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 510 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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REPORT ON THE 510 AREA CODE

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TELECOMMUNICATIONS DIVISION

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TABLE OF CONTENTS

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 510 area code, from its creation in 1991, through one split, to its present status, covering the East Bay region from Crockett south to Fremont. This report should be viewed in a broader context than the facts pertaining solely to the 510 area code. The report evaluates the status of number availability in the 510 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 510 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 510 utilization data submitted for this study and report.

The utilization study sheds new light on the numbering crisis in the 510 area code. The data reveals that despite increasing demand for numbers, the 510 area code is not fully utilized. The study found that of the 7.8 million useable numbers in the 510 area code, approximately 4.3 million, or more than half, presently are not in use. The data further establishes that the 510 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 510 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 510 area code is one of a group of reports covering specific area code number utilization levels.

FINDINGS

The 510 area code contains approximately 7.8 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 4.3 million available numbers, approximately 1.5 million have been set aside by the CPUC to use in a lottery for companies seeking numbers. Companies possess the remaining unused 2.8 million numbers. Wireline carriers, such as Pacific Bell and many competitive local exchange carriers, hold roughly 1.9 million available numbers, while wireless carriers hold approximately 860,000 available numbers.

Because there is not yet a number pool[2] in the 510 area code, all 2.8 million unused numbers are left stranded in company inventories. Even when a pool is implemented, some numbers will remain stranded because 1) the FCC has determined that wireless carriers do not

[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.

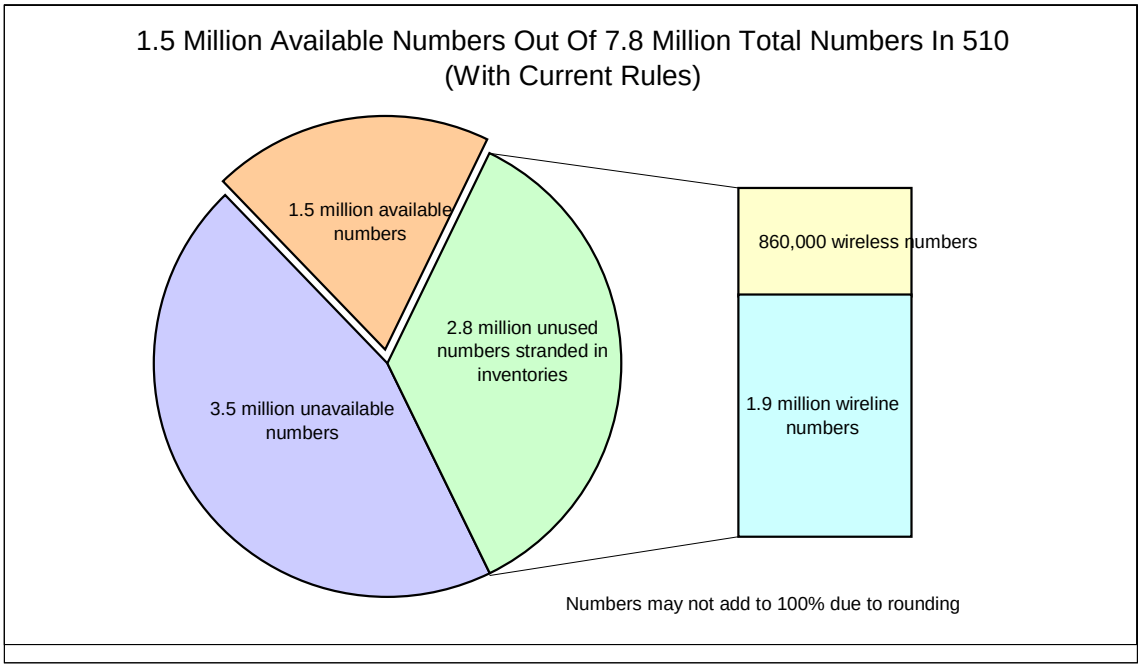
[2] Historically, telephone numbers have been allocated to companies in blocks of 10,000, as a complete prefix, such as (510) 703-XXXX. Number pooling allows companies to obtain numbers in blocks of 1,000 or fewer numbers.

have to participate in the pool at this time,[3] and 2) 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 months. The study further finds that of the 4.3 million numbers not in use, a maximum of 3.4 million numbers[5] could be made available to companies through pooling if a) the companies donated blocks with higher contamination levels to the pool, and b) wireless carriers were required to participate in the 510 number pool. 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.

[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.


1.5 Million Available Numbers Out Of 7.8 Million Total Numbers In 510
(With Current Rules)
1.5 million available numbers
2.8 million unused numbers stranded in inventories
3.5 million unavailable numbers
860,000 wireless numbers
1.9 million wireline numbers
Numbers may not add to 100% due to rounding

Finally, the study notes that companies identify 3.5 million numbers as unavailable. TD staff recommends specific 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 510 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 numbers 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 telecommunications 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, 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.

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

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

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 16 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. 510 History and CPUC Decisions

The 510 area code is a classic example of area code proliferation in California. The geographic region covering the 510 area code was originally part of the 415 area code, one of the first three area codes in California in 1947, which covered all of central California. The 510 area code was formed in 1991, splitting off the East Bay, Alameda, and Contra Costa Counties from the 415 area code. In 1998, the Eastern Alameda and Contra Costa Counties were split off from the 510 area code, forming the 925 area code.

Despite the introduction of an additional area code to provide relief to the 510 area code, NANPA determined in the spring of 1998 that the 510 area code was running short of numbers. In response to the NANPA's determination that the CPUC must act to provide additional numbers for phone company use, the CPUC approved an area code overlay on April 1, 1999. In an overlay, a new area code is created covering the same geographical area as the existing area code. Under CPUC and Federal Communications Commission (FCC) rules, all customers with numbers in both the new and old area codes are required to dial 1 plus the area code plus the seven digit number (known as 1 + 10 digit dialing) to reach any other number in either of the two area codes. The new area code was scheduled to be overlaid on the 510 area code on June 15, 1999, with mandatory 1 + 10 digit dialing to begin on April 15, 2000.

When the first overlay and 1 + 10 digit dialing were implemented in the 310 area code (located in the Los Angeles area) in April of 1999, customers expressed strong objections to the overlay and to the requisite 1 + 10 digit dialing. The CPUC halted the 310 overlay in September. In December of 1999, by Decision 99-12-051, the CPUC suspended all overlays previously approved, which included the overlay in the 510 area code. In that same decision, the CPUC required its TD staff to study number use to determine the quantity of available, unused numbers in the 510 area code. This report fulfills that requirement.[8]

[8] In addition, the California state legislature enacted Section 7937 of the California Public Utilities Code. Effective on January 1, 2000, Section 7937 requires the CPUC to prepare and

(continued on next page)

1. Numbers Allocated Through Monthly Lottery

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 companies when demand exceeds supply. The 510 lottery began in May 1997. Currently, the CPUC distributes four prefixes (two initial and two growth)[9] in the monthly 510 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 thirty-five prefixes in the 510 area code through this process between January 1, 2000 and August 31, 2000.

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 suspended, beginning in December 1999, all plans for new area codes previously approved. At the same time, the CPUC adopted number conservation measures including number pooling and rules regarding fill rates and sequential numbering.

1. Number Pool

With FCC approval, the CPUC began pooling trials in four area codes in 2000 in order to boost the efficiency of number allocation. In addition, the CPUC has proposed pooling trials for 13 other area codes in 2001.

Number pooling allows telephone companies to receive numbers in smaller blocks than the traditional 10,000 numbers, enabling multiple providers to share a prefix, thereby utilizing this limited resource much more efficiently. The technology that enables the network to support

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submit to the Legislature, by July 1, 2001, a study of the telecommunications industry's usage rates of telephone numbers in all California area codes. This report also complies with that legislative requirement with respect to the 510 area code.

