I.C.C. Docket No. 00-0812
Staff Ex. 1.1

REBUTTAL TESTIMONY

OF

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TELECOMMUNICATIONS DIVISION

ILLINOIS COMMERCE COMMISSION

I.C.C. DOCKET NO. 00-0812

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I. Introduction

Q. Are you the same Robert Koch who filed direct testimony in this proceeding?

A. Yes.

Q. What is the purpose of your Rebuttal Testimony in this proceeding?

A. I will respond to the Rebuttal Testimony of David G. Tucek on behalf of Verizon North Inc. and Verizon South Inc. (jointly referred to as "Verizon") regarding my direct testimony in this proceeding. Specifically, I address his defense of the ICM model as it relates to my testimony. In this testimony, I conclude that Mr. Tucek's rebuttal testimony has not changed my opinion concerning the defects of the ICM model, nor has it affected the overall position of Staff witnesses.

II. ICM Criticisms

Q. Please summarize Mr. Tucek's defense of the ICM model.

A. Mr. Tucek responds to three major criticisms Staff and Intervenors made concerning the ICM model, and attempts to answer these criticisms in his rebuttal testimony. The first criticism of the ICM model is that it produces costs that are too high. Mr. Tucek uses C.A. Turner indices, as well as a true-up calculation, to claim that ICM does not produce UNE rates that are out of line with current rates. My rebuttal testimony will show that significant flaws exist in Mr. Tucek's method of calculating this true-up. As such, Verizon has not sufficiently addressed this criticism of the model.

The second criticism is that ICM does not model an appropriate network. Within this criticism are three critical observations concerning the modeled network: (1) there are too many DLCs modeled; (2) ICM's choice of NGDLCs is inappropriate; and (3) many DLCs in the modeled network serve only a handful of customers. While Mr. Tucek responds to my testimony (and that of Intervenors) in this regard, none of his responses to these observations are adequate.

The third criticism is that ICM models a network that is not appropriately forward-looking. In my direct testimony, I observed that flaws existed in

the demand data used to model the network. I reasoned that, since demand used in ICM is not forward-looking, the network produced by ICM is also not forward-looking. Mr. Tucek attempts to explain this inconsistency in a manner that I do not consider persuasive. In their direct testimony, Intervenors in the case made additional arguments in support of this criticism. Mr. Tucek also addresses their criticisms. Although I make comments regarding Mr. Tucek's characterization of other witnesses' testimony, it is my expectation that those witnesses will also address these concerns.

ICM Inflates the Cost of the Network

Q. After reviewing Mr. Tucek's rebuttal testimony, is it still your belief that ICM inflates the cost of the network?

A. Yes. As I mentioned previously, Mr. Tucek uses C.A. Turner indices to show that investment in the current network, when adjusted to current price levels, is similar to the cost of the network modeled by ICM. Mr. Tucek does not explain the significance of these indices, or why they are appropriate in this proceeding. In my opinion, these indices do not yield an accurate appraisal of the cost of the existing network. As such, the costs developed by Mr. Tucek using these indices are not relevant in this proceeding. I am equally unconvinced by the true-up calculation that Mr.

Tucek puts forth to explain the differences between the current rates for services and the costs modeled by ICM.

Q. Why are you concerned with the accuracy of the C.A. Turner Index?

A. The FCC has previously analyzed the C.A. Turner Index for GTE and has provided the following determination:

> When using indices of inflation to develop direct costs, we use indices that are verifiable, developed for broad sectors of the economy (e.g., the consumer price index or the producer price index), used by a variety of users (e.g., government agencies and a large cross section of companies within the private sector) and routinely developed by impartial government agencies (e.g., the U.S. Bureau of Labor Statistics). **The C.A. Turner Telephone Plant Index, however, is unverifiable, narrowly focused, and does not appear to be widely accepted because it is used by a small number of users**.[1]

It is my belief that the same concerns exist in Illinois for GTE's successor company, Verizon. The analysis Mr. Tucek conducted was of the very nature that the FCC rejected in the GTE proceeding. That is, Mr. Tucek was attempting to develop a figure for the direct network investment for existing plant for his comparison. Although no actual rate is produced by this analysis, the analysis is used here to justify the over-inflated costs produced by ICM.

