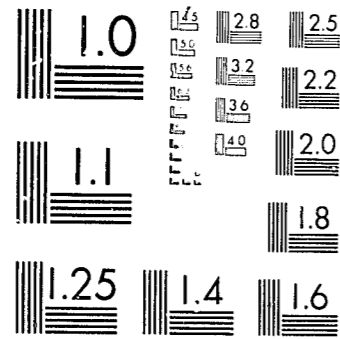


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SYSTECH REPORT NO. 3-20

A SUMMARY OF '911'  
SYSTEMS PLANNING IN  
NORTH CAROLINA

SUBMITTED TO:

Mr. William J. Lynch  
Communications/911 Coordinator

SYSTECH CORPORATION

SYSTECH REPORT NO. 3-20

A SUMMARY OF '911'  
SYSTEMS PLANNING IN  
NORTH CAROLINA

JANUARY 1981

SUBMITTED TO:

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Communications/911 Coordinator  
Governor's Crime Commission  
Department of Crime Control and Public Safety  
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## I. INTRODUCTION

NINE-ONE-ONE (911) IS THE THREE DIGIT TELEPHONE NUMBER THAT HAS BEEN DESIGNATED FOR PUBLIC USE THROUGHOUT THE UNITED STATES IN REPORTING AN EMERGENCY AND REQUESTING EMERGENCY ASSISTANCE. IT IS INTENDED AS A NATIONWIDE TELEPHONE NUMBER GIVING THE PUBLIC DIRECT ACCESS TO AN EMERGENCY ANSWERING CENTER. UNDER THE 911 CONCEPT, EVERYONE, REGARDLESS OF THE NATURE OF THE EMERGENCY, WOULD DIAL '911'. SINCE THE CITIZEN IS NO LONGER FACED WITH THE DECISION OF WHAT AGENCY HAS JURISDICTION AND WHICH NUMBER TO CALL, THE TIME BETWEEN RECOGNITION OF AN EMERGENCY AND REPORTING THE EMERGENCY CAN BE CONSIDERABLY SHORTENED.

LOCAL GOVERNMENTS AND CITIZENS IN NORTH CAROLINA ARE BECOMING INCREASINGLY INTERESTED IN THE 911 CONCEPT. TWELVE (12) COUNTY AND MUNICIPAL 911 SYSTEMS ARE, AS OF THE DATE OF THIS REPORT, OPERATIONAL IN NORTH CAROLINA AND MORE ARE IN THE PROCESS OF IMPLEMENTATION. THE NORTH CAROLINA DEPARTMENT OF CRIME CONTROL AND PUBLIC SAFETY, DIVISION OF CRIME CONTROL, PUBLISHED IN DECEMBER 1978 A DOCUMENT ENTITLED 'PLANNING FOR 911'. THE PLANNING GUIDE IDENTIFIES THE ISSUES INVOLVED IN PLANNING AND IMPLEMENTING A 911 SYSTEM, SUGGESTS ITEMS THAT WILL REQUIRE MUTUAL AGREEMENTS AMONG THE LOCAL GOVERNMENTS AND AGENCIES INVOLVED, AND PROVIDES EXAMPLES OF INTERAGENCY AGREEMENTS, ORGANIZATIONAL STRUCTURES, AND PLANNING DATA REQUIREMENTS.

BECAUSE OF THE INCREASED INTEREST IN 911, THE DEPARTMENT OF CRIME CONTROL AND PUBLIC SAFETY, DIVISION OF CRIME CONTROL, DECIDED TO EXPAND UPON THE PLANNING GUIDE. THE RESULTING PROJECT YIELDED INDIVIDUAL 911 PLANS FOR EACH COUNTY IN THE STATE, WITH SPECIFIC RECOMMENDATIONS FOR HANDLING MANY OF THE ISSUES OF 911 IMPLEMENTATION. THESE PLANS ARE ORGANIZED BY PLANNING REGION AND ARE CONTAINED IN SYSTECH REPORTS NO. 3-21 THROUGH 3-38, ONE DOCUMENT FOR EACH OF THE EIGHTEEN PLANNING REGIONS IN THE STATE.

THIS DOCUMENT SUMMARIZES THE INFORMATION CONTAINED IN THE EIGHTEEN REGIONAL DOCUMENTS. SECTION II CONTAINS A SUMMARY OF THE PLANNING DATA FROM THE COUNTY PLANS AND SECTION V SUMMARIZES THE RECOMMENDATIONS FROM THE COUNTY PLANS. IN ADDITION, THIS SUMMARY DOCUMENT ADDRESSES THE SYSTEM ALTERNATIVES, DEFINITIONS,

STANDARDS, REQUIREMENTS, AND CONFIGURATIONS THAT ARE COMMON TO 911 PLANNING FOR ALL COUNTIES.

THE TECHNICAL AND COST INFORMATION CONTAINED IN SECTION IV OF THIS DOCUMENT IS BASED ON THE LATEST INFORMATION AVAILABLE, CURRENT TARIFFS, AND THE STATE-OF-THE-ART AS OF THE DATE OF THIS REPORT. THE RECOMMENDATIONS IN THE COUNTY PLANS ARE ALSO MADE ON THIS BASIS. IT IS IMPORTANT FOR THE READER TO REALIZE THAT THE INFORMATION IN SECTION IV OF THIS DOCUMENT--SUCH AS THE SPECIAL FEATURES AVAILABLE, THE TYPES OF SYSTEMS AND EQUIPMENT REQUIRED TO PROVIDE THESE FEATURES, AND THE COST INFORMATION FOR 911 SYSTEMS--IS NOT 'SET IN CONCRETE'. IT IS POSSIBLE THAT CONTINUING IMPROVEMENT IN TECHNOLOGY IN THE AREA OF 911 SYSTEMS MAY CHANGE THE OPTIONS AVAILABLE TO LOCAL GOVERNMENTS DESIRING 911 SYSTEMS IN THE FUTURE.

## II. SUMMARY OF PLANNING INFORMATION

PRIOR TO DEVELOPING 911 PLANS FOR EACH NORTH CAROLINA COUNTY, CERTAIN PLANNING INFORMATION WAS COMPILED; INCLUDING TELEPHONE COMPANY EXCHANGE BOUNDARIES, CAPABILITIES, AND 911 TARGET DATES, AND LOCATIONS AND CAPABILITIES OF EXISTING DISPATCH/ANSWERING POINTS. DETAILED PRESENTATIONS OF THIS AND OTHER PLANNING INFORMATION CAN BE FOUND IN THE INDIVIDUAL COUNTY PLANS. A STATEWIDE SUMMARY IS PRESENTED BELOW.

### A. TELEPHONE COMPANY EXCHANGE BOUNDARIES

FIGURE II-1 OUTLINES THE BOUNDARIES OF THE 433 EXCHANGES SERVING NORTH CAROLINA COUNTIES. THERE ARE A TOTAL OF 30 TELEPHONE COMPANIES SERVING PARTS OF THE STATE, INCLUDING A TENNESSEE EXCHANGE OVERLAPPING INTO CHEROKEE COUNTY, AND A VIRGINIA COMPANY SERVING KNOTTS ISLAND IN CURRITUCK COUNTY.

### B. SUMMARY OF TELEPHONE COMPANY INFORMATION

FIGURE II-2 SUMMARIZES PERTINENT INFORMATION CONCERNING THE TELEPHONE COMPANIES PROVIDING SERVICE IN NORTH CAROLINA. THE PROJECTED DATES FOR 911 AVAILABILITY ARE TAKEN FROM THE TELEPHONE COMPANY SURVEY COMPLETED BY THE CRIME CONTROL DIVISION SEVERAL YEARS AGO. THE ACQUISITION OF PLANNING INFORMATION DURING THIS PROJECT INCLUDED UPDATING AND COMPLETING THE PREVIOUS SURVEY. IN SEVERAL CASES, TELEPHONE COMPANIES HAVE UPGRADED THEIR PREVIOUS SCHEDULES. COMPLETE UPDATED INFORMATION ON TELEPHONE COMPANY CAPABILITIES IS CONTAINED IN THE INDIVIDUAL COUNTY PLANS. A SUMMARY OF ANTICIPATED 911 AVAILABILITY BY COUNTY IS ILLUSTRATED ON THE MAP IN FIGURE II-3. IN THIS MAP, 911 AVAILABILITY BY COUNTY IS ASSESSED ON THE BASIS OF TELEPHONE COMPANY CAPABILITY TO PROVIDE 911 IN THE CENTRAL OFFICES IN THAT COUNTY. EXCHANGE OVERLAP IS NOT CONSIDERED IN THE ASSESSMENT, NOR ARE POLITICAL OR ORGANIZATIONAL FACTORS.

### C. EXISTING 911 SYSTEMS IN NORTH CAROLINA

THERE ARE A NUMBER OF COUNTY AND MUNICIPAL 911 TELEPHONE SYSTEMS CURRENTLY OPERATIONAL IN NORTH CAROLINA, AND IMPLEMENTATION IS UNDERWAY FOR SEVERAL MORE. FIGURE II-4 LISTS THOSE SYSTEMS THAT ARE CURRENTLY OPERATIONAL OR WHERE AN ORDER FOR SERVICE HAS BEEN PLACED WITH THE TELEPHONE COMPANIES. FIGURE II-4 DESCRIBES FOR EACH SYSTEM THE 911 SERVICE AREA, OPERATIONAL

FIGURE II-2  
SUMMARY OF TELEPHONE COMPANY INFORMATION

TELEPHONE COMPANY	TELCO. CONTACT FOR 911 INFORMATION	NO. OF N.C. EXCHANGES	COUNTY(IES) SERVED	911 TARGET DATE <sup>1</sup>
Atlantic Telephone Membership Corporation	Mr. Huttie, Engineer 919/754-4311	6	Brunswick	Not provided
Barnardsville Telephone Company	Jack Gamson, General Manager 704/626-2767	1	Buncombe	Now
Carolina Telephone and Telegraph	Lynwood Langley 919/823-9603  (For 911 service information, counties should contact the District Commercial Manager at the local office.)	145	Beaufort Bertie Bladen Camden Carteret Chatham Chowan Columbus Craven Cumberland Currituck Dare Duplin Edgecombe Forsyth Franklin Gates Granville Greene Guilford Halifax Harnett Hertford Hoke Hyde Johnston	1981-1992 Now-1997 1984-1992 Available now Now-1996 Now-1986 Available now 1981-1994 Now-1984 Now-1983 Available now 1984-1994 Now-1996 Now-1988 1983 1981-1994 Available now 1982 1983 1983 1981-1994 1986-1996 1982-1984 1984 1981-1994 1980-1994
(continued)-				

<sup>1</sup> From Crime Control Division Telco. Survey. A range of dates indicates that the projected dates in each exchange are different.

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FIGURE II-2 CONTINUED

TELEPHONE COMPANY	TELCO. CONTACT FOR 911 INFORMATION	NO. OF N.C. EXCHANGES	COUNTY (IES) SERVED	911 TARGET DATE <sup>1</sup>
Central Telco. (continued)			Orange Person Randolph Rockingham Stokes Surry Wilkes Yadkin	In service 1985-1987 Now-1988 1981-1986 1982-1998 1983-1990 1981-1983 1990
Citizens Telephone Company	C.W. Pickelsimer, Jr. 704/883-9011	4	Transylvania	1980-1982
Concord Telephone Company	Jerry McClellan 704/782-4311	9	Cabarrus Rowan Stanly	No date specified for these counties.
Continental Telephone Company of Virginia	John Perkinson 804/427-9911	1	Currituck	No date specified.
Ellerbe Telephone Company	J.M. Bennett 919/652-2221	1	Richmond	No date specified.
General Telephone Company	W.J. Jordan 919/471-5569	7	Durham Granville Union	In service In service 1983
Heins Telephone Company	Harry Osborn 919/775-7123	3	Lee Harnett	1981 1981
Lexington Telephone Company	William Harris 704/249-9900	3	Davidson	No date specified.

<sup>1</sup> From Crime Control Division Telco. Survey. A range of dates indicates that the projected dates in each exchange are different.