[9] A company's request for its first prefix in the rate center is considered an initial request; requests for additional
(continued on next page)

the assignment of smaller blocks is referred to as Local Number Portability or LNP.[10] 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. Thirteen of the top 100 MSAs are located in California; the 510 area code is in one of them.[11]

Though LNP technology has existed for several years, the FCC has given 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.[12] At this time, only wireline carriers[13] 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.

The CPUC has been aggressively setting up number pools. Recognizing the the number conservation benefits of the first four pools, the CPUC issued a Proposed Pooling Schedule for 2001, which included a pooling trial for the 510 area code to begin in October 2001. The ALJ Ruling solicited comments on the proposed schedule on June 27, 2000, and is currently considering comments parties submitted. The CPUC has not issued the final pooling schedule.

2. Improved Number Inventory Management

While pooling trials have improved 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.

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:

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prefixes are considered growth requests.

[10] See Chapter Three of this report for a discussion of LNP.

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

[12] Cellular companies, PCS companies, and paging companies comprise the wireless category.

[13] ILECs and CLECs.

- Companies 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 and before being eligible to receive a thousand-block through the number pool. 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 these policies will potentially free more numbers for use in number pooling, to be allocated through the lottery, or to be otherwise used by companies. Indeed, these measures together with the effects of number pooling have already achieved some positive effects. For example, since the CPUC extended the 75% fill rate and imminent exhaust rules to all area codes, 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 policies (pooling, 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 number

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.)[14] 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 numbers are used and to promote more efficient use of numbers. 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 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 numbering crises in many

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

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 510 area code, there are 18 wireless carriers holding 179 prefixes. If the CPUC were allowed to create a separate area code for those companies, the 179 prefixes in the 510 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 510 area code to undergo another area code change, the CPUC recognized the necessity of determining the quantity of telephone numbers that are in use and yet to be used. To that end, the CPUC instituted a 510 utilization study and required companies to provide usage data to the CPUC as of April 30, 2000. 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 510 area code.

CHAPTER TWO: 4.3 MILLION UNUSED NUMBERS IN THE 510 AREA CODE

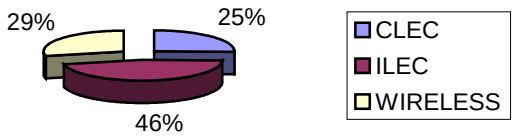
Of the 7.8 million numbers in the 510 area code, companies hold 6.3 million. The other 1.5 million numbers have yet to be assigned to companies. The CPUC's utilization study found that of the 6.3 million numbers held by companies, 2.8 million remain unused in their inventories. Therefore, 4.3 million numbers in the 415 area code remain unused. A portion of these unused numbers can be made available for use by all companies, either through pooling or through the monthly lottery allocation process. In addition, companies have reported 3.5 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 forty-one companies, holding 612 prefixes in the 510 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 held in 510 by incumbent local exchange carriers (ILECs), competitive local exchange carriers (CLECs),[15] and wireless carriers in 13 rate centers and one special code area.[16]

Table 2-1
Distribution of NXXs by
Category of Service Provider



2. Carriers Reporting

Of the 41 companies, 39 companies submitted utilization data; one carrier submitted data too late to be included in the summaries provided by NeuStar. TD has considered this late filer in it analysis.

[15] Wireline carriers are composed of ILECs and CLECs.

[16] The one special code area is used for directory assistance, a special use prefix described in section D.1.c of this chapter.

3. Non-Reporting Companies

The remaining two companies holding 7 prefixes in the 510 area code are no longer offering service in the 510 area code. GTE Communications Corporation and CRL Network Services wrote that they were returning their codes in the 510 area code. NANPA has confirmed the return of all 7 prefixes.

B. Numbers Available in the 415 Area Code

1. 4.3 Million Numbers Available

The 510 area code has 4.3 million unused numbers. Of these unused numbers, TD found that companies held 2.8 million numbers in their inventories.[17] These numbers held in inventory are currently not used but held in anticipation of future need. The remaining 1.5 million unused numbers are not yet assigned to companies and are made available in the monthly lottery. The breakdown of available numbers is shown in the table below.

[17] A detailed break-down of the available 2.8 million numbers is shown in Table B-1 in Appendix B.

Table 2-2
Summary of Available Numbers

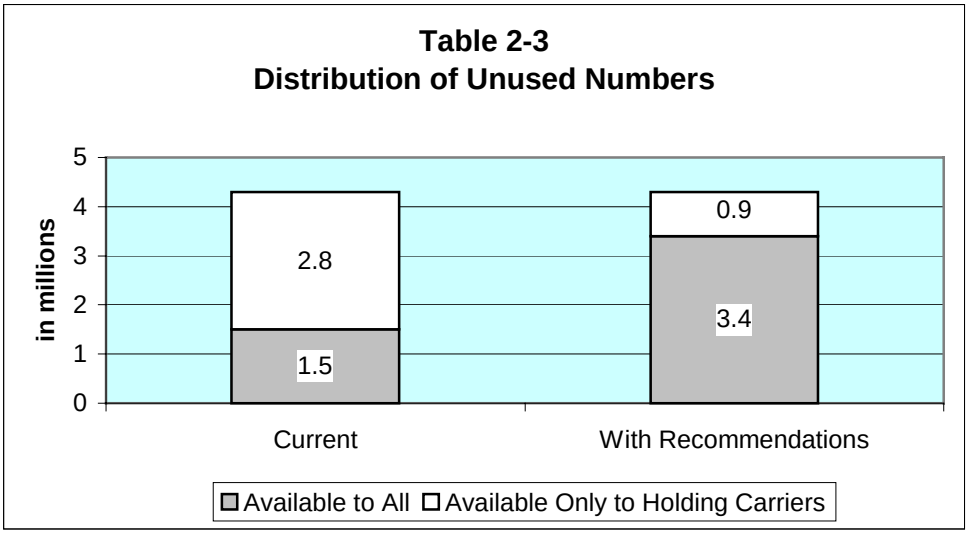
Wireline Carriers	1,900,954
Wireless Carriers	761,679
Type 1 Carriers	101,960
Total Available Numbers Reported by Carriers	2,764,593
Numbers Available for the 510 Lottery	1,580,000
Total Available Numbers in the 510 Area Code	4,344,593

Not all of the 4.3 million unused numbers are immediately available to every company that wants numbers. Of the 4.3 million numbers, only the 1.5 million numbers from the lottery are available to all companies. The remaining 2.8 million unused numbers are only available to the companies who hold them. The 510 area code is currently not in a pooling trial and no schedule has yet been determined. However, should pooling begin with the current FCC rules on blocks held by LNP-capable wireline carriers with 10% or less contamination, the pooling trial could start with a maximum of the 1.2 million numbers described earlier. However, TD cautions that this number will decrease over time as companies use numbers in 510. In addition, with the other pooling trials set up in California, the Commission has allowed companies a six-month inventory so any blocks in the 0% to 10% contamination levels needed for company inventory would not be donated to the pool, thereby further decreasing numbers available for the pool.

By setting up a pooling trial in the 510 area code and adopting recommendations in this report,[18] the CPUC could shift unused numbers to the category available to all companies. Of the 4.3 million unused numbers, those actions could result in making a maximum of 3.4 million numbers[19] available to all companies with the remaining 0.9 million numbers available to the companies who hold them.

[18] Recommendations dealing with receiving authority from the FCC to increase contamination threshold rates (25%) for pooling, recovering blocks from special use codes, and recovering unused numbers from non-LNP capable carriers and Type 1 carriers as described later in this report.

