

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)	
)	
Unbundled Access to Network Elements)	WC Docket No. 04-313
)	
Review of the Section 251 Unbundling)	CC Docket No. 01-338
Obligations of Incumbent Local Exchange)	
Carriers)	

**COMMENTS OF THE
MICHIGAN-BASED CLEC COALITION**

Concise Summary

The FCC should establish precise and objective thresholds and standards for determining when CLECs are impaired in obtaining access to unbundled network elements. The recommendations of an economist with an expertise in telecommunications and public utility economics coupled with empirical cost models support the recommendations contained herein. The objective is to determine the threshold condition for each unbundled network element (UNE) which maximizes the certainty of sustainable rules while simultaneously meeting the economic and functional requirements of a vibrant telecommunications industry. Three critical areas are studied, UNE-P, EEL, and interoffice transport. This new approach for determining impairment takes into consideration the availability of wholesale sources and situations wherein the RBOC ceases to be the dominate provider in an exchange. Collectively, the proposed thresholds and standards provide a simple, yet comprehensive, framework for determining impairment.

I. The Michigan-Based CLEC Coalition

These Comments are offered by the Michigan-Based CLEC Coalition (MBCC) in response to the FCC's request for guidance in determining rules for implementing the access requirements of the 1996 Federal Telecommunications Act. The MBCC takes particular interest the FCC's solicitation of comments by small entity telecommunications providers.

The MBCC is made up of small, yet vital, entity telecommunication providers. It is comprised of nine (9) entrepreneurial Michigan-based CLECs: Specifically, ACD Telecom, Inc.,

C.L.Y.K. Inc., d/b/a Affinity Telecom, Inc., CMC Telecom, Inc., grid4 Communications, Inc., JAS Networks, Inc., Quick Communications, Inc., d/b/a Quick Connect US, Superior Technologies, Inc, d/b/a Superior Spectrum, Inc., TC3 Telecom, Inc., TelNet Worldwide, Inc.. Together and individually, we represent and provide a direct and unique factual basis as to the impact regulatory policy at the federal and state levels has on the telecommunications market and the viability of our enterprises. None of the member companies are publicly held corporations. Each must rely on obtaining capital for expansion from traditional financial lenders.

Each of the member companies of the MBCC has a unique business plan and provides a valuable service to the public. Superior Spectrum is the only CLEC headquartered in the Upper Peninsula of Michigan, which is vast and sparsely populated area. Superior Spectrum serves both residential and business customers. Affinity partners with Section 501(c)(3) organizations to provide residential service to urban areas, frequently to disadvantaged consumers. TelNet is a facilities-based provider but relies upon UNE-P to provide service to more remote locations where it does not have facilities.

II. A New Approach and a New Definition of Impairment

As thoroughly discussed by Dr. Gary Wolfram in the attached white paper (“Appendix A”), “uncertainty” is the enemy of competition. Uncertainty undermines the roots of emergent competition and prevents its growth. From an economic perspective, it is essential that the FCC establish definite, objective rules that provide precise information to competing carriers, end users, and financiers. All participants need a fair ability to plan and strive for objectives and outcomes.

From a legal perspective, the FCC’s attempts to define impairment have been found deficient in large part because of their lack of precision. The FCC’s first attempt was found to be too broad. The Supreme Court found that the definition of impairment must “apply *some* limiting

language.” *AT&T Corp v Iowa Utilites Board*, 525 U.S. 366, 388 (1999) (“*AT&T*”).

The FCC’s second attempt to define impairment was found lacking because the resulting broad unbundling requirements would apply “in every geographic market and customer class without regard to the state of competitive impairment in any particular market.” *United States Telecom Association v FCC*, 290 F. 3d 415, (D.C. Cir. 2002) (“*USTA I*”).

While the D.C. Circuit Court has not reversed the FCC’s third attempt to define impairment, set forth in the *TRO*, the Court has questioned whether it is too “vague” and “too open-ended.” *United States Telecom Association v FCC*, 359 F. 3d 554, 572 (D.C. Cir. 2002) (“*USTA II*”). The Court stated:

“We note that in at least one important respect the Commission’s definition of impairment is vague almost to the point of being empty. The touchstone of the Commission’s impairment analysis is whether the enumerated operational and entry barriers ‘make entry into a market uneconomic.’ Order, ¶ 80. Uneconomic by whom? By any CLEC, no matter how efficient? By an ‘average’ or ‘representative’ CLEC? By the most ‘efficient’ CLEC? By a hypothetical CLEC that used ‘the most efficient telecommunications technology currently available,’ the standard that is built into TELRIC.

“We need not resolve the significance of this uncertainty, but we highlight it because we suspect that the issue of whether the standard is too open-ended is likely to arise again.”

MBCC proposes that the FCC establish a precise and objective definition of impairment that would satisfy legal concerns about vagueness and at the same time rid the industry of the economic anathema of uncertainty. Specifically, the MBCC proposes that the FCC define impairment by establishing a series of objective threshold standards. MBCC’s proposed objective threshold standards would overcome the deficiencies found to have existed in the FCC’s previous generalized definitions of impairment.

MBCC’s proposed standards would impose precise and definite limitations on when CLECs would be entitled to purchase UNEs from ILECs, thus satisfying the concern expressed by the U.S.

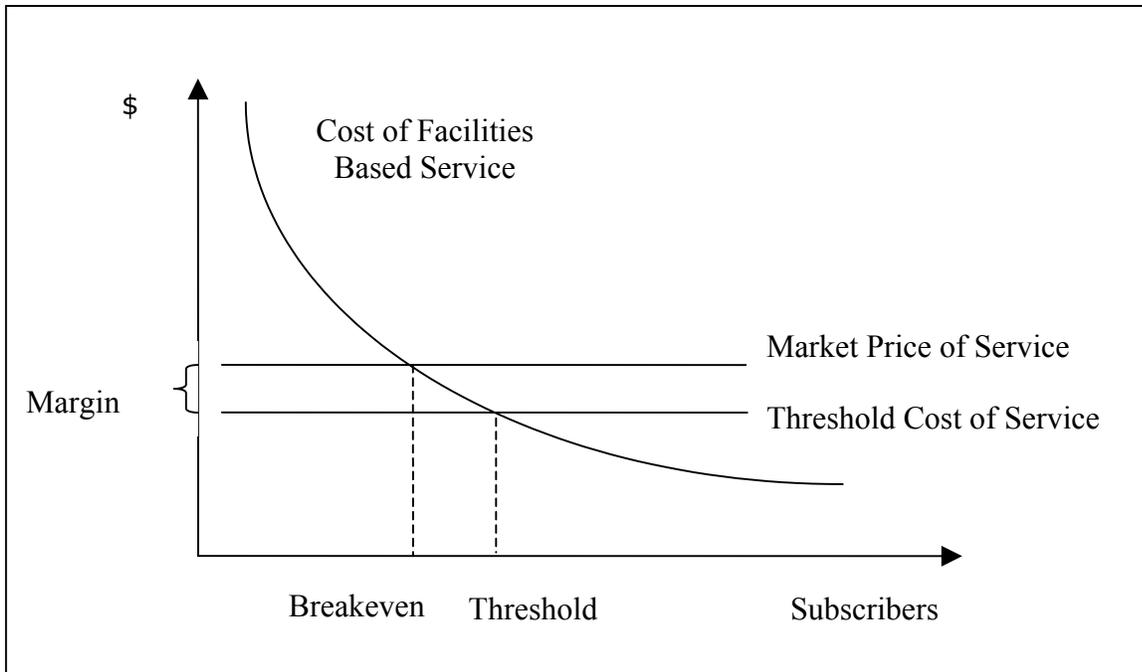
Supreme Court in *AT&T*.

MBCC's proposed threshold standards would satisfy the concern expressed by the D.C. Circuit Court in *USTA I* because CLECs would not be entitled to obtain prescribed UNEs in every geographic market without regard to the state of competition in each particular market. Rather, MBCC's proposed objective threshold standards would be applied to assess the particular state of competition in each geographic market. By using the threshold standards, the determination of whether impairment would vary element by element, market by market, and be precisely and objectively related to the conditions in each and every market.

MBCC's proposed threshold standards would satisfy the concerns expressed by the D.C. Circuit in *USTA II*. By no means are MBCC's proposed threshold standards vague or open-ended.

III. Specifics of Threshold Rules

The MBCC proposes that for each network element, the FCC establish the number of lines that makes it economically efficient for a competitor to deploy its own element. The MBCC offers recommendations that are based upon actual cost data as presented in Appendices B, C, D and E. The concept proposed herein can be graphically depicted as follows:



A. Facility Thresholds:

Our specific suggestions are that the CLECs should be deemed capable of installing and maintaining their own facilities when it meets the following thresholds:

- (a) Local switching: A CLEC should not have access to an ILEC's switches when its line density in any LATA exceeds the number of 10,000 combined residential and business voice-only lines (DS0 equivalents). The data supporting this proposed threshold level is set forth in Appendix B.
- (b) Rural exchanges: The provision of switching in any rural exchange should presumed to be impaired and CLECs should be entitled to purchase switching from the ILEC to service rural exchanges. Whether an exchange is rural should be determined in accordance the definition of "rural area" set forth in 47 CFR 54.5. Such rural exchanges seldom possess the customer density necessary to support competition.