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FIGURE II-2 CONTINUED

TELEPHONE COMPANY	TELCO. CONTACT FOR 911 INFORMATION	NO. OF N.C. EXCHANGES	COUNTY (IES) SERVED	911 TARGET DATE <sup>1</sup>
Mebane Home Telephone Company, Inc.	W.R. Hupman 704/563-9111	1	Alamance/Randolph	In service
Mid-Carolina Telephone Company	Archie Thomas 704/847-6911	27	Anson Davidson Forsyth Iredell Polk Rowan Stokes Union	No dates specified for these counties.
South Central Bell (Tennessee)	Not Available	1	Cherokee	No date specified.
North State Telephone Company	J.P. Harman 704/885-5121	3	Davidson Guilford Randolph	No dates specified for these counties.
Piedmont Telephone Membership Corporation	E.R. Perrell 704/787-5787	2	Davidson	No date specified.
Pineville Telephone Company	C.R. Yandell 704/889-8821	1	Mecklenburg	In service
Randolph Telephone Company	W.M. Fitzgerald 704/622-9012	1	Randolph	Available now
Randolph Telephone Membership Corporation	Bill Wilsey 704/332-2615	7	Chatham Davidson Moore Randolph	No dates specified for these counties.

<sup>1</sup> From Crime Control Division Telco. Survey. A range of dates indicates that the projected dates in each exchange are different.

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FIGURE II-2 CONTINUED

TELEPHONE COMPANY	TELCO. CONTACT FOR 911 INFORMATION	NO. OF N.C. EXCHANGES	COUNTY(IES) SERVED	911 TARGET DATE <sup>1</sup>
Saluda Mountain Telephone Company	Ed Leland 704/749-3601	1	Polk	No date specified.
Sandhill Telephone Company	Archie Thomas 704/847-6911	2	Moore	No date specified.
Service Telephone Company, Inc.	Lucille K. Cutrell 919/649-7300	1	Columbus	No date specified.
Skyline Telephone Membership Corporation	J.H. McGuire 919/246-7141	12	Alleghany Ashe Avery Watauga	No date spec. No date spec. No date spec. 1980-1995
Southern Bell Telephone and Telegraph	Heyward Maynard 919/836-4126	93	Alamance Alexander Avery Brunswick Buncombe Burke Caldwell Caswell Catawba Cleveland Forsyth Gaston Guilford Haywood Henderson Iredell Johnston Lincoln Mecklenburg	1980-1995 1987-1997 In service 1984-1986 1980-1984 No date spec. 1981-1982 1993-1999 No date spec. 1980-1996 In service 1982-1994 1982-1994 1983-1987 1980 1982-1995 1992 In service In service
(continued)				

<sup>1</sup> From Crime Control Division Telco. Survey. A range of dates indicates that the projected dates in each exchange are different.

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FIGURE II-2 CONTINUED

TELEPHONE COMPANY	TELCO. CONTACT FOR 911 INFORMATION	NO. OF N.C. EXCHANGES	COUNTY(IES) SERVED	911 TARGET DATE <sup>1</sup>
Southern Bell T&T (continued)			Mitchell New Hanover Orange Pender Richmond Robeson  Rockingham Rowan Rutherford Scotland Wake Watauga Wayne	1984 1981-1997 In service 1981-1993 1983 Lumberton and Red Springs in service 1983 1982 1979-1999 1999 1980-1991 1989 1992-1995
Star Telephone Membership Corporation	O.H. Duncan 919/564-4194	10	Bladen Sampson	1986-1996 No date spec.
Surry Telephone Membership Corporation	Mike Stanley 919/386-8156	6	Surry	1980-1982
Tri-County Telephone Membership Corporation	Mr. Smith 919/964-4211	3	Beaufort	No date specified.
Western Carolina Telephone Company  (continued)	Ken English 704/586-5233	26	Buncombe Cherokee Clay Graham Jackson McDowell Macon Madison	No dates specified for these counties.

<sup>1</sup> From Crime Control Division Telco. Survey. A range of dates indicates that the projected dates in each exchange are different.

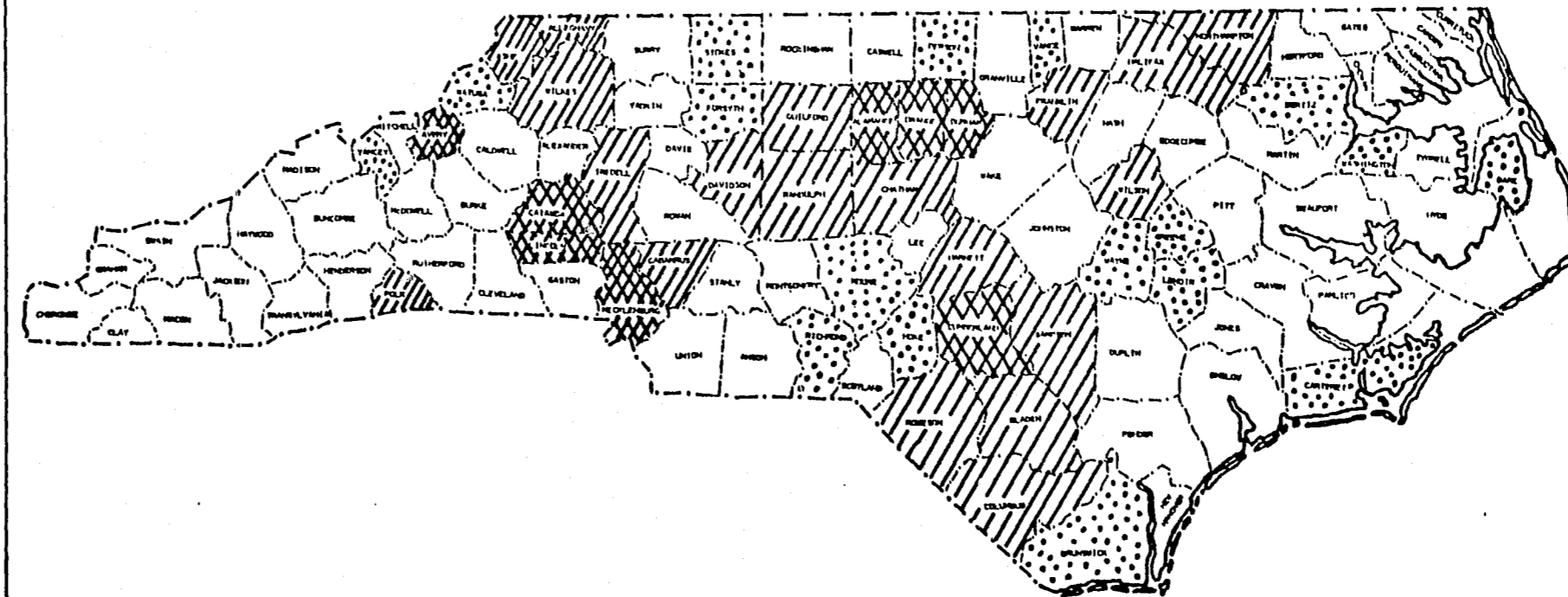
FIGURE II-2 CONTINUED

TELEPHONE COMPANY	TELCO. CONTACT FOR 911 INFORMATION	NO. OF N.C. EXCHANGES	COUNTY(IES) SERVED	911 TARGET DATE <sup>1</sup>
Western Carolina Telco. (continued)			Mitchell Swain Yancey	No date specified for these counties.
Wilkes Telephone Membership Corporation	Clifton Guffey 919/973-3103	4	Wilkes	No date specified.
Yadkin Valley Telephone Membership Corporation	William Crownfield 919/463-5022	10	Davie Iredell Yadkin	No dates specified for these counties.
	TOTAL EXCHANGES -	<u>433</u>		

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<sup>1</sup> From Crime Control Division Telco. Survey. A range of dates indicates that the projected dates in each exchange are different.

FIGURE II-3  
 SUMMARY OF 911 AVAILABILITY  
 IN NORTH CAROLINA COUNTIES




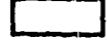


-  EXISTING SYSTEMS - 911 is currently operational or an order has been placed for service
-  911 can be provided in 0-24 months
-  911 available within 5 years
-  911 availability undetermined at this time; likely more than 5 years

FIGURE II-4

911 SYSTEMS IN NORTH CAROLINA--  
OPERATIONAL OR IMPLEMENTATION UNDERWAY

COUNTY	911 SERVICE AREA	OPERATIONAL STATUS	NO. OF EXCHANGES	PSAP LOCATION
Alamance	Countywide	On order - system completion by January, 1982	2	Alamance County Emergency Communications Center
Avery	County (Newland exchange only)	Operational	1	Avery County Sheriff Department
Catawba	Countywide	On order - system completion by July 1982	8	Catawba County Communications Center
Cumberland	County-all except City of Fayetteville	Operational	Fayetteville Exchange-8 central off.	County Law Enforcement Center (Dept. of Emergency Services)
Durham	Countywide	Operational	2*	Emergency Operations Center *Multiple central offices
Edgecombe	City of Rocky Mount-police calls only	Operational	1	Rocky Mount Police Department
Forsyth	City of Winston-Salem only	Operational	1	Winston-Salem Public Safety Communications Center
Granville	Town of Butner only Town of Creedmoor only	Operational Operational	1 1	Butner Police Department Creedmoor Police Dept.
Lincoln	Countywide	Operational	3	Lincoln County Communications Center
Mecklenburg	Countywide	Operational	13	Charlotte Police Dept.
Orange	Countywide	Operational	3	Orange County Communications Center
(continued)				

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FIGURE II-4 CONTINUED

COUNTY	911 SERVICE AREA	OPERATIONAL STATUS	NO. OF EXCHANGES	PSAP LOCATION
Robeson	City of Lumberton only	Operational (Dec.1980)	1	Lumberton Communications Center
	City of Fairmont only	Operational	1	Fairmont Police Department

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STATUS, NUMBER OF EXCHANGES INCLUDED IN THE SYSTEM, AND LOCATION OF THE PUBLIC SAFETY ANSWERING POINT (PSAP).

D. STATISTICAL SUMMARY BY COUNTY

DETAILED INFORMATION CONCERNING LOCATION OF DISPATCH AND ANSWERING POINTS, EQUIPMENT CAPABILITIES AT THESE LOCATIONS, POLITICAL FACTORS, POPULATION, AND OTHER PERTINENT PLANNING DATA WAS OBTAINED FOR EACH COUNTY AND IS CONTAINED IN THE REGIONAL 911 PLANS, SYSTECH REPORTS 3-21 THROUGH 3-38. A SUMMARY OF THE QUANTIFIABLE ELEMENTS OF THIS PLANNING INFORMATION IS PRESENTED IN FIGURE II-5 FOR EACH COUNTY.

DATA ON THE NUMBER OF PAY TELEPHONES WAS NOT READILY AVAILABLE FOR ALL COUNTIES. THEREFORE, AVAILABLE DATA WAS ASSEMBLED AND A POPULATION-BASED MODEL WAS DEVELOPED FOR DETERMINING THE NUMBER OF PAY STATIONS. THE QUANTITIES IN COLUMN 3 OF FIGURE II-5 WERE GENERATED FROM THE MODEL.

THE SIGNIFICANCE IN DETERMINING WHETHER COIN STATIONS WERE DIAL-TONE FIRST IS THAT GENERALLY A TELEPHONE SYSTEM THAT HAS DIAL-TONE FIRST WILL NOT REQUIRE MAJOR EQUIPMENT MODIFICATIONS FOR THE IMPLEMENTATION OF 911. THE FACT THAT DIAL-TONE FIRST SERVICE IS AVAILABLE DOES NOT MEAN THAT THE PAY TELEPHONE IS A MEANS FOR PUBLIC ACCESS TO THE EMERGENCY SERVICES. IN MANY CASES, IT WAS FOUND THAT THE OPERATOR THAT ANSWERS WHEN '0' IS DIALED IS A 'CONTRACT' SERVICE LOCATED MANY MILES AWAY. MOST OFTEN THE OPERATOR IS NOT IN THE SAME COUNTY, MAYBE NOT EVEN IN THE SAME STATE. THE OPERATOR MAY KNOW LITTLE, IF ANYTHING, ABOUT THE AVAILABILITY OF EMERGENCY SERVICES. THUS, A DIAL-TONE FIRST PAY TELEPHONE WITH '0' ACCESS TO THE OPERATOR IS NOT EQUIVALENT TO '911' SERVICE.

IF THE PAY STATIONS IN ALL EXCHANGES IN A COUNTY ARE DIAL-TONE FIRST, A 'YES' WILL APPEAR IN FIGURE II-5. IF PAY STATIONS IN ONE OR MORE EXCHANGES ARE NOT DIAL-TONE FIRST A 'NO' APPEARS IN THE COLUMN.

