



**The TELRIC Test:
*Determining the “Zone of
Reasonableness” for UNE Rates***

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In their efforts to spur local telecom competition, State commissions are placing considerable emphasis on the wholesale prices that new entrants pay for unbundled network elements. State commissions are well aware that wholesale rates play a significant – if not the central – role in spurring new companies to enter the state and offer residential and business customers a viable competitive choice.

Under the interconnection agreement arbitration provisions of the Telecommunications Act of 1996, State commissions establish rates for unbundled network elements (“UNEs”) provided by incumbent local exchange carriers. Section 252(d) of the Telecommunications Act of 1996, 47 U.S.C. 252(d), requires that these rates be “based on cost” and may include a “reasonable profit.” While there has been near-constant litigation surrounding the meaning of that legislative language and implementing rules, most State commissions have required that rates for UNEs be based upon a forward-looking cost study, otherwise known as a “Total Element Long-Run Incremental Cost”, or “TELRIC”, cost study.¹ A TELRIC cost study determines the value of a particular network element based essentially upon its replacement cost – that is, how much would it cost to build that particular component of the network, such as unbundled loop plant, today? Economists generally agree that if UNE rates are priced at this long-run, forward-looking replacement cost, both incumbents and entrants will have appropriate incentives to invest in either current facilities or construct new facilities.

As part of the long-distance entry process of the Bell operating companies (“BOCs”), many State commissions are now re-assessing rates originally established in 1997-98. In addition, when evaluating a BOC’s application, the FCC must ensure that the BOC is making all UNEs available

¹ In some cases, the cost studies of the ILECs are better described as Total Service Long-Run Incremental Cost (“TSLRIC”) studies.



in a manner that gives new entrants a reasonable opportunity to compete.² Rather than engage in its own detailed review of cost studies, the FCC has developed an analytical method for comparing UNE rates across different states. This method of comparing rates is a useful means of providing assurance that a particular rate falls at or below the “zone of reasonableness” of TELRIC compliance. As a result, UNE rates in several states, including Massachusetts, Missouri, and Oklahoma, have been reduced considerably by the BOC up to and during the FCC’s 271 review in an effort to satisfy the FCC’s review of UNE rates.

Given the central role that UNE rates play in determining the level of competitive entry, the “TELRIC Test” is a useful and important tool that can be used to see if ILEC-proposed rates fall at or below this zone of reasonableness. Applying the TELRIC Test to proposed UNE rates can be a useful action by State commissions, because the results of this test will provide clues as to which particular elements may need further examination.

Even states not facing an immediate “271” process or full-blown UNE rate case need to know whether the prevailing UNE rates in their state are promoting or impeding local competition and entry. By flagging suspect rates quickly and easily, the TELRIC Test is a useful tool that State commissions can use to focus scarce resources upon rates of considerable concern.

² See Application by Bell Atlantic New York for Authorization Under Section 271 of the Communications Act To Provide In-Region, InterLATA Service in the State of New York, Memorandum Opinion and Order, 15 FCC Rcd 3953, 4084, ¶ 244 (1999) (“*New York 271 Order*”); Joint Application by SBC Communications Inc., Southwestern Bell Tel. Co., and Southwestern Bell Communications Services, Inc., d/b/a Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Kansas and Oklahoma, Memorandum Opinion and Order, FCC 01-29, CC Docket No. 00-217, ¶¶ 47-48 (rel. Jan. 22, 2001) (“*Kansas/Oklahoma 271 Order*”); Application of Verizon New England Inc., Bell Atlantic Communications, Inc. (d/b/a Verizon Long Distance), NYNEX Long Distance Company (d/b/a Verizon Enterprise Solutions) And Verizon Global Networks Inc., For Authorization to Provide In-Region, InterLATA Services in Massachusetts, FCC 01-130, CC Docket No. 01-9, at ¶ 20 (rel. Apr. 16, 2001) (“*Massachusetts 271 Order*”); Application of Verizon Pennsylvania Inc., Verizon Long Distance, Verizon Enterprise Solutions, Verizon Global Networks Inc., and Verizon Select Services Inc. for Authorization to Provide In-Region, InterLATA Services in Pennsylvania, FCC 01-269, CC Docket No. 01-138, ¶¶ 53-75 (rel. Sept. 19, 2001) (“*Pennsylvania 271 Order*”).