[1] CC Docket No. 93-162, Released June 13, 1997, ¶184 (emphasis added)

Q. Please describe the comparison of ICM costs to current retail rates for network access lines?

A. Mr. Tucek's method is to start from the ICM produced UNE loop cost, and thereafter to make three specific adjustments that yield what he considers to be a proper comparison with existing rates. First, he excludes shared costs from his run of ICM. Tucek Rebuttal at 10. Mr. Tucek argues that the costs that support the current retail rates were developed without shared and common cost recovery. Therefore, removal of these costs from the ICM is needed for an appropriate comparison with existing rates.

Second, Mr. Tucek includes the exchanges sold to Citizens Communications in December of 2000 as part of this comparison. Id. Since these exchanges were part of the network in which existing rates were developed, and are not part of the network ICM uses to develop costs in this proceeding, Mr. Tucek reasons that any ICM cost comparison with the current retail rate must be developed with Citizens exchanges.

Third, he excludes loops served by digital loop carriers (hereafter "DLCs") from the ICM network. With these adjustments, he runs the model under the 18 kft (18 kilofeet, or 18,000 feet) option. Id. Mr. Tucek argues that this is necessary because circuit equipment investment was not included in the cost development supporting the current retail rates, and should

thus be removed from ICM. The resulting TELRIC cost is shown to be $15.48, which is similar to the existing retail rates of $15.99 and $16.99. Mr. Tucek argues that this exercise shows that ICM is not gold-plating the network (i.e., modeling a network that supports functions unlikely to be demanded by a large percentage of customers, in a manner rendering it excessively costly) and produces reasonable results.

Q. What concerns do you have with the true-up calculation used by Mr. Tucek to show that ICM costs are consistent with current retail rates?

A. In my opinion, the first two adjustments made by Mr. Tucek are meritorious. However, the third adjustment is inappropriate. Because the current network access line rates are based on cost estimates that do not include investment in circuit equipment, Mr. Tucek reasons that removal of all access lines connected to DLCs in ICM will take care of the differences in network modeling. While this may seem reasonable at first glance, it is totally inappropriate upon inspection. There is no adjustment that can be made in ICM to account for the fact that no circuit equipment is included in the cost development for current rates.

Although I cannot speak for Mr. Tucek, I believe his intention in making this third adjustment was to remove only the cost of DLC equipment from

the network modeled by ICM. This would seem to be a reasonable adjustment if it were to occur in a vacuum, as Mr. Tucek indicated that the cost development for the current retail rates did not include DLC costs and assumed that average loop lengths were below 12 kft. Tucek Rebuttal at 10.

Regrettably, this third adjustment removes not only the circuit equipment costs, but also the entire cost of the longest loops in the network. As I mention elsewhere in this rebuttal testimony, the longest loops in the ICM modeled network are highly inefficient as a result of DLC utilization and the use of an inefficient fiber-copper mix. The impact of this adjustment is that the resulting ICM based network will be reflective of an average of only the least-cost, most efficient loops in Verizon's network, and cannot be considered a reasonable proxy of the average UNE loop cost of the entire network. Yet, Mr. Tucek makes this adjustment so as to compare the ICM results with a network access line rate that is based on the entire network, not just the most efficient portions of it. As such, this modified ICM network is useless as a means of comparison with the current retail rates, for whose cost development the Commission has previously determined as reasonable for the entire network.

Another defect in Mr. Tucek's analysis lies in his comparison of a UNE loop with a network access line. This is improper, as the network access

line cost also includes the cost of the loop port, while the UNE loop cost does not. As such, a true comparison must add the UNE port cost of $2.18 as developed by ICM to the UNE loop cost.

