(h) The term *location portability* means the ability of users of telecommunications services to retain existing telecommunications numbers without impairment of quality, reliability, or convenience when moving from one physical location to another.

(i) The term *long-term database method* means a database method that complies with the performance criteria set forth in section 52.3(a) of this chapter, 47 CFR § 52.3(a).

(j) The term *North American Numbering Council (NANC)* means an advisory committee created under the Federal Advisory Committee Act, 5 U.S.C., App (1988), to advise the Commission and to make recommendations, reached through consensus, that foster efficient and impartial number administration.

(k) The term *number portability* means the ability of users of telecommunications services to retain, at the same location, existing telecommunications numbers without impairment of quality, reliability, or convenience when switching from one telecommunications carrier to another.

(l) The term *regional database* means an SMS database or an SMS/SCP pair that contains information necessary for carriers to provide number portability in a region as determined by the NANC.

(m) The term *service control point* (SCP) means a database in the public switched network which contains information and call processing instructions needed to process and complete a telephone call. The network switches access an SCP to obtain such information. Typically, the information contained in an SCP is obtained from the SMS.

(n) The term *service management system* (SMS) means a database or computer system not part of the public switched network that, among other things: (1) interconnects to an SCP and sends to that SCP the information and call processing instructions needed for a network switch to process and complete a telephone call; and (2) provides telecommunications carriers with the capability of entering and storing data regarding the processing and completing of a telephone call.

(o) The term *service portability* means the ability of users of telecommunications services to retain existing telecommunications numbers without impairment of quality, reliability, or convenience when switching from one telecommunications service to another, without switching from one telecommunications carrier to another.

(p) The term *service provider portability* means the ability of users of telecommunications services to retain, at the same location, existing

telecommunications numbers without impairment of quality, reliability, or convenience when switching from one telecommunications carrier to another.

(q) The term *telecommunications* means the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received.

(r) The term *telecommunications carrier* means any provider of telecommunications services, except that such term does not include aggregators of telecommunications services (as defined in 47 U.S.C. § 226(a)(2)).

(s) The term *telecommunications service* means the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used.

(t) The term *transitional measure* means a method such as Remote Call Forwarding (RCF), Flexible Direct Inward Dialing (DID), or other comparable and technically feasible arrangement that allows one local exchange carrier to transfer telephone numbers from its network to the network of another telecommunications carrier, but does not comply with the performance criteria set forth in section 52.3(a) of this chapter, 47 CFR § 52.3(a).

§ 52.3 Deployment of Long-Term Database Methods for Number Portability by LECs.

(a) Subject to subsections (b) and (c), all local exchange carriers (LECs) must provide number portability in compliance with the following performance criteria:

(1) supports network services, features, and capabilities existing at the time number portability is implemented, including but not limited to emergency services, CLASS features, operator and directory assistance services, and intercept capabilities;

(2) efficiently uses numbering resources;

(3) does not require end users to change their telecommunications numbers;

(4) does not require telecommunications carriers to rely on databases, other network facilities, or services provided by other telecommunications carriers in order to route calls to the proper termination point;

(5) does not result in unreasonable degradation in service quality or network reliability when implemented;

(6) does not result in any degradation in service quality or network reliability when customers switch carriers;

(7) does not result in a carrier having a proprietary interest;

(8) is able to migrate to location and service portability; and

(9) has no significant adverse impact outside the areas where number portability is deployed.

(b) All LECs must provide a long-term database method for number portability in the 100 largest Metropolitan Statistical Areas (MSAs) by December 31, 1998, in accordance with the deployment schedule set forth in Appendix A to Part 52 of this chapter.

(c) Beginning January 1, 1999, all LECs must make a long-term database method for number portability available within six months after a specific request by another telecommunications carrier in areas in which that telecommunications carrier is operating or plans to operate.

(d) The Chief, Common Carrier Bureau, may waive or stay any of the dates in the implementation schedule, as the Chief determines is necessary to ensure the efficient development of number portability, for a period not to exceed 9 months (i.e., no later than September 30, 1999).

(e) In the event a LEC is unable to meet the Commission's deadlines for implementing a long-term database method for number portability, it may file with the Commission at least 60 days in advance of the deadline a petition to extend the time by which implementation in its network will be completed. A LEC seeking such relief must demonstrate through substantial, credible evidence the basis for its contention that it is unable to comply with the deployment schedule set forth in Appendix A to Part 52 of this chapter. Such requests must set forth: (1) the facts that demonstrate why the carrier is unable to meet the Commission's deployment schedule; (2) a detailed explanation of the activities that the carrier has undertaken to meet the implementation schedule prior to requesting an extension of time; (3) an identification of the particular switches for which the extension is requested; (4) the time within which the carrier will complete deployment in the affected switches; and (5) a proposed schedule with milestones for meeting the deployment date.

(f) The Chief, Common Carrier Bureau, shall monitor the progress of local exchange carriers implementing number portability, and may direct such carriers to take any actions necessary to ensure compliance with the deployment schedule set forth in Appendix A to Part 52 of this chapter.

(g) Carriers that are members of the Illinois Local Number Portability Workshop must conduct a field test of any technically feasible long-term database method for number portability in the Chicago, Illinois, area concluding no later than August 31, 1997. The carriers participating in the test must jointly file with the Common Carrier Bureau a report of their findings within 30 days following completion of the test. The Chief, Common Carrier Bureau, shall monitor developments during the field test.

§ 52.5 Database Architecture and Administration.

(a) The North American Numbering Council (NANC) shall direct establishment of a nationwide system of regional SMS databases for the provision of long-term database methods for number portability.

(b) All telecommunications carriers shall have equal and open access to the regional databases.

(c) The NANC shall select a local number portability administrator(s) (LNPA(s)) to administer the regional databases within seven months of the initial meeting of the NANC.

(d) The NANC shall determine whether one or multiple administrator(s) should be selected, whether the LNPA(s) can be the same entity selected to be the North American Numbering Plan Administrator, how the LNPA(s) should be selected, the specific duties of the LNPA(s), the geographic coverage of the regional databases, the technical interoperability and operational standards, the user interface between telecommunications carriers and the LNPA(s), the network interface between the SMS and the downstream databases, and the technical specifications for the regional databases.

