing how to cost and price unbundled network elements were vacated by a July 18, 1997 ruling of the United States Court of Appeals for the Eighth Circuit. We asked parties to brief the implications of this ruling for the present Docket.

US West Communications (USWC) informs us that the Court "has firmly ruled that the states have the authority to set intrastate rates." USWC Brief, at 14. The Division of Public Utilities (Division or DPU) believes the ruling settles a jurisdictional question in favor of the states and means we have authority to set prices for the unbundled loop without applying FCC pricing requirements. AT&T tells us, however, that the Court "expressed no opinion on the merits of the FCC's pricing principles or methodologies," and urges us not to ignore the FCC's costing and pricing decisions. AT&T Brief, at 5- 6. Nextlink concurs. In MCI's words, "the economic concepts for determining cost-based nondiscriminatory rates remain as valid as ever." MCI Brief, at 4.

In conjunction with its opinion that we need not consider the vacated FCC Rules, USWC argues that we face a "regulatory compact obligation" to set the loop price sufficiently above TELRIC to permit recovery of embedded costs:

Not allowing US WEST to recover embedded costs resulting from these investments would either deny U S WEST shareholders any reasonable prospect of earning an equitable return on those investments or would require that U S WEST recover these costs solely from its own end user customers even though competitors and their customers will benefit substantially from the investments which led to these embedded costs. Either alternative would therefore violate principles of equity and could undermine incentives for investment in infrastructure, reducing economic efficiency. Amended Brief of US West Communications, August 25, 1997.

The Division's similar position is that ". . . under current regulation USWC must be given a reasonable opportunity to cover its embedded costs in rates charged to customers." DPU Brief, at 12. AT&T attributes to the Division a motive to keep local retail rates low, but opines that this attempt "to maintain the status quo . . . [is] inconsistent with federal and state law. . . ." AT&T Brief, at 2 - 3.

AT&T advocates the economist's view that, when economic efficiency is the objective, the price of any good or service must equal the marginal cost incurred by the firm which makes or supplies it. AT&T believes the competitive market insures this pricing outcome, which it claims to be in the public interest because society's scarce resources will be employed most efficiently when all prices equal marginal cost. In its opinion, this theoretical argument is before us now in the form of the relationship between USWC's cost, not marginal cost but TELRIC, and the price we must

set for the sale of its unbundled loops to competitors.

AT&T, Nextlink, and MCI argue it is economically correct to set the unbundled loop price equal to TELRIC because TELRIC is the closest approximation to marginal cost we can reach for a regulated telecommunications firm. The Division supports an efficient but equitable pricing outcome, and therefore believes both embedded and TELRIC cost analyses are germane. But the Division questions whether TELRIC is a good proxy for marginal cost, stating that a price equal to TELRIC is neither necessary nor sufficient for economic efficiency because TELRIC is forecast average, not marginal, cost. USWC concurs, but favors TELRIC if calculated and applied as it recommends.

As noted, both the Division and USWC contend that embedded cost remains a relevant factor to consider in setting prices for unbundled network elements. USWC recommends using embedded cost as a price ceiling, allowing for recovery of a reasonable portion of common costs and profit from the provision of unbundled network elements.

No party disputes and we conclude that under the 1995 State Act and the 1996 Federal Act, we have the authority to decide what costs are relevant, how cost estimates should be calculated, what methods and models are appropriate, and the weight to be accorded to evidence and the factors advocated by the parties. Moreover, since neither statute requires a price that is equal to the estimated unbundled loop cost, we have latitude to establish the proper relationship between cost estimates and price. That is to say, we may consider all factors relevant to pricing unbundled network elements rather than simply equating the price to a cost estimate from a particular cost model.

Setting the prices or rates for unbundled network elements does not require us to depart from the long-standing regulatory practice which identifies the public interest in just and reasonable rates with a set of ratemaking objectives. Our ratemaking decisions have rested, and should continue to rest, upon a record-based, balanced approach to attaining them. Economic efficiency is an important objective. We believe our pricing decision should encourage efficient entry. Forward-looking economic cost may be appropriate for this purpose, even though TELRIC as a means to efficiency has been challenged by the Division and USWC. All parties, nevertheless, advocate the use of TELRIC under conditions each describes in their testimony.