[19] See Table B-2 in the appendix for a detailed breakout of the 3.4 million numbers.



Current technology requires a company to be LNP-capable in order to donate numbers for another company to use. All wireline carriers in the 510 area code are required to be LNP-capable.[20] Although a number pooling trial has not yet been scheduled for the 510 area, TD analyzed the 510 utilization data by percentage contamination to determine the availability of numbers that potentially can be used in a number pool. Wireline companies hold 1.9 million unused numbers in the 510 area code. 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 less contaminated.[21] 1.2 million of the wireline companies' 1.9 million unused numbers are contained in 1,248 thousand-blocks held by LNP-capable carriers and are 10% or less contaminated. However, not all of these 1.2 million numbers can be retrieved from companies' inventories 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 for future use.

The remaining 679,000 of the 2.1 million unused numbers cannot be retrieved, either because the 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 639,000 numbers in blocks

[20] Although all wireline carriers are required to be LNP-capable, two wireline carriers in the 415 area code remain non LNP-capable.

[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.

that are more than 10% contaminated.[23] Non-LNP capable carriers hold 30,000 of the 2.1 million unused numbers. Special use codes[24] are generally not LNP-capable and constitute 10,000 of the 1.2 million unused numbers.

Wireless carriers hold 762,000 unused numbers in the 510 area code. Of these unused numbers, 345,000 are in blocks that are 10% or less contaminated, while 416,000 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.

C. Analysis of Available Numbers

1. Analysis of Wireline Carriers' Contamination Rates

The CPUC requires each company participating in number pools to donate blocks that are 10% or less contaminated, excluding those retained for the six-month inventory.[25]

TD analyzed the 510 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 rates by rate center for wireline carriers.

[23] See Table B-1 in Appendix B. The 663,984 is comprised of 43,503 which are in blocks that are 10-15% contaminated, 51,597 from 15-20% contaminated, 32,870 from 20-25% contaminated, and 536,014 numbers which are in blocks that are more than 25% contaminated. Later in this chapter, TD recommends additional steps that can be implemented to make more of the 663,984 numbers available for number pooling.

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

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

Table 2-4
Available Numbers by Percentage Contamination for LNP-Capable Wireline Carriers

RATE CENTER	0%	>0%-10%	>10%-15%	>15%-20%	>20%-25%
CROCKETT	1,000	994	1,726	805	0
EL SOBRANTE PINOLE	21,000	7,690	2,613	809	1,590
FREMONT NEWARK GREENLEAF	52,000	44,658	8,015	2,417	1,583
FREMONT NEWARK MAIN	92,000	34,846	6,176	2,400	3,165
FREMONT NEWARK OLIVER	82,000	28,537	7,064	4,803	3,075
HAYWARD	93,000	51,152	7,861	4,838	5,443
HERCULES RODEO	30,000	9,742	0	0	760
OAKLAND ALAMEDA	73,000	48,381	6,184	800	799
OAKLAND BERKELEY	93,000	40,550	3,538	4,055	6,263
OAKLAND FRUITVALE	52,000	30,131	2,687	1,629	1,588
OAKLAND MAIN PIEDMONT	68,000	72,386	7,037	18,519	9,297
OAKLAND TRINIDAD	66,000	49,877	7,955	4,844	3,925
RICHMOND	60,000	20,065	2,671	1,610	2,321
TOTAL	783,000	439,009	63,527	47,529	39,809

The first two columns of Table 2-4 show the potential numbers available to the 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 2-4 shows that all rate centers have available numbers that companies could donate to the pool.

The last three columns of Table 2-4 capture available numbers in blocks that are greater than 10% contaminated but no more that 25% contaminated. Under the current number pool rules, companies retain thousand-blocks that are more than 10% contaminated. Increasing the contamination rate threshold from 10% to 25% would potentially free up an additional 128,000[26] numbers for use in the number pool. TD cautions that although Table 2-4 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 numbers that can be added to the pool while still leaving companies with a six-month inventory.

[26] Additional numbers from the last three columns of Table 2-4: 43,503+51,597+, 32870=128,000

As shown by Table 2-4 and also shown graphically in Table B-3 of Appendix B, each rate center has available numbers from blocks of differing contamination levels up to 25%. The table shows that if the contamination level is increased from 10% to 25%, more unused numbers exist in each rate center that potentially can 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 Rate

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 2-5 shows available blocks of numbers in differing contamination levels held by wireless carriers. Wireless carriers hold 345,000 available numbers in blocks which are 10% or less contaminated as shown in the first two columns of Table 2-5. Wireless carriers also have 57,000 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 Table 2-5.

[27] Of these 345,000 unused numbers held by wireless carriers, TD estimates that 129,000 are held by the paging companies. See Table B-2 of Appendix B.

Table 2-5
Available Numbers by Percentage Contamination for Wireless Carriers

RATE CENTER	0%	>0%-10%	>10%-15%	>15%-20%	>20%-25%
CROCKETT	0	0	0	0	0
EL SOBRANTE PINOLE	0	0	0	0	0
FREMONT NEWARK GREENLEAF	8,000	0	0	0	0
FREMONT NEWARK MAIN	21,000	15,658	2,645	0	791
FREMONT NEWARK OLIVER	9,000	0	0	0	0
HAYWARD	42,000	16,751	2,661	2,493	2,319
HAERCULES RODEO	0	0	0	0	0
OAKLAND ALAMEDA	8,000	1,875	0	1,661	750
OAKLAND BERKELEY	7,000	996	0	812	1,559
OAKLAND FRUITVALE	0	0	881	0	0
OAKLAND MAIN PIEDMONT	135,000	56,448	12,271	8,248	15,549
OAKLAND TRINIDAD	1,000	999	858	0	0
RICHMOND	13,000	8,746	1,747	0	1,540
TOTAL	244,000	101,473	21,063	13,214	22,508

Because the FCC has granted wireless carriers an extension of time to implement LNP, no wireless carriers serving the 510 area code are capable of implementing LNP. Thus, wireless carriers cannot participate in number pooling at this time, resulting in 345,000 unused numbers in blocks between 0% to 10% contaminated in the 510 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 pool.*
- *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' permanent exemption on becoming LNP-capable.*

3. Potential Block Contamination Abuses

When blocks are slightly more than 10% contaminated, those blocks cannot be donated to the pool. TD found instances where companies contaminated several blocks in one prefix just above 10%. The CPUC's rules on sequential numbers 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. Sequential numbering minimizes contamination by requiring companies to begin assignment in the next thousand-block only after a 75% fill rate has been attained in the prior block. Where companies possess significant available numbers in a given rate center, these two efficiency measures could prevent the opening of new blocks or prefixes.

Companies reported utilization data as of April 30, 2000. The sequential numbering and fill rates decision was issued in July 2000. Therefore, TD does not expect carriers to continue contaminating blocks unnecessarily.

Recommendation for Block Contamination Issues Affecting All Companies

- *The CPUC should monitor 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] As shown in Tables 2-4 and 2-5, wireline carriers and wireless carriers hold 783,000 unused numbers and 244,000 unused numbers, respectively, in the 0% contaminated blocks. Of these 0% contaminated blocks, 160,000 numbers are in 16 whole prefixes, i.e. spare prefixes, while 767,000 numbers are scattered throughout many different prefixes. The following table shows the breakdown between wireless and wireline carriers.

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

[29] Carriers 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 code. The Commission would then consider each carrier's circumstances and determine whether to direct NANPA to reclaim the codes.