FIGURE II-5  
STATISTICAL SUMMARY BY COUNTY

COUNTY	POPULATION <sup>1</sup>	NO. OF PAY STATIONS <sup>2</sup>	DIAL-TONE FIRST IN PAY STATIONS?	NO. OF MAJOR DISPATCH POINTS	NO. OF FULL RADIO CONTROL CONSOLES <sup>3</sup>	NO. OF LOGGING TAPE RECORDERS <sup>4</sup>
<b>REGION A</b>						
Cherokee	17,700	37	Yes	1	1	1*
Clay	6,000	15	Yes	1	0	1*
Graham	7,000	20	Yes	2	0	1*
Haywood	44,600	75	Yes	4	2	1
Jackson	25,400	48	Yes	1	1	1
Macon	19,200	38	Yes	1	0	1
Swain	10,200	25	Yes	1	0	1*
<b>REGION B</b>						
Buncombe	154,400	835	Yes	3	5	2
Henderson	51,600	275	No	4	3	2
Madison	17,200	100	Yes	1	1	1
Transylvania	22,000	125	Yes	2	1	1
<b>REGION C</b>						
Cleveland	78,300	470	Yes	3	5	2
McDowell	34,100	165	Yes	3	3	2
Polk	12,400	70	Yes	2	1	1
Rutherford	51,600	275	Yes	2	2	2
<b>REGION D</b>						
Alleghany	8,800	45	Yes	1	0	1
Ashe	20,800	115	Yes	1	1	0
Avery	13,800	85	Yes	1	1	1
Mitchell	14,100	90	Yes	2	1	1*
Watauga	28,700	155	Yes	3	2	1
Wilkes	55,700	300	Yes	3	1	0
Yancey	14,600	95	Yes	1	0	1

\*Operable but not hooked up.

<sup>1</sup> Estimated population from the Office of State Budget and Management dated November, 1979.

<sup>2</sup> Determined from model described in preceding text.

<sup>3</sup> Includes turret consoles, but not remote consoles.

<sup>4</sup> Inoperable recorders are not counted.



FIGURE II-5 CONTINUED

COUNTY	POPULATION <sup>1</sup>	NO. OF PAY STATIONS <sup>2</sup>	DIAL-TONE FIRST IN PAY STATIONS?	NO. OF MAJOR DISPATCH POINTS	NO. OF FULL RADIO CONTROL CONSOLES <sup>3</sup>	NO. OF LOGGING TAPE RECORDERS <sup>4</sup>
<b>REGION E</b>						
Alexander	22,600	125	Yes	1	1	0
Burke	63,800	350	Yes	4	5	2
Caldwell	60,900	338	Yes	2	2	2
Catawba	100,900	550	Yes	2	5	2
<b>REGION F</b>						
Cabarrus	79,700	360	Yes	3	4	3
Gaston	156,000	670	Yes	4	4	2
Iredell	79,300	400	Yes	4	5	2
Lincoln	38,900	215	Yes	**	**	**
Mecklenburg	384,700	2,000	Yes	**	**	**
Rowan	93,500	400	Yes	4	3	3
Stanly	45,200	205	Yes	2	2	1
Union	65,300	355	Yes	2	3	1
<b>REGION G</b>						
Alamance	98,000	300	Yes	2	3	2
Caswell	19,600	90	Yes	1	1	1
Davidson	102,800	500	Yes	4	3	1
Guilford	305,400	1,678	Yes	5	14	5
Randolph	84,700	380	No	3	3	2
Rockingham	76,600	330	Yes	3	3	3
<b>REGION H</b>						
Anson	23,500	130	Yes	1	1	1
Montgomery	19,900	110	Yes	1	1	0
Moore	44,700	245	Yes	4	2	1
Richmond	42,800	130	Yes	3	1	1
<b>REGION I</b>						
Davie	22,400	120	Yes	1	1	1
Forsyth	229,400	2,000	Yes	3	9	3
Stokes	29,200	145	Yes	2	1	2
Surry	56,000	250	Yes	3	3	3
Yadkin	27,000	150	Yes	1	1	1

<sup>1</sup> Estimated population from the Office of State Budget and Management dated November, 1979.

<sup>2</sup> Determined from model described in preceding text.

<sup>3</sup> Includes turret consoles, but not remote consoles.

<sup>4</sup> Inoperable recorders are not counted.

\*\*Data not acquired for counties with 911 systems now.

FIGURE II-5 CONTINUED

COUNTY	POPULATION <sup>1</sup>	NO. OF PAY STATIONS <sup>2</sup>	DIAL-TONE FIRST IN PAY STATIONS?	NO. OF MAJOR DISPATCH POINTS	NO. OF FULL RADIO CONTROL CONSOLES <sup>3</sup>	NO. OF LOGGING TAPE RECORDERS <sup>4</sup>
<b>REGION J</b>						
Chatham	31,000	150	Yes	2	1	1
Durham	145,600	1,200	Yes	1	**	**
Johnston	66,700	280	Yes	2	2	2
Lee	35,100	160	No	4	1	1
Orange	69,600	375	Yes	1	**	**
Wake	290,300	1,300	Yes	2	6	2
<b>REGION K</b>						
Franklin	28,100	145	Yes	1	1	1
Granville	32,900	150	Yes	6	1	0
Person	27,100	135	Yes	3	0	1
Vance	34,300	170	Yes	3	1	1
Warren	17,100	80	Yes	2	0	0
<b>REGION L</b>						
Edgecombe	55,500	250	Yes	4	4	2
Halifax	55,500	250	Yes	6	3	2
Nash	67,400	303	Yes	2	2	2
Northampton	23,400	105	Yes	1	1	0
Wilson	60,800	108	Yes	2	2	1
<b>REGION M</b>						
Cumberland	233,200	1,200	Yes	**	**	**
Harnett	55,700	250	No	3	1	0
Sampson	49,100	220	Yes	2	1	1
<b>REGION N</b>						
Bladen	29,200	155	Yes	1	1	1
Hoke	18,800	85	Yes	1	1	1*
Robeson	93,900	410	Yes	2	5	2
Scotland	31,000	105	Yes	3	2	2

\*Operable but not hooked up.

\*\*Data not acquired for counties with 911 systems now.

<sup>1</sup> Estimated population from the Office of State Budget and Management dated November, 1979.

<sup>2</sup> Determined from model described in preceding text.

<sup>3</sup> Includes turret consoles, but not remote consoles.

<sup>4</sup> Inoperable recorders are not counted.

FIGURE II-5 CONTINUED

COUNTY	POPULATION <sup>1</sup>	NO. OF PAY STATIONS <sup>2</sup>	DIAL-TONE FIRST IN PAY STATIONS?	NO. OF MAJOR DISPATCH POINTS	NO. OF FULL RADIO CONTROL CONSOLES <sup>3</sup>	NO. OF LOGGING TAPE RECORDERS <sup>4</sup>
<b>REGION O</b>						
Brunswick	32,700	52	Yes	1	1	1
Columbus	51,600	225	Yes	1	1	1
New Hanover	97,700	500	Yes	4	4	2
Pender	22,200	45	Yes	1	1	1
<b>REGION P</b>						
Carteret	37,000	180	Yes	2	1	2
Craven	67,500	300	Yes	2	2	0
Duplin	40,100	190	Yes	1	1	1
Greene	14,900	80	Yes	1	1	1
Jones	9,800	50	Yes	1	1	0
Lenoir	58,700	260	Yes	4	1	1
Onslow	117,600	510	Yes	3	3	1
Pamlico	10,000	65	Yes	1	1	1
Wayne	93,000	425	No	4	3	2
<b>REGION Q</b>						
Beaufort	40,000	190	Yes	1	1	1
Bertie	21,200	110	Yes	1	1	0
Hertford	25,000	112	Yes	1	1	1
Martin	25,400	125	Yes	1	1	1
Pitt	81,600	360	Yes	2	3	2
<b>REGION R</b>						
Camden	5,700	40	Yes	1		
Chowan	12,300	75	Yes	3	1	1
Currituck	10,600	62	Yes	1	1	1
Dare	10,600	62	Yes	2	2	1
Gates	8,300	50	Yes	No 24-hour dispatch		
Hyde	5,500	40	Yes	1	0	0
Pasquotank	28,800	135	Yes	2	2	***
Perquimans	8,800	50	Yes	1	0	1*
Tyrrell	4,000	30	Yes	1	0	***
Washington	15,100	80	Yes	2	0	1*

\*Operable but not hooked up.

<sup>1</sup> Estimated population from the Office of State Budget and Management dated November, 1979.

<sup>2</sup> Determined from model described in preceding text.

<sup>3</sup> Includes turret consoles, but not remote consoles.

<sup>4</sup> Inoperable recorders are not counted.

\*\*\*Recorder in Elizabeth City P.D. is currently inoperable and the P.D. is using Tyrrell County's recorder.

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### III. 911 SYSTEM STANDARDS

MANY ASPECTS OF 911 SYSTEM PLANNING INVOLVE CHOICES BETWEEN VARIOUS ALTERNATIVES ON ISSUES SUCH AS:

- Where will the Public Safety Answering Point (PSAP) be established?
- How will telephone exchange boundary mismatch be handled?
- Will the system use tandem trunking (network system) or direct trunking (dedicated system)?
- What call handling method(s) will be used?
- What special features will the system have?

THESE AND OTHER IMPORTANT DECISIONS MUST BE MADE BY LOCAL GOVERNMENTS WHEN PLANNING A 911 SYSTEM. THERE ARE DIFFERENT APPROACHES THAT CAN BE TAKEN ON THESE ISSUES AND THE SELECTION OF ONE ALTERNATIVE OVER ANOTHER MAY BE INFLUENCED BY COST, LOCAL ATTITUDES, AND OTHER FACTORS.<sup>1</sup> HOWEVER, THERE ARE SOME ASPECTS OF 911 SYSTEM PLANNING THAT SHOULD NOT BE DISCRETIONARY--CERTAIN MINIMUM STANDARDS MUST BE MET IN ORDER TO PROVIDE AN ADEQUATE LEVEL OF SERVICE. THE STANDARDS FOR 911 SYSTEMS FALL UNDER THREE MAJOR CATEGORIES--OPERATIONAL STANDARDS, TECHNICAL STANDARDS, AND TRAINING STANDARDS. THE RECOMMENDED MINIMUM STANDARDS IN THESE THREE CATEGORIES ARE PRESENTED IN TABLES III-1 THROUGH III-3. ALSO LISTED UNDER EACH CATEGORY ARE FEATURES THAT ARE CONSIDERED DESIRABLE ALTHOUGH NOT REQUIRED. THE STANDARDS PRESENTED IN TABLES III-1 THROUGH III-3 ARE EXCERPTED FROM THE DOCUMENT 'PLANNING FOR 911'.

<sup>1</sup> These issues are discussed in Section IV of this report, and specific recommendations are made for each county in the Regional plans.

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TABLE III-1  
OPERATIONAL STANDARDS FOR 911\*

Minimum Standards

- A. All law enforcement, fire protection, emergency medical, and rescue agencies within the boundaries of the 911 system must be included in the 911 system.
- B. The 911 answering center will operate 24 hours a day, seven days a week.
- C. All incoming 911 calls will be tape recorded on a master logging recorder equipped to record the date and time of receipt of each call.
- D. The primary published emergency number will be "911".
- E. Enough 911 lines and trained operators will be provided such that during the average busiest hour of the day at least 90 percent of the calls will be answered within 10 seconds (two or three rings).
- F. Each operator position will have access to the incoming 911 lines and an outgoing line dedicated to that position.

Desirable Features

- A. The 911 operators will be dedicated to answering 911 calls and will have no other simultaneous function such as clerk or other non-related function that will interfere with their duties as 911 operator or reduce the grade of service.
- B. Each 911 operator position will be equipped with an instant playback type of recorder to record each incoming 911 call.

\*From "Planning for 911", prepared by the N.C. Department of Crime Control and Public Safety, Division of Crime Control, December 1978.

TABLE III-2  
TECHNICAL STANDARDS FOR 911\*

Minimum Standards

- A. There will be a minimum of two incoming 911 lines.
- B. If direct trunking (as opposed to tandem trunking) is used, there will be at least two 911 lines between the 911 center and each of the central offices in its service area.
- C. If tandem trunking is used the grade of service provided over the interoffice trunks will be at least one in 100.
- D. Responsible agency will request traffic studies every 6 months to insure compliance with a grade of service of 1 percent busy signal.
- E. All exposed 911 circuit facilities will be protected and marked to prevent accidental contact.
- F. The 911 center will have standby emergency electrical power capability for use in the event of a commercial power failure.
- G. When an automatic call distributor (ACD) is used to terminate 911 calls, the recorded announcement option will be used.
- H. Circuits and equipment of the 911 system will not be taken out of service until permission is obtained from the 911 center supervisor.

