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ORIGINAL
FILE COPY

September 29, 1995

Ms. Blanca Bayo, Director
Division of Records and Reporting
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399-0850

via Hand Delivery

Re: Investigation into Temporary Local Telephone Number Portability Solution to Implement Competition in Local Exchange Telephone Markets; Docket No. 950737-TP

Dear Ms. Bayo:

Enclosed for filing please find an original and fifteen copies of the Rebuttal Testimony of Danny G. Engleman on behalf of Time Warner AxS of Florida, L.P. and Digital Media Partners' for the above-referenced docket. You will also find a copy of this letter and a diskette in Word Perfect 5.1 format enclosed. Please date-stamp the copy of the letter to indicate that the original was filed and return to me.

If you have any questions regarding this matter, please feel free to contact me.

Respectfully,

PENNINGTON & HABEN, P.A.

for

Peter M. Dunbar

PMD/tmz
Enclosures

cc: All Parties of Record (w/ enclosure)

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CERTIFICATE OF SERVICE
DOCKET NO. 950737-TP

I HEREBY CERTIFY that a true and correct copy of Time Warner AxS of Florida, L.P.'s and Digital Media Partners' Rebuttal Testimony of Danny G. Engleman has been served by either *Federal Express or Hand Delivery on this 29th day of September, 1995, to the following parties of record:

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PETER M. DUNBAR, ESQ.

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 950737-TP

REBUTTAL TESTIMONY OF

DANNY G. ENGLEMAN

ON BEHALF OF TIME WARNER AxS OF FLORIDA, L.P.

AND DIGITAL MEDIA PARTNERS

Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.

A. Danny G. Engleman, 160 Inverness Drive West, Englewood, Colorado 80112. I am employed by Time Warner Communications as the Director of Switch Technologies.

Q. HAVE YOU TESTIFIED PREVIOUSLY IN THIS PROCEEDING?

A. Yes. I submitted Direct Testimony on behalf of Time Warner AxS and Digital Media Partners.

Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A: The purpose of my testimony is to offer rebuttal to the testimony filed on behalf of General Telephone Company of Florida (GTEFL), Bell South Telecommunications, Inc. (Bell South), and United Telephone Company of Florida and Central Telephone Company of Florida (Sprint United/Centel),

regarding a temporary number portability mechanism. I also have comments about the testimony filed on behalf of MCI Metro Access Transmission Services (MCI Metro) and Metropolitan Fiber Systems of Florida, Inc. (MFS).

Q: DO YOU HAVE ANY COMMENTS ON THE TESTIMONY FILED ON BEHALF OF SPRINT UNITED/CENTEL AND BELL SOUTH?

A: Yes. The remaining issues in this docket ultimately determine a price for remote call forwarding when it is used to provide temporary service provider number portability by LECs to ALECs. Despite this, neither Sprint United's witness F. Ben Poag, nor Bell South's witness Frank R. Kolb have proposed prices for this mechanism in their direct testimony. Because Time Warner is by necessity a consumer for this service, I find it incredible that neither Bell South nor Sprint United was willing to offer up a price for entities like Time Warner to best determine their costs of doing business.

Q: GTEFL WITNESS BEVERLY Y. MENARD HAS OFFERED A PRICE OF $1.25 FOR THE FIRST PATH AND $1.10 FOR ADDITIONAL PATHS. DO YOU AGREE WITH THIS PRICE?

A: The price offered by GTEFL is simply too high for new entrants and acts today as a barrier to entry. For example, customers today who have Call Waiting or Voice Mail, as many residential customers currently do, will need at least two paths to keep their current service. Business customers with multi-line hunt groups will have to pay for a path for each incoming line. This means Time Warner would have to pay $2.35 a month to GTEFL for many of its residential customers coming from an incumbent LEC, and more than this for anything but the smallest business customer. Compare this to Florida's existing retail rates for basic telephone service plus Call Waiting (between $13.47 and $25.20 for residential customers, and between $18.81 and $40.90 for single line business customers. These are the rates with which Time Warner must compete. This makes it especially difficult for Time Warner to serve residential customers because it leaves very little operating margin. The foregoing does not even consider other costs Time Warner will incur to interconnect with the LECs--it is just one element of the cost of interconnection. It is inappropriate to have to pay this much for a temporary number portability

mechanism that is fraught with problems, as I discussed in my direct testimony.

Further, if there is a price for an additional path, the price should reflect the fact that the incidence of use of that path will be minuscule, compared to that of the primary path, especially for residential customers. For residential customers, the additional path would only be activated if the customer purchases Call Waiting and utilizes call waiting. Even then, this additional path would only have an impact on the LEC network during the peak for the LEC end office in which the customer's original number resides. With a multi-line hunt group, the probability of each additional line being used beyond the first, published number line decreases as you go up the numbers in the group. Thus, with no extra setup required, and minimal network impact, the price for additional paths, if there is one, should be significantly less than for the first path, if there is to be a charge for additional paths at all.

Q: YOUR POSITION IN DIRECT TESTIMONY DIFFERED FROM THAT OF DON PRICE ON BEHALF OF MCI METRO AND FROM THAT OF TIMOTHY T. DEVINE ON BEHALF OF MFS. DO YOU DISAGREE WITH WHAT THEY RECOMMENDED?

A: No. In my direct testimony I recommended a price of $1.00 for two paths and $.50 for additional paths for number portability. This is because Section 364.16(4), Florida Statutes requires that the prices and rates for temporary number portability not be below cost. Based on what I know about cost from my experience as an engineer, I believe the prices I proposed cover incremental costs, yet still are at a level to allow Time Warner to do business. In comments Time Warner Communications has filed with the Federal Communications Commission in CC Docket No. 95-116 (attached as Exhibit DGE-3), Time Warner stated it did not believe there should be any charge for either of the temporary number portability mechanisms (Remote Call Forwarding and Direct Inward Dialing (DID)) because they were not solutions at all, but were merely existing services provided to the customers of competitive LECs. As stated in the comments to the FCC and as stated in my direct testimony, these mechanisms suffer from

severe competitive and technical problems, and offer any manner of opportunities for the LECs to degrade service to the competitive carriers. In short, they place the ALECs at a competitive disadvantage, and should be free of charge to compensate for these disadvantages. This is similar to the approach the Federal Communications Commission (FCC) and this Commission took in their respective access charges proceedings (FCC Dockets 78-72 and 83-1145 Florida Public Service Commission Docket No. 820537-TP) by charging a discount to IXCs other than AT&T, to compensate for inferior access until equal access was extensively implemented. This is the position I would be taking in Florida were it not for the statutory mandate. Time Warner believes that it is important to provide the incumbent LECs with an incentive to develop a data base solution for number portability.

If the Commission does not accept my recommendation on behalf of Time Warner, I could support either of the cost recovery methods proposed by MCI Metro's witness Price (each local service provider recovers the costs from its own end users) or MFS' witness

Devine (an annual surcharge on all major LEC-assigned numbers would be assessed based upon the product of total minutes of calls forwarded and the incremental costs of switching).

Q. SHOULD THIS DOCKET BE CLOSED?

A. No. The Commission should leave this docket open as a forum for the number portability standards group to continue its work to investigate and develop intermediate and long-term number portability solutions.

Q: PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A: Neither Bell South nor Sprint United/Centel have offered prices in their direct testimony, even though price is the most significant remaining issue. GTEFL offers a price which is too high for Time Warner to do business, in light of all of the other costs of interconnection including other network and operating costs as well. If the Commission decides to reject my pricing recommendations, Time Warner could support the proposals of either MCI Metro or MFS as to the proposed price for an interim number portability mechanism.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A: Yes, it does.

TIMEWARNER COMMUNICATIONS

MEMORANDUM

Date: September 14, 1995

To:

C. Barnhouse	R. Jones	S. Pearse	R. Wendell
J. Butler	C. Marek	K. Reeves	T. Wright
C. Doherty	C. Melton	M. Schermer	
D. Engleman	T. Morrow	T. Staebell	
M. Huey	E. Murley	S. Weiske	

From: Don Shepheard

Subject: FCC Number Portability Notice of Proposed Rulemaking

Attached are the Comments of Time Warner Communications in response to the FCC's Notice of Proposed Rulemaking concerning number portability. In these comments, we stress the importance of service provider portability to the development of local service competition, and urge the Commission to focus its attention on this aspect rather than on service or location portability. In a robust, competitive market where service provider portability is available, the marketplace will meet customer demand for other forms of number portability.

The comments also explain why the current "interim" forms of number portability (RCF/DID), while allowing market entry, place new entrants at a competitive disadvantage and must be replaced with database solutions as quickly as possible. Further, the Commission must assume a leadership role and immediately establish the regulatory framework and timelines for the deployment of database solutions. The comments provide an analysis of current database technology and recommend that the FCC allow carriers some flexibility in their choice of technology to minimize time-to-market and industry expense. National standards should be established for the features and functionality of the *service*, including a national call processing requirement, but not for the specific *technology* to implement the service.