But we also believe the requirements of the 1995 State and the 1996 Federal Act for just and reasonable rates do not restrict consideration in this Docket to the economic efficiency objective alone, even were there agreement on the specific means of achieving that end. A public-interest decision to set a just and reasonable rate for the unbundled loop may be grounded in more than just the desire to promote economic efficiency using a TELRIC estimate. Our decision making process can include other considerations, including the local loop embedded cost evidence and attendant arguments made by the Division and USWC. As subsequent discussion shows, embedded cost may give a realistic cross-check to a cost-modeling exercise premised on a hypothetical network. As always, we must weigh and ultimately reach a balance of the various considerations in establishing a just and reasonable rate based upon the information available to us.

B. CRITERIA FOR MODEL SELECTION

Though we may proceed without reference to the FCC Rules, we are cognizant of the cost-modeling recommendations of the Joint Board (a group of individuals, required by the Federal Act, that provide recommendations to the FCC) that in large part were adopted by the FCC. Parties urge us to act consistently with the FCC's decisions about forward-looking economic cost modeling. These decisions⁽³⁾ can be summarized as:

1. The least-cost, most efficient, reasonable technology currently being deployed to provide service will be modeled. The incumbent local exchange carrier's existing wire centers will be the center of the loop network, to which outside plant will terminate. Wire center line counts will equal actual counts, and average loop length will reflect actual average loop length. Loop design will not impede the provision of advanced services.
2. A network function or element necessary to produce a service will have an associated cost.
3. Only long-run, forward-looking economic cost will be modeled.
4. The rate of return will be that authorized by the FCC on interstate services or by the state on intrastate services. Economic lives and future net salvage values will be used to calculate depreciation rates, which will be within the FCC-authorized range.
5. The cost of providing service to all businesses and households within a geographic region will be estimated so economies of scale are properly reflected.
6. A reasonable allocation of joint and common costs will be assigned to a service.⁽⁴⁾
7. Calculations will be deaveraged to the wire center serving area level, or if feasible to smaller areas such as a Census Block Group, Census Block, or grid cell.

With the exception of differing positions on the cost of capital and depreciation rates to use, we find no dispute on this record with these statements as guidelines for forward-looking economic cost modeling, and conclude that any model we adopt in this Docket should meet them. In addition, we

require criteria to guide our choice of the appropriate model. Here again, we are well advised by the Joint Board, the FCC, and the recommendations of the parties.

Two criteria, recommended by the Joint Board and adopted by the FCC, are openness and flexibility. Openness means the model, and all underlying data, formulae, computations, and software, should be available to the parties for evaluation. Underlying data should be verifiable, engineering assumptions reasonable, and model outputs plausible. Flexibility means a party should be able to examine and modify critical assumptions, engineering principles, and input values.

USWC states that a cost model should be consistent, flexible, stable, reliable, and realistic; that is, assumptions should be consistent, parties should be able to conduct sensitivity tests, results should be stable when the model is updated, the model should be reliable so correction of mistakes has an insignificant effect on results, and only realistic assumptions about the design, planning, and construction of facilities should be used. In agreeing that a cost model should be open and verifiable, the Division testifies that if full documentation is not provided the model will be a "black box" and independent evaluation will not be possible. In AT&T's and MCI's view, a model should be completely documented so an independent analyst can understand how it operates and can test the adequacy of its algorithms; a model should be flexible enough to allow adjustment and testing of inputs by users; a model should be stable as to the sensitivity of results to changes in inputs and assumptions; and, finally, a model should employ non-proprietary data available to the public.

