BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's own Motion Into Competition for Local Exchange Service.	R.95-04-043 (Filed April 26, 1995)
Order Instituting Investigation on the Commission's own Motion Into Competition for Local Exchange Service.	I.95-04-044 (Filed April 26, 1995)

REPORT ON THE 818 AREA CODE

Submitted in Compliance with California Public Utilities Code Section 7937, CPUC decision 99-12-051, and Administrative Law Judge Ruling Issued On January 18, 2000

CALIFORNIA PUBLIC UTILITIES COMMISSION
TELECOMMUNICATIONS DIVISION

Respectfully submitted
November 28, 2000

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CALIFORNIA PUBLIC UTILITIES COMMISSION
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November 28, 2000

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EXECUTIVE SUMMARY

Like much of the country, California currently is experiencing a numbering crisis. From 1947 to January 1997, the number of area codes in this state increased gradually from 3 to 13. During the next three years, however, the number of area codes in California nearly doubled. By the end of 1999, California had 25 area codes statewide. The California Public Utilities Commission (CPUC) recently has implemented several measures intended to ensure efficient use of telephone numbers. Without these measures, the CPUC projects that 16 more area codes would need to be opened by the end of 2002, resulting in a statewide total of 41 area codes.

This study recounts the history of the 818 area code, from its creation in 1984 through the various splits to its present status, covering the greater San Fernando Valley area in Southern California. This report should be viewed in a broader context than the facts pertaining solely to the 818 area code. The report evaluates the status of number availability in the 818 area code, and discusses the various state and federal policies which govern number use in California and nationwide. In addition, the report analyzes number use by carrier category and identifies what measures the CPUC can employ in the 818 and other area codes to improve efficiency of number use in order to avoid prematurely opening new area codes. Data is self-reported by the companies; the CPUC staff has not audited any 818 utilization data submitted for this study and report.

The utilization study sheds new light on the numbering crisis in the 818 area code. The data reveals that despite increasing demand for numbers, the 818 area code is not fully utilized. The study found that of the 7.9 million usable numbers in the 818 area code, approximately 3.9 million, or roughly half, presently are not in use. The data further establishes that the 818 area code possesses considerable room for growth, and thus, aggressive measures such as splits or overlays are not yet warranted. The report further urges the CPUC to seek from the FCC authority to implement Unassigned Number Porting (UNP) as a means to more efficiently use numbers still available in the

818 area code.

This report is filed in compliance with CPUC Decision (D.) 99-12-051, and with AB 406, enacted by the California Legislature in the 1999 legislative session. (Chapter 99-809, 1999.) AB 406, codified as Public Utilities Code Section 7937, requires the CPUC to obtain historical telephone number use data from every telecommunications company in California. The CPUC's Telecommunications Division (TD) first obtained and analyzed data from the 310 area code in Los Angeles late in 1999, and produced a utilization report on 310 in March 2000. This report on the 818 area code is one of a group of reports covering specific area code number utilization levels.

FINDINGS

The 818 area code contains approximately 7.9 million telephone numbers available for consumer use. These numbers are available to telecommunications companies which obtain the numbers from the North American Numbering Plan Administrator (NANPA)[1], and in turn, assign the numbers to their customers for their immediate use. Alternatively, companies may reserve numbers for future use, or retain numbers for some internal (administrative) use. Some companies provide blocks of numbers to resellers or "dealers", which then assign those numbers to customers. The FCC deems numbers which companies allocate to resellers to be "intermediate" numbers. In addition, each assigned number, after disconnection, must "age" during a transition period before assignment to the next customer. Many companies have inventories of numbers in the “aging” process. Finally, some numbers are not available for public use, as they have been set aside for emergency purposes, for technical network support, or for other reasons.

The FCC has determined that numbers in these five categories – assigned, administrative, reserved, intermediate, or aging – are unavailable, either because they are already in use or are designated for some present or future use. Of the 3.9 million

[1] NANPA is a role performed by NeuStar, Inc. The FCC chose NeuStar, formerly Lockheed Martin, to perform the functions of numbering administration and area code changes nationwide.

available numbers, 1.23 million have been set aside by the CPUC to use in a lottery for companies seeking numbers. Companies possess the remaining 2.7 million unused numbers. Wireline carriers, such as Pacific Bell and many competitive local exchange carriers, hold roughly 1.8 million available numbers, while wireless carriers hold approximately 834,000 available numbers.

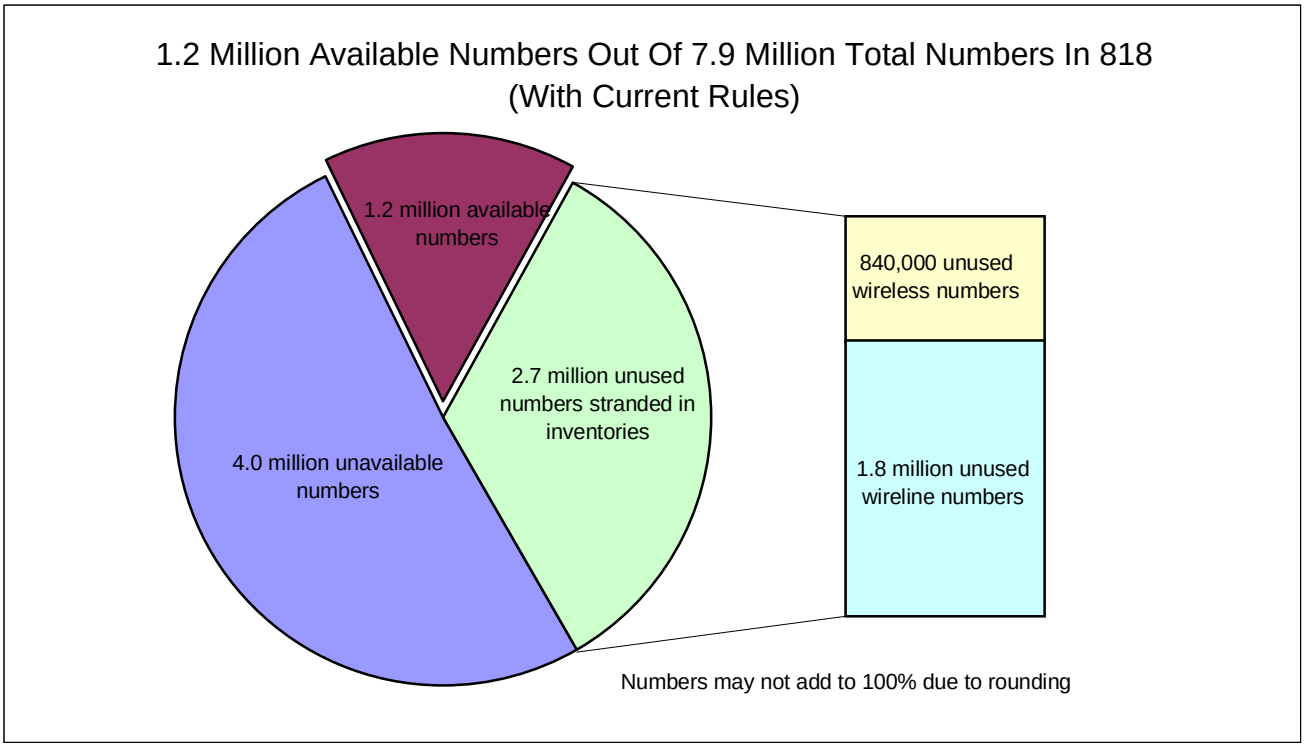
Because there is no "number pool" [2] in the 818 area code, all the 2.7 million unused numbers are left stranded in company inventories. Should a pool be implemented, the FCC has determined that wireless carriers do not have to participate in pooling at this time.[3] In addition, the FCC has determined that the CPUC may only require wireline carriers to contribute to a number pool those blocks of 1,000 numbers that are 10% or less contaminated[4], meaning those blocks in which only 100 or fewer numbers are unavailable. However wireline carriers may also keep a portion of the 10% or less contaminated blocks if those are needed for use within six month. The study further finds that a maximum of 3.2 million numbers[5] could be available to all companies through pooling if a) the companies were required to donate blocks with higher contamination levels in a pooling trial and b) wireless carriers were required to participate in a pooling trial. The first table below illustrates the current distribution of numbers. The second table shows the distribution that would occur if all the recommendations in this report were implemented.

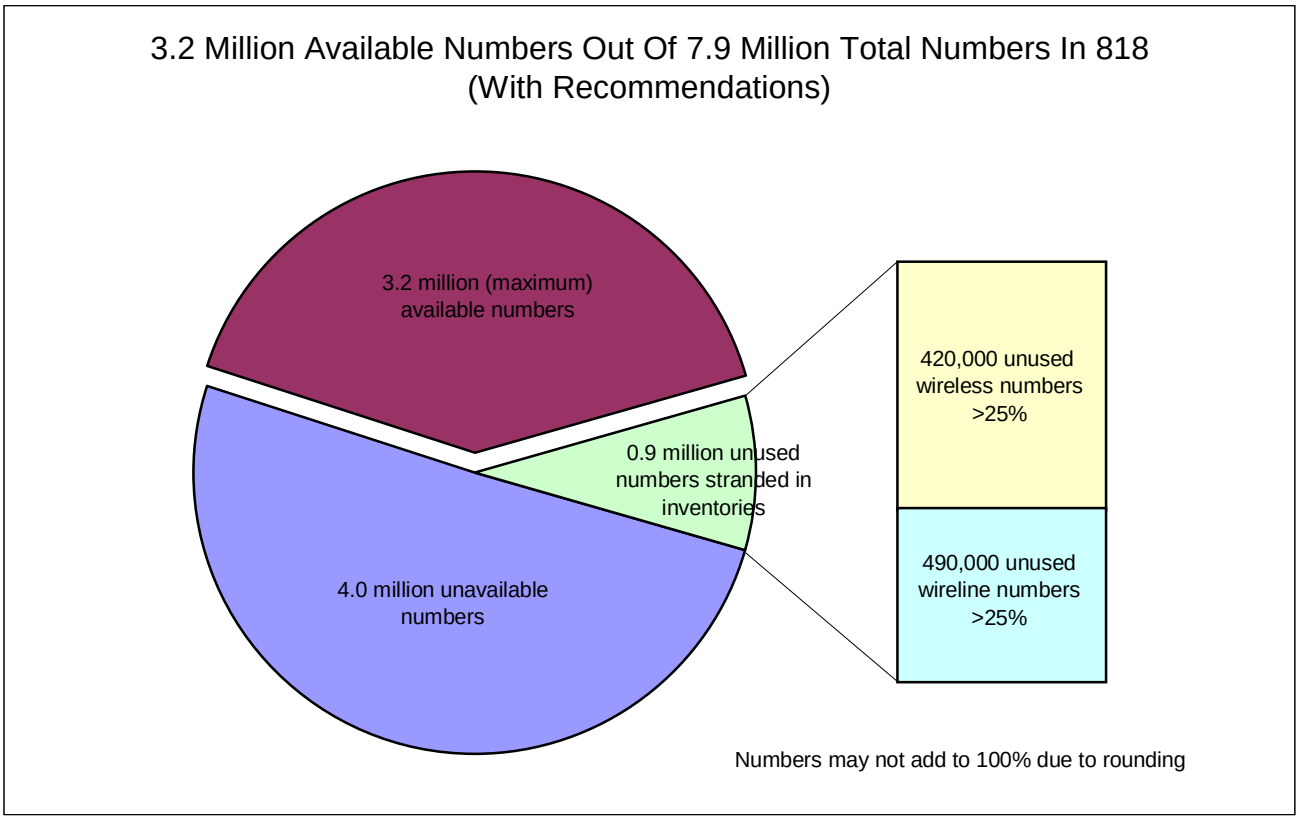
[2] Historically, telephone numbers have been allocated to companies in blocks of 10,000, as a complete prefix, such as (415) 703-XXXX. Number pooling allows companies to obtain numbers in blocks of 1,000 or even fewer numbers.

[3] At present, only wireline carriers are required to participate in number pooling. The FCC has granted most wireless carriers an extension of time, until November, 2002, to implement the technology that will support number pooling. The FCC has permanently exempted paging companies from implementing the technology necessary to pool.

[4] The percentage of numbers in use in a particular block of 1,000 numbers is referred to as the "contamination" level.

[5] This assumes that companies' six-month inventory needs would be satisfied out of the unused numbers in the blocks greater than 25% contaminated.


1.2 Million Available Numbers Out Of 7.9 Million Total Numbers In 818
(With Current Rules)
1.2 million available numbers
2.7 million unused numbers stranded in inventories
4.0 million unavailable numbers
840,000 unused wireless numbers
1.8 million unused wireline numbers
Numbers may not add to 100% due to rounding


3.2 Million Available Numbers Out Of 7.9 Million Total Numbers In 818
(With Recommendations)
3.2 million (maximum) available numbers
0.9 million unused numbers stranded in inventories
4.0 million unavailable numbers
420,000 unused wireless numbers >25%
490,000 unused wireline numbers >25%
Numbers may not add to 100% due to rounding

Finally, the study notes that companies identify 4.0 million numbers as unavailable. TD staff recommends measures the CPUC can employ to ensure that companies use those "unavailable" numbers more efficiently. Given the near doubling of the number of area codes in California, from 1996 to 1999, this vital public resource should be used as efficiently and effectively as possible. The CPUC and the telecommunications industry should strive to minimize the quantity of numbers left stranded in company inventories. The 818 Area Code Report recommendations are summarized in Appendix I.

CHAPTER ONE: OVERVIEW OF NUMBERING

A. Inefficient Use and Increasing Demand for New Numbers in California Is Causing Area Code Proliferation

California is currently experiencing an explosive demand for telephone numbers and area codes. The increased demand for numbering resources is due to many factors, including competition for local phone service, as well as the popularity of faxes, pagers, cell phones, internet services, etc. California's robust economy and the growth in the state's population also contribute to the increased demand for telephone numbers. This increase in demand is complicated by a number allocation system dating from the 1940's that is inefficient in today's competitive marketplace.

Prior to 1997, one phone company[6] provided local telephone service to all customers in a particular area and new area codes were opened as the population grew. The number of California area codes rose steadily from 3 in 1947 to 13 in 1992, and stayed at that level until January 1997. The Telecommunications Act of 1996 brought competition to local telephone service and competitive local phone companies[7] began to enter the marketplace, each requiring its own stock of numbers. The traditional system of number allocation was not designed to provide telephone numbers to more than one company.

In the past, when telecommunication companies needed telephone numbers to serve their customers, they received blocks of 10,000 numbers, i.e. prefixes. Because companies were assigned blocks of 10,000 numbers, they may have been assigned more numbers than they needed. For example, under this system, a company with only 500 customers would have received a 10,000 number block, the same quantity of numbers a company with 9,500 customers would receive. Thus, numbers are taken in these large blocks, creating an artificial demand for more numbers, which in turn fuels the need to open more area codes. The need to assign 10,000 numbers is a practice from the past when one telephone company provided service to all customers in its territory. Today,

[6] Today called the Incumbent Local Exchange Carrier (ILEC)

[7] Today called Competitive Local Exchange Carriers (CLEC)

with over 200 telecommunications companies in the state needing numbers to serve customers, and with the limited quantity of numbers available in each area code, this process is no longer an efficient way to allocate numbers.

The rise in demand for numbers combined with the inefficient allocation system for numbers has forced the rapid opening of new area codes throughout the state. Since 1997, the number of area codes has nearly doubled to 25. Unless major changes occur, the CPUC projects that sixteen more area codes would need to be opened by 2002. With more and more companies needing numbers of their own, new area codes are not necessarily the best solution.

B. 818 History and CPUC Decisions

The 818 Numbering Plan Area (NPA) is one example of area code proliferation in California. The 818 area code was implemented in 1984 when it was geographically split from the 213 area code, one of the three original area codes assigned to California in 1948 when the North American Numbering Plan was implemented. In June of 1997, the 818 area code was geographically split with the implementation of the 626 area code. The current 818 area code serves the greater San Fernando Valley area in Southern California.

Despite the introduction of an additional area code to provide relief to the 818 area code, the North American Numbering Plan Administrator (NANPA) determined the 818 area code required further relief in early 1998. On October 7, 1999, by Decision 99-10-022, the CPUC ordered the implementation of a variety of conservation measures to address the exhaustion of numbers in the 818 area code. As a back-up plan, the CPUC adopted a geographic split, but deferred an implementation date until and unless it can be determined that number conservation measures have failed to provide enough numbering resources to facilitate competition in the 818 area code.

1. Monthly Lottery Allocation of Prefixes

In all the area codes in danger of running out of numbers, the CPUC has instituted a lottery process to fairly allocate the remaining prefixes among phone companies when

demand exceeds supply. The 818 lottery began May 1997. Currently, the CPUC distributes three prefixes (two initial and one growth[8]) in the monthly 818 lottery. Each company submits applications for initial and growth prefixes to the NANPA Code Administrator. If more applications are received than can be satisfied in that month, the first applicants chosen by random drawing are assigned a prefix and the remaining applicants are placed on a priority list and receive prefixes in the following month's lottery in the order they were drawn. Once every company requesting a prefix has received numbers, a new drawing is held and additional companies are eligible to receive prefixes. The CPUC has allocated 27 prefixes in the 818 area code through this process between January 1, 2000 and August 31, 2000. As of the utilization study date of April 30, 2000, there were 123 prefixes available for assignment. By the end of August 2000, 115 prefixes were available for assignment in the 818 area code.