Lines provided to such rural exchanges should not be counted in determining whether a CLEC has sufficient customer DS0 limits to support switching.

- (c) Collocation Facilities: A CLEC should be deemed capable of building, sharing or otherwise acquiring collocation facilities in any wire center in any LATA when its number of residential and business voice-only lines reaches a qualifying count of 500 in any wire center. When that threshold is met, the CLEC should no longer have access to the ILEC's UNE-P or EEL network element in such qualifying wire center. The data supporting this proposed threshold level is set forth in Appendix B.

B. Wholesale Thresholds:

Realizing that there may be other sources of access to UNE when there are more than one local exchange carrier in a LATA, we propose that there also be a threshold based on existing alternatives to ILEC facilities.

- (d) ILEC provisioning of EEL circuits or UNE-P should not be required if there exist 2 wholesale providers (other than the ILEC) providing the same functionality within any given wire center in a LATA.
- (e) ILEC provisioning of Interoffice Transport, should not be required if there exists 2 wholesale providers (other than the ILEC) providing the same functionality between any 2 wire centers.

C. Dominant Provider Threshold:

In addition, once an ILEC ceases to be a dominant provider in a central office, then lack of access to the ILECs network will not be considered an impairment, or barrier to entry. Our suggestion is that:

- (f) If the lines operated by all CLECs, by any means, exceeds 40% of the deployed voice-only lines (DS0 equivalents) in a given wire center, ILEC provisioning of UNE-P and EEL elements should not be required¹.

To further the robustness of the methodology presented here, Appendices F, F and H depict the logical flow and interdependency of the threshold tests.

D. UNE-L Threshold – Special attention to UNE-L

The economic prospect to recreate the loops to the individual customer's premise is negligible. Thus we propose that the FCC indicate:

- (g) CLECs should have access to UNE-L without restraint or prejudice. In particular:
 - (i) Access to the full functionality of existing metallic, fiber and hybrid loops migrated to competitive switching or other facilities.
 - (ii) The incumbent LEC should permit CLECs to provide voice service using the same line used by the ILEC to provide DSL services and should not discriminate in the terms and conditions on which DSL services are provided to customers of CLEC voice services.

¹A competitive market share threshold of 40% is supported by the FCC's determination in 1995 that AT&T was no longer a dominant IXC after AT&T's market share declined below 60% of the long distance market. See *IN THE MATTER OF MOTION OF AT & T CORP. TO BE RECLASSIFIED AS A NON-DOMINANT CARRIER*, FCC Docket No. 95-427, 11 FCC Rcd 3271, Rel'd October 23, 1995, ¶¶ 40 and 67. While the FCC in reaching its conclusion also took into factors other than market share (such as supply elasticity, demand elasticity and AT&T's size, cost structure and resources), if these other factors were taken into account here, a higher competitive market share threshold would be supported. For example in the AT&T case, the FCC gave weight to the fact that there were two other "full-fledged facilities-based competitors" (MCI and Sprint) operating in the market place. *Id.*, ¶ 70. Clearly, full-fledged facilities-based competition does not currently exist in the local exchange market to nearly the same extent as it existed in the long distance market in 1995. Thus, MBCC's 40% competitive market share threshold is conservative.

- (iii) There should be no prohibitions or limitations on the use of alternative technologies or facilities, whether they are standalone incumbent LEC loops or non-incumbent LEC facilities.
- (iv) Line-sharing should be allowed with the proviso that the cost for the loops is to be shared equally between the voice and data service providers.

E. Override Option for ILECs

- (h) Notwithstanding any of the above recommended thresholds or standards, ILECs should be permitted to file evidence with state commissions, demonstrating that particular CLEC are not impaired if the ILEC does not furnish the CLEC with particular UNEs. State commission's should entertain such evidence, make recommended findings and transmit such cases to the FCC for final determination. Such an override option would allow ILECs to obtain relief in any situation where the thresholds are not an effective means to determine impairment in a particular situation.

F. Transitions Thresholds Details:

- Once a threshold condition is reached, affected CLECs would have 12 months to transition from the UNE model prescribed by the Act to alternative methods.
- If a threshold condition ceases to be met for 12 consecutive months, then the UNE model prescribed by the Act will be reinstated.
- Auditing/Reporting requirement. The line-threshold trigger mechanism naturally requires the ILEC to periodically file data on line counts in each end office that qualifies for impairment analysis and place it on the web for CLEC access. This

allows CLECs and other ILECs to know when a trigger is being approached and make plans for the purchase, placement, and maintenance of switches and collocation devices. In order to ensure a smooth transition, the CLEC should be allowed access to the network element for a given period after the trigger is met.

- Pricing. Pricing of required UNE elements must remain cost-based (TELRIC) and the province of state commissions. Until the critical mass of a market based economy arise, price regulation is needed to provide the check-and-balance framework on requisite UNE elements.

IV. Special Rule to protect against predatory pricing

Wholesale pricing aside, gaming of the system by any dominant provider can be achieved by manipulating the retail price. To prevent this, the MBCC and the Hillsdale Policy Group (see Appendix A) also recommend that the FCC require the ILEC to allow CLECs, in any calendar month, to buy for resale any service at the lowest price charged to an ILEC customer. While this would require the ILECs to post with the FCC or state commissions its lowest rates charged to customers, MBCC believes such a requirement is well within the statutory authority of the FCC.² MBCC also believes that such a pricing scheme would meet the “just and reasonable standard” of the statute.

This posting requirement should include “special offers” of any kind, as a voice-grade analog line is a voice-grade analog line, whether it is POTS, Centrex, or one used for DSL service. If the ILEC bundles several services into one price, the bundle should be made equally available for resale to any CLEC. There should be no distinction between regulated and unregulated services, as

²We suggest a reading of the State of Maine Public Utilities Commission recent decision, Verizon-Maine, Docket Number 2002-682, September 3, 2004, for further discussion of this issue

all are bundled with dial tone, the essential voice service. The RBOCs currently offer a never-ending succession of promotional offers. See for example, Attachments A and B to Appendix A. In doing such, they have perverted the meaning of resale tariffs. Today, the RBOCs tariffs are a poor baseline for resale pricing. The redefinition of resale baseline pricing to the rate that is charged to the lowest price for retail customers, or at slightly below that rate, would provide a just and reasonable way for CLECs to enter the market. Moreover, it would require less government regulation than the current method of TELRIC pricing, and thus further meet the intention of Congress.

V. Questions About the Proposal

Presented below are responses to some obvious questions that might be raised concerning the MBCC's proposal:

- Would the MBCC's proposed thresholds withstand Federal Court scrutiny?

Yes. Generally speaking, a major criticism of the Federal Court has been that the FCC's definitions of impairment have suffered from vagueness. Adoption of the Michigan-Based CLEC Coalition's proposal would set clear, definite, objective standards.

- Are the MBCC's proposed thresholds consistent with the FCC's most recent definition of impairment?

Yes. The FCC's most recent definition of impairment focused on the concept of "barriers to entry." The MBCC's proposed thresholds would clearly and objectively define when such barriers to entry are overcome - without discrimination.

- Do MBCC's proposed thresholds address Chairman Powell's concern regarding the need to transition towards facility-based competition?

Yes. The proposed thresholds provide criteria that objectively define last point at which CLECs would be able to lease facilities from ILECs.

- Would MBCC's proposed thresholds advance the goals of the Federal Act?

Yes. The greatest impairment that CLECs face is uncertainty. By setting clear, objective standards, CLECs could devise rational business models, obtain capital, avoid incessant litigation, and contribute toward the advancement of a sophisticated, high quality telecommunications infrastructure to the betterment of our society.

VI. Conclusion

The concepts, facts, and solutions presented here are directed to inure the fountainhead of the FTA, the betterment of telecommunications services for the American consumer through a competitive landscape of every shape and size.

The Michigan-Based CLEC Coalition asserts that the FTA provides us with clear rights:

- 1) The right to interconnect facilities and equipment with the ILEC's network. Section 251(c)(2).
- 2) The right to interconnection that is in quality to the services that the ILEC provides to itself and its affiliates. Section 251(c)(2)(C).
- 3) The right to interconnect on rates, terms, and conditions that are just and reasonable and nondiscriminatory. Section 251(c)(2)(D)
- 4) The right to nondiscriminatory access to network elements on an unbundled basis at any technically feasible point that are essential to enable requesting CLECs to provide the services they seek to offer. Section 251(c)(3) and Section 251(d)(2)(B).

- 5) The right to preservation of state law that is consistent with the Federal Act and does not substantially prevent implementation of the purposes of the Act. Section 251(d)(3).

It is to these rights which member companies of MPCC, and other similarly situated CLECs throughout the nation, have relied upon good faith. We urge the FCC to execute its duties in upholding these rights and to the beneficiaries we both serve – the American consumer.

All CLECs are important. Small to mid size carriers and businesses like MBCC have a vital role in the fabric of the American economy. It is this segment that is the incubator of new jobs and the crucible of innovation. These entities face unique challenges and deserve vehicles and unfettered avenues to propagate their benefits.