This Z-Tel Public Policy Paper No. 2 examines the TELRIC Test methodology. In particular, this Paper discusses how the FCC utilizes cost estimates derived from its universal service, Hybrid Cost Proxy Model (“HCPM”), to determine how much UNE rates may vary state-by-state with the variation being consistent with cost differences across the states. State commissions can utilize the analysis set forth in this paper and the included tables as a quick and initial “reality-check” on rates for particular UNEs. The attached Tables provide the ceiling on the zone of reasonableness for certain UNEs (including loop, end-office switching, and transport UNEs).

The Importance of UNE Rates

Competition requires multiple firms vying for the patronage of customers. To move from a monopoly environment to an environment in which multiple firms compete, new firms must enter the market. However, because entry is governed to a large extent by UNE rates, those rates play a critical and key role in determining whether residential and business consumers enjoy the benefits of competition.

In fact, the prevailing UNE rates in a state are critical in determining whether CLECs enter a state (or ILEC region within a state) at all. In addition, CLECs make crucial decisions regarding the direction of scarce marketing and operational resources based upon UNE rates. Quite simply, if the prices for UNEs in a state are too high, consumers in that state will not benefit from increased competition and entry.

But determining whether a rate is “right” is a complicated task. As any State commissioner or staffer knows, UNE pricing cases require tremendous amounts of effort and painstakingly detailed work. Telecom staff managers need to determine which rates are “most out of line” and therefore should require more attention and analysis. Complicating this task is the now-familiar pattern of 11th hour rate adjustments filed by BOCs prior to a 271 application. A State commission may also wish to know in advance which UNE rates may or may not present an issue in an upcoming 271 proceeding.

As a result, it is tremendously important to possess a quick and reliable “reality-check” for UNE rates – an efficient and effective method



of determining whether any particular rate falls at or below the TELRIC zone of reasonableness. The TELRIC Test is such a tool.³

The TELRIC Test Methodology

In its recent 271 Orders, the FCC set forth a simple methodology to determine whether a UNE rate in any state is consistent with a TELRIC-compliant rate in another state. The FCC first used this analysis in the *Kansas/Oklahoma 271 Order* and has subsequently used it in the *Massachusetts* and *Pennsylvania 271 Orders*.

When evaluating UNE rates within the context of a 271 application, the FCC employs a cost model to compare UNE rates in the applicant state with rates in other states for which the Commission has found rates to be TELRIC compliant.⁴ The model used for the TELRIC Test is the FCC's Hybrid Cost Proxy Model ("HCPM" or "Synthesis Model" or "USF Cost Model").⁵ If the relative difference in rates is roughly equal to or lower than the relative differences in costs derived from the HCPM, then the FCC declares the rates to be TELRIC compliant (or consistent with what a TELRIC analysis would produce).⁶ The operating principle of the TELRIC Test is that relative UNE rates between states should be consistent with

³ All calculations required to perform the TELRIC test are provided in Excel spreadsheets available at www.egroupassociates.com, in the download section. The relevant documents are found under the "Regulatory Documents" heading and are included in the "Documents supporting the Ford Affidavit ..." for various 271 applications.

⁴ In some cases, primarily due to the significant presence of Verizon-GTE in some states, this benchmark procedure could be used to compare rates and costs between ILECs within a state.

⁵ See Federal- State Joint Board on Universal Service, CC Docket No. 96- 45, Ninth Report and Order, 14 FCC Rcd 20432, ¶¶ 41-42 (1999) ("*Inputs Order*").

⁶ The FCC indeed presumes that rates are TELRIC-compliant if the rate for an element in one state is the same as in a TELRIC-compliant reference state and the HCPM demonstrates that the reference state has equivalent or higher costs for that element. The FCC articulated this presumption in the *Kansas/Oklahoma 271 Order* and the *Massachusetts 271 Order*. See *Kansas/Oklahoma 271 Order* at ¶ 82; *Massachusetts 271 Order* at ¶¶ 22-27. As a result, it is appropriate to regard the "zone of reasonableness" as a kind of ceiling on TELRIC-compliant rates, but that TELRIC-compliant rates can certainly be substantially lower than this ceiling. See *Pennsylvania 271 Order* at ¶ 53-75 (noting that Pennsylvania rates were substantially below the ceiling a comparison to New York and the HCPM model establish).



relative cost differences, and that these relative cost differences are reasonably measured by the HCPM.