In addition, USWC advocates the use of external reality checks to validate TELRIC model results. Those suggested include the incumbent local exchange carrier's embedded costs, which reflect the book rather than market cost of plant, new construction costs, which is the cost to build today, investments made by competing local exchange carriers, estimates made by competitors, and other published cost studies. In the Company's view, the further TELRIC results deviate from embedded or new construction costs, the greater is the doubt about their validity. AT&T and MCI state that independent and objective cost data can be used to evaluate USWC's data and the reasonableness of its cost estimates.

Because a model cannot be independently evaluated unless it is completely documented, we will adopt the openness criterion recommended to the FCC by the Joint Board, and advocated here by the parties. The practical requirement suggested by "complete documentation" is not explicit on this record, though its common sense meaning is clear enough. The FCC wants a cost model to be accompanied by a clear and comprehensive programmer's flow chart, including a main logic section schematically showing the relationships among structural components of the model, decision nodes, inputs, and outputs. The source code for any components written in a programming language must also be provided. Our conclusion is simply that models must be documented well enough to allow independent evaluation. Parties may come to us if this requirement is not being met. Our existing procedures will be used to protect information determined to be proprietary. Because the record shows that analysts and users must be able to vary a model's assumptions and data inputs, in order to test the sensitivity of results to such changes and to evaluate the model itself, we adopt the recommended flexibility criterion as well.

We believe the other criteria advocated by the parties on the record should be interpreted to supplement these two, which are the essential ones. In this sense, believing them to be reasonable and useful, we adopt those identified in the above discussion. We also agree, as the parties recommend, that a cost estimate should be judged reasonable, or validated, by checking it against other pertinent information.

C. PHASE II IN THE CONTEXT OF FCC PROCEEDINGS

Section 254 of the 1996 Federal Act requires the FCC, by March 8, 1996, to have initiated a Federal-State Joint Board on Universal Service to recommend rules for a new federal universal service support mechanism. The Joint Board's report of November 8, 1996, reviewed the BCM2, the CPM and the Hatfield 2.2.2 models, and recommended: (a) a cost proxy model should be developed by May 8, 1997; (b) a model should satisfy specified criteria; (c) refinements to proposed models should be based on the BCM2 and the Hatfield 2.2.2, as the CPM has not yet been fully evaluated, (d) a specific timetable for implementation should be adopted; (e) workshops with federal, state, and industry representatives should be held; and (f) state members of the Joint Board should report to the FCC on the use of proxy cost models.

On March 26, 1997, the state members of the Joint Board recommended that one model should be selected in order to focus the efforts of industry participants and regulators. In another report, filed April 21, 1997, a majority of the state members, having reviewed the BCPM, the Hatfield 3.1, and the TECM models, recommended continuing with the BCPM; two dissenting state members argued that neither the BCPM nor the Hatfield 3.1 was yet appropriate. The report found neither the BCPM nor the Hatfield 3.1 model able to meet the criteria.

On May 8, 1997, the FCC released its Report and Order implementing generally the recommendations of the Joint Board. The FCC, concurring with the minority state members, ordered continuing review of both the BCPM and Hatfield models, and indicated its intention to issue a Further Notice of Proposed Rulemaking ("FNPRM") by June 1997, to determine the forward-looking economic cost of supported services provided by non-rural carriers in high-cost areas. The FCC advised that a platform, i.e., algorithms and fixed assumptions, for the cost proxy model would be chosen by January 1998, and a complete cost model, including input values, adopted by August 1998, so that non-rural carriers would begin receiving federal support beginning January 1, 1999. A state was to elect by August 15, 1997, whether it would conduct its own forward-looking economic cost studies for the purpose of determining federal universal service support in that state. State studies were to be submitted to the FCC by February 6, 1998, a date later extended to April 24, 1998. On July 18, 1997, the FCC released the FNPRM.

On July 29, 1997, the FCC issued notice of the criteria that would be applied to evaluate cost studies submitted by the states. To accept a state cost study for the purpose of calculating federal universal service support, the FCC would require that study to be the same one the state would use to determine intrastate universal service support levels. Moreover, states were advised to develop permanent unbundled network element prices as a basis for the universal service cost study.