C. CPUC Efforts to Resolve Area Code Proliferation

Recognizing the substantial social and economic burdens associated with constant area code changes, the CPUC has taken steps to resolve the numbering crisis. Responding to widespread public outcry over the proliferation of new area codes, the CPUC, beginning in December 1999, suspended all plans for new area codes previously approved. At the same time, the CPUC adopted number conservation measures, including the establishment of number pooling trials, fill rates and sequential numbering.

1. Number Pooling

The CPUC, with FCC approval, began pooling trials in four area codes in 2000, in order to boost the efficiency of phone number allocation. Number pooling allows telecommunication providers to receive numbers in smaller blocks than the traditional 10,000 numbers, thus enabling multiple providers are able to share a prefix, thereby utilizing this limited resource much more efficiently. The technology that enables the network to support the assignment of smaller blocks is referred to as Local Number

[8] A company's request for its first prefix in a rate center is considered an initial request; requests for additional prefixes are considered growth requests.

Portability or LNP.[9] LNP was originally mandated by the FCC as a means to enable customers to retain their telephone numbers when they switch telephone service to another local provider. This same platform is utilized for number pooling. The FCC had required all wireline carriers to become LNP-capable by the end of 1998 in the top 100 Metropolitan Statistical Areas (MSAs) in the country.[10] Thirteen of the top 100 MSAs are located in California; the 818 area code is in one of them.

Though LNP technology has existed for several years, the FCC later granted cellular and PCS companies an extension of time until November 2002 to become LNP-capable. The FCC gave paging companies a permanent exemption from the LNP requirement.[11] Thus at this time, only wireline carriers[12] can participate in pooling. In the area codes with pooling, wireline carriers participate in pooling and wireless carriers participate in the lottery. In the remaining area codes, all phone companies participate in the lottery.

There is currently no number pooling trial underway in the 818 area code. The CPUC issued a Proposed Pooling Schedule for 2001, which included a pooling trial for the 818 area code to begin in October 2001. The ALJ Ruling soliciting comments on the proposed schedule was issued on June 27, 2000. Reply comments have been received and are being considered. No final pooling schedule has been issued to date.

2. Improved Number Inventory Management

While pooling trials have improved the efficiency of the distribution of numbers to companies, companies have not had strong incentives to efficiently manage the numbers already allocated to them. Thus, the CPUC ordered companies to improve number inventory management with measures including rules on fill rates and sequential numbering.

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[9] See Chapter 3 of this report for a discussion of LNP.

[10] FCC's Opinion and Order on Telephone Number Portability FCC 97-74, issued March 6, 1997

[11] Celullar companies, PCS companies, and paging companies comprise the wireless category.

[12] ILECs and CLECs

In July 2000, the CPUC issued Decision 00-07-052, which extended number conservation measures adopted in the 310 area code to other area codes within California. These number conservation measures include the following:

- Carriers are required to return to the NANPA any prefix held for more than six months without being used.
- "Imminent exhaust criteria" are established in all area codes with lotteries or pooling trials. In each rate center in which companies request additional numbers, they must as a prerequisite supply NANPA with a form demonstrating they will be out of numbers within three months.
- Companies must satisfy a minimum 75% fill rate requirement before being eligible to request a growth code in any area code in rationing. Companies must assign numbers in thousand block sequence, moving to the next block only once a 75% fill rate has been attained in the prior block.

TD anticipates that these policies will potentially free more numbers for use in a potential 818 number pool, to be allocated through the lottery, or to be otherwise used by companies. Indeed, these measures have already achieved some positive effects. For example, since the CPUC extended the 75% fill rate and imminent exhaust rules to all area codes, including 818, CPUC staff has observed that the demand for growth prefixes in each month's lottery has declined.

3. CPUC Efforts at Federal Level

The FCC has exclusive jurisdiction over numbering in the U.S. Therefore, the CPUC's number conservation and allocation policies (pooling, lottery, fill rates and sequential numbering) are governed by the FCC's delegation of authority to the states. In recognition of the severity of the numbering crisis in California, the CPUC has aggressively petitioned the FCC for additional authority. As a result, the FCC has delegated authority to plan and implement area code changes, as well as authority to implement number conservation measures.

a) Authority Regarding Pooling

On April 26, 1999, the CPUC filed a petition with the FCC requesting authority to institute number pooling trials and other number conservation measures within the state to better manage this public resource. On September 15, 1999, the FCC granted that petition, allowing the CPUC to institute mandatory number pooling on a trial basis, deploying it sequentially in one MSA at a time. When the FCC granted the CPUC the authority to deploy various numbering resource optimization strategies, including the authority to institute thousand-block numbering pooling trials, it also clarified that California's authority will be superseded by future national measures adopted by the FCC.

On March 31, 2000, the FCC released the Numbering Resource Optimization Report and Order and Further Notice of Proposed Rulemaking (NRO Order).[13] The NRO Order sets forth rules for defining numbers, forecasting, tracking and auditing companies' use of numbers, and for conservation measures associated with number usage, including but not limited to number pooling. The definitions for numbers and timelines for aging and reserved numbers that were adopted in that order have been incorporated into the utilization data contained herein.

With the release of the NRO Order, the FCC adopted a number of administrative and technical measures that will allow it to monitor more closely the way numbering resources are used and to promote more efficient use of numbering resources. In particular, the FCC adopted a nationwide system for allocating numbers in blocks of one thousand, rather than ten thousand, wherever possible, and announced its intention to establish a plan for national rollout of thousands-block number pooling.

Because the FCC recognized that state thousand-block number pooling trials underway might not conform to the national standards set forth in the NRO Order, the FCC gave state commissions until September 1, 2000 to conform their thousands-block number pooling trials to the national framework. One requirement imposed in California

[13] Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 99-200 FCC 00-104 (released March 31, 2000).

which differs from the national standards is the requirement that companies meet a 75% fill rate in each block before they may receive an additional block from the pooling administrator. The CPUC recognized the 75% fill rate as a critical factor in the success of the 310 pooling trial and petitioned for a waiver of compliance with the national rules. On August 31, 2000, the FCC issued an order granting the CPUC authority to continue to use its own pooling rules until the FCC decides on the merits of the petition, or until December 31, 2000, whichever occurs sooner. This allows California to continue applying the 75% utilization rate in its number pooling efforts.

The NRO further constrains the CPUC by concluding that the rollout of thousand-block number pooling should first occur in area codes that are located in the largest 100 MSAs. In its comments prior to the release of the NRO, the CPUC had argued that California would be precluded from exploring whether number pooling could alleviate the crises for number resources in many parts of the state that are located outside of the top 100 MSAs. The CPUC believes the FCC should delegate authority to the states to order deployment of LNP. This grant of authority to California would make pooling possible throughout the state.

b) Authority Regarding Technology-Specific Area Codes

Currently, state commissions are constrained by the FCC from establishing an area code specifically for wireless telecommunications services. On April 26, 1999, the CPUC filed another petition with the FCC requesting authority to create service-specific or technology-specific area codes. In the 818 area code, wireless carriers hold 199 prefixes. If the CPUC were allowed to create a separate area code for those companies, these 199 prefixes in the 818 area code could be reassigned to other phone uses, thus prolonging the life of the existing area code. To date, the FCC has not acted on the CPUC's petition.

On September 28, 2000, Governor Davis signed into law Senate Bill (SB) 1741, authored by Senator Bowen. SB 1741 requires the CPUC to request authority from the FCC to require telephone corporations to establish technology-specific area codes based

on wireless and data communications, and to permit 7-digit dialing within both that technology-specific area code and the underlying pre-existing area code or codes. The bill requires the CPUC to use any authority so granted unless it makes a specified finding that there is reason not to do so. The legislation also prohibits the CPUC from implementing any authority granted by the FCC in a manner that impairs number portability. The Petition that the CPUC filed with the FCC in April 1999 fulfills the technology-specific area code requirement set forth in the bill.

The bill also prohibits the CPUC from approving new area codes unless a telephone utilization study has been performed and all reasonable telephone number conservation measures have been implemented. This utilization study fulfills the telephone utilization study portion of SB 1741.

4. Utilization Studies

Before requiring the residents and businesses of the 818 area code to undergo another area code change, the CPUC recognized the necessity of determining the amount of telephone numbers that are in use and yet to be used. To that end, the CPUC instituted an 818 utilization study and required companies to provide usage data to the CPUC as of April 30, 2000. The TD contracted with NeuStar to collect the data, which submitted the aggregated data in its entirety to TD on August 18, 2000. The study parameters and filing requirements appear in Appendix A, as well as a list of companies who have been allocated numbers in the 818 area code.

CHAPTER TWO: 3.9 MILLION UNUSED NUMBERS IN THE 818 AREA CODE

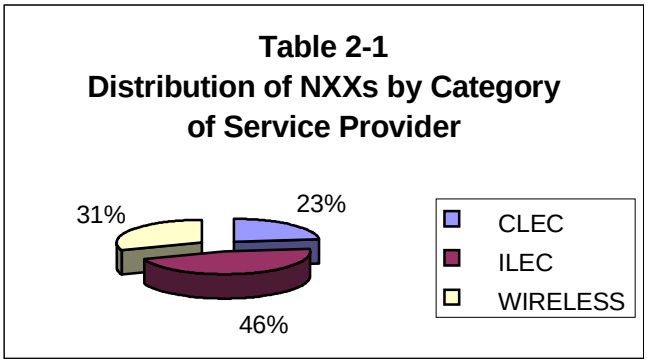
Of the 7.9 million numbers in the 818 area code, companies hold 6.7 million. The other 1.2 million numbers have yet to be assigned to companies. The CPUC's utilization study found that of the 6.7 million numbers held by companies, 2.7 million remain unused in their inventories. Therefore, 3.9 million numbers in the 818 area code remain unused. A portion of these unused numbers can be made available for use by all companies, either through a potential number pool or through the monthly lottery allocation process. In addition, companies have reported 4.0 million numbers as unavailable. A portion of these unavailable numbers can be used more efficiently if the recommendations contained in this report are implemented.

A. The Scope of the Utilization Study

1. Distribution Statistics of Prefixes

The CPUC asked fifty-five companies in the 818 area code to report their utilization data, with a reporting cut-off date of April 30, 2000. Table 2-1 shows the distribution of prefixes by type of company: incumbent local exchange carrier (ILEC), competitive local exchange carrier (CLEC), [14] and wireless carrier.

[14] Wireline carriers include ILECs and CLECs.



2. Carriers Reporting

Of the 55 companies, 51 companies submitted utilization data; one company submitted data too late to be included in the summaries provided by NeuStar. TD has considered this late filer in its analysis.

3. Non-Reporting Carriers

CRL Network Services wrote to NeuStar that it was returning all its prefixes in California. NANPA has confirmed that CRL Network Services has returned all five of its prefixes in the 818 area code.

The remaining three companies, of the 55 companies, failed to report utilization data. These three companies hold four prefixes. Table 2.2 summarizes this information.

Table 2-2

Non-Reporting Carriers

Carrier	OCN	Rate Center	Prefix
PageCell, Inc.- CA	6586	Van Nuys	278
PagePrompt, Inc.	6588	Van Nuys	214
PagePrompt, Inc.	6588	Van Nuys	418
Paging Dimensions	6869	Van Nuys	412

Administrative Law Judge's Ruling Ordering Carriers to Submit Utilization Data, dated June 15, 2000, directed twelve delinquent companies to submit utilization data within 20 days or be subject to sanctions. PageCell, PagePrompt, and Paging Dimensions were listed among the twelve companies.

In addition, the CPUC has already issued a report on number utilization in the 310 area code on March 16, 2000. After the report's issuance, the CPUC issued Administrative Law Judge's Ruling Ordering Carriers to Submit Utilization Data, dated May 11, 2000. It should be noted that PageCell, PagePrompt, and Paging Dimensions were listed as companies that did not submit utilization data for the 310 area code.

Recommendation for Data Submittal

- *The CPUC should direct the NANPA to withhold issuing prefixes to these companies until the required information is submitted. The CPUC should also consider levying fines or other penalties for failure to comply. If these prefixes are not being used for customers, the CPUC should direct the NANPA to reclaim the prefixes as soon as possible.*

B. 3.9 Million Numbers Available in the 818 Area Code

The 818 area code has 3.9 million unused numbers. Of these unused numbers, the 818 study found that companies held 2.7 million numbers in their inventories.[15] These numbers held inventory are currently not used for any purpose, but held in anticipation of future need. The remaining 1.2 million unused numbers are not yet assigned to companies; these numbers are available for allocation in the monthly 818 lottery. The summary of available numbers is shown in the table below.

[15] A further breakdown of the 2.7 million available numbers held by companies is shown in Table B-1 in Appendix B.

Table 2-3

Summary of Available Numbers

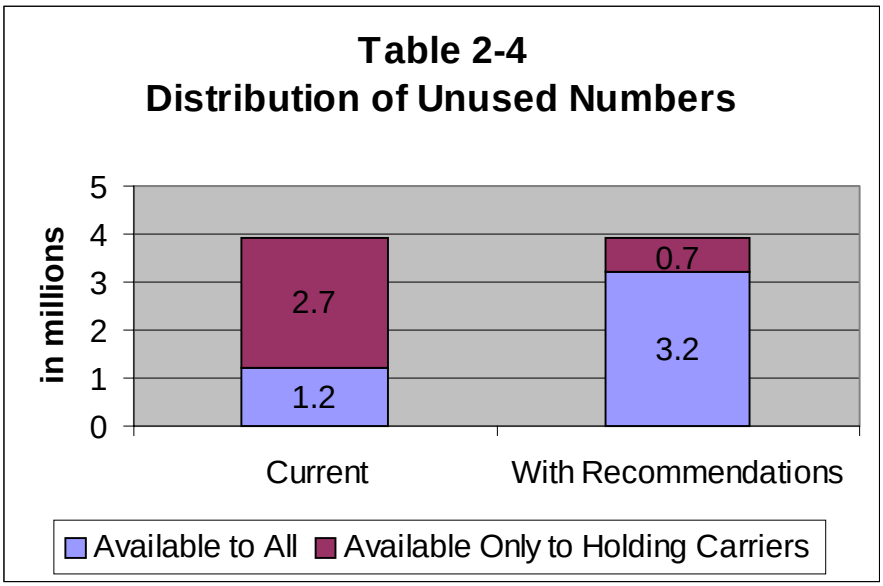
Wireline Carriers	1,828,826
Wireless Carriers	705,730
Type 1 Carriers[16]	128,201
Total Available Numbers Held by Carriers	2,662,757
Numbers Available for the 818 Lottery	1,230,000
Total Available Numbers in the 818 Area Code	**3,892,757**

Not all of the 3.9 million unused numbers are immediately available to every company that wants numbers. Of the 3.9 million numbers, only the 1.23 million numbers for the lottery are currently available to all companies. The remaining 2.7 million numbers are only available to the companies that hold them. The 818 area code is currently not in a pooling trial and no schedule for pooling has yet been adopted.[17] However, should pooling be started with the current FCC rules specifying donations of 10% or less contaminated blocks of LNP-capable carriers, the pooling trial could start with a maximum of the 1.35 million numbers in wireline carriers' 10% or less contaminated blocks. However, the passage of time may lessen this number as companies use numbers. In addition, if the CPUC were to allow companies to retain a six-month inventory, as in the other pooling trials set up in California, some blocks in the 0% to 10% contamination levels would not be donated to the pool.

[16] Type 1 carriers are not considered wireline or wireless carriers. Type 1 numbers are programmed in to wireline carrier's end office, but are used by a wireless carrier.

[17] See Chapter 3 for the status on pooling in the 818 area code.

By adopting the recommendations[18] in this report, the CPUC could shift numbers from one availability category to the other as shown in the table below. Those actions could result in making a maximum of 3.2 million numbers[19] of 3.9 million unused numbers available to all companies, with the remaining 0.7 million numbers available to the companies that hold them.



Although a number pooling trial has not yet been scheduled for the 818 area code, TD analyzed the 818 utilization data by percentage contamination to determine the availability of numbers that potentially could be used in a number pool. Current technology requires a company to be LNP-capable in order to donate numbers for another company to use. All wireline carriers in the 818 area code are required to be LNP capable.[20] In order for the unused numbers to be retrieved from company inventories, the FCC requires these unused numbers to be retrieved from blocks which are 10% or

[18] Chiefly, setting a higher contamination threshold (25%) for pooling, recovering blocks from special use codes, recovering unused numbers from non-LNP capable carriers and Type 1 carriers as described later in this report, and requiring wireless carriers to participate in pooling.

[19] See Table B-2 in the appendix for a detailed breakout of the 3.2 million numbers.