(e) Once the NANC has selected the LNPA(s) and determined the locations of the regional databases, it must report its decisions to the Commission.

(f) The information contained in the regional databases shall be limited to the information necessary to route telephone calls to the appropriate telecommunications carriers. The NANC shall determine what specific information is necessary.

(g) Any state may opt out of its designated regional database and implement a state-specific database. A state must notify the Common Carrier Bureau and NANC that it plans to implement a state-specific database within 60 days from the release date of the Public Notice issued by the Chief, Common Carrier Bureau, identifying the administrator selected by the NANC and the proposed locations of the regional databases. Carriers may challenge a state's decision to opt out of the regional database system by filing a petition with the Commission.

(h) Individual state databases must meet the national requirements and operational standards recommended by the NANC and adopted by the Commission. In addition, such state databases must be technically compatible with the regional system of databases and must not interfere with the scheduled implementation of the regional databases.

(i) Individual carriers may download information necessary to provide number portability from the regional databases into their own downstream databases. Individual carriers may mix information needed to provide other services or functions with the information downloaded from the regional databases at their own downstream databases. Carriers may not withhold any information necessary to provide number portability from the regional databases on the grounds that such data has been combined with other information in its downstream database.

§ 52.7 Deployment of Transitional Measures for Number Portability.

(a) All LECs shall provide transitional measures, which may consist of Remote Call Forwarding (RCF), Flexible Direct Inward Dialing (DID), or any other comparable and technically feasible method, as soon as reasonably possible upon receipt of a specific request from another telecommunications carrier, until such time as the LEC implements a long-term database method for number portability in that area.

§ 52.9 Cost Recovery for Transitional Measures for Number Portability.

(a) Any cost recovery mechanism for the provision of number portability pursuant to section 52.7(a) of this chapter, 47 CFR § 52.7(a), that is adopted by a state commission must not:

(1) give one telecommunications carrier an appreciable, incremental cost advantage over another telecommunications carrier, when competing for a specific subscriber (i.e., the recovery mechanism may not have a disparate effect on the incremental costs of competing carriers seeking to serve the same customer); or

(2) have a disparate effect on the ability of competing telecommunications carriers to earn a normal return on their investment.

§ 52.11 Deployment of Long-Term Database Methods for Number Portability by CMRS Providers.

(a) By June 30, 1999, all cellular, broadband PCS, and covered SMR providers must provide a long-term database method for number portability, including the ability to support roaming, in compliance with the performance criteria set forth in section 52.3(a) of this chapter, 47 CFR § 52.3.

(b) By December 31, 1998, all cellular, broadband PCS, and covered SMR providers (as defined in Interconnection and Resale Obligations Pertaining to Commercial Mobile Radio Services, First Report and Order, CC Docket 94-54, FCC 96-263 (adopted June 12, 1996)) must have the capability to obtain routing information, either by querying the appropriate database themselves or by making arrangements with other carriers that are capable of performing database queries, so that they can deliver calls from their networks to any party that has retained its number after switching from one telecommunications carrier to another.

(c) The Chief, Wireless Telecommunications Bureau, may waive or stay any of the dates in the implementation schedule, as the Chief determines is necessary to ensure the efficient development of number portability, for a period not to exceed 9 months (i.e., no later than September 30, 1999, for the deadline in subsection (b), and no later than March 31, 2000, for the deadline in subsection (a)).

(d) In the event a carrier subject to subsections (a) and (b) is unable to meet the Commission's deadlines for implementing a long-term number portability method, it may file with the Commission at least 60 days in advance of the deadline a petition to extend the time by which implementation in its network will be completed. A carrier seeking such relief must demonstrate through substantial, credible evidence the basis for its contention that it is unable to comply with subsections (a) and (b). Such requests must set forth: (1) the facts that demonstrate why the carrier is unable to meet our deployment schedule; (2) a detailed explanation of the activities that the carrier has undertaken to meet the implementation schedule prior to requesting an extension of time; (3) an identification of the particular switches for which the extension is requested; (4) the time within which the carrier will complete deployment in the affected switches; and (5) a proposed schedule with milestones for meeting the deployment date.

(e) The Chief, Wireless Telecommunications Bureau, may establish reporting requirements in order to monitor the progress of cellular, broadband PCS, and covered SMR providers implementing number portability, and may direct such carriers to take any actions necessary to ensure compliance with this deployment schedule.

§§ 52.12 - 52.99 [Reserved]

APPENDIX A to Part 52 -- Deployment Schedule for Long-Term Database Methods for Local Number Portability

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

10/97-12/97		1/98-3/98		4/98-6/98	
Chicago, IL	3	Detroit, MI	6	Indianapolis, IN	34
		Akron, OH	20	Milwaukee, WI	35
				Columbus, OH	38
Philadelphia, PA	4	Washington, DC	5	Pittsburgh, PA	19
		Baltimore, MD	18	Newark, NJ	25
				Norfolk, VA	32
Atlanta, GA	8	Miami, FL	24	New Orleans, LA	41
		Fort Lauderdale, FL	39	Charlotte, NC	43
		Orlando, FL	40	Greensboro, NC	48
				Nashville, TN	51
				Las Vegas, NV	50
		Cincinnati, OH	30		
		Tampa, FL	23		
New York, NY	2	Boston, MA	9	Nassau, NY	13
				Buffalo, NY	44
Los Angeles, CA	1	Riverside, CA	10	Orange Co, CA	15
		San Diego, CA	14	Oakland, CA	21
				San Francisco, CA	29
				Rochester, NY	49
Houston, TX	7	Dallas, TX	11	Kansas City, KS	28
		St. Louis, MO	16	Fort Worth, TX	33
				Hartford, CT	46
Minneapolis, MN	12	Phoenix, AZ	17	Denver, CO	26
		Seattle, WA	22	Portland, OR	27