Finally, the comments urge the Commission to provide incentives for the incumbent local exchange carriers to comply with portability requirements, such as tying additional LEC pricing flexibility to implementation of database service provider portability. In addition, non-database solutions, such as RCF and DID, should be provided at no charge.

Special thanks go to Larita Arnold and Mark Blumhardt for their technical analysis and policy input in the preparation of these comments. Approximately 60 parties filed comments in this proceeding and reply comments are due October 12, 1995. We will keep you posted as to further developments.

cc: L. Arnold
M. Blumhardt
H. Gerken
P. Jones
K. Kay
J. Stahlhut

EXHIBIT

DGE-3

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of	)	
	)	
Telephone Number Portability	)	CC Docket No. 95-116
	)	RM 8535

COMMENTS OF TIME WARNER COMMUNICATIONS HOLDINGS, INC.

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ATTORNEYS FOR TIME WARNER
COMMUNICATIONS HOLDINGS, INC.

September 12, 1995

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SUMMARY

Time Warner Communications Holdings, Inc. ("TWComm") is the entity through which Time Warner, Inc. plans to provide, and in Rochester, New York is already providing, competitive local telephone service over its cable plant. TWComm is therefore critically interested in lowering the barriers to entry into the local telephone market. Perhaps the most important of those barriers is the absence of service provider portability.

Unlike the other types of number portability discussed in the Commission's Notice, service provider portability, the ability of a telephone subscriber to change carriers without having to change telephone providers, is an essential prerequisite for local competition. Numerous market studies, including those performed by TWComm and included in these comments, attest to the fact that a significant percentage of telephone subscribers are far less likely to change telephone companies if they have to change their telephone numbers. Moreover, because they control the switching of all numbers, incumbent LECs are uniquely placed to prevent their prospective competitors from gaining service provider portability. In service provider portability, therefore, competitive entrants face a classic market failure, solvable only by government intervention.

The form that such intervention takes is, however, as important an issue as the recognition that it is necessary. As

TWComm explains in these comments, it is critical that the Commission understand that the so-called "interim" service provider portability solutions, such as remote call forwarding and direct inward dialing, do not solve the competitive problem.

The Commission must instead implement regulations establishing a strictly enforced time line for the implementation of medium and long term database service provider portability solutions that meet certain specific functional requirements. In addition, where efficient, uniform national technical requirements should be imposed on all networks. For example, the Commission should establish a national call processing approach. But where it is efficient to permit each carrier to choose an aspect of the portability scheme that best suits its needs, the Commission should allow for such flexibility. Thus, TWComm has recommended that the Commission permit each provider to choose the numbering and triggering solutions for its own network.

Finally, TWComm believes that the Commission should provide adequate incentives for LECs to comply with its portability requirements, such as tying LEC requests for pricing flexibility to their deployment of database solutions and requiring that the so-called "interim" solutions be provided free of charge.

Federal regulations should not, however, eliminate state participation in service provider portability. TWComm has already begun to participate or plans to participate in trials in New York, Illinois, Ohio and Florida. These projects are extremely helpful opportunities to test database technology, and

the states must be permitted to continue to pursue them as well as other aspects of the promotion of number portability that are not inconsistent with federal policy.

BEFORE THE

Federal Communications Commission

WASHINGTON, D.C.

In the Matter of	)	
	)	
Telephone Number Portability	)	CC Docket No. 95-116
	)	RM 8535

COMMENTS OF TIME WARNER COMMUNICATIONS HOLDINGS, INC.

Time Warner Communications Holdings, Inc. ("TWComm"), hereby files its comments on the Commission's Notice of Proposed Rulemaking[1] in the above-referenced proceeding.

INTRODUCTION

TWComm, an affiliate of Time Warner Inc., represents Time Warner's commitment to providing competitive telephony to U.S. consumers. TWComm holds certificates of convenience and necessity from nine states, and has applications pending before others. While providing competitive access services and local private line services in various locations,[2] TWComm has begun offering local switched telephone services to customers in Rochester, New York, pursuant to interconnection and access arrangements achieved after lengthy negotiations with Rochester

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[1] See Telephone Number Portability, Notice of Proposed Rulemaking, CC Docket No. 95-116, RM 8535 (released July 13, 1995) ("Number Portability NPRM").

[2] TWComm affiliates currently provide alternative local access services in Ohio, Wisconsin, Indiana, North Carolina, Texas, Hawaii, Tennessee, New York, and California. Of these, New York and Ohio have authorized TWComm affiliates to provide local switched services.

Telephone Co. and approvals by the New York Public Service Commission. Through a strategy of "clustering" its cable systems, i.e., by amassing systems geographically adjacent in order to more efficiently share headends and other network functionalities, Time Warner through TWComm and related affiliates is poised to provide new services to its existing cable subscriber base in various areas throughout the country. Whether this potential will in fact be realized is critically dependent upon the removal of legal barriers and the deployment of appropriate technical and economic arrangements ensuring access to certain key services and functions under the absolute control of the incumbent telephone companies. Perhaps the most important among these issues is the subject of this proceeding: number portability.

If TWComm is to have any hope of gaining and retaining market share in the local telephone business, entrenched LECs must cooperate in providing true number portability. There can be no serious dispute that subscribers will be substantially less likely to switch local carriers if they must endure the expense and inconvenience of changing telephone numbers. There can also be no doubt that, as explained below, all of the various interim "solutions" to number portability leave competitive carriers at a substantial competitive disadvantage.

Given the importance of this issue, TWComm either has been or plans to be a participant in state number portability trials wherever TWComm plans to provide competitive local telephone

service. In both the Rochester and Manhattan trials, for example, number portability technology will be tested on TWComm's telephone network. TWComm is also involved in number portability workshops in Illinois and is planning to participate in a number portability standards group in Florida.

Although some states have thus begun to consider the manner in which to promote number portability, TWComm commends the Commission for undertaking this proceeding at this time. The Notice seeks detailed input to a variety of questions, and TWComm's comments are submitted in an effort to provide responsive input, including market demand studies and detailed analysis of current technological alternatives and the state trials underway to assess them.

It bears emphasis, however, that some of the most significant questions raised in the Notice cannot yet be answered, given the dynamism which characterizes the potential technical solutions. The choice of solutions available today will be eclipsed by answers discovered tomorrow. Moreover, particular solutions will likely prove satisfactory for some networks but not for others.

While TWComm believes there is a crucial role for government in this process, especially in light of the de jure and de facto monopolies enjoyed by the incumbent telephone companies, TWComm believes that the appropriate role of the FCC is not to designate "the solution" in this proceeding. Rather, the FCC must act to oversee a process in which local telephone companies are provided

adequate incentives, including the avoidance of government sanctions, to cooperate in the selection and deployment of a key element to competition in the local loop. This process must achieve two objectives: 1) it must allow for the near term availability of number portability using current database technologies so as to allow immediate introduction of local competition on a market-by-market basis, and 2) it must facilitate the establishment of nationwide number portability over the next several years as a long term solution.

The necessary steps to bring about number portability are discussed in detail below. Very briefly, TWComm believes the FCC must:

- Focus upon service provider number portability implementation, setting aside, at least for the moment, location and service portability;
- Understand that so-called "interim solutions" that do not rely upon database solutions, such as remote calling forwarding and direct inward dialing, are unresponsive to the problem;
- Establish a regulatory framework for medium and long term database solutions. The framework should include a six month time frame in which LEC deployment in response to bona fide requests is required, the prescription of specific parameters that must be met in order to qualify the LEC as in compliance, the establishment of a national call processing approach (N-1), and a requirement to work toward a new set of standards for all industry participants that will allow long term solutions to be deployed in the shortest time frame possible;
- Provide adequate incentives for LEC cooperation in the process, including tying LEC requests for pricing flexibility directly to their deployment of satisfactory database solutions, precluding the assessment of any charges by LECs for the provision of non-database approaches such as

remote call forwarding, and establishing a clearly articulated intention to impose maximum forfeitures and penalties for failure to comply;

- Allow state trials and tests to proceed within federally prescribed minimum parameters in order to maximize the opportunities for optimal solutions, while allowing states to pursue and enforce approaches not inconsistent with the federal schema.

DISCUSSION

I. The Commission Should Implement Regulations To Promote Only Service Provider Portability At This Time.

In the Number Portability NPRM, the Commission seeks comments on whether to encourage the development of service provider number portability, location number portability or service number portability. TWComm firmly believes that there is a critical need for the FCC to act to bring about service provider portability, but that government intervention in the development of either location or service portability is not justified at this time.

The Notice appears to attribute equal significance to all three types of portability. In fact, while it may eventually become necessary for the Commission to promote the development of location and service number portability, there is no clear need for such regulatory intervention at this early stage in the development of local competition. In contrast, the Commission must act promptly to promote service provider portability. Only in the latter case is it certain that LECs have the power and

incentive to deny their competitors access to an essential input of production.