As the FCC indicated in the *Kansas/Oklahoma 271 Order*:

Our USF cost model provides a reasonable basis for comparing cost differences between states. We have previously noted that while the USF cost model should not be relied upon to set rates for UNEs, it accurately reflects the relative cost differences among states.⁷

The FCC described how it applies the TELRIC Test in the following passage of the *Kansas/Oklahoma 271 Order*:

In taking a weighted average of loop rates in Oklahoma and Texas, we find that Oklahoma's rates are roughly one-third higher than those in Texas. . . . Using a weighted average of wire-center loop costs, the USF cost model indicates that loop costs in SWBT's Oklahoma study area are roughly 23 percent higher than loop costs in its Texas study area. We therefore attribute this portion of the differential, roughly two-thirds of it, to differences in costs. The remainder of the differential, however, is not *de minimis*, and we cannot ignore its presence.⁸

The FCC determined that "discounted" rates offered by SBC in this proceeding were TELRIC compliant as follows:

The weighted average of the Oklahoma discounted loop rates is roughly 11 percent higher than the weighted average of the loop rates in Texas. This differential between Oklahoma promotional and Texas rates is well within the 23 percent differential suggested by the USF cost model, and so we conclude that the discounted rates meet the requirements of the Act.⁹

This application of the TELRIC Test is an example of how this clear and straightforward methodology can evaluate the TELRIC compliance of proposed UNE rates without engaging in a complicated analysis endemic to UNE cost studies.

⁷ *Kansas/Oklahoma 271 Order*, ¶ 84 (emphasis added).

⁸ *Id.* at ¶¶ 83-85 (footnotes omitted).

⁹ *Id.* at ¶ 86 (footnote omitted).



The TELRIC Test can be defined more formally as follows. Let the cost for an unbundled element in the applicant state i be C_i and in some reference state be C_R . Further, let the TELRIC loop costs determined by the state commissions be P_i and P_R , respectively. While the HCPM is used to produce values for C_i and C_R , the FCC stated that the estimates from the HCPM do not equal necessarily the absolute level of TELRIC costs, i.e., $P_i \neq C_i$ and $P_R \neq C_R$. However, the agency does contend that the HCPM's output accurately reflects the relative cost differences among states. Thus, the TELRIC Test is defined as

$$\frac{P_i}{P_R} \leq \frac{C_i}{C_R}, \quad (1)$$

a condition which simply indicates that the ratio of UNE rates must be (approximately) equal to or less than the ratio of HCPM costs. Simple algebra shows that the upper limit of the TELRIC compliant UNE rate is

$$P_i \approx P_R \cdot \frac{C_i}{C_R}. \quad (2)$$

The upper limits of TELRIC compliance for loop, switching, and transport UNEs, using Texas as the reference state, are provided in Tables 1, 2, and 3.

To illustrate the application of Equation (1), consider the FCC's Oklahoma and Texas loop comparison again. Prior to the arbitrary reduction in Oklahoma loop rate, the UNE rates in Oklahoma were "roughly one-third higher than those in Texas," implying that P_i/P_R is approximately 1.33. The HCPM indicated, however, that loop costs are only "23 percent higher than loop costs" in Texas, implying that C_i/C_R is 1.23. Obviously, 1.33 is not less than or equal to 1.23, leading the FCC to express concern over the initial Oklahoma loop rate. Once the Oklahoma loop rate was reduced, the ratio of prices (P_i/P_R) was only 1.11 – below the cost ratio (C_i/C_R) of 1.23. Thus, the newly-reduced Oklahoma loop rate passed the TELRIC Test and the FCC accepted the reduced rate as TELRIC compliant.