7/98-9/98		10/98-12/98	
Grand Rapids, MI	56	Toledo, OH	81
Dayton, OH	61	Youngstown, OH	85
Cleveland, OH	73	Ann Arbor, MI	95
Gary, IN	80	Fort Wayne, IN	100
Bergen, NJ 42		Scranton, PA	78
Middlesex, NJ	52	Allentown, PA	82
Monmouth, NJ	54	Harrisburg, PA	83
Richmond, VA	63	Jersey City, NJ	88
		Wilmington, DE	89
Memphis, TN	53	Greenville, SC	67
Louisville, KY	57	Knoxville, KY	79
Jacksonville, FL	58	Baton Rouge, LA	87
Raleigh, NC	59	Charleston, SC	92
West Palm Beach, FL	62	Sarasota, FL	93
Birmingham, AL	66	Mobile, AL	96
		Columbia, SC	98
Honolulu, HI	65	Tulsa, OK	70
Providence, RI	47	Syracuse, NY	69
Albany, NY	64	Springfield, MA	86
San Jose, CA	31	Ventura, CA	72
Sacramento, CA	36	Bakersfield, CA	84
Fresno, CA	68	Stockton, CA	94
		Vallejo, CA	99
San Antonio, TX	37	El Paso, TX	74
Oklahoma City, OK	55	Little Rock, AR	90
Austin, TX	60	Wichita, KS	97
		New Haven, CT	91
Salt Lake City, UT	45	Omaha, NE	75
Tucson, AZ	71	Albuquerque, NM	76
		Tacoma, WA	77

APPENDIX C - Regulatory Flexibility Act Analysis

A. Final Analysis of First Report and Order

1. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603 (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Notice. The Commission sought written public comments on the proposals in the Notice, including the Initial Regulatory Flexibility Analysis. The Commission's Final Regulatory Flexibility Analysis (FRFA)[1] in this First Report and Order is as follows:

2. Need for and Objectives of Rules: The Commission, in compliance with sections 251(b)(2) and 251(d)(1) of the Communications Act of 1934, as amended by the Telecommunications Act of 1996 (the Act), adopts rules and procedures intended to ensure the prompt implementation of telephone number portability with the minimum regulatory and administrative burden on telecommunications carriers. These rules are necessary to implement the provision in the Telecommunications Act of 1996 (1996 Act) requiring local exchange carriers (LECs) to offer number portability, if technically feasible. In implementing the statute, the Commission has the responsibility to adopt rules that will implement most quickly and effectively the national telecommunications policy embodied in the Act and to promote the pro-competitive, deregulatory markets envisioned by Congress. Congress has recognized that number portability will lower barriers to entry and promote competition in the local exchange marketplace.

3. Summary of Significant Issues Raised by the Public in Response to the IRFA: There were no comments submitted in response to the Initial Regulatory Flexibility Analysis. The Chief Counsel for Advocacy of the United States Small Business Administration filed comments on the Notice which generally support the actions we take in this First Report and Order. However, in their general comments, some commenters suggested a course of action which may result in less of an impact on small entities. Specifically, prior to passage of the 1996 Act, some LECs asserted that the Commission should neither adopt, nor direct the adoption of, number portability without performing a thorough cost/benefit analysis.[2] Most parties, however, now agree that the 1996 Act clearly directs the Commission to implement long-term number portability.[3] In the Report and Order, we concluded that Congress has determined that the Commission should develop a national number portability policy and has specifically

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[1] Our final analysis conforms to the RFA, as amended by the Contract With America Advancement Act of 1996, P.L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Subtitle II of CWAAA is "The Small Business Regulatory Enforcement Fairness Act of 1996" (SBREFA).

[2] Bell Atlantic Comments at 18-19; NYNEX Comments at 15-16; NYNEX Reply Comments at 14; SBC Communications Comments at 10.

[3] See, e.g., Bell Atlantic Further Comments at 2; NCTA Further Comments at 2; Omnipoint Further Comments at 2.

directed us to prescribe the requirements that all local exchange carriers, both incumbents and others, must meet to satisfy their statutory obligations.[4] Moreover, section 251(e)(1)'s assignment to the Commission of exclusive jurisdiction over that portion of the North American Numbering Plan (NANP) that pertains to the United States gives us authority over the implementation of number portability to the extent that such implementation will affect the NANP.[5]

4. Description and Estimate of Number of Small Businesses to Which Rules Will Apply: The Regulatory Flexibility Act generally defines the term "small business" as having the same meaning as the term "small business concern" under the Small Business Act, 15 U.S.C. § 632. A small business concern is one which (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA). Id. According to the SBA's regulations, entities engaged in the provision of telephone service may have a maximum of 1,500 employees in order to qualify as a small business concern. 13 C.F.R. § 121.201. This standard also applies in determining whether an entity is a small business for purposes of the Regulatory Flexibility Act.

5. Our rules governing long-term number portability apply to all LECs, including incumbent LECs as well as new LEC entrants, and also apply to cellular, broadband PCS, and covered SMR providers. According to the SBA definition, incumbent LECs do not qualify as small businesses because they are dominant in their field of operation. Accordingly, we will not address the impact of these rules on incumbent LECs.

6. However, our rules may have a significant economic impact on a substantial number of small businesses insofar as they apply to telecommunications carriers other than incumbent LECs. The rules may have such an impact upon new entrant LECs, as well as cellular, broadband PCS, and covered SMR providers. Based upon data contained in the most recent census and a report by the Commission's Common Carrier Bureau, we estimate that 2,100 carriers could be affected. We have derived this estimate based on the following analysis:

7. According to the 1992 Census of Transportation, Communications, and Utilities, there were approximately 3,469 firms with under 1,000 employees operating under the Standard Industrial Classification (SIC) category 481 -- Telephone. See U.S. Dept. of Commerce, Bureau of the Census, 1992 Census of Transportation, Communications, and Utilities (issued May 1995). Many of these firms are the incumbent LECs and, as noted above, would not satisfy the SBA definition of a small business because of their market dominance. There were approximately 1,350 LECs in

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[4] See 47 U.S.C. § 251(b)(2), (d).