Without service provider portability, competitive LECs ("CLECs") such as TWComm cannot compete effectively with incumbent LECs in the provision of basic local exchange service. The empirical data supporting this point is abundant and virtually irrefutable. The Notice cited the results of studies conducted for MCI and MFS that demonstrate the large percentage of telephone subscribers for whom a telephone number change is a major deterrent to changing local telephone providers.[3] TWComm's independent research, as discussed below, confirms these results.

TWComm has included with these comments as Appendix A the results of its own studies, performed through random telephone interviews and focus group discussions, on the impact of service provider portability on competition.[4] TWComm's telephone survey showed that local subscribers are 40% less likely to change telephone service providers if they would have to change telephone numbers.[5] Moreover, the focus group interviews produced strong anecdotal evidence that subscribers, especially

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[3] See Number Portability NPRM at 9 n.26.

[4] As explained in the study results, two studies were performed. In the first, telephone interviews were conducted with a random sample of households (totalling 2,400) from Time Warner's cable franchise areas in three cities. In the second, over 14 focus group discussions were conducted with residential as well as small, medium and large business customers in five cities. See Appendix A at 2.

[5] See id. at 9.

businesses, view the loss of their current telephone numbers as a serious deterrent to changing telephone companies.[6]

The competitive significance of portability gives the incumbent LECs the strong incentive to exploit their ability to prevent or delay the implementation of service provider portability. Numerous changes wholly within the private control of the LECs are necessary to achieve service provider portability. A LEC's refusal to cooperate could thus easily impede the prompt implementation of any proposed service provider portability scheme. Moreover, LECs obviously stand to benefit from refusing to cooperate since such refusal helps them retain customers. The implementation of service provider portability, then, represents a classic case of market failure justifying government intervention.

The situation with service and location portability, on the other hand, is quite different. The demand for these services is uncertain.[7] Further, incumbent LECs have the incentive to develop and provide these services if adequate consumer demand exists.[8] More importantly, once service provider portability is implemented, CLECs will likely be able to deliver location portability (at least within their own service areas) and service portability without the need to rely on LEC cooperation. In

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[6] See id. at 5, 8.

[7] TWComm has not conducted studies on the demand for either service and is not aware of any such studies.

[8] This may not be true, of course, for location portability outside of the LEC's service area.

short, there is every reason to expect that the market will provide service and location portability as demanded by consumers without any encouragement from regulators.

Moreover, any Commission attempt to encourage the development of location portability would confront serious practical problems. First, there is no industry consensus as to the proper geographic scope of location portability. For example, should subscribers be able to keep their phone numbers when moving to an area served by another switch in the same calling area, metropolitan area, Basic or Major Trading Area, LATA or state?

Second, location portability raises a host of billing problems that are as yet unsolved. For example, if portability results in subscribers receiving what would normally be toll calls on their old telephone numbers, it is hard to know who should pay. If the ported subscriber pays, callers in the old location will be unaware of the charges the subscriber is incurring. If the calling party is charged, callers would have no way of knowing whether a specific call would result in toll charges. Moreover, technology does not currently permit all calls to be billed if a calling party is charged.[9]

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[9] For example, it is not clear how to bill for calls outside of the service provider's network because this would likely require communication between the potentially incompatible billing systems of different companies. Furthermore, it is not clear how to bill for coin phone calls. The billing information for these calls is currently useless, and it is not apparent how portability solutions can require callers to deposit more money. It is also not clear how to bill cellular callers since billing

(continued...)

These problems can and will be solved if there is sufficient customer demand. This observation will especially hold to the extent the FCC is successful in establishing the necessary prerequisites for true local competition, since competing local carriers will gain or lose customers based on relative performance, including the offering of features such as location or service portability. It is thus crucial for the FCC to concentrate its efforts on these critical competitive conditions -- including service provider portability -- and leave the complex secondary issues to either marketplace solutions or, if and when necessary, subsequent government action.

II. The So-Called Interim Solutions Such As RCF And DID Place CLECs At A Significant Competitive Disadvantage.

In the NPRM, the Commission described some of the limitations of the so-called "interim solutions" for service portability such as remote call forwarding ("RCF") and direct inward dialing ("DID").[10] It is important to emphasize, however, that these are not number portability solutions at all; they are merely existing services provided to the customers of competitive LECs. Moreover, as TWComm has experienced first hand in Rochester where RCF is deployed, these technologies suffer from severe competitive and technical problems.

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[9](...continued)
information is not available on the majority of cellular trunks. Finally, it is not clear how to bill for hotel/motel calls through operator services tandems.

[10] See Number Portability NPRM at ¶¶ 55-62.

First, the competitive problems with RCF and DID arise from the fact that they require all calls to a customer served by a competitive carrier to be routed through LEC switches. This results in LECs receiving all of the access revenues for interexchange calls to CLEC subscribers. Moreover, the potential for LECs to intentionally degrade service to the competitive carrier is obvious. Such arrangements also mean that new entrants must grant the incumbent LEC access to important proprietary information. True database service portability solutions avoid these competitive problems by removing control of the essential functionalities from the incumbent LEC and placing them in the hands of a neutral third party database administrator and the CLEC itself.

Second, the technical degradation of a competitive provider's service under RCF or DID is also an acute and well-documented problem. TWComm has included in Appendix B a comprehensive discussion of the technical flaws from which both DID and RCF suffer.[11] To summarize briefly, both services inefficiently utilize numbering resources and prevent CLEC subscribers from receiving certain CLASS features. Moreover, DID results in longer setup times for CLEC subscribers.

RCF and DID therefore place CLECs at a severe competitive disadvantage, and sound public policy precludes reliance upon

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[11] See Appendix B at 7-8.

these as even temporary "solutions" to number portability.[12] As described below, substantially more satisfactory solutions will be available in the near future.

III. Current Technology Supports Medium Term Solutions That Offer True Number Portability.

There are four basic aspects of database number portability technology. The first important concept is the numbering scheme, which is the way a network identifies the proper destination for a ported call. MCI Metro's carrier portability code ("CPC"), AT&T's local routing number ("LRN"), and U.S. Intelco's local area number portability ("LANP") are all examples of numbering schemes.

The second important aspect of this technology is the trigger, which is a means of querying databases and routing calls based on the response. There are two kinds of database triggers: intelligent network ("IN") triggers and advanced intelligent network ("AIN") triggers. Any of the numbering schemes can be used with either IN or AIN triggers.

The third important aspect of number portability is the notion that different carriers can use different combinations of numbering and triggering schemes. That is, database technology will allow each carrier to choose the numbering and triggering schemes that work most efficiently on their respective networks. For example, one carrier using an IN trigger and a CPC numbering

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[12] Nevertheless, in the absence of true number portability, these services represent the only way CLECs can gain entry into the local exchange service market, albeit with considerable disadvantages.

scheme could interconnect with another carrier that chooses an AIN trigger and an LANP numbering scheme without suffering any compatibility problems. On calls originating on the first network and terminating on the second network, the database could handle the IN trigger and cause the call to be translated according to the requirements of LANP. On calls originating on the second network and terminating on the first network, the database could handle the AIN trigger and cause the call to be translated according to the requirements of CPC.

The final aspect of number portability technology is the call processing scenario, which determines at what point in the routing of a call the trigger causes a database to be queried. TWComm discusses call processing scenarios in detail in a later section.[13]

In the NPRM, the Commission seeks comments on the strengths and weaknesses of the various numbering solutions.[14] TWComm has included in Appendix B a full analysis of the CPC, LRN and LANP solutions. As a policy matter, the critical point of that discussion is that there are several approaches that, while perhaps not appropriate as permanent solutions, offer service portability far superior to that offered by RCF and DID and that are available in the very near term.

Of the major numbering schemes, only full LRN has an estimated "time to market" that exceeds about six months. The

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[13] See Section IV.C below.

[14] See Number Portability NPRM at ¶¶ 35-54.

longer time period for LRN arises from the fact that the SS7 call setup message parameter changes associated with LRN will require approval from standards bodies. That process could substantially delay implementation.

In contrast, the IN technology already deployed in most LEC switches for applications such as 800 number portability and the AIN technology deployed for certain other services can support CPC, LANP and (in modified form) LRN within about six months.[15] Unlike full LRN, implementation of solutions based on existing triggering technology will not require significant switch upgrades or approval from standards bodies.

Once implemented, the medium term solutions, while not as robust as full LRN, will offer true number portability. Unlike RCF and DID, these are database solutions that do not require all calls to be routed through LEC switches. They also support CLASS features[16] and do not result in the incumbent receiving a disproportionate amount of the access revenue.

Finally, it is very unlikely that implementation of medium term solutions will delay the implementation of longer term solutions. First, there is no reason why the study and implementation of appropriate long term solutions cannot proceed while the medium term technology is deployed. More importantly, longer term solutions will build on medium term solutions and

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[15] See Appendix B at 1-7.

