

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.

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REPORT ON THE 310 AREA CODE

Submitted in Compliance with Decision 99-09-067

CALIFORNIA PUBLIC UTILITIES COMMISSION
TELECOMMUNICATIONS DIVISION

Respectfully submitted
March 16, 2000

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EXECUTIVE SUMMARY

I. INTRODUCTION

The Telecommunications Division (TD) of the California Public Utilities Commission (CPUC) submits this report on the 310 area code in compliance with Decision (D.) 99-09-067. The decision required TD to file a report on the status of telephone number resources in the 310 area code. The report also fulfills some requirements of AB 406, enacted by the California Legislature in the last legislative session.¹

In this report, TD proposes measures for recovering unused numbers from existing carriers in the 310 area code for donation to a number pool. The pool would provide other carriers an opportunity to obtain additional new numbers. TD also recommends actions to implement effective number conservation measures, the benefits of which will extend far beyond the 310 area code. Many of the recommendations in this report focus on the greater goal of achieving more efficient carrier use of public numbering resources.

The findings in this report have implications for all areas of the state. 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 subsequent three years, however, the number of area codes in California nearly doubled. By the end of 1999, California had 25 area codes statewide. Without more efficient use of telephone numbers throughout the state, TD projects that 16 more area codes will need to be opened by the end of 2002, resulting in a statewide total of 41 area codes. As the Commission has found in several decision, the addition of new area codes creates substantial cost and inconvenience for business and residential customers. The objective, then, is to avoid new area codes whenever possible.

¹ Chapter 99-809, 1999.

A. History of the 310 Area Code

The 310 area code was created in 1991 when it was geographically split from the 213 area code. Almost 5 years later, the 310 area code was split, creating the 562 area code. In the summer of 1997, the CPUC considered opening another new area code because the 310 area code appeared to be running out of numbers. In early 1998, the CPUC approved implementation of an area code “overlay” in the 310 area, which would have created a new area code covering the same geographic area as the existing 310 area code. Under CPUC and Federal Communications Commission (FCC) rules, all customers with numbers in the existing 310 area code as well as in the new, anticipated 424 area code would be required to dial 1 plus the area code plus the seven digit number, i.e., 1+10 digit dialing, to reach any other number in either of the two area codes.

Once implemented, customers expressed strong objections to the overlay and the requisite 1+10-digit dialing requirement. In response to the expressions of concern by Los Angeles customers and to a formal request by political leaders and community groups, the CPUC stopped implementation of the overlay in September, 1999. Before proceeding to split the 310 area code, the CPUC requested a study of number use to determine the quantity of available, unused numbers remaining in the 310 area code.

B. Traditional Telephone Number Allocation Practices

A key factor driving the need for new area codes is the inefficient way that telephone numbers are allocated. Traditionally, when carriers needed telephone numbers for their customers, they received whole prefixes, also known as NXX codes, which are blocks of 10,000 numbers. The practice of assigning numbers in 10,000 increments is a holdover from the recent past, when only one carrier was authorized to provide service to customers in a specific territory. Today, more than 200 telecommunications carriers operating in California need numbers to provide service to customers. Yet each of them has had to obtain numbers in blocks of 10,000, or an entire NXX code, whether the carrier has 500 customers or 9,500 customers. Thus, the allocation of numbers in 10,000

blocks is creating an artificial demand for more numbers, which in turn, creates the need to open still more area codes.

Today, the means exist to allocate numbers in blocks smaller than 10,000. This process, called “number pooling”, presently enables allocation of numbers in blocks of 1,000, though eventually, it may be possible to pool individual telephone numbers. Thousand-block pooling enables several carriers to share the number resources of one NXX code. But, to participate in pooling, carriers must use the same technology that enables carriers to “port” telephone numbers from one service provider to another. Portability means that a customer may switch carriers and take the telephone number to the new carrier. This technology is called “local number portability” (LNP), and it must be programmed into a carrier’s equipment in order for that carrier to participate in pooling. Presently, all but one wireline carrier in the 310 area code, Level 3 Communications, has LNP capability. The FCC has allowed wireless carriers until November, 2002 to implement LNP technology. Under FCC rules, the CPUC cannot mandate that carriers implement LNP technology in order to participate in pooling or as the basis for other number conservation measures.

Carriers without LNP capability, therefore, continue to receive numbers in blocks of 10,000, though a limited number of NXX codes are being allocated in a 310 lottery drawing. Carriers not participating in the 310 number pooling trial must meet certain criteria to be eligible for the two NXX codes rationed in the 310 lottery held every other month. As of February 29, 2000, 15 NXX codes remain available in the 310 lottery, with the next lottery scheduled for April, 2000.²

II. RESULTS OF THE 310 UTILIZATION STUDY AND OF THE CPUC’S NUMBERING ACTIONS

TD conducted in the 310 area code the first number utilization study ever performed in the state of California. The CPUC contracted with Neustar, the independent company that performs

² As described in Chapter 2 of this report, TD continues to seek recovery of other NXX codes, which would add to the quantity of 10,000 blocks available in the 310 lottery for non-LNP-capable carriers.

numbering administration functions at both the national and state level, to collect utilization data from carriers on behalf of the Commission.³ The CPUC consulted with the industry in establishing the parameters for the study, which covered the definitions and categories of numbers carriers were to use in reporting their data. Neustar compiled the data and provided to TD aggregated data, and the raw data collected from each carrier individually, i.e., “carrier-specific” data.

Upon receipt of the data from Neustar, TD staff conducted an analysis of the data, and developed the findings and recommendations contained in this report. Among the highlights of the report’s findings and conclusions are the following:

- *At least 3 million unused numbers exist in the 310 area code, some of which are available for pooling, some of which are available through the NXX code lottery, and some can be assigned to customers of the carriers holding the numbers;*
- *Of the 3 million unused numbers in the 310 area code, approximately 2.7 million are held by carriers, while the CPUC has set aside roughly 340,000 for the 310 pool and lottery;*
- *Of the 2.7 million unused numbers carriers hold in the 310 area code, 470,000 are in blocks that are 10% or less used and which are being retained in six-month inventories;*
- *An undetermined quantity of numbers in the 310 area code presently is not being used, but is held in “reserve” for future customer use;*
- *The CPUC could not determine the quantity of “reserved” numbers because carriers do not effectively track reserved numbers separately from numbers being used by customers.*
- *785 thousand-blocks – as many as 785,000 numbers – have fewer than 10% of their numbers in use, and have been donated or are available to be donated to the 310 pool for reallocation to other carriers.*

³ Until late last year, Neustar was a division of Lockheed Martin.

- *If NXX codes with 25% or fewer numbers in use were included in the 310 number pooling trial, the CPUC could increase the quantity of blocks available for pooling by another 478 thousand-blocks, or as many as 478,000 numbers. Combining the 478 blocks with the 785 blocks discussed above and another new 160 blocks that the CPUC has set aside for pooling would generate a total of 1.4 million numbers in the 310 area code available for reallocation through the pool.*
- *The CPUC can take further steps to increase efficient use of another 1.4 million of the 2.7 million unused numbers already held by the carriers. These numbers are not presently available for pooling and cannot otherwise be reallocated.*
- *TD's pursuit of several carriers who did not comply with the CPUC's order to report 310 utilization data has resulted in, or will soon result in, recovery of additional numbers in the 310 area code for reallocation.*

The CPUC's efforts to assert greater control over the use of public numbering resources are only beginning with the 310 area code. In addition to halting the overlay in the 310 area code in September 1999, the CPUC has responded to increasing public concern over the proliferation of area codes throughout the state. Specifically, the CPUC has taken several actions to increase the efficiency with which telecommunications carriers use the telephone numbers they already possess. These actions are consistent with the intent of the Legislature in enacting AB 406, i.e., that the CPUC determine actual number use in California, and move towards more efficient number utilization practices. In addition, the CPUC has sought and received from the FCC authority to take additional steps to conserve numbers.

The CPUC has undertaken the following actions to date:

- *Conducted the state's first telephone number utilization study in the 310 area code;*

- *Obtained interim authority from the FCC to begin implementing a trial which would allocate numbers to carriers in smaller quantities than traditionally have been used;*
- *Petitioned the FCC for authority to create area codes dedicated to particular services or technologies; and*
- *Issued draft rules relating to the use of more efficient number use practices, such as requiring that numbers be assigned sequentially (sequential numbering) and that carriers meet minimum usage or “fill” rates before they may obtain additional numbers.*
- *Issued a schedule for the submission of utilization data in the other 24 area codes in the state. Following the initial submission, ongoing code utilization reporting requirements shall take effect for all NPAs with reports due on a quarterly basis.*

More work remains to be done. The carriers’ self-reported data reveals that almost 2.7 million numbers are unused in carrier inventories and only 785,000 of those numbers are available for pooling. Further, the study’s results suggest that limiting the quantities of numbers used for internal administrative purposes, reserved for future customer use, aging between customer assignment, and set aside for special information services all would free up more numbers in the 310 area code.

Consistent with the mandates of AB 406, the TD hopes that the Commission will embrace in most or all other area codes in California, the techniques and approaches initiated in the 310 area code. Thus, both the recommendations, listed on the following pages, and the number conservation efforts undertaken in the 310 area code should provide a template for further number conservation efforts intended to improve number use efficiency. These efforts also should slow the rate at which new area codes must be introduced in California until carriers efficiently use or assign numbers within their control.

III. SUMMARY OF RECOMMENDATIONS FOR NUMBER EFFICIENCY

A. Recommendations for More Efficient Use of Numbers in the 310 Area Code

1. Promoting Full Use of Assigned NXX Codes in the 310 Area Code

The 310 utilization study required carriers to report information on numbers characterized as “unavailable” in carrier number inventories and for purposes of reallocation to other carriers, whether those numbers are “in use” or not. Unavailable numbers fall into several categories: 1) numbers assigned to customers or to customer equipment, 2) numbers assigned to the carrier for its own internal administrative purposes, 3) numbers in the process of “aging” between disconnection of service and reassignment to a new customer, and 4) numbers “reserved” for potential future customer use. Further, some numbers reported by wireline carriers as “assigned” actually have been provided to wireless carriers under “Type 1” agreements, which are contracts between wireline and wireless carriers governing the terms and conditions of service.⁴ In addition, many carriers hold 1,000-blocks of numbers with fewer than 100 assigned numbers, whether those numbers are assigned in sequence or randomly. This is referred to as a “10% or less contamination” rate for that 1,000-block.

Recommendations for Block Contamination Issues

- 1. The CPUC should immediately adopt fill rates and sequential numbering requirements for all carriers in the 310 area code, even if those carriers are not currently requesting additional blocks from the number pool, or additional NXX codes in the lottery.⁵*

⁴ TD discusses “Type 1” numbers in greater detail in Chapter Two.

⁵ Consistent with proposals for fill rates and sequential numbering contained in the recent ALJ ruling seeking comment, TD proposes that these limits apply to growth codes only.

2. *Where carriers have significant numbers available in a given rate center, fill rates and sequential numbering would prevent the unnecessary opening of new 1,000-blocks or NXX codes.⁶ Future utilization studies could be used to determine whether carriers are complying with these efficient use practices.*
3. *The CPUC should establish penalties for carrier non-compliance with fill rates and sequential numbering rules in the 310 area code.*
4. *The CPUC should bar carriers from assigning numbers in a 1,000-block contaminated less than 10% when they can easily assign numbers from an already-contaminated block (above 10% contamination level). A block with just 101 numbers is more than 10% contaminated, and thus is disqualified from donation to the pool.*

Recommendation for Type 1 Numbers

5. *The CPUC should require all wireless carriers who did not submit to Neustar Type 1 utilization data for the 310 area code to immediately report such data. If these carriers report significant unused numbers, the CPUC should require the carriers to return those numbers to the wireline carriers with which they have the Type 1 agreements. The quantity of available numbers can then be assessed, and to the extent feasible, blocks could be donated to the 310 pooling trial or otherwise put in use.*

2. Limiting Reserved Numbers in the 310 Area Code

Industry guidelines allow carriers to reserve an NXX code for up to 18 months if the applicant can demonstrate that reservation of the code is necessary for technical or planning reasons, or because regulatory approval is pending.⁷ Industry guidelines impose no restrictions, however, on a carrier's ability to reserve blocks of numbers within the NXX code, once the carrier receives the code. TD's analysis of the 310 study results show that reserved numbers significantly impact specific 1,000-blocks, NXX codes, and

⁶ A "rate center" is the point within each telephone exchange, or network grouping of telephone lines, from which distance is measured to other exchanges for purposes of rating and routing calls.