Small businesses are growth generators. Small CLECs are innovators and are able to quickly devise specific solutions to specific customers needs. Having numerous small CLECs enable numerous unique problems to be solved simultaneously. Each CLEC can fill a specific need and niche. A gigantic telecommunications provider, of any modality, cannot respond as quickly as small providers or simultaneously offer numerous solutions to numerous unique problems. Gigantic telecommunications providers are factories, dependent on established systems to provide cookie cutter responses to problems. Their nature is not to be innovators

The concept of thresholds presented here is omnipotent in that it exemplifies basic economic decision making process that takes place in every business. It does not discriminate, it is within the province of the Act and FCC, will withstand the scrutiny of the courts, and provides a structured and sensible migration to alternative sources of requisite elements. We call upon the FCC to take full measure of the solutions offered here and integrate them within forthcoming rulemaking.

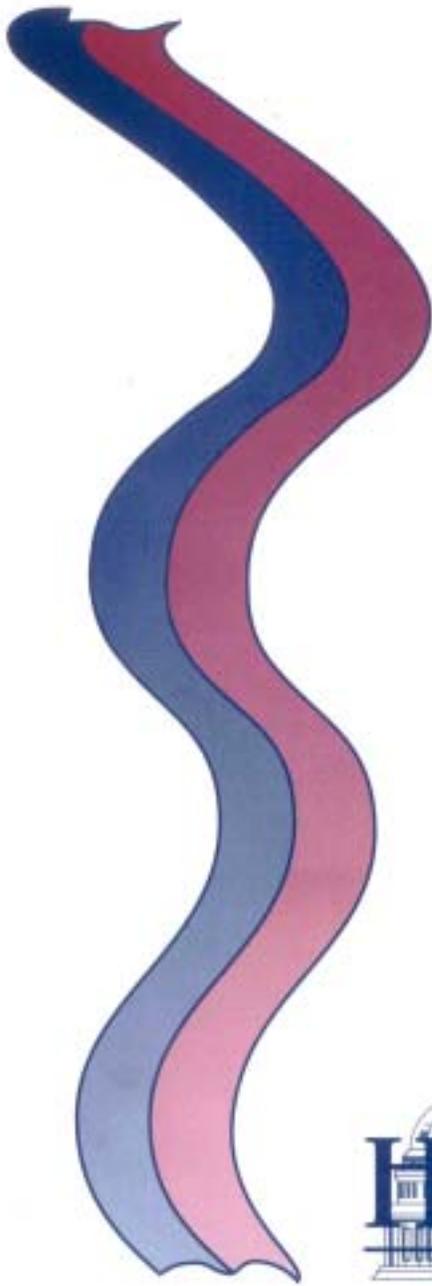
MICHIGAN-BASED CLEC COALITION

Dated: October 4, 2004

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APPENDIX A



**Setting Precise, Objective Standards to Remove Uncertainty from the
Telecommunications Local Marketplace;
A New Approach to Defining Impairment**

**Gary Wolfram, Ph.D.
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October 1, 2004

I. Overview of Implementation of the 1996 Telecommunications Act

When Congress enacted the 1996 Telecommunications Act (the “Act”), its purpose was to create a competitive market in all avenues of telecommunications, including local service. The preamble to the Act states¹:

“[a]n Act [t]o promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies.”

Congress recognized the economic and physical barriers to entry that exist in local service, and in Section 251 (and 271) of the Act, required Incumbent Local Exchange Carriers (“ILECs”) to provide access to the network. Without this access, it would be impossible for a competitive industry to develop.

A major difficulty in implementing the intent of Congress has been uncertainties created by constant litigation of FCC rules and strong-arm strategies and tactics of the dominate carriers. The Hillsdale Policy Group (“HPG”) recommends the establishment of a precise, objective set of rules that meets the intent and letter of the Act, provides for entrance into the local market, creates an incentive for the creation of new and improved infrastructure where this is economically efficient, and establishes a certainty to the market that will allow new entrants to obtain the funds and market share necessary for expansion of the infrastructure.

II. Special Nature of Telecommunications

Telecommunications is an industry that is faced with an infrastructure bottleneck, high fixed costs, and low marginal costs. A limited number of other industries, such as railroads and electricity, have similar problems, where control over the infrastructure bottleneck creates the ability to monopolize the industry. One of the first places that this type of problem was discussed in the United States was in *Terminal Railroad Association*

¹Preamble, Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996).

v. *U.S.* (1912), involving the railroad industry. A group of companies obtained monopoly control over a bridge and rail lines into St. Louis and excluded competitors from using this portion of the railroad infrastructure. The Supreme Court found that control over this key part of the infrastructure created a monopoly and was in violation of the Sherman Antitrust Act.

The telecommunications industry is similar in that there is a bottleneck, the physical infrastructure, where the company that controls the infrastructure controls access to customers. Whichever company controls the loops, switches, transmission lines, etc., can create a monopoly over the local, long distance, and Internet service.²

Although telecommunications was a competitive industry in its early years, as evidenced by the fact that in 1910 there were more competitive lines than Bell telephone lines, entry into the telecommunications industry was made impossible early in the process by government regulation.³ Telephony became a government-regulated protected monopoly and new entry was no longer feasible.

Then, in 1963, MCI filed for the right to provide microwave communications between St. Louis and Chicago. A series of events led to a filing in 1974 by the Department of Justice (“DOJ”) of an antitrust suit against AT&T. The observation was that AT&T used its bottleneck of the local phone networks to favor its long distance operations relative to that of its competitors. A consent decree was announced in 1982, which led to disconnecting the bottleneck-owner from the retail service provider in the case of long distance services. In 1984 AT&T gave up its ownership of the infrastructure to the newly created Regional Bell Operating Companies (“RBOCs”), and was allowed to enter **all** markets. However, the RBOCs regrettably controlled both the infrastructure and the right to retail local service, seeding the incentives to limit availability versus expanding it.

Long distance service rather quickly became a competitive industry. Prices for long distance fell dramatically. According to the FCC’s 2004 *Reference Book of Rates, Price Indices, and Household Expenditures for Telephone Service*, the average revenue per minute of long distance service, combining residential and business service, fell by 53% from 1992 to 2002, and the trend is for further declines.⁴

On the other hand, local phone service remained a monopoly because the companies that retained control of the infrastructure retained the ability to retail local phone service.

²For further discussion of the economics and regulation of industries where essential elements create a bottleneck, see Jean-Jacques Laffont and Jean Tirole, *Competition in Telecommunications* (Cambridge: MIT Press, 2000).

³For an interesting history of the early years of the telecommunications industry see John Brooks, *Telephone: The First Hundred Years* (New York: Harper and Row, 1976).

⁴Federal Communications Commission, *Reference Book of Rates, Price Indices, and Household Expenditures for Telephone Service*, 2004, Table 1.15.

Average monthly residential rates for local service rose by 22% over that same period, with local rates rising another 2.8% in 2003.⁵ Furthermore, the RBOCs merged, reducing the number of local service monopoly companies from the original seven down to four.

A reason for this differential experience between the long distance and local service experience is that there is no economic incentive for a company that retails local phone service to allow access to the infrastructure, and thus access to its customers, to a competitor. The DOJ's arguments concerning AT&T's dominance in the long distance market prior to the consent decree is true today of the RBOCs in the local service market.

III. Required Access to Infrastructure

Congress recognized this fundamental economic incentive, and under the 1996 Act required the RBOCs and other incumbent local exchange carriers ("ILECs") to allow access to their infrastructure. Section 251 stated that the **ILECs** have a duty to:

. . . provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory in accordance with the terms and conditions of the **agreement** and the requirements of this section and section 252.⁶

This section is a clear and unambiguous directive to the ILECs to provide competitors with the ability to reach customers. In section 10 of the TRO, the FCC acknowledged that Section 251 (d)(2) of the Act provides that:

[I]n determining what network elements should be made available for purposes of subsection (C)(3), the Commission shall consider, at a minimum, whether – (A) access to such network elements as are **proprietary** in nature is necessary; and (B) the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.⁷

IV. Impairment

The FCC has struggled with establishing rules that can accomplish what Congress anticipated when it conceived of a competitive market in telecommunications. The Act contemplated three methods for new entrants, competitive local exchange carriers

⁵Ibid., Table 1.2.

⁶47 U.S.C. § 251(c)(3).

⁷*Id.* § 251(d)(2).

("CLECs"), to enter the local exchange market: (1) by building their own complete networks, such as a cable TV system for dual use, (2) by building various facilities and using elements of the ILEC's network for the ones the new entrants lacked themselves, and (3) by reselling the ILEC's services. The vision was that eventually the RBOCs and other incumbent providers would be faced with a wide array of competitors, including "facilities-based" competitors, that is competitors that used a network completely independent upon the RBOCs, at least down to the loop to the end user's premises, also known as "the last mile," as well as resale providers.

The difficulty lies in establishing a procedure by which nascent firms could eventually develop their own networks, while at the same time not allowing large competitive firms to simply make use of the RBOC's network with no intention of ever developing any part of the platform when economically feasible. The analytically and empirically defined study of impairment is key to solving this problem. A CLEC would need to have access to individual elements of the ILEC's network if lack of access to that element *impaired* or created a barrier that prevented the CLEC from entering and sustaining itself the industry.

Since the inception of the Act, CLECs in general, and small CLECs in particular, have been confronted with the Herculean obstacles of the incumbent LECs and a maddeningly shifting regulatory landscape. Yet despite these added challenges, the CLEC business has been able to take root creating choice, value, and increased quality for thousands of consumers in Michigan. These customers will not be fairly served by rules that will eliminate the existing competition or preclude new entrants. For the concept of impairment as a barrier to entry is truly within the theory and practice of the Act, and a changing definition of impairment by itself creates such uncertainty that it in itself is a barrier to entry.