The key insight of the TELRIC Test is the quantification of the difference in UNE rates in two states that can be justified by legitimate cost differences between the two states – such as, geographic reasons, population density, environmental factors, etc. The HCPM model was developed by the FCC for a similar purpose – to estimate the forward-looking costs of network elements in order to determine the level of universal service support from the interstate jurisdiction that the federal universal service fund would provide. Therefore, while the HCPM need not be used to generate any particular UNE rate, it is highly useful and probative in determining the *relative* cost differentials between states – that is, how much the cost of a forward-looking network in Oklahoma would vary from the cost of a forward-looking network in Texas.

Applying the TELRIC Test can be undertaken for most elements in any state with publicly-available information. Determining the price and cost ratios does require certain decisions, including:

1. Selection of the appropriate a “reference state” or group of “reference states” must be selected. This is the state or group of states to which a state’s UNE rate is to be compared. For the test to have relevance, the reference state (or states) must have established a TELRIC-compliant rate.
2. Identification of and normalization of UNE rates. In this era of last-minute, *ad hoc* UNE rate changes by BOCs, identifying the “current” rate can be particularly difficult. In addition, UNEs must be “normalized” to take into account rate structure differences between states. For instance, unbundled local switching costs are undertaken by different rate structures in different states – for instance, in California, SBC assesses a call set-up fee, a charge not present in other SBC states. Comparing California unbundled switching charges to other states therefore requires one to make certain assumptions about usage, call length, etc.
3. Because the Act requires that each UNE price be “based on cost”, efforts by BOCs to “bundle” together UNEs for purposes of the



TELRIC Test must be rejected. Allowing this type of bundling would permit illegal cross-subsidization of UNE rates by the BOC.

These important decisions are discussed in the following sections. At present, the FCC has not outlined specific rules to follow when performing the TELRIC Test. However, common sense and the recognition of certain facts provide considerable direction in applying the TELRIC Test.

Selecting the Reference State

An important component of applying the TELRIC Test correctly is selecting an appropriate “reference state.” While there may be some aesthetic value to selecting a state that is geographically proximate or of similar population density, those virtues are unnecessary. It must be remembered that the HCPM was designed to account for geographic variety among states and account for different population densities. The more important criteria for selecting the reference state is whether that state has “TELRIC-compliant” rates.

The HCPM is designed to fully account for geographic differences across states. If, as the FCC contends, the HCPM reliably detects cost differences across states, then it must do across any potential pair of states regardless of geographic proximity, teledensity, or other factors. If not, then the HCPM does not properly account for these relevant factors and consequently cannot be relied upon to measure differences in rates across any pair of states.

It is possible – and indeed advisable – to use as a reference state TELRIC rates of a different BOC. Loops and other network components are defined in a sufficiently homogeneous manner across BOCs so that direct comparisons are legitimate. Using publicly available usage and ARMIS data, different rate structures can be normalized for comparison purposes. For example, sufficiently general indicia of switching and transport costs and rates can be constructed so that valid comparisons can be made.



In addition, BOC networks were generally designed and constructed pursuant to common, Bellcore standards, many of which pre-dated divestiture. Finally, comparisons across geographical and “BOC lines” can serve as a useful way of benchmarking one BOC’s rates against another’s, a useful check upon the risk that one BOC may be able to maintain higher rates region-wide. In short, forward-looking costs should not vary significantly based on different BOC ownership.¹⁰

The most important criterion in identifying a reference state or group of reference states is the confidence one has that those states have TELRIC-compliant rates. There is not much purpose in comparing one state’s rate against another state rate if the reference state does not have TELRIC-compliant rates.

”Combining” or “Bundling” UNEs

In applying or analyzing the TELRIC Test, regulators must be careful to avoid combining or bundling several UNEs together for comparison purposes. For example, one BOC has used a perverted form of the TELRIC Test to argue that its “loop/switching combination” passed the analysis – even while the price of its unbundled switching element failed the test by more than 100%.

According to law, each UNE must be based on the forward-looking cost of providing that element. It would violate that legal principle to “offset” high costs for one UNE by referencing lower costs for another UNE. In addition, FCC Rule 51.506(d)(4) explicitly prohibits the costs of a UNE from subsidizing other elements or services. Examining the relative prices of several UNEs in combination would not detect whether such cross-subsidization is occurring. Finally, in comparison to another state, the cost of one element in one state may be significantly lower or higher than cost differential of another element, while others may be similar.¹¹

¹⁰ *Pennsylvania 271 Order* at ¶ 64 (noting that HCPM model “makes no distinction between data among BOCs”).