[5] See 47 U.S.C. § 251(e)(1).

1995. Industry Analysis Division, FCC, Carrier Locator: Interstate Service Providers at Table 1 (Number of Carriers Reporting by Type of Carrier and Type of Revenue) (December 1995). Subtracting this number from the total number of firms leaves approximately 2,119 entities which potentially are small businesses which may be affected. This number contains various categories of carriers, including competitive access providers, cellular carriers, interexchange carriers, mobile service carriers, operator service providers, pay telephone operators, PCS providers, covered SMR providers, and resellers. Some of these carriers -- although not dominant -- may not meet the other requirement of the definition of a small business because they are not "independently owned and operated." See 15 U.S.C. § 632. For example, a PCS provider which is affiliated with a long distance company with more than 1,000 employees would be disqualified from being considered a small business. Another example would be if a cellular provider is affiliated with a dominant LEC. Thus, a reasonable estimate of the number of "small businesses" affected by this Order would be approximately 2,100.

8. Description of Projected Reporting, Recordkeeping and Other Compliance Requirements of the Rules: There are several reporting requirements imposed by the Report and Order. It is likely that the entities filing the reports will require the services of persons with technical expertise to prepare the reports. First, carriers participating in a field test in the Chicago, Illinois, area are required to file with the Commission a report of their findings within 30 days after completion of the test. At this time, it is not clear how many carriers will be participating, but it is likely to include several new entrant LECs and the dominant incumbent LEC in the region. Second, after December 31, 1998, long-term number portability must be provided by LECs outside of the 100 largest MSAs within six months after a specific request by another telecommunications carrier in which the requesting carrier is operating or plans to operate. The request specifically must request long-term number portability, identify the discrete geographic area covered by the request, and provide a tentative date six or more months in the future when the carrier expects to need number portability in order to port prospective customers. Third, state regulatory commissions must file with the Commission a notification if they opt to develop a state-specific database in lieu of participating in a regional database system. Carriers that object to a state decision to opt out of the regional database system may file with the Commission a petition for relief. Fourth, the item requires any administrator selected by a state prior to the release of the Report and Order, that wishes to bid for administration of one of the regional databases, must submit a new proposal in accordance with the guidelines established by the NANC. We expect that only one entity, Lockheed Martin, will be subject to this requirement since it is the only administrator which has been selected by a state to date. Fifth, the Report and Order requires carriers that are unable to meet the deadlines for implementing a long-term number portability solution to file with the Commission at least 60 days in advance of the deadline a petition to extend the time by which implementation in its network will be completed. Finally, we require an industry body known as the Industry Numbering Committee (INC) to file a report with the Commission on the portability of non-

geographic numbers assigned to LECs within 12 months after the effective date of the Report and Order.[6]

9. Steps Taken to Minimize Impact on Small Entities Consistent with Stated Objectives: The Commission's actions in this Report and Order will benefit small entities by facilitating their entry into the local exchange market. The record in this proceeding indicates that the lack of number portability would deter entry by competitive providers of local service because of the value customers place on retaining their telephone numbers.[7] These competitive providers, many of which may be small entities, may find it easier to enter the market as a result of number portability which will eliminate this barrier to entry.[8]

10. In general, we have attempted to keep burdens on local exchange carriers to a minimum. For example, we have adopted a phased deployment schedule which requires long-term number portability to be implemented initially in the 100 largest MSAs, and then elsewhere upon a carrier's request. The provision of currently available measures is conditioned upon request only. In addition, we have attempted to minimize the impact of our rules upon cellular, broadband PCS, and covered SMR providers, which may be small businesses, by not requiring such carriers to offer currently available number portability measures. Similarly, paging and messaging service providers, which may be small entities, are required to provide neither currently available measures nor long-term number portability under our rules. The regulatory burdens we have imposed are necessary to ensure that the public receives the benefit of the expeditious provision of service provider number portability in accordance with the statutory requirements.

B. Initial Analysis of Further Notice of Proposed Rulemaking

11. Pursuant to section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared the following Initial Regulatory Flexibility Analysis (IRFA) of the expected impact on small entities of the policies and rules proposed in the Further Notice of Proposed Rulemaking (Further Notice). Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments on the remainder of the Further Notice, but they must have a

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[6] In the Report and Order, the Commission delegates authority to the Wireless Telecommunications Bureau to require reports from cellular, PCS, and covered SMR providers in order to monitor the progress of these providers toward implementing long-term number portability. These reporting requirements are not defined in sufficient detail in the Report and Order to obtain approval from the Office of Management and Budget. Separate approval will be requested when the specific requirements are imposed by the Wireless Telecommunications Bureau.

[7] See First Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 95-116, FCC 96-286 at ¶ 31 (rel. July 2, 1996).

[8] See id. at ¶¶ 28-30.

separate and distinct heading designating them as responses to the regulatory flexibility analysis. The Secretary shall cause a copy of the Further Notice, including the IRFA, to be sent to the Chief Counsel for Advocacy of the Small Business Administration in accordance with section 603(a) of the Regulatory Flexibility Act.

12. Reason for Action: The Commission, in compliance with sections 251(b)(2) and 251(d)(1) of the Act, proposes rules and procedures intended to ensure the prompt implementation of telephone number portability with the minimum regulatory and administrative burden on telecommunications carriers. The rules proposed in the Further Notice are necessary to implement section 251(e)(2) of the Act, which requires that the costs of number portability be borne by all telecommunications carriers on a competitively neutral basis.

13. Objectives and Legal Basis for Proposed Rules: The Commission's objective in issuing the Further Notice is to propose and seek comment on rules establishing a cost recovery mechanism for carriers to use in implementing a long-term number portability method pursuant to the Act and in accordance with our Report and Order in this proceeding. Specifically, our goal is to propose rules which implement section 251(e)(2) of the Act, requiring that the cost of "number portability be borne by all telecommunications carriers on a competitively neutral basis as determined by the Commission." 47 U.S.C. § 251(e)(2). The legal basis for action as proposed in the Further Notice is contained in sections 1, 4(i), 4(j), 201-205, 218, 251(b), 251(e), and 332 of the Communications Act of 1934, as amended. 47 U.S.C. §§ 151, 154(i), 154(j), 201-205, 218, 251(b), 251(d), 251(e), 332.