The business plans of the CLECs are unique and diverse - the beauty of our free market system. Each CLEC services its clients within the framework granted and prescribed by the Act. In executing any business plan, access to natural, financial, and human resources is vital. In wireline telecommunications, the need for unimpaired (financially and operationally) access to the infrastructure is of particular importance.

V. Important Concepts in Developing Rules – the Need to Eliminate Uncertainty

It is not in the economic interest of ILECs to allow CLECs to access the infrastructure. Moreover, it is understood that a showing of non-impairment can foreclose access to the infrastructure of the ILECs. Presented below are concepts and strategies for migration rulemaking that embrace the pragmatics of market economics and the legal precepts of the Act.

Any rulemaking must be cognizant of what might be called the first law of telecommunications, where telecommunications is defined as communication at a distance. Telecommunications requires a set of interdependent elements including links (e.g. loops), nodes (e.g. switches), protocols (e.g. SS7), and applications (e.g. dial tone/voice service). Lack of access to any one of these requisite elements by rule,

operation, or cost, renders access to the rest of the system useless. A corollary to this rule is that any one of the requisite telecommunications elements by itself is useless.

A second major point is that the telecommunications market is interdependent. Market opportunity is predicated on a requisite confluence of services across geographically dispersed locations. These two points will alert the rule-maker that that the system can be easily booby-trapped. This leads to the following considerations:

- The whole system will fail if any one UNE is prematurely declared unimpaired.
- Incentives to investment in elements (e.g. switches) without assurance of access to remaining requisite elements (e.g. loops) results in stranded investment.
- Creating uncertainty in the availability of access to the range of necessary elements forecloses markets and access to the capital necessary to become facilities-based, which is the only way to escape the difficulties associated with a rival having the ability to disrupt service to one's customers.

As the dominant rival and vendor for requisite elements, the ILECs understand these concepts very well. Declare UNE-Switching unimpaired and UNE-P is eliminated. Competitors must exit the market due to excessive monetary barriers to entry. Eliminate inter-office transport and those providers who invested in switching now are faced with stranded equipment and possibly stranded collocated sites. Fail to understand that telecommunications is communications at a distance, and a truncated market results. The uncertainty of access to UNE-P or individual elements is in direct conflict with the construction of infrastructure, competitive offerings, and investment of which was supposed to be the bedrock purpose of the Act.

Congress in recognizing this created specific rights for the future competitors to the ILECs and placed them in Section 251. The FCC has the duty to insure that the rival/vendor conundrum of the incumbent LEC is not used as ruse to establish an unregulated monopoly and effectively make useless the property and investment made by CLECs and the consumers they serve.

Another major advantage of ILECs is the ability to create uncertainty in the market. Uncertainty will make it difficult for competitors to obtain the financing and market share essential to provide their own elements of the infrastructure. Lenders dislike uncertainty. If ABC Telecom wants to provide its own switch, ABC Company must be able to demonstrate to lenders that it has sufficient customer revenues to justify the investment. Lenders also know that in addition to the switch, ABC Company needs use of the ILEC's loops, transmission lines, and other network elements. If the ILEC can create uncertainty about the ability of ABC to maintain its access to the other network elements, it raises the risk of lending to ABC. At a minimum, such uncertainty would raise the cost of financing for ABC Company, and could easily keep lenders from lending at any rate.

This tenuous ability of CLECs to raise capital demonstrates that ILECs have an enormous incentive to create uncertainty regarding the use of their network elements. ILECs have a record of following this incentive. Immediately following the implementation of rules,

ILECs litigated and in the case of *Iowa Utils. Bd. V. FCC*, the 8th Circuit Court reversed some parts of the FCC order.⁸ In 1999 the U.S. Supreme Court vacated the specific unbundling rules.⁹

The FCC responded in November of 1999 with the *UNE Remand Order*. In *United States Telecom. Ass'n. v FCC*, the Circuit Court remanded parts of this Order.¹⁰ In December 2001, the FCC released its Triennial Review NPRM. In March of 2004, the D.C. Circuit Court again remanded unbundling rules.¹¹

At this point, we are eight years into the Act and there only exist interim rules, which are themselves being currently challenged by the ILECs. It does not take a Ph.D. economist to realize that it is in the economic interest of ILECs to challenge every rule established by the FCC. Even if the challenges do not prove successful, the very existence of the challenges, along with the history of the courts, creates uncertainty and reduces the ability of competitors to obtain the necessary financing to compete effectively.

VI. Why Section 271 Has Not Been Effective

Section 271 of the Act provided what may be thought of as a carrot to the ILECs, by allowing them to enter the long distance market once they had satisfied certain Section 271 requirements. These requirements were meant to establish full access to incumbent infrastructure by competitors.¹²

Section 271 was not very effective in establishing competition in local service for a fairly obvious economic reason. By the time Section 271 proceedings were being conducted, long distance service was a competitive industry and did not provide greater than normal profits. The advantage in being able to retail long distance lies in being able to bundle long distance, local and internet services. SBC recognized this and said so much in its 1999 annual report:

Being the incumbent provider is a huge advantage in a marketplace where customers increasingly look to one company to provide all of their communications service.¹³

⁸120 F.3d 753 (8th Cir. 1997).

⁹*AT&T Corp v. Iowa Utils. Bd.*, 525 U.S. 366 (1999).

¹⁰290 F.3d. 415 (D.C. Cir. 2002) (*USTA I*)

¹¹*USTA II*, 359 F.3d at 564-76.

¹²47 U.S.C. § 271.

¹³*SBC 1999 Annual Report*, pg. 2.

The only companies capable of bundling are the ILECs, as they alone can monopolize the bottleneck of access to the customer. The economic incentive, then, is for the ILECs to satisfy the Section 271 requirements in such a way that they gain entrance into long distance without actually providing access to competitors, and to "backslide" on the requirements once Section 271 benefits were awarded them. In other words, the ILECs have an enormous economic incentive to keep local competition to a minimum, gain entrance into the long distance market, and re-monopolize the chain of telecommunications, only this time without government regulation.

This is exactly the point that Adam Smith made in *An Inquiry into the Nature and Causes of the Wealth of Nations* in two of his famous phrases:

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.¹⁴

It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest.¹⁵

These can be summarized as "incentives matter." We cannot expect the ILECs to behave in a manner that is in contradiction to the economic incentives of the system. Thus, the only way to truly establish competition in telecommunications, and presumably this is what Congress' desired, is to require access to the infrastructure in a way that truly allows competitors the ability to enter the market. The Section 251 requirements are there to affect this end.

VII. The Logic of Transition to Competitive Markets

The infrastructure for telecommunications has the quality that each component part has a high fixed cost and a low marginal cost. This means that each stage of the infrastructure requires a critical mass of customers to make it profitable and economically efficient to deploy that portion of the infrastructure. In the jargon of the industry, each unbundled network element requires a certain number of customers in order for it to be economically efficient to deploy it. For example, a carrier must have enough customers to generate a certain amount of revenue, before the carrier can recover the costs of deploying a switch to serve a LATA or before the carrier can recover the costs of collocating in an end office.

The ILECs were given an enormous advantage by being made the monopoly provider of phone service for decades. This means they have an established large customer base and have control of the current infrastructure. How can a competitor enter the marketplace if

¹⁴Adam Smith, *The Nature and Causes of the Wealth of Nations* (Indianapolis: Liberty Fund, 1981, (1776)), pg. 145.

¹⁵*Ibid.*, pp. 26-27.

it must provide its own network elements, since, at the inception of competition, the ILEC has all the customers and the competitor does not have a critical mass of customers from which to recover the cost of deploying facilities and equipment? The most feasible way for competition to come into existence in a market such as telecommunications is for competitors to be given access to the entire network to begin with, and only be required to provide network elements as the competitor reaches the critical number of customers needed to efficiently compete with the ILEC using that network element.

VIII. Principles for Developing Transition to Competitive Market

HPG believes the following serves as the basic principles for making the transition from government-regulated monopoly to competitive markets:

- (1) Congress intended to require ILECs to provide access to the entire network platform for new entrants, as this is the only way that any firm can enter the market.
- (2) Access to the network must be at a rate that makes it possible for an economically efficient entrant to make use of the network, that is, access to UNE-P at \$28 per line when the ILEC is retailing service for \$7.95 per line is not true access.
- (3) Congress wished to reduce the amount of government regulation in the market, and thus a simple, straightforward method of determining when the network element is no longer available to the CLECs is desirable.
- (4) Certainty in the marketplace is necessary for competitors to obtain financing to be able to construct those network elements that are economically efficient.
- (5) A rule that satisfies these conditions is to establish precise, objective economic standards that would trigger release of the ILEC from its responsibility to provide each network element.

It is not economically feasible for a new company to construct all the elements of the telecommunications infrastructure before it can begin to compete with an ILEC. However, as the company becomes established and develops a customer base, it at some point becomes feasible to provide its own elements.

CLECs have every incentive to seek to own and control the infrastructure that they are using to supply service and no longer have to rely on a rival for providing and servicing the element. Imagine if a company sold cars and had to rely on a competitor to provide the engine for the cars. The competitor would have every economic incentive to produce poor quality engines for the company's cars in order to get the company's customers to switch to his cars. It should be obvious that the company would have every incentive to produce its own engines once it becomes economically feasible to do so. The same condition holds for CLECs.