⁷ Central Office Code (NXX) Assignment Guidelines, prepared by the Industry Numbering Committee, January 27, 1999 version, Section 4.4

rate centers.⁸ The reserved number results for wireline carriers were particularly inaccurate, though both wireline and wireless carriers displayed a tendency to treat “reserved” and “assigned” numbers the same, i.e., as “assigned”. The carrier practice of not tracking how long numbers are reserved means that carriers continue to seek more numbers in the 310 area code while they do not accurately account for the numbers they already hold.

Recommendations for Reserved Numbers

6. *The CPUC should limit to 180 days the period carriers are allowed to “reserve” unused numbers in the 310 area code. This approach is consistent with the Commission’s rules governing inventories for carriers participating in the 310 number pool, with the month-to-exhaust criteria in the 310 NXX code lottery, and with filings the CPUC has made at the FCC. Limiting the time that numbers can be reserved will make more numbers available in carrier inventories for assignment to customers and for reallocation in 310 either through the number pool or via the NXX code lottery.*
7. *The CPUC should order carriers to upgrade, by April 30, 2000, their number tracking systems so that carriers can readily determine how long they are holding unused numbers in reserve. More accurate tracking of reserved numbers would increase carrier readiness for upcoming utilization studies planned for other area codes throughout the state. Because they would be continually tracking numbers classified as “reserved”, the carriers could quickly and easily report how long those numbers have been held in reserve.*

3. Special Use Numbers in the 310 Area Code Should Be Placed in One NXX Code

Certain NXX codes in every area code are designated for “special” uses and thus are not available for general commercial use by customers. These NXX codes are set aside so their numbers can be used as recorded public information announcements for time-of-day or weather forecasts, as high-volume call-in numbers, or as emergency preparedness numbers. For

⁸ Reserved numbers are discussed in greater detail in Chapter Two.

example, the prefix 555 is reserved nationally for inter-area code directory assistance. But, aside from 555-1212, no other number in the 555 prefix is working in California.

In responding to the utilization study, carriers reported which of the NXX codes they hold in the 310 area code are dedicated to such special uses. The study results showed that only six wireline NXX codes in the 310 NPA are dedicated to special uses: one for emergency preparedness, two for special calling programs, one for inter-area code directory assistance (1-XXX-555-1212), one for time, and one for high-volume calling. Few of the numbers in these NXX codes are in use, suggesting that many of the 1000-blocks in those codes could be reallocated. The CPUC should investigate recovering some or all of these numbers in particular special use NXX codes for reallocation either in the 310 number pool or the 310 NXX code lottery.

Recommendations for Special Use Numbers

8. *The CPUC should investigate moving the numbers for time and emergency preparedness in the 310 area code into the 555 prefix. If the numbers for these services were available from 555 in the 310 area code, the two NXX codes currently dedicated to these services could be returned to the NANPA for reallocation to carriers.*
9. *The CPUC should solicit comments in the Local Competition proceeding to determine whether any technical issues are associated with reclaiming and re-using blocks from high-volume calling NXX codes in the 310 number pool. Based on the results of the utilization study, TD has identified nine 1,000-blocks from one high-volume calling NXX code which might be available for donation to the 310 pool, if no technical issues exist.*

4. Non-Compliant Carriers Must Be Ordered To Submit Data

Seven carriers, three wireline and four wireless, reported no data on their use of numbers currently held in the 310 area code. NXX codes have been recovered or will soon be recovered from three of the carriers, and thus utilization data is no longer necessary from those

carriers. Based on the non-compliance of the remaining four wireless carriers, however, TD proposes the following actions:

Recommendations for Compliance

10. The CPUC should immediately issue an order compelling the four non-compliant wireless carriers to promptly submit utilization data for the 310 area code. If these carriers do not promptly comply, the CPUC should direct the NANPA to suspend the allocation of numbers to these carriers. Further, the CPUC should consider other penalties against non-compliant carriers.

B. Recommendations For Reallocating Unused Numbers in the 310 Area Code

1. Increased Number Use Efficiency Through Number Pooling

The full effect of the 310 number pooling trial cannot be assessed until some time after the pool begins operating on March 18, 2000. Nonetheless, TD recommends here several steps to increase the quantity of numbers available for the 310 pool, and to expand the number of carriers participating in the pool. Carriers cannot participate in the pool if they do not have LNP capability, and thus they must continue to draw numbers in entire NXX codes, or blocks of 10,000 numbers. Given the urgency of the number drain in California, and nationwide, and consistent with the CPUC's comments in the FCC's numbering resources optimization proceeding (FCC 99-200), LNP capability on a national scale is critical to expanding number pooling and implementing other code conservation measures.

Recommendations for Local Number Portability and Number Pooling

11. The FCC should order nationwide implementation of LNP, or delegate to California and other states authority to order implementation of LNP on a statewide or as-needed basis.

12. The FCC's LNP rules were designed to assist a customer seeking to retain his telephone number when changing from one service provider to another. To facilitate customer choice, the FCC's

rules provide that once a wireline carrier receives a bona fide request from another carrier to port a customer's number, the carrier receiving the request must implement LNP technology in a prescribed time frame. The current FCC rules do not provide for a state commission to request that a non-LNP-capable wireline carrier implement the technology for regulatory purposes. The CPUC should petition the FCC to extend to state commissions the existing carrier requesting authority.

- 13. As soon as permitted by the FCC, the CPUC should request that non-LNP-capable wireline carriers in the 310 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.*
- 14. The CPUC should increase, from 10% to 25%, the contamination threshold for all LNP-capable carriers donating blocks of numbers to the 310 number pool. Allowing use of blocks with higher contamination levels will result in greater quantities of numbers being made available for pooling. This recommendation would be inconsistent with industry guidelines, which use a 10% contamination level for pooling purposes. Nonetheless, the FCC's September, 1999 order (FCC 99-248), granting the CPUC additional authority to engage in number conservation measures, allows the CPUC to deviate from industry pooling guidelines after consultation with the industry.*
- 15. When wireless carriers become LNP-capable in 2002, the CPUC should adopt mandatory donation policies for number pooling for wireless carriers.*
- 16. The CPUC should develop specific rules for carriers pertaining to forecasting a six-month inventory to be retained when a number pool is authorized in a particular area code. The data reported in the 310 utilization study demonstrated that carriers based their six-month inventory forecasts on widely varying assumptions. Specific rules for forecasted inventories should result in more consistent forecasts among carriers.*
- 17. The CPUC should institute a penalty mechanism for carriers who continue to further contaminate 1,000-blocks of numbers after the Block Donation Date, which is the date that 1,000-blocks are submitted to the pooling administrator. TD also recommends that, if the CPUC adopts a penalty mechanism, it should be applied in future number pools in other area codes.*

18. *The CPUC should direct that carriers with interim number portability (INP) arrangements transition permanent LNP arrangements by no later than April 30, 2000. INP accomplishes the same general purpose as LNP, which is to “port” a customer’s number from one carrier to another, but INP uses two telephone numbers while LNP uses only one. The CPUC should adopt a schedule for transitioning INP arrangements to LNP in all other California area codes.*

2. Other Number Conservation Measures for Efficient Number Use

The following number conservation measures could result in more efficient carrier use of numbering resources:

Recommendations for Other Number Conservation Measures

19. *The CPUC should begin an investigation into consolidating certain rate centers in the 310 area code. Specifically, the Commission should examine the possibility of consolidating the San Pedro and Avalon rate centers because the population served by the Avalon rate center is small, but carriers forecast that they will need more numbers in that rate center. The San Pedro rate center is moderately used, and is geographically close to Avalon, which is on Catalina Island.*

20. *The CPUC should explore NXX code sharing which could lead to more efficient use of numbers among two or more carriers. The 310 utilization study was not designed to investigate code-sharing, which allows two or more carriers to share numbers in a given NXX code. Nonetheless, Commission pursuit of this option may lead to more widespread use of these options among both carriers affiliated through mergers, acquisitions, or business relationships, as well as among non-affiliated carriers.*

C. Recommendations for More Efficient Number Use Practices for Other Area Codes in California

In addition to the recommendations set forth above pertaining specifically to the 310 area code, the CPUC should adopt policies governing number use practices on a statewide basis. As noted earlier, the approaches undertaken in the 310 area code are intended to serve as a

template for statewide numbering policies. Consistent with that goal, TD recommends the following measures:

1. Administrative Numbers

Carriers use “administrative” numbers for internal purposes. Consistent with the parameters the CPUC established for the utilization study, carriers reported administrative numbers in three subcategories: 1) employee/official numbers, 2) test numbers, and 3) other numbers (location routing numbers, wireless E911 numbers, and temporary local directory numbers, for example).

Recommendations for Administrative Numbers

- 21. The CPUC should consider limiting to specific 1,000-blocks the assignment of certain categories of administrative numbers, i.e., employee numbers.⁹ Administrative numbers that do not require assignment to specific 1,000 blocks for technical reasons should be aggregated into a single 1,000-block within each NXX. The CPUC’s investigation of this option should explore the possibility of restricting the quantity of administrative numbers a carrier may assign when the carrier holds multiple NXX codes or large quantities of numbers in a given rate center. TD further recommends that the CPUC solicit comments on these issues in the Local Competition proceeding (R.95-04-043/I.95-04-044).*
- 22. The CPUC should continue its investigation of the possible over-assignment of numbers for employee number purposes by carriers in the 310 NPA.*
- 23. The CPUC should continue to press the FCC to adopt uniform definitions for such numbers.*

2. Aging Numbers

Numbers “age” between disconnection of one customer’s service and the start of service for the next customer assigned the same number.¹⁰ The aging process helps to reduce customer confusion which would occur if a number is reassigned too soon. At the same time, carriers in

⁹ Administrative numbers are discussed in greater detail in Chapter Two.

¹⁰ Aging numbers are discussed in greater detail in Chapter Two.

California have number aging policies which are neither consistent across carriers, nor consistent with industry guidelines. TD recommends the following policies for aging numbers.

Recommendations for Aging Numbers

24. In non-jeopardy situations, the CPUC should adopt guidelines developed by the Industry Numbering Committee for aging of disconnected numbers, as follows:

- a) Residential telephone numbers should be aged no less than 30 days and no longer than 90 days from the subscriber-specific disconnect date.*
- b) Business telephone numbers should be aged no less than 90 days but no more than 365 days from the subscriber-specified disconnect date.*

25. In non-jeopardy situations, the CPUC should adopt shorter aging periods in order to free up more numbers for use

3. Special Use Numbers

Consistent with TD's recommendation for special use NXX codes in the 310 area code, TD believes that numbers can be made available by reassigning special uses to certain NXX codes.

Recommendation for Special Use Numbers

26. The CPUC should initiate an investigation into broader use of the 555 prefix in all California area codes, in which presently only one number out of 10,000 is used to provide inter-area code directory assistance. The Commission should consider establishing standard numbers in the 555 prefix for providing time, emergency preparedness, and weather information services. Similarly, broader use of the 555 prefix throughout the state would result in return of NXX codes in other area codes for reallocation.

CHAPTER ONE: BACKGROUND

A. The Demand for Numbers in California

California is currently experiencing an explosive demand for telephone numbers that fuels the need to create new area codes. Since 1997, the number of area codes or Numbering Plan Areas (NPAs), nearly doubled in the past three years from 13 to 25.¹¹ Unless major changes in state and federal numbering policies and practices are implemented, California will have 41 area codes by the end of 2002. Many factors have contributed to the demand for numbers, including inefficiencies in number allocation, competition for local telephone service and the popularity of telecommunications devices and services, such as cell phones, pagers, automated teller machines, and “point-of-sale” credit card readers. The demand also is driven by California’s increasing population and a robust economy.

B. CPUC Has Attempted to Address the Area Code Crisis at the Federal Level

1. CPUC Petitions on Number Conservation Seek Additional Authority

Under federal law, the FCC has exclusive jurisdiction over “those portions of the North American Numbering Plan that pertain to the United States.”¹² In addition, Congress authorized the FCC to delegate to “State commissions or other entities all or any portion of such jurisdiction.”¹³ In September, 1998, the FCC issued an order pertaining to number conservation measures adopted by the Pennsylvania Public Service Commission. In that FCC decision, commonly known as the Pennsylvania Order, the FCC prescribed the limits of state authority to order number pooling, but invited state commissions to seek additional authority to engage in number conservation trials. Pursuant to the Pennsylvania Order, in April, 1999, the CPUC filed two petitions with the FCC.