[20] Although all wireline carriers are required to be LNP capable, two wireline carriers in the 818 area code remain non LNP-capable.

less contaminated.[21] 1.35 million of wireline carriers' 1.8 million unused numbers are contained in 1,369 thousand-blocks held by LNP-capable carriers that are 10% or less contaminated. However, if a number pool were to start in the 818 area code, not all of these 1.35 million numbers can be retrieved from companies' inventories for the pool because companies need to have enough numbers to meet anticipated future need.[22] Both the CPUC and the FCC have determined that six-months of inventory is a reasonable quantity to hold in inventory.

The remaining 476,000 of the 1.8 million unused numbers would not be retrieved, either because they numbers are in blocks greater than 10% contaminated or because they are in non LNP-capable blocks. However, companies can immediately use these numbers to provide service to their customers or meet other needs. Wireline carriers hold 426,000 numbers in blocks that are more than 10% contaminated.[23] Non-LNP capable wireline carriers hold 40,000 of the 1.8 million unused numbers. Special use prefixes[24] are generally not LNP-capable and constitute 10,000 of the 1.8 million unused numbers.

Wireless carriers hold 706,000 unused numbers in the 818 area code. Of these unused numbers, 367,000 are in blocks that are 10% or less contaminated, while 339,000 numbers are in blocks greater than 10% contaminated. Until wireless carriers become LNP-capable in November 2002, none of these numbers may be reallocated to other companies. In the interim, wireless carriers may assign these numbers to their own customers.

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[21] 10% or less contaminated means that out of 1000 numbers in a block, 100 numbers or less have been classified as unavailable.

[22] Future need may include serving new customers or offering new services.

[23] See Appendix B, Table B-1. The 426,463 is comprised of 55,667 numbers from blocks that are 10-15% contaminated, 54,387 from 15-20% contaminated, 28,191 from 20-25% contaminated, and 288,217 numbers from block that are more than 25% contaminated. Later in this chapter, TD recommends additional steps that can be implemented to make more of the 426,463 numbers available for number pooling.

[24] For a discussion of numbers held for special uses, see Section D.1.c of this chapter.

C. Analysis of Available Numbers

1. Analysis of Wireline Carriers' Contamination Rates

If pooling takes place in the 818 area code under current rules, the CPUC would require each company participating in the 818 number pool to donate blocks that are 10% or less contaminated, excluding those retained for the six-month inventory. [25]

Although a number pooling trial has not yet been scheduled for the 818 area code, TD analyzed the 818 utilization data to determine the availability of numbers within blocks if different contamination thresholds were employed in the number pool. The following table summarizes available numbers by contamination rate by rate center for wireline carriers.

[25] INC's Thousand Block (NXX-X) Pooling Administration Guidelines, dated January 10, 2000, state that companies should donate specified thousand blocks.

Table 2-5

Available Numbers by Percentage Contamination for LNP Capable Wireline Carriers

Rate Center	0%	>0% - 10%	>10% - 15%	>15% - 20%	>20% to 25%
Agoura	16,000	12,468	4,401	0	1,557
Burbank	85,000	54,869	4,370	5,624	3,876
Burbank Sun Valley	24,000	26,171	3,541	3,296	784
Canoga Park	71,000	67,915	12,442	9,772	2,369
Glendale	70,000	54,165	1,762	6,470	1,598
La Crescenta	63,000	13,720	0	1,600	0
Los Angeles DA 01	0	0	0	0	0
Los Angeles DA 14	0	0	0	0	0
North Hollywood	72,000	47,601	7,019	4,846	2,277
Northridge	41,000	42,934	4,421	1,600	3,955
Pasadena La Canada	17,000	5,761	0	800	775
Pasadena	0	0	0	0	0
Reseda	53,000	35,854	2,635	800	1,565
San Fernando Granada Hills	34,000	13,593	0	0	0
San Fernando Pacoima	36,000	12,665	888	841	1,573
San Fernando	59,000	29,129	1,782	2,443	1,553
San Fernando Sepulveda	26,000	9,735	0	800	783
Sunland Tujunga	42,000	14,687	0	810	0
Van Nuys	117,000	85,273	12,406	14,685	5,526
818 NPA DA	0	0	0	0	0
Grand Totals	**826,000**	**526,540**	**55,667**	**54,387**	**28,191**

The first two numeric columns of Table 2-5 show the potential numbers available to a pooling trial, except for those numbers kept for companies' six-month inventory, under current rules. Available numbers in one rate center cannot be used in another rate center. Table 2-5 shows that, except for three rate centers, the rest of the rate centers have available numbers that companies could potentially donate to an 818 pooling trial.

The last three columns of Table 2-5 capture available numbers in blocks that are more than 10% contaminated but no more than 25% contaminated. Under the current

number pool rules, companies retain thousand number blocks that are more than 10% contaminated in their inventories. Increasing the contamination rate threshold for donations from 10% to 25% would potentially free up an additional 138,000[26] numbers for use in the number pool. TD cautions that, although Table 2-5 shows potential results from increasing allowable contamination levels, further analysis and input from the industry may be necessary to determine accurately the quantity of additional blocks that could be added to the pool while still leaving companies with a six-month inventory.

As shown by Table 2-5, and also shown graphically in Table B-3 of Appendix B, most rate centers have available numbers from blocks of differing contamination levels up to 25%. The tables show that, if the contamination level were increased from 10% to 25%, more unused numbers exist in most rate centers that potentially could be donated to the pool.

Recommendation from Block Contamination Analysis of Wireline Carriers

- *The CPUC should petition the FCC to increase the contamination level for pooling to 25%. If the FCC grants the petition, the CPUC should increase the maximum contamination level of donated blocks from 10% to 25% for all LNP-capable carriers.*

2. Analysis of Wireless Carriers' Contamination Rates

Under current FCC rules, cellular and PCS companies are exempt from number pooling until November 2002 when they must become LNP capable. The FCC has indefinitely exempted paging companies from becoming LNP-capable.[27] Table 2-6 shows available blocks of numbers in differing contamination levels held by wireless carriers. Wireless carriers hold 367,000 available numbers in blocks which are 10% or less contaminated as shown in the first two numeric columns of Table 2-6. Wireless carriers also have 19,600 available numbers in blocks with contamination levels greater than 10% but less than or equal to 25% as indicated by the last three columns of

[26] Additional numbers from the last three columns of Table 2-5: 55,667 + 54,387 + 28,191 = 138,245

[27] Of the 386,000 unused numbers held by wireless carriers, TD estimates that 162,000 are held by the paging companies. See Table B-2 of Appendix B.

Table 2-6.

Table 2-6

Available Numbers by Percentage Contamination for Wireless Carriers

Rate Center	0%	>0% - 10%	>10% - 15%	>15% - 20%	>20% - 25%
Agoura	0	0	854	1,644	758
Burbank	19,000	32,296	870	0	0
Burbank Sun Valley	0	0	0	0	0
Canoga Park	13,000	5,802	0	820	1,500
Glendale	0	0	0	0	0
La Crescenta	6,000	0	0	0	0
Los Angeles DA 01	8,000	0	0	0	0
Los Angeles DA 14	0	0	0	0	0
North Hollywood	9,000	4,908	894	0	0
Northridge	0	0	0	0	0
Pasadena La Canada	0	0	0	0	0
Pasadena	0	0	0	0	0
Reseda	0	0	0	0	0
San Fernando Granada Hills	15,000	929	0	803	0
San Fernando Pacoima	0	0	0	0	0
San Fernando	14,000	20,572	0	1,673	0
San Fernando Sepulveda	0	0	0	0	0
Sunland Tujunga	0	0	0	0	0
Van Nuys	178,000	40,080	2,622	3,301	3,852
818 NPA DA	0	0	0	0	0
Grand Totals	**262,000**	**104,587**	**5,240**	**8,241**	**6,110**

Because the FCC has granted wireless carriers an extension of time to implement LNP, no wireless carriers serving the 818 area code are capable of implementing LNP. Thus, wireless carriers cannot participate in number pooling at this time, resulting in 386,000 unused numbers in blocks between 0% to 25% contaminated in the 818 area code.

Recommendations from Block Contamination Analysis for Wireless Carriers

- *When cellular and PCS companies become LNP capable in November 2002, the CPUC should direct those wireless carriers to donate to and participate in the potential 818 pooling trial.*
- *The CPUC should adopt a 25% contamination threshold for donated blocks from wireless carriers to the pool.*
- *The CPUC should solicit comments on the feasibility of paging companies becoming LNP-capable and participating in pooling.*
- *If deemed feasible, the CPUC should petition the FCC to rescind the paging companies' indefinite exemption from becoming LNP-capable.*

3. Potential Block Contamination Abuses

When blocks are slightly more than 10% contaminated, those blocks cannot be donated to the potential pool. TD found instances where companies have contaminated several blocks in one prefix just over 10%. The CPUC's rules on sequential numbering and fill rate practices promulgated in Decision 00-07-052 are designed to prevent this problem from occurring in the future. Fill rates mitigate contamination by requiring companies to use contaminated blocks up to 75% before they can receive additional blocks or prefixes. Sequential numbering minimizes contamination by requiring companies to move to the next thousand block only once a 75% fill rate has been attained in the prior block. Where companies have significant available numbers in a given rate center, these two efficiency measures could prevent the opening of new blocks or prefixes.

Carriers reported utilization data as of April 30, 2000. The sequential numbering and fill rate decision was issued in July 2000. Therefore, TD does not expect companies to continue to contaminate blocks unnecessarily.

Recommendation for Block Contamination Issues Affecting All Carriers

- *The CPUC should monitor company compliance with its fill rate and sequential numbering policies through future number utilization filings and audits.*
- *The CPUC should establish penalties for non-compliance with fill rate and sequential numbering policies adopted in Decision 00-07-052.*[28]

4. Reclamation of Prefixes

Decision 00-07-052 directed companies to return prefixes that are held unused for more than six months.[29] Wireline carriers and wireless carriers hold 866,000 unused numbers and 262,000 unused numbers respectively, in the 0% contaminated blocks. Of these 0% contaminated blocks, 210,000 are in 21 whole prefixes, i.e. space prefixes, while 918,000 numbers are scattered throughout many different prefixes. The following table shows the breakdown.

Table 2-7

Breakdown of Numbers in 0% Contaminated Blocks

	Avail. Nos. in 0% Contam. Blocks	Avail. Nos. in Spare Prefixes	Avail. Nos. in Differing Prefixes
Wireline Carriers	866,000	120,000	746,000
Wireless Carriers	262,000	90,000	172,000

As shown above, 210,000 numbers in 21 spare prefixes can possibly be reclaimed if not used within six months. However as a result of the FCC's March 31, 2000 NRO Order, the NANPA no longer has sole authority to reclaim unused prefixes. The FCC

[28] See Chapter 1 for the discussion on Decision 00-07-052.

[29] Companies must file monthly reports with TD identifying prefixes which have not been activated within the six month time frame and explain the circumstances causing the delay in activating the prefix. The CPUC would then consider each company's circumstances and determine whether to direct the NANPA to reclaim the prefixes.

granted authority to state regulatory commissions to investigate and determine whether code holders have activated prefixes within the allowed time frames, and directed the NANPA to abide by the state commission's determination to reclaim a prefix if the state commission is satisfied that the code holder has not activated the prefix within the time specified in the NRO Order. Substantial cooperation between the CPUC and the NANPA will be required in order for the CPUC to exercise this new authority to determine whether a prefix should be reclaimed. Furthermore, the NANPA must still perform the mechanical steps to reclaim prefixes once the CPUC directs the NANPA to reclaim a prefix.

Recommendation for Reclamation of Prefixes

- *An order should be issued requiring the NANPA to notify the CPUC when a prefix has not been placed in service during the legally required time period for every California area code. The order should specify the procedures that the CPUC will follow in directing the NANPA to reclaim unused prefixes, and should require the NANPA to notify the CPUC of the steps the NANPA has taken to reclaim a prefix.*

D. Analysis of 4.0 Million "Unavailable" Numbers

In the following sections, TD recommends a series of policies designed to require companies to use unavailable numbers more efficiently. These policies would potentially free more numbers for use in a potential pool, to be allocated through the monthly lottery, or to be otherwise used by companies.

Companies report that 4.0 million numbers in the 818 area code are either assigned to customers or are used by companies for reserved, administrative, intermediate and aging purposes. Assigned numbers are those numbers that are currently being used by customers or equipment. Companies refer to these numbers as "unavailable". Unavailable numbers include not only those actually in use by customers, but also the following categories:

- Reserved numbers – Numbers that are reserved in blocks for future use by specific customers;

- Administrative numbers – Numbers that companies use for their own internal use;
- Intermediate numbers - Numbers that are made available for use by another telecommunications carrier or non-carrier entity for the purpose of providing telecommunications service to an end user or customer; and
- Aging – Numbers from recently disconnected service which are not reassigned during a fixed interval.

1. 3.1 Million Assigned Numbers

In the 818 area code, there are 3.1 million assigned numbers, with 2.1 million assigned to customers by wireline carriers and 1.0 million assigned to customers by wireless carriers. The percentage of assigned numbers to total numbers held by companies is shown in the table below.

Table 2-8

Assigned Numbers to Numbers Held by Companies (in millions)

	Assigned Numbers	Nos. Held by Carriers	Percentage
Wireline Carriers	2.1	4.5	46.1%
Wireless Carriers	1.0	2.0	50.8%

a) Non –Working Wireless

Non-working wireless describes numbers assigned to wireless customer equipment, but which are not yet working. These numbers are considered a sub-category of assigned numbers. For example, wireless carriers sometimes pre-package a cellular telephone with an assigned telephone number for sale to customers. Although the number is assigned, it will remain inactive until a customer purchases the telephone. There were no non-working wireless numbers reported in the 818 area code. While the quantity of non-working wireless numbers is zero, this sub-category of assigned numbers

could increase because there are no restrictions on the number of days that a wireless company can hold these numbers causing many numbers to remain idle for an unspecified period of time. The CPUC should consider several options to improve inventory management of non-working wireless numbers. One option is for the CPUC to require companies to return these numbers to the unassigned category after 45 days (similar to the requirement the CPUC has established for reserved numbers). Therefore, additional numbers would be freed for re-assignment. Since pre-packaged equipment with non-working assigned numbers is often located in various retail outlets, another option is for the CPUC to require companies to maintain inventory records of all such retail/wholesale equipment with the associated numbers assigned and to require regular (weekly/monthly) updating of these inventory records. In addition, the CPUC should continue to monitor non-working wireless numbers in the near term to track compliance with staff's recommendations.

Recommendations For Treatment of Non-Working Wireless

- *Non-Working wireless numbers should be treated as reserved numbers and limited to 45 days, after which they should be treated as available for assignment to customers.*
- *Companies should be required to maintain and update regularly the inventory records of all equipment assigned non-working wireless numbers along with the number assigned and submit such records to the CPUC upon request.*
- *The CPUC should continue to monitor non-working wireless numbers in the near term through future utilization filings and include this category of numbers in any audits conducted of wireless carrier number use*

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b) Eliminating Interim Number Portability Releases Numbers for Reallocation

Interim Number Portability (INP) is the ability to move telephone service from one service provider to another using Remote Call Forwarding (RCF), Direct Inward Dialing (DID), or equivalent means. [30] Prior to the implementation of permanent LNP, companies entered into INP arrangements to enable the transfer of customers from one company to another. Under these INP arrangements, two telephone numbers are associated with each customer. LNP eliminates the need for two telephone numbers for each customer when the customer changes companies because customers can take their numbers with them.

Since the 818 area code is included in one of the top 100 MSAs in the nation, all wireline carriers should have become LNP-capable by the end of December 1998.[31] The only companies who reported INP numbers were ILECs. They reported a total of 198 INP numbers in the 818 area code. Since all the reported INP numbers were from ILECs' and none were from their competitors, it does not appear that INP exists in the 818 area code to facilitate competition for customers. Thus, TD questions why any INP numbers exist in this area code. Switching to LNP technology and eliminating INP will free up half of the 198 numbers that are currently dedicated to INP.

Recommendation for INP-Related Conservation Measures

- *The CPUC should require companies to transition from INP to LNP in the 818 area code and implement a monitoring mechanism to ensure compliance.*
- *The CPUC should adopt a schedule for transitioning INP arrangements to LNP in all other California area codes.*

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[30] Remote Call Forwarding allows a customer to have a local telephone number in a distant location. RCF is similar to call forwarding on a residential line, except that the RCF customer has no phone, no office and no physical presence in that location. Direct Inward Dialing uses a trunk from the central office which passes the last two to four digits of the Listed Directory Number into the PBX, thus allowing the PBX to switch the call to the correct extension without the use of an attendant. Existing DID retail service is limited to PBX services. For purposes of providing INP, DID switch functionality is used to provide INP to any CLC customer regardless of the type of terminal equipment used on the customer's premises.

[31] However, two wireline carriers still remain non-LNP capable.

c) Expanded Use of the 555 Prefix Could Release Other Prefixes Dedicated to Special Uses

Historically, the telecommunications industry has designated certain prefixes for special uses, usually to an incumbent local exchange carrier (ILEC). These include numbers for recorded public information announcements such as time-of-day, weather forecasts, high-volume call- in numbers, and emergency access[32] numbers. These prefixes are not made available for general commercial use and as such, numbers that are not in actual use lie vacant. In 1999, companies decided not to duplicate the special use prefixes in each area code. Concerned that this process could adversely affect the public, the CPUC directed that prefixes should be duplicated in each new area code.