Q. Could you calculate an appropriate comparison of the ICM results to current Verizon network line rates?

A. Yes. Since, in my opinion, Mr. Tucek's first two adjustments are reasonable, and his third is not, my belief is that the appropriate loop cost for this comparison is $25.27, as calculated by Mr. Tucek. Tucek Rebuttal at 10. Adding the port cost yields a total cost of $27.45. Applying Verizon's interim shared and common cost factor of 28.8% to this total cost produces a UNE rate that would be comparable to the retail network access line rate. My calculation of the comparable ICM cost is thus $35.36. This rate is more than twice that of Verizon's highest retail network access line, after all appropriate adjustments have been made. The result of this comparison is that it shows that ICM inflates costs significantly, not that it is models UNE costs to a level reasonably close to the existing rate structure.

ICM Models an Incorrect Network

Q. Is it still your testimony that the ICM models an incorrect network?

A. Yes. Staff and Intervenors' witnesses took the position in their direct testimony that ICM models an improper network for several reasons. Mr. Tucek is correct in identifying three significant criticisms noted by parties to this proceeding that lead to this conclusion: (1) that the ICM models an excessive number of DLCs in the network; (2) that ICM uses an improper choice of DLCs to model the network; and (3) that many of the DLCs modeled by ICM serve only a handful of customers. While Mr. Tucek makes several arguments concerning these three observations, I do not consider those arguments persuasive.

(1) ICM Models too many DLCs in the Network

Q. What is your opinion of Mr. Tucek's argument that the ICM can not model fewer DLCs?

A. Mr. Tucek concedes that there are more DLCs modeled in the ICM network than exist in Verizon's actual network in Illinois. Tucek Rebuttal at 14. Mr. Tucek argues that there is no way for the ICM to model fewer DLCs, even under the 18 kft loop-length restriction option. Tucek Rebuttal at 14, 15. While I agree with Mr. Tucek that this is the case, it does not support his claim that ICM does not model an excessive number of DLCs. In fact, this statement only supports Staff's position that ICM is inadequate because it cannot be adjusted to reflect a more reasonable network, which

is to say one that assumes a reasonable number of DLCs, rather than an excessive number.

Q. What is your opinion of Mr. Tucek's argument that the dollar amount of circuit equipment investment is lower under ICM than the reproduction cost of the existing network?

A. Mr. Tucek argues that the difference between the dollar amount of circuit equipment investment modeled by ICM is actually lower than the reproduction cost of the existing network. Tucek Rebuttal at 15. Mr. Tucek provides Rebuttal Attachment DGT-1 as support for this position as well. I am not persuaded by this argument. First, the reproduction cost calculations provided by Mr. Tucek are speculative in nature. As a result, any use of this data should be accompanied by a disclaimer stating that it relies on broad assumptions and is not based on an actual accounting of current investment costs.

Second, even if circuit equipment prices of the ICM modeled network were found to be lower than the actual reproduction costs of the existing network, this argument is a red herring. If the ICM placement of DLCs is inefficient, it does not matter what its cost is in comparison to the existing network. An inefficient network is not LRSIC or TELRIC based, since both assume an efficient network. As such, Mr. Tucek's network cannot be

used as a basis for developing UNE rates in Illinois. Further, the investment in DLCs does not exist in a vacuum. The impact of placing DLCs inefficiently also impacts the efficient copper-fiber mix in the network. With too many DLCs, regardless of the investment, there will be too much fiber, which also drives up the cost of the network.

Q. What is your opinion of Mr. Tucek's arguments concerning the restriction of copper loop length?

A. Mr. Tucek seeks to employ the FCC Advanced Services Order (CC Docket No. 98-147), dated March 31, 1999, as a basis of support for ICM's loop length restrictions. Mr. Tucek cites from the Advanced Services Order that asynchronous digital subscriber line ("ADSL") technology is the most commonly deployed of these technologies. Using this citation, Mr. Tucek reasons that the ICM must model a network capable of ADSL speeds throughout its Illinois network.

Although I would support a decision by Verizon to upgrade its telephone network to provide "state of the art" broadband technology to its customers, such support would have to be tempered with the efficiency losses that may result from such an upgrade. Modeling a network that will support ADSL technology anywhere and everywhere is inefficient. Moreover, if Verizon where to propose an actual upgrade to its telephone

network to contain such capabilities, it would need to show to the Commission that such an extensive upgrade would be used and useful before recovering its costs. It is my belief that Verizon could not make such a showing, as I have not seen any evidence that penetration levels for ADSL services would be significant enough to warrant the extensive upgrade.