IX. Specifics of Transition Rules

HPG suggests the FCC redefine the concept of impairment by, for each network element, determining and establishing precise, objective standards of the point at which it would be economically efficient for a competitor to deploy its own element.

The concept of setting threshold standards exemplifies and mimics the basic economic decision making that takes place in every business, does not discriminate, is within the province of the Act and the FCC, and provides a structured and sensible migration to alternative sources of requisite elements.

The following threshold standards should be set:

- (a) Local switching: A CLEC should no longer be considered to be impaired in the provision of local switching in a LATA and should not have access to an ILEC's switches when the CLEC's line density in any LATA exceeds the number of combined residential and business voice-only lines (DS0 equivalents) reasonably necessary to enable the CLEC to recover its costs of operating a switch in the LATA.
- (b) Rural exchanges: The provision of switching in any rural exchange should be presumed to be impaired and CLECs should be entitled to purchase switching from the ILEC to service rural exchanges. Whether an exchange is rural should be determined in accordance with the definition of "rural area" set forth in 47 CFR 54.5. Such rural exchanges are seldom possess the customer density necessary to support competition. Lines provided to such rural exchanges should not be counted in determining whether a CLEC has sufficient customer DS0 limits to support switching.
- (c) Collocation Facilities: CLECs should be deemed capable of building, sharing or otherwise acquiring collocation facilities in any wire center in any LATA when the number of residential and business voice-only lines reaches a level in any wire center reasonably necessary to enable the CLEC to recover its costs of operating a switch and collocation facility in the LATA.¹⁶ When that threshold is met, the CLEC should no longer have access to the ILEC's UNE-P or EEL network element in such qualifying wire center.

¹⁶In establishing the threshold test, there must be consideration of remote-end offices. For example, there are more than 200 such offices in Michigan. Remote switches are very limited in function and subtend off to regular central office switches in a spoke and hub arrangement. It is little value for a CLEC to collocate at a remote switch, as the CLEC would also have to be collocated at the host switch. Our suggestion in determining when a CLEC reaches the requisite threshold of voice lines both the host and all remotes should be taken into consideration to trigger the requirement to collocate in the host wire center. Collocation at a remote center is seldom possible to do physically.

Because there may be other sources of access to UNE when there are more than one local exchange carrier in a LATA, HPG proposes that there also be a threshold based on existing alternatives to ILEC facilities.

- (a) ILEC provisioning of EEL circuits or UNE-P should not be required if there exists 2 wholesale providers (other than the ILEC) providing the same functionality within any given Central Office in a LATA.
- (b) ILEC provisioning of Interoffice Transport should not be required if there exists 2 wholesale providers (other than the ILEC) providing the same functionality between any 2 Central Offices.

In addition, once an ILEC is no longer a dominant provider in a central office, lack of access to the ILECs network will not be considered an impairment, or barrier to entry. HPG recommends:

- (a) If the lines operated by all CLECs, by any means, exceeds 40% of the deployed voice-only lines (DS0 equivalents) in a given CO, ILEC provisioning of UNE-P and EEL elements should not be required. Should the lines operated by CLECs fall below 40%, once the threshold has been met, access to UNE-P would once again become available.

As to the loop element, it is difficult to find economic sense in recreating the loops to the individual customer's house. In addition, placing a line to a customer has other barriers, namely the need to obtain right-of-way, permission of the local government, etc, that effectively create a barrier to entry even to CLECs that are facilities based. Thus, HPG proposes that CLECs have access to UNE-Ls without prejudice. In particular:

- (a) Access to the full functionality of existing metallic, fiber and hybrid loops migrated to competitive switching or other facilities.
- (b) The incumbent LEC should permit CLECs to provide voice service using the same line used by the ILEC to provide DSL services and should not discriminate in the terms and conditions on which DSL services are provided to customers of CLEC voice services.
- (c) There should be no prohibitions or limitations on the use of alternative technologies or facilities, whether they are standalone incumbent LEC loops or non- incumbent LEC facilities.
- (d) Line-sharing should be allowed with the proviso that the cost for the loops is to be shared equally between the voice and data service providers.

Filing Requirements

The line-threshold trigger mechanism naturally requires the ILEC to periodically file data on line counts in each end office that qualifies for impairment analysis and place it on the web for CLEC access. This allows CLECs and other ILECs to know when a trigger is being approached and make plans for the purchase, placement, and maintenance of switches and collocation devices. In order to ensure a smooth transition, the CLEC should be allowed access to the network element for a given period after the trigger is met.

Pricing

Pricing of required UNE elements must remain cost-based (TELRIC) and the province of state commissions. Until the critical mass of a market-based economy arises, price regulation is needed to provide the check-and-balance framework on requisite UNE elements.

Moreover, wholesale pricing aside, gaming of the system by any dominate provider can be achieved by manipulating the retail price. To prevent this, the HPG also suggest that the FCC require the ILEC to allow CLECs, in any calendar month, to buy for resale any service at the lowest price charged to an ILEC customer. While this would require the ILECs to post with the FCC or state commissions its lowest rates charged to customers, HPG believes such a requirement is well within the statutory authority of the FCC.¹⁷ HPG also believes that such a pricing scheme would meet the “just and reasonable standard” of the statute. Nobel laureate, Friedrich Hayek, in his 1960 book, *The Constitution of Liberty*, suggested that the primary way to regulate a monopoly is to require that it provide its product to everyone at a non-discriminatory price.¹⁸

This posting requirement should include “special offers” of any kind, as a voice-grade analog line is a voice-grade analog line, whether it is POTS, Centrex, or one used for DSL service. If the ILEC bundles several services into one price, the bundle should be made equally available for resale to any CLEC. There should be no distinction between regulated and unregulated services, as all are bundled with dial tone, the essential voice service. The RBOCs currently offer a never-ending succession of promotional offers. See for example, Attachments A and B. In doing such, they have perverted the meaning of resale tariffs. Today, the RBOCs tariffs are a poor baseline for resale pricing. The redefinition of resale baseline pricing to the rate that is charged to the lowest price for retail customers, or at slightly below that rate, would provide a just and reasonable way for CLECs to enter the market. Moreover, it would require less government regulation

¹⁷We suggest a reading of the State of Maine Public Utilities Commission recent decision, Verizon-Maine, Docket Number 2002-682, September 3, 2004, for further discussion of this issue.

¹⁸F.A. Hayek, *The Constitution of Liberty* (Chicago: University of Chicago Press, Gateway Edition, 1960) pg. 136.

than the current method of TELRIC pricing, and thus further meet the intention of Congress.

This requirement to require ILECs to offer their lowest pricing to CLECs for resale should be in addition to other existing resale or UNE purchasing options that CLECs currently have.

Override option for ILECs

Notwithstanding any of the above recommended thresholds or standards, ILECs should be permitted to file evidence with state commissions, demonstrating that particular CLECs are not impaired if the ILEC does not furnish the CLEC with particular UNEs. State commissions should entertain such evidence, make recommended findings and transmit such cases to the FCC for final determination. Such an override option would allow ILECs to obtain relief in any situation where the thresholds are not an effective means to determine impairment in a particular situation.

XI. Conclusion

HPG's recommendation represents a simple, yet comprehensive solution to the problem of the FCC in implementing the wish of Congress to produce competition in local telecommunications services, providing incentives for build out of new infrastructure when it is economically efficient, and overcoming the economic incentives of the ILECs to monopolize the industry. When a competitor gains a sufficiently large number of customers, the ILEC would no longer be required to provide access to its switches, for example. The switch-producing industry would have an incentive to produce ever more efficient switches, which would then be deployed by all companies. As switches become more efficient, a lower number of customers would be required make the ownership of switches economically viable and thus to discharge the ILEC from its duty to provide access to that element. In this way the system would gradually move in an efficient manner to facilities-based competition.

If ILECs are required to sell services to CLECs, at the CLEC's option, at ILEC's lowest retail price, then attempts to re-monopolize the telecommunications industry with predatory pricing will be met with the ability of competitors to lease the UNE at a low rate, perhaps increasing the number of customers of the CLEC, and thus moving the CLEC off the ILEC's network.

HPG's suggestions meet the language and spirit of the 1996 Telecommunications Act. They are just and reasonable, and provide a limit on the duty of the ILECs to provide access to their unbundled network elements. The suggestions provide incentives to improve the quality of the infrastructure and will lead to lower prices and advances in the technology of telecommunications. They reduce the amount of government regulation necessary to effect competition in the industry. Finally, they provide certainty to a market that had been shaken with uncertainty since Congress attempted to make it competitive.

Gary Wolfram

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Dr. Wolfram received his Ph.D. in Economics from the University of California at Berkeley and has taught at the University of California at Davis, Mount Holyoke College, Washington State University, and the University of Michigan at Dearborn.

ATTACHMENT A
TO WOLFRAM WHITE PAPER

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ATTACHMENT B
TO WOLFRAM WHITE PAPER

APPENDIX B

Appendix B: Facility Based Switching Cost Model

The attached spreadsheet outlines the approximate costs associated with developing and operating a CLEC Switching CO per the real-world experience of TelNet Worldwide, Inc. These costs are rounded and are conservative, drawing from vendor bills, including UNE elements procured from SBC-MI. Every effort has been made to include only those costs directly associated with establishing a CO Switching Center and do not include any other indirect costs associated with providing the service. In this way an apples-to-apples comparison can be made with the switching costs of the RBOC. Simply put, these are the costs needed to establish a basic CLEC Switching capability in a given LATA. Presented is a narrative of these costs.