The utilization study shows that seven prefixes are dedicated for special uses, two for Pseudo 800 service code and one each for high volume calling, emergency preparedness, time, directory assistance and information provider service.[33] Except for one prefix in the Pseudo 800 Service Code, companies reported 60,000 assigned numbers in six prefixes. TD questions the necessity of assigning an entire prefix for each purpose.

Furthermore, having multiple special use prefixes is an inefficient use of numbers in the 818 area code from which the special use numbers are drawn. For example, if the 555 prefix[34] currently reserved only for directory assistance could be used to provide time and emergency preparedness, then two more prefixes could be returned for reallocation in the 818 area code.

Similarly, expanded use of the 555 prefix throughout the state could result in more returned prefixes in other area codes. TD recommends that the CPUC initiate an investigation into broader use of the 555 prefix in California. The CPUC should further analyze the option of obtaining standard 555 numbers in every California area code to

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[32] The emergency access prefixes are for services other than 911.

[33] This prefix is reserved for companies who request telephone lines to set up numbers for customer information services.

[34] The number used for inter-area code directory assistance which is uniform throughout California is 1(XXX)555-1212. This number has been designated for this use at the federal level.

provide time, emergency preparedness, and weather information at no additional cost to customers.

The study indicates that of the two prefixes dedicated to Pseudo 800 Service, one prefix is fully utilized while only one number in the other 10,000 block is assigned. The remainder of these numbers can be a potential source of numbers for pooling.

Recommendations for Special-Use Prefixes

- *TD recommends that CPUC initiate an investigation into the possibility of moving the number for time and emergency preparedness into the 555 prefix.*
- *TD recommends that the CPUC include in its investigation the broader use of the 555 prefix in California's area codes by providing standard 555 numbers in every California area code to provide time, emergency preparedness, and weather information.*
- *TD recommends that the CPUC solicit comments in the Local Competition proceeding (R.95-04-043/I.95-04-044) regarding technical issues that would arise if 1,000 number blocks from high-volume calling prefixes and Pseudo 800 Service Codes are reclaimed and placed in the potential 818 number pool.*

2. Reserved Numbers Are a Potential Source of Additional Numbers

Carriers "set aside" numbers for future use by customers.[35] Previously, industry number assignment guidelines allowed companies to reserve a prefix for up to 18 months for customer future use.[36] The FCC's NRO Order modified the number reservation period to 45 days. This 818 utilization study incorporated the FCC's 45-day requirement. The FCC later issued an extension until December 1, 2000 for companies to comply with the 45-day rule.[37] The extension allows companies time to upgrade their number

[35] An example would be a customer request for 2,500 numbers to be used in 2000, coupled with a request to have the next 2,500 numbers in sequence "reserved" for the customer to use in 2001.

[36] Central Office Code (NXX) Assignment Guidelines, prepared by the Industry Numbering Committee, January 27, 1999 version, Section 4.4.

[37] FCC Order 00-280, CC Docket No. 99-200, adopted and released on July 31, 2000.

tracking mechanisms, which tally the quantities of reserved numbers they hold. While companies reported a total of approximately 199,000 reserved numbers in the 818 utilization study[38], it is unclear whether the reported amount is accurate. Since companies could reserve numbers for longer than 45 days prior to the NRO Order, the quantity of reserved numbers reported may be overstated and, correspondingly, the quantity of available numbers reported may be understated.

Wireline carriers reported approximately 176,000 reserved numbers in the 818 area code. If the quantity of reserved numbers held by wireline carriers can be minimized, additional numbers could be available for immediate use by the companies from within their own number inventories and, thus, could slow the rate at which new prefixes are allocated to these companies. Once it is established, numbers could also be freed up for reallocation in the potential 818 number pool.[39] Currently there are no limitations on the quantity or percentage of numbers a company can classify as reserved, even though the company may still be requesting new number resources. Similarly, companies are not required to use their reserved numbers stock before they can request that new numbers be allocated to them. In the Van Nuys rate center[40], for instance, one wireline carrier has reserved an entire prefix or 10,000 numbers. TD questions whether this company and other companies with high levels of reserved numbers truly need new number resources when they have unused number resources in their inventories. Other companies serving the Van Nuys rate center reported anywhere from 0 to 5,700 reserved

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38 See Appendix D for a breakdown of reserved numbers reported in the 415 NPA by rate center.

39 Although most wireline carriers serving the 818 NPA are LNP-capable, a number pooling trial has not yet been implemented in this area code. Thus, these companies still request new number resources at the 10,000 block level (i.e. whole prefix) from the NANPA. As described in Chapter 1 of this report, however, the CPUC is considering a proposal that would establish number pooling in the 818 area code in 2001. At that time, companies could donate excess numbering resources for reallocation and could get new number resources in smaller quantities (i.e. at the 1,000 number block level).

40 The Van Nuys rate center by far has the most prefixes allocated to companies in it compared to other rate centers in the 818 area code. As of April 30, 2000, 237 of the prefixes allocated in the 818 area code were located in there; other rate centers in the area code had between 1 and 70 prefixes each allocated in them. Correspondingly, there are nearly 200,000 reserved numbers in the Van Nuys rate center and thus it has a great potential for conserving number resources if improvements in the use of reserved numbers are implemented as suggested by TD.

numbers within a single prefix. If the CPUC orders efficient use practices specific to reserved numbers, companies will more efficiently use number resources.

Wireless carriers reported just over 23,000 reserved numbers in the 818 area code. Wireless carriers also reported wide variances in reserved numbers. In the Van Nuys rate center, two wireless carriers reported approximately 6,500 reserved numbers each. The other companies serving that rate center averaged 150 reserved numbers. Like wireline carriers, efficient number use practices specific to the reserved numbers could immediately free up numbers within these companies' inventories for use. Once wireless carriers are able to participate in number pooling, these practices could have the same efficiency gains as those for wireline carriers.

Recommendations for Reserved Numbers

- *The CPUC should monitor reserved number use for all companies by reviewing future utilization data to ensure companies are complying with whether the FCC's 45-day requirement.*
- *The CPUC should adopt efficient number use practices specific to company reserve number holdings. In developing these practices, the CPUC should investigate various alternatives including, but not limited to, 1) limits on the quantity or percentage of reserved numbers companies can hold, and 2) requirements for using reserved number resources prior to requesting new number resources.*

3. Restrictions on Administrative Numbers Could Yield More Numbers

Administrative numbers are those not assigned to customers and are generally used for a wide range of applications for companies' internal use, including testing, internal business, and other network purposes. Carriers self-reported a total of approximately 63,000 administrative numbers in the 818 area code, with about half of those held by wireline carriers and half held by wireless carriers.

The utilization study revealed that there is a potential for companies to over-assign administrative numbers within a particular 1,000 block, prefix or rate center in the 818

area code. For example, one company serving the Canoga Park rate center reported that about 10% of its number resources were used for administrative purposes[41], while all other companies in that rate center used between 0 and 3% of their resources for those purposes. Given the variance in the levels of administrative numbers between companies, it is unclear what basis companies use for placing numbers in this category. The CPUC should therefore pursue an investigation in this area.

In addition, some companies randomly assign administrative numbers and are thereby wasting number resources. Companies could conserve numbers by changing the way in which these types of numbers are assigned. Some companies randomly assigned administrative numbers in multiple thousand blocks within the same prefix when they have available number resources to centralize those assignments within one or a few blocks. This practice means that both wireline and wireless carriers will already have contaminated multiple thousand blocks and prevent them from being donated once they can participate in number pooling or from being used in other LNP-based conservation measures.

Also, some companies holding multiple prefixes in a given rate center randomly assign administrative numbers throughout different prefixes when they have the available number resources to centralize the assignment of these numbers in one prefix in that rate center. TD questions the need for companies to hold multiple prefixes in a given rate center, when they are using multiple prefixes to serve their internal purposes and not necessarily to serve customer needs. Moreover, since these companies contaminated many more thousand blocks in multiple prefixes versus in one prefix, this practice exacerbates the problem of contaminating number resources and prevents them from being donated to the pool when one is established in the 818 area code, as described above.

[41] This company used most of its numbers in this category for "other administrative purposes", which was ten times or more the amount of numbers any other company used for those purposes. See Appendix A for details on what is included in the subcategory "other administrative purposes".

Recommendations for Administrative Numbers

- *The CPUC should develop criteria by which companies assign administrative numbers. The CPUC should consider placing a limit on the quantity or percentage of administrative numbers companies are allowed to hold.*
- *The CPUC should develop rules that require companies to limit administrative number assignments within certain blocks in a given prefix. In cases in which companies hold multiple prefixes in a single rate center, the CPUC should develop rules that require companies to limit administrative number assignments within prefixes.*

4. Intermediate Numbers

The "intermediate number" category is a new one only recently introduced by the FCC in its NRO Order. This category tracks numbers that companies make available for use by another telecommunications carrier or non-carrier entity. Carriers reported a total of approximately 402,000 intermediate numbers in the 818 area code. Wireline carriers hold 296,000 intermediate numbers and wireless carriers hold almost 106,000. The quantity of intermediate numbers varied significantly among rate centers in the 818 area code, with six rate centers having no intermediate numbers at all.[42] Since the intermediate number category is a new one, the quantity of numbers reported by companies may increase over time as more companies become familiar with this category. TD notes that this number use category has the potential for abuse by companies if they use significant quantities of number resources for intermediate purposes and take away available resources that could be assigned to customer uses. Therefore, TD recommends the CPUC continue to monitor intermediate number use in the future.

[42] See Appendix F for a breakdown of intermediate numbers held by wireline and wireless carriers. Appendix F demonstrates that the quantity of intermediate numbers in each 818 rate center varied from 0 to nearly 146,000.

Recommendations for Intermediate Numbers

- *The CPUC should monitor intermediate number use for all companies by reviewing future utilization filings to test whether potential abuses in this reporting category occur.*

a) Type 1 Numbers

Wireline carriers allocate numbers for use by wireless carriers through Type 1 interconnection agreements.[43] Because wireline and wireless carriers share responsibility for Type 1 numbers, both types of companies reported on these numbers. Wireline carriers report Type 1 numbers in the Intermediate category since they provide these numbers to another company. Wireless carriers report on the same numbers in greater detail, since they actually use these numbers, placing them in the Assigned, Administrative, Reserved, Intermediate, Aging, or Available categories.

Reporting of Type 1 numbers is complicated, as wireline and wireless reports often do not match. In the 818 area code, over 40% of all Type 1 numbers are unaccounted for or mismatched.[44] Wireline donor carriers do not monitor wireless Type 1 inventories, nor do they proactively reclaim unused Type 1 numbers from wireless carriers. TD recommends that wireline carriers perform an annual inventory check on Type 1 numbers and reclaim any unused Type 1 numbers within 60 days.[45]

As described in Chapter 1, state and federal require most companies to demonstrate efficient numbering practices before becoming eligible to obtain more numbers. In contrast, Type 1 wireless carriers have no check on their number use because they draw numbers directly from wireline companies, therefore avoiding the scrutiny of the official number administrator. TD recommends Type 1 wireless carriers be subject to number conservation measures and the CPUC should develop a system to ensure compliance.

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[43] Type 1 numbers are *programmed* in the wireline carrier's end office, but are *used* by a wireless carrier.

[44] 143,100 out of a total of 354,300 Type 1 numbers are unaccounted for or mismatched.

[45] Type 1 numbers may go unused because wireless carriers go out of business or because of inadequate record keeping.

Improved Type 1 number management is particularly crucial because unlike numbers held by most wireless carriers, Type 1 numbers are eligible for number pooling.[46] Therefore, Type 1 numbers are not only available to be recovered, but these numbers will also contribute to the success of pooling. Despite the problems with reporting, TD has identified 10 blocks of numbers in the 818 area code that may be eligible for donation to the pool.[47] The CPUC should recognize Type 1 numbers as a resource for number pooling and take steps to have wireless carriers donate excess blocks to the pool.

<u>Recommendations for Type 1 numbers:</u>

- *Wireline and wireless carriers should improve Type 1 number inventory management. Wireline carriers should perform an annual inventory check of wireless Type 1 numbers to confirm that wireless companies are using the numbers allocated to them. Carriers should make inventory data available to the CPUC upon request. Wireline companies should reclaim unused numbers within 60 days of discovery*
- *Type 1 carriers should be subject to number conservation techniques such as sequential numbering and fill rates. A system to ensure compliance with Type 1 number conservation measures should be developed.*
- *The CPUC should consider Type 1 wireless carriers as candidates for number pooling. Excess and unused Type 1 numbers should be donated to the number pool.*

5. Aging Numbers

The FCC's NRO Order defines *aging numbers* as disconnected numbers that are not available for assignment to another end user or customer for a specified period of time. Consistent with the Industry Numbering Committee (INC) Guidelines, the CPUC

[46] The 818 study revealed that Type 1 numbers given to wireless carriers are from prefixes in which LNP has already been initiated by the wireline carriers. Because Type 1 numbers reside in the wireline carrier's end office, Type 1 numbers are LNP-capable and thus suited for pooling.

[47] These blocks are 10% or less contaminated.

adopted the FCC upper-limits for aging numbers as 90 days for residential numbers and 365 days [48] for business numbers.

In the 818 area code, there are about 226,000 numbers in aging, representing 5.7% of the total unavailable numbers. While most service providers track aging telephone numbers by business and residential categories, Pacific Bell, the largest single holder of telephone numbers in the 818 area code, does not differentiate between business and residential customers when tracking aging numbers. Since Pacific Bell did not differentiate, the consultant chose to place those in the business category. Therefore, the vast majority of aging numbers is categorized in the business category and may give a false impression that most of the aging numbers are business numbers.

Because Pacific Bell does not differentiate between residential and business in reporting aging numbers, it is uncertain whether the maximum 90-day aging period for residential numbers is governing their aging policy, and whether at the end of the 90-day period, Pacific Bell is reassigning these numbers to the available category. Pacific Bell may be allowing residential numbers to be in the aging category for nine months longer than is permissible under both FCC and CPUC rules.

A higher percentage of aging numbers occurs in the wireless category, as compared to the wireline category. Aging numbers represent 8.7 percent of the total unavailable wireless numbers, or about 112,000 numbers. Aging numbers represent 4.2 percent of the total unavailable wireline numbers, about 114,000 numbers. This is consistent with the higher turnover or "churn" that occurs in the wireless industry. Table G-1, in Appendix G, shows the breakdown of aging numbers by wireless and wireline categories.

[48] In the NRO Order, both 360 days and 365 days were used as the time period for aging business numbers. In a clarifying order, the FCC adopted 365 days as the aging period for business numbers. When the CPUC sent out the parameters for utilization data for this study, the 360 day time period for aging business numbers was used. In order to be consistent with the time frames the FCC adopted, the CPUC is now using the 365 time period for aging business numbers.

Recommendation for Aging Numbers

- *Although the CPUC has required all companies to differentiate between residential and business numbers in aging and track the two categories separately, Pacific Bell has not complied with these requirements. Pacific Bell should be redirected to differentiate between business and residential numbers in aging, track them separately, and report on each category accurately. The CPUC should assess penalties for failure to comply.*

6. The Need to Audit the Data

The data analyzed in this utilization study were self-reported by companies. Given the area code crisis in California, the CPUC should audit this data for two reasons. First, verifying number usage data is important to ensure that the public resource of telephone numbers within area codes is efficiently managed. Second, audits would help verify whether companies are complying with CPUC and FCC rules for number usage.

Recommendation for Audits

- *The CPUC should audit the data submitted by companies in this study and future area code utilization studies.*

CHAPTER THREE - NUMBER POOLING AND OTHER NUMBER CONSERVATION MEASURES

A. Introduction

Many of the recommendations in Chapter Two resulted directly from the analysis of the utilization data and address actions that the CPUC should undertake to make additional numbers available for either pooling or for the regular monthly lottery. The recommendations contained in this chapter suggest additional conservation measures that the CPUC could adopt in the 818 area code and statewide: LNP- related actions, Unassigned Number Porting, Rate Center Consolidation, and prefix sharing. In addition, California should build upon the success of number pooling by setting up trials in other area codes. When applied, these conservation measures would result in uniform policies which would cause companies to use numbers more efficiently across California and would minimize customer confusion.

B. Number Pooling

Number pooling is an excellent method of number conservation. The CPUC worked aggressively to bring number pooling to California and the results have been dramatic. Pools are underway in the 310, 415 and 714 area codes and the CPUC plans to roll out the maximum possible number of pools before national number pooling begins.

In the 310 area code, number pooling has been in effect for over six months. The pool has satisfied the numbering needs of all companies participating in the pool without opening a single prefix.[49] Prior to pooling, 98 prefixes would have been opened to satisfy the demand for numbers. Number pooling has avoided the need to open prefixes and extended the life of the 310 area code by at least 15 months.[50]

[49] Two prefixes have been opened in the 310 pool for LRN assignment purposes.