Table 2-6
Breakdown of Numbers in 0% Contaminated Blocks

	Avail. Nos. in 0% Con't Blocks	Avail. Nos. in Spare Codes	Avails. Nos. in Differing Codes
Wireline Carriers	783,000	170,000	613,000
Wireless Carriers	244,000	90,000	154,000

As shown above, 260,000 numbers in 26 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 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.[30] Substantial cooperation between the CPUC and the NANPA will be required in order for the CPUC to exercise this new authority and 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 3.5 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 the pool, to be allocated through the monthly lottery, or to be otherwise used by companies.

[30] FCC 00-104, Paragraphs 237, 238, and 241

Companies report that 3.5 million numbers in the 510 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 commonly 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 – Numbers from recently disconnected service which are not reassigned during a fixed interval.*

1. 2.6 Million Assigned Numbers

In the 510 area code, 2.6 million assigned numbers exist with 1.8 million assigned to customers by wireline carriers and 0.8 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 2-7
Assigned Numbers to Numbers Held by Carriers (in millions)

	Assigned Numbers	Nos. Held by Carriers	Percentage
Wireline Carriers	1.8	4.3	41.5%
Wireless Carriers	.8	1.8	44.9%

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. Only one company reported 24,000 assigned numbers in the non-working wireless category for the 510 area code. While the quantity of non-working wireless numbers reported generally is low, 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 by reviewing future utilization filings and include this category of numbers in any audits conducted of wireless carrier number use.*

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. [31] Prior to the implementation of permanent LNP, companies entered into

[31] Remote Call Forwarding allows a customer to have a local telephone number in a distant location. RFC 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

(continued on next page)

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 customers change companies because customers can take their numbers with them.

Since the 510 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.[32] The only companies who reported INP numbers were ILECs. They reported a total of 97 INP numbers in the 510 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 510 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 97 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 510 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.*

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 ILEC. These include numbers for recorded public information announcements such as time-of-day and weather forecasts, high-volume call-in numbers, and emergency access[33] 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 codes in each area code. Concerned that this process would adversely affect the public, the CPUC directed that codes should be duplicated in each new area code.

(continued from previous page)
premises.

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

[33] Other than 911.

The utilization study shows that seven prefixes are dedicated for special uses, one each for billing[34], directory assistance, 700 IntraLata Presubscription, high volume calling, time, weather, and emergency preparedness. Except for high-volume calling, 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 codes is an inefficient use of numbers in the 510 area code as well as in other area codes in California. For example, if the 555 prefix[35] currently reserved only for directory assistance could be used to provide time, emergency preparedness, weather service and 700 IntraLata Presubscription, then four more prefixes could be returned for reallocation in the 510 area code. Similarly, expanded use of the 555 prefix throughout the state could result in more returned codes 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 to the option of obtaining standard 555 numbers in every California area code to provide time, emergency preparedness, and weather information at no additional cost to customers.

With respect to high volume calling, the utilization study indicates that the prefix dedicated to this service[36] is not fully utilized. Out of the 10,000 numbers allocated, only 108 numbers are actually in use. The remainder of these numbers, however, can be a potential source of numbers for pooling. TD recognizes that there may be technical issues involved in obtaining these numbers. TD recommends that the Commission solicit comments in the Local Competition proceeding (R.95-04-043/I.95-04-044) regarding technical issues that would prevent high-volume calling prefix from being reclaimed and placed in the 510 number pool.

In addition to the under utilization of these numbers, the distribution of these numbers among blocks also demonstrates inefficient utilization practices. In fact, the 108 numbers are contained in three different 1,000 blocks. Consistent with our statewide

[34] The entire 10,000 numbers is dedicated to a specific customer for Automatic Identified Outward Dialing.

[35] 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.

[36] High-volume calling codes are meant to provide service to customers with a large quantity of incoming calls such as radio stations.

conservation measures adopted in July, TD recommends that CPUC require companies to assign numbers sequentially within each 1,000 block.

Recommendations for Special-Use Prefixes

- *TD recommends that CPUC initiate an investigation into the possibility of moving the number for time, emergency preparedness, weather service and IntraLata Presubscription.into the 555 prefix.*
- *TD recommends that 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 the Commission solicit comments in the Local Competition proceeding (R.95-04-043/I.95-04-044) regarding technical issues that would arise if 1000 numbers blocks from high-volume calling prefixes are reclaimed and placed in the 510 number pool.*
- *TD recommends that CPUC require companies to assign numbers sequentially in special use prefixes. Where the numbers are presently assigned randomly, TD recommends that these be moved to special use prefixes and consolidated in one 1,000 block in order to free more blocks for number pooling.*

2. Reserved Numbers Are a Potential Source of Additional Numbers

Carriers "set aside" numbers for future use by customers.[37] Previously, industry number assignment guidelines allowed companies to reserve a prefix for up to 18 months for customers' future use.[38] The FCC's NRO Order modified the number reservation period to 45 days. This 510 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.[39] The extension allows companies time to upgrade their number tracking mechanisms, which tally the quantities of reserved numbers they hold. While companies reported a total of 241,600 reserved

[37] 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.

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

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

numbers in the 510 utilization study,[40] 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 a total of 223,851 reserved numbers in the 510 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 established, numbers could also be freed up for reallocation in the 510 number pool.[41] Currently there are no limitations on the quantity or percentage of numbers a company can classify as reserved before 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. Comparing the data on the Fremont-Newark-Greenleaf rate center and the Fremont-Newark-Oliver rate center illustrates wide discrepancies between the quantity of reserved numbers companies hold. Thirteen wireline carriers reported having reserved numbers in each of those rate centers. However, wireline carriers reserved nearly three times as many reserved numbers in the latter rate center.[42] In another example, one company holds over 8,600 reserved numbers the Hayward rate center. Other companies in that same rate center hold as few as zero reserved numbers. If the CPUC orders efficient use practices specific to reserved numbers, companies will more efficiently use number resources.

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

[41] Although most wireline carriers serving the 510 NPA are LNP-capable, a number pooling trial has not yet been implemented in this NPA. Thus, these carriers 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 510 NPA in 2001. At that time, carriers 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).

[42] Wireline carriers serving the Fremont-Newark-Greenleaf rate center reported 7,504 reserved numbers and wireline carriers serving the Fremont-Newark-Oliver rate center reported 20,435 reserved numbers.

Wireless carriers reported 17,749 reserved numbers in the 510 area code. Wireless carriers also reported wide variances in reserved numbers. In the Oakland-Main-Piedmont rate center, 15 wireless carriers reported between 0 and 300 reserved numbers for a given rate center. By contrast, 3 wireless carriers in that rate center reported reserved numbers as low as 1,200 and as high as 2,100 in a given prefix. Like wireline carriers, efficient number use practices specific to 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 the FCC's 45-day requirement.*
- *The CPUC should adopt efficient number use practices specific to carrier 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 numbers.*

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 almost 61,000 administrative numbers in the 510 area code. Wireline carriers hold approximately 32,000 of these numbers and wireless carriers hold approximately 29,000 of them.

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 510 area code. The following three examples demonstrate this potential for over-assignment. First, in the Oakland-Main-Piedmont rate center, 2 companies are each using over 33 percent of their number resources for administrative purposes, while the average across all companies is close to 13 percent. Second, one carrier has nearly 10,000 numbers dedicated to testing in one prefix in that

same rate center, while the average per prefix is less than 50. Third, the Hayward rate center has 265,958 wireline numbers assigned which is nearly three times as many as the Oakland-Alameda rate center, but they are using only half the amount of administrative numbers. Given the variances 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 prevents them from donating blocks once they can participate in number pooling, or from 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.

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 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. Companies reported a total of approximately 374,000 intermediate numbers in the 510 area code. Wireline carriers hold about 279,000 of those numbers and wireless carriers hold somewhat less than 95,000. The quantity of intermediate numbers varied significantly among rate centers in the 510 area code.[43] Since the intermediate number category is new, 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. Therefore, TD recommends the CPUC continue to monitor intermediate number use.