[16] Some modifications may be required for existing AIN technology to support CLASS features, but these would not significantly delay implementation.

will not generally require carriers to dismantle previous upgrades. Any medium term solution, for example, will use the same database and the same signalling network as its logical successor long term solution. The only major change that a long term solution might require is a new trigger.

IV. The Commission Should Establish The Regulatory Framework For The Deployment Of Medium And Long Term Service Provider Portability As Soon As Possible.

Federal regulators can play a critical role in overseeing the implementation of both medium and long term database service provider portability solutions. First, in light of the fact that database solutions can be deployed very soon, the Commission should require LECs to deploy such technology within six months of a bona fide request therefor. Second, the FCC should establish certain basic requirements for medium term solutions, while permitting adequate flexibility for carriers to choose the systems that serve them best. Third, it should establish a single national call processing scenario for service provider portability. Fourth, it should ensure that long term solutions are implemented as soon as possible. Finally, it should implement an equitable scheme for the recovery of the costs associated with RCF, DID and number portability solutions.

A. The Commission Should Require LECs To Implement Medium-Term Service Portability Solutions Within Six Months After A Bona Fide Request.

Given that true number portability solutions can be deployed using essentially existing triggering technology, the Commission should require that LECs provide database solutions within six

months after a bona fide request from a competitive carrier. This will provide enough time for the LEC and CLEC to make any necessary system upgrades.

To help provide LECs with the incentive to comply with this deadline, the Commission should make the implementation of medium term as well as long term service portability solutions one of the prerequisites for granting price cap LECs the enhanced pricing flexibility currently being considered in the Commission's Price Cap Performance Review.[17] In that proceeding, the Commission sought comments on "specific standards for evaluating the state of competition in particular [interstate access] markets."[18] LECs in markets determined to be competitive would eventually become eligible for greater access pricing flexibility. Establishing the implementation of true number portability as one of the prerequisites to such a determination will help to create an incentive for LECs to deploy what is otherwise not in their interest.

Further, the FCC should clearly articulate from the outset its willingness to utilize its full enforcement authority to ensure LEC compliance. LECs should be placed on notice at the

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[17] See Price Cap Performance Review for Local Exchange Carriers, First Report and Order, CC Docket No. 94-1 at ¶¶ 368-418 (released Apr. 7, 1995). Of course, in the event that Congress passes legislation that gives the Commission the power to require LEC cooperation in the implementation of number portability as one of the prerequisites for entering the long distance market, TWComm would urge the Commission to use this mechanism as well.

[18] Id. at ¶ 407.

earliest time that they will be subject to possible forfeitures and penalties, such as those established under Title V, for non-compliance. Similarly, the FCC should make clear that the LEC obligation to provide service created by this proceeding is enforceable through the mandamus provision of Section 406[19] in federal district courts.

B. The Commission Should Establish Certain Baseline Requirements For All Medium Term Database Solutions.

While it is critical that the Commission compel the deployment of service portability solutions, it should refrain, at least during the implementation of medium term solutions, from imposing a uniform national numbering scheme. This is because there is substantial heterogeneity among LEC and CLEC networks and different switches respond differently to the various service portability numbering solutions. In some cases this will mean that the optimal numbering solution for a CLEC is CPC while the LEC with which it is interconnected would operate most effeciently using LANP. At least initially, therefore, CLECs and LECs should be given the opportunity to decide which of the service portability solutions work most efficiently on their respective networks.

The FCC can, however, ensure the implementation of adequate solutions by defining certain baseline criteria with which all medium-term solutions must comply. Accordingly, TWComm

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[19] 47 U.S.C. § 406.

recommends that all medium term solutions permissible under the FCC's order meet the following requirements:

1. The provision of true number portability - The ported subscriber must be able to keep his or her original telephone number. That is, the ported subscriber's automatic number identification and calling party number must be the same as the number callers use to reach the ported subscriber.

2. A database solution - Routing numbers should be stored in a service control point database that is administered by a neutral third party.

3. Triggering - Either an IN or AIN trigger must be used to access the database. In cases where a LEC has neither IN nor AIN, the Commission should require the deployment of IN triggers.

4. Numbering - The database should support the carrier's choice of CPC, LRN or LANP.

5. Full feature interactions - All switch-based functions, including CLASS functions, should function properly.

6. Efficient allocation of access revenues - The CLEC should be able to charge IXCs for access to its facilities.

7. Ten digit routing - A ten digit routing code should be used to route calls from the LEC to the CLEC.

C. The Commission Should Require The Adoption Of N-1 As A National Call Processing Scenario.

In addition to establishing requirements for medium term solutions, service provider portability will function efficiently only if the Commission establishes a single, national call processing scenario. Without a national approach, a patchwork of solutions would cause switches along the network to make redundant database dips. When combined with the requirement that carriers deploy a forward call indicator bit as a backup

protection,[20] a single national approach is by far the most reliable way to prevent this problem. As explained in detail below, TWComm believes that the N-1 scenario is the most efficient national approach.

As the Commission explained in the NPRM,[21] there are at least three processing scenarios: terminating access provider ("TAP"), originating service provider ("OSP") and N-1. Under TAP, the subscriber's old end office receives the call and then routes it to the subscriber's new end office. TAP suffers from three critical flaws. First, when a ported subscriber receives an interLATA call, the incumbent LEC receives the access revenue for completion of the call. Second, TAP utilizes trunk capacity inefficiently. This is because the ported subscriber is not assigned to the switch that performs the service provider portability queries and therefore causes both an incoming trunk and an outgoing trunk to be tied up. Third, the call traverses through more switching systems than with other approaches causing longer call setup time than the other scenarios.[22]

Under an OSP approach, the end office placing the call is responsible for sending the query to the portability database. Thus, OSP does not suffer from the problems relating to access

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[20] A forward call indicator bit signals to downstream switches that a database query has already been made for a particular call.

[21] See Number Portability NPRM at ¶¶ 43-47.

[22] This is especially true with long distance calls that require the call to be routed through tandem switches.

charges, inefficient use of trunk capacity or call setup time present in TAP. As the Commission noted in the NPRM,[23] however, OSP would burden all LECs around the country with the requirement that they access the relevant database to determine whether the called number has been ported. Furthermore, OSP presents the added problem that LECs without IN or AIN would have to tandem all originating calls through a portability capable switch.

On balance, N-1 is the most efficient call processing scenario. Under that scheme, the second to last carrier in the routing of a call handles the database query. N-1 avoids the excessive trunking needs and other problems associated with TAP and obviates the need for originating LECs to flash-cut to distant portability databases. Accordingly, the Commission should mandate that the nation adopt N-1 as a uniform call processing scenario. As a safety backup mechanism, however, the Commission should also require deployment of a forward call indicator bit.

D. The Commission Must Ensure That A Long Term Solution Is Implemented As Soon As Possible.

While these comments have thus far focused on the need for an adequate service provider solution as soon as possible, it is also important to emphasize that a long term solution should be implemented as soon as circumstances permit. Indeed, while TWComm firmly supports the policy of implementing medium range solutions, it is fully aware of the risk of that approach. That

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[23] See id. at ¶ 45.

is, having implemented medium term solutions, LECs will almost certainly argue that there is no need to deploy long term solutions.

As explained above, however, most of the investment in network upgrades for medium term solutions is transferrable to longer term solutions. Indeed, if carriers are given the freedom to choose their own numbering and triggering solutions, they should be able to plan their investments to minimize waste. The transition to longer term solutions, therefore, will require a relatively small investment from LECs, and they should not be able to overstate the burden and cost of upgrading their networks when necessary.

The Commission must ensure that LECs are not able to resist this progress from medium to long term solutions. When appropriate, it should establish a baseline definition for long term solutions similar to the one suggested for medium term solutions above. For example, long term solutions should be required to pool numbers so that numbering resources are used more efficiently in the longer term. Thus, the Commission should require that all vacant numbers (i.e. those unused by any service provider) should be pooled in the service management system and be usable by any provider. A CLEC should be able to obtain a new number from the pool of all unused dialable numbers in the applicable local calling area.

The Commission should also delegate to an industry committee the responsibility for determining the national standards

required for long term solutions and for seeking approval from standard setting bodies. The progress of such industry bodies should be monitored closely to prevent incumbents from delaying the process. Finally, as mentioned above, the Commission should link LEC cooperation with pricing flexibility and, if possible, with entry into the long distance market.

E. The Commission Should Establish Regulations For The Recovery Of The Costs Associated With Number Portability.

1. LECs Should Be Required To Provide RCF And DID Free Of Charge.

Although sometimes necessary in the short term, non-database approaches place CLECs at a competitive disadvantage, as explained above. To compensate for the disadvantages of relying on these approaches and to provide at least some incentive for LECs to implement database solutions,[24] the Commission should require LECs to provide the CLECs' choice of RCF, DID or enhanced DID free of charge.