[50] As of September 18, 2000.

The positive experience in 310 is mirrored in 415. The 415 pool opened July 29, 2000. Again, without opening a single prefix, the numbering needs of companies have been met.[51] After just two months, pooling has saved 12 prefixes.

Pooling benefits not only the public but the companies as well by reducing the time necessary to acquire numbering resources. Without pooling, activating new numbers takes at least 66 days.[52] With number pooling, companies can activate new numbers in three weeks.

1. More Accurate Forecasting Will Improve Number Pooling

In California, number pooling has worked well because companies have met their numbering needs from blocks other companies donate to the pool. The CPUC has set aside prefixes in each area code that will be used to replenish the pools if and when donations are no longer sufficient. There are a limited number of set aside prefixes, so it is crucial that these prefixes be opened only when there is truly a need.

If donated numbers are not sufficient to meet the companies' forecasts, a new prefix may need to be opened. Industry guidelines suggest replenishing a pool at least 66 days in advance of when the forecast shows a company will need more numbers than the pool has on hand. This presents a problem, as companies in California have, on average, forecast *seven times* more numbers than they will take from the pool. In many cases the forecasts are incredibly exaggerated. For example, in the San Francisco Central Rate Center in the 415 area code, companies predicted they would use 75 blocks in the first two months of the pool. However, they have used none. Had the Pooling Administrator (PA) opened prefixes based on the forecast, the prefixes would lie unused in the rate center.[53]

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[51] Three prefixes have been opened in the 415 pool for LRN assignment purposes.

[52] Before a whole prefix is activated, the prefix must be first listed for 66 days, in the Local Exchange Routing Guide (LERG), stating which rate center the prefix will be located in.

[53] Data can be found in Pooling Appendix.

The CPUC has thus far prevented prefixes from being unnecessarily opened by ordering the PA to consult with TD staff prior to opening any new prefix. However, the CPUC believes this issue should be addressed for the long term. Industry guidelines encourage companies to over-forecast because a company can only be assured numbers for which it forecasts.[54] In essence, a company could be penalized for under-forecasting. Since there is no penalty for over-forecasting, it is in companies' interests to err on the side of over-forecasting. The TD recommends the CPUC develop specific rules guiding company forecasting. The TD also recommends that the PA take historical usage into account when determining when to open a fresh prefix of 10,000 numbers.

Recommendations for Number Pooling

- *The CPUC should continue to urge the FCC to adopt a 75% fill rate requirement for pooling nationwide.*
- *The CPUC should work with industry groups and the Pooling Administrator to develop specific rules for companies pertaining to forecasting a six-month inventory when a number pool is authorized in a particular area code.*

C. Lack of Local Number Portability Stands as a Key Barrier to Pooling

Full deployment in the 818 area code is critical to effective number conservation. As described in Chapter 1, LNP enables customers to keep their telephone numbers when they switch companies. Because the number remains with the customer and can be transferred to different companies, there is no need to distribute duplicate numbering resources to both companies. Also, LNP is the technology platform that makes number pooling possible.

In an order released in 1997, the FCC ordered all wireline carriers in the top 100 MSAs to become LNP-capable by December 1998.[55] The 818 area code falls within one of the top 100 MSAs. The study revealed that all but two wireline carriers in the 818 area

[54] 6.1.4 & 6.1.5 in INC 99-0127-023, January 10, 2000

[55] FCC 96-286 in CC Docket No. 95-116

code are LNP-capable. These two companies hold nearly 40,000 numbers that could be made available for number pooling if they were LNP-capable. This noncompliance could be explained by a rule change in a later FCC order regarding LNP deployment.[56] The CPUC is working with the FCC to resolve the confusing language in the two orders. Once this is accomplished, the CPUC recommends requiring all wireline carriers become LNP capable within 6 months.

Wireless carriers, however, requested and received from the FCC an extension of time, until November 2002, to become LNP capable.[57] The FCC has not decided when wireless carriers, once LNP capable, will be required to participate in number pooling. The CPUC has filed comments with the FCC arguing that wireless carriers should be required to participate in pooling immediately upon becoming LNP capable.[58] Wireless non-LNP capable carriers hold 199 prefixes in the 818 area code, of which 369 blocks could be made available for pooling if they were required to participate in the pool.

As noted earlier, federal LNP requirements are directed at companies in the country's top 100 MSAs. But roughly half of the area codes in California fall partially or completely outside of these MSAs. These area codes are facing similar numbering crises, and LNP is not ordered. Without full activation of LNP throughout California, the CPUC is effectively prevented from operating number pools in half of the area codes in the state. California has a pending petition at the FCC to extend LNP deployment statewide. The CPUC should urge the FCC to act on the petition for authority to order LNP capability statewide.

Recommendations for LNP

- *The CPUC should encourage the FCC to resolve the contradiction in the texts ordering LNP capability for all wireline carriers in the top 100 MSAs.*

[56] FCC 97-074 in CC Docket No. 95-116

[57] FCC 99-19, WT Docket 98-229; CC Docket No. 95-116, Released: February 9, 1999

[58] Further Comments of the California Public Utilities Commission and the People of the State of California in CC Docket No. 99-200, submitted May 19, 2000.

- *As soon as permitted by the FCC, the CPUC should request that non-LNP capable wireline carriers in the 818 area code become LNP capable within the time frame prescribed by the FCC, which in no case may exceed 6 months from the day the CPUC makes the request.*
- *In the meantime companies (both inside and outside of the top 100 MSAs) should be encouraged to make requests of one another to become LNP capable.*

D. Unassigned Number Porting

Unassigned Number Porting (UNP) is the term used to describe the transfer of unused numbers from one company to another. Like number pooling and the porting of assigned numbers from company to company, UNP is made possible by deployment of Local Number Portability, or LNP. The primary benefit of UNP would be increased access to unused numbers stranded in company inventories. UNP would also strengthen competitively neutral access to public numbering resources by enabling companies with smaller inventories to access the inventories of companies with larger number holdings.

UNP would allow companies to transfer small increments of numbers between themselves. Various proposals have suggested limiting the increments to 25 or 100 numbers.[59] Two efficiencies would be gained: 1) companies with smaller scale needs would be able to receive numbers in increments appropriate to meet their needs, and 2) unused numbers stranded in company inventories would be transferred to companies where they could be put to use.

Currently, companies receive unused numbers from the NANPA or the PA in increments of 10,000 numbers (prefixes) or 1,000 numbers (blocks). In areas without number pooling, prefixes held in company inventories that are not put to use within six months must be returned, but only if uncontaminated. If just one number has been used, the remaining 9,999 are stranded in the company inventory. In areas with number pooling, blocks are eligible for return only if 10% or less contaminated. For example, if a company receives 1000 numbers and only has need for 100 numbers, the remaining 900

[59] See INC Contribution #336R of September 29, 2000, "UNP Architecture With Minimal Administrative Structure" and Focal and MCIWorldcom's Report on UNP Trial

numbers are eligible for return. However, if a company received 1000 numbers and only has need for 101 numbers, the remaining 899 numbers are ineligible for return and are stranded in the company inventory. UNP is one way to address the problem of stranded numbers.

The FCC has contemplated UNP but has so far declined to act.[60] The FCC has not ruled out UNP as a conservation measure.[61] In the absence of a voluntary company agreement to implement UNP, however, the CPUC could only implement UNP with FCC approval. Given the number conservation benefits to be had, the CPUC should petition the FCC for authority to undertake a UNP trial.

Recommendations for UNP

- *The CPUC should petition the FCC for authority to implement UNP statewide.*

E. Consolidation of Rate Centers to Maximize Number Use

Rate Center Consolidation (RCC) is a potential number conservation tool because it allows companies to use numbers over a larger geographic area, thus slowing the rate at which prefixes are used. Rate center location dictates both the scope of a customer's local calling area and the charges assessed per toll call. In California, each rate center governs a relatively small, uniform local calling area, measured from the rate center of each exchange. Because the local calling areas in California are small compared to those in many other states, it is virtually impossible to migrate to larger calling areas via consolidation of rate centers without eliminating at least some toll call routes.

Eliminating toll routes would have the residual effect of reducing revenues for toll service providers, which include both local exchange carriers and interexchange carriers. The two major ILECs in California, Pacific Bell and Verizon (formerly GTE California),

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[60] NRO Order, FCC 00-104, CC Docket 99-200, ¶ 230. "We reiterate our finding that UNP and ITN [individual telephone number pooling] are not yet sufficiently developed for adoption as nationwide numbering resource optimization measures and conclude that ITN and UNP should not be mandated at this time."

[61] See ¶ 231: "We permit carriers, however, to engage voluntarily in UNP where it is mutually agreeable and where no public safety or network reliability concerns have been identified."

have expressed at industry meetings their belief that they should be "made whole" for any loss of toll revenues that likely would result from consolidating rate centers. An industry task force which the CPUC charged with developing a proposal for rate center consolidation reported to the CPUC in March 1999 that it would offer no such plan until the CPUC addresses revenue and consumer impact issues. However it is difficult, if not impossible, for the CPUC to address consumer and revenue impacts if the CPUC has no plan before it for consolidating rate centers, which would provide the context and details for assessing such impacts.

California has roughly 750 rate centers, each of which is the approximate center of a 12-mile local calling area. With no input from the industry, the CPUC cannot begin to guess what approach would be most appropriate. For example, California could consolidate from 750 rate centers to 400, or to 200. Each of those possibilities would present different rate "impacts" for both companies and customers. Alternatively, rather than attempting to consolidate rate centers on a statewide basis, the CPUC could consider consolidating rate centers on an area code-by-area code basis. All rate centers in one area code, for example, could be consolidated into one rate center. This would eliminate both the uniform statewide local calling area of 12 miles and uniform statewide rates for each company, thus generating some amount of customer confusion as individuals travel throughout the state for business or social purposes, or relocate their home or business. Further, because companies would lose toll revenues when rate centers are consolidated and local calling areas expanded, the CPUC would need to address the question of which, if any, companies should be allowed to recover those lost revenues, and if so, how.[62] Finally, rate center consolidation will mean direct, substantial, and permanent basic rate increases for many customers, unless the ILECs forgo their claim that RCC should be revenue neutral. Economics and Technology, a Boston consulting group, has projected

[62] For example, while the ILECs still control roughly 95% of the residential toll market, competitors have succeeded in making significant inroads into the business toll market, where the ILECs now hold only 50% of the market. If the CPUC were to decide that the ILECs should be “made whole” for any lost toll revenues, then other companies legitimately could demand a mechanism to make them whole as well. Alternatively, if the competitors cannot practically be reimbursed for lost revenues, then as a policy matter, the CPUC must decide if it is reasonable to allow only the ILECs to recover such revenue.

that “rate center consolidation in California could result in a per-access-line increase of $5.56 in basic monthly rates for California ILEC customers."[63]

This may not be an acceptable option, even though California presently has among the lowest local exchange rates in the country. And, if the ILECs continue to press for revenue neutrality, the very process of determining the amount of those revenues, as well as how those monies should be recovered and from what class(es) of customers, would constitute a rate-design proceeding of significant scale and scope. Such a proceeding could consume a tremendous amount of CPUC, industry and consumer representative resources and take one to two years.[64]

Nonetheless, because RCC offers the potential for conserving significant quantities of numbers in California, TD recommends that the CPUC renew its efforts to determine how RCC could be implemented in California. The industry should be directed to posit several different scenarios, if they cannot agree on one proposal.

Recommendations for Rate Center Consolidation

- *The CPUC should undertake further investigation by ordering the telecommunications industry to develop a plan, within 180 days, for rate center consolidation.*

F. Sharing of Prefixes May Yield More Efficient Number Use

In analyzing previous utilization data in the 310 area code, TD became aware that two non-affiliated companies were sharing prefixes under an informal arrangement. Using LNP, a company with excess numbers had transferred whole thousand blocks of numbers to the other company for use. TD believes this sharing arrangement promotes efficient number use among companies.

Some companies reporting utilization data in the 818 area code are affiliated through mergers, acquisitions or other business relationships. Despite these affiliations,

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[63] "Where Have All the Numbers Gone?" (Second Edition), The Ad Hoc Telecommunications Users Committee, prepared by Economics and Technology, Inc., June 2000. The estimate of $5.56 may be conservative.

[64] The last major rate design proceeding undertaken for Pacific Bell and Verizon, then GTEC, was the Implementation and Rate Design (IRD) phase of the New Regulatory Framework proceeding, 1.87-l l-033. The IRD phase took three years to complete.

each company separately request numbers from the NANPA and will request them from the 818 number pool, when one is established. TD notes that the benefits of prefix sharing arrangements may be different in area codes in which number pooling has already been implemented versus those that number pooling has not been implemented. Sharing prefixes between companies appears worthy of further investigation by the CPUC as a mechanism to promote more efficient use of numbers.

Recommendations for Sharing of Prefixes

- *The CPUC should further explore sharing of prefixes as a means to more efficiently utilize numbers in all California area codes.*

G. Conclusion

Analyzing the utilization data provided by companies has provided useful information regarding number availability and usage practices in the 818 area code. It also offers insights into developing better public policies to improve efficiency of number use.

We now know that of the approximately 7.9 million usable numbers in the 818 area code, roughly 3.9 million, or roughly half, presently are not in use. Despite the increasing demand for numbers, the 818 area code is not fully utilized. The data indicates that there is considerable room for growth within the existing 818 area code, and it is premature to consider splitting or overlaying the 818 area code at this time.

The CPUC already has directed companies to employ measures to use more efficiently the numbering resources in the 818 area code. Recently adopted fill rates and sequential numbering rules will insure that companies better use their existing resources and receive additional numbers only on an as-needed basis. When pooling is implemented in the 818 area code, this will assure that all LNP capable carriers are given numbers expeditiously and in usable blocks. Allocating numbers in 1,000 block increments rather than in full prefixes of 10,000 numbers will insure that the numbering resources are used more efficiently and can greatly extend the life of the existing area

code. Implementing these more efficient numbering practices is an important first step, but more needs to be done.

In analyzing the data, it is now clear that because of 1) past inefficiencies in numbering policies and practices, 2) the 10% contamination ceiling for block donations to pooling, and 3) the deferral of LNP capability for wireless carriers, nearly 4 million numbers are not in use in 818 but cannot be reassigned to other companies. Changing contamination thresholds, implementing UNP, and requiring LNP capability for all companies could make these stranded numbers available for reassignment.

The CPUC should continue its collaborative process with the FCC and the telecommunications industry to implement Unassigned Number Porting, the development of non-geographic-specific area codes, and other measures which will more fully utilize numbers. The CPUC should begin implementation of the many number conservation and management practices found in the Recommendations Section of this report. As a public resource, it is important that our numbering supplies are used as efficiently and effectively as possible.

Table A-1
Prefix Holders in 818 Area Code Who Submitted Data

1	AB Cellular Holding, LLC dba AT&T Wireless
2	Airstar Paging
3	Airtouch Cellular - CA
4	Airtouch Paging - California
5	Allegiance Telecom, Inc.-CA
6	AT&T - Local - CA
7	AT&T Local
8	AT&T Wireless Services, Inc.
9	Cook Telecom, Inc.
10	Cox California PCS, Inc.
11	Digitcom Services, Inc.
12	Firstworld Anaheim
13	Firstworld So CA
14	Focal Communications Corp of California
15	Frontier Local Services, Inc.-CA
16	GST Pacific Lightwave
17	GTE Co of California
18	ICG Telecom Group - CA
19	Level 3 Communications, LLC-CA
20	Map Mobile Communications, Inc.
21	MCIMetro, ATS, Inc.
22	MediaOne Telecommunications of California, Inc.
23	Message Center Beepers, Inc
24	Metrocall
25	MGC Communications, Inc.-CA
26	Mobilecomm
27	Nationwide Paging, Inc.
28	Network Services LLC
29	Nextel Communications
30	Nextlink of California
31	O1 Communications, Inc.
32	Optel California Telecom, Inc
33	Pacific Bell
34	Pacific Bell - CLEC
35	Pacific Bell Mobile Services
36	Pac-West Telecomm, Inc.
37	Paetec Communications, Inc. - CA
38	Pagemart, Inc.
39	Pagenet

40 Paging Plus
41 San Diego Paging
42 Sprint Spectrum L.P.
43 Teleport Communications Group - Los Angeles
44 Teligent, Inc.-CA
45 The Telephone Connection of Los Angeles, Inc.
46 The Westlink Company
47 Time Warner Communications Axs of California
48 TSR Wireless LLC
49 U.S. Telepacific Corp.-CA
50 Winstar Wireless, Inc.-CA
51 Worldcom Technologies, Inc.-CA

Prefix Holders in 818 Area Code Who Did Not Submit Data

1 CRL Network Service
2 PageCell, Inc - CA
3 PagePrompt, Inc.
4 Paging Dimensions

APPENDIX A

DEFINITIONS FOR UTILIZATION STUDY

Administrative: Administrative numbers are numbers used by telecommunications carriers to perform internal administrative or operational functions necessary to maintain reasonable quality of service standards. Subcategories used in the Utilization Studies are:

Internal Business Purpose/Official Numbers: A number assigned by a service provider for its own internal business purposes

Test Numbers: Telephone numbers (TNs) assigned for inter-and intra-network testing purposes

Other Administrative Numbers (include only Location Routing Number, Temporary Local Directory Number and Wireless E911 ESRD/ESRK) where

Identical to a Local Routing Number (LRN): The ten-digit (NPA-XXX-XXXX) number assigned to a switch/point of interconnection (POI) used for routing in a permanent local number portability environment

Temporary Local Directory Number (TLDN): A number dynamically assigned on a per call basis by the serving wireless service provider to a roaming subscriber for the purpose of incoming call setup

Wireless E-911 ESRD/ESRK: A ten-digit number used for the purpose of routing an E911 call to the appropriate Public Service Answering Point (PSAP) when that call is originating from wireless equipment. The ESRD identifies the cell site and sector of the call origination in a wireless call scenario. The Emergency Services Routing Key (ESRK) uniquely identifies the call in a given cell site/sector and correlates data that is provided to a PSAP by different paths, such as the voice path and the Automatic Location Identification (ALI) data path. Both the ESRD and ESRK define a route to the proper PSAP. The ESRK alone, or the ESRD and/or Mobile Identification Number (MIN), is signaled to the PSAP where it can be used to retrieve from the ALI database, the mobile caller's call-back number, position and the emergency service agencies (e.g., police, fire, medical, etc.) associated with the caller's location. If a NANP telephone number is used as an ESRD or ESRK, this number cannot be assigned to a customer.
For convenience, "other administrative numbers" are reported as a group for purposes of the Utilization Study

Aging Numbers: Aging numbers are disconnected numbers that are not available for assignment to another end user or customer for a specified period of time. Numbers

previously assigned to residential customers may be aged for no more than 90 days. Numbers previously assigned to business customers may be aged for no more than 360 days. For purposes of the Utilization Study, carriers are to separately report aging numbers associated with residential service from those associated with business service.