Desirable Features

- A. Call transfer, direct ringdown, message relay or direct radio relay for 911 calls originating outside 911 service area due to central office boundary extending beyond the area served.
- B. Fx or Wx (special toll-free number) for callers from the 911 service area whose telephone exchange is outside the area served or does not have 911 access to the PSAP, with a special vacant code announcement when a caller dials 911 instead. The announcement should provide the toll-free number, identifying the associated PSAP, and refer the caller to the directory if they live outside the identified area.
- C. Where possible, diverse routing of incoming trunks should be used.
- D. An emergency contingency plan should be developed.

\*From "Planning for 911", prepared by the N.C. Department of Crime Control and Public Safety, Division of Crime Control, December 1978.

TABLE III-3  
TRAINING STANDARDS FOR 911 PERSONNEL\*

Minimum Standards

Answering personnel should be trained to proficiency in at least the following basics:

- 1) Uniform answering procedures;
- 2) Proper citizen interrogation for gathering complaint information;
- 3) Conveying accurate and complete information to dispatchers in serviced agencies;
- 4) Knowledge of jurisdictional areas to preclude erroneous dispatch;
- 5) Keeping adequate records.

Desirable Standards

- 1) Training in basic Police, EMT, and Fire procedures.
- 2) Maintaining circuit discipline (elimination of unnecessary conversation).
- 3) Knowledge of segments of law important to telecommunicators.
- 4) Basic maintenance procedures for communications equipment.

NOTE: Uniform training requirements do not presently exist in North Carolina, nor are uniform training programs available. Refer to Section IV of this document for additional information on training.

\*From "Planning for 911", prepared by the N.C. Department of Crime Control and Public Safety, Division of Crime Control, December 1978.

#### IV. 911 SYSTEM CONCEPTS AND ALTERNATIVES

A 911 SYSTEM IS MUCH MORE THAN SIMPLY A TELEPHONE SYSTEM-- IT IS AN ORGANIZATIONAL UNIT IN THE LOCAL GOVERNMENT STRUCTURE THAT PROVIDES A PUBLIC EMERGENCY SERVICE. PLANNING A 911 SYSTEM INVOLVES DECISIONS ON ORGANIZATIONAL, PROCEDURAL, AND TECHNICAL ISSUES. ALTHOUGH RECOMMENDATIONS HAVE BEEN DEVELOPED FOR EACH COUNTY IN NORTH CAROLINA (SEE SECTION V), ULTIMATELY THESE DECISIONS MUST BE MADE BY THE LOCAL GOVERNMENTS INVOLVED. THE PARAGRAPHS THAT FOLLOW PROVIDE INFORMATION ON THE MAJOR ISSUES THAT MUST BE ADDRESSED WHEN LOCAL GOVERNMENTS BEGIN TO PLAN FOR 911.

##### A. THE PUBLIC SAFETY ANSWERING POINT (PSAP)

###### 1. LEVELS OF OPERATION

ESTABLISHING THE PUBLIC SAFETY ANSWERING POINT--THE POINT WHERE 911 CALLS ARE ANSWERED AND PROCESSED--IS ONE OF THE MOST IMPORTANT ELEMENTS IN PLANNING A 911 SYSTEM. WHEN PLANNING FOR IMPLEMENTATION OF THE 911 CONCEPT, IT IS IMPORTANT TO REMEMBER THE CONSIDERABLE FLEXIBILITY IN OPERATIONAL METHOD THAT IS POSSIBLE. A 911 SYSTEM CAN WORK ESSENTIALLY ON FOUR LEVELS, AND VARIOUS COMBINATIONS OF THE BASIC LEVELS DESCRIBED BELOW SHOULD BE EXAMINED, WITH SELECTION MADE OF AN OPERATIONAL CONCEPT BEST SUITED TO THE LOCAL SITUATION.

THE 911 PUBLIC SAFETY ANSWERING POINT (PSAP) MAY BE:

LEVEL 1: A SIMPLE TELEPHONE ANSWERING AND CALL TRANSFER STATION.

A) THE COMPLAINT 'PROCESSOR', THE PERSON WHO ANSWERS A CALL MADE ON 911 LINE, DETERMINES FROM THE NATURE OF THE CALL WHAT SORT OF ASSISTANCE IS REQUIRED, AND WHICH AGENCY SHOULD RESPOND.

B) THE COMPLAINT PROCESSOR THEN TRANSFERS THE CALL TO THE PROPER RESPONDING AGENCY BY SOME SUCH MEANS AS A DIRECT RING DOWN LINE, AUTOMATIC DIALER, PHONE CROSS-PATCH, OR WHATEVER METHOD OR METHODS WERE SELECTED AS BEST DURING SYSTEM PLANNING.

LEVEL 2: A TELEPHONE ANSWERING AND CALL REFERRAL SERVICE.

A) THE COMPLAINT PROCESSOR ANSWERS A CALL ON AN INCOMING 911 LINE, DETERMINES WHAT AGENCY SHOULD BE CONTACTED, AND PROVIDES THE CALLER WITH THE PROPER SEVEN-DIGIT NUMBER TO DIAL.

B) SYSTEMS OPERATING AT EITHER LEVEL ONE OR LEVEL TWO COULD ALSO USE MESSAGE RELAY FOR SOME AGENCIES. THIS WOULD BE USED FOR CALLS THAT MAY NOT BE OF IMMEDIATE URGENCY, OR WHERE DIRECT CONTACT BETWEEN THE CALLER AND THE RESPONDING AGENCY DISPATCHER IS NOT IMPORTANT OR CANNOT BE MADE, FOR INSTANCE BECAUSE THE CALLER HAS A HANDICAP OR DISABILITY. THE COMPLAINT PROCESSOR NOTES ALL ESSENTIAL ELEMENTS OF THE CALL, AND FORWARDS THE MESSAGE TO A RESPONDING AGENCY BY TELEPHONE, RADIO, PHYSICALLY PASSING THE WRITTEN MESSAGE, OR SOME OTHER APPROPRIATE MEANS.

LEVEL 3: A TELEPHONE ANSWERING SERVICE WITH DIRECT DISPATCH OF SOME EMERGENCY UNITS AND CALL TRANSFER, MESSAGE RELAY OR REFERRAL SERVICE FOR OTHERS.

LEVEL 4: A COMPLETE RESPONSE CENTER WITH ALL AGENCIES COMMUNICATING WITH ONE ANOTHER AND ACCOMPLISHING ALL DISPATCH OPERATIONS THROUGH THE CENTER.

## 2. PSAP LOCATION

THE PSAP CAN BE LOCATED AT AN EXISTING EMERGENCY SERVICE AGENCY OR A SEPARATE ORGANIZATION CAN BE ESTABLISHED. TO RELATE THIS TO THE PRECEDING DISCUSSION; GENERALLY, A PSAP AT AN EXISTING AGENCY WILL BE A LEVEL 3 OR LEVEL 4 OPERATION, AND A SEPARATE PSAP WILL BE A LEVEL 1 OR LEVEL 2 OPERATION.

EXISTING AGENCY IS PSAP: IN MOST COUNTIES IN NORTH CAROLINA, THE ONLY COST-EFFECTIVE APPROACH TO PROVIDING 911 SERVICE IS TO ESTABLISH THE PSAP IN AN EXISTING PUBLIC SAFETY AGENCY. SINCE APPROXIMATELY 80% OF ALL EMERGENCY CALLS ARE FOR LAW ENFORCEMENT, THE MOST PRACTICAL ARRANGEMENT IN MANY CASES WILL BE TO ESTABLISH THE 911 ANSWERING POINT AT THE SHERIFF DEPARTMENT OR MAJOR POLICE DEPARTMENT. IF THE COUNTY HAS A CONSOLIDATED COMMUNICATIONS CENTER, THE PSAP SHOULD BE THERE. IN MANY COUNTIES IN THE STATE, 911 CALLS CAN BE ANSWERED BY THE RECOMMENDED PUBLIC SAFETY AGENCY WITHOUT STAFF INCREASES OR COMMUNICATIONS CENTER EQUIPMENT CHANGES.

SEPARATE PSAP: THE ALTERNATIVE OF ESTABLISHING A SEPARATE PSAP, WHICH IS ESSENTIALLY A 911 SWITCHBOARD OR REFERRAL, IS USUALLY COST-EFFECTIVE ONLY IN LARGE SYSTEMS WHERE UTILIZATION OF AN EXISTING AGENCY AS PSAP WOULD REQUIRE STAFF INCREASES

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TO HANDLE THE 911 CALLS FOR ALL SERVICES. IN SUCH A CASE, ESTABLISHING A SEPARATE PSAP MAY NOT INVOLVE COSTLY DUPLICATION OF SERVICES. THIS ALTERNATIVE IS OFTEN CONSIDERED WHEN THERE ARE SEVERAL MAJOR AGENCIES IN A SYSTEM AND LOCAL GOVERNMENTS CANNOT AGREE UPON AN EXISTING AGENCY AS PSAP. THE COST-EFFECTIVENESS SHOULD BE CAREFULLY CONSIDERED.

## 3. FEATURES OF A PSAP

REGARDLESS OF ITS LOCATION OR LEVEL OF OPERATION, THE PUBLIC SAFETY ANSWERING POINT SHOULD HAVE THE FOLLOWING MINIMUM FEATURES AND CAPABILITIES:

- \* 24-HOUR OPERATION;
- \* SUFFICIENT OPERATORS (TELECOMMUNICATORS) TO PROVIDE THE LEVEL OF SERVICE DEFINED IN SECTION III;
- \* LOGGING TAPE RECORDER TO CONTINUOUSLY RECORD ALL 911 LINES.

'911' WILL BE USED AS THE EMERGENCY NUMBER FOR ALL EMERGENCY SERVICES IN THE SERVICE AREA; THEREFORE THE PSAP WILL REQUIRE THE ABILITY TO PROCESS CALLS FOR ALL PUBLIC SAFETY AGENCIES IN THE AREA. APPROACHES TO CALL HANDLING ARE DESCRIBED IN SECTION B BELOW.

## 4. RECOMMENDATIONS

EACH COUNTY PLAN INCLUDES A RECOMMENDATION ON THE LOCATION OF THE PSAP FOR THAT COUNTY. THE RECOMMENDATION IS BASED ON COST-EFFECTIVENESS AND LOCAL FACTORS. A SINGLE PSAP IN EACH COUNTY IS REFLECTED IN THE RECOMMENDATIONS. RECOMMENDED PSAP LOCATIONS ARE SUMMARIZED IN SECTION V OF THIS DOCUMENT.

## B. METHODS OF CALL HANDLING

THERE ARE BASICALLY FOUR METHODS THAT A PSAP CAN USE TO HANDLE A 911 CALL THAT IS RECEIVED. FIGURE IV-1 ILLUSTRATES THE FOUR METHODS, DESCRIBED BELOW.