Recommendations for Intermediate Numbers

- *The CPUC should monitor intermediate number use for all companies by interviewing 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.[44] 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 a complicated, as wireline and wireless reports often do not match. In the 510 area code, one half of all Type 1 numbers are unaccounted for or mismatched.[45] 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

[43] 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 510 rate center varied from 0 to nearly 97,000.

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

[45] 133,665 out of a total of 279,965 Type 1 numbers are unaccounted for or mismatched.

wireline carriers perform an annual inventory check on Type 1 numbers and reclaim any unused Type 1 numbers within 60 days.[46]

As described in Chapter 1, state and federal mandates 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 that Type 1 wireless carriers be subject to number conservation measures, and the CPUC should develop a system to ensure compliance.

Improved Type 1 number management is particularly crucial because unlike numbers held by most wireless carriers, Type 1 numbers are eligible for number pooling.[47] Therefore, if more closely managed, Type 1 numbers could be made available for pooling. Despite the problems with reporting, TD has identified 17 blocks of Type 1 numbers in the 510 area code that may be eligible for donation to the pool.[48] The Commission should recognize Type 1 numbers as a resource for number pooling and take steps to have companies donate excess blocks to the pool.

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. Companies 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 Commission should consider Type 1 wireless carriers as candidates for number pooling. Excess and unused Type 1 numbers should be donated to the number pool.*

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

[47] The 510 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.

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

5. Aging Numbers

The FCC's NRO Order defines aging numbers as disconnected numbers that are not available for assignment to another customer for a specified period of time. Consistent with the Industry Numbering Committee (INC) Guidelines, the CPUC adopted the FCC upper-limits for aging numbers as 90 days for residential numbers and 365 days[49] for business numbers.

In the 510 area code, there are approximately 179,000 numbers in the aging category, representing 5.1 % of the total unavailable numbers. While most companies track aging telephone numbers by business and residential categories, Pacific Bell, the largest single holder of numbers in the 510 area code, does not differentiate between business and residential customers when tracking aging numbers. In the cases where only totals were supplied, 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 % of the total unavailable wireless numbers, or about 82,000 numbers. Aging numbers represent 4 % of the total unavailable wireline numbers, about 97,000 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.

Recommendation for Aging Numbers

- *Although the CPUC has required all companies to differentiate between residential and business numbers in aging and track*

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.

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 510 utilization study was 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 will help verify whether companies are complying with CPUC and FCC rules.

Recommendations 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 as required by Public Utilities Code Section 7935(a). The CPUC could adopt the following conservation measures in the 510 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 a trial in the 510 area code. When applied, these conservation measures would result in uniform policies which will 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.[50] 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.[51]

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.[52] After just two months, pooling has saved 12 prefixes.

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

[51] As of September 18, 2000.

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

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.[53] With number pooling, activating new numbers can be accomplished in three weeks.

1. More Accurate Forecasting Will Improve Number Pooling

So far in California, number pooling has worked well because companies have met their numbering needs from the excess numbers 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 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 been, on average, forecasting *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 pool administrator opened prefixes based on the forecast, the prefixes would lie unused in the rate center.[54]

The CPUC has thus far prevented prefixes from being unnecessarily opened by ordering the Pooling Administrator (PA) to consult with TD prior to opening any 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.[55] 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. TD recommends the CPUC develop specific rules guiding company forecasting. TD also

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

[54] Data can be found in Pooling Appendix.

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

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 LNP deployment in the 510 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.[56] The 510 area code falls within one of the top 100 MSAs. The study revealed that all but two wireline carriers in the 510 area code are LNP capable. These companies hold 30,000 numbers that could be made available for number pooling, if they implemented LNP technology. This non-compliance could likely be explained by the existence of subsequent FCC documents contradicting the original LNP order. The CPUC is working with the FCC to resolve the confusing language in the texts. Once this is accomplished, the CPUC recommends requiring all wireline carriers to 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 yet to decide 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

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

[57] FCC 99-19, WT Docket 98-229; CC Docket No. 95-116, Released: February 9, 1999. Paging companies are indefinitely exempt from becoming LNP-capable.

[58] Further Comments of the California Public Utilities Commission and the People of the State of

(continued on next page)

179 prefixes in the 510 area code, of which 345 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.*
- *As soon as permitted by the FCC, the CPUC should request that non-LNP capable wireline carriers in the 510 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 LNP. The primary benefit of UNP would be increased access to unused numbers stranded in carrier 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.

(continued from previous page)
California in CC Docket No. 99-200, submitted May 19, 2000.

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 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.*
- *The CPUC should solicit comments in order to develop rules and practices necessary to implement UNP.*

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

[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."

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), 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 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.*

[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.

[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.

F. Sharing 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 technology, 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 510 area code are affiliated through mergers, acquisitions or other business relationships. Despite these affiliations, each company seperately requests numbers from the NANPA.[65] TD notes that the benefits of sharing prefixes 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 area codes*

CONCLUSION

Analyzing the utilization data provided by carriers has provided useful information regarding number availability and usage practices in the 510 area code. It also offers insights into developing better public policies to improve efficiency of number use.

We now know that of the approximately 7.8 million usable numbers in the 510 area code, roughly 4.3 million, or more than half, presently are not in use. Despite the increasing demand for numbers, the 510 area code is not fully utilized. The data indicates that there is considerable room for growth within the existing 510 area code, and it is premature to consider splitting or overlaying the 510 area code at this time.

The CPUC already has directed carriers to employ measures to use more efficiently the numbering resources in 510. Recently adopted fill rates and sequential numbering rules will

[65] Prior to the opening of the 415 number pool on July 29, 2000, all companies requesting telephone numbers got prefixes from the NANPA. Currently, only non-LNP capable carriers receive prefixes from the NANPA, while LNP capable carriers receive thousand-number blocks from the pooling administrator.

insure that carriers better use their existing resources, and receive additional numbers only on an as-needed basis. When pooling is implemented in the 510 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 carrier 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 3 million numbers are not in use in 510 but cannot be reassigned to other carriers. Changing contamination thresholds, implementing UNP, and requiring LNP capability for all carriers 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 effective as possible.

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 (area code-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 area code. 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 Prefixes: Certain Prefixes 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 ________ *area code* UTILIZATION STUDY FORMAT

RATE CENTER ______________

INFORMATION								ASSIGNED	ADMINISTRATIVE				INTER-MEDIATE	RESERVED	AGING			UNAVAILABLE	AVAILABLE
OCN	COC Type	LNP	Special Use	Rate Center	area code	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 ________ *area code* UTILIZATION STUDY FORMAT CONTAMINATION LEVELS

RATE CENTER ______________

INFORMATION								CONTAMINATION LEVELS													
OCN	COC Type	LNP	Special Use	Rate Center	area code	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 _______ *area code* UTILIZATION STUDY FORMAT TYPE 1 NUMBERS

RATE CENTER _____________

INFORMATION						ASSIGNED	ADMINISTRATIVE				INTER-MEDIATE	RESERVED	AGING			UNAVAILABLE	AVAILABLE
OCN	Donor SP	Rate Center	area code	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 ________ *area code* UTILIZATION STUDY FORMAT TYPE 1 CONTAMINATION LEVELS *RATE CENTER* ______________

INFORMATION						CONTAMINATION LEVELS												
OCN	Donor SP	Rate Center	area code	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 *area code* 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 area code:									
INTERIM LOCAL NUMBER PORTABILITY (INP):										
	Total quantity of assigned TNs dedicated to INP in the area code:									

Appendix A

Part 2 *area code* 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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Table A-1
Prefix Holders in 510 Area Code