Assigned Numbers: Assigned numbers are numbers working in the Public Switched Telephone Network under an agreement such as a contract or tariff at the request of specific end users or customers for their use, or numbers not yet working but having a customer service order pending. Numbers that are not yet working and have a service order pending for more than five days shall not be classified as assigned numbers. For purposes of the Utilization Studies, numbers for non-working wireless and for interim number portability are to be considered as assigned numbers in Part 1-Section A and separately identified in Part 2. See Interim Number Portability and Non-Working Wireless for definitions.

Available Numbers: Available numbers are numbers that are available for assignment to subscriber access lines, or their equivalents, within a switching entity or point of interconnection and are not classified as assigned, intermediate, administrative, aging, or reserved.

COC Type: Three-digit element defining the use of the Central Office Code (codes such as 0XX used for access tandem and testboard addressing or a "+" symbol that indicates direct routing to the designated switch in the NPA. 2XX-9XX values are considered NXXs.) Allowable codes in the LERG Destination Code by LATA and Tandem Homing Arrangements (LERG 6/9) are:

ATC = Access Tandem Code (0/1XX)
CDA = Customer Directory Assistance only (555 line numbers are assigned by the North American Numbering Plan Administration)
EOC = End Office Code
PLN = Planned Code - non-routable
PMC = Public Mobile Carrier (Type 2 Interconnected)
RCC = Radio Common Carrier (Dedicated Type 1 Interconnected)
SIC = Special 800 Service Code
SP1 = Service Provider - Miscellaneous Service (Type 1 Interconnected)
SP2 = Service Provider - Miscellaneous Service (Type 2 Interconnected)
TST = Standard Plant Test Code

Allowable codes in the LERG Oddball file (LERG6ODD only) are:

700 = 700 IntraLATA Presubscription
AIN = Advanced Intelligent Network
BLG = Billing Only

BRD = Broadband
CTV = Cable Television
ENP = Emergency Preparedness
FGB = Feature Group B Access
HVL = High Volume
INP = Information Provider
LTC = Local Test Code
N11 = N11 Code
ONA = Open Network Architecture
PRO = Protected
RSV = Reserved
RTG = Routing Only
UFA = Unavailable for Assignment

Interim Number Portability (INP): The interim ability to move telephone service from one service provider to another service provider using Remote Call Forwarding (RCF), Direct Inward Dialing (DID), or equivalent means where:

> Remote Call Forwarding allows a customer to have a local telephone number in a distant location. Every time someone calls that number, that call is forwarded to the RCF customer in the distant location. Remote call forwarding is similar to call forwarding on a residential line, except that the RCF customer has no phone, no office and no physical presence in that location.
>
> A DID (Direct Inward Dial) trunk is a trunk from the Central office which passes the last two to four digits of the Listed Directory Number into the PBX, thus allowing the PBX to switch the call to and thus ring the correct extension" without the use of an attendant (Newton's Telecom Dictionary). Existing DID retail service is limited to PBX services. For purposes of providing INP, Pacific and GTEC will use the DID switch functionality to provide INP to any CLC customer regardless of the type of terminal equipment used on the customers' premises.
>
> For the purposes of the Utilization Study, each carrier must report the quantity of its assigned numbers that are dedicated to providing INP under Assigned Numbers in Part 1-Section A and separately identified in Part 2.

Intermediate Numbers: Intermediate numbers are numbers that are made available for use by another telecommunications carrier or non-carrier entity for the purpose of providing telecommunications service to an end user or customer. Numbers ported for the purpose of transferring an established customer's service to another service provider shall not be classified as intermediate numbers. For Type 1 donor carriers, Type 1 numbers are to be reported as intermediate numbers in Part 1-Section A and detailed information is to be provided in Part 2 for the Utilization Studies. For Type 1 recipient donors, Type 1 numbers shall be reported in the Part 1-Section B for the Utilization Studies. For definition, see Type 1 numbers.

Local Number Portability: The ability to move a telephone number from one service provider to another service provider using LRN-LNP technology

Non-Working Wireless: this category is for wireless companies only to report numbers that they have already assigned to customer equipment, but are not yet working. For example, cellular carriers often pre-package a cellular telephone with an assigned telephone number for sale to customers. Those phone numbers are assigned, but are not actually activated until after the customer purchase is made. For the purposes of the Utilization Study, each carrier must report the quantity of its non-working wireless numbers under Assigned Numbers in Part 1-Section A and separately identified in Part 2.

OCN: Operating Company Number (OCN) assignments must uniquely identify the applicant. Relative to CO Code assignments, NECA-assigned Company Codes may be used as OCN's. Companies with no prior CO Code or Company Code assignments should contact NECA (973-884-8355) to be assigned a Company Code(s). Since multiple OCNs and/or Company codes may be associated with a given company, companies with prior assignments should direct questions regarding appropriate OCN usage to the Traffic Routing Administration (TRA) on 732-699-6700

Reserved Numbers: Reserved numbers are numbers that are held by service providers at the request of specific end users or customers for their future use. Numbers held for specific end users or customers for more than 45 days shall not be classified as reserved numbers.

Special Use NXX Codes: Certain NXX codes have traditionally been reserved or designated for special uses, and have not been available for assignment by carriers for general commercial use in providing telephone numbers to customers. These NXX prefixes are restricted to such special uses as recorded public information announcements of time-of-day and weather forecasts, high-volume call-in numbers, and emergency access numbers used by the Federal Emergency Management Administration (FEMA), etc.

Type 1 Numbers: numbers pursuant to a Type 1 interconnection agreement. The Type 1 interconnection is a connection between a mobile/wireless service provider and an end office of another service provider for the purpose of originating and terminating traffic or for access to end user services (i.e. DA, Operator services, 911, etc). The interconnection consists of a facility between the mobile/wireless service provider and the end office, switch usage, and telephone numbers (only required if the mobile carrier wishes to receive originating (L/M) traffic). For the purposes of the 310 Utilization Study, both mobile/wireless service providers who have received Type 1 numbers and those service providers who have provided Type 1 numbers to mobile/wireless service providers are asked to report on those numbers at the 1000 block level.

APPENDIX A

PART 1-SECTION A _____ ***NPA*** **UTILIZATION STUDY FORMAT**

RATE CENTER _____

INFORMATION								**ASSIGNED**	**ADMINISTRATIVE**				**INTER-MEDIATE**	**RESERVED**	**AGING**			**UNAVAILABLE**	**AVAILABLE**
OCN	COC Type	LNP	Special Use	Rate Center	NPA	NXX	X	**TOTAL**	Internal/Official	Test	Other	**TOTAL**	**TOTAL**	**TOTAL**	RES	BUS	**TOTAL**	**TOTAL**	**TOTAL**
							0	0	0	0	0	0	0	0	0	0	0	0	1000
							1	0	0	0	0	0	0	0	0	0	0	0	1000
							2	0	0	0	0	0	0	0	0	0	0	0	1000
							3	0	0	0	0	0	0	0	0	0	0	0	1000
							4	0	0	0	0	0	0	0	0	0	0	0	1000
							5	0	0	0	0	0	0	0	0	0	0	0	1000
							6	0	0	0	0	0	0	0	0	0	0	0	1000
							7	0	0	0	0	0	0	0	0	0	0	0	1000
							8	0	0	0	0	0	0	0	0	0	0	0	1000
							9	0	0	0	0	0	0	0	0	0	0	0	1000
							Total>>	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10000**
							0	0	0	0	0	0	0	0	0	0	0	0	1000
							1	0	0	0	0	0	0	0	0	0	0	0	1000
							2	0	0	0	0	0	0	0	0	0	0	0	1000
							3	0	0	0	0	0	0	0	0	0	0	0	1000
							4	0	0	0	0	0	0	0	0	0	0	0	1000
							5	0	0	0	0	0	0	0	0	0	0	0	1000
							6	0	0	0	0	0	0	0	0	0	0	0	1000
							7	0	0	0	0	0	0	0	0	0	0	0	1000
							8	0	0	0	0	0	0	0	0	0	0	0	1000
							9	0	0	0	0	0	0	0	0	0	0	0	1000
							Total>>	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10000**
							0	0	0	0	0	0	0	0	0	0	0	0	1000
							1	0	0	0	0	0	0	0	0	0	0	0	1000
							2	0	0	0	0	0	0	0	0	0	0	0	1000
							3	0	0	0	0	0	0	0	0	0	0	0	1000
							4	0	0	0	0	0	0	0	0	0	0	0	1000
							5	0	0	0	0	0	0	0	0	0	0	0	1000
							6	0	0	0	0	0	0	0	0	0	0	0	1000
							7	0	0	0	0	0	0	0	0	0	0	0	1000
							8	0	0	0	0	0	0	0	0	0	0	0	1000
							9	0	0	0	0	0	0	0	0	0	0	0	1000
							Total>>	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10000**

APPENDIX A

PART 1-SECTION A _____ ***NPA*** **UTILIZATION STUDY**
FORMATCONTAMINATION LEVELS ***RATE CENTER*** _____

INFORMATION								**CONTAMINATION LEVELS**												
OCN	COC Type	LNP	Special Use	Rate Center	NPA	NXX	X	Contamination %	0%	Quantity	0%<=10%	Quantity	10%<=15%	Quantity	15% <= 20%	Quantity	20% <= 25%	Quantity	>25%	Quantity
0	0	0	0	0	0	0	0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
0							1	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							2	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							3	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							4	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							5	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							6	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							7	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							8	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							9	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
								TOTAL		**10**		**0**		**0**		**0**		**0**		**0**
0	0	0	0	0	0	0	0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
0							1	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							2	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							3	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							4	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							5	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							6	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							7	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							8	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							9	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
								TOTAL		**10**		**0**		**0**		**0**		**0**		**0**
0	0	0	0	0	0	0	0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
0							1	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							2	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							3	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							4	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							5	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							6	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							7	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							8	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
							9	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
								TOTAL		**10**		**0**		**0**		**0**		**0**		**0**

APPENDIX A

PART 1-SECTION B _____ *NPA*

UTILIZATION STUDY FORMAT

TYPE 1 NUMBERS *RATE CENTER* _____

INFORMATION						**ASSIGNED**	**ADMINISTRATIVE**				**INTER-MEDIATE**	**RESERVED**	**AGING**			**UNAVAILABLE**	**AVAILABLE**
OCN	Donor SP	Rate Center	NPA	NXX-X	TN RANGE	**TOTAL**	Internal/Official	Test	Other	**TOTAL**	**TOTAL**	**TOTAL**	RES	BUS	**TOTAL**	**TOTAL**	**TOTAL**
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
						0	0	0	0	0	0	0	0	0	0	0	#NAME?
					Total>>	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**#NAME?**
					0	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					1	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					2	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					3	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					4	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					5	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					6	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					7	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					8	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					9	0	0	0	0	0	0	0	0	0	0	0	#NAME?
					Total>>	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**#NAME?**

APPENDIX A

PART 1-SECTION B _____ ***NPA***

UTILIZATION STUDY FORMAT

TYPE 1 CONTAMINATION LEVELS ***RATE CENTER*** _____

INFORMATION						**CONTAMINATION LEVELS**												
OCN	Donor SP	Rate Center	NPA	NXX-X	TN RANGE	Contamination %	0%	Quantity	0%<= 10%	Quantity	10%<= 15%	Quantity	15% <= 20%	Quantity	20% <= 25%	Quantity	>25%	Quantity
0	0	0	0	0	0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
0					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					Total>>			**10**		**0**		**0**		**0**		**0**		**0**
0	0	0	0	0	0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
0					1	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					2	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					3	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					4	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					5	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					6	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					7	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					8	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					9	0%	Yes	1	No	0	No	0	No	0	No	0	No	0
					Total>>			**10**		**0**		**0**		**0**		**0**		**0**
0	0	0	0	0	0	0%	Yes	1	No	0	No	0	No	0	No	0	No	0

APPENDIX A

PART 2 ***NPA***

UTILIZATION STUDY FORMAT

SERVICE PROVIDER:										
REPORT DATE:				As of 4/30/2000						
SPECIAL USE IDENTIFICATION:										
								TIME, WEATHER, HVC, ETC.		
	NXX:						PURPOSE:			
	NXX:						PURPOSE:			
	NXX:						PURPOSE:			
	NXX:						PURPOSE:			
	NXX:						PURPOSE:			
	NXX:						PURPOSE:			
	NXX:						PURPOSE:			
	NXX:						PURPOSE:			
ASSIGNED NUMBERS:										
	Total quantity of **assigned TNs** that are non-working wireless in the NPA:									
INTERIM LOCAL NUMBER PORTABILITY (INP):										
	Total quantity of **assigned TNs** dedicated to INP in the NPA:									

APPENDIX A

PART 2 ***NPA***

UTILIZATION STUDY FORMAT

TYPE 1 INTERCONNECTIONS:

DONORS: Identified as SPs that have assigned Type 1 numbers to other SPs:

	NXX-X	***TELEPHONE NUMBER RANGE***	***QUANTITY OF TNs ASSIGNED***	***RATE CENTER***	***RECIPIENT SERVICE PROVIDER***	***RECIPIENT SP's OCN***

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APPENDIX B

Table B-1
3.9 million Available Numbers

Wireline Carriers		1,828,826
Wireless Carriers		688,539
Late Wireless Filer		17,191
Type 1 Carriers		128,201
Subtotal		2,662,757
Available for lottery		1,230,000
Total		3,892,757

The 2.7 million numbers assigned to carriers are broken down as:

	Blocks	Numbers
Wireline Carriers		
Blocks with 0% contamination	866	866,000
Blocks with more than 0% up to 10%	553	536,364
Blocks with more than 10% up to 15%	63	55,667
Blocks with more than 15% up to 20%	67	54,387
Blocks with more than 20% up to 25%	36	28,191
Blocks with more than 25% contam.	2,955	288,217
Total Available Numbers		1,828,826
Wireless Carriers		
Blocks with 0% contamination *	262	262,000
Blocks with more than 0% up to 10%	107	104,587
Blocks with more than 10% up to 15%	6	5,240
Blocks with more than 15% up to 20%	10	8,241
Blocks with more than 20% up to 25%	8	6,110
Blocks with more than 25% contam.	1,577	302,361
Subtotal		688,539
Late wireless filer:		
Blocks with more than 25% contam. **	30	17,191
Total Available Numbers		705,730
Type 1 Carriers		
Reported as Intermediate Numbers by Donors		354,300
Reported as Unavailable Numbers by Type 1 Carriers		(159,316)
Est. of Unavailable Numbers of Remaining Type 1 Carriers***		(66,783)
Total Available Numbers		128,201

* Three carriers holding 4 codes did not submit utilization data. These 40,000 numbers have been counted as available in forty 0% contaminated blocks. In addition, one carrier could not provide utilization data for one NXX code. These 10,000 numbers have been Counted as available in ten 0% contaminated blocks.

** The late filer did not have blocks with 0% to 25% contamination.

*** Of the 354,300 numbers reported by donors as Type 1 numbers, Type 1 recipients only reported on 249,650 numbers with 159,316 as unavailable and 90,334 as available. Therefore, 104,650 numbers are unaccounted for. Staff estimated the unavailable numbers for the unaccounted numbers using the same ratio as numbers that were reported, namely 159,316 divided by 249,650.