As I argued in my direct testimony, advanced services, as defined in Illinois statutes, have a much lower capacity than those modeled by Verizon. Staff Exhibit 1.0 at 11, 12. Further, the Illinois Legislature has set the penetration benchmark for advanced services availability at 80% of the customer base. 220 ILCS 5/13-518. What ICM develops, however, is 100% penetration of technology that greatly exceeds these requirements. As the ability to provide high bandwidth services in the network increases, so does the cost. The network design in ICM maximizes broadband capability rather than maximizing efficiency. The end result is a network that is not consistent with current public policy in the State.

In addition, Mr. Tucek's argument completely ignores the fact that the ICM modeled network is not forward-looking. Nowhere in Verizon's direct or rebuttal testimony in this case is it stated that the ICM models a network that exists today in Illinois or is even on the planning horizon. As such, the network is not TELRIC based, nor can it be adapted to be TELRIC based.

(2) ICM uses an Improper Choice of DLCs

Q. Please comment on Mr. Tucek's assertions that ICM uses appropriate DLCs in its modeled network?

A. In my direct testimony, I state that traditional loop carriers should be applied in ICM to some degree, rather than next generation DLCs ("NGDLCs"). My argument is based on efficiency concerns and the appropriate design of a forward-looking network. Mr. Tucek takes exception to this position. Tucek Rebuttal at 16, 17. However, instead of demonstrating why NGDLCs are appropriate throughout the network, Mr. Tucek provides only a discussion as to why he thinks my definition of NGDLC is incorrect. Not only is his argument concerning my definition of NGDLC incorrect, but it does not support his position.

I do not dispute the fact that NGDLCs are needed in a forward-looking network. However, I take issue with the inefficient placement of these devices postulated by ICM. ICM requires NGDLC placement throughout the modeled network. As I have discussed previously on a number of occasions, this is not appropriate for UNE rate development. Mr. Tucek assumes that forward-looking networks must contain the most advanced

capabilities possible throughout the network. As such, he must support his reasoning for this assumption.

Further, Mr. Tucek's concerns regarding my definition of NGDLC is misplaced. Mr. Tucek provides an alternate definition of NGDLC but does not support his source for this definition. I use a definition from Newton's Telecommunications Dictionary. I responded to data request VZ-Staff 1.04 by providing this simple definition, and not by altering it in any way. In my review of ICM, I applied this definition appropriately.

Q. Could you explain in more detail what a more appropriate network design would look like?

A. As a non-engineer, I cannot speak to the specifics of any network design. However, I can assert what I believe is a more appropriate general approach to modeling for the purpose of developing UNE rates. My main argument is that the placement of NGDLCs throughout the modeled network as proposed by the company is imprudent. The capability of providing advanced services throughout the network is unnecessary and does not reflect an actual planned upgrade to the network. The appropriate TELRIC cost of the loop, for example, should be reflective of a reasonable planned network for Verizon. As such, I believe that the use of traditional DLCs would be more efficient in certain areas of the network.

Naturally, such a modeling would assume that some customers would be precluded from the provisioning of advanced services.

As this methodology retains consistent with the current network deployed by Verizon. Further, unless Verizon can affirmatively show otherwise, the network configuration produced by this methodology will not be inconsistent with any network upgrades that are actually planned. As such, the SLC-96 that I offered as an example in response to data request VZ-Staff 1.04 may be considered forward-looking, as long as it is the most efficient means of providing telephone service to some customers in the network and no plans have been made to replace it with NGDLCs.

Q. What is your opinion concerning Mr. Tucek's claim that only a small number of DLCs serve a handful of customers, and that most serve a larger and more reasonable number?