14. Description and Estimated Number of Small Entities Affected: As discussed above in the Final Regulatory Flexibility Act Analysis for the Report and Order, our rules governing long-term number portability apply to all LECs, including incumbent LECs as well as new LEC entrants, and also apply to cellular, broadband PCS, and covered SMR providers. According to the SBA definition, incumbent LECs do not qualify as small businesses because they are dominant in their field of operation. Accordingly, we will not address the impact of these rules on incumbent LECs.

15. However, our rules may have a significant economic impact on a substantial number of small businesses insofar as they apply to telecommunications carriers other than incumbent LECs. The rules may have such an impact upon new entrant LECs as well as cellular, broadband PCS, and covered SMR providers. Based upon data contained in the most recent census and a report by the Commission's Common Carrier Bureau, we estimate that 2,100 carriers could be affected. See supra ¶¶ 4-7 (discussion of estimated number of small businesses affected). We request comment on this estimate. These entities could include various categories of carriers, including competitive access providers, cellular carriers, interexchange carriers, mobile service carriers, operator service providers, pay telephone operators, PCS providers, covered

SMR providers, and resellers. The SIC codes which describe these groups are 4812 and 4813.

16. Reporting, Recordkeeping and Other Compliance Requirements: The Further Notice requests comment on the appropriate method by which the costs of long-term number portability should be recovered. One possible cost recovery method would be based upon a percentage of a carrier's gross revenues. Such a rule, if promulgated, would not impose a reporting requirement on LECs because they already file information about gross revenues with the Commission for other purposes. There are no other reporting requirements contemplated by the Further Notice.

17. Federal Rules Which Overlap, Duplicate or Conflict with these Rules: None.

APPENDIX D - 100 LARGEST METROPOLITAN STATISTICAL AREAS (MSAs) AND THEIR POPULATIONS

1.	Los Angeles, CA	9,150,000
2.	New York, NY	8,584,000
3.	Chicago, IL	7,668,000
4.	Philadelphia, PA	4,949,000
5.	Washington, DC	4,474,000
6.	Detroit, MI	4,307,000
7.	Houston, TX	3,653,000
8.	Atlanta, GA	3,331,000
9.	Boston, MA*	3,211,000
10.	Riverside, CA	2,907,000
11.	Dallas, TX	2,898,000
12.	Minneapolis, MN	2,688,000
13.	Nassau, NY	2,651,000
14.	San Diego, CA	2,621,000
15.	Orange Co., CA	2,543,000
16.	St. Louis, MO	2,536,000
17.	Phoenix, AZ	2,473,000
18.	Baltimore, MD	2,458,000
19.	Pittsburgh, PA	2,402,000
20.	Akron, OH	2,222,000
21.	Oakland, CA	2,182,000
22.	Seattle, WA	2,180,000
23.	Tampa, FL	2,157,000
24.	Miami, FL	2,025,000
25.	Newark, NJ	1,934,000
26.	Denver, CO	1,796,000
27.	Portland, OR	1,676,000
28.	Kansas City, KS	1,647,000
29.	San Francisco, CA	1,646,000
30.	Cincinnati, OH	1,581,000
31.	San Jose, CA	1,557,000
32.	Norfolk, VA	1,529,000
33.	Fort Worth, TX	1,464,000
34.	Indianapolis, IN	1,462,000
35.	Milwaukee, WI	1,456,000
36.	Sacramento, CA	1,441,000
37.	San Antonio, TX	1,437,000
38.	Columbus, OH	1,423,000
39.	Fort Lauderdale, FL	1,383,000
40.	Orlando, FL	1,361,000
41.	New Orleans, LA	1,309,000
42.	Bergen, NJ	1,304,000
43.	Charlotte, NC	1,260,000
44.	Buffalo, NY	1,189,000
45.	Salt Lake City, UT	1,178,000
46.	Hartford, CT*	1,156,000
47.	Providence, RI*	1,131,000
48.	Greensboro, NC	1,107,000
49.	Rochester, NY	1,090,000
50.	Las Vegas, NV	1,076,000
51.	Nashville, TN	1,070,000
52.	Middlesex, NJ	1,069,000
53.	Memphis, TN	1,056,000
54.	Monmouth, NJ	1,035,000
55.	Oklahoma City, OK	1,007,000
56.	Grand Rapids, MI	985,000
57.	Louisville, KY	981,000
58.	Jacksonville, FL	972,000
59.	Raleigh, NC	965,000
60.	Austin, TX	964,000
61.	Dayton, OH	956,000
62.	West Palm Beach, FL	955,000
63.	Richmond, VA	917,000
64.	Albany, NY	875,000
65.	Honolulu, HI	874,000
66.	Birmingham, AL	872,000
67.	Greenville, SC	837,000
68.	Fresno, CA	835,000
69.	Syracuse, NY	754,000
70.	Tulsa, OK	743,000
71.	Tucson, AZ	732,000
72.	Ventura, CA	703,000
73.	Cleveland, OH	677,000
74.	El Paso, TX	665,000
75.	Omaha, NE	663,000
76.	Albuquerque, NM	646,000
77.	Tacoma, WA	638,000
78.	Scranton, PA	637,000

79.	Knoxville, TN	631,000
80.	Gary, IN	620,000
81.	Toledo, OH	614,000
82.	Allentown, PA	612,000
83.	Harrisburg, PA	610,000
84.	Bakersfield, CA	609,000
85.	Youngstown, OH	604,000
86.	Springfield, MA*	584,000
87.	Baton Rouge, LA	558,000
88.	Jersey City, NJ	552,000
89.	Wilmington, DE	539,000
90.	Little Rock, AR	538,000
91.	New Haven, CT*	527,000
92.	Charleston, SC	522,000
93.	Sarasota, FL	518,000
94.	Stockton, CA	518,000
95.	Ann Arbor, MI	515,000
96.	Mobile, AL	512,000
97.	Wichita, KS	507,000
98.	Columbia, SC	486,000
99.	Vallejo, CA	483,000
100.	Fort Wayne, IN	469,000

* Population figures for New England's city and town based MSAs are for 1992, while others are for 1994.