¹¹ For example, loop costs may be significantly lower in one state than another while switching costs remain relatively equal. Using the TELRIC Test to “combine” analysis of the “loop/switching



In short, combining or bundling UNEs for the TELRIC Test would not provide adequate assurances that the price of *each* UNE is “based on cost.”

The TELRIC Test National Survey

The TELRIC Test framework is incredibly useful and robust. The attached Tables list the ceilings on the zone of reasonableness for each state, using Texas as a reference state.¹² Like any UNE rate calculation, this analysis is subject to changes, such as changes in underlying cost assumptions, the use of different reference states, the results of pending and future state proceedings, or other developments.¹³

combination” would permit the BOC to gouge its CLEC customers on unbundled switching. The same situation is possible any time the TELRIC Test is used to analyze a combination of any two elements. Summary statistics from the HCPM shed some light on this issue. The variance of loop costs is roughly equal to the mean of loop costs (the coefficient of variation is 1.17). For end-office switching costs, however, the variance is substantially less than the mean with a coefficient of variation (equal to the variance divided by the mean) of 0.02. Thus, switching costs exhibit virtually no variation from state to state, particularly relative to loop rates.

¹² Verizon’s UNE rates in New York are currently being actively reviewed by the NYPSC in Case No. 98-C-1357, and a final decision on those rates is imminent. As a result, the attached Tables do not include New York as a reference state, given the imminent pending nature of that proceeding. Nevertheless, Verizon’s 271 authority in Massachusetts and Pennsylvania is predicated upon application of the TELRIC Test to the interim New York rates. However, in the *Massachusetts 271 Order*, the FCC noted that its application of the TELRIC Test to Verizon would change when the New York rates changed:

If the New York Commission adopts modified UNE rates, future section 271 applicants could no longer demonstrate TELRIC compliance by showing that their rates in the applicant states are equivalent to or based on the current New York rates, which will have been superceded. . . . Moreover, . . . a decision by the New York Commission to modify these UNE rates may undermine Verizon’s reliance on those rates in Massachusetts and its compliance with the requirements of section 271, depending on the New York Commission’s conclusions.

Massachusetts 271 Order at ¶¶ 29-30. In the *Pennsylvania 271 Order*, the FCC compared Pennsylvania rates to those same interim New York rates. *Pennsylvania 271 Order* at ¶¶ 62-67.

¹³ The D.C. Circuit found that “rates may often need adjustment to reflect newly discovered information.” *AT&T Corp. v. FCC*, 220 F.3d 607, 617-18 (D.C. Cir. 2000). The FCC has also noted that rates can “evolve over time to take into account updated information on cost inputs and new technologies.” *Massachusetts 271 Order* at ¶ 27.



Using Texas as the reference state, Tables 1-3 provide the recurring monthly charge ceiling on the TELRIC zone of reasonableness for loops, end-office switching, and shared transport. Table 4 lists the usage estimates utilized to normalize the monthly charge for switching and transport. These usage estimates are derived from publicly-available ARMIS and HCPM data.

While Texas is used as the reference state, the results of Tables 1-3 can be used to calculate the ratio C_i/C_R for any two states for these elements, simply by generating the ratio of the two states to be examined. For instance, one would generate the ratio C_i/C_R to compare loop rates in Virginia and Texas by dividing \$17.64 by \$16.61, to determine the ratio 1.06.

The purpose of these Tables is not to indicate what the precise “right” rate is for all of these states. Rather, the Tables are designed instead to give an indication of the current ceiling on the zone of reasonableness for the listed elements. Lower rates certainly can be consistent with TELRIC – but higher rates are certain to draw attention as not being based on legitimate cost differentials.

The TELRIC Test is particularly useful when UNE rates are established in an *ad hoc* fashion, possibly as part of a carrier-to-carrier or carrier-to-regulator negotiation. Because the HCPM “accurately reflects the relative cost differences among states,” the HCPM also can be used to evaluate and compare UNE rates in the course of a formal state cost proceeding. The TELRIC Test is also useful even if no UNE rate case is pending, as it can flag for State commissions which particular rates may warrant proactive attention. Because rates in a reference state may change, the TELRIC Test should be performed regularly.