A. Mr. Tucek addresses concerns presented by IRCA witness Jason Hendricks regarding DLCs that serve customers at well under capacity. As such, Mr. Hendricks will presumably respond to these assertions in his rebuttal testimony. In my opinion, however, Mr. Hendricks' arguments in support of this issue are persuasive. Further, I consider Mr. Tucek's arguments regarding this issue to detract from, rather than support, his position. Simply put, Mr. Tucek admits that 4.7% of DLCs in the modeled

network serve five or fewer customers. In my opinion, this does not prove that the problem is insignificant; rather, it proves that the problem is pervasive.

I also disagree with Mr. Tucek's proposal that the DLC material and placement investment be set to zero. First, contrary to Mr. Tucek, it is my belief that the $1.23 reduction in loop cost for such a change in investment is significant. This $1.23 per loop may prove to be a crucial factor in competitors' decisions to offer service in Verizon territory. It is not a minor sum for a CLEC that is competing with an ILEC on a margin that is small to begin with. Second, as was mentioned previously, setting DLC investment to zero does not negate the impact the DLC has on fiber-copper placement. Even with a zero investment for the DLC, the DLC still exists in the modeled network and causes fiber to be placed inefficiently, driving up cost as a result. Therefore, I believe that the impact of this reduction is greater than the $1.23 stated by Mr. Tucek.

ICM is not Forward-Looking

Q. Please summarize Mr. Tucek's criticisms of your testimony concerning this issue.

A. In my direct testimony, I took issue with the demand data used by ICM to model the network. I reasoned that, since demand used in ICM is not forward-looking, the network produced by ICM is also not forward-looking. Mr. Tucek responds to this in a manner that is not, in my opinion, persuasive. Other witnesses to the case make additional arguments in support of this criticism. Mr. Tucek addresses those comments in his rebuttal and the appropriate witnesses will address concerns related to their testimony.

I disagree with the method Mr. Tucek uses to address my concern. First, Mr. Tucek criticizes my use of SLC-96's as not being forward-looking in a previous section of his testimony, but does not bring this argument forward here. Second, Mr. Tucek does not address why NGDLC placement is the most appropriate forward-looking placement of circuit equipment. These are significant claims made earlier in his rebuttal testimony, but are not reiterated in this section, for reasons best known to Mr. Tucek. If Mr. Tucek is to prove that ICM models a forward-looking network, these issues must be addressed.

III. Criticism of my Direct Testimony

Q. Please summarize Mr. Tucek's specific criticisms of your direct testimony.

A. Mr. Tucek addressed two specific areas of my direct estimony on pages 33 through 36 of his rebuttal testimony. First, Mr. Tucek discusses my comments regarding the advanced data service capabilities of the modeled network. He concludes that the ICM should not be rejected because it filed cost studies using the 12 kft, 6 mbps (megabit per second) option to develop these studies. His second discussion concerns my recommendation that 2000 census data should be used to model customer locations. Mr. Tucek asserts that my recommendation is not feasible in ICM.

Q. What is your opinion regarding Mr. Tucek's discussion concerning advanced data service capabilities?

A. Mr. Tucek makes three relatively unrelated arguments concerning advanced data services. I do not disagree with any of these three arguments in particular, but do not see how these arguments relate to the conclusions made in my direct testimony. First, Mr. Tucek clarifies some discrepancies between his testimony and the supporting documentation in

ICM. He asserts "It was never Verizon's intent to model a network that was completely equipped to provide advanced services." Tucek Rebuttal at 33. He concludes that the local loop network modeled by ICM meets its objective of not impeding advanced services, but that shelves, line cards, and other equipment is needed to provide xDSL. Missing from this discussion, however, is support for his testimony, which states that the network is capable of providing advanced services.

Mr. Tucek argues this point in response to observations I had made in my direct testimony. It was my concern that Verizon was implying that the TELRIC costs developed by ICM reflected a network that had xDSL functionality. The essence of my testimony was that one should not construe from Mr. Tucek's testimony that the increased cost of the loop could be attributed to advanced data service capabilities being added to the network; in fact, only a portion of the incremental cost of provisioning advanced data service capabilities were included (NGDLC placement and increased use of fiber in network). I do not disagree with the characterization in Mr. Tucek's Rebuttal Testimony concerning this matter.