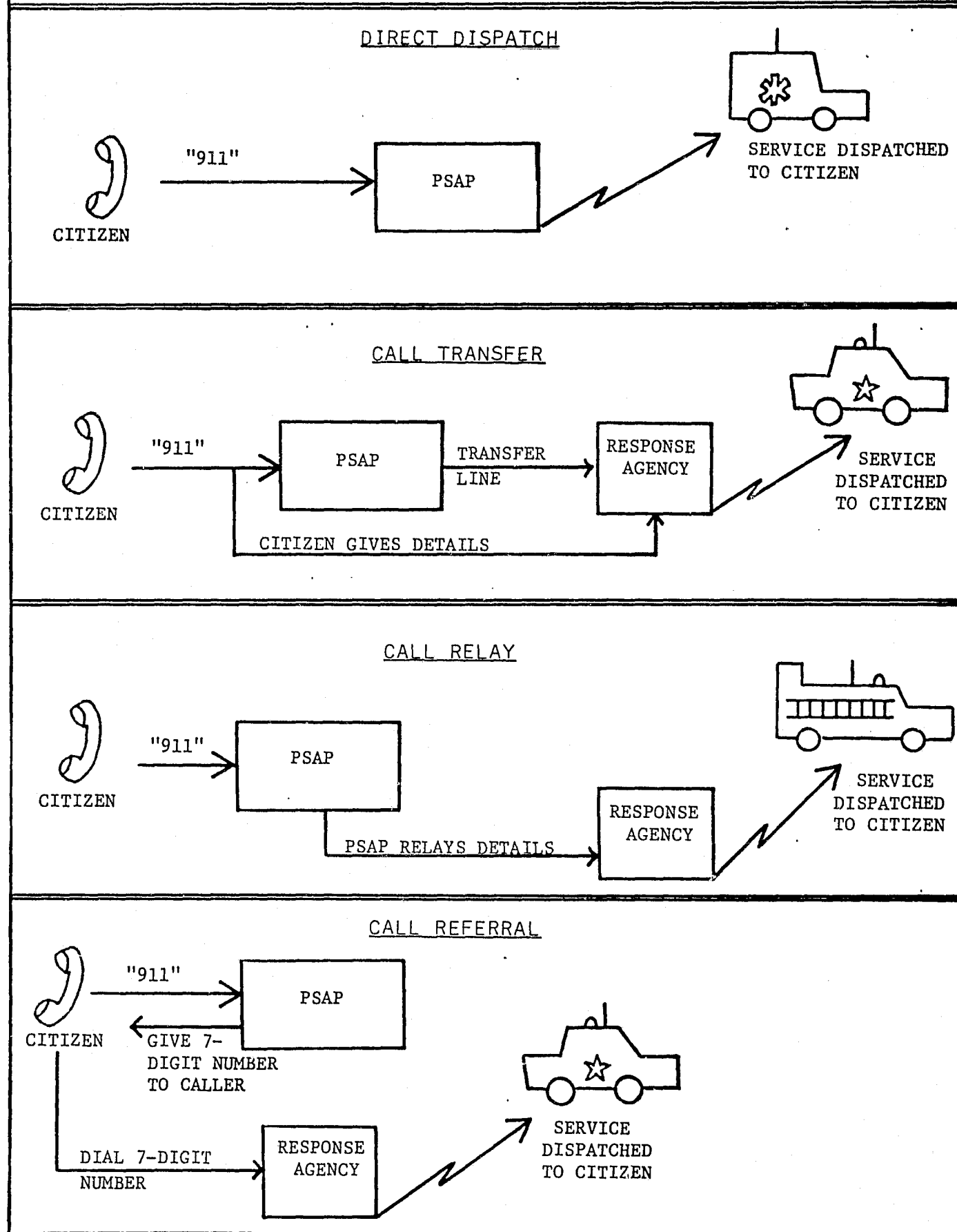
DIRECT DISPATCH: THE PSAP ANSWERS THE CALL, OBTAINS THE NECESSARY INFORMATION AND DISPATCHES THE APPROPRIATE RESOURCE TO THE EMERGENCY.

CALL TRANSFER: THE PSAP ANSWERS THE CALL, OBTAINS SUFFICIENT INFORMATION TO DETERMINE THE APPROPRIATE RESPONSE AGENCY, AND TRANSFERS THE CALL TO THAT AGENCY. THE RECEIVING AGENCY TAKES THE COMPLETE INFORMATION FROM THE CALLER AND DISPATCHES THE EMERGENCY RESOURCE.

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FIGURE IV-1

ILLUSTRATION OF CALL HANDLING METHODS



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**CALL RELAY:** THE PSAP ANSWERS THE 911 CALL, OBTAINS THE NECESSARY INFORMATION, THEN CONTACTS THE APPROPRIATE RESPONSE AGENCY AND RELAYS THE INFORMATION TO THEM. THE RESPONSE AGENCY DISPATCHES THE EMERGENCY RESOURCE. THE PSAP CAN USE ANY OF SEVERAL MEDIUMS--INCLUDING PUBLIC TELEPHONE, DIRECT LINE, INTERCOM, OR RADIO--TO RELAY THE INFORMATION.

**CALL REFERRAL:** THE PSAP ANSWERS THE 911 CALL, OBTAINS SUFFICIENT INFORMATION TO DETERMINE THE APPROPRIATE RESPONSE AGENCY, AND PROVIDES THE CALLER WITH THE 7-DIGIT NUMBER TO CALL TO REACH THE AGENCY.

THE SAME CALL HANDLING METHOD NEED NOT BE USED FOR ALL AGENCIES SERVICED. THE PSAP MAY DISPATCH SOME AGENCIES, USE CALL TRANSFER FOR ANOTHER AGENCY, AND EMPLOY CALL RELAY OR CALL REFERRAL FOR LIMITED SPECIAL APPLICATIONS. FIGURE IV-2 DESCRIBES TYPICAL APPLICATIONS OF EACH METHOD OF CALL HANDLING AND IDENTIFIES THE MAJOR ADVANTAGES AND DISADVANTAGES OF EACH.

THE COUNTY PLANS LIST EACH AGENCY THAT THE PSAP WILL RECEIVE CALLS FOR AND RECOMMENDS A METHOD FOR HANDLING EACH AGENCY'S CALLS. DIRECT DISPATCH IS RECOMMENDED WHEREVER FEASIBLE, AND CALL TRANSFER OR CALL RELAY WHERE DIRECT DISPATCH IS NOT FEASIBLE. CALL RELAY IS RECOMMENDED ON A LIMITED BASIS. CALL REFERRAL WAS NOT RECOMMENDED IN ANY CASE EXCEPT AS A POSSIBLE APPROACH TO HANDLING CALLS FROM AN ADJACENT COUNTY, DUE TO EXCHANGE BOUNDARY OVERLAP, AND FOR REFERRING NON-EMERGENCY CALLS.

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FIGURE IV-2

A COMPARISON OF 911 CALL HANDLING METHODS

METHOD	EXAMPLES OF APPLICATION	ADVANTAGES	DISADVANTAGES
<u>DIRECT DISPATCH</u>	<ul style="list-style-type: none"> <li>-PSAP is Consolidated Communications Center which dispatches all services.</li> <li>-PSAP is County Sheriff Department which dispatches county law enforcement and county fire.</li> <li>-PSAP is large police department which dispatches city law enforcement only.</li> </ul>	<ul style="list-style-type: none"> <li>-Fastest response time</li> <li>-Minimum duplication of services</li> <li>-No transfer lines required; less costly</li> </ul>	<ul style="list-style-type: none"> <li>-Requires close interagency cooperation</li> <li>-Agencies may be unwilling to give up dispatch autonomy</li> </ul>
<u>CALL TRANSFER</u>	<ul style="list-style-type: none"> <li>-PSAP is large police department; dispatches city calls and transfers county calls.</li> <li>-PSAP is Sheriff Department; dispatches county calls and transfers city calls.</li> <li>-PSAP is independent agency operating as a Level 1 PSAP--transfers all calls.</li> <li>-Can be used where any agency wishes to perform its own dispatching, and call volume justifies the cost.</li> </ul>	<ul style="list-style-type: none"> <li>-Minimum need for interagency cooperation</li> <li>-Dispatch autonomy is preserved</li> </ul>	<ul style="list-style-type: none"> <li>-Longer response time than direct dispatch</li> <li>-Can be more frustrating to citizen; must talk to two agencies</li> <li>-Requires call transfer capability, which adds cost to the system</li> </ul>
<u>CALL RELAY</u>	<ul style="list-style-type: none"> <li>-Can be used for agencies with very low call volume that desire to do their own dispatching.</li> <li>-Can be used for calls from citizens who live in an area of an adjacent county but are served by this county's exchange (See Section IV-D discussion of boundary excursion).</li> <li>-Recommended for low call volumes only.</li> </ul>	<ul style="list-style-type: none"> <li>-Preserves dispatch autonomy</li> <li>-No transfer lines required; inexpensive alternative</li> </ul>	<ul style="list-style-type: none"> <li>-Requires explicit call handling policies to be agreed upon</li> <li>-Possible confusion if explicit policies not followed</li> <li>-Longer response time</li> </ul>
<u>CALL REFERRAL</u>	<ul style="list-style-type: none"> <li>- Citizen calls "911" with a non-emergency call, PSAP refers citizen to appropriate 7-digit number.</li> <li>- Can be used for calls from adjacent county residents resulting from an exchange excursion.</li> </ul>	<ul style="list-style-type: none"> <li>-Prevents overloading of 911 lines with non-emergency calls</li> <li>-Requires no special equipment or lines</li> </ul>	<ul style="list-style-type: none"> <li>-Citizen must re-dial 7-digit number</li> </ul>

C. SYSTEM ADMINISTRATION

THIS ISSUE REFERS TO CRITICAL QUESTIONS SUCH AS WHERE RESPONSIBILITY OF THE PSAP WILL LIE, WHERE FUNDS TO SUPPORT THE PSAP WILL COME FROM, HOW GRIEVANCES WILL BE RESOLVED, AND HOW POLICIES WILL BE MADE. ALTHOUGH THE MANAGEMENT STRUCTURE WILL VARY FROM ONE SYSTEM TO ANOTHER DUE TO VARIANCE IN POLITICAL APPROACH, COST FACTORS, AND OTHER INFLUENCES, A COMMON NECESSARY ELEMENT IS A USER ADVISORY BOARD. THE USER BOARD OR COMMITTEE SHOULD INCLUDE REPRESENTATION FROM EACH OF THE PUBLIC SAFETY AGENCIES INVOLVED, THE PUBLIC, AND LOCAL GOVERNMENTS SERVED. TYPICAL DUTIES AND RESPONSIBILITIES SHOULD INCLUDE:

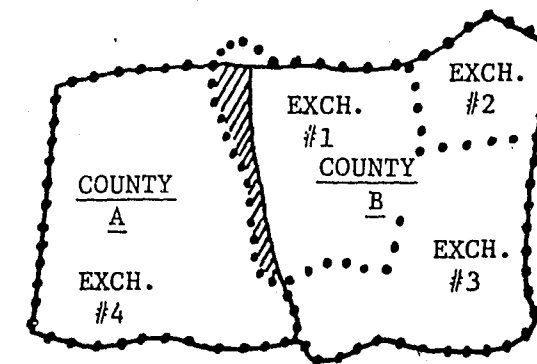
- A) DETERMINATION OF POLICIES AFFECTING OPERATION;
- B) ESTABLISHMENT, CONTROL, AND MAINTENANCE OF STANDARDS;
- C) PROVISION OF ADEQUATE TRAINING;
- D) THE ESTABLISHMENT OF PROCEDURES FOR RESOLVING PUBLIC AND EMERGENCY OPERATION GRIEVANCES;
- E) RESOLUTION OF INTERNAL GRIEVANCES BY PUBLIC AGENCIES USING 911.

'PLANNING FOR 911', THE DOCUMENT PUBLISHED BY THE DIVISION OF CRIME CONTROL IN DECEMBER 1978, PROVIDES ADDITIONAL INFORMATION ON THIS SUBJECT AND DESCRIBES TYPICAL MANAGEMENT STRUCTURES THAT MAY BE APPLICABLE. THE READER IS REFERRED TO THE PLANNING GUIDE FOR FURTHER DISCUSSION.

D. TELEPHONE EXCHANGE BOUNDARY MISMATCH

AS THE MAP IN SECTION II SHOWED, TELEPHONE EXCHANGE BOUNDARIES DO NOT ALWAYS COINCIDE WITH COUNTY BOUNDARIES. SINCE EMERGENCY SERVICES ARE GENERALLY PROVIDED ON A JURISDICTIONAL BASIS AND THE RECOMMENDED 911 SERVICE AREA IS THE COUNTY, THE MISMATCH BETWEEN EXCHANGE BOUNDARIES AND COUNTY BOUNDARIES CAN CREATE PROBLEMS. THE SEVERITY OF THE PROBLEM RANGES FROM NO OVERLAP PROBLEMS TO SITUATIONS SO SEVERE THAT IMPLEMENTATION OF AN EFFECTIVE 911 SYSTEM IS NEARLY IMPOSSIBLE. THERE ARE TWO KINDS OF BOUNDARY MISMATCH--EXCHANGE INCURSIONS, AND EXCHANGE EXCURSIONS, WHICH ARE ILLUSTRATED AND EXPLAINED IN FIGURE IV-3. THE ILLUSTRATION SETTING--COUNTY A, COUNTY B, AND THE 'SHADED AREA'--IS USED AS THE EXAMPLE IN THE FOLLOWING

FIGURE IV-3  
AN EXPLANATION OF EXCHANGE BOUNDARY  
INCURSION AND EXCURSION



EXPLANATION:

Exchange #1 has its central office location in County B and most subscribers are in County B. The shaded area is an "exchange excursion" from County B.

This means that if County B implements 911, there will be some citizens of County A who will reach the County B PSAP when they dial 911. County B needs a procedure to get these calls to County A.

From County A's standpoint, the shaded area is an "exchange incursion".