Appendix B
Table B-2
Numbers Potentially Available Under Different Pooling Scenarios

		Running Total
Wireline Carriers: Current Level at 10% or less (1)	1,352,540	
Available for Lottery	1,230,000	
Subtotal	2,582,540	2,582,540
Other Possibilities for Pooling:		
Available Numbers from non-LNP blocks of Wireline Carriers	39,825	2,622,365
Available Numbers from Special Use Codes	9,999	2,632,364
Unvailable Numbers from Special Use Codes (2)	20,000	2,652,364
Wireline Carriers: Up to 15% contamination	55,667	2,708,031
Wireline Carriers: Up to 20%	54,387	2,762,418
Wireline Carriers: Up to 25%	28,191	2,790,609
Cellular and PCS Carriers: Up to 10% (3) (4)	212,620	3,003,229
Cellular and PCS Carriers: Up to 15% (3)	3,039	3,006,269
Cellular and PCS Carriers: Up to 20% (3)	4,780	3,011,048
Cellular and PCS Carriers: Up to 25% (3)	3,544	3,014,592
Type 1 Carriers: Up to 10%	9,511	3,024,103
Type 1 Carriers: More than 10% up to 25%	18,115	3,042,218
Paging Carriers: Up to 10% (3) (4)	153,967	3,196,185
Paging Carriers: Up to 15% (3)	2,201	3,198,386
Paging Carriers: Up to 20% (3)	3,461	3,201,847
Paging Carriers: Up to 25% (3)	2,566	3,204,413
Total	**3,204,413**	

(1) In other pooling trials in California, carriers have been allowed to keep a six-month inventory so, assuming the same applies should pooling occur in 818, far fewer numbers would actually be donated by carriers.

(2) See Chapter 2, Section D.1.c. for discussion of special use codes.

(3) While cellular and PCS carriers have until November 2002 to become LNP-capable, paging companies are currently exempted indefinitely. Therefore, TD estimated the percentage of codes held by cellular and PCS (58%) vs. paging (42%) and applied the percentages to wireless carriers' available numbers.

(4) Three paging companies holding 4 codes did not submit utilization data. These 40,000 numbers have been counted as available in forty 0% contaminated blocks. In addition, one cellular carrier could not provide utilization data for one NXX code. These 10,000 numbers have been counted as available in ten 0% contaminated blocks.

Table B-3
818 - Wireline Carriers' Available Numbers by Contamination Level up to 25%

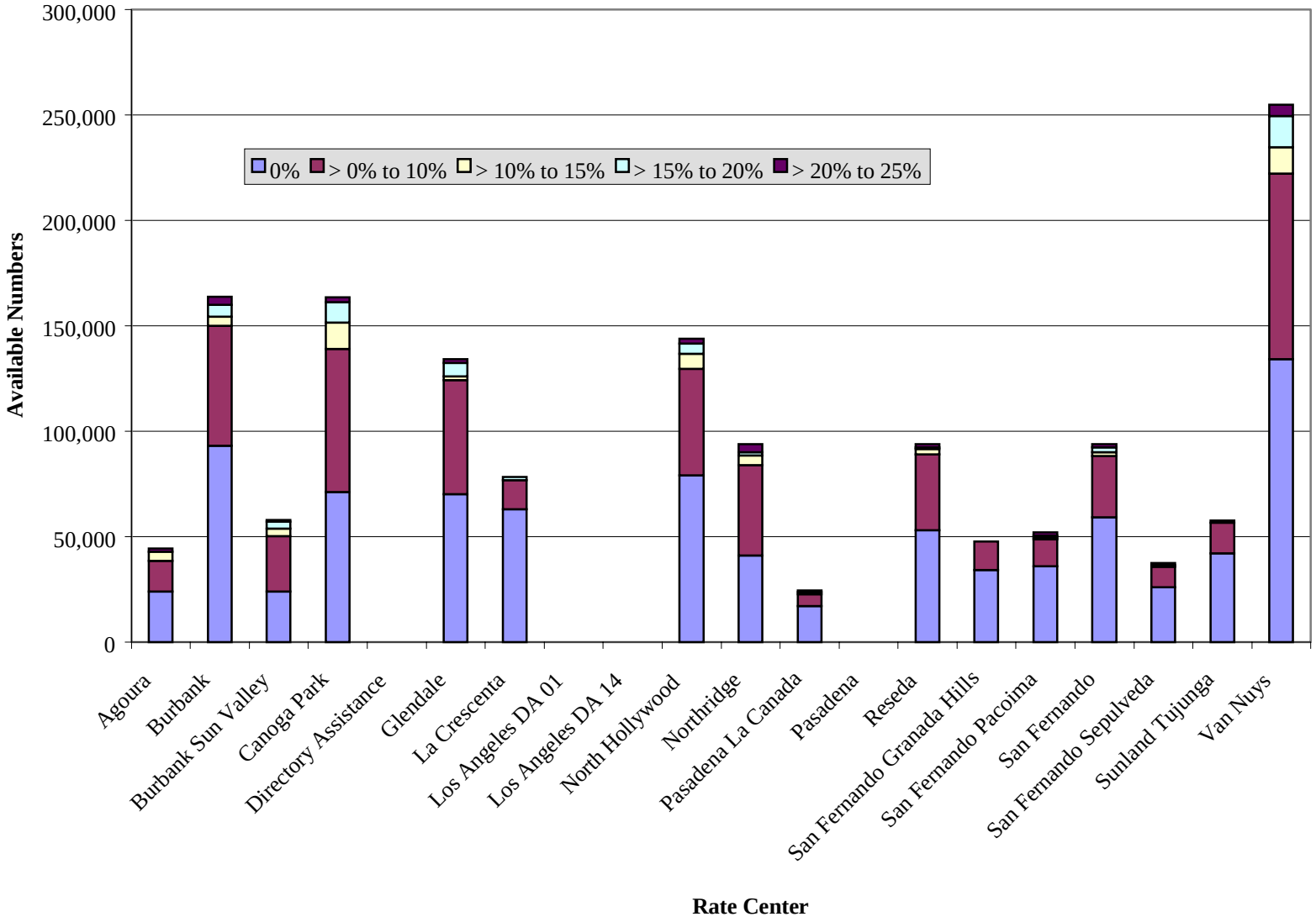


Table B-4
Telephone Numbers Assigned by Wireline and Wireless Carriers

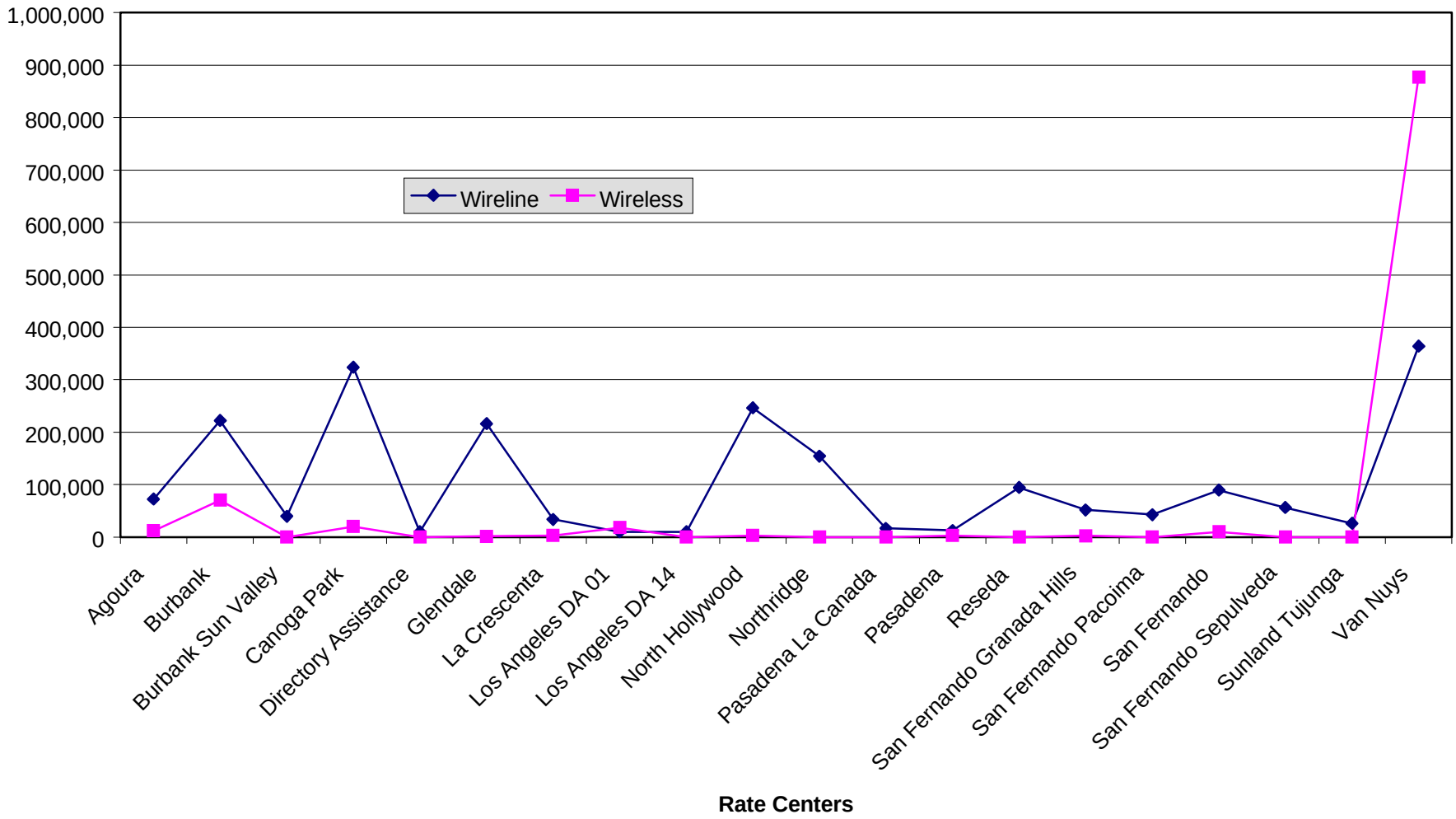


Table B-5
Numbers in Use Vs. Total Numbers Held by Wireline Carriers

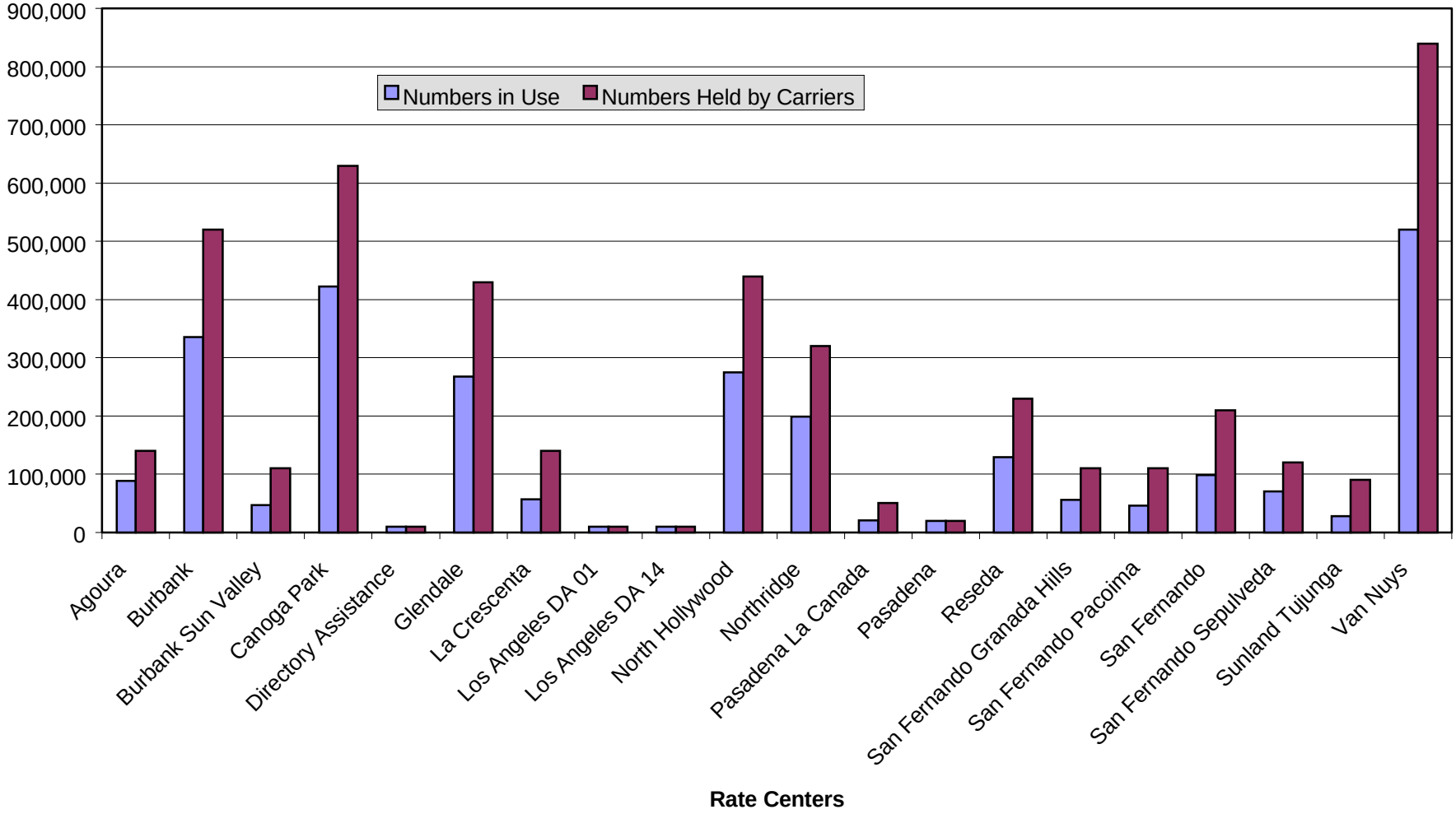
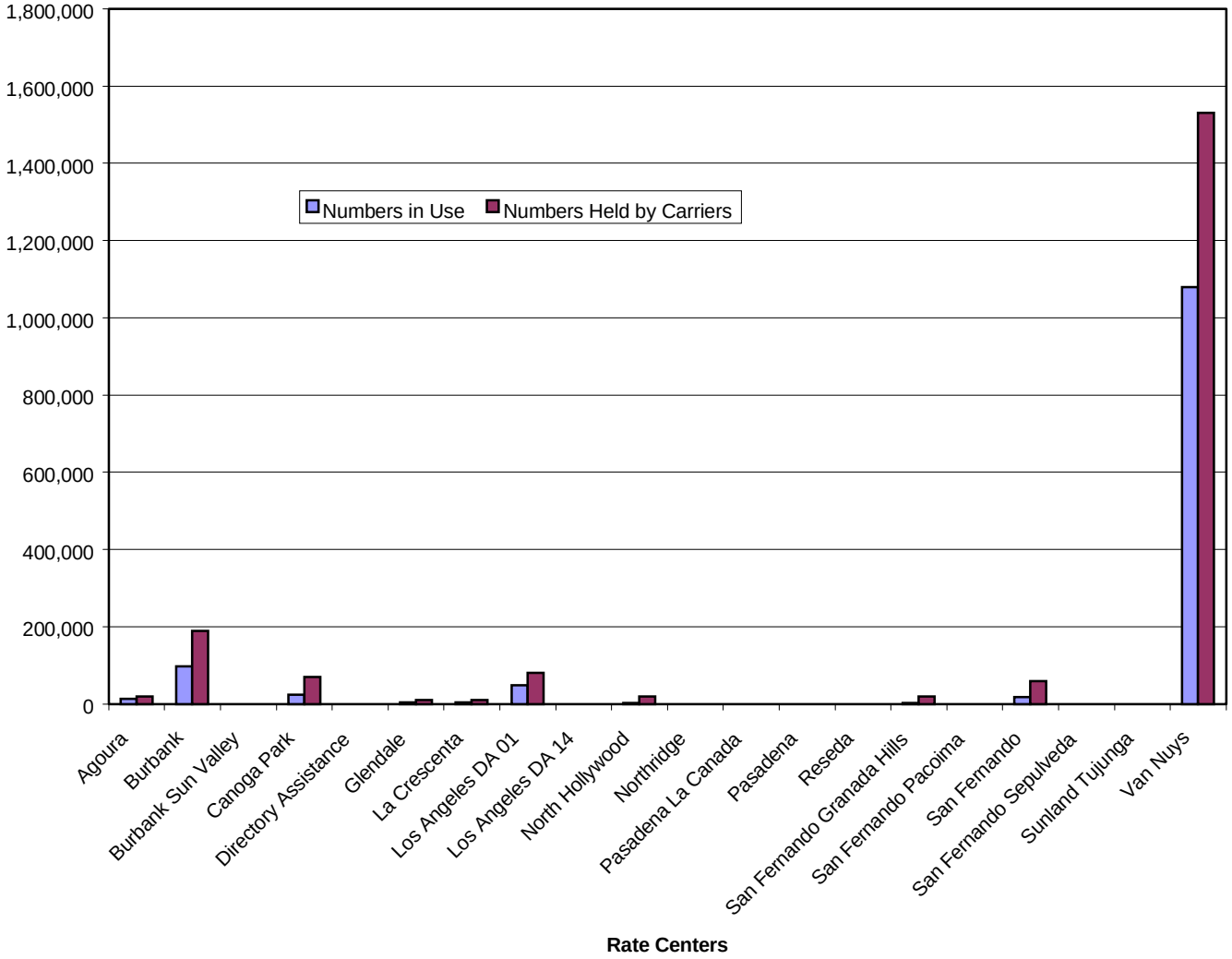