On October 31, 1997, the FCC staff released for review and comment the first version of its cost proxy model (Hybrid Cost Proxy Model, or HCPM) customer location and loop design modules. Revised versions of BCPM and Hatfield have been submitted. On December 29, 1997, HCPM 2.0 was released by FCC staff. On February 3, 1998, the FCC issued a notice setting February 6, 1998, as the deadline for receipt of revised versions of models, after which no changes to model logic, algorithms, or fixed assumptions would be accepted. Also on February 6, the FCC staff released HCPM 2.5.

In Docket No. 96-45 Further Notice of Proposed Rulemaking, the FCC encouraged states to use the same costing method to price both unbundled elements and the services subject to universal service support. USWC asserts that the Eighth Circuit decision means the FCC cannot require use of the same model for both purposes. USWC distinguishes universal service, a finished service, from an unbundled network element. It argues that under Utah law, the former faces a TSLRIC test; the latter is said to face a TELRIC test. These tests are different, USWC argues, in that shared costs are much less important in TELRIC than in TSLRIC; therefore, two models are required. USWC Brief, at 14-15. The Division argues that the FCC's May 8, 1997 Universal Service Order in CC Docket No. 96-45 has no impact in the present Docket, because the only relevant requirement is that forward-looking costs are to be used to determine universal service support. DPU Brief, at 12.

III. ISSUES FOR DECISION

A. CHOICE OF MODEL

1. Inadequacy of the Record

As a result of inadequate model documentation, the Division, an independent analyst, cannot determine whether algorithms reflect a network based on best engineering practices and economic principles of network design. For this reason, it testifies, the models are "black boxes." Expert testimony leaves no doubt that the models on the record cannot pass the tests imposed by the openness and flexibility criteria. Even when these models are run as nearly as possible with the same values for user-defined assumptions, the resulting cost estimates are not the same. In the Division's opinion, these remaining differences are due to the variations in network design "hardwired" in each model ("each models network architecture differently") it has been unable to evaluate.

In Phase II, we will not adopt any model failing to meet the criteria. We conclude that we need not do so because Phase III offers the opportunity for further examination which we have reason to believe may be fruitful and, for Phase II, the Division proposes an acceptable interim alternative.

The Division urges us to defer selection of a model to a later phase of the Docket when better versions of the models and better evaluation is expected. Its recommendation for Phase II is to select the median value of a range of estimates defined by the outcomes of the three submitted models using a controlled assumption set with Division-selected values. This set, parties agree, consists of a dozen key assumptions.⁽⁵⁾ By contrast, USWC argues for its Regional Loop Capacity model (RLCAP) estimate using the values for these assumptions it supports. It submits the Benchmark Cost Proxy Model (BCPM) to validate the estimate produced by the RLCAP model. AT&T and MCI jointly submit the Hatfield 3.1 model using the assumption values they select.

The difference is unacceptably large. With AT&T and MCI assumption values, Hatfield 3.1 yields a monthly forward-looking economic cost estimate for the loop of \$13.10 Transcript, at 1172, witness Siwek. RLCAP, with USWC's assumption values, yields \$27.87, more than twice the Hatfield result. USWC Brief, at 2. Yet these are the cost estimates each recommends. Using the Division's assumption values in the models gives a Hatfield estimate of \$20.19 and an RLCAP one of \$18.64. The BCPM result is \$24.62. DPU Brief. The median of this range, \$20.19, is the loop cost estimate the Division recommends. Because these models are being refined and updated⁽⁶⁾ and because independent evaluation of them has not been successful, we conclude the Division's proposal should be adopted.

This conclusion means we need not decide the values for each of the twelve assumptions now, even though much of the testimony on the record debates the proper values for them. Since we do not adopt a model, and the models themselves continue to evolve, we defer further consideration of input values to Phase III.