There is ample precedent for requiring free provision of non-database solutions. The most compelling example is the Commission's Access Charges proceeding,[25] in which the Commission determined that the quality of local access granted to AT&T

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[24] Requiring the provision of RCF and DID without charge might to some extent compensate for competitive imbalances, but it creates only a minimal incentive for LEC implementation of true number portability. The problem is that while LECs may in some cases charge new entrants steep prices for RCF and DID, they incur very low incremental costs to provide them.

[25] See MTS and WATS Market Structure, Third Report and Order, 93 F.C.C.2d 241 (Feb. 28, 1983) on reconsideration 97 F.C.C.2d 682 (Aug. 22, 1983), 97 F.C.C.2d 834 (Feb. 15, 1984).

before implementation of full equal access was superior to that available to other long distance carriers, the so-called "other common carriers" ("OCCs").[26] To compensate the OCCs for this competitive disadvantage, the Commission imposed a nationwide "premium access charge" on AT&T to subsidize the OCCs' interconnection charge until the transition to full equal access was complete.[27]

Here, as in the equal access context, LECs possess a significant competitive advantage due solely to their historical role as certified monopoly providers. Just as AT&T was required to pay a premium for the competitive advantage gained before implementation of full equal access, so LECs should be required to pay a premium for the competitive advantage gained before implementation of true service provider portability. In this latter case, the "premium" should be in the form of provision of RCF without charge.

2. Carriers Should Absorb The Costs They Incur In Implementing Number Portability; Common Costs Should Be Split Equitably.

As recognized in the NPRM,[28] it is important that the Commission establish equitable regulations for the allocation of the costs of database solutions. In considering these equities, it is critical to recognize that both LECs and CLECs incur costs

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[26] See id. at 287-290.

[27] See id. at 287-288. The Commission stated that the premium access charge would decline during the conversion to full equal access. Id.

[28] See Number Portability NPRM at ¶¶ 53-54.

in altering their networks to accommodate service provider portability. The fairest and most efficient approach to cost recovery is therefore for each carrier to absorb its own number portability costs.

Moreover, carriers should assume common costs, such as those associated with the administration and maintenance of databases, in proportion to their relative market shares. Market share should be measured by the number of subscriber lines.

LECs will object that this approach to cost recovery leaves them paying a larger amount than CLECs. This objection should be viewed with skepticism since number portability is not in the LECs' interest, and they will certainly try to undermine its implementation by forcing higher entry costs on their competitors. Moreover, it should be emphasized that any difference in the LECs' cost recovery obligations is far outweighed by the huge competitive advantages enjoyed by LECs over CLECs that are purely the result of their historical role as certified monopoly providers.

IV. State Regulators Should Play A Significant Role In The Implementation Of Service Provider Portability.

As the Commission recognized in the NPRM,[29] states have a legitimate interest in the development of number portability and have already started conducting tests and implementing number portability measures. Moreover, states can play an important

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[29] See id. at ¶ 32.

role in overseeing the transition to medium term solutions and finally to long term solutions.

First, the Commission should encourage states to continue to conduct and/or oversee portability trials. TWComm has actively participated in state trial efforts, and has included as Appendix C a detailed description of the trials. State portability tests provide an invaluable opportunity to study the database technologies.

There are very likely other aspects of the regulation of number portability implementation that are efficiently left to the states. Indeed, again, the FCC's participation in service provider portability should be limited to requiring only what is necessary for adequate nationwide service provider portability and to intervening when those requirements are not being met. Subject to federally established rules, the states could provide important administration and enforcement functions which the FCC's limited resources cannot.

Moreover, as mentioned above, the baseline requirements for any medium term database solution should not be exhaustive. So long as it does not undermine the federal policy goals in this area, an individual state should be permitted to require LECs to provide CLECs with further portability services.

V. It Is Well Within The Commission's Jurisdiction To Establish A Framework For The National Implementation Of Service Provider Portability.

Parties opposing the introduction of competition in the local loop will almost certainly try to argue that the FCC lacks

the jurisdiction to implement number portability regulations. But as explained below, properly fashioned regulations for the promotion of number portability would fall well within the Commission's jurisdiction.

Section 1 of the Communications Act grants the FCC expansive jurisdiction over interstate communications.[30] The scope of that grant is only limited by Section 2(b) of the Act which grants the states jurisdiction over certain intrastate carrier communications activities.[31] The Courts have interpreted these provisions to mean that, when otherwise acting within its authority, the Commission may preempt state regulation where it is "not possible to separate the interstate and intrastate components of the asserted FCC regulation."[32]

As acknowledged in the NPRM, number portability will have a substantial effect on the administration of the nation's numbering resources and the promotion of competition between

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[30] See 47 U.S.C. § 151 (granting the FCC jurisdiction "[f]or the purposes of regulating interstate and foreign commerce in communication by wire and radio so as to make available, as far as possible, to all the people of the United States a rapid, efficient, nationwide and worldwide wire and radio communication service . . .").

[31] See 47 U.S.C. § 152(b) ("nothing in this chapter shall be construed to apply or to give the Commission jurisdiction with respect to (1) charges, classifications, practices, services, facilities, or regulations for or in connection with intrastate communication service by wire or radio of any carrier . . .")

[32] Louisiana Pub. Serv. Comm'n v. FCC, 476 U.S. 355, 375 n.4 (1986) citing North Carolina Utils. Comm'n v FCC, 537 F.2d 787 (4th Cir.) cert. denied, 429 U.S. 1027 (1976) and North Carolina Utils. Comm'n v FCC, 552 F.2d 1036 (4th Cir.) cert. denied, 434 U.S. 874 (1977).

providers of interstate communications.[33] In establishing regulations mandating the development of number portability the Commission would therefore be acting well within its authority under Section 1 to promote an efficient and rapid interstate telecommunications network.[34]

It should be noted that, in certain cases, it may prove impossible to separate the interstate and intrastate components of the number portability regulations. For example, it would be impossible to separate the interstate and intrastate components of regulations mandating a national N-1 call processing scenario. If states were permitted to mandate TAP or OSP processing scenarios for intrastate calls, the national aspect of the approach and all its concomitant efficiencies would be lost. In that case, therefore, as well as perhaps others, the Commission may have to preempt state regulation of number portability. A complete analysis of this issue, however, awaits a clearer sense of exactly what regulations the Commission intends to implement.

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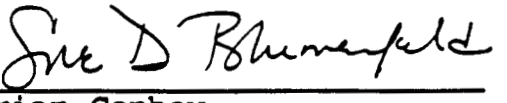
[33] See Number Portability NPRM at ¶¶ 29-31.

[34] See 47 U.S.C. § 151.

CONCLUSION

For the reasons described above, TWComm respectfully requests that the Commission mandate the development of service provider portability in the manner described in these comments.

Respectfully submitted,



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September 12, 1995

APPENDIX A

TIME WARNER COMMUNICATIONS

MARKET RESEARCH AND CONCLUSIONS ON THE IMPACT OF NUMBER PORTABILITY

TIME WARNER COMMUNICATIONS

MARKET RESEARCH AND CONCLUSIONS ON THE IMPACT OF NUMBER PORTABILITY

PURPOSE;

The purpose of this report is to threefold: (a) document the fact that lack of number portability poses a significant barrier to Time Warner Communications' entry in the local telephone service market, (b) quantify the estimated negative impact due to lack of number portability, and (c) summarize the research efforts that led to these conclusions

BACKGROUND

Time Warner Communications plans to provide telephony based communications services in selected Time Warner Cable cities. Before undertaking this endeavor, Time Warner Communications wanted to understand market potential and issues likely to impact market entry. Towards this objective, Time Warner Communications undertook research designed to identify consumers' likelihood to switch to a competing telephony based service provider with and without number portability, given various pricing scenarios and brand positioning options.

METHODOLOGY

A. Telephone interviews were used to gather consumer feedback in three cities. The sample was drawn from random lists of all households in each city's cable franchise area; participants totaled 2,400.

B. Over 14 focus groups in 5 cities were conducted to understand customer perceptions of the ideal telephone company, various brand options, and the issue of number portability as a factor in influencing consumers' decisions to switch providers. These groups included residential, small, medium, and large business customers.

CONCLUSIONS (A) QUANTITATIVE RESEARCH THROUGH CONSUMER INTERVIEWS

A lack of number portability will be a considerable barrier to maximizing share for a new local telephone service offering, regardless of where it is offered or how it is positioned. A discount of 10% or more may be required to offset this situation. Although the negative impact due to a lack of number portability can be overcome with good service quality and reasonable pricing, issues such as having to notify people of a number change and concerns about getting a new number in published directories impact consumers' willingness to switch providers and must be addressed.

CONCLUSIONS (B) QUALITATIVE RESEARCH THROUGH CUSTOMER FOCUS GROUPS

SUMMARY

A lack of number portability was the most passionately discussed topic in all of the focus groups. Residential and business respondents clearly perceive many negatives and few if any positives associated with this issue. While residential respondents used terms like "hassle" and "inconvenient" to describe how this would impact them, business respondents used even stronger terms like "very negative" and "kiss of death".