APPENDIX E - DESCRIPTION OF NUMBER PORTABILITY METHODS

1. Database methods

1. Location Routing Number (LRN). Under AT&T's LRN proposal, a carrier seeking to route a call to a ported number queries or "dips" an external routing database, obtains a ten-digit location routing number for the ported number, and uses that location routing number to route the call to the end office switch which serves the called party.[1] The carrier dipping the database may be the originating carrier, the terminating carrier, or the N-1 carrier (the carrier prior to the terminating carrier). Under the LRN method, a unique location routing number is assigned to each switch. For example, a local service provider receiving a 7-digit local call, such as 887-1234, would examine the dialed number to determine if the NPA-NXX is a portable code.[2] If so, the 7 digit dialed number would be prefixed with the NPA and a 10-digit query (e.g., 679-887-1234) would be launched to the routing database. The routing database then would return the LRN (e.g., 679-267-0000) associated with the dialed number which the local service provider uses to route the call to the appropriate switch. The local service provider then would formulate an SS7 call set up message with a generic address parameter, along with the forward call indicator set to indicate that the query has been performed, and route the call to the local service provider's tandem for forwarding.[3]

2. LRN is a "single-number solution" because only one number (i.e., the number dialed by the calling party) is used to identify the customer in the serving switch.[4] Each switch has one network address -- the location routing number. The record and the Industry Numbering Committee (INC) indicate that LRN supports custom local area signalling services (CLASS), emergency services, and operator and directory services, but may result in some additional post-dial delay.[5] LRN can support location

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[1] See Notice, 10 FCC Rcd at 12364. See also AT&T Comments at 18-23; AT&T February 6, 1996 Ex Parte Filing at 6-9.

[2] An NXX code, or central office code, is the second three digits of a ten digit telephone number and identifies the service provider switch that serves a specific customer location. See Notice, 10 FCC Rcd at 12354.

[3] This description of call flow employing the LRN method was adapted from the Proposed Final Draft on number portability produced by the Industry Numbering Committee. See INC Report at 49-51.

[4] AT&T Comments at 20; CA LNP Task Force Report at 5; INC Report at 45.

[5] INC Report at 45.

and service as well as service provider portability.[6] Finally, LRN supports wireless-wireline and wireless-wireless service provider portability.[7]

3. Carrier Portability Code (CPC). Under CPC, each local service provider within a given area would be assigned a three-digit Carrier Portability Code (CPC).[8] The database serving that area would contain all the telephone numbers that have been transferred from one carrier to another and their corresponding CPCs. A carrier querying the database for purposes of routing a call to a customer that has transferred his or her telephone number would know from the NXX code of the dialed number that the telephone number may have been transferred to another local service provider. The carrier would query a database serving that area, which would return to the carrier a three-digit CPC corresponding to the service provider serving the dialed number.[9] The carrier then would route the call according to the carrier portability code and the dialed NXX code. For example, an IXC delivering a call to the 301 NPA would query the database serving the 301 area code. In return, that database would transmit back to the IXC a ten-digit number consisting of the three-digit NPA replaced with the CPC for the LEC serving that customer, plus the customer's seven-digit telephone number. The IXC then would route the call to the location pre-designated by the terminating carrier based on the six-digit CPC-NXX. Similarly, carriers providing service within the area would query the same database to identify the local service provider responsible for handling specific local calls.[10]

4. AT&T asserts that CPC is compatible with LRN by permitting adoption of switch trigger mechanisms, switch interfaces, signalling translations, and the development of an SMS to an LRN environment.[11] CPC supports an N-1 call processing scenario, avoids routing calls through incumbent LEC networks, permits carriers to own or provide for their own routing databases, and supports vertical features.[12] On the other hand, the CPC method essentially uses two NPA codes, and therefore precludes use of the second

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[6] Id. at 46.

[7] Id. at 45-58; CA LNP Task Force Report at 5-9.

[8] CPC was developed by MCI Metro and its multi-vendor task forces, which included Siemens, Nortel, DSC, and Tandem. INC Report at 80. See also Notice, 10 FCC Rcd at 12363-64; MCI Comments at 10-15.

[9] Carrier portability codes would identify competing providers of local telephone services within each NPA. The same codes could be used to represent the same company or a different company in other NPAs. INC Report at 80-97. See also CA LNP Task Force Report at 13-14; Notice, 10 FCC Rcd at 12363-64.

[10] This description of call flow employing the CPC method was adapted from the Proposed Final Draft on number portability produced by the Industry Numbering Committee. See INC Report at 83.

[11] AT&T Comments at 31-32.

[12] Id. at 31; INC Report at 81.

NPA code for other purposes.[13] CPC supports location portability to a limited extent.[14] It is not clear how operator services, such as busy line verification, collect calls, calling card calls, and third-party billing, would be handled under this proposal.[15] Routing telephone calls based on carrier portability codes likely will require, among other things, that the software be modified in each network switch located in the NPA within which this system is deployed. It also would require modification to the Local Exchange Routing Guide (LERG) on the same NPA-basis so that the LERG contains routing data based on carrier portability codes.