1 Airtouch Paging - California
2 Allegiance Telecom, Inc.-CA
3 Bay Area Cellular Telephone
4 Brooks Fiber Communications - California
5 Cook Telecom, Inc.
6 CRL Network Services
7 Digitcom Services, Inc.
8 Focal Communications Corp of California
9 Frontier Local Services, Inc.-CA
10 GST Lightwave, Inc.-California
11 GTE Communications Corp.
12 GTE Mobilnet of California
13 ICG Telecom Group - CA
14 Level 3 Communications, LLC-CA
15 Map Mobile Communications, Inc.
16 MCIMetro, ATS, Inc.
17 Metrocall
18 MGC Communications, Inc.-CA
19 Mobilecomm
20 Network Services LLC
21 Nextel Communications
22 Nextlink of California
23 North County Communications Corp.-CA
24 O1 Communications, Inc.
25 Optel California Telecom, Inc
26 Pacific Bell
27 Pacific Bell Mobile Services
28 Pac-West Telecomm, Inc.
29 Pagemart, Inc.
30 Pagenet
31 Paging Plus
32 San Diego Paging
33 Sprint Spectrum L.P.
34 TCI Telephony Services of California, Inc.
35 Teleport Communications Group - San Francisco
36 Teligent, Inc.-CA
37 The Westlink Company
38 TSR Wireless LLC
39 U.S. Telepacific Corp.-CA
40 Winstar Wireless, Inc.-CA
41 Worldcom Technologies, Inc.-CA

Appendix B

Table B-1

4.3 million Available Numbers

Wireline Carriers		1,900,954
Wireless Carriers		748,588
Late Wireless Filer		13,091
Type 1 Carriers		101,960
	Subtotal	2,764,593
Available for lottery		1,580,000
	Total	4,344,593

The 2.8 million numbers assigned to carriers are broken down as:

Wireline Carriers	Blocks	Numbers
Blocks with 0% contamination	812	812,000
Blocks with more than 0% up to 10%	466	449,787
Blocks with more than 10% up to 15%	72	63,527
Blocks with more than 15% up to 20%	59	47,529
Blocks with more than 20% up to 25%	51	39,809
Blocks with more than 25% contam.	2,870	488,302
Total Available Numbers		1,900,954
Wireless Carriers		
Blocks with 0% contamination	244	244,000
Blocks with more than 0% up to 10%	105	101,473
Blocks with more than 10% up to 15%	24	21,063
Blocks with more than 15% up to 20%	16	13,214
Blocks with more than 20% up to 25%	29	22,508
Blocks with more than 25% contam.	1,352	346,330
Subtotal		748,588
Late wireless filer:		
Blocks with more than 25% (a)	20	13,091
Total Available Numbers		761,679
Type 1 Carriers		
Reported as Intermediate Numbers by Donors		279,965
Reported as Unavailable Numbers by Type 1 Carriers		(104,782)
Est. of Unavailable Numbers of Remaining Type 1 Carriers(b)		(73,223)
Total Available Numbers		101,960

(a) The late wireless filer did not have any blocks between 0% up to 25%

(b) Of the 279,965 numbers reported by donors as Type 1 numbers, Type 1 recipients only reported on 164,800 numbers with 104,782 as unavailable and 60,018 as available. Therefore, 115,165 numbers are unaccounted for. Staff estimated the unavailable numbers for the unaccounted numbers using the same ratio as numbers that were reported, namely 104,782 divided by 164,800.

Appendix B

Table B-2

Numbers Potentially Available Under Different Pooling Scenarios

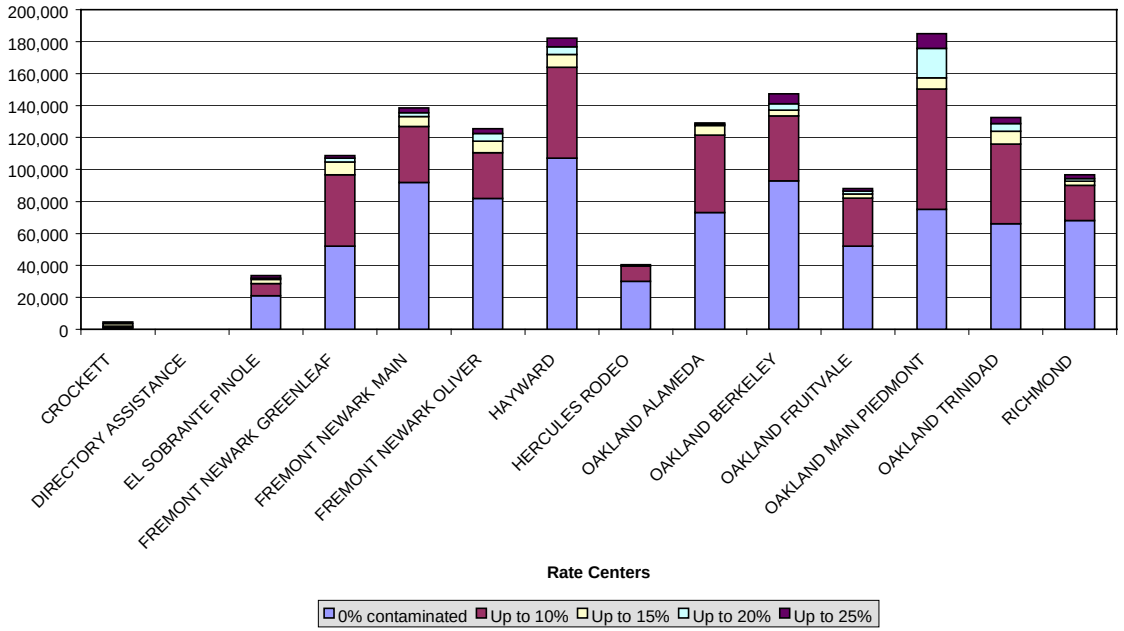
		Running Total
Wireline Carriers: Current Level at 10% or less (1)	1,222,009	
Available for Lottery	1,580,000	
Subtotal	2,802,009	2,802,009
Other Possibilities for Pooling:		
Available Numbers for non LNP blocks of Wireline Carriers	29,886	2,831,895
Available Numbers from Special Use Codes	9,892	2,841,787
Unavailable Numbers from Special Use Codes (2)	40,000	2,881,787
Wireline Carriers: Up to 15%	63,527	2,945,314
Wireline Carriers: Up to 20%	47,529	2,992,843
Wireline Carriers: Up to 25%	39,809	3,032,652
Cellular and PCS Carriers: Up to 10% (3)	234,922	3,267,574
Cellular and PCS Carriers: Up to 15% (3)	14,323	3,281,896
Cellular and PCS Carriers: Up to 20% (3)	8,986	3,290,882
Cellular and PCS Carriers: Up to 25% (3)	15,305	3,306,187
Type 1 Carriers: Up to 10%	15,382	3,321,569
Type 1 Carriers: More than 10% to 25%	26,096	3,347,665
Paging Carriers: Up to 10% (3)	110,551	3,458,217
Paging Carriers: Up to 15% (3)	6,740	3,464,957
Paging Carriers: Up to 20% (3)	4,228	3,469,185
Paging Carriers: Up to 25% (3)	7,203	3,476,388
Total	3,476,388	

(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 510, far fewer numbers would actually be donated by carriers.