RESIDENTIAL PERSPECTIVE

✓ *A lack of number portability is perceived as a problem for most consumers, requiring some significant form of incentive to make up for the inconvenience (e.g free features, price discounts, etc)*

✓ *Several respondents mentioned the expenses a lack of number portability would cause them, in the form of reprinting material such as letterhead, business cards for work-at-home customers, mailing lists, etc, and the effort than would be required to notify customers of the number change*

✓ *A few residential respondents did not have a problem with lack of number portability; these respondents tend not to be heavy home phone users*

✓ *A few respondents stated that they would never switch to a different provider of telephone services, if this required a number change, regardless of any incentive offered*

CONCLUSIONS (B) QUALITATIVE RESEARCH THROUGH CUSTOMER FOCUS GROUPS

BUSINESS PERSPECTIVE

✓ *Almost all business respondents perceive a lack of number portability as a serious barrier that will be difficult to overcome, even with call forwarding or messaging options*

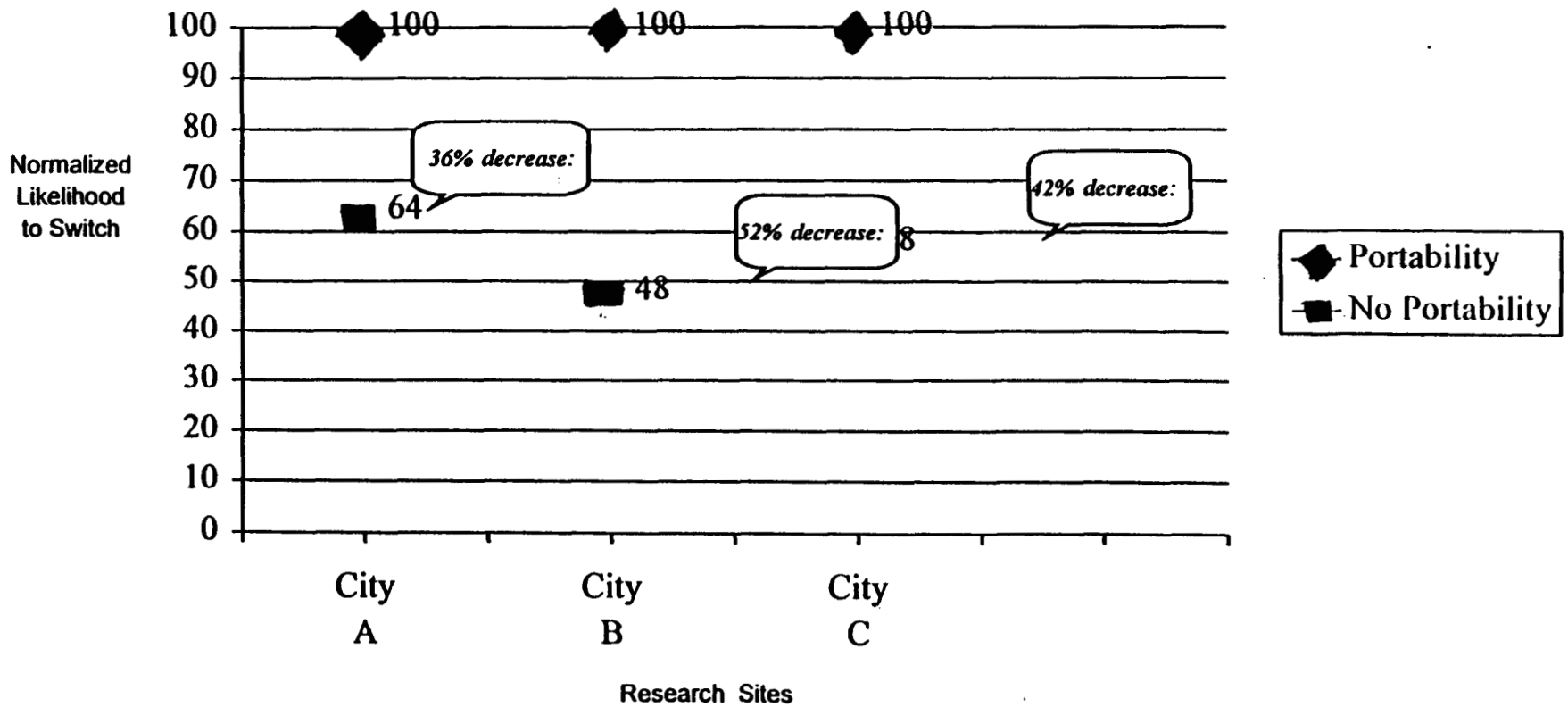
✓ *It was made clear that businesses would expect the number change to be transparent to their customers. Small businesses in particular feared a lack of credibility if this were not the case.*

✓ *Many businesses have customized phone numbers that they are not willing to give up (e.g. 232 - GOLF)*

✓ *Respondents indicated that significant financial concessions would be required in order to make them even consider a number change; some mentioned price discounts of as much as 20% - 25%*

There is a measurable difference between consumers' likelihood to switch with and without number portability across all cities

Normalized* Comparison of Customer Likelihood to Switch With and Without Number Portability Across Cities



**** See Appendix 1 for explanation of methodology used to normalize display data***

FOCUS GROUP EXCERPTS: RESIDENTIAL CUSTOMER

"...That (number change requirement) would stop me...I'm like her (another participant) about my private line. Once you've given it (private telephone number) to who you want to have it, that's it.."

✓ *"...(It would be) a major hassle. I don't want a hassle. If they have a switch back guarantee you're just going to confuse everybody."*

✓ *"...I go along with his (other participant) comment. If you change the number after you've had a number for as many years as I have, it's a major problem. Everybody all around the countryside has got my number, and I think it's a real problem.*

✓ *"...This is a real picky thing, but it makes a lot of people mad...(the thing is) that a lot of people, their phones are programmed and then you have to go through and change everybody's number..."*

(These quotes made after moderator asked group if intercept recordings would obviate the negative effects of number changes)

✓ *"...It's (number change) still inconvenient for those people that you want to have that number, the old number. There would be additional expense you'd have to incur to...especially if you're in business and you got your home number on the business card and you'd have to get new business cards made up."*

✓ *"...you know, they give a new number out with the recording. How many times have you called big companies... I've called and they say the number has been changed to so and so...It's a pain, I'd really have to think hard about it."*

FOCUS GROUP EXCERPTS ON NUMBER PORTABILITY: LARGE BUSINESS CUSTOMERS

✓ *"...That would be a kiss of death. We, particularly, deal with international customers and third world nations. No. I don't think so. There'd be no benefits... I mean, the customer is the most important person. I'm not changing numbers!"*

✓ *".. (I feel) very negative. Very negative. Well for the outside numbers, the numbers that the public knows and that are on hundreds of collateral publications and business cards, all that. We probably wouldn't do it if we had to change the main number and couldn't retain it."*

✓ *"...No, (I wouldn't change numbers). It's very annoying to customers. It gives a bad image to the public. They (public) feel there is something wrong with your company...you know, didn't pay the bill, so you got cut off from the old number...lost our lease, had to move...People are very impatient."*

(This quotes are in response to a discussion of a number change "work-around", in which businesses changed non-critical or "back-office" numbers, but retained their main number) *"...I'm trying to think of what non-critical telephone numbers aren't published all over the place. I mean if you get them one at a time or something, but I don't see any advantage in doing that; I mean that's too difficult." "...There are some DID trunks. There are some fax lines that we could change. I don't want to deal with six different vendors on this deal. I'd like to make my life simpler..."*

APPENDIX 1

METHODOLOGY USED TO NORMALIZE LIKELIHOOD TO SWITCH RESULTS, IN ORDER TO DETERMINE THE IMPACT OF LACK OF NUMBER PORTABILITY

METHODS USED TO NORMALIZE RESPONSES

① *Customer responses to various brand and price options were averaged for under the portability a and non portability scenarios. The percent difference between portability and non portability was calculated for each city.*

② *All responses associated with number portability were converted to 100%..*

③ *The non portability percent difference (step 1) was subtracted from the normalized portability response percent of 100% (step 2). The resulting number represents the normalized non portability response rate*

④ *Example:*	*Original Results*	*Percent Difference*	*Normalized Results*
with portability	*50%*	-----	*100%*
without portability	*30%*	*40%*	*60% (100% minus 40%)*

APPENDIX 2

TEXT OF QUESTIONS NUMBER PORTABILITY QUESTIONS ASKED IN TELEPHONE INTERVIEW AND FOCUS GROUP STUDIES

A. TELEPHONE INTERVIEWS

Consumers were asked the following question for a variety of brand and discount options: How likely would you be to switch to this new service? Please respond using a scale of 0% to 100%, where 0% means that you absolutely would not switch, 100% means you absolutely would switch, and 50% means you might or might not switch. Interviewers next asked the following question: You said that your likelihood of switching to this new telephone service was (repeat response obtained from above questions). Please tell me your likelihood of switching to this new telephone service if you were unable to keep you existing number using a scale of 0% to 100%, where 0% means that you absolutely would not switch, 100% means you absolutely would switch, and 50% means you might or might not switch.