Let us assume that both County A and County B implement 911 systems. (Assume for the purposes of discussion that except for the shaded area, county boundaries and exchange boundaries match.) The following will be true:

1. All citizens in County B will reach the County B PSAP when they dial "911".
2. All citizens in the shaded portion of County A will reach the County B PSAP when they dial "911".<sup>1</sup>
3. In order to service all of its citizens, County A will need some method to provide toll-free access to the County A PSAP for citizens in the shaded area.<sup>1</sup>

IMPACT; ONLY COUNTY A HAS 911

If County A has 911 but County B does not, the citizens in the shaded area would reach a recording if they dial "911". Item #3 above remains true.

<sup>1</sup> Refers to Basic 911 service. E-911 service can provide selective routing to overcome the problem.



DISCUSSION OF POSSIBLE APPROACHES TO BOUNDARY MISMATCH PROBLEMS.

1. APPROACHES TO EXCHANGE EXCURSION

WHAT SHOULD COUNTY B (SEE FIGURE IV-3) DO ABOUT THE SHADED AREA OF EXCHANGE EXCURSION? FIRST OF ALL, COUNTY B SHOULD CONTACT COUNTY A. THE RESPONSIBILITY FOR THOSE CITIZENS IN THE SHADED AREA LIES WITH COUNTY A. COUNTY A MAY SEND LETTERS TO ALL TELEPHONE SUBSCRIBERS IN THE SHADED AREA TO INFORM THEM THAT DIALING '911' WOULD REACH THE WRONG CENTER, AND TELL THE SUBSCRIBER THE PROPER 7-DIGIT NUMBER TO CALL (OR ZENITH NUMBER, IF APPROPRIATE). THE TELEPHONE DIRECTORY SHOULD ALSO CARRY THIS INFORMATION.

COUNTIES A AND B SHOULD AGREE UPON ONE OF THE FOLLOWING METHODS FOR HANDLING ANY COUNTY A '911' CALLS THAT COME INTO THE COUNTY B PSAP.

CALL REFERRAL: COUNTY B WOULD GIVE THE CALLER THE CORRECT 7-DIGIT NUMBER TO USE TO REACH COUNTY A. IT IS THE RESPONSIBILITY OF COUNTY A TO PROVIDE A TOLL-FREE NUMBER FOR THIS PURPOSE.

CALL RELAY: COUNTY B WOULD RELAY THE INFORMATION TO COUNTY A BY RADIO OR TELEPHONE. SOME COUNTIES RELAY BY PIN. TELEPHONE RELAY CAN TAKE ANY OF THE FOLLOWING FORMS:

- MANUALLY DIAL THE NUMBER
- AUTOMATIC DIALER
- DEDICATED LINE.

CALL TRANSFER: TRANSFER THE CALLS TO THE COUNTY A PSAP. IT IS THE RESPONSIBILITY OF COUNTY A TO PAY FOR EQUIPMENT AND LINE COSTS ASSOCIATED WITH THIS.

CALL REFERRAL AND CALL RELAY ARE SUITABLE FOR MINOR EXCURSIONS WITH LOW VOLUME OF CALLS. A MAJOR EXCURSION WITH A HIGH VOLUME OF 'SHADED-AREA' CALLS MAY WARRANT CALL TRANSFER.

2. APPROACHES TO EXCHANGE INCURSION

IF COUNTY A DECIDES TO IMPLEMENT A 911 SYSTEM, WHAT SHOULD IT DO ABOUT PROVIDING ITS CITIZENS IN THE SHADED AREA WITH ACCESS TO ITS PSAP?

FIRST OF ALL, THE COUNTY SHOULD CONSIDER THE MAGNITUDE OF THE OVERLAP. IF A VERY LARGE PORTION OF THE COUNTY (IN TERMS OF POPULATION) IS AFFECTED BY EXCHANGE INCURSION, IT MAY NOT BE FEASIBLE TO IMPLEMENT 911 AT THE PRESENT TIME. COUNTY A MAY ELECT TO WAIT UNTIL 911 CAN BE PROVIDED TO ALL ITS CITIZENS,

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EITHER THROUGH SELECTIVE ROUTING<sup>1</sup> OR REALIGNMENT OF THE EXCHANGE BOUNDARIES. OF COURSE, IF ONE OF THE APPROACHES DESCRIBED UNDER #2 OR #3A BELOW CAN BE IMPLEMENTED, THEN COUNTY A CAN EFFECTIVELY PROVIDE 911 SERVICE EVEN TO A LARGE INCURSION AREA.

IF THE EXCHANGE INCURSION AFFECTS A SMALL OR MODERATE PORTION OF THE COUNTY, ANY OF THE FOLLOWING ALTERNATIVES MAY BE APPROPRIATE.

1. SEND LETTERS TO ALL TELEPHONE SUBSCRIBERS IN THE 'SHADED AREA' OF COUNTY A INFORMING THEM THAT THEY CANNOT REACH THE COUNTY A PSAP BY DIALING '911', AND TELL THE SUBSCRIBER THE APPROPRIATE 7-DIGIT NUMBER TO CALL. COUNTY A MUST PROVIDE A TOLL-FREE NUMBER.

2. IF COUNTY B DOES NOT HAVE 911, COUNTY A COULD INCLUDE IN ITS 911 SYSTEM DEDICATED 911 LINES FROM THE COUNTY B EXCHANGE. THE RESULTS: COUNTY B CITIZENS WOULD REACH THE COUNTY A PSAP IF THEY DIALED 911, CREATING A NEED FOR ONE OF THE METHODS DESCRIBED UNDER EXCHANGE EXCURSIONS. THIS ALTERNATIVE WOULD REQUIRE FORMAL APPROVAL BY COUNTY B. THIS MAY BE APPLICABLE IN A SITUATION WHERE THE OVERLAP IS QUITE SIGNIFICANT AND COUNTY B DOES NOT EXPECT TO IMPLEMENT 911 FOR MANY YEARS, PERHAPS DUE TO CENTRAL OFFICE CONSTRAINTS IN ITS OTHER EXCHANGES.

3A. IF COUNTY B HAS 911, COUNTY A CAN NEGOTIATE AN AGREEMENT WITH COUNTY B WHEREBY COUNTY A 'SHADED AREA' RESIDENTS WILL BE INSTRUCTED TO DIAL 911, THE COUNTY B PSAP WILL RECEIVE THESE CALLS, AND WILL UTILIZE CALL RELAY OR CALL TRANSFER TO THE COUNTY A PSAP. COUNTY A WILL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE ARRANGEMENT. THIS WOULD IN EFFECT PROVIDE ALL COUNTY A CITIZENS WITH 911 ACCESS TO THE COUNTY A PSAP.

- OR -

3B. INSTRUCT 'SHADED AREA' RESIDENTS PER #1 ABOVE. SELECT ONE OF THE OPTIONS LISTED UNDER 'EXCHANGE EXCURSIONS' FOR COUNTY B TO USE IN THE EVENT ANY CITIZENS IN THE 'SHADED AREA' DO REACH THE COUNTY B PSAP ON 911.

<sup>1</sup> A feature of E-911, discussed under the following heading, "E-911 and Boundary Mismatch".

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3. 'E-911' AND BOUNDARY MISMATCH

ENHANCED UNIVERSAL NUMBER SERVICE, OR 'E-911' IS AVAILABLE IN A FEW AREAS. AMONG THE MANY SPECIAL FEATURES THAT AN E-911 SYSTEM CAN PROVIDE IS 'SELECTIVE ROUTING'. THIS FEATURE ROUTES A 911 CALL TO THE DESIGNATED PSAP ASSOCIATED WITH THE IDENTIFIED TELEPHONE NUMBER FOR THE CALLING PARTY. THUS, ALL TELEPHONE NUMBERS IN THE 'SHADED AREA' OF OUR EXAMPLE WOULD BE DESIGNATED AS COUNTY A PSAP NUMBERS, AND ALL OTHER NUMBERS IN THAT EXCHANGE AS COUNTY B PSAP. THE CALLS WOULD AUTOMATICALLY BE ROUTED TO THE CORRECT ANSWERING POINT.

E-911 IS NOT AVAILABLE IN ALL AREAS, AND ITS COST IS HIGHER THAN BASIC 911 SERVICE.

E. TYPE OF 911 SERVICE: NETWORK OR DEDICATED

FOR THE PURPOSES OF BRINGING 911 CALLS INTO THE PSAP FROM THE EXCHANGES THAT WILL BE INCLUDED IN THE 911 SYSTEM, THERE ARE TWO BASIC TYPES OF SERVICE AS DESCRIBED BELOW.

1. NETWORK LINES

USES LINES SHARED WITH REGULAR TRAFFIC. LEAST EXPENSIVE, FEW FEATURES AVAILABLE, SUBJECT TO SYSTEM OVERLOAD.

2. DEDICATED LINES

LINES ARE USED ONLY FOR 911 SERVICE. MOST EXPENSIVE, MANY FEATURES ARE AVAILABLE.

A SIMPLIFIED DESCRIPTION OF HOW THESE TWO TYPES OF SERVICE DIFFER IS SHOWN IN FIGURES IV-4 AND IV-5. IT CAN BE SEEN IN FIGURE IV-4 (NETWORK SYSTEM), THAT A CALL FROM THE NORTH EXCHANGE WOULD BE ROUTED THROUGH THE NORMAL TRUNKS THAT TIE THE NORTH EXCHANGE TO THE COUNTY SEAT EXCHANGE. IF THESE TRUNKS BECOME BUSY WITH NON-EMERGENCY TRAFFIC THE CALLER WILL RECEIVE A BUSY SIGNAL. IN FIGURE IV-5 IT CAN BE SEEN THAT DEDICATED LINES ARE USED TO TIE THE NORTH EXCHANGE TO THE PSAP. THESE LINES ARE NOT SHARED AND, HENCE, WILL NOT BUSY UP WITH NON-EMERGENCY TRAFFIC.

ALL EXISTING 911 SYSTEMS IN NORTH CAROLINA ARE DEDICATED LINE SYSTEMS. IN THE COUNTY PLANS CONTAINED IN SYSTECH REPORTS NOS. 3-21 THROUGH 3-38, DEDICATED SYSTEMS ARE RECOMMENDED FOR ALL COUNTIES. RECOMMENDED SYSTEM FEATURES OF CALLED PARTY