Table B-6
Numbers in Use Vs. Total Numbers Held by Wireless Carriers



APPENDIX C

818 SPECIAL USE CODES

NXX	PURPOSE	ASSIGNED	UNAVAILABLE	AVAILABLE
213	Pseudo 800 Service Code	10000	10000	0
520	High Volume Calling	10000	10000	0
555	Directory Assistance	10000	10000	0
561	Emergency Preparedness	10000	10000	0
818	Pseudo 800 Service Code	10000	1	9999
853	Time Service	10000	10000	0
976	Information Provider Service	10000	10000	0

APPENDIX D

Table D-1

Wireline Rerserved Numbers in the 818 Area Code			
Rate Center	**Number of Wireline Carriers**	**Reserved Numbers**	
AGOURA	5	5944	
BURNBANK/BURBANK	16	31973	
BURBANK SUN VALLEY	6	2274	
CANOGA PARK	15	19673	
GLENDALE	15	12755	
LA CRESCENTA	9	1219	
LSAN DA 01	1	0	
LSAN DA 14	1	0	
NORTH HOLLYWOOD	15	9655	
NORTHRIDGE	11	24139	
PASADENA LA CANADA	3	600	
PASADENA PASADENA	1	5661	
RESEDA	10	5359	
SAN FERNANDO GRANADA HILLS	4	126	
SAN FERNANDO PACOIMA	5	458	
SAN FERNANDO	12	2455	
SAN FERNANDO SEPULVEDA	5	9994	
SUNLAND TUJUNGA	5	46	
VAN NUYS	20	43378	
Total		175,709	

APPENDIX D

Table D-2

Wireless Rerserved Numbers in the 818 Area Code			
Rate Center	**Number of Wireless Carriers**	**Reserved Numbers**	
AGOURA	1	0	
BURBANK/BURBANK	6	1316	
BURBANK SUN VALLEY	0	0	
CANOGA PARK	6	1698	
GLENDALE	1	3025	
LA CRESCENTA	1	0	
LSAN DA 01	2	2703	
LSAN DA 14	0	0	
NORTH HOLLYWOOD	2	11	
NORTHRIDGE	0	0	
PASADENA LA CANADA	0	0	
PASADENA PASADENA	0	0	
RESEDA	0	0	
SAN FERNANDO GRANADA HILLS	1	0	
SAN FERNANDO PACOIMA	0	0	
SAN FERNANDO	3	21	
SAN FERNANDO SEPULVEDA	0	0	
SUNLAND TUJUNGA	0	0	
VAN NUYS	22	14421	
Total		23,195	

APPENDIX E

Table E-1

Wireline Administrative Numbers in the 818 NPA					
Rate Center	**Number of Wireline Carriers**	**Employee/ Official Numbers**	**Test**	**Other**	**Total Admin Numbers**
AGOURA	5	101	186	0	287
BURNBANK/ BURBANK	16	2426	1354	2	3782
BURBANK SUN VALLEY	6	214	322	159	695
CANOGA PARK	15	777	1466	1128	3370
GLENDALE	15	605	1527	3	2135
LA CRESCENTA	9	603	223	0	826
LSAN DA 01	1	0	0	0	0
LSAN DA 14	1	0	0	0	0
NORTH HOLLYWOOD	15	752	1531	158	2441
NORTHRIDGE	11	115	945	152	1212
PASADENA LA CANADA	3	600	132	0	732
PASADENA PASADENA	1	0	78	0	78
RESEDA	10	105	899	202	1,206
SAN FERNANDO GRANADA HILLS	4	687	163	1	851
SAN FERNANDO PACOIMA	5	1282	100	37	1419
SAN FERNANDO	12	2921	853	102	3606
SAN FERNANDO SEPULVEDA	5	1657	268	2	1927
SUNLAND TUJUNGA	5	883	127	455	1465
VAN NUYS	20	3316	2486	4	5806
Total		17,044	12,660	2,405	31,838

APPENDIX E

Table E-2

Wireless Administrative Numbers in the 818 NPA					
Rate Center	**Number of Wireless Carriers**	**Employee/ Official Numbers**	**Test**	**Other**	**Total Admin Numbers**
AGOURA	1	0	0	0	0
BURNBANK/ BURBANK	6	948	1479	2051	4478
BURBANK SUN VALLEY	0	0	0	0	0
CANOGA PARK	6	65	15	0	80
GLENDALE	1	0	50	0	50
LA CRESCENTA	1	0	0	0	0
LSAN DA 01	2	0	0	0	0
LSAN DA 14	0	0	0	0	0
NORTH HOLLYWOOD	2	1	9	0	10
NORTHRIDGE	0	0	0	0	0
PASADENA LA CANADA	0	0	0	0	0
PASADENA PASADENA	0	0	0	0	0
RESEDA	0	0	0	0	0
SAN FERNANDO GRANADA HILLS	1	0	1	0	1
SAN FERNANDO PACOIMA	0	0	0	0	0
SAN FERNANDO	3	62	2044	0	2106
SAN FERNANDO SEPULVEDA	0	0	0	0	0
SUNLAND TUJUNGA	0	0	0	0	0
VAN NUYS	22	1158	5186	18192	24536
Total		2,234	8,784	20,243	31,261

APPENDIX F

Table F-1

Wireline Intermediate Numbers in the 818 Area Code		
Rate Center	**Number of Wireline Carriers**	**Intermediate Numbers**
AGOURA	5	6400
BURBANK/ BURBANK	16	65100
BURBANK SUN VALLEY	6	1000
CANOGA PARK	15	60000
GLENDALE	15	26400
LA CRESCENTA	9	19600
LSAN DA 01	1	0
LSAN DA 14	1	0
NORTH HOLLYWOOD	15	700
NORTHRIDGE	11	9500
PASADENA LA CANADA	3	1900
PASADENA PASADENA	1	0
RESEDA	10	20200
SAN FERNANDO GRANADA HILLS	4	2000
SAN FERNANDO PACOIMA	5	0
SAN FERNANDO	12	0
SAN FERNANDO SEPULVEDA	5	0
SUNLAND TUJUNGA	5	0
VAN NUYS	20	83600
Total		296,400

APPENDIX F

Table F-2

Wireless Intermediate Numbers in the 818 Area Code		
Rate Center	**Number of Wireless Carriers**	**Intermediate Numbers**
AGOURA	1	0
BURNBANK/ BURBANK	6	15390
BURBANK SUN VALLEY	0	0
CANOGA PARK	6	677
GLENDALE	1	0
LA CRESCENTA	1	0
LSAN DA 01	2	22375
LSAN DA 14	0	0
NORTH HOLLYWOOD	2	0
NORTHRIDGE	0	0
PASADENA LA CANADA	0	1900
PASADENA PASADENA	0	0
RESEDA	0	0
SAN FERNANDO GRANADA HILLS	1	462
SAN FERNANDO PACOIMA	0	0
SAN FERNANDO	3	2960
SAN FERNANDO SEPULVEDA	0	0
SUNLAND TUJUNGA	0	0
VAN NUYS	22	62203
Total		105,967

APPENDIX G

TABLE G-1			
AGING NUMBERS IN THE 818 NPA			
	RESIDENTIAL	**BUSINESS**	**TOTAL**
WIRELINE	3851	110481	114333
WIRELESS	37332	74712	112044
TOTAL NUMBERS	41183	185193	226376

APPENDIX H
TABLE H-1
NUMBER POOLING

310 Pooling Updates (as of August 18, 2000)

1	6	7	8	9	10
Rate Center	**Initial Forecast Blocks by Carriers for 2000 Q3**	**Blocks Assigned by Pooling Administrator for 2000 Q3**	**Initial Blocks Forecasted by Carriers Year -to-Date**	**Blocks Assigned by Pooling Administrator Year -to-Date**	**Blocks Remaining from Carrier-Donation to the 310 pool**
AVALON	1	0	2	1	1
BEVERLY HILLS	26	1	58	7	85
CMTN CMTN	13	1	37	5	32
CMTN GRDN	19	0	42	6	65
CULVER CITY	13	0	35	8	32
EL SEGUNDO	20	0	52	8	38
HAWTHORNE	19	0	41	8	27
INGLEWOOD	17	0	43	8	54
LOMITA	12	1	27	5	18
MALIBU	11	0	28	7	18
REDONDO	18	1	42	7	62
SAN PEDRO	10	0	51	7	35
SNMN MRVS	25	1	79	8	53
SNMN SNMN	32	3	46	10	53
TORRANCE	23	1	51	8	60
W ANGELES	27	2	76	10	53
TOTAL	**286**	**11**	**710**	**113**	**686**

One Block = 1 thousand numbers

APPENDIX H
TABLE H-2
NUMBER POOLING

415 Pooling Updates (as of August 18, 2000)

1	2	3	4	5	6
Rate Center	**Forecast Blocks by Carriers for 2000 Q3**	**Blocks Assigned by Pooling Administrator for 2000 Q3**	**Initial Blocks Forecasted by Carriers Year -to-Date**	**Blocks Assigned by Pooling Administrator Year -to-Date**	**Blocks Remaining from Carrier-Donation to the 415 pool**
BELVEDERE	3	1	3	1	21
CORTEMADERA	6	3	6	3	26
IGNACIO	6	4	6	4	39
IVERNESS	3	0	3	0	27
MILL VALLEY	6	3	6	3	37
NICASIO	3	0	3	0	21
NOVATO	8	5	8	5	32
POINT REYES	3	0	3	0	25
SAN RAFAEL	6	1	6	1	67
SAUSALITO	5	0	5	0	37
SNFC CNTRL	75	0	75	0	110
SNFC JUNIPER	16	1	16	1	76
SNFC MT-EV	21	0	21	0	73
STNSN-BLNS	3	0	3	0	31
TOTAL	**164**	**18**	**164**	**18**	**622**

One Block = 1 thousand numbers

APPENDIX I

The following contains a comprehensive list of recommendations contained in this report:

Recommendation for Data Submittal

- *The CPUC should direct the NANPA to withhold issuing prefixes to these companies until the required information is submitted. The CPUC should also consider levying fines or other penalties for failure to comply. If these prefixes are not being used for customers, the CPUC should direct the NANPA to reclaim the prefixes as soon as possible.*

Recommendation from Block Contamination Analysis of Wireline Carriers

- *The CPUC should petition the FCC to increase the contamination level for pooling to 25%. If the FCC grants the petition, the CPUC should increase the maximum contamination level of donated blocks from 10% to 25% for all LNP-capable carriers.*

Recommendations from Block Contamination Analysis for Wireless Carriers

- *When cellular and PCS companies become LNP capable in November 2002, the CPUC should direct those wireless carriers to donate to and participate in the potential 818 pooling trial.*
- *The CPUC should adopt a 25% contamination threshold for donated blocks from wireless carriers to the pool.*
- *The CPUC should solicit comments on the feasibility of paging companies becoming LNP-capable and participating in pooling.*
- *If deemed feasible, the CPUC should petition the FCC to rescind the paging companies' indefinite exemption from becoming LNP-capable.*

Recommendation for Block Contamination Issues Affecting All Carriers

- *The CPUC should monitor company compliance with its fill rate and sequential numbering policies through future number utilization filings and audits.*
- *The CPUC should establish penalties for non-compliance with fill rate and sequential numbering policies adopted in Decision 00-07-052.*[65]

Recommendation for Reclamation of Prefixes

- *An order should be issued requiring the NANPA to notify the CPUC when a prefix has not been placed in service during the legally required time period for every California area code. The order should specify the procedures that the CPUC will follow in directing the NANPA to reclaim unused prefixes, and should require the NANPA to notify the CPUC of the steps the NANPA has taken to reclaim a prefix.*

Recommendations For Treatment of Non-Working Wireless

- *Non-Working wireless numbers should be treated as reserved numbers and limited to 45 days, after which they should be treated as available for assignment to customers.*
- *Companies should be required to maintain and update regularly the inventory records of all equipment assigned non-working wireless numbers along with the number assigned and submit such records to the CPUC upon request.*
- *The CPUC should continue to monitor non-working wireless numbers in the near term through future utilization filings and include this category of numbers in any audits conducted of wireless carrier number use*

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[65] See Chapter 1 for the discussion on Decision 00-07-052.

Recommendation for INP-Related Conservation Measures

- *The CPUC should require companies to transition from INP to LNP in the 818 area code and implement a monitoring mechanism to ensure compliance.*
- *The CPUC should adopt a schedule for transitioning INP arrangements to LNP in all other California area codes.*

Recommendations for Special-Use Prefixes

- *TD recommends that CPUC initiate an investigation into the possibility of moving the number for time and emergency preparedness into the 555 prefix.*
- *TD recommends that the CPUC include in its investigation the broader use of the 555 prefix in California's area codes by providing standard 555 numbers in every California area code to provide time, emergency preparedness, and weather information.*
- *TD recommends that the CPUC solicit comments in the Local Competition proceeding (R.95-04-043/I.95-04-044) regarding technical issues that would arise if 1,000 number blocks from high-volume calling prefixes and Pseudo 800 Service Codes are reclaimed and placed in the potential 818 number pool.*

Recommendations for Reserved Numbers

- *The CPUC should monitor reserved number use for all companies by reviewing future utilization data to ensure companies are complying with whether the FCC's 45-day requirement.*
- *The CPUC should adopt efficient number use practices specific to company reserve number holdings. In developing these practices, the CPUC should investigate various alternatives including, but not limited to, 1) limits on the quantity or percentage of reserved numbers companies can hold, and 2) requirements for using reserved number resources prior to requesting new number resources.*

Recommendations for Administrative Numbers

- *The CPUC should develop criteria by which companies assign administrative numbers. The CPUC should consider placing a limit on the quantity or percentage of administrative numbers companies are allowed to hold.*
- *The CPUC should develop rules that require companies to limit administrative number assignments within certain blocks in a given prefix. In cases in which companies hold multiple prefixes in a single rate center, the CPUC should develop rules that require companies to limit administrative number assignments within prefixes.*

Recommendations for Intermediate Numbers

- *The CPUC should monitor intermediate number use for all companies by reviewing future utilization filings to test whether potential abuses in this reporting category occur.*

Recommendations for Type 1 numbers:

- *Wireline and wireless carriers should improve Type 1 number inventory management. Wireline carriers should perform an annual inventory check of wireless Type 1 numbers to confirm that wireless companies are using the numbers allocated to them. Carriers should make inventory data available to the CPUC upon request. Wireline companies should reclaim unused numbers within 60 days of discovery*
- *Type 1 carriers should be subject to number conservation techniques such as sequential numbering and fill rates. A system to ensure compliance with Type 1 number conservation measures should be developed.*
- *The CPUC should consider Type 1 wireless carriers as candidates for number pooling. Excess and unused Type 1 numbers should be donated to the number pool.*

Recommendation for Aging Numbers

- *Although the CPUC has required all companies to differentiate between residential and business numbers in aging and track the two categories separately, Pacific Bell has not complied with these requirements. Pacific Bell should be redirected to differentiate between business and residential numbers in aging, track them separately, and report on each category accurately. The CPUC should assess penalties for failure to comply.*

Recommendation for Audits

- *The CPUC should audit the data submitted by companies in this study and future area code utilization studies.*

Recommendations for Number Pooling

- *The CPUC should continue to urge the FCC to adopt a 75% fill rate requirement for pooling nationwide.*
- *The CPUC should work with industry groups and the Pooling Administrator to develop specific rules for companies pertaining to forecasting a six-month inventory when a number pool is authorized in a particular area code.*

Recommendations for LNP

- *The CPUC should encourage the FCC to resolve the contradiction in the texts ordering LNP capability for all wireline carriers in the top 100 MSAs.*
- *As soon as permitted by the FCC, the CPUC should request that non-LNP capable wireline carriers in the 818 area code become LNP capable within the time frame prescribed by the FCC, which in no case may exceed 6 months from the day the CPUC makes the request.*
- *In the meantime companies (both inside and outside of the top 100 MSAs) should be encouraged to make requests of one another to become LNP capable.*

Recommendations for UNP

- *The CPUC should petition the FCC for authority to implement UNP statewide.*

Recommendations for Rate Center Consolidation

- *The CPUC should undertake further investigation by ordering the telecommunications industry to develop a plan, within 180 days, for rate center consolidation.*

Recommendations for Sharing of Prefixes

- *The CPUC should further explore sharing of prefixes as a means to more efficiently utilize numbers in all California area codes.*