B. FOCUS GROUPS

The focus group moderator addressed each group as follows, immediately after discussion of customer likelihood and willingness to switch to an alternate service provider: : Let's move on here a little bit. Nobody knows for sure, but it's possible that your current phone number may not be transferable to a line you obtain from a new provider. Like I said, nobody knows for sure, but that's a possibility. How do you feel about a situation where it's necessary to change a phone number or phone numbers in order to access an alternative service?

APPENDIX B

ANALYSIS OF NUMBERING SCHEMES

MCImetro

As is commonly known, MCImetro is a single number Service Provider Portability approach that suggests two triggering methods: AIN and IN (800-like). With MCImetro, the Service Provider Portability database would substitute the Called Party NPA with a Carrier Portability Code (CPC) which is used for routing.

Following are advantages to using the MCImetro solution:

The MCImetro solution can be implemented in a very short time frame. The technology is here and now. It has already been successfully tested using a variety of switches in conjunction with the MCImetro service provide portability SCP database.

The MCImetro solution routes calls with a single number. There is no second number. Calls are routed using a Carrier Portability Code (CPC) which identifies a carrier, be it LEC or CLEC. The CPC is used in lieu of an NPA and are assigned out of the pool of unused NPAs. When an end office detects a call is being placed to a ported number, a query will be sent to the service provider portability database, which contains a routing number in the format of CPC-NXX-XXXX. The subscriber keeps their same seven digit NXX-XXXX number, and the MCImetro solution will use this same number along with the CPC for routing.

One of the greatest advantages to this is reduced impact on Operations Systems, which are computer systems used by telephone companies in order to provision service, monitor problems, bill, etc. Since the MCImetro solution uses one single number, the service provider portability impacts on operations systems less than solutions uing multiple numbers.

When routing calls with this single number solution, there is no need for the originating switch to swap one complete ten digit number in place of another when ported subscribers originate calls.

Although almost all Service Provider Portability solutions could be triggered by IN protocols, like 800, MCImetro CPC officially supports the use of IN triggers. The cost advantage to using IN triggers was discussed above.

MCImetro espouses the use of IN triggers for their CPC solution. The use of IN triggers does not have AIN feature interaction problems. For example, AIN standards specify that subscribers cannot activate CLASS Automatic Callback or Automatic Recall

calls to a ported number provisioned with the 3/6/10[1] trigger. The following table shows feature interactions between the IN CPC solution and CLASS features. Note that all CLASS features function correctly.

CPC SOLUTION - IN TRIGGERING			
	ported user calling non-ported user	**non-ported user calling ported user**	**ported user calling ported user**
Distinctive Ringing	OK	OK	OK
Caller ID	OK	OK	OK
Customer Originated Trace	OK	OK	OK
Selective Call Forwarding	OK	OK	OK
Selective Call Rejection	OK	OK	OK
Long Distance Call Waiting	OK	OK	OK
Anonymous Call Rejection	OK	OK	OK
	ported user activating to non-ported user	**non-ported user activating to ported user**	**ported user activating to ported user**
Automatic Recall	OK	OK	OK
Automatic Call Back	OK	OK	OK

As a comparison to the IN CPC solution, the following table shows the problem with CLASS activation toward ported numbers when using AIN.

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[1] The 3/6/10 trigger is an AIN trigger that corresponds to an array of digits. For example, it can be used as a three digit trigger. In this case, when the digits of a call's NPA matches the three digits of the trigger, the trigger is said to have been detected and a query can be sent to an SCP. Likewise, the 6 digit trigger corresponds to the call's NPA-NXX, and the ten digit trigger corresponds to the entire NPA-NXX-XXXX of a call.

CPC SOLUTION - AIN TRIGGERING			
	ported user calling non-ported user	**non-ported user calling ported user**	**ported user calling ported user**
Distinctive Ringing	OK	OK	OK
Caller ID	OK	OK	OK
Customer Originated Trace	OK	OK	OK
Selective Call Forwarding	OK	OK	OK
Selective Call Rejection	OK	OK	OK
Long Distance Call Waiting	OK	OK	OK
Anonymous Call Rejection	OK	OK	OK
	ported user activating to non-ported user	**non-ported user activating to porter user**	**ported user activating to ported user**
Automatic Recall	OK	NO[1]	NO[1]
Automatic Call Back	OK	NO[1]	NO[1]

1 - Current AIN standards do not allow CLASS activations to numbers with 3/6/10 triggers.

The inability to activate CLASS features to ported numbers assigned the AIN 3/6/10 trigger is a significant issue. Bellcore standards specify that CLASS features shall not be able to activate ported numbers assigned the AIN 3/6/10 trigger. In order to remove this limitation, Bellcore standards need to be changed and vendors need to make modifications to their software.

Although not specific to the MCImetro solution, there is another important issue regarding CLASS features and service provider portability. When subscribers activate their CLASS feature, like Automatic Callback, SS7 will route ClASS messages to the subscriber's old end office, which does not allow the feature to operate normally. In order to alleviate this problem, there are two work-arounds. First, STPs can be translated with the subscriber's full ten digit telephone number (and in the case of MCImetro, the format is NPA-NXX-XXXX), instructing the messages to be routed to the correct end office. Note that STPs are not normally translated with ten digits -- a translation for each and

every ported subscriber is much more laborious than traditional 3 (NPA) or 6(NPA-NXX) digit translations. In the second work-around, STPs would continue to use non-ten digit translations, but would be translated to route CLASS messages to a service provider portability database rather than end office. In this case, the service provider portability database would route these CLASS messages to the correct end office, eliminating the need for laborious ten digit STP translations.

Time Warner does not believe that the CLASS/STP translation issue is an excuse for not providing portability.

There are several disadvantages to the MCImetro solution:

First, since each service provider would consume a CPC in each NPA in each LATA in which they offer service, the usage of CPCs might contribute to telephone number exhaust. Second, CPC translations at each switch can require as much effort as administering a new NPA. This requires more effort than other solutions where new NXXs are translated within already existing NPAs. Third, since the CPC routing address contains the ported subscriber's seven digit number, the CLEC is forced to assign their subscriber in the end office dedicated to the subscriber's NXX. With other solutions, like LRN, the portability database merely returns a location routing number which can correspond to any of the CLEC's switches, allowing the CLEC to offer location portability. Finally, CPC solutions using AIN makes other AIN services offerings using the same trigger impossible. The end office detecting a 3/6/10 digit trigger can send only one query to a database -- that query can be either a service provider portability query or an AIN service query, but not both. If the trigger is used for portability, it cannot be used for revenue generating products.

AT&T LRN

The AT&T Location Routing Number (LRN) approach offers perhaps the most robust solution for the future. In the LRN solution, when an end office detects that a call is being placed to a ported number it will send a query to a service provider database. The response from the database will instruct the end office to route the call to a Location Routing Number, which is a number assigned to a single CLEC end office. When the CLEC end office receives the call, it will examine the SS7 call setup message to determine the subscriber receiving the call.

Like MCImetro, LRN offers the same single number advantages. Another advantage to LRN is the use of a new AIN service provider portability trigger. The new trigger does not have AIN feature interaction problems, like CLASS activation to ported DNs with 3/6/10 triggers. The new trigger frees up the 3/6/10 digit

trigger for revenue generating product use. A third advantage to the LRN solution is number exhaust impact. A switch serving ported subscribers is addressed by the Location Routing Number, which is a unique NXX within an existing NPA as known by the Local Exchange Routing Guide (LERG). Since a new end office must 'own' at least one new NXX anyway, there is no additional impact on exhaust over any other Service Provider Portability solution. Finally, the LRN solution allows the LEC or CLEC to offer location portability. Using the Location Routing Number, calls to the ported number can be routed to any end office regardless of the dialed number.

There are several disadvantages to LRN. The LRN solution proposes changes to SS7 call setup message parameters (i.e. the Generic Address Parameter), requiring acceptance by standards bodies. These changes are not guaranteed to be accepted by the standards bodies. Even if the standards changes were accepted, these changes would most likely not be available until 9-18 months after acceptance -- the 'time to market' is too long for Time Warner.

Transitional LRN-like solution

As an alternative to the LRN solution as specified by AT&T, a modified verison of LRN is possible as a transitional solution. Like most other solutions, this solution is triggered at the N-1th carrier, either by an AIN or IN trigger. Upon receipt of a portability query, the portability SCP will instruct the end office to route the call to the CLEC's end office via the Location Routing Number. The portability SCP will also place the dialed number in some SS7 call setup parameter, like the Original Calling Party Number parameter. However, unlike the AT&T LRN solution, on receipt of the call, the CLEC's terminating office will again trigger on the call, and its SCP will examine the same SS7 call setup parameters used earlier in the call and will route the call to the dialed number -- in this case the contents of the Original Called Party Number parameter.