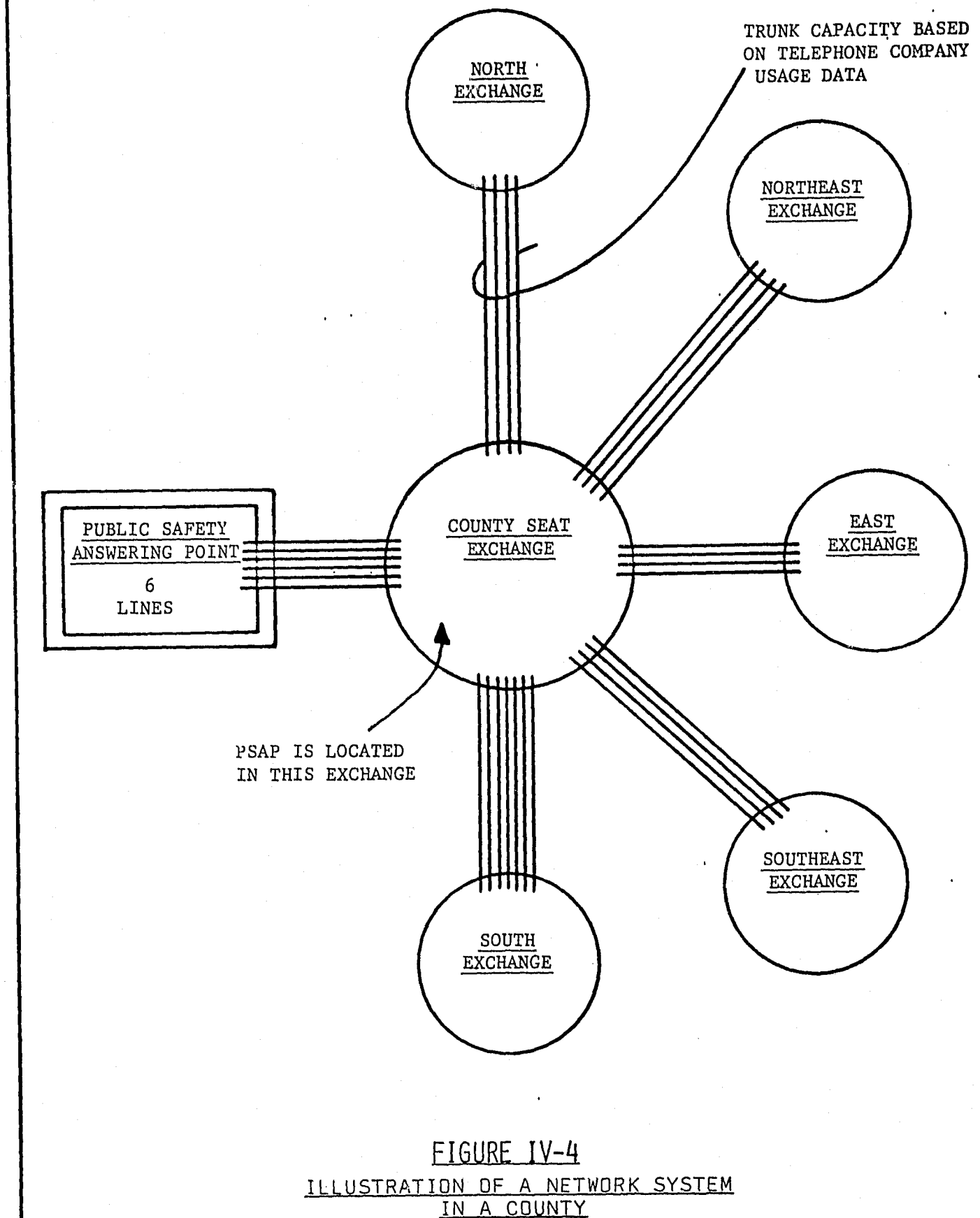


FIGURE IV-4  
ILLUSTRATION OF A NETWORK SYSTEM  
IN A COUNTY

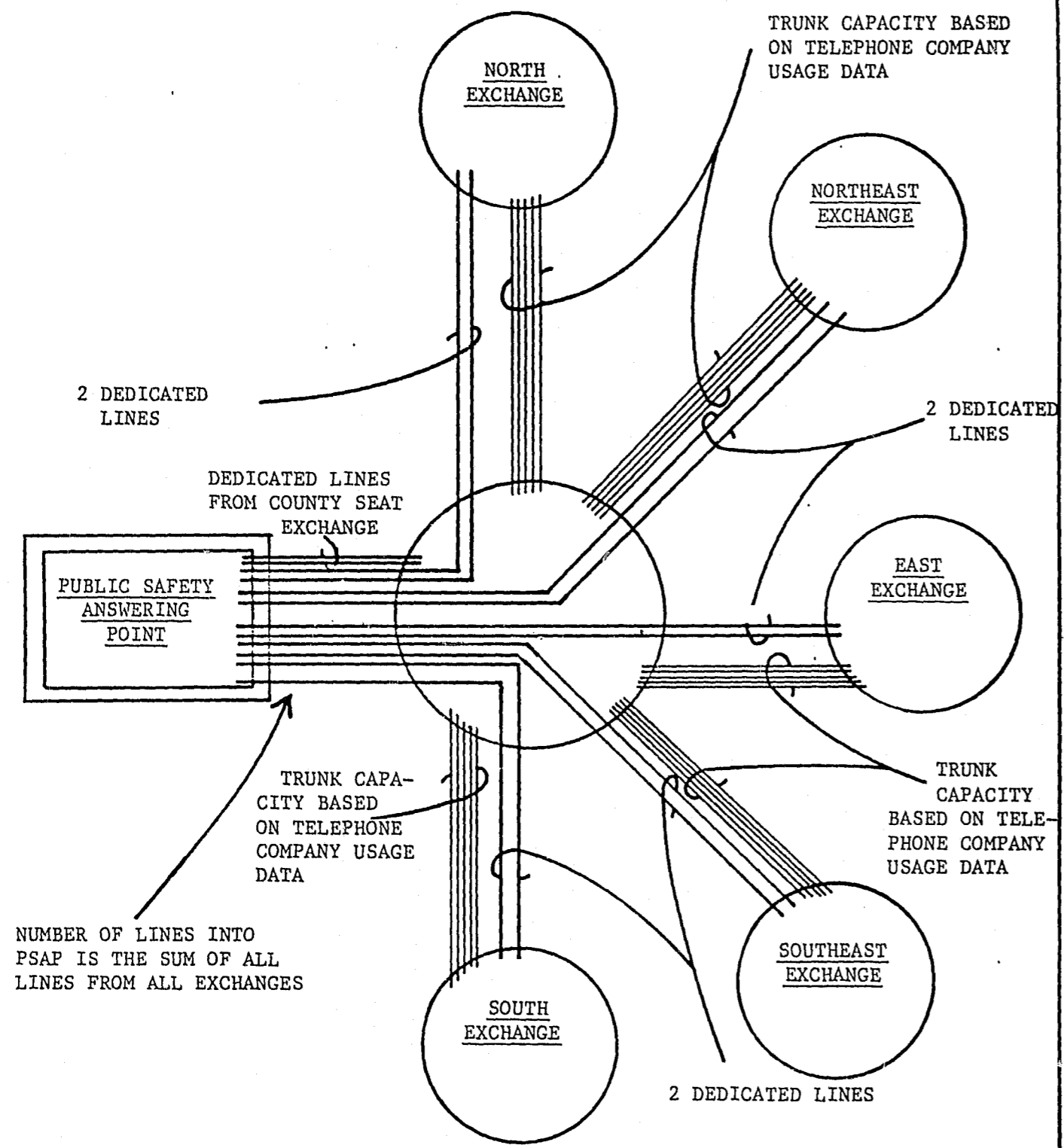


FIGURE IV-5  
ILLUSTRATION OF DEDICATED SYSTEM IN A COUNTY WITH SIX EXCHANGES

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HOLD AND RINGBACK ARE NOT AVAILABLE IN NETWORK SYSTEMS. IN SOME COUNTIES THERE MAY BE A VERY LARGE COST DIFFERENCE BETWEEN NETWORK AND DEDICATED SYSTEMS. IF COST IS A LIMITING FACTOR, SOME COUNTIES MAY DESIRE TO OBTAIN TELEPHONE COMPANY ESTIMATES FOR BOTH NETWORK AND DEDICATED, AND FURTHER EVALUATE THE TRADE-OFFS BETWEEN COST AND FEATURES.

F. 911 SYSTEM FEATURES

911 SYSTEMS ARE AVAILABLE ON 3 LEVELS OF 'SOPHISTICATION'. THE PRIMARY DIFFERENCES BETWEEN THE LEVELS ARE THE FEATURES PROVIDED AND THE SYSTEM COST. THE THREE LEVELS OF 911 SYSTEMS ARE DESCRIBED BELOW.

LEVEL 1: BASIC 911-LIMITED FEATURES

THE MOST BASIC 911 SYSTEM HAS TWO FEATURES AVAILABLE-- FORCED DISCONNECT AND IDLE TONE APPLICATION.<sup>1</sup> THIS SYSTEM REQUIRES NO SPECIAL EQUIPMENT AND ITS COSTS ARE SIMPLY THE MONTHLY LINE CHARGES AND EQUIPMENT RENTAL. THE SYSTEM CAN USE DEDICATED OR NETWORK LINES. NORMAL INSTALLATION CHARGES ARE APPLICABLE.

LEVEL 2: BASIC 911-FULL FEATURES

THIS SYSTEM LEVEL IS STILL CONSIDERED 'BASIC' 911 BUT HAS MANY FEATURES AVAILABLE. THESE INCLUDE FORCED DISCONNECT, IDLE TONE APPLICATION, CALLED PARTY HOLD, RINGBACK, SWITCHHOOK STATUS, AND CALL TRANSFER. THE PROVISION OF ANY OR ALL OF THESE FEATURES (EXCEPT FORCED DISCONNECT AND IDLE TONE APPLICATION), REQUIRES SPECIALLY DESIGNED KEY EQUIPMENT INSTALLED AT THE PSAP. CALLED PARTY HOLD, RINGBACK, AND SWITCHHOOK STATUS ARE FEATURES THAT CAN ONLY BE PROVIDED WHEN DIRECT TRUNKING (DEDICATED LINE SYSTEM) IS USED. SYSTEM COST FOR A TYPICAL SMALL COUNTY IS DESCRIBED AS FOLLOWS.

EXAMPLE: COUNTY OF 25,000 POPULATION; THREE TELEPHONE EXCHANGES, AND 2 ATTENDANT POSITIONS IN THE PSAP.

SYSTEM COST: INCLUDES ALL LINE CHARGES, ALL EQUIPMENT CHARGES, AND ALL OF THE FEATURES LISTED IN THE PREVIOUS DISCUSSION.

<sup>1</sup> All features referred to in these descriptions are explained in Figure IV-6. The availability of features listed may be affected by individual central office capabilities.

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INITIAL EQUIPMENT AND INSTALLATION  
 COST (1-TIME CHARGE).....\$12,000  
 MONTHLY RECURRING COST.....\$780/MONTH

COST BREAKOUT - FEATURES: IN ORDER TO PROVIDE AN INDICATION OF THE COST OF THE FEATURES PROVIDED IN THIS EXAMPLE, THE FEATURES ARE BROKEN OUT FROM THE ABOVE TOTAL AS FOLLOWS:

<u>FEATURE</u>	<u>INITIAL COST</u> (IN THE EXAMPLE COUNTY)	<u>MONTHLY COST</u>
Forced Disconnect	- Standard features in this system,	
Idle Tone Application	no separate charge -	
Ringback	\$95.00	\$3.00/month
Switchhook Status	\$925.00	\$20.00/month
Called Party Hold	-A separate charge is not broken out since this feature is required if Ringback or Switchhook Status is provided.	
Call Transfer	- See below -	

THE COST OF CALL TRANSFER DEPENDS UPON THE METHOD OF TRANSFER. IF DEDICATED LINES FROM THE PSAP TO THE AGENCIES ARE USED, LINE CHARGES WOULD APPLY. THIS WOULD BE APPROPRIATE IN HIGH VOLUME SITUATIONS. IF THE CENTRAL OFFICE IS ESS<sup>1</sup> THEN 'SPEED CALLING' IS AVAILABLE AT \$2.50 PER MONTH FOR 8 NUMBERS OR \$3.50 PER MONTH FOR 30. WITH SPEED CALLING, THE ATTENDANT USES A 2-DIGIT CODE INSTEAD OF THE NORMAL 7-DIGIT NUMBER. THE ATTENDANT CAN TRANSFER BY MANUALLY DIALING THE NUMBER HE WISHES TO TRANSFER THE CALL TO (NO ADDITIONAL CHARGE). IF THE CENTRAL OFFICE IS NOT ESS, THE PSAP CAN PURCHASE AN AUTOMATIC DIALER TO TAKE THE PLACE OF DIALING MANUALLY AT A COST OF APPROXIMATELY \$300.

LEVEL 3: ENHANCED 911-'E-911'

IN ADDITION TO THE FEATURES DESCRIBED IN THE PRECEEDING PARAGRAPH, E-911 SYSTEMS OFFER ADVANCED CAPABILITIES SUCH AS AUTOMATIC NUMBER IDENTIFICATION (ANI), AUTOMATIC LOCATION IDENTIFICATION (ALI), AND SELECTIVE ROUTING (SR)<sup>2</sup>. THE FEATURES ARE DESCRIBED IN FIGURE IV-6. THIS SERVICE IS ONLY

<sup>1</sup> Electronic switching; available in very few N.C. central offices.  
<sup>2</sup> These features are optional and costed separately. Standard E-911 features are forced disconnect, idle tone application, default routing, alternate routing, and speed calling.

AVAILABLE IN A FEW AREAS OF NORTH CAROLINA. IN ORDER TO PROVIDE A GENERAL INDICATION OF COSTS THAT CAN BE ANTICIPATED IN AN ENHANCED 911 SYSTEM, THE FOLLOWING INFORMATION WAS EXTRACTED FROM THE SOUTHERN BELL TARIFF SUBMITTED TO THE PSC IN EARLY 1980. IT MUST BE EMPHASIZED IN CONSIDERING THESE FIGURES THAT THEY ARE INTENDED TO PROVIDE A GENERAL INDICATION OF COST. THE TARIFF HAS NOT BEEN APPROVED AS OF THE DATE OF THIS REPORT AND NEW DEVELOPMENTS MAY BE UPCOMING.

E-911 SERVICE IS AVAILABLE IN FIVE SERVICE FEATURE OFFERINGS. CHARGES FOR EACH ARE BASED ON THE TOTAL NUMBER OF MAIN AND EQUIVALENT MAIN TELEPHONES TO WHICH THE SERVICE FEATURE(S) APPLIES.