5. Release-to-Pivot (RTP). Carriers using RTP attempt to complete all calls as they presently do to a switch that is assigned a given NPA-NXX. If the dialed number has not been ported, the call will be completed exactly as it is currently. If the dialed number has been ported from the switch (the "release" switch), the call will be released back to a previous switch (the "pivot" switch) in the call path along with rerouting information (RI). The pivot switch uses the RI to reroute the call to the new switch. For example, a switch with pivot capabilities would determine whether a particular call should proceed to a release capable switch. The pivot switch would formulate an initial address message (IAM) containing a capability indicator informing the release switch that the call can be released back to the pivot switch. Once the release switch receives the call, it would use a translation table to determine whether the called number has been ported. If it has, the switch then would formulate a release message containing a cause value (RTP) and an LRN for delivery back to the pivot switch. The LRN would be included in the release message as a redirection number. The pivot switch then would access a translation table and determine routing based on the first six digits of the LRN. A new IAM then would be formulated and the call redirected to the appropriate switch.[16]

6. RTP must traverse the existing LEC network by means of switches equipped with release and pivot functionality and an internal database for call setup.[17] RTP using the location routing number to route calls is a single-number solution.[18] RTP

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[13] This is so because MCI Metro's method would replace the dialed NPA code with the three-digit CPC, which effectively removes that code from the pool of available NPA codes. Bell Atlantic Comments at 13-15; CA LNP Task Force Report at 14; INC Report at 82.

[14] Compare GTE Comments at 19 (CPC does not support location portability) with INC Report at 81 (CPC supports location portability within a rate center).

[15] NYNEX Reply Comments at 6-7; SBC Communications Reply Comments at 15; MCI Comments at 14. See also INC Report at 92-93.

[16] This description of call flow employing the RTP method was adapted from the Proposed Final Draft on number portability produced by the Industry Numbering Committee. See INC Report at 98-99.

[17] Id. at 98; CA LNP Task Force Report at 10. See also AT&T Reply Comments at 13-14.

[18] CA LNP Task Force Report at 11.

does not involve the assignment of "pseudo numbers," which minimizes number exhaust.[19] RTP should not interfere with emergency services or operator and directory services, but may increase call setup time and post-dial delay.[20] RTP can support service as well as service provider portability, but it is unclear to what extent RTP can support location portability.[21] Finally, RTP supports portability between wireless carriers, but it is unclear whether it can support wireless-wireline portability.[22] Some parties believe that RTP is not appropriate for long-term implementation of service provider portability because of its reliance on the networks of incumbent LECs, the potential for post-dial delay, and its inefficient use of signaling links.[23]

7. Query on Release (QOR). Also known as "Look Ahead," QOR is similar to RTP in that queries are performed only for calls to ported numbers.[24] However, QOR is different in several respects. Prior to querying a routing database, the switch from which the call originates reserves the appropriate call path through the SS7 network and attempts to complete a call to the switch where the NPA-NXX of the dialed number resides. If the number is ported, the call is released back to a previous switch in the call path, which performs a query to determine the LRN of the new serving switch. The call then is routed to the serving switch. This method differs from RTP in that when a number has been ported from the Release switch, the previous switch in the call path will query the database to obtain the routing information instead of that information being supplied by the Release switch. In other words, the switch that redirects the call also performs the query, thus eliminating the need for the carrier to which the number was originally assigned to provide routing information.[25] Pacific Bell indicates that QOR can support both location and service portability, since any call can be released back and routed through a non-incumbent provider's network.[26]

8. Local Area Number Portability (LANP). Under this proposal, each customer is assigned a ten-digit customer number address (CNA) which is mapped to a unique ten-digit network node address (NNA), both of which are stored in routing

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[19] Pacific Bell Comments at 19.

[20] CA LNP Task Force Report at 11; INC Report at 100-03.

[21] CA LNP Task Force Report at 11; INC Report at 100.

[22] CA LNP Task Force Report at 11.

[23] AT&T Reply Comments at 13-14; CCTA Further Comments at 5.

[24] Pacific Bell Further Comments at 4 n.10.

[25] Id. at 4 & n.10.

[26] Id. at 7 n.18.

databases.[27] A service provider receives the called number (the CNA), queries a routing database, translates the called number from its CNA to its associated NNA, uses the NNA to route the call, and passes the NNA to the serving end office which, based on the NNA, terminates the call to the appropriate line or trunk. Unlike LRN, which assigns a unique location routing number to each switch, LANP requires a separate NNA for each CNA. The California Local Number Portability Task Force indicates that LANP does not result in post-dial delay or require changes in the wireless networks.[28] In addition, LANP supports service provider, service, and unrestricted location portability.[29] Moreover, the CNA can be disassociated from the switches and moved to a common pool of numbers for reassignment.[30] However, LANP may impact emergency services, as the information displayed at the Public Safety Answering Point (PSAP) will initially be the NNA rather than the CNA.[31] Some parties and state commissions believe that the LANP method is not a viable option for long-term number portability because it is too complicated to implement.[32]

9. Non-Geographic Number (NGN). Under this approach, which overlays the existing LEC network, a ported subscriber is assigned a non-geographic number (NGN) and a geographic number (GN) that indicates the customer's physical location and the serving central office. If the customer moves or changes local service providers, the GN -- but not the NGN -- changes, similar to 800 service. When the NGN is dialed, the NGN is translated into the GN through a database query, and the call is routed based on the GN as is done today. All other calls are processed as they are currently. A database dip is required only for calls to ported numbers.[33] Ported calls will experience longer call setup delay and post-dial delay.[34] Emergency and operator and directory services are not affected.[35] This approach supports service provider, service, and unlimited location portability.[36] On the other hand, NGN strains numbering resources by forcing all ported

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[27] See Notice, 10 FCC Rcd at 12364-65; U.S. Intelco Comments at 6-8.

[28] CA LNP Task Force Report at 16.

[29] Id.

[30] Id.; INC Report at 65-66; Notice, 10 FCC Rcd at 12364-65.

[31] CA LNP Task Force Report at 15.

[32] AT&T Comments at 26; Bell Atlantic Comments at 14-15; BellSouth Comments at 30-31.

[33] GTE Comments at 9-12; CA LNP Task Force Report at 17.

[34] GTE Comments at 10, 16 INC Report at 104, 107.

[35] GTE Comments at 13, 18 INC Report at 109.