¹¹ The terms “area code” and “NPA” are interchangeable, and are so used in this report.

¹² See the 1996 Federal Telecommunications Act, 47 U.S.C. § 251(e)(1).

¹³ Id.

The first petition sought authority to order a mandatory number pooling trial in California, as well as to initiate other efficient number use practices. On September 15, 1999, the FCC granted the CPUC petition, authorizing the start of number pooling trials in California subject to certain conditions. In addition, the FCC authorized the CPUC to establish efficient number use practices, such as requiring carriers to assign numbers sequentially (i.e., sequential numbering) and to meet usage thresholds,(i.e., “fill rates”), prior to obtaining new blocks of numbers in the same rate center. In response to that grant of authority, the CPUC has ordered the 310 number pooling trial and has moved towards adopting efficient number use practices initially in the 310 NPA and later in all area codes.

The state’s first number pooling trial is scheduled to begin in the 310 NPA on March 18, 2000. Initially, carriers identified 751 thousand-blocks for donation to the pool, but, as described in Chapter Two of this report, TD discovered an additional 34 blocks that could be donated to the pool. Further, the CPUC directed that 16 new NXX codes, or 160,000 numbers, be set aside for the 310 number pool. TD will not be able to determine the actual impact of the number pool on the life of the 310 NPA until some time after the trial begins and real carrier requests for 1,000-blocks are submitted to the pooling administrator.

The second petition the CPUC filed with the FCC in April, 1999 sought authority for the Commission to consider creating one or more area codes dedicated to specific technologies or services, (i.e., service-specific or technology specific area codes.) Such authority could, for example, result in placing all wireless services in a separate area code. Since wireless carriers cannot participate in number pooling because they have not implemented portability technology, wireless carriers continue to draw numbers in blocks of 10,000. If the existing wireless carriers in the 310 NPA, who hold among them 191 NXX codes, were moved to a wireless area code, that would free up almost two million more numbers in the 310 NPA for reallocation to other carriers. To make the best use of a technology-specific area code, the CPUC, for example, has proposed moving into one umbrella area code numbers assigned to wireless carriers in many different existing NPAs in Southern California. This proposal would create an “expanded”

wireless area code. The FCC has not yet acted on this petition, but has instead consolidated the California petition, along with similar petitions from Massachusetts and Connecticut, into a pending rulemaking on “numbering resource optimization”.

The FCC issued its Notice of Proposed Rulemaking (NPRM) on June 2, 1999, seeking comments on a broad spectrum of rules associated with the administration of telephone number usage and conservation. These included proposed rules for defining numbers, for forecasting, tracking, and auditing carriers’ use of numbers, and for conservation measures associated with number usage, including but not limited to, number pooling.¹⁴ The CPUC filed comments on the NPRM on July 30, 1999, and reply comments on September 9, 1999. A decision in the NPRM is expected by the end of March, 2000, and likely will have far-reaching implications for California’s authority to promote efficient carrier use of telephone numbers in the state.

2. CPUC Obtained Interim Authority for Its NXX Code Lottery Process

a. Existing Lottery

In 1996, the CPUC approved the use of a lottery to allocate NXX codes. At some point in the life of an area code, the number of codes remaining in the NPA drops below the anticipated demand for those remaining codes. The point at which anticipated demand exceeds the remaining supply of NXX codes in an NPA is the point at which the NANPA declares the area code to be in a state of “jeopardy”. Within three months of NANPA’s declaration, the industry planning group meets to determine whether to begin rationing NXX codes in that area code. Upon deciding that rationing should begin within an NPA, the group also identifies the number of NXX codes to be allocated among requesting carriers.

The 310 NPA has been in rationing since October 1996. When the CPUC rescinded the overlay plan in D.99-09-067, the CPUC also reduced the lottery allocation in the monthly 310

¹⁴ Notice of Proposed Rulemaking In the Matter of Numbering Resource Optimization (NPRM), (FCC 99-200, Released: June 2, 1999). The CPUC filed comments in response to the NPRM, mentioned throughout this report, on July 30, 1999 and reply comments on September 10, 1999.

lottery to two NXX codes per month. In January, 2000, by letter from the Director of TD, the monthly lottery allocation was further reduced to two NXX codes every other month. In addition, as discussed below, the CPUC ordered a one-time special lottery for carriers who could demonstrate extraordinary need for numbers, via use of “imminent exhaust criteria”.

On December 1, 1998, the FCC granted a petition from the CPUC for additional authority over the California NXX code lottery process. Pursuant to that grant of authority, the CPUC has asserted more control over the lottery process. TD staff currently is reviewing on a regular basis the number of codes allocated every month in each area code. Several times in the past six months, via CPUC decision, ALJ Ruling, or letter from the Director of TD, the monthly allocation of NXX codes has been adjusted to encourage more efficient use of numbers, and to extend the life of those area codes in hopes that the CPUC soon will be able to implement pooling in more area codes. The more NXX codes that are available in an area code when pooling is initiated, the greater the benefits that can be achieved and the longer the existing NPA can continue to provide numbering resources without the need to open a new area code.

b. Emergency Lottery for the 310 Area Code

The Commission established a one-time emergency lottery of eight unassigned NXX codes for carriers who were able to demonstrate special need in the 310 area code. This emergency lottery was held in addition to the usual monthly lottery. To obtain the NXX codes, each carrier was required either to demonstrate that it would run out of numbers in a particular rate center in the 310 NPA within three months. Alternatively, if the carrier wanted an initial code, that is, a first code in a particular rate center, the carrier could document that it would be marketing service in that rate center within three months. The one-time special lottery was held on December 16, 1999 to allocate the eight NXX codes in the 310 NPA. All eight codes were allocated to carriers meeting the imminent exhaust criteria. On a going-forward basis, all carriers receiving codes in the 310 NPA are required to meet the imminent exhaust criteria. In the January 2000, lottery five codes were also given out to carriers meeting the imminent exhaust criteria.

Once the 310 number pool is established, all LNP-capable carriers will be authorized to draw numbers only from the number pool in blocks of 1,000. It is anticipated that there will be far fewer carriers applying for numbers in the 310 lottery because all LNP-capable carriers seeking numbers will be drawing from the pool. Therefore, as of the February, 2000 lottery, two NXX codes have been rationed in the 310 NPA every other month only to non-LNP capable carriers meeting the established criteria.

3. Local Number Portability Should Be Deployed for Efficient Number Use

Local Number Portability (LNP) is the technology that enables customers to directly retain their telephone numbers even if they choose to switch their service to another local service provider.¹⁵ In 1997, the FCC required local exchange carriers to provide LNP in the top 100 Metropolitan Statistical Areas (MSAs) in the country by the end of 1998.¹⁶ The FCC order provides that, except under certain circumstances, wireline carriers providing service within the top 100 MSAs must be capable of implementing LNP. The FCC required LNP activation only in those switches where a carrier received a bona-fide request from another carrier to port a customer's number. Federal regulators concluded that by addressing the problems associated with changing telephone numbers when switching service providers, local competition would be enhanced. Wireless carriers have been given an extension until November 2002 to implement LNP in the top 100 MSAs.

The current configuration of the telephone network requires that telephone numbers be allocated to individual carriers in blocks of 10,000 per rate center, even if the carrier may not need all those numbers in the rate center. Number pooling allows service providers to receive numbers in smaller blocks in a rate center. This mechanism could significantly increase the efficiency with which the numbers may be used. The allocation of unassigned blocks of 1000 numbers from

¹⁵ LNP is discussed in greater detail in Chapter Two.

¹⁶ FCC Opinion and Order on Telephone Number Portability, FCC 97-74

the pool to a service provider is based on the “portability” platform established by LNP. LNP enables the network to support the assignment of blocks of 1000 numbers from a single NXX code to different service providers. Currently, participation in number pooling is limited to service providers who are LNP capable. When number pooling is fully implemented LNP capable service providers may apply to the pooling administrator for blocks of 1000 numbers, instead of an entire NXX. The pooling administrator then “ports” the block of numbers to the service provider on the requested activation date.

The FCC has authority to order deployment of LNP as an essential component of critical conservation measures such as number pooling, unassigned number porting, and code sharing. In order to fully implement number pooling throughout California, either the FCC or the CPUC should order deployment of LNP. Without the ability to order deployment of LNP in areas both included within the top 100 MSAs and outside of those MSAs, California will not be able to use number pooling to alleviate the number resource crisis in many parts of the state.

C. An Overview of the 310 NPA Numbering Crisis

The numbering crisis in the 310 NPA is typical of the situation currently in many area codes in the state. Originally part of the 213 NPA, the western, eastern, and southern parts of Los Angeles County were split off from 213 and the 310 NPA code was created in 1991. In 1997, eastern Los Angeles County and the Long Beach area were split off from 310 and the 562 NPA was created. Soon after the 310/562 split, in the summer of 1997, public hearings began in the 310 NPA in connection with plans to open yet another area code because of rapid number allocation in the remaining 310 geographic area.

In May, 1998, in D.98-05-021, the CPUC ordered the implementation of an overlay within the geographic area covered by the 310 NPA and required use of 1+10-digit dialing for all calls in both the 310 NPA and the new area code.¹⁷ Following a firestorm of negative public reaction

¹⁷ Both the FCC and CPUC have policies requiring a mandatory dialing change in overlay area codes. The purpose for requiring the dialing change when an overlay is activated is to ensure that competition is not deterred as a result of local dialing disparity. On the federal level, 47

to the 1+10 digit dialing requirement, several political leaders and community representatives petitioned the CPUC to modify D. 98-05-021, and the CPUC granted that petition on September 16, 1999. Pursuant to additional authority granted by the FCC, the CPUC suspended the 310 overlay and instituted more aggressive measures to conserve existing phone numbers, requiring an accounting of what numbers are actually in use in the 310 NPA before a date for further area code relief could be established.¹⁸ Specifically, the Commission ordered TD to study NXX code utilization at the 1,000 block level for each NXX code assigned in the 310 area code. The order directed TD staff to report the results of the NXX code utilization study, the status of number pooling implementation in the area code, and an analysis of the extent to which conservation measures might resolve number shortage there.

The CPUC's Interim Opinion also required the ALJ to establish a process for the return of underutilized NXX codes within the 310 NPA. It directed the North American Numbering Plan Administrator (NANPA) to set aside 16 NXX codes for the 310 number pooling trial, and reduced the number of NXX codes rationed in the monthly 310 Lottery from six codes to two codes.

On October 4, 1999, the ALJ issued a ruling requesting comments on a back-up plan for a geographic split in the 310 NPA pursuant to FCC requirements.¹⁹ While a proposed decision on the back-up plan has been circulated, the Commission has not adopted a final decision regarding the back-up plan.

CFR Section 52.19(c)(3)(ii) provides that "no area code overlay may be implemented unless there exists, at the time of implementation, mandatory ten-digit dialing for every telephone call within and between all area codes in the geographic area covered by the overlay area code." Further, CPUC D. 96-08-028 states in Ordering Paragraph 4, "For any NPA, relief plan either pending or yet to be proposed, parties shall not propose an overlay as a relief option until or unless mandatory 1 + 10-digit dialing is in place at the time the overlay is implemented."

¹⁸ See CPUC D.99-09-067.

¹⁹ In granting the CPUC additional authority, the FCC also mandated that the CPUC must adopt a "back-up" plan for a new area code while the CPUC is employing conservation measures in that particular area code. (See FCC 99-248.)

D. CPUC Measures to Promote Number Efficiency In the 310 NPA

1. NXX Code Utilization Study

Telecommunications Division Staff held a workshop on October 14, 1999 to discuss the 310 NXX code utilization study parameters with telecommunications industry representatives. Staff initially proposed a set of utilization parameters and received industry comments, which were incorporated into the final requirements, established by an ALJ ruling dated November 3, 1999. All carriers holding NXX codes in the 310 NPA were required to submit utilization data by December 22, 1999. The TD contracted with Neustar²⁰ to collect the data, and Neustar was required to submit aggregated data to TD by January 31, 2000. The study parameters, filing requirements and a list of carriers who submitted data on code utilization appear in Appendix A.