- 1) One-Time Column
 - This column contains the one-time cost to procure equipment or facility. The one-time costs are sub-totaled and then amortized, producing a “loan payment” amount in the Monthly column
- 2) Monthly Column
 - These are the monthly reoccurring fees for equipment, facilities, staff, etc.
- 3) Switch Establishment Costs. Basic research and development to deploy a switch. This includes:
 - Understanding and implementing ICA arrangements with the RBOC
 - Researching equipment manufacturers, RFI, RFQ,
 - Site selection and planning for CO
 - Researching contractors and vendors for equipment and construction
- 4) Common Elements
 - These elements generally represent fixed costs. They include computers and software to connect to the PSTN's SS7 network.
 - Databases and Software needed to manage the network and call processing
 - Basic equipment for interfacing facilities to equipment
 - Construction of a CO
 - Vendor maintenance and support
- 5) CLEC CO
 - These are marginal costs linked to the capacity of servicing a given amount of output
 - Electronics for switching is incremented by circuit boards
 - Interconnection facilities to terminate traffic to the PSTN, 911, system, etc.
- 6) Staff and Operating Expense
 - This represents incremental needs in operating a facility based switching solution
 - Switch engineers and technicians must be sufficient and competent to operate the CO 24x7x365
 - Additional costs are incurred from accounting, insurance, IT, etc.
- 7) Total Cash Outlay.
 - The One-Time Costs are summed. A CLEC requires access to approximately \$1,200,000.00 to construct and deploy a switching CO of capacity 10K DS0's

- The Monthly Costs are summed. Ac CLEC needs approximately \$102,000.000 of revenue each month to achieve break-even on gross operating expense
- 8) Cost Analysis
- Interest Rate – 6%
 - Amortization Period – 36 months
 - DS0 Capacity – Total DS0 capacity analyzed
 - Average Yield – A switch’s DS0s are consumed by subscriber lines and by trunks connecting it to the PSTN. Based upon network engineering standards for trunking, the net sellable capacity of DS0 switch ports is approximately 44% of its total capacity.
 - Average Capacity Sold over Period: This figure attempts to address the condition of how much of the available capacity of the switch is sold each month. In this model, it is suggested that 100% of the sellable capacity (10,000 DS0’s) is sold each and every month for 36 months.
 - Average Cost per DS0. This is the cost of each sellable DS0. It is computed by dividing the Total Monthly Expense (~102K) by the sellable capacity (~10K). This model supports that each sellable DS0 costs approximately \$10.07.

Facility Based Switching Cost Model
September-04

	One Time	Monthly
Switch Establishment Costs:		
R&D	\$75,000.00	
Subtotal: Sunk Costs	\$75,000.00	\$2,291.67
Monthly Rate: Sunk Costs		\$2,291.67
Common Elements		
Equipment/Software		
SS7 Software	\$178,250.00	
S77 Computers (2)	\$66,800.00	
Soft Switch Software	\$40,250.00	
Hardware Spares Kit	\$28,000.00	
Computer Servers (2)	\$17,000.00	
Database Software	\$1,000.00	
Billing Mediation Software (CDRs)	\$15,000.00	
Element Management Software	\$50,000.00	
Routers (2)	\$18,000.00	
Ethernet Switches (2)	\$2,000.00	
M13 Multiplexers (2)	\$4,000.00	

M10 Multiplexers (2)	\$4,000.00	
Test equipment and tools	\$15,000.00	
Training	\$15,000.00	
Installation	\$40,000.00	
Annual Maintenance and Support		\$15,000.00
CLEC CO Site		
Real Estate	\$30,000.00	\$1,500.00
Power (400 amps UPS)	\$26,000.00	\$1,250.00
HVAC (20Ton)	\$50,000.00	\$500.00
Generator (130KW) and Transfer Switch	\$50,000.00	\$500.00
Fire suppression (Preaction Dry Pipe)	\$12,000.00	\$200.00
Security (key pads, alarm, camera)	\$2,000.00	\$150.00
Common Facilities		
Entrance Facilities (2-T3)	\$1,434.00	\$3,510.00
A-links Facilities (2-T1)	\$1,256.00	\$2,226.00
Internet Access (1.5Mb)	\$500.00	\$300.00
Phone lines	\$40.00	\$15.00
Common Usage		
Code Administration	\$5,000.00	\$500.00
Subtotal: One-Time Common Elements Amortization	\$672,530.00	\$20,549.53
Monthly Rate: Common Elements		\$46,200.53
CLEC Central Office		
Equipment		
Switch Chassis	\$84,000.00	
Switching Controller Cards (24,192 DS0's)	\$378,000.00	
Announcements, Echo Cancellation, DSP Card (1)	\$35,000.00	
Terminal Server, Modem, PDU, etc.	\$1,500.00	
Cabling	\$200.00	
Interconnection Circuits		
Meet Point Facility, (2-DS3)	\$1,434.00	\$3,510.00
Local/Toll Trunking, (21-T1)	\$3,222.00	\$7,155.00
IXC Trunking, (3-T1)	\$540.00	\$1,095.00
911 Circuits, (4-T1)	\$992.00	\$4,268.00
OS/DA/BLV/CHOKE, (2-T1)	\$506.00	\$2,068.00
Subtotal: One-Time CLEC CO Amortization	\$505,394.00	\$15,442.59
Monthly Rate: CLEC CO		\$33,538.59
Staff and Operating Expense		
Operations	\$5,000.00	\$25,000.00

Engineering		
Insurance		
Accounting		
Technicians		
IT		
Subtotal: One-Time Staff and Operations Amortization	\$5,000.00	\$152.78
Monthly Rate: Staff and Operations		\$25,152.78
Total Cash Outlay	\$1,257,924.00	\$107,183.57
Cost Analysis		
Interest Rate	6%	
Amortization Period (months)	36	
DS0 Capacity of Network	24,192	
Average Yield	44.00%	
Average % capacity sold per month over period	100.00%	
	Units	Cost/Unit
Average Monthly Cost Per DS0: Switching	10,644	\$10.07

APPENDIX C

Appendix C: Facility Based Collocation at RBOC CO Cost Model

The attached spreadsheet outlines the approximate costs associated with collocating at an RBOC CO per the real-world experience of TelNet Worldwide, Inc. These costs are rounded and are conservative, drawing from vendor bills, including UNE elements and collocation services procured from SBC-MI. Every effort has been made to include only those costs directly associated with establishing a collocation site and transport between this site and the CLEC CO. No other indirect costs associated with providing the service is included. In this way an apples-to-apples comparison can be made with the transport costs of the RBOC. Simply put, these are the costs needed to establish a basic collocation arrangement. Presented is a narrative of these costs.

- 1) One-Time Column
 - This column contains the one-time cost to procure equipment or facility. The one-time costs are sub-totaled and then amortized, producing a “loan payment” amount in the Monthly column
- 2) Monthly Column
 - These are the monthly recurring fees for equipment, facilities, staff, etc.
- 3) Costs
 - Fixed costs are limited to (a) R&D, (b) Planning Fees, (c) optronix, and to a degree (d) installation and operations. Most of the costs are marginal in that they are directly related to the output capacity of the system.
 - This means that there is a great pricing pressure on the costs of the raw goods provided by the RBOC. As RBOC collocation pricing increases, there is a direct correlation to cost per unit.
 - Interconnection services must be purchased in specific quantities. Accordingly, there is the need to over-buy capacity. This condition is exacerbated by the planning fee “tax” that is assessed for every order.
- 4) Critical Condition
 - The critical factors for a CO are the one-time costs - ordering and installation. These fees are substantial and represent a barrier to entry, but also increase the net marginal cost.
 - Interoffice transport. This model assumes that the inter-office transport is that of an entrance facility. It should be understood by the reader that this is an optimal condition, but not a likely condition. That is, CO collocations will cover a wide range of geographic locations. The availability of cost-based interoffice facilities is paramount to a viable UNE-L deployment. In this model, unbundled dark fiber is anticipated.
- 5) Total Cash Outlay
 - The One-Time Costs are summed. A CLEC requires access to approximately \$69,000.00 to construct and deploy RBOC collocation arrangement with 1000 DS0's capacity, including the ability to interconnect this collocation with the CO of the CLEC.
 - The Monthly Costs are summed. A CLEC needs approximately \$6,600.00 of revenue each month to achieve break-even on gross operating expense.
- 6) Cost Analysis

- Interest Rate – 6%
- Amortization Period – 36 months
- DS0 Capacity – 1,000
- Average Capacity Sold over Period: This figure attempts to address the condition of how much of the available capacity of the switch is purchased each month. In this model, it is suggested that 100% of the sellable capacity (1,000 DS0's) are sold each and every month for 36 months.
- Average Cost per DS0. This is the cost of each sellable DS0. It is computed by dividing the Total Monthly Expense (~\$6.6K) by the sellable capacity (~1K). This model supports that each sellable DS0 cost is approximately \$6.65.