Therefore, we conclude that a reasonable estimate of the forward-looking economic cost of the loop, an unbundled network element, is about \$20.00, which is near the median value of the range of outputs from the proposed models using a consistent set of input assumptions. We accept this amount as the reasonable approximation supported by a record which shows models to be incomplete and evolving, unable to meet recommended criteria, and for which full, independent evaluation has not been possible. The record also shows that the cost estimates produced by the models can and should be compared to other information as a means of validation. We therefore derive support for the \$20.00 amount from record evidence showing the embedded cost of a loop, determined using our ratemaking cost-of-service model, DCOS, to be approximately \$20.00 (\$18.49 plus something over one dollar for the cost of the main distribution frame). While aware of the AT&T and MCI objection to any consideration of

embedded cost, we conclude that it is a useful cross-check to test the reasonableness of our decision in Phase II of this Docket. Once we adopt a model and become experienced in its use, the emphasis given embedded costs may diminish.

B. PRICING

1. Geographic Deaveraging

Both USWC and the Division argue that deaveraging of TELRIC costs ought to occur when retail rates are deaveraged, which, the Company asserts, may be in its expected rebalancing case.⁽⁷⁾ AT&T and MCI favor deaveraging now, in order to provide the cost basis for proper prices. Given the Eighth Circuit Court decision which vacated the FCC rules, deaveraging may now only arise under the 54-8b-15 (7)(b) Universal Public Telecommunications Service Support Fund requirement that we determine the costs of basic telephone service on a geographic area basis. Since we have decided not to accept a model in this Phase, we do not have a sufficient evidentiary basis to deaverage at this time.

2. We have determined that price may exceed forward-looking economic cost, depending on the treatment of common costs, the requirement that rates be just and reasonable, and the role of embedded cost. Our finding that embedded cost is \$20.00 means it is unnecessary to establish a price greater than a TELRIC value of the same amount because the embedded result includes both common costs and an allowed rate of return on investment. Given this, an increment added to TELRIC would result in over recovery of costs. Therefore, we conclude that the price of a loop as an unbundled network element shall be \$20.00.

IV. ORDER

Wherefore, based upon the evidence received by the Commission and the consideration of the Commission as discussed in the text of this Report and Order, the Commission Orders that the rate for a US West loop, as an unbundled network element, will be \$20.00 per month. This rate shall be a final, statewide rate, effective on the date of this Report and Order. The Commission notes that the rate set herein is based upon the record made available in Phase II of this docket. As such, parties should be aware that the Commission intends to revisit this matter subsequent to the Commission's selection of an appropriate cost proxy model and determination of proper input assumptions.

DATED at Salt Lake City, Utah, this 8th day of April, 1998.

/s/ Stephen F. Mecham, Chairman

(SEAL) /s/ Constance B. White, Commissioner

/s/ Clark D. Jones, Commissioner

Attest:

/s/ Julie Orchard
Commission Secretary

1. ¹ Local Competition Order, CC Docket No. 96-98, First Report and Order, August 8, 1996.

2. ² Forward-looking economic costs means "the cost of producing services using the least cost, most efficient, and reasonable technology currently available for purchase with all inputs valued at current prices." CC Docket No. 96-45, Universal Service Order, May 8, 1997, paragraph 224, ff 573.

3. ³ *Recommended Decision*, CC Docket No. 96-45, Federal-State Joint Board on Universal Service, released November 8, 1996, ¶277; *Report and Order*, CC Docket No. 96-45, Federal-State Joint Board on Universal Service, released May 8, 1997, ¶250.

4. ⁴ The term "service" is used by the FCC because these recommendations were developed in the Universal Service Docket there. Phase II considers the cost of an unbundled network element, not a service. We will consider whether this necessitates differences in cost modeling at the appropriate point.

5. ⁵ The assumptions are: depreciation rate, cost of capital, number of access lines, structure sharing percent, fill factors, placement costs, structure mix, fiber/copper crossover, network operations maintenance, unbundling (grooming) costs, drop, and main distribution frame cost.

6. ⁶ The versions of these models considered in Phase III of this Docket are BCPM 3.1 and HAI 5.0a. These versions were also submitted by the February 6, 1998 deadline in the FCC modeling docket discussed in IIC above.

7. ⁷ The Company opted not to file this case.