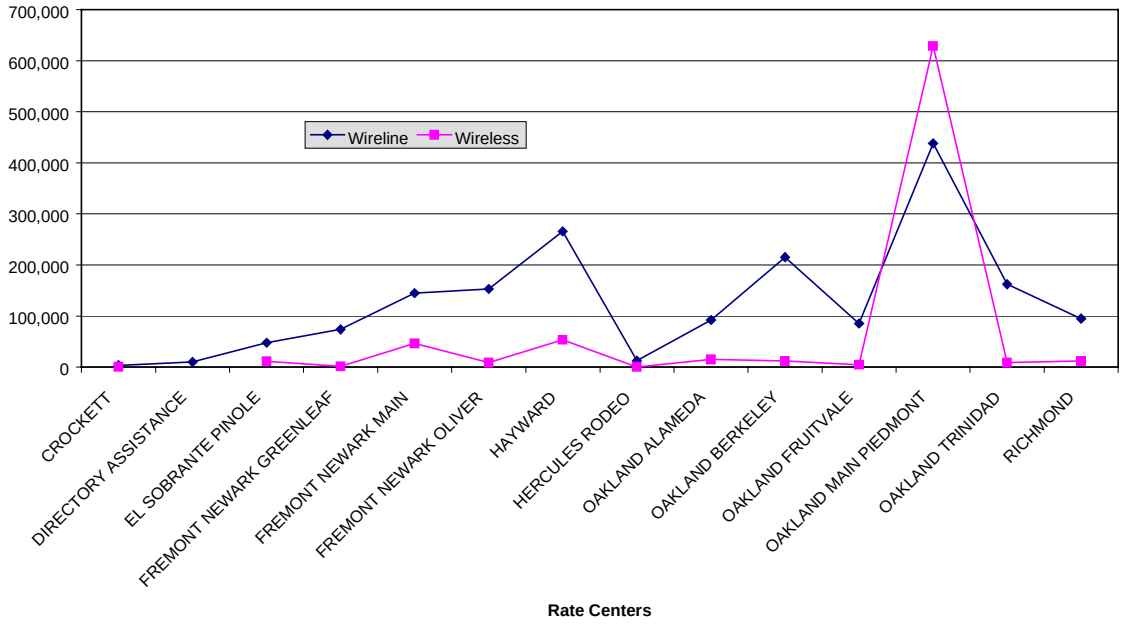
(2) See discussion of special use codes in Section E.1.c

(3) While cellular and PCS carriers have until November 2002 to become LNP capable, paging companies are currently totally exempted. Therefore, TD estimated the percentage of codes held by cellular and PCS (68%) vs paging (32%) and applied the percentage to the available numbers.

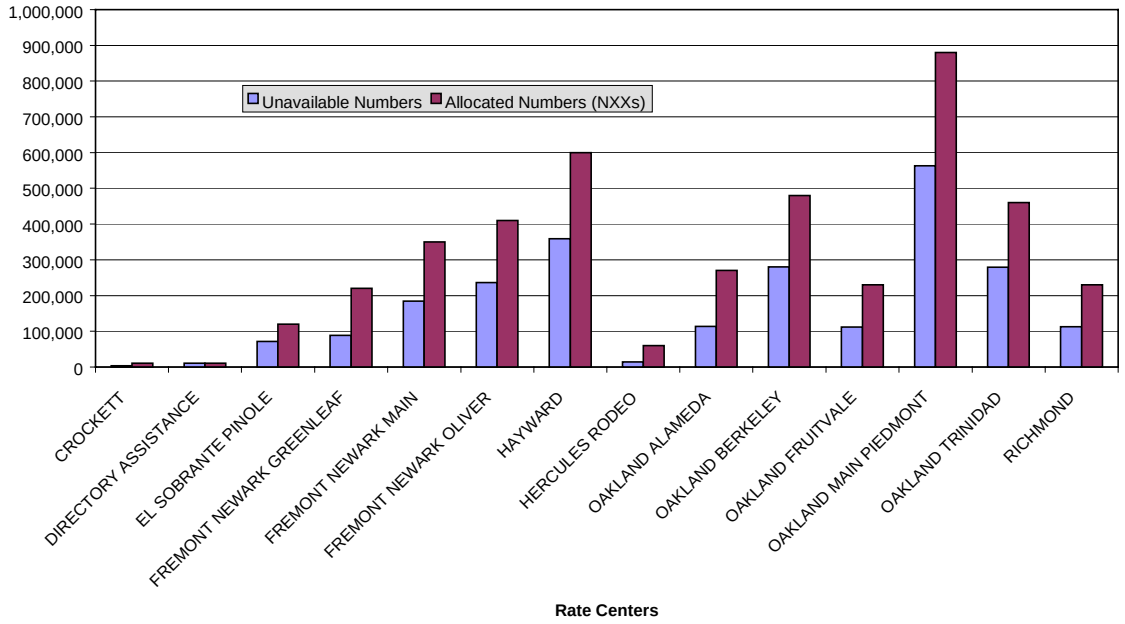
Appendix B
Table B-3
Wireline Carriers: Available Number by Contamination Level up to 25%



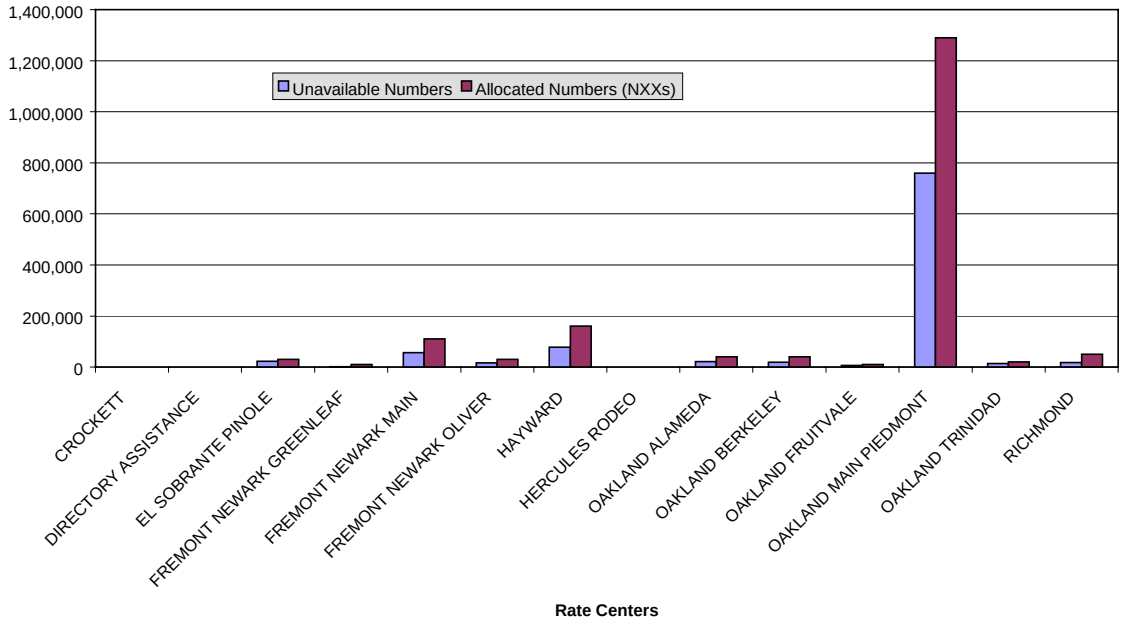
Appendix B
Table B-4
Telephone Numbers Assigned by Wireline and Wireless



Appendix B
Table B-5
Unavailable to Allocated Numbers for Wireline Carriers



Appendix B
Table B-6
Unavailable to Allocated Numbers for Wireless Carriers



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APPENDIX C

510 SPECIAL USE CODES

NXX	PURPOSE	ASSIGNED	UNAVAILABLE	AVAILABLE
203	Billing	10000	10000	0
555	Directory Assistance	10000	10000	0
700	700 IntraLATA Pre-subscription	10000	10000	0
762	High Volume Calling	10000	108	9892
767	Time Service	10000	10000	0
936	Weather Service	10000	10000	0
999	Emergency Preparedness Service	10000	10000	0