Facility Based Collocation at RBOC CO Cost Model

September-04

CLEC Collocation	One-Time	Monthly
R&D	\$2,500.00	
Planning Fees		
CO Planning	\$3,805.77	\$22.29
Installation	\$2,500.00	
Real Estate		
Cage 100 sq. ft.	\$1,000.00	\$1,001.28
Power		
Delivery (80 amps)	\$315.78	
DC Usage Primary (80 amps)		\$475.00
DC Usage Secondary (80 amps)		\$295.00
HVAC		\$47.35
Security		
Cards	\$86.00	
Cross-connection: ILEC to CLEC		
DS0 (500)	\$2,886.50	\$20.87
DS1 (28)	\$1,314.96	\$14.30
DS3 (4)	\$1,344.04	\$50.12
Fiber (24)	\$2,428.99	\$8.12
Timing Lead	\$989.56	
Equipment		
DSX Panels	\$1,000.00	
DLC	\$5,000.00	
Muxing	\$2,000.00	
Router and e-switch	\$4,000.00	

Optronix	\$35,000.00	
Terminal Server, Modem, PDU, etc.	\$1,500.00	
Cabling	\$200.00	
Interoffice Transport		
UNE Dark Fiber Entrance (4)	\$1,654.68	\$95.62
Operations		\$2,500.00
Engineering		
Field Technicians		
Subtotal: Amortization	\$69,526.28	\$2,124.41
Monthly Rate: CLEC Collocation		\$6,654.36
	Units	Cost/Unit
Average Monthly Cost per DS0	1000	\$6.65

APPENDIX D

Appendix D: SBC-Michigan UNE-P Costs

The attached spreadsheet outlines the approximate costs associated with SBC-MI UNE-P service, per the real-world experience of TelNet Worldwide, Inc. These costs are rounded and a conservative representation of these costs. The costs for UNE-P are based upon SBC-Michigan's current UNE tariffs. Simply put, these are the costs incurred for an average UNE-P line. Presented is a narrative of these costs.

1. Charges are group as non-recurring costs (NRC), monthly reoccurring costs (MRC), and usage costs
2. The main billable elements include
 - a. Loop
 - b. Port
 - c. Switching
 - d. Shared Transport
3. To arrive at a bottom-line total, the number of units for each relevant element is established.
4. The extended columns represent the necessary number of units of an element or fee times the cost of that element or fee
5. The bottom-line total is a simple summation of all cost groups.
6. When a new line is being established the NRC are a dominate factor in providing the service and competing.

APPENDIX E

SBC-MI Analog Line UNE-P Cost Model

September-04

Element	Description	Unit			Extended			
		Unit NRC	Unit MRC	Unit Usage	Quantity	NRC	MRC	Usage
Analog - UNE-P								
Loops - 2 Wire Analog								
NRC								
Service Order - Initial /2/ /3/	Fee to place order; does not apply to pre-existing installation or migrations	\$3.16			1	\$3.16		
Service Order - Disconnect	Fee to disconnect service; combination does not have to be un-assembled	\$1.54			1	\$1.54		
Service Order - Subsequent	Fee to change something about the service	\$3.02			0	\$0.00		
Service Coordination Fee, per CO /5/	Applies on once per UNE-P	\$0.84						
Loop Connection /2/ /3/		\$17.82			1	\$17.82		
Loop Disconnect		\$5.85			1	\$5.85		
Loop Record Work		\$1.82			1	\$1.82		
Cancellation, per last critical date reached								
Design Layout Report		\$4.03						
Records Issued		\$17.90						
Designed, Verified and Assigned		\$35.78						
Plant Test		\$45.60						
Due Date Change Charge								
Analog Loop		\$3.16						
MRC								
Metro (Zone A)			\$8.47		0	\$0.00		
Suburban (Zone B)			\$8.73		1	\$8.73		
Rural (Zone C)			\$12.54		0	\$0.00		
Cross Connect /5/								
NRC								

None								
MRC								
2-wire			\$0.27		1		\$0.27	
Ports								
NRC								
Port Connection /2/	Per Occasion	\$11.89			1	\$11.89		
Port Disconnection	Per Occasion	\$6.63			1	\$6.63		
Due Date Change: Basic Line Port		\$3.02						
Conversion from basic line to ground start	or vice versa, per change	\$11.89						
Basic Line								
Port Feature Add/Change Install	per order	N/A						
Port Feature Add/Change Disconnect	per order	N/A						
Port Vertical Features								
Call Waiting		N/A						
Call Forwarding Variable		N/A						
Call Forwarding Busy		N/A						
Call Forwarding Don't Answer		N/A						
Three-way calling		N/A						
Speed Calling -8		N/A						
Speed Calling -30		N/A						
Auto Callback/Auto Redial		N/A						
Distinctive Ring/Priority Call		N/A						
Selective Call Rejection/ Call Blocker		N/A						
Auto Recall/Call Return		N/A						
Selective Call Forwarding		N/A						
Calling Number Delivery		N/A						
Calling Name Delivery		N/A						
Calling Number/Name Blocking		N/A						
Remote Access to Call Forwarding		N/A						
Personalized Ring		N/A						
Hunting Arrangement		N/A						
MRC								
Analog			\$2.53		1	\$2.53		
Switching								
NRC								
Service Order - Install /2/	Per Order	\$3.02			1	\$3.02		
Service Order - Disconnect	Per Order	\$1.54			1	\$1.54		
Service Order - Subsequent	Per Order	\$3.18						
Service Order - Record Work	Per Occasion	\$1.86						
Cancellation or Change of Service	per last critical date reached							

Design layout report		\$3.16						
Records issued date		\$7.53						
Designed, verified, assigned		\$14.91						
Plant test		\$14.91						
ULS Usage Billing & Trunk Order	Development Charge	\$163.82						
Service coordination fee /5/	per switch		\$0.84		1		\$0.84	
Usage								
ULS	Unbundled local switching, per originating MOU			\$0.001192	2000			\$2.38
Daily Usage Feed	per message (CDR?)			\$0.000672	500			\$0.34
Shared Transport	ST, means that we are transporting our calls over the same facilities as others							
ULS-Usage for ULS-ST	per originating & terminating MOU			\$0.000522	2000			\$1.04
ULS-ST Banded Transport	per MOU			\$0.000730	2000			\$1.46
ULS-ST Common Transport	per MOU			\$0.000446	2000			\$0.89
ULS-ST Tandem Switching	per MOU			\$0.000191	2000			\$0.38
ULS-ST SS7 Signaling Transport	per message			\$0.000145	500			\$0.07
Migration Charge								
Analog Line Port /4/	per occasion	\$0.35			0			
Subtotal: 1MB							\$53.27	\$12.37
Total: Loop, Port, Usage							\$53.27	\$18.94

/1/ Rates based on MPSC Case No. U-11831, rates subject to change pursuant to appellate outcomes

/2/ Does not apply to pre-existing migrations

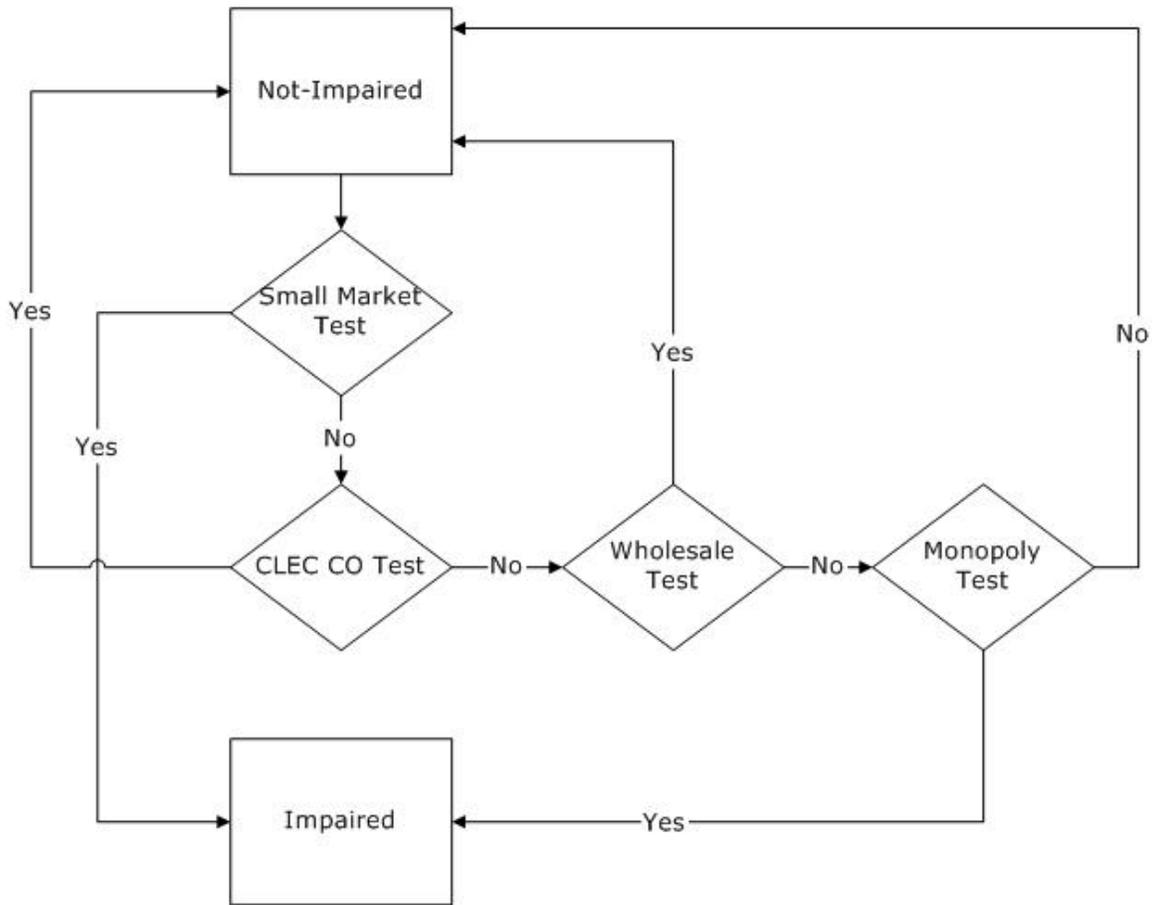
/3/ Does not apply to pre-existing installations