The TELRIC Test also can be used to examine other areas of critical concern. For instance, the charges for Daily Usage Files – a considerable expense for UNE-P entrants like Z-Tel – also can be compared by use of the test. For example, in Georgia and Louisiana. DUF charges amount to more than 20% of the costs of the UNE-Platform, but only 6% of such costs in Texas. The TELRIC costs for some elements, such as the DUF, are not



expected to vary considerably by state or LEC. Thus, if sizeable differences are observed across states for elements that should have similar costs, then the proposed rates are based on studies that have deviated from TELRIC principles in some way.

Conclusion: Using the TELRIC Test to Promote Local Entry

While much progress has been made on UNE rates the past few years, a lot of work still needs to be done. Quite frankly, incumbent LECs to date have been comfortable proposing high UNE rates in many states without reference to pro-competitive actions already taken by other states in the region and nationwide. This situation forces State commissions and entrants alike to analyze and litigate all rates on a state-by-state basis, without any formal framework to benefit from the actions and insights of other State commissions.

Use of the TELRIC Test by State commissions can change that situation rapidly. The TELRIC Test is a powerful tool that State commissions can utilize as a quick “reality check” for UNE rates proposed by their local incumbents. While it does not say whether any particular UNE rate is “the correct rate,” the test will indicate whether a proposed UNE rate falls above the zone of reasonableness. Indeed, the TELRIC Test is most useful at the *beginning* of UNE rate proceeding or, preferably, even *before* the rate proceeding has begun, because the test can focus regulators on particular suspect rates that warrant further attention. Because UNE rates in reference states may change, the TELRIC Test should be performed regularly, even if no rate case is pending.

The TELRIC Test also can be used to establish interim rates pending completion of a more complete cost proceeding. Clearly, establishing interim rates that fall at or below the ceiling of the zone of reasonableness is far more pro-competitive than simply accepting whatever rate the ILEC proposes, subject to true-up. Given that UNE rate cases can take longer than a year, maintaining an ILEC rate that falls above the zone of reasonableness will hamper competitive entry during that time period. Some incumbents have adopted this use of the TELRIC Test as part of the 271 process. For example, in its current Missouri application, SBC utilized



a form of the TELRIC Test as the basis for proposing lower rates, pending results of a complete cost proceeding.

The TELRIC Test also could free State commissions to develop areas of particular expertise that may not be possible if staff resources had to be thrown into every aspect of every cost case. For instance, a smaller State commission could rely upon the TELRIC Test to establish loop and transport rates (on a permanent or interim basis), so it could focus its resources on unbundled local switching rates. And if other State commissions applied the TELRIC Test for switching, the expertise of that smaller State commission would have positive influences on states across the region and nation. The TELRIC Test provides an analytical framework for State commissions to engage in this division of labor.

UNE rate proceedings are complex, time-consuming, and interminably long. The TELRIC Test gives State commissions the ability to leverage the work of State commissions nationwide in similar cost proceedings by indicating the ceiling on the zone of reasonableness for forward-looking rates. The TELRIC Test can perform this function while taking into account legitimate cost differentials between states, such as teledensity, environmental, and geographic factors. The TELRIC Test can also be utilized by State commissions to manage scarce staff resources. By identifying early on the particular UNE rates that may be most “out-of-line”, particular attention to those components of a cost case can be accelerated and addressed swiftly.

The TELRIC Test is also useful for a State commission even if there is no pending or upcoming UNE rate case. Because the TELRIC Test provides a quick “reality-check” on UNE rates, State commissions can and should use the test at any point to gauge whether UNE rate levels are appropriate. Because prevailing UNE rates in reference states can change, performing the TELRIC Test regularly will allow State commissions to proactively determine whether further actions, such as institution of a UNE rate case, may be warranted.