2. Mandatory Number Pooling Trial in the 310 NPA

On November 4, 1999, an Assigned Commissioner's Ruling designated Neustar as the number pooling administrator for the 310 number pooling trial, and scheduled an implementation meeting as required by industry pooling guidelines. The following time line was established for the pooling trial: 1) each LNP-capable carrier was required to give the pooling administrator a forecast report and block donation identification by December 14, 1999; 2) carriers were required to freeze assignments from the blocks identified for donation by February 26, 2000; and 3) the pooling trial was scheduled to begin on March 18, 2000.

3. Fill Rates and Sequential Numbering

By ALJ Ruling dated November 15, 1999, the CPUC solicited comments concerning rules to promote efficient number use through sequential number assignments and minimum usage or "fill" rates carriers must meet before they may obtain additional numbers in a rate center where the carrier already holds numbers. After receipt of comments in November and December, 1999, an ALJ Draft Decision was circulated for comment on February 15, 2000. The draft proposed an immediate minimum fill rate of 75%, as a prerequisite for the assignment of NXX codes (in the case of non-LNP capable carriers) and of thousand-number blocks (in the case of

²⁰ Formerly known as Lockheed Martin.

pooling participants) for growth purposes in the 310 NPA. The draft decision proposed that carriers should assign numbers sequentially within a 1,000-block, moving into the next block only once a 75% fill rate has been achieved in the prior block. Within a given 1,000 block, however, a carrier would have discretion to assign numbers in whatever sequence it deems warranted as long as the overall 75% fill rate criterion is observed. The draft decision is scheduled to be considered at the March 16, 2000 Commission meeting.

4. New Rules Established for the Return of Blocks of Numbers

In November 1999, the CPUC prescribed additional rules to promote efficient allocation and distribution of numbers that carriers obtain in the 310 NPA lottery.²¹ NXX codes, or blocks of 10,000 numbers, assigned prior to the effective date of the decision must be placed in service within six months of the assignment effective date. The revised 310 lottery rules require that any NXX codes assigned after the effective date of the decision must be placed in service within three months. The revised lottery rules also required that any NXX codes held by LNP-capable carriers not placed into service according to the timelines specified in the decision must be returned to the pool.²² Codes returned by these carriers must be reallocated through the NXX code lottery. Finally, as part of the drive to place every available NXX code in the pool or the lottery, the revised lottery rules also directed the NANPA to begin NXX code reclamation.

As a result of the CPUC's efforts to obtain information pertaining to the availability of numbers in the 310 NPA, and to establish a pooling trial, several carriers have returned NXX codes. In some cases, carriers have gone out of business, while other carriers simply had not begun to use the codes they obtained and would not be ready to use those codes in the near future.²³

²¹ See D.99-11-027.

²² Non-LNP capable carriers were not required to return codes for use in the 310 pool.

²³ If, for example, a carrier was about to begin offering service in a particular rate center and had an unused NXX code from which numbers could be assigned to new customers once the carrier begins offering service, the carrier would not need to return the NXX code. If the carrier is LNP-capable, however, the carrier would be expected to return unused 1,000-blocks to the pool.

CHAPTER TWO: 310 NPA NXX CODE UTILIZATION STUDY

A. Introduction

Chapter Two contains an analysis of the data obtained from the 310 utilization study. The utilization study reveals that carriers possess excess numbers in the 310 area code that are unused. Also, Chapter Two contains recommended actions that will require numbers to be used more efficiently by the carriers currently possessing those unused numbers, and actions that the Commission should undertake to make additional numbers available for either the 310 pooling trial or the regular monthly lottery.

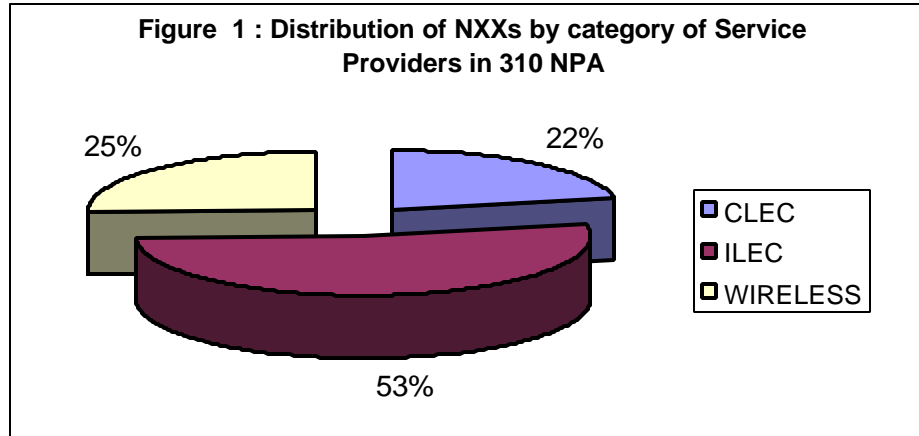
B. The Scope of the Utilization Study:

1. Carriers Reporting

A total of 55 carriers have been allocated NXX codes in the 310 NPA. The carriers were asked to report utilization data on a specific day in November, 1999. Of the 55 carriers, 48 submitted utilization data. These 48 reporting carriers collectively hold 724 of the 734 NXX codes allocated to carriers in the 310 NPA.

Fifty-three percent of the NXX codes are held by incumbent local exchange carriers (ILECs), 25% are held by wireless carriers, and 22% are held by competitive local exchange carriers (CLECs). Figure 1 shows the distribution of these codes by type of carrier in 16 rate centers and four special code areas.²⁴

²⁴ The four special code areas are those used for the special use NXX codes described in section C.5 of this chapter.



CLEC (Competitive Local Exchange Carrier), ILEC (Incumbent Local Exchange Carrier), and WIRELESS (Wireless carriers)

2. Non-Reporting Carriers

Of the 55 companies holding NXX codes in the 310 NPA, seven companies initially failed to report utilization data. These seven companies hold a total of ten NXX codes. Table 2-1 summarizes this information appears below.

Table 2-1 310 Utilization No Data Reported			
	OCN	Rate Center	NXX
CRL	4128	SNMN SNMN	699
SEIKO	6347	CMTN GRDN	686
MACLAND	6348	CMTN GRDN	972
PAGECELL	6586	CMTN GRDN	682
PAGECELL	6586	SNMN SNMN	554
PAGEPROMPT	6588	LAKEWOOD	304
PAGEPROMPT	6588	LAKEWOOD	405
PAGEPROMPT	6588	SNMN SNMN	583
RADIOCALL	6854	SNMN SNMN	580
PAGING DIMENSIONS	6869	LAKEWOOD	934

Macland could not be found and is presumed to be out of business. TD is pursuing the return of the NXX code held by Macland.

Two of the non-reporting companies, CRL and Seiko, agreed to return their NXX codes either because they do not conduct business in the 310 NPA or have not used the numbers in the allotted period.²⁵

Four of the non-reporting companies were paging carriers (i.e., Pagecell, Pageprompt, Radiocall and Paging Dimensions). Although wireless companies cannot donate 1,000 number blocks to the 310 pool, the data is required for a thorough analysis of number utilization. TD follow-up investigation indicates that one paging company, Radiocall, recently was acquired by another company. The new owner has committed to file utilization data but TD has not yet received the data.

Recommendations for Data Submittal

- *The ALJ assigned to this proceeding should issue an order requiring the four paging carriers identified above to submit immediately utilization data in the 310 area code. If compliance is not forthcoming, the ALJ should direct the NANPA to withhold issuing these companies' NXX codes in California until the required information is submitted.²⁶ The CPUC should also consider levying fines or other penalties for failure to comply. If these NXX codes are not assigned to customers, the NANPA should reclaim them as soon as possible.*

3. The Need to Audit The Data

The data in the 310 utilization study was self-reported by carriers and has not been audited by CPUC staff. Given the area code crisis in California, audits are needed for two reasons. First, data verification on number usage is important to manage efficiently the public resource of

²⁵ CRL's code will be available on March 31, 2000 for reallocation through the NXX code lottery. The NXX code held by Seiko has already been returned and included as part of the numbers available in the lottery.

²⁶ NANPA is the North American Numbering Plan Administrator, which allocates area codes and the prefixes within them throughout the United States.

telephone numbers within area codes. Second, carrier number tracking systems are inadequate. For example, some carriers could not track how long numbers were reserved for future use and could not differentiate between reserved and assigned numbers²⁷ Given the great social and economic impacts of area code changes, it is important to be sure that numbers are not left unused and that this public resource is managed wisely.

Recommendations for Audits

- *The Commission should audit the data submitted by carriers in this study and future area code utilization studies, provided that the necessary funds are allocated.*

C. Number Availability in the 310 Area Code

1. Three Million Numbers Available in the 310 NPA

The 310 study results show that approximately 3 million unused numbers are available in the 310 area code. Of those, 160,000 numbers are in new NXX codes that the CPUC set aside for number pooling²⁸. Another 150,000 numbers are already set aside for allocation in the 310 NXX code lottery, while 30,000 more numbers will be added to the 310 lottery by the end of April, 2000.²⁹ The remaining available numbers, 2.7 million, are not currently being used by carriers or their customers.³⁰ The breakdown of available numbers is shown in the table below.

²⁷ For a complete discussion about reserved numbers, see Section E.1 of this chapter.

²⁸ Currently, a total of 945 thousand-number blocks are available for the 310 number pooling trial. The 945 block includes 160,000 numbers from the 160 blocks which were set aside by the CPUC as well as numbers from 785 blocks donated by carriers. The 785 blocks are discussed later in this chapter.

²⁹ The 30,000 numbers include one NXX code returned by CRL to be available on March 31, 2000, and two NXX codes returned by ICG and The Telephone Connection which will become available in April 2000.

³⁰ The available 2.7 million numbers ($\pm 5\%$ errors) are estimated using the steps in Table B-1 and estimation procedure in Appendix B.

Table: 2.2
Summary of Available Numbers in the 310 Area Code (in thousands)

Wireline Carriers	2,189
Wireless Carriers	466
Total Available Numbers from Utilization Data	2,655
Numbers set aside for the 310 pooling trial for New NXXs	160
Numbers set aside for the 310 lottery	180
Total Available Numbers Set Aside for the 310 Area Code	340
TOTAL AVAILABLE NUMBERS IN 310 AREA CODE	2,995

* For calculation see Table B-1 (Appendix B)

Wireline carriers hold roughly 2.2 million unused numbers in the 310 NPA. (See Table 2-2.) As many as 1.2 million of those numbers are contained in 1,255 thousand-blocks held by LNP-capable carriers and are 10% or less contaminated. Of these, 785 are now available for pooling³¹, and 470 blocks are part of carriers' six-month inventories. Under the CPUC's rules for the 310 number pool, the 470 blocks in carriers' inventories currently cannot be donated to the pool. Carriers holding those blocks, however, can immediately use numbers in the blocks to serve customers. More numbers could be made available for the pool from wireline carriers if

³¹ See footnote 41.

the Commission raises the acceptable contamination level for blocks donated to the pool above 10%.

As many as 888,000 of the 2.2 million unused numbers held by LNP-capable wireline carriers are in blocks that are more than 10% contaminated.³² Carriers can also immediately use these numbers to provide service to their customers or meet other needs.

Approximately 46,000 of the 2.2 million unused numbers are either held by non-LNP capable carriers or are designated for special uses.³³ Wireless carriers hold approximately 466,000 unused numbers in the 310 NPA. Of these unused numbers, as many as 395,000 are in blocks that are 10 % or less contaminated, while up to 71,000 numbers are in blocks greater than 10% contaminated. Until wireless carriers become LNP-capable in November, 2002, these numbers may not be reallocated to other carriers. In the interim, wireless carriers may assign these numbers to their own customers.

Despite this limitation, more unused numbers can be recovered and reassigned if the Commission adopts higher contamination threshold rates for pooling purposes; recovers blocks from special use codes; and recovers unused numbers from non-LNP capable carriers as described later in this report.

2. TD Finds 16 Additional Blocks For Number Pooling

As required by the Assigned Commissioner's Ruling (ACR),³⁴ all LNP-capable wireline carriers were to file a report to TD by November 30, 1999 identifying their six-month inventory and

³² See Table B-2 in Appendix B. The 888,000 figure is comprised of 478,000 which are in blocks that are 10-25% contaminated, and 410,000 numbers which are in blocks that more than 25% contaminated. Later in this chapter, TD recommends additional steps that can be implemented to make more of the 888,000 numbers available for number pooling.