<u>Service Feature</u>	<u>Initial Cost per 1000 Main Stations</u>	<u>Monthly Cost per 1000 Main Stations</u>
a. Automatic Number Identification (ANI)	\$465	\$ 40
b. Selective Routing (SR)	\$1,550	\$ 80
c. Combined ANI and SR	\$1,560	\$ 90
d. Combined Automatic Number and Location Identification (ANLI)	\$1,490	\$ 93
e. Combined ANLI and SR	\$1,610	\$102

Above are service charges only. Charges for PSAP equipment follow.

a. Automatic Number Identification

- 1) Master Controller (can handle up to 4 incoming lines and 4 ANI display units); maximum 1 per system.

	<u>Initial Service Cost</u>	<u>Installation Cost</u>	<u>Monthly Cost</u>
Each:	\$670	\$6,630	\$365

- 2) Auxiliary Controller (to handle next 11 lines and/or ANI display units); Maximum 1 per system

Each:	--	\$1,825	\$ 93
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- 3) Additional trunk equipment (required with Auxiliary Controller) for up to four incoming lines (maximum three per system).

Each:	--	\$560	\$ 28
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- 4) Display and transfer unit (maximum 15 per system).

Each:	\$14	\$456	\$ 23
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- 5) Commercial power conversion unit (optional).

Each		\$1,095	\$ 55
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	<u>Initial Service Cost</u>	<u>Installation Cost</u>	<u>Monthly Cost</u>
b) <u>Automatic Location Identification</u>			
1) Master controller for up to three ALI display units (maximum one per system).			
Each:	\$1,140	\$8,400	\$445
(installed at same time as ANI equip- ment)			
2) Auxiliary controller for up to four additional ALI display units (maximum three per system).			
Each:	--	\$945	\$ 48
3) Display unit (maximum fifteen per system)			
Each:	\$ 9	\$1,181	\$ 60
4) Interior wiring			
Per display unit:	--	\$17	\$ 1

FIGURE IV-6 DEFINES ALL OF THE FEATURES DISCUSSED IN THIS SECTION AND DESCRIBES THEIR USES. THE SPECIFIC FEATURES RECOMMENDED IN THE COUNTY 911 PLANS ARE:

CALLED-PARTY HOLD: THIS WILL ALLOW THE PSAP TO HOLD THE CIRCUIT OPEN AFTER THE CALLER HAS HUNG UP. IF A CALL TRACE IS REQUIRED, THE PSAP CAN CONTACT THE TELEPHONE COMPANY AND REQUEST THAT THE HELD CIRCUIT BE TRACED. THE TRACING PROCEDURE USED BY THE TELEPHONE COMPANY WOULD BE STANDARD CALL TRACE PROCEDURES FOR THE TYPE OF CENTRAL OFFICE INVOLVED.

RINGBACK: ALLOWS PSAP TO CALL BACK TO THE CALLING PARTY IF ADDITIONAL INFORMATION IS REQUIRED.

DIRECT TRUNKING AND A 911 SYSTEM OF THE SECOND LEVEL DESCRIBED ARE REQUIRED TO PROVIDE THESE FUNCTIONS. UNDER THE SECOND LEVEL SYSTEM, FORCED DISCONNECT AND IDLE TONE APPLICATION WOULD BE SUPPLIED AS STANDARD FEATURES.

#### G. 911 SYSTEM COST CATEGORIES

##### 1. INITIAL NON-RECURRING COSTS

CATEGORIES OF ONE-TIME INITIAL COSTS ARE AS FOLLOWS. NOT ALL WILL BE APPLICABLE IN ANY ONE COUNTY.

##### A. TELEPHONE EQUIPMENT COSTS

INSTALLATION OF CALL ANSWERING EQUIPMENT AND 911 TRUNKS FROM TELEPHONE CENTRAL OFFICES TO A 911 ANSWERING CENTER. ONE-TIME CHARGES FOR INSTALLATION OF ALL INCOMING

FIGURE IV-6  
911 SYSTEM FEATURES

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911 SYSTEM FEATURE	DEFINITION	USES OF THE FEATURE	ADDITIONAL COMMENTS
<u>FORCED DISCONNECT</u>	Enables telecommunicator to disconnect nuisance calls	Helpful in dealing with prank callers; prevents deliberate lock-up of the system	This is a standard feature of most 911 systems.
<u>IDLE CIRCUIT TONE APPLICATION</u>	Enables telecommunicator to determine if calling party has hung up or is still on line	Useful in determining if caller is injured and cannot speak (call can then be traced)	This is a standard feature of most 911 systems.
<u>AUTOMATIC CALL DISTRIBUTOR (ACD)</u>	Distributes incoming calls evenly among telecommunicators who are not busy	Eliminates delays in answering calls in large 911 answering centers by always routing a call to an open position	Useful primarily in large centers.
<u>CALLED-PARTY HOLD</u>	Enables PSAP to hold line open after caller has hung up	Useful in tracing prank calls, bomb threats, etc. or if calling party fails to give location of emergency	-Tracing may take excessive time from some small central offices -Does not protect anonymity of caller -Available only with direct trunking
<u>EMERGENCY RING-BACK</u>	Enables answering point to call back caller for additional information	Helpful in getting verification on information	Available only on calls trunked directly from the originating central office
<u>IDENTIFICATION OF INCOMING LINES</u>	Identifies which central office call is routed through	Helpful in identifying general location of caller	This is essentially a 'cosmetic' item available on all systems. Each button on the telephone set represents an incoming line, and is identified by color or symbol as to the central office it comes from.
(continued)			

FIGURE IV-6 CONTINUED

911 SYSTEM FEATURE	DEFINITION	USES OF THE FEATURE	ADDITIONAL COMMENTS
<u>SWITCHHOOK STATUS</u>	Telecommunicator receives both an audible and visual signal that a held on-hook party has gone off-hook	-Prevents inadvertently tying up a line with, called party hold -Lets the operator know if a held party comes back on, in the event the PSAP has been trying to get back to the party	Limited to 911 calls trunked directly from the originating central office via metallic facilities. This optional feature requires central office modifications.
<u>MULTI-LINE CONFERENCING</u>	Allows telecommunicator to connect caller directly with specific emergency service (such as suicide prevention service, etc.)	Enables caller who needs (on an emergency basis) to communicate with a specific agency to do so	Telecommunicator must stay on line and cannot handle other calls. Not recommended for PSAP's with a single operator position.
<u>CALL TRANSFER</u>	Allows telecommunicator to transfer an incoming call to another agency via a 2-way circuit.	One of the methods of PSAP call handling	The telecommunicator does not have to stay on the line after the called agency has answered, but may re-enter at any time while the connection is still established.
<u>AUTOMATIC NUMBER IDENTIFICATION (ANI)</u>	Automatically identifies and displays number from which caller is speaking	Can reduce prank calls; enables telecommunicator to call back or trace the call	-Available only with E-911 system -See Text for cost
<u>AUTOMATIC LOCATION IDENTIFICATION (ALI)</u>	Automatically identifies and displays the name (business accounts only) and address associated with the calling party's telephone	Eliminates need for traces, may improve response time	-Available only with E-911 system -See text for cost information -Combination of ANI/ALI, displaying number and location, is available

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FIGURE IV-6 CONTINUED

911 SYSTEM FEATURE	DEFINITION	USES OF THE FEATURE	ADDITIONAL COMMENTS
<u>ALTERNATE ROUTING</u>	Allows 911 calls to be automatically routed to a designated alternate location if all 911 lines to the primary PSAP are busy or if the primary PSAP closes down for a period (night service).	Distributes overload of PSAP emergency calls in a crisis situation	This is a standard feature of E-911; available only with E-911 system.
<u>SELECTIVE ROUTING</u>	Automatically identifies jurisdiction from which call is coming and routes call to appropriate dispatch center for that jurisdiction	This can essentially eliminate the problems of exchange boundary/county boundary mismatches (Refer to Section IV-D3)	Available only with E-911 system



AND OUTGOING LINES AND SPECIAL RECORDER CONNECTIONS. ESTIMATED INITIAL TELEPHONE CHARGES WERE ADDRESSED IN SUBSECTION F.

**B. RECORDER EQUIPMENT**

MAGNETIC TAPE DUAL-TRACK 24-HOUR LOGGING RECORDERS WITH TIME GENERATOR AND READER, AND 30 REELS OF TAPE. (MOST NORTH CAROLINA COUNTIES AND A NUMBER OF LARGER TOWNS RECEIVING LEAA FUNDS IN THE PAST SEVERAL YEARS FOR RADIO COMMUNICATIONS SYSTEMS HAVE BEEN PROVIDED EITHER AN ADEQUATE TAPE RECORDER FOR THIS USE, OR ONE THAT CAN BE READILY EXPANDED TO HANDLE COUNTYWIDE 911 TRAFFIC.) ESTIMATED COST OF \$16,000 FOR A RECORDER OF THIS TYPE. INSTANT PLAYBACK RECORDERS, ONE PER ANSWERING POSITION AND ONE FOR THE SUPERVISOR POSITION. (APPROX. \$1,600 EACH).

**C. CONSOLE EQUIPMENT**

WHERE RADIO CONTROL EQUIPMENT IS REQUIRED, ONE-TIME COSTS FOR CONSOLES AS NEEDED TO PROVIDE THE NECESSARY CONTROL FEATURES. (MOST NORTH CAROLINA SHERIFF'S DEPARTMENTS AND THE LARGER POLICE DEPARTMENTS HAVE BEEN PROVIDED LEAA FUNDS FOR CONSOLES, MANY OF WHICH MAY HAVE SUFFICIENT UNUSED CAPACITY TO HANDLE ADDITIONAL 911 TRAFFIC. IN SOME CASES, ADDITIONAL CONSOLE EQUIPMENT WILL PROBABLY BE REQUIRED, HOWEVER, FOR EMS AND POSSIBLE FIRE TRAFFIC.) APPROXIMATE COST \$5,000-\$15,000.

**D. FACILITY CONSTRUCTION/MODIFICATION**

EVEN WHERE ADEQUATE HOUSING EXISTS, MODIFICATIONS MAY BE NECESSARY AND EMERGENCY GENERATOR POWER MUST BE PROVIDED. APPROXIMATE COST OF A 5KW EMERGENCY GENERATOR IS \$6,000.

**E. MISCELLANEOUS**

COSTS OF ADDITIONAL CONTROL MODULES FOR EXISTING CONSOLES, CONSOLE MODIFICATIONS, DEDICATED TELEPHONE LINES, WX NUMBERS, ALERTING SYSTEMS (PAGERS FOR FIRE AND EMS PERSONNEL), AND SIMILAR ITEMS.

**2. MODEL FOR ESTIMATING MONTHLY RECURRING COSTS**

FIGURE IV-7 IDENTIFIES FIVE MAJOR COST CATEGORIES FOR ESTIMATING 911 SYSTEM COST AND PROVIDES SOME GENERAL INFORMATION FOR DETERMINING THE APPLICABILITY OF THE CATEGORIES TO A COUNTY. THE COST ESTIMATES PROVIDED REFLECT MONTHLY TELEPHONE COMPANY CHARGES ONLY. THEY DO NOT INCLUDE STAFFING AND OPERATION OF PSAP NOR DO THEY INCLUDE NON-RECURRING ITEMS DISCUSSED IN #1 ABOVE. CATEGORY 0 REFLECTS THE BASIC LEVEL 1 SYSTEM DISCUSSED IN THE PRECEEDING SUBSECTION AND THE REMAINING CATEGORIES REFLECT LEVEL 2 SYSTEMS FOR VARYING POPULATION LEVELS.

FIGURE IV-7

MODEL FOR ESTIMATING THE RECURRING COSTS FOR 911 TELEPHONE SERVICE

CATEGORY	POPULATION OF COUNTY	GENERAL CHARACTERISTICS	EXPECTED MONTHLY 911 TELEPHONE COSTS <sup>1</sup>
0	less than 50,000	This is a Basic System with NO FEATURES except possibly Forced Disconnect and Idle Tone Applications. (Level 1) <u>County Characteristics:</u> No large towns or cities, government generally dominated by the county. County area dominated by one telephone company.	\$90-250/month
1	less than 25,000	Basic System with ALL FEATURES listed under Level 2 system including call transfer capability without direct lines to transfer agencies. <u>County Characteristics:</u> No large towns or cities, government generally dominated by the county. County