/4/ Only applies to pre-existing migrations

/5/ Applies only once per combination

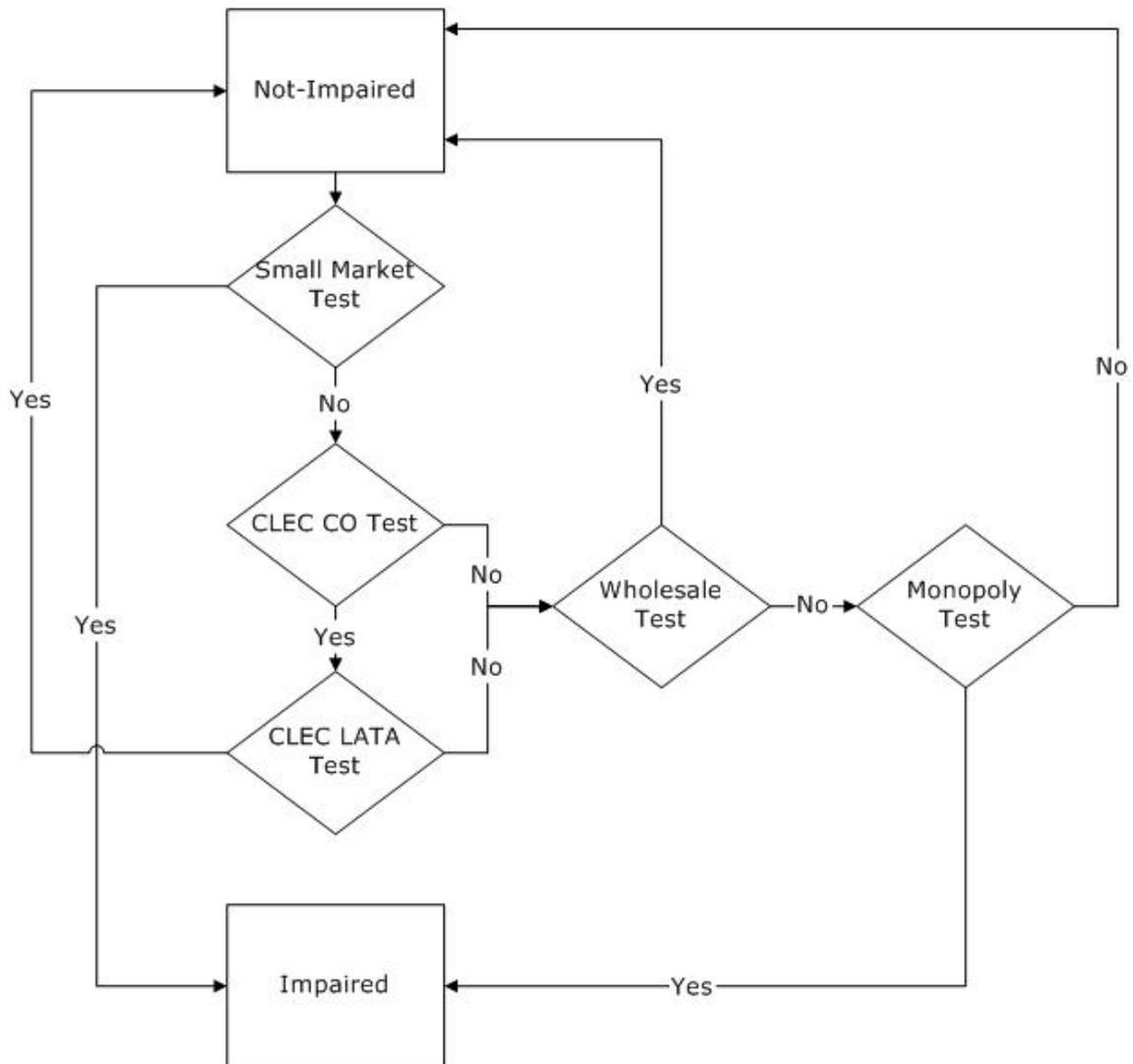
/6/ ULS-ST rates subject to true-up from MPSC Case U-12622

Shall the RBOC be Required to Provide EEL Services
at a Given CO?



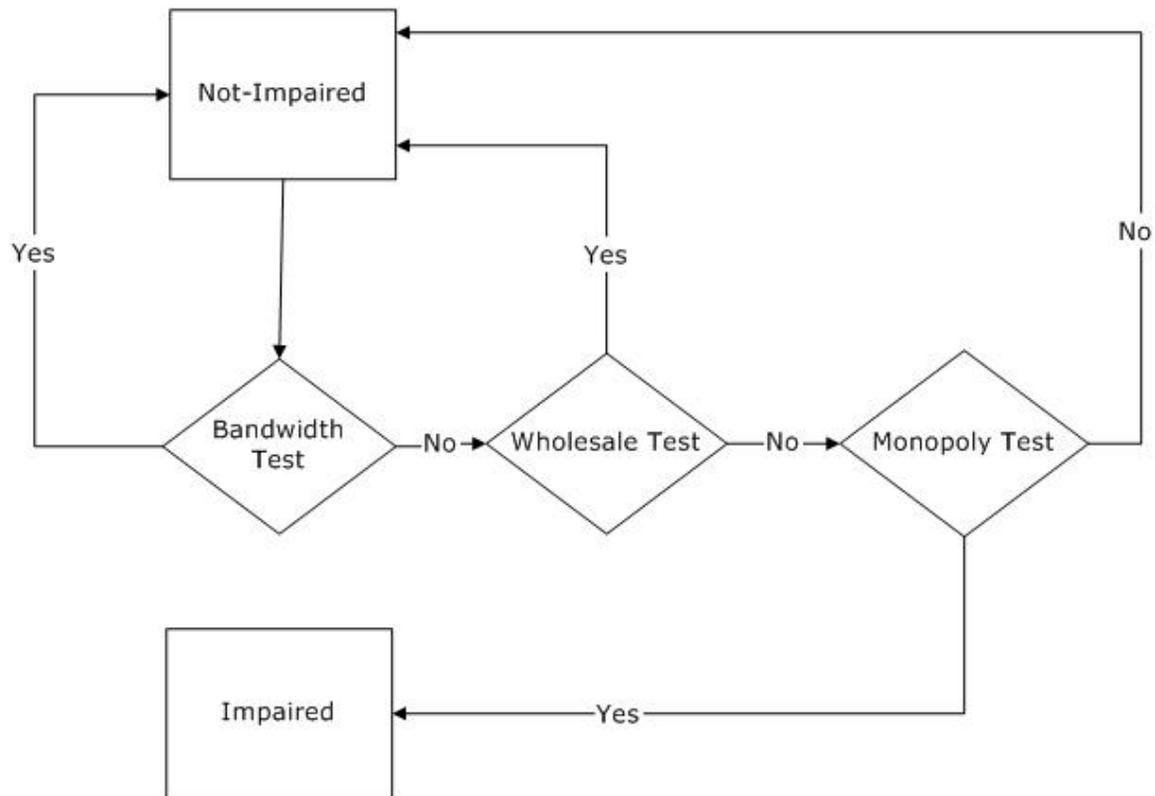
- Assumption: CLEC Colocated in at least 1 CO in a given LATA
- Small CO Test: Low Population Density or Low Number of Lines @ CO
- CO Test: Does CLEC serve more than 500 DS0's @ CO?
- Wholesale Test: Are there at least 2 wholesale alternatives providing similar service?
- Monopoly Test: Does the RBOC have more than 60% of the retail DSO's @ CO?

Shall the RBOC be Required to Provide UNE-P
Services at a Given CO?



- Assumption: CLEC may or may not have switching capability in given LATA
- Small CO Test: Low Population Density or Low Number of Lines @ CO
- CO Test: Does CLEC serve more than 500 DSO's @ CO?
- LATA Test: Does CLEC serve more than 10,000 DSO's in a given LATA?
- Wholesale Test: Are there at least 2 wholesale alternatives providing similar service?
- Monopoly Test: Does the RBOC have more than 60% of the retail DSO's @ CO?

Shall the RBOC be Required to Provide Interoffice Transport along a Given Route?



- Assumption: Route is between 2 COs in which CLEC has presents
- Bandwidth Test: Does the required transport construction breakeven over 10 year amortization?
- Wholesale Test: Are there at least 2 wholesale alternatives providing similar service along given route?
- Monopoly Test: Does the RBOC have more than 60% of the retail DSO's at both End-Point COs?