³³ For a discussion of numbers held for special uses, see Section E of this chapter.

³⁴ Assigned Commissioner's Ruling (ACR) Setting Schedule and Rules for the Implementation of the 310 Area Code Number Pooling Trial, dated November 15, 1999.

thousand-number blocks in excess of the six-month inventory which they would donate to the pool. Hereafter, these filings will be referred to as the CPUC Block Donation Filings.

The utilization study showed 1,255 potentially available thousand blocks of unused numbers (see Table 2-3). Potentially available blocks are LNP-capable blocks that are 10% or less contaminated. Based on TD's reconciliation, all 1,255 potentially available blocks are identified as either blocks donated for the 310 number pool or blocks retained for carriers' six-month inventory according to the CPUC Block Donation Filings.

Shortly after the CPUC Block Donation Filings were due to the CPUC on November 30, 1999, LNP-capable wireline carriers filed block donation data with the Pooling Administrator (PA). Although the information was due to the PA by December 14, 1999, the PA continued to receive updated reports and data from late filers. The PA has issued continuous updates of the block donation data on its "numberpool.com" website. The PA report of February 25, 2000 is the last report of block donation data prior to the Block Donation Date of February 26, 2000. According to the PA, carriers are not allowed to contaminate further the blocks identified for donation after the Block Donation Date.

The February 25, 2000 PA report shows 751 available blocks for pooling purposes. Based on information received in the CPUC Block Donation Filings and in the course of TD's analysis, TD found an additional 16 available blocks, the number of blocks available for pooling purposes to 767 (751 + 16).³⁵

The 16 additional available blocks for the 310 pool are comprised of the following:

- Six blocks in the Beverly Hills rate center from one carrier who did not indicate any available blocks for pooling purposes to the PA;

³⁵ As explained in Section C.3 of this chapter 18 blocks will be added to the pool, increasing carrier donations to 785 blocks.

- Two additional blocks (one each in the Compton Gardena and Lomita rate centers) identified by another carrier during the course of TD's inquiries;
- Nine blocks in the Lomita rate center due to a carrier's new NXX code received in the January 2000 lottery;
- Loss of one block from the San Pedro rate center due to a sharing agreement between two carriers.

Based on the information received from the CPUC Block Donation Filings, the PA report, and the additional information received by TD of the additional 16 blocks, TD determined that 767 donated blocks are available for pooling. Table C-1 of Appendix C summarizes the 767 donated blocks by 0% contamination and by greater than 0% but less than or equal to 10% contamination based on the CPUC block donation filings. All tables referred to in this section will be found in Appendix C. In addition, in D.99-09-067 and D.99-11-027, the Commission ordered that one NXX code per rate center would be reserved for pooling.

Recommendations From Block Donation Analysis

- *No penalties currently exist if a carrier further contaminates identified blocks after the Block Donation Date. Therefore, the Commission should institute penalties against carriers who further contaminate blocks after the block donation date. TD also recommends that this penalty, if adopted, be implemented in future number pooling trials.*
- *In the CPUC block donation filings in November 1999, carriers were required to identify blocks available for pooling and identify blocks kept for their six-month inventory cushion. The format of the information received by TD varied greatly among carriers. After reviewing the differing types and formats of information provided by the carriers, the Commission should require that future inventory reports be formatted as in Table C-2 to provide consistency and maximum clarity of the data reported.*
- *The assumptions used by carriers in developing the forecasted six-month inventory varied greatly among carriers. Some carriers used as their basis their historical average, while other carriers used*

marketing/business plan forecasts. Still others used a combination of both. The Commission should develop specific rules for the carriers to determine their six-month inventory forecasts. For example, the rule could specify a monthly average based on the last year plus a growth factor.

3. Other Returned Codes

In its analysis, the TD uncovered two underutilized NXX codes in the Beverly Hills rate center that GTE-California (GTEC) has agreed to turn over to the incumbent carrier, Pacific Bell. These NXX codes were dedicated for use in World War II. Only two 1,000 blocks within these NXX codes are being used to serve less than 500 customers each. In the process of responding to the utilization study, GTEC identified this anomaly and discussed options for more efficient use with TD staff. TD recommended to GTEC that the two NXX codes be transferred to the incumbent carrier. By early May, Pacific Bell will have received the NXX codes and will donate eighteen 1,000 number blocks to the pooling administrator for assignment to carriers who need numbers in this rate center.

D. Increasing Contamination Thresholds Releases More Unused Numbers for Pooling

1. Analysis of Wireline Carriers' Contamination Rates

The nationwide Industry Numbering Committee's (INC) thousand block pooling administration guidelines³⁶ state that carriers should donate specified thousand blocks to the number pooling administrator (PA). Consistent with INC guidelines, the CPUC determined that each carrier participating in the 310 number pool must donate blocks that are 10% or less contaminated, excluding those retained for the six month inventory.

TD analyzed the 310 utilization data to determine the percentage contamination of blocks that can be potentially used in the number pool. The following table summarizes contamination rates by rate center for wireline carriers.

³⁶ Thousand Block (NXX-X) Pooling Administration Guidelines, Draft Working Document, INC August 1999.

Table 2-3

Thousand Blocks grouped by Percentage Contamination (C) for Wireline Carriers

RATE CENTER	C ≤ 10%	10% < C ≤ 15%	15% < C ≤ 20%	20% < C ≤ 25%
AVALON	2	0	1	1
BEVERLY HLS	163	12	6	13
CMTN CMTN	52	1	5	0
CMTN GRDN	114	5	4	3
CULVER CITY	64	2	4	2
EL SEGUNDO	82	6	4	9
DA 310 NPA	0	0	0	0
HAWTHORNE	53	3	5	6
INGLEWOOD	98	4	6	5
LAKEWOOD	0	0	0	0
LOMITA	20	0	2	0
LSAN LA01	0	0	0	0
LSAN LA14	0	0	0	0
MALIBU	42	2	4	1
REDONDO	102	3	6	262
SAN PEDRO	51	4	3	5
SNMN MRVS	88	5	8	6
SNMN SNMN	150	7	7	12
TORRANCE	88	7	1	3
W ANGELES	86	4	11	8
TOTALS	1255³⁷	65	77	336

Table 2-3, column 1 shows the number of blocks with 10% or less contamination that are held by LNP capable wireline carriers. Four rate centers have more than 100 blocks that are 10% or less contaminated and one rate center has close to a hundred blocks of thousand numbers with that contamination level. Out of the total 1,255 blocks, there are 60 sequential number blocks with 0% contamination. Additionally, 753 blocks within the 1,255 block exist that are

³⁷ 813 of the 1255 blocks are 0% contaminated. The remaining 442 of these blocks are greater than 0% contaminated but not more than 10% contaminated.

0% contaminated, that are non-contiguous and are disbursed throughout many NXX codes. The next three columns of Table 2-3 capture blocks that are greater than 10% contaminated but no more than 25% contaminated. Under the current 310 number pool rules, carriers may retain thousand number blocks that are 10 to 25% contaminated and which are in excess of the six month inventory.

Increasing the contamination rate threshold for pooling donation to 25% would potentially free-up an additional 478 blocks for use in the number pool. TD cautions that although Table 2-3 shows potential results from increasing allowable contamination levels, further analysis and input from the industry may be necessary to determine accurately the quantity of additional blocks that can be added to the pool while still leaving carriers with a six month inventory.

Figures B-1, 2, 3, and 4 of Appendix B, show a range of contamination levels by rate centers for wireline carriers. The figures show that at each contamination level, blocks of 1,000 unused numbers in each rate center exist that potentially can be donated.

Recommendations from Block Contamination Analysis of Wireline Carriers

- *The Commission should increase the maximum contamination level of donated blocks from 10% to 25% for all LNP capable carriers. In the 310 NPA, we observe another 478 thousand blocks (ranging from greater than 10% to 25%) that could be made available from LNP capable wireline carriers that are not currently eligible for pool donation. If this recommendation is adopted, the TD plans to examine the extent to which raising the contamination level of donated blocks would extend the life of 310 NPA. The impact on 310 life depends on carriers' 6 month inventory levels as well as on the successful implementation of fill rate and sequential number ordering administration³⁸ that carriers may be asked to follow.*

³⁸ CPUC ALJ Ruling November 15, 1999.

2. Analysis of Wireless Carriers

Table 2-4 shows contamination levels of blocks of 1,000 unused numbers held by wireless carriers. Three hundred ninety-five blocks of available numbers held by wireless carriers are 10% or less contaminated. Two hundred sixty-four of the 395 blocks are concentrated in two rate centers and most of the numbers in those blocks are with paging companies. Wireless carriers also have 41 thousand blocks at both the 10% or less and 25% or less contamination levels.

Table 2-4

Thousand Blocks grouped by Percentage Contamination (C) for Wireless Carriers

RATE CENTER	C ≤ 10%	10% < C ≤ 15%	15% < C ≤ 20%	20% < C ≤ 25%
AVALON	0	0	0	0
BEVERLY HLS	36	1	0	0
CMTN CMTN	1	1	0	0
CMTN GRDN	177	2	5	6
CULVER CITY	16	0	0	0
EL SEGUNDO	10	0	2	0
DA 310 NPA	0	0	0	0
HAWTHORNE	0	0	0	0
INGLEWOOD	0	0	0	0
LAKEWOOD	45	3	2	0
LOMITA	0	0	0	0
LSAN LA01	0	0	0	0
LSAN LA14	0	0	0	0
MALIBU	0	0	0	0
REDONDO	0	0	0	0
SAN PEDRO	0	0	0	0
SNMN MRVS	11	0	1	0
SNMN SNMN	87	4	8	4
TORRANCE	0	0	1	0
W ANGELES	12	0	1	0

TOTALS	395³⁹	11	20	10
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* Does not include Type 1 numbers and represents 436 of the total 466 blocks held with unused numbers held by wireless carriers

Because the FCC has granted wireless carriers an extension on implementing LNP to November 2002, all wireless carriers serving the 310 NPA are not capable of implementing LNP and, thus, cannot participate in number pooling.

Recommendations From Block Contamination Analysis For Wireless Carriers

- *When wireless carriers become LNP-capable in 2002, the Commission should adopt mandatory donation policies for number pooling for wireless carriers*

3. Block Contamination Issues Affecting All Types of Carriers

In certain rate centers, several carriers assigned one number out of a thousand number block to a customer and allocated 100 numbers for administrative purposes. Since 101 out of the 1,000 numbers in the block was then deemed unavailable, the block was reported contaminated beyond the 10% threshold even though only one number was actually assigned to a customer. For LNP-capable carriers, this means that such blocks were ineligible for donation to the 310 number pool. To prevent this problem from occurring, efficiency measures such as fill rates and sequential numbering should be implemented. Fill rates mitigate contamination by requiring carriers to use contaminated blocks up to a specified percentage before they can receive additional blocks. Sequential numbering minimizes contamination by requiring carriers to use blocks in sequential order. Where carriers have significant numbers available in a given rate center these two efficiency measures could prevent the opening of new blocks or NXX codes.

³⁹ 254 of the 395 blocks are 0% contaminated with 140 of these blocks being sequentially clustered in whole NXX codes. The remaining 141 of these blocks are greater than 0%

Recommendations For Block Contamination Issues Affecting All Carriers

- *The Commission should adopt fill rates and sequential numbering requirements for all carriers in the 310 NPA even if they are not requesting additional blocks from the number pool or NXX codes in the lottery. Fill rate and sequential number policies will prevent carriers from further contaminating thousand number blocks with less than a hundred assigned numbers. Future utilization studies could be used to test compliance with such measures if adopted.*
- *The Commission should establish penalties for non-compliance with fill rate and sequential numbering policies.*
- *The Commission should bar carriers from assigning numbers in a thousand number block contaminated less than 10% when they can easily assign numbers from an already contaminated block (above 10% contamination level). A block with just 101 numbers contaminated, thus exceeding a 10% contamination level, disqualifies that block from being donated to the pooling trial.*

E. Carriers Characterize 4.6 Million Numbers In 310 As Unavailable

Carriers report that 4.6 million of numbers in the 310 NPA are either assigned to customers or are used by carriers for reserved, administrative, and aging purposes. Carriers commonly refer to these numbers as “unavailable”. Unavailable numbers include:

- Assigned numbers – Numbers that are currently being used by customers or equipment;
- Reserved numbers – Carriers frequently reserve blocks of numbers for future use by customers;
- Administrative numbers – Numbers that carriers use for their own internal use; and
- Aging – Numbers from recently disconnected service which are not reassigned during a fixed interval.

contaminated but not more than 10% contaminated.