**Table 1. The TELRIC Test:
TELRIC Compliant Ceiling on Unbundled Loop Rates**

State	TELRIC Compliant Upper Limit	HCPM Loop Costs (C_i)	State	TELRIC Compliant Upper Limit	HCPM Loop Costs (C_i)
AL	\$22.55	\$26.56	ND	\$16.94	\$19.95
AR	\$19.55	\$23.02	NE	\$16.55	\$19.50
AZ	\$13.82	\$16.28	NH	\$18.97	\$22.35
CA	\$10.77	\$12.68	NJ	\$13.22	\$15.57
CO	\$15.23	\$17.93	NM	\$17.45	\$20.55
DC	\$9.03	\$10.63	NV	\$18.50	\$21.79
FL	\$14.61	\$17.21	NY	\$12.29	\$14.48
GA	\$16.11	\$18.98	OH	\$14.30	\$16.85
IA	\$15.52	\$18.28	OK	\$17.39	\$20.48
ID	\$18.44	\$21.71	OR	\$15.02	\$17.69
IL	\$12.91	\$15.20	PA	\$14.66	\$17.27
IN	\$15.79	\$18.60	RI	\$14.51	\$17.09
KS	\$15.93	\$18.77	SC	\$19.58	\$23.06
KY	\$22.42	\$26.41	SD	\$17.92	\$21.11
LA	\$19.32	\$22.75	TN	\$19.45	\$22.91
MA	\$13.08	\$15.40	TX	\$14.10	\$16.61
MD	\$14.14	\$16.66	UT	\$13.27	\$15.63
ME	\$23.89	\$28.14	VA	\$14.98	\$17.64
MI	\$15.68	\$18.46	VT	\$26.19	\$30.85
MN	\$14.96	\$17.63	WA	\$13.97	\$16.45
MO	\$16.36	\$19.27	WI	\$14.98	\$17.64
MS	\$29.04	\$34.21	WV	\$25.54	\$30.08
MT	\$21.36	\$25.16	WY	\$23.65	\$27.86
NC	\$16.55	\$19.50			

The upper limit on TELRIC compliance is computed using Equation (2) in the text. The UNE loop rate for Texas is \$14.10 (P_R) and the HCPM cost is \$16.61 (C_R).



Table 2. The TELRIC Test:
TELRIC Compliant Ceiling on End-Office Switching
(Per-Line/Per-Month)

State	TELRIC Compliant Upper Limit	HCPM Costs (C _i)	State	TELRIC Compliant Upper Limit	HCPM Costs (C _i)
AL	\$4.89	\$2.61	ND	\$4.26	\$2.27
AR	\$3.93	\$2.10	NE	\$4.93	\$2.64
AZ	\$4.02	\$2.15	NH	\$3.90	\$2.08
CA	\$3.82	\$2.04	NJ	\$3.54	\$1.89
CO	\$4.57	\$2.44	NM	\$4.12	\$2.20
DC	\$5.26	\$2.81	NV	\$4.13	\$2.21
FL	\$4.03	\$2.15	NY	\$4.08	\$2.18
GA	\$4.27	\$2.28	OH	\$4.03	\$2.15
IA	\$4.26	\$2.28	OK	\$4.13	\$2.21
ID	\$4.20	\$2.25	OR	\$4.06	\$2.17
IL	\$3.97	\$2.12	PA	\$3.94	\$2.11
IN	\$4.21	\$2.25	RI	\$3.65	\$1.95
KS	\$4.34	\$2.32	SC	\$4.16	\$2.22
KY	\$4.71	\$2.52	SD	\$3.99	\$2.13
LA	\$4.55	\$2.43	TN	\$4.53	\$2.42
MA	\$3.50	\$1.87	TX	\$4.09	\$2.18
MD	\$4.06	\$2.17	UT	\$4.23	\$2.26
ME	\$4.12	\$2.20	VA	\$4.05	\$2.16
MI	\$3.75	\$2.01	VT	\$4.55	\$2.43
MN	\$4.20	\$2.25	WA	\$3.92	\$2.09
MO	\$4.69	\$2.51	WI	\$4.00	\$2.14
MS	\$5.20	\$2.78	WV	\$4.87	\$2.60
MT	\$4.32	\$2.31	WY	\$3.85	\$2.06
NC	\$4.38	\$2.34			

Monthly per-line end-office switching costs are computed by adding the (average) switch port rate to the (average) per-minute rate multiplied by end-office minutes. End-office minutes are provided in the HCPM and are summarized in Table 4. Texas is the reference state (port is \$2.22 and the per-minute rate is 0.00144).