Q. What is your opinion regarding Mr. Tucek's explanation as to why he filed cost studies consistent with 6 mbps transmission speeds?

A. I do not find Mr. Tucek's explanation to be responsive to the question of whether Verizon's decision to file cost studies consistent with the 6 mbps transmission speeds was appropriate. The only argument that Mr. Tucek makes is that Verizon chose to model its network with the capability of providing the most common form of advanced services, ADSL. Tucek Rebuttal at 34. If this is the only reason why Verizon chose to model this network, it represents a substantial deviation from TELRIC principles. After all, the Commission ordered this proceeding to develop costs for loops that will be used primarily for voice communications. Mr. Tucek does not attempt to argue why the network developed by ICM is the most appropriate means for determining TELRIC costs. Staff and Intervenors have gone to great length showing the inefficiencies of the modeled network. Mr. Tucek is not responsive to these concerns as he defends Verizon's decisions regarding network modeling.

Q. What is your response regarding Mr. Tucek's statement that ICM should not be rejected because the Company filed costs using the 12 kft, 6 mbps option?

A. I agree completely with Mr. Tucek on this issue. However, he is missing the Staff's point in recommending the rejection of ICM. I have testified that each of the three network options in ICM are not TELRIC or LRSIC compliant, and that it does not appear that there is a way in which the

model can produce TELRIC or LRSIC compliant costs. This is the reason why I recommend that the model be discarded, not that the company chose to run ICM under its most inefficient scenario for the purpose of producing cost studies.

Q. What is your opinion regarding Mr. Tucek's claim that it is infeasible to use 2000 Census data to model customer locations?

A. I believe that Mr. Tucek has provided sufficient evidence that demonstrates that my recommendation concerning 2000 Census data is not feasible. However, this evidence demonstrates yet another shortcoming of the model – specifically, that it is not adaptable to demand changes over time. This is particularly troublesome, as it implies that new, updated data cannot be integrated into the model. Therefore, the Commission is compelled to accept old data from the time of the first use of the model.

The problems with updating this data show a significant weakness of ICM, as well as other cost tools that attempt to model the entire network of a company. The model depends on this data to produce reasonable estimates of network costs, but this data is questionable in itself. Even if ICM produced a perfect, efficient model based on the demand data, if the data itself is incorrect then the product of the model is going to be

incorrect. In the computer programming industry, this is referred to as "garbage-in, garbage-out" dilemma.

I do not claim to know what an adequate remedy to this problem might be, other than to use demand sampling to estimate costs, rather than to rely on an outdated data set to model the entire network. At least with sampling and statistical methods, there is a known degree of confidence that can be controlled.

IV. Conclusion

Q. Could you please summarize your rebuttal testimony?

A. Yes. Mr. Tucek provided several arguments rebutting observations Staff has made in regard to the ICM model. In almost all of these cases, Mr. Tucek's arguments simply are not valid. Further, Verizon's witnesses in the case are unresponsive to several key points put forth by Staff and Intervenors in this proceeding. As such, my recommendation that ICM is not adequate for the purpose of developing LRSIC and TELRIC costs has not changed.

Q. Has the position of other Staff witnesses changed as a result of Verizon rebuttal testimony?

A. Staff witnesses generally found Verizon rebuttal testimony to be non-responsive and unpersuasive. As a result, the overall positions of Staff witnesses are unchanged. In fact, Staff witnesses Mark Hanson, Judith Marshall, James Zolnierek and I found additional concerns with Verizon's position in this proceeding as a result of a review of the company witnesses' rebuttal testimonies.

It was my hope, expressed in my direct testimony, that Verizon would address Staff's initial concerns regarding the ICM model, nonrecurring costs, and switched access charges during this rebuttal phase. Staff Exhibit 1.0 at 19, 20. With the exception of Staff witness Karen Buckley, none of the Staff witnesses' positions concerning these issues have changed in a significant manner. The ultimate result is that Staff witnesses cannot support the ICM model or its output as presented in this phase of the proceeding.

Q. Does this conclude your testimony?

A. Yes.