In addition, one wireline carrier has set aside certain NXX codes for special uses, including directory assistance, time of day, and emergency preparedness. These NXX codes are not currently available for commercial use or assignment to customers. Special use NXX codes have few working numbers, although 10,000 numbers in each of those codes have been set aside.

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

1. 4.2 Million Assigned Numbers

The CPUC utilization study defines “assigned number” as any number that is:

- (a) working in the public switched telephone network (PSTN) under an agreement (e.g., tariff, contract) at the request of a specific customer for that customer's use
- (b) non-working wireless⁴⁰ or
- (c) not yet working but has a customer service order pending for 30 days or less.

In the 310 area code, approximately 4.2 million assigned numbers exist, with approximately 2.9 million held by wireline carriers and approximately 1.3 million held by wireless carriers. The assigned numbers in use in the 310 NPA are not distributed uniformly among 310 rate centers. Figure B-5 in Appendix B shows that wireline carriers have most of their assigned numbers in the Beverly Hills and Santa Monica (SNMN-SNMN) rate centers. Figure B-5 also shows that wireless carriers have most of their assigned numbers in the Compton Gardena rate center.

⁴⁰ The category of non-working wireless in the utilization study is used for wireless companies to report numbers that they have already assigned to customer equipment, but are not yet working. For example, cellular carriers often prepackage a cellular telephone with an assigned telephone number for sale to customers.

Out of the 4.2 million assigned numbers, most (4.1 million) are working in the PSTN. Another 46,397 are non-working wireless numbers, and 63,702 numbers are associated with service orders pending less than 30 days.

a. Limits on Service Orders Pending

Industry guidelines do not currently put a time limit on how long service orders can remain pending. For administrative convenience, however, carriers were limited on the service orders they could report as pending for the utilization study. They were only allowed to report on those service orders that were pending for 30 days or less. Correspondingly, service orders pending only constituted 63,702 of the 4.2 million assigned numbers reported by carriers. In the CPUC's comments in the NPRM, the CPUC noted that there is not a clear distinction between numbers with service orders pending and reserved numbers (discussed below). Placing a time limit on service orders pending could provide the distinction needed.

Recommendation for Assigned Numbers

- *The CPUC should place a 30-day limitation on service orders pending.*

b. Verification Problems With Type 1 Numbers

In the utilization study, Type 1 numbers are defined as numbers obtained pursuant to a Type 1 interconnection agreement between a wireless carrier and an end office of a wireline carrier for the purpose of originating and terminating telephone traffic or for access to end user services (i.e. directory assistance, operator services, E911, etc). For the purposes of the 310 utilization study, wireless carriers who have received Type 1 numbers and those wireline carriers who have provided Type 1 numbers to wireless carriers were directed to report on those numbers at the 1000 block level.

TD's analysis suggests that about 522,340 Type 1 numbers have been provided by wireline carriers to wireless carriers. However, the utilization data shows that only 190,040 of those numbers are used by customers. Wireless carriers, particularly paging companies, did not

submit data indicating whether the remaining 332,340 numbers are being used. Without such data, TD could not determine whether these numbers might actually be non-working available numbers. Given this problem, TD could not verify whether Type 1 numbers are actually working and assigned.

Recommendations for Type 1 numbers

- *The Commission should require all wireless carriers with outstanding Type 1 utilization data for the 310 NPA to report immediately that data. If significant unused numbers are reported, the Commission should require the return of those numbers to the originating wireline carriers. Any returned numbers could then be assessed either for potential donation to the 310 pooling trial or for reclamation by the NANPA.*

2. Reserved Numbers Are a Potential Source of Additional Numbers

Carriers “reserve” numbers by setting them aside for future use by customers.⁴¹ Industry number assignment guidelines allow carriers to reserve an NXX code for up to 18 months for customer future use.⁴² The carrier applicant must demonstrate that reserving the code is necessary for technical or planning reasons, or because regulatory approval is pending. At the same time, however, the industry guidelines do not impose any restrictions on a carrier’s ability to reserve blocks of numbers within an NXX code, once the NXX code is allocated to the carrier.

Potentially, hundreds of thousands of numbers which carriers reported as “assigned” may not actually be in use because they are “reserved” for future use. Carriers responding to the 310 utilization study reported a total of 195,925 reserved numbers. (See Appendix F for reserved number summary data.) While that figure constitutes only 4% of the 4,861,666 unavailable telephone numbers carriers reported, the study results strongly suggest that this quantity of

⁴¹ An example would be a customer request for 1,500 numbers to be used in 2000, coupled with a request to have the next 1,500 numbers in sequence “reserved” for the customer to use in 2001.

⁴² Central Office Code (NXX) Assignment Guidelines, prepared by the Industry Numbering Committee, January 27, 1999 version, Section 4.4.

reserved numbers is grossly understated. For example, one wireline carrier holding 141 NXX codes in the 310 NPA was not able to determine which numbers in those NXX codes were reserved, and thus included reserved numbers in the “assigned” number category. Of course, the inability to distinguish between reserved and assigned numbers with regard to those 141 NXX codes also means that the total quantity of “assigned” numbers, i.e., those presently in use, is overstated by an unknown amount.

The 310 utilization study asked carriers to report how many reserved telephone numbers they hold, and the length of time the numbers had been reserved. The CPUC’s utilization study parameters did not include numbers “assigned with service order pending” in the definition of reserved numbers. This distinction matters because numbers “assigned with service order pending”, like “reserved”, is an open-ended category, i.e., the service order can be “pending” for many months. Nonetheless, because the CPUC might want to consider adopting different rules governing “reserved” numbers and numbers “assigned with service order pending”, the two categories were separated for purposes of the study.

Wireline carriers reported a total of 145,431 reserved numbers, but this number is likely understated. The carriers did not distinguish reserved numbers from assigned numbers for the 141 NXX codes described above. Still, even when the wireline carriers could identify the quantity of reserved numbers they hold, they could not determine for how long those numbers had been reserved. The utilization study parameters sought data on reserved numbers in three time frames, and the wireline carriers reported as follows: 19% reserved for 180 days or fewer; 3% reserved for 181 to 365 days, and 1% for more than 365 days.

In some rate centers, the quantity of reserved numbers has an even more significant impact. For example, the pooling administrator’s combined forecast for the El Segundo rate center, as of February 25, 2000, shows carrier predictions of 135,000 telephone numbers needed through the 310 number pool over the next 18 months. All but one of the wireline carriers serving the 310 NPA are LNP-capable, and thus are able to participate in the 310 pooling trial. Wireline

carriers report 27,105 reserved telephone numbers in that same rate center, but the same carriers could not report how long 91% of those reserved numbers have been reserved. Indeed, for some wireline carriers, “reserved” numbers constitute the majority of numbers they categorize as “in use” in a particular thousand block or NXX code. Should the CPUC place limits on the quantity of numbers wireline carriers may reserve, and on the period those numbers can be reserved, more numbers within carrier inventories would be available for pooling.

Wireless carriers reported 50,494 reserved numbers in the 310 NPA. Wireless carriers were better able to determine the period of time numbers were reserved: 84.5% reserved for 180 days or fewer; 0.5% for 181 to 365 days, and 1% for more than 365 days. Still, wireless carriers could not determine for how long 14% of the total had been reserved. Similar to wireline carriers, “reserved” numbers comprise the majority of numbers counted as “in use” in a specific NXX code for some wireless carriers.

TD’s analysis of the utilization study data demonstrated that reserved numbers have a very significant impact on particular thousand blocks of numbers, on NXX codes, and on rate centers. It also is very clear that many carriers do not have adequate tracking mechanisms in place for monitoring the status of numbers as “reserved” or “assigned”, so they simply treat both the same. Wireline carriers in particular demonstrated great difficulty in tracking how long they are holding reserved numbers. From the perspective of maximizing the use of number resources, it is vital to distinguish, and track separately, “reserved” and “assigned” numbers. The inability of carriers to track how long numbers are being reserved is particularly troubling since carriers are reserving these numbers while continuing to request more numbering resources in the 310 NPA, whether as whole NXX codes from the NANPA, or blocks of 1,000 from the pooling administrator.

Thus, the total quantity of numbers carriers reported as “in use” likely is overstated. Further, if 195,925 numbers reported as reserved numbers were not reserved, they would be available now for pooling purposes, the NXX code lottery, or carrier inventories. In addition, the

utilization study indicates that certain carriers are not appropriately tracking how long numbers are or have been reserved. Carriers are reserving up to 1,000 numbers in a block, and up to almost 7,000 numbers in an NXX code. Thus, in particular cases, whole NXX codes or individual thousand number blocks would be available if those numbers were not “reserved” for future use. The CPUC should limit the period of time numbers can be reserved.

Further, the CPUC may wish to compare carrier holdings of reserved numbers against the numbers in their inventories to determine if there is a correlation between larger holdings of reserved numbers and higher inventory levels. If such a correlation is found, the CPUC may want to consider establishing rules that link the quantity of reserved numbers carriers hold to inventory levels.

In its NPRM, the FCC proposed a definition of reserved numbers which included a number of characteristics: a reserved number is non-working, has been set aside at the confirmed, documented request of a specific customer for that customer’s future use, and appears in the service provider’s records as “reserved”. In addition, industry guidelines contain some restrictions on the quantity of numbers that can be reserved, and for how long. The CPUC has submitted comments to the FCC emphasizing the need for clarity in the definition of reserved numbers. The status of reserved numbers is still in flux, as industry groups are working on the definition and the FCC is expected to adopt a definition in its decision on the NPRM.

Recommendations for Reserved Numbers

- *To increase efficient number use, the CPUC should set a limit of 180 days as the period that carriers are allowed to hold reserved numbers. This policy is consistent with industry guidelines, which dictate that a carriers must activate an NXX code within six months after receiving it, or the NANPA will reclaim it.⁴³ In addition, this limit is consistent with the CPUC’s adopted rules for the 310 number pooling trial, which allows carriers to maintain a 6-month inventory of*

⁴³ Industry guidelines provide for some extensions to the 6-month period in certain situations.

numbering resources. Moreover, this limit does not conflict with the current lottery procedures for the 310 NPA, which provides for a three-months-to-exhaust criteria to determine whether carriers qualify to participate. Finally, the limit comports with the CPUC's comments filed in response to the FCC's NPRM, in which the CPUC joined other state commissions in advocating that the FCC adopt specific timelines for reserved numbers.

- *The CPUC also must address the problem of carriers inability to determine how long numbers are being reserved. The CPUC should order carriers to upgrade promptly their number tracking systems in order to monitor accurately how long numbers are being reserved. On January 18, 2000, the CPUC issued an ALJ ruling setting forth a schedule for number utilization studies for all other area codes in the state. The ruling prescribes that utilization studies in 24 California area codes be conducted in three phases with carrier data due between June 1, 2000 and February 1, 2001. To ensure that the data collected in these future utilization studies more accurately reports actual numbers in the "reserved" category, the CPUC should order carriers to complete their number tracking system upgrades no later than April 30, 2000. In the utilization study workshop held in preparation for the 310 study, many carriers indicated that they are already upgrading their systems, so meeting an April 30th deadline should be achievable.*

3. Restrictions on Administrative Numbers Could Yield More Numbers

“Administrative Numbers” are numbers which are not assigned to customers because they fall into one of the following categories:

1. Employee/Official Number: Numbers assigned by the service provider for its own internal business purposes.
2. Test Numbers: Numbers assigned for inter- and intra-network testing.
3. Other Numbers:

- Location Routing Number: A number assigned to a switch used for routing under LNP.
- Wireless E911: A number used for the purpose of routing an E911 call to the appropriate public service answering point when the call originates from wireless equipment.
- Temporary Local Directory Number: A number assigned on a per call basis by the serving wireless service provider to a roaming subscriber for the purpose of incoming call set-up.

The administrative numbers data included in the 310 utilization study provide a broad picture of the total numbers used by carriers for the wide range of applications under this category.