[36] GTE Comments at 16-17; INC Report at 111.

customers to limited non-geographic numbers, requires a nationwide cut-over, and requires an initial change of telephone numbers to obtain portability.[37]

2. Non-database methods

10. Remote Call Forwarding (RCF). RCF is an existing LEC service that redirects calls in the telephone network and can be adapted to provide a semblance of service provider number portability.[38] If a customer transfers his or her existing telephone number from Carrier A to Carrier B, any call to that customer is routed to the central office switch operated by Carrier A that is designated by the NXX code of the customer's telephone number. Carrier A's switch routes that call to Carrier B, translating the dialed number into a number with an NXX corresponding to a switch operated by Carrier B. Carrier B then completes the routing of the call to its customer. The change in terminating carriers is transparent to the calling party. Disadvantages of RCF include the following: (1) it requires the use of two, ten-digit telephone numbers and thus strains number plan administration and contributes to area code exhaust; (2) it generally does not support several custom local area signalling services (CLASS), such as caller ID, and may degrade transmission quality, because it actually places a second call to a transparent telephone number; (3) it can handle only a limited number of calls to customers of the same competing service provider at any one time; (4) it may result in longer call set-up times; (5) it requires the use of the incumbent LEC network for routing of calls; (6) it may enable incumbents to access competitors' proprietary information; (7) it may result in more complicated resolution of customer complaints; (8) the potential for call blocking may be increased; and (9) it may impose substantial costs upon new entrants.[39]

11. Flexible Direct Inward Dialing (DID). DID works similarly to RCF, except the original service provider routes calls to the dialed number over a dedicated facility to the new service provider's switch instead of translating the dialed number to a new number.[40] DID has many of the same limitations as RCF, although DID can process more simultaneous calls to a competing service provider.[41]

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[37] AT&T Comments at 27-28; AT&T Reply Comments at 16-17; MCI Reply Comments at 16-17.

[38] See Notice, 10 FCC Rcd at 12369.

[39] See id.; Sprint Comments at 17; AT&T Reply Comments at 11-12; Cablevision Lightpath Reply Comments at 10; Teleport Comments at 7; MCI Comments at 20-22; Ad Hoc Telecommunications Users Committee Reply Comments at 5.

[40] See Notice, 10 FCC Rcd at 12369.

[41] See id.; Sprint Comments at 17; AT&T Reply Comments at 12-14; Cablevision Lightpath Reply Comments at 10; Teleport Comments at 7; MCI Comments at 20-22; Ad Hoc Telecommunications Users Committee Reply Comments at 5.

12. Other. We are aware of three derivatives of RCF and DID, all of which require routing of all incoming calls to the terminating switch identified by the NXX code of the dialed phone number, and involve the loss of CLASS functionalities. Unlike RCF and DID, they use LEC tandem switches to aggregate calls to a particular competing service provider before those calls are routed to that provider.[42] In addition, Cablevision Lightpath advocates use of Trunk Route Indexing (TRI), which it claims routes calls directly to the competitor's interconnection facilities and supports CLASS features.[43] Finally, Directory Number Route Indexing (DNRI) is a method which first routes incoming calls to the switch to which the NPA-NXX code originally was assigned.[44] DNRI then routes ported calls to the new service either through a direct trunk or by attaching a temporary "pseudo NPA" to the number and using a tandem, depending on availability.

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[42] See Notice, 10 FCC Rcd at 12370. Under the first RCF/DID derivative method, enhanced remote call forwarding (ERCF), a call is routed to the LEC switch corresponding to the NXX code of the dialed telephone number. The dialed number then is assigned an ERCF "translation" which consists of the same number preceded by a 10XXX prefix. The XXX is the carrier ID code assigned to the competitive exchange provider. This 12 to 15-digit number (telephone number with 10XXX prefix) is sent to a tandem switch that recognizes the 5-digit prefix, strips it out, and routes the call to the competitive exchange provider's switch.

A second derivative method, route index/portability hub, also requires the call to be routed to the LEC switch corresponding to the NXX code of the dialed number. The LEC switch inserts a 1XX prefix onto the front of the telephone number. This 1XX code identifies the competitive service provider to which the call will be routed. This 10 to 13-digit number (telephone number with the 1XX prefix) is transmitted to the LEC tandem switch to which the competitive exchange provider is connected. The tandem switch strips the 1XX prefix from the dialed number, and routes the call to the competitive exchange provider's switch, from where the routing of the call is terminated

A third derivative method, hub routing with AIN, is similar to route index/portability hub, except that rather than the receiving LEC switch interpreting the routing information, the LEC switch interrogates a remote database that contains routing information. Having obtained this routing information from the database, the LEC switch routes the call via a tandem switch to the terminating competitive exchange provider's switch. This method may require that the LEC's tandem switch be equipped with the ability to interrogate a database. Id. at 12370 n.56.

[43] Cablevision Lightpath Reply Comments at 7-8.

[44] USTA April 4, 1996 Ex Parte Letter.

APPENDIX F - IMPLEMENTATION SCHEDULE

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

10/97-12/97		1/98-3/98		4/98-6/98	
Chicago, IL	3	Detroit, MI	6	Indianapolis, IN	34
		Akron, OH	20	Milwaukee, WI	35
				Columbus, OH	38
Philadelphia, PA	4	Washington, DC	5	Pittsburgh, PA	19
		Baltimore, MD	18	Newark, NJ	25
				Norfolk, VA	32
Atlanta, GA	8	Miami, FL	24	New Orleans, LA	41
		Fort Lauderdale, FL	39	Charlotte, NC	43
		Orlando, FL	40	Greensboro, NC	48
				Nashville, TN	51
				Las Vegas, NV	50
		Cincinnati, OH	30		
		Tampa, FL	23		
New York, NY	2	Boston, MA	9	Nassau, NY	13
				Buffalo, NY	44
Los Angeles, CA	1	Riverside, CA	10	Orange Co, CA	15
		San Diego, CA	14	Oakland, CA	21
				San Francisco, CA	29
				Rochester, NY	49
Houston, TX	7	Dallas, TX	11	Kansas City, KS	28
		St. Louis, MO	16	Fort Worth, TX	33
				Hartford, CT	46
Minneapolis, MN	12	Phoenix, AZ	17	Denver, CO	26
		Seattle, WA	22	Portland, OR	27