APPENDIX D
TABLE D-1

Wireline Reserved Numbers in the 510 area code					
Rate Center	Number of Wireline Carriers	Reserved Numbers			
CROCKETT	1	178			
EL SOBRANTE/ PINOLE	3	1594			
FREMONT-NEWARK GREENLEAF	13	7504			
FREMONT-NEWARK MAIN	17	15,399			
FREMONT-NEWARK OLIVER	13	20,435			
HAYWARD	18	37,686			
HERCULES-RODEO	5	538			
OAKLAND-ALAMEDA	15	7,139			
OAKLAND BERKELEY	17	33,869			
OAKLAND FRUITVALE	10	15,165			
OAKLAND MAIN-PIEDMONT	13	56,127			
OAKLAND TRINIDAD	12	24,724			
RICHMOND	8	3,493			
Total		223,851			

APPENDIX D
TABLE D-2

Wireless Reserved Numbers in the 510 area code					
Rate Center	Number of WireLess Carriers	Reserved Numbers			
CROCKETT	0	0			
EL SOBRANTE/ PINOLE	1	0			
FREMONT-NEWARK GREENLEAF	1	0			
FREMONT-NEWARK MAIN	6	2,183			
FREMONT-NEWARK OLIVER	2	0			
HAYWARD	10	4,571			
HERCULES-RODEO	0	0			
OAKLAND-ALAMEDA	2	156			
OAKLAND BERKELEY	4	2,843			
OAKLAND FRUITVALE	1	13			
OAKLAND MAIN-PIEDMONT	18	5,876			
OAKLAND TRINIDAD	2	0			
RICHMOND	3	2,107			
Total		17,749			

APPENDIX E
TABLE E-1

Wireline Administrative Numbers in the 510 area code						
Rate Center	Number of Wireline Carriers	Employee/ Official Numbers	Test	Other	Total Admin Numbers	
CROCKETT	1	0	11	0	11	
EL SOBRANTE/ PINOLE	3	2	174	0	176	
FREMONT-NEWARK GREENLEAF	13	704	921	154	1779	
FREMONT-NEWARK MAIN	17	808	1558	330	2696	
FREMONT-NEWARK OLIVER	13	1196	960	346	2502	
HAYWARD	18	1319	1780	310	3409	
HERCULES-RODEO	5	0	259	3	262	
OAKLAND-ALAMEDA	15	5779	1459	215	7453	
OAKLAND BERKELEY	17	660	1590	7	2257	
OAKLAND FRUITVALE	10	610	1021	5	1636	
OAKLAND MAIN-PIEDMONT	13	3777	*****	1005	6,563	
OAKLAND TRINIDAD	12	733	1644	205	2582	
RICHMOND	8	4	554	4	562	
Total		15,592	11,931	2,584	31,888	

APPENDIX E
TABLE E-2

Wireless Administrative Numbers in the 510 area code						
Rate Center	Number of Wireless Carriers	Employee/ Official Numbers	Test	Other	Total Admin Numbers	
CROCKETT	0	0	0	0	0	
EL SOBRANTE/ PINOLE	1	0	12	0	12	
FREMONT-NEWARK GREENLEAF	1	41	4	0	45	
FREMONT-NEWARK MAIN	6	480	86	916	1482	
FREMONT-NEWARK OLIVER	2	0	8	0	8	
HAYWARD	10	579	84	1656	2319	
HERCULES-RODEO	0	0	0	0	0	
OAKLAND-ALAMEDA	2	0	1035	0	1035	
OAKLAND BERKELEY	4	9	715	0	724	
OAKLAND FRUITVALE	1	0	111	0	111	
OAKLAND MAIN-PIEDMONT	18	2215	16,375	3033	21,623	
OAKLAND TRINIDAD	2	0	709	0	709	
RICHMOND	3	300	47	687	1034	
Total		3,624	19,186	6,292	29,102	

APPENDIX F
TABLE F-1

Wireline Intermediate Numbers in the 510 area code					
Rate Center	Number of Wireline Carriers	Intermediate Numbers			
CROCKETT	1	0			
EL SOBRANTE/ PINOLE	3	19700			
FREMONT-NEWARK GREENLEAF	13	2100			
FREMONT-NEWARK MAIN	17	13,200			
FREMONT-NEWARK OLIVER	13	50,917			
HAYWARD	18	39,700			
HERCULES-RODEO	5	401			
OAKLAND-ALAMEDA	15	3,101			
OAKLAND BERKELEY	17	16,802			
OAKLAND FRUITVALE	10	3,600			
OAKLAND MAIN-PIEDMONT	13	42,600			
OAKLAND TRINIDAD	12	78,945			
RICHMOND	8	8,300			
Total		279,366			

APPENDIX F
TABLE F-2

Wireless Intermediate Numbers in the 510 area code					
Rate Center	Number of Wireless Carriers	Intermediate Numbers			
CROCKETT	0	0			
EL SOBRANTE/ PINOLE	1	10135			
FREMONT-NEWARK GREENLEAF	1	0			
FREMONT-NEWARK MAIN	6	1,768			
FREMONT-NEWARK OLIVER	2	6,749			
HAYWARD	10	12,495			
HERCULES-RODEO	0	0			
OAKLAND-ALAMEDA	2	3,323			
OAKLAND BERKELEY	4	1,000			
OAKLAND FRUITVALE	1	1,000			
OAKLAND MAIN-PIEDMONT	18	53,957			
OAKLAND TRINIDAD	2	2,958			
RICHMOND	3	1,108			
Total		94,493			

APPENDIX G

TABLE G-1			
AGING NUMBERS IN THE 510 area code			
	RESIDENTIAL	BUSINESS	TOTAL
WIRELINE	0	96917	96917
WIRELESS	35883	45881	81764
TOTAL NUMBERS	35883	142798	178681

APPENDIX H

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

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
CORTEMADRA	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

SUMMARY OF RECOMMENDATIONS

The Following Contains A Comprehensive List of Recommendations Contained In This Report:

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 pool.
- 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' permanent exemption on becoming LNP capable.

Recommendation for Block Contamination Issues Affecting All Companies

- *The CPUC should monitor 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 00-07-052.66

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

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

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 by reviewing future utilization filings and include this category of numbers in any audits conducted of wireless carrier number use.
- Eliminating Interim Number Portability Releases Numbers for Reallocation

Recommendation for INP-Related Conservation Measures

- The CPUC should require companies to transition from INP to LNP in the 510 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.
- Expanded Use of the 555 Prefix Could Release Other Prefixes Dedicated to Special Uses

Recommendations for Special-Use Prefixes

- TD recommends that CPUC initiate an investigation into the possibility of moving the number for time, emergency preparedness, weather service and IntraLata Presubscription.into the 555 prefix.
- TD recommends that 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 the Commission solicit comments in the Local Competition proceeding (R.95-04-043/I.95-04-044) regarding technical issues that would arise if 1000 numbers blocks from high-volume calling prefixes are reclaimed and placed in the 510 number pool.

- TD recommends that CPUC require companies to assign numbers sequentially in special use prefixes. Where the numbers are presently assigned randomly, TD recommends that these are to be moved in special use prefixes and consolidated in one 1,000 block in order to free more blocks for number pooling.

Recommendations for Reserved Numbers

- The Commission should monitor reserved number use for all companies by reviewing future utilization data to ensure companies are complying with the FCC's 45-day requirement.
- The Commission should adopt efficient number use practices specific to carrier reserve number holdings. In developing these practices, the Commission 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 Commission 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 interviewing 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. Companies 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 Commission 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.

Recommendations 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 510 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.
- The CPUC should solicit comments in order to develop rules and practices necessary to implement UNP.

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 area codes