Carriers self-reported 54,682 administrative numbers. Study data show that carriers assign as many as 1000 numbers in a block for administrative purposes. Moreover some carriers do not consistently assign administrative numbers to the same block or NXX code within a rate center. Although many carriers limit the assignment or distribution of numbers under this category to one or two 1000 blocks within their assigned NXXs, other carriers appear to assign these numbers in a more random fashion--across several 1000 blocks.

Table 2-5				
Administrative Number Utilization in the 310 NPA				
	Employee Numbers	Test Numbers	Other Numbers	Total Administrative Numbers
Wireline	33,002	13,401	212	46,615
Wireless	439	525	7,285	8,249
Total Numbers	33,441	13,926	7,497	54,862

Confining the assignment of administrative numbers to a single 1000 block may add to the efficiency with which 1000 blocks are used by carriers and help preserve numbers for number pooling and other conservation measures. However, further investigation of the technical requirements of various numbers under this category is needed to ascertain whether this action is technically possible within certain subcategories of these numbers.

The potential for carriers to over-assign numbers within any particular 1000 block, NXX code, or rate center for administrative number uses does exist. For example, the utilization report discloses that one wireline carrier assigned 10,700 numbers for employee number purposes in a single rate center in the 310 NPA, which is significantly more than other carriers. Over-assignment of numbers for administrative number purpose precludes the use of numbers for number pooling or assignment to customers.

In its pending NPRM, the FCC is examining definitions of different categories of numbers, including “administrative”, and the various subcategories of administrative numbers. Clearer definitions of these numbers would help to identify whether some of these numbers could be reclaimed, and if so, which numbers. In its prior filed comments, the CPUC urged the FCC to establish clear definitions for administrative numbers.

Recommendations for Administrative Numbers

- *The CPUC should consider limiting the assignment of certain categories of administrative numbers (for example, employee numbers) to specific 1000 blocks within an NXX code. Numbers that do not require assignment to specific 1000 blocks for technical reasons should be aggregated under a single 1000 block within each NXX. The investigation should also explore the possibility of placing a limit on the quantity of administrative numbers a carrier may assign when the carrier holds multiple NXX codes or large quantities of numbers in a given rate center. The CPUC should also solicit comments from the parties in the local competition docket on issues related to the efficient use of administrative numbers as part of the investigation on area code policy.*

- *The CPUC should continue its investigation of the possible over-assignment of numbers for employee number purposes by carriers in the 310 NPA.*
- *The CPUC should continue to press the FCC to adopt more detailed definitions for administrative numbers.*

4. Statewide Aging Policies Can Lead to More Efficient Number Management

“Aging” refers to the process of reserving a disconnected telephone number for a specific period of time before reassigning the number to another subscriber. A number is disconnected when it is no longer used to route calls to equipment owned or leased by the disconnecting subscriber of record. Aging intervals enable service providers to:

- Fulfill their administrative requirements, e.g., billing cycle completion, 911 record reconciliation in a timely manner.
- Offer their disconnecting subscribers the opportunity to request specific announcement treatment, e.g., referral to a new telephone number.
- Minimize misdirected calls intended for the previous subscriber when the telephone number has been re-assigned to a new subscriber.
- Reconnect the disconnected subscriber, using the same telephone number and service provider during the aging period.

For the purposes of the 310 NPA utilization study, carriers were required to submit the following information:

- Length of time carrier ages residential numbers in non-jeopardy situations
- Length of time carrier ages business numbers in non-jeopardy situations
- Length of time carrier ages residential numbers in jeopardy situations
- Length of time carrier ages business numbers in jeopardy situations

The 310 NPA utilization study reveals that wireline carriers were aging 13,373 numbers for residential customers and 78,084 numbers for business customers. Wireless carriers were aging 34,686 numbers for residential customers and 47,053 numbers for business customers.⁴⁴

Carriers indicate wide differences in the number of days disconnected telephone numbers are aged for business or residential customers.⁴⁵ Many carriers did not respond with any aging policy and the TD assumes that these carriers do not have established aging policies.

The following table illustrates the shortest verses the longest length of time that numbers are aged by the various carriers. The table illustrates the stark difference in the number of days that numbers are aged. For example, two wireline carriers age their disconnected residential numbers for 30 days during non-jeopardy situations, while four wireline carriers age their numbers for 90 days. One wireless carrier ages its disconnected numbers for 20 days regardless of customer category or jeopardy condition, while other carriers aged their numbers for periods of up to one year.

Table 2-6				
Shortest vs. Longest Length of Time Disconnected Telephone Numbers Are Aged by Carriers in the 310 NPA (by Service Type and Jeopardy Status)				
	Residential Non-Jeopardy	Business Non-Jeopardy	Residential Jeopardy	Business Jeopardy
Wireline Carriers	30 days/90 days	30 days/365 days or life of directory	30 days/365 days	30 days/365 days or life of directory

⁴⁴ The figures may not be entirely accurate because certain carriers do not distinguish between residential and business customers.

⁴⁵ Tables E-1 and E-2 , Appendix E.

Wireless Carriers	20 days/180 days	20 days/365 days	20 days/90 days	20 days/90 days
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The carrier data illustrates that many of the wireline carriers responding to the utilization survey have aging policies that do not differentiate between jeopardy and non-jeopardy situations. For example, fifteen wireline carriers have identical aging periods for jeopardy situations and non-jeopardy situations. Three wireline carriers have shorter aging periods for jeopardy situations.

Establishing shorter aging intervals for jeopardy situations can mitigate number shortages during critical situations. Numbers otherwise stranded in the aging process may serve as a source of additional numbers for number pooling or reassignment to customers. In view of the critical situation facing the 310 NPA, limitations on this category of numbers may yield a potential supply of unused numbers.

Industry-wide maximum aging periods will ensure the release and re-assignment of these numbers on a timely and predictable basis. The impact of a uniform aging policy is difficult to estimate because of the different carrier specific aging intervals currently in effect. It is extremely difficult to develop accurate estimates of how many numbers will become available for reassignment at any point in time in the 310 NPA.

Due to the possible impacts on subscribers who may be reassigned numbers that have been aged insufficiently and the equally significant implications on number availability if disconnected numbers are aged too long, the TD finds that the establishment of uniform aging policies for residential and business subscribers under jeopardy and non-jeopardy situations is warranted. Uniform policies will ensure the recognition of standardized aging intervals among all carriers, including those that appear to follow no standards at the present. Industry-wide standardization will protect California consumers and enable the CPUC to better analyze the data presented by carriers under this category.

Recommendations for Aging Numbers

- *The CPUC should establish and enforce a 30 to 90 day aging period for residential customers and a 90 to 365 day aging period for business customers that complies with industry standard guidelines proposed by the INC in non-jeopardy situations.⁴⁶*
- *The CPUC should develop shorter aging periods for numbers in jeopardy situations.*

5. Expanded Use of the 555 NXX Code Could Release Other NXX Codes Dedicated to Special Uses

Historically, the telecommunications industry has set aside or designated certain NXX codes for special uses. These designations include numbers for recorded public information announcements such as time-of-day and weather forecasts, high-volume call-in numbers, and emergency access numbers. The industry has not made these NXX codes available for general commercial use. At the same time, because few seven-digit numbers in a “special use” NXX code may actually be designated for the special use, most of the remaining numbers in that NXX code lie vacant. These numbers potentially are recoverable for reallocation to the 310 number pool.

⁴⁶ In its report entitled “INC Guidelines for Aging and Administration of Disconnected Telephone Numbers”, dated November 8, 1999, the Industry Numbering Committee offered the following ranges from which to establish aging periods in non-jeopardy situations:

- Residential telephone numbers: No less than 30 days but no more than 90 days from the subscriber specified date of disconnect.
- Business telephone numbers: No less than 90 days but no more than 365 days from the subscriber specified date of disconnect.

The INC recommends that the intervals be modified through industry consensus or a regulatory order for jeopardy situations.

In their responses to the 310 utilization study, carriers were required to report which NXX codes they hold in the 310 NPA are dedicated to special uses. The study results show that only six wireline NXX codes in the 310 area code are dedicated to special uses: one for emergency preparedness, two for special calling programs, one for inter-area code directory assistance (1-XXX-555-1212), one for time, and one for high volume calling. Carriers reported that the ten 1,000-blocks from the two NXX codes dedicated to special calling programs have been slated for donation to the 310 number pool. The utilization study data indicates that the remaining thousand blocks in the two special calling program NXX codes are either in use or included in the carrier's 6-month inventory.

TD's analysis found that the NXX codes for time, directory assistance and emergency preparedness are greatly underused. Current industry practice assigns special use codes to a particular wireline carrier, usually an incumbent local exchange carrier. Not all special use codes exist in every area code, however. For example, the 310 area code has a special number dedicated to inter-area code directory assistance, and for time, but not for weather services. In 1999, TD staff became aware that the industry had decided not to duplicate in each new area code the special use codes and their associated emergency preparedness, weather, and time services. Because of concerns that the public would be adversely affected if the codes were not duplicated, the CPUC directed that codes should be duplicated in new NPAs. Duplicating special use codes, however, is an inefficient use of numbers in both the area code and in the specific NXX codes from which the special use numbers are drawn. Consequently, TD now recommends that the CPUC revisit policies pertaining to special use codes.

The number used for inter-area code directory assistance, which is uniform throughout California, is 1(XXX) 555-1212. This number is widely associated in the public mind with inter-area code directory assistance. Further, the 555-1212 number has been designated for this use at the federal level and cannot be changed. Other numbers, such as for time and weather services, however, are not as readily identifiable for the public, and may vary from area

code to area code. Therefore, TD recommends that the number for time and for emergency preparedness in the 310 NPA be moved into the 555 prefix. If the 555 prefix currently reserved only for directory assistance could be used to provide time and emergency preparedness information in the 310 NPA, then two more NXX codes could be returned to the NANPA for allocation to carriers as they need numbers for customers.

In addition, TD recommends that the Commission initiate an investigation into broader use of the 555 prefix in California's NPAs. Further analysis is needed to determine the possibility of obtaining standard 555 numbers in every California NPA to provide time, emergency preparedness, and weather information at no additional cost to customers. Similarly, expanded use of the 555 prefix throughout the state could result in more returned NXX codes in other NPAs.

The utilization study data indicates that the one NXX code dedicated to high volume calling in the 310 NPA is not being used. High volume calling codes relate to providing service to customers with a large quantity of incoming calls, such as radio stations. Carriers sometimes create special network configurations related to high volume calling numbers. None of the blocks in this NXX code have been slated for number pooling in the 310 NPA. TD received no information as to whether technical concerns would prevent 1,000-blocks in this NXX code from being donated to the pool. Therefore, TD recommends the Commission solicit comments in the Local Competition proceeding (R.95-04-043/I.95-04-044) regarding what technical issues, if any, would arise if high-volume calling NXX codes are reclaimed and placed in the 310 number pool. Assuming no technical obstacles are identified, then TD recommends that nine blocks from the high volume calling NXX code be donated to the 310 number pool.

Recommendations for Special-Use NXX Codes

- *TD recommends that the number for time and for emergency preparedness in the 310 NPA be moved into the 555 prefix. If the 555 prefix currently reserved only for directory assistance could be used to provide time and emergency preparedness information in the 310 NPA,*

then two more NXX codes could be returned to the NANPA for allocation to carriers as they need numbers for customers.

- *TD recommends that the Commission initiate an investigation into broader use of the 555 prefix in California's NPAs. Further analysis is needed to determine the possibility of obtaining standard 555 numbers in every California NPA to provide time, emergency preparedness, and weather information at no additional cost to customers.*
- *TD recommends the Commission solicit comments in the Local Competition proceeding (R.95-04-043/I.95-04-044) regarding what technical issues, if any, would arise if high-volume calling NXX codes are reclaimed and placed in the 310 number pool. Assuming no technical obstacles are identified, then TD recommends that nine blocks from the high volume calling NXX code be donated to the 310 number pool.*

CHAPTER THREE:
NUMBER POOLING AND OTHER
NUMBER CONSERVATION MEASURES

A. Introduction

Many of the recommendations in Chapter Two resulted in the analysis of the utilization study and address actions that the Commission should undertake to make additional numbers available for either pooling or for the regular monthly lottery. The recommendations contained in this chapter suggest additional conservation measures that the Commission could adopt in the 310 NPA and statewide, including LNP-related actions, rate center consolidation, and NXX code sharing.⁴⁷ When applied, these conservation measures would result in uniform policies which will cause carriers to use numbers more efficiently and which will minimize customer confusion.