Table 3. The TELRIC Test:
TELRIC Compliant Ceiling on Transport Rates
(Per-Line/Per-Month)

State	TELRIC Compliant Upper Limit	HCPM Costs (C _i)	State	TELRIC Compliant Upper Limit	HCPM Costs (C _i)
AL	\$0.40	\$0.64	ND	\$0.55	\$0.87
AR	\$0.29	\$0.46	NE	\$0.51	\$0.81
AZ	\$0.16	\$0.25	NH	\$0.18	\$0.29
CA	\$0.06	\$0.09	NJ	\$0.04	\$0.06
CO	\$0.17	\$0.27	NM	\$0.38	\$0.60
DC	\$0.04	\$0.07	NV	\$1.17	\$1.87
FL	\$0.11	\$0.18	NY	\$0.09	\$0.14
GA	\$0.17	\$0.27	OH	\$0.12	\$0.19
IA	\$0.24	\$0.39	OK	\$0.39	\$0.62
ID	\$0.30	\$0.48	OR	\$0.15	\$0.24
IL	\$0.08	\$0.12	PA	\$0.12	\$0.19
IN	\$0.17	\$0.27	RI	\$0.07	\$0.11
KS	\$0.34	\$0.55	SC	\$0.25	\$0.40
KY	\$0.53	\$0.84	SD	\$0.52	\$0.83
LA	\$0.41	\$0.65	TN	\$0.29	\$0.47
MA	\$0.05	\$0.08	TX	\$0.19	\$0.30
MD	\$0.13	\$0.21	UT	\$0.22	\$0.35
ME	\$0.44	\$0.71	VA	\$0.17	\$0.27
MI	\$0.13	\$0.20	VT	\$0.56	\$0.89
MN	\$0.26	\$0.41	WA	\$0.10	\$0.16
MO	\$0.25	\$0.40	WI	\$0.12	\$0.19
MS	\$0.72	\$1.15	WV	\$0.59	\$0.95
MT	\$0.83	\$1.32	WY	\$0.61	\$0.97
NC	\$0.16	\$0.25			

Transport costs are computed by multiplying the common/shared transport rate by direct transport minutes and (in most cases) two times common transport minutes, plus the tandem minutes multiplied by the tandem-switching rate. The full, per-minute rate for all elements should be used for the computations. Transport rate structures differ across states, so the minutes assigned to particular rates should be specified with care. Texas is the reference state (transport rate is 0.0004 and the tandem switching rate is 0.000794).



Table 4. Relevant Inputs for Computing Usage Sensitive UNE Prices

State	EO Minutes/Direct Transport Minutes/Common Transport Minutes/Tandem Minutes	State	EO Minutes/Direct Transport Minutes/Common Transport Minutes/Tandem Minutes
AL	1846/648/26/13	ND	1089/354/14/7
AR	931/275/11/6	NE	1198/394/16/8
AZ	1131/378/15/8	NH	841/245/10/5
CA	800/241/10/5	NJ	768/223/9/5
CO	1163/386/16/8	NM	1076/355/14/7
DC	811/275/11/6	NV	738/232/9/5
FL	1420/483/20/10	NY	1108/370/15/8
GA	1825/637/26/13	OH	1207/406/17/8
IA	1022/332/14/7	OK	1115/362/15/7
ID	964/315/13/6	OR	1118/370/15/8
IL	987/327/13/7	PA	1011/329/13/7
IN	1174/394/16/8	RI	1020/326/13/7
KS	1088/357/15/7	SC	1547/532/22/11
KY	1671/579/24/12	SD	773/228/9/5
LA	1688/591/24/12	TN	1826/640/26/13
MA	819/239/10/5	TX	1298/438/18/9
MD	1200/406/17/8	UT	1179/392/16/8
ME	800/240/10/5	VA	1197/402/16/8
MI	933/296/12/6	VT	951/293/12/6
MN	1134/385/16/8	WA	1247/415/17/8
MO	1228/413/17/8	WI	1045/344/14/7
MS	1436/492/20/10	WV	1336/459/19/9
MT	923/281/11/6	WY	840/247/10/5
NC	1585/544/22/11		



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