The advantages to the modified LRN solution are as follows: First, this solution can use AIN or IN triggers, allowing flexibility at the incumbent LEC end office. Second, the LEC or CLEC can offer location portability for the same reasons as the AT&T LRN solution. Third, the LEC and CLEC has less switch translations than other solutions like the MCImetro CPC solution, since CPCs do not have to be translated as NPAs. Fourth, this solution would provide for a transition to a true A&T LRN solution. Most importantly, this solution uses technology that is here and now and can be implemented in a very short time frame. It does not require standards changes nor additional trigger development.

The main disadvantage to this modified LRN solution is the use of two queries in order to route the call. This results in additional post dial tone delay.

Seattle/U.S. Intelco

The U.S. Intelco solution, also known as Local Area Number Portability (LANP) is different from the other solutions in that it uses two numbers for each ported subscriber: the subscriber's original number, and a new routing number known as a Network Node Address (NNA). The NNA is used for call routing number as follows: When an end office detects a call to a ported number, the end office will send a query, either through the use of an AIN or IN trigger, to a service provider portability database. The database will then instruct the end office to route the call to the subscriber's NAA. Upon receipt of the call, the CLEC end office will merely terminate the call to the subscriber's line, which is assigned the NNA. When the ported subscriber originates calls, the CLEC end office will need to ensure that the original subscriber's number (not the NNA) is used for the subscriber's calling party number and billing number.[2]

First, this solution can use AIN or IN triggers, allowing flexibility at the incumbent LEC end office. Second, the LEC or CLEC can offer location portability for the same reasons as the AT&T LRN solution. Third, the LEC and CLEC has less switch translations than other solutions like the MCImetro CPC solution, since NNAs do not have to be translated as NPAs. Although it may appear that two numbers worsens the exhaust issue, this is not the case. The LANP solution allows unused numbers to be freed up. In today's situation, the entire NXX block of numbers is tied up even if only one number is used. With LANP, all of the other numbers in the NXX block would be free for assignment. Therefore, LANP actually helps the number exhaust issue. Most importantly, this solution uses technology that is here and now and can be implemented in a very short time frame.

There are disadvantages with LANP. When ported subscribers originate calls, some switches have difficulty assigning the subscriber's original calling party number and billing number for calls. This was verified with U.S. Intelco testing -- AT&T 5ESS switches had difficulties. In addition, some switches may not have enough memory available for translations because unlike other solutions, with LANP (to be most effective), both the subscriber's original number and the subscriber's NAA must be

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[2] SS7 call setup messages include the caller's calling party number and billing number. The CLEC end office originating calls needs to insert the subscriber's original number in these call setup messages.

translated on the CLEC's switch. Finally, operations systems may have a greater impact with the dual numbering approach with LANP than with single numbering approaches like LRN or MCImetro CPC.

GTE

The GTE solution requires that each ported subscriber make a one time number change. Time Warner cannot accept service provider "solutions" that require number changes.

ANALYSIS OF SO-CALLED INTERIM SOLUTIONS

Remote Call Forwarding (RCF)

The RCF limitations are as follows: First, RCF uses two numbers (without freeing any other numbers) and does not ease telephone number exhaust. Second, RCF is inefficient in trunk utilization because there is no capability to route the call to an alternate destination by an interexchange carrier. Third, RCF allows the incumbent LEC to collect access revenues for interLATA calls, removing the CLEC from these earnings. Finally, RCF does not function properly with switch-based features. The following table shows the limitations of using RCF with various switch based features (NO implies that the feature will not function properly):

RCF SOLUTION			
	ported user calling non-ported user	**non-ported user calling ported user**	
Distinctive Ringing	NO[2]	OK	NO[2]
Caller ID	NO[2]	OK	NO[2]
Customer Originated Trace	OK[1]	OK	OK[1]
Selective Call Forwarding	NO[2]	OK	NO[2]
Selective Call Rejection	NO[2]	OK	NO[2]
Long Distance Call Waiting	OK	OK	OK
Anonymous Call Rejection	OK	OK	OK
	ported user activating to non-ported user	**non-ported user activating to ported user**	**ported user activating to ported user**
Automatic Recall	OK	NO[3]	NO[3]
Automatic Call Back	OK	NO[3]	NO[3]

1 - COT information will be recorded under the forward-to DN, not the original dialed number.
2 - CPN will be new forward-to DN, not ported number.
3 - The 5ESS cannot perform feature activation to Call Forwarded DN.

b) DID

The DID limitations are as follows: Like RCF, DID is inefficient in trunk utilization. DID allows the incumbent LEC to collect access revenues for interLATA calls, removing the CLEC from these earnings. Using MF trunks, DID does not allow CLASS features to function properly. CLASS features require SS7, which is not available for DID trunks. Using MF trunks, DID has slower call setup times than SS7 trunking. Call setup delay is even worse with enhanced versions of DID that route calls through an Access Tandem. Given this analysis, DID gives the incumbent LEC a significant advantage over CLECs.

APPENDIX C

CURRENT/PLANNED TRIALS IN WHICH TWCOMM IS INVOLVED

New York

Ten companies (AT&T, Cellular One/Genesee Telephone Company, LOCATE, MCI, MFS Intelenet, Inc., NYNEX, Rochester Telephone Corp., Sprint Communications Company L.P., Teleport Communications Group, and Time Warner Communications) in conjunction with the New York Public Service Commission (NYPSC) solicited proposals from manufacturers/providers of network database-driven Local Number Portability (LNP) architectures, for use in exploring the feasibility of a multi-company LNP trial. The trial will begin on or about February 1, 1996 following the approval of the NYPSC.

Two providers were selected via Request for Proposal evaluation process: MCImetro for a Carrier Portability Code (CPC) solution in Manhattan, and U S Intelco/Stratus for a Local Area Number Portability (LANP) solution in Rochester, New York.

Phase 1 will port numbers from dedicated, unused NNXs.

Phase 2 will expand the trial to a limited number of NNXs in general use. Telephone numbers from trial participants' administrative offices will port from one local service provider to another.

Phase 3 will serve customers served by interim number portability arrangements (remote call forwarding) via the LNP trial capability.

Manhattan

NYNEX has elected to accommodate the CPC trial with AIN 0.1 triggers from their Manhattan switches. MCImetro, Time Warner, NYNEX, TCG, and MFS will have class 5 end offices in the trial topology; all are served via the NYNEX 37th street access tandem. AT&T, MCI, and Sprint will interface for interexchange carrier traffic; STPs owned by AT&T, MCI, NYNEX, Sprint, ITN and MFS will interface signaling links. MCImetro will provide the LNP SCP data base, but AT&T, MCI and Sprint may have copies of their own data base. The trial will impact Line Identification Data Bases (LIDB) for all carriers involved; the scope of the impact is unknown at this time. All class 5 end offices will carry operator services and 911 traffic. (The Manhattan area will have E911 via 2 tandems as of 10/31/95.)

MCImetro will complete test plans by 11/1/95, and have data base equipment and access lines installed by 11/27/95. Training will complete by 1/27/96.

Trial Phase 1 will begin 2/1/96 and complete 3/22/96. Phase 2 will begin 3/25/96, end 5/31/96; and Phase 3 begins 6/3/96, ends 8/14/96.

The trial team will develop a cost model for the widespread deployment of this LNP method after the conclusion of Phase 3. The post trial activities are scheduled to be completed by 1/15/97.

Rochester

The technical team is currently defining the trial network topology. Participating companies: MFS, Time Warner, Rochester Telephone, Cellular One, Sprint, AT&T, MCI.

Trial Network Design Document Complete: 10/18/95

Trial System Design Document Complete: 10/18/95

Trial Network Development Complete: 11/20/95

Trial System Development Complete: 11/20/95

Pre-Trial Testing and Training Complete: 1/5/96

Phase 1: 2/1/96 through 3/29/96

Phase 2: 4/1/96 through 5/31/96

Phase 3: 6/3/96 through 7/31/96

Post-Trial Report and Cost Model Completion: 8/31/96

Illinois

The Illinois Commerce Commission has hosted a workshop for carriers operating networks in Illinois to explore and define LNP issues. This team developed a framework requirements document that outlines requirements for an LNP architecture solution in Illinois. AG Communications/ITN, USIntelco/Stratus, AT&T, MCImetro, and Nortel responded to the requirements document with formal presentations in Chicago during the week of 8/14/95. This team will select an architecture for deployment on 9/7-8/95.

AG Communications presented a dual number approach, USIntelco/Stratus presented LANP interworking with various other vendor solutions, AT&T presented LRN, MCImetro presented CPC, and Nortel presented Look Back.

The workshop created subcommittees to explore SMS, Rating and Billing requirements.

Florida

The Florida Public Service Commission hosts a Number Portability Standards Group to determine the appropriate parameters, costs and standards of number portability as directed by Florida Statutes. This team is just now assembling.

Ohio

Since MFS has been granted the approval to provide local access in Ohio, the Ohio Commission has expressed an interest in exploring LNP requirements issues. No specifics as of this writing.