B. Number Pooling Provides Opportunities for Number Conservation

As described in Chapter One, the CPUC received an interim delegation of authority to institute mandatory number pooling on a trial basis, by deploying it sequentially in one MSA at a time. The 310 number pooling trial will be operational on March 18, 2000. According to the Polling Administrator's report dated February 25, 2000, LNP-capable carriers have donated 751 thousand number blocks or as many as 751,000 numbers to the pool. In addition, TD staff has identified an additional 24 thousand number blocks, available for the 310 pool, for a total of 785 blocks or up to 785,000 numbers. In addition to carrier donations, the CPUC has directed that 16 new NXX codes, or 160,000 be set aside for the 310 number pool. TD believes that pooling will significantly extend the life of the 310 NPA. It is not possible to predict accurately a new exhaust date for the 310 NPA until actual utilization rates are demonstrated during pooling.

⁴⁷ These options are not addressed in this report. Code sharing involves an agreement between two carriers to share numbers in an NXX code. TD is aware of two carriers in the 310 NPA that are engaged in code sharing, but the practice is not widespread.

The CPUC's experience with the 310 number pool will provide a foundation for the CPUC to conduct additional number pooling trials throughout the state. The 310 number pool uses the 1.4 functionality found in NPAC software release 2.0 i.e. the best number pooling software currently available). Although work is in progress within the industry to release a more advanced version of NPAC software (release 3.0) by the end of the year, that version is not currently available for the trial in 310. When available, the new software will speed up the pace with which number pooling can be implemented throughout California. The 310 number pooling trial provides the opportunity to identify and resolve any technological issues that may arise once pooling begins. In addition, the 310 pooling trial will provide the opportunity to test whether numbers are effectively ported and thousand blocks are successfully shared among carriers using the LNP architecture. Moreover, it provides the opportunity to ensure that telephone calls are properly routed and billed during the trial.

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

Local number portability enables customers to keep their telephone numbers even when they change service providers, so that, for example Carrier 1 can transfer, or "port", a customer's number to Carrier 2. LNP was originally developed to enable customers to switch service providers without changing their telephone numbers, but the technology now has several critical new applications, including but not limited to, serving as the basic platform for number conservation measures such as 1,000-block number pooling. LNP technology is crucial to the implementation of number pooling because it allows the switch to separate the customer's number from other numbers in the same switch for billing and other purposes. Thus, its deployment in the 310 NPA is critical to the success of number pooling there.

In an order released in 1997, the FCC established a schedule for deploying LNP technology nationally. The FCC's plan called for LNP to be rolled out in the top 100 MSAs by December 1998. Thirteen of the top 100 MSAs are located in California and are listed in Table 3-1. The FCC's rules required that a carrier only need deploy LNP technology if it received a bona fide request from another carrier to port a customer's number. Even though the national phase-in of

LNP is completed, if a carrier has never received a bona fide request to port a customer's number, the carrier need not ever have implemented LNP technology.

Table 3-1 - IMPLEMENTATION SCHEDULE

Implementation must be completed by the carriers in the relevant California MSAs during the periods specified below:

Phase I--10/1/97-3/31/98	Phase II--1/1/98-5/15/98	Phase III--4/1/98-6/30/98	Phase IV--7/1/98-9/30/98	Phase V--10/1/98-12/31/98
Los Angeles 1	Riverside, CA 10 San Diego, CA 14	Orange Co, CA 15 Oakland, CA 21 San Francisco, CA 29	San Jose, CA 31 Sacramento, CA 36 Fresno, CA 68	Ventura, CA 72 Bakersfield, CA 84 Stockton, CA 94 Vallejo, CA 99

Data collected in the 310 utilization study indicates that LNP capability among wireline carriers in the 310 area code is nearly complete. Except for Level 3 Communications, all wireline providers serving the 310 area code are LNP capable in all or most of their switches. Moreover, Level 3 Communications reported that it is in the process of developing the capability to implement LNP in the 310 area code.

Even if a carrier is LNP-capable, LNP may not necessarily have been activated in each of the NXX codes in the carrier's inventory. For example, the utilization data illustrates that ten NXX codes held by six wireline carriers in the 310 area code have not been activated for LNP. It may be possible for some or all of these NXX codes to be immediately activated for LNP by the carriers holding them. Without specific authority from the FCC to require the full deployment of LNP in all switches, however, the quantity of numbers that can be included in the 310 number pooling trial is unnecessarily constrained.

Wireless carriers, however, requested and received from the FCC an extension of time, until November, 2002, to become LNP capable.⁴⁸ In requesting the extension of time, wireless carriers cited both the expense and technical difficulties of deploying wireless LNP technology, and also asserted that spending capital on deploying LNP technology would impair competitive efforts by the wireless industry. In addition, some wireless carriers urged the FCC not to require wireless compliance with the LNP requirements at all, asserting that no consumer demand for LNP existed. The FCC declined to waive the LNP requirement altogether, but on February 9, 1999, did grant wireless providers a three-year extension to comply. Non-LNP capable wireless carriers hold 191 NXX codes in the 310 NPA.

As noted earlier, wireline carriers operating in the country's top 100 MSAs were required to be fully LNP-capable by the end of 1998. As currently configured, the 310 NPA falls within the

⁴⁸ FCC 99-19, WT Docket 98-229; CC Docket No. 95-116, Released: February 9, 1999.

boundaries of a top100 MSA's and therefore most wireline carriers in the NPA have deployed LNP technology. But for many other NPAs facing similar jeopardy situations, LNP technology is not yet deployed. Many NPAs fall partially or completely outside the boundaries of these MSAs. Without full activation of LNP throughout California, number pooling and other number conservation alternatives that depend on LNP cannot be considered as options. Further, without the authority to order deployment of LNP in these areas, the CPUC will not be able to adequately address number shortage problems in California through number pooling on a statewide basis.

Recommendations for LNP-Related Conservation Measures

- *The CPUC should petition the FCC to extend to state commissions authority to request a non-LNP capable wireline carrier to implement LNP technology for number pooling purposes.*
- *The FCC should order nationwide implementation of LNP, or delegate to California and other states authority to order implementation of LNP on a statewide or as-needed basis.*
- *As soon as permitted by the FCC, the CPUC should request that non-LNP-capable wireline carriers in the 310 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.*

D. Eliminating Interim Number Portability Releases Numbers for Reallocation

The 310 utilization study reveals that 3,402 numbers are still dedicated to Interim

Number Portability (INP).⁴⁹ Prior to the implementation of permanent LNP, carriers entered into INP arrangements to enable the transfer of customers from one carrier to another. Under these INP arrangements, two telephone numbers are associated with each customer. With LNP, the need for two telephone numbers for each customer as required by INP is eliminated when customers change carriers because customers can directly take their numbers with them.

From a number conservation perspective, LNP is preferable to INP since it uses half as many numbers when customers want to change carriers while still enabling those customers to keep their existing telephone numbers. Only three carriers reported having telephone numbers involved in INP in the 310 NPA. Those providers reported that a total of 3,402 INP telephone numbers exist in the 310 NPA. If all INP arrangements were transitioned to LNP, half of those numbers or 1,701 numbers would be free for reallocation in the 310 NPA.

Recommendations for INP-Related Conservation Measures

- *The CPUC should require carriers serving the 310 area code to transition from INP to LNP by no later than April 30, 2000. This recommendation would free up 1,701 telephone numbers in the 310 NPA, half of those currently dedicated to INP which uses two numbers per customer. While eliminating INP for the purpose of number conservation would not result in the return of whole NXX codes in the 310 NPA, combined with other conservation efforts it could make 1,000-blocks available for pooling or other purposes.*

⁴⁹ INP is the interim ability to move telephone service from one service provider to another using Remote Call Forwarding (RCF), Direct Inward Dialing (DID), or equivalent means:

- 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 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 310 utilization study, each carrier was required to report the quantity of its assigned numbers that are dedicated to providing INP.

The CPUC should adopt a schedule for transitioning INP arrangements to LNP in all other California area codes.

- *The CPUC should determine a schedule for transitioning from INP to LNP in all other California area codes. Future utilization studies in the 310 and other NPAs can be used to test whether carriers have made the transition from INP to LNP.*

E. Consolidating Certain Rate Centers to Maximize Number Use

Rate center location dictates both the scope of a customer's local calling area and the charges assessed per toll call.⁵⁰ With nearly 800 rate centers, California has significantly more rate centers than any other state. Each rate center governs a relatively small, uniform, local calling area, measured in a twelve-airline-mile radius 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 call routes has the residual effect of reducing toll revenues for local telephone service providers, which for more than 95% of residential customers in California are the incumbent local exchange carriers (ILECs). Thus, the ILECs will ask the CPUC to "make them whole" for any lost toll revenues. Indeed, in a letter dated July 2, 1999, the industry task force considering the applicability of rate center consolidation (RCC) in California asked the CPUC to resolve associated revenue issues before the industry will develop detailed recommendations or propose specific technical solutions for RCC.

Further, the industry task force declined to propose a plan for reducing the number of rate centers in this state until the CPUC resolves the revenue issues. Nor did the industry offer any

⁵⁰ In California, a customer's local calling area is that area within a 12-airline mile radius of the rate center for the customer's exchange. All calls originating and terminating within the local calling area are "local" calls, the charges for which are included in the monthly flat rate for the customer's residential service. If the customer has measured residential service, or business service, the customer is charged for those calls at a specific tariffed rate. Calls which terminate beyond the 12-mile local calling area, but within the customer's serving area, are toll calls for which the customer is charged according to the time of day the call is made, the duration of the call, and the distance between the calling and called parties' rate centers.

proposals on how such consolidation would be accomplished and/or how customers would be affected. In comments filed on July 30, 1999 before the FCC in response to its NPRM on numbering issues (FCC 99-200), the CPUC explained at length that RCC poses the potential for direct, substantial and permanent basic rate increases for many customers. For that reason, the CPUC urged the FCC to leave to the states further action regarding whether, how, and when to consolidate rate centers. Nonetheless, RCC remains a potential means of conserving numbers in California. The impediment at present remains the industry's insistence that revenue issues be resolved first. TD staff believes that there are some instances where consolidation of rate centers could be accomplished relatively easily and quickly because one of the rate centers serves a somewhat remote and unpopulated area. One such example exists in the 310 NPA – the Avalon rate center on Catalina Island.

Avalon has had just one NXX code for many years. Very recently, however, a number of carriers provided forecasts to the 310 number PA indicating that they will request 1,000 blocks in the Avalon rate center based on their business projections. The San Pedro rate center, which is geographically close to the Avalon rate center, has fewer than 30 NXX codes. Given the increasing interest in serving the Avalon rate center, TD believes it would be appropriate to consider consolidating that rate center with the San Pedro rate center. Doing so, however, will likely trigger a request from Pacific Bell, the ILEC serving Avalon, that it should be allowed to recoup in some fashion any lost toll revenue for calls to and from the Avalon rate center.

Recommendations for Rate Center Consolidation

- *The Commission should initiate an investigation regarding the possibility of consolidating the Avalon and San Pedro rate centers in the 310 NPA. The investigation should include assessment of whether this consolidation can be accomplished with minimal impact on the cost that customers pay for telephone service.*
- *The Commission should explore other similar types of consolidations in other area codes throughout California. Future utilization studies in other area codes may well uncover data supporting other rate center consolidation opportunities.*

F. NXX Code Sharing May Yield More Efficient Number Use

In analyzing the 310 utilization data, TD became aware that two non-affiliated carriers were sharing NXX codes under informal arrangements created by those carriers. Using LNP, a carrier with excess numbers transferred whole thousand blocks of numbers to another carrier for use. This sharing arrangement appears to promote efficient number use among carriers.

Some carriers reporting utilization data in the 310 NPA are affiliated through mergers, acquisitions, or other business relationships. Despite the affiliation, each carrier requests numbers from NANPA and many will request numbers in the 310 number pool. It is not clear whether affiliated companies are using code-sharing arrangements that could reduce the demand for numbers in the 310 NPA. The utilization study was not designed to explore code-sharing arrangements and therefore concrete recommendations to implement code sharing cannot be recommended at this time. However, NXX code sharing seems worthy of further investigation by the CPUC as a mechanism to promote more efficient use of numbers.

Recommendations for NXX Code Sharing

- *The Commission should further explore NXX code sharing as a means to more efficiently utilize numbers in the 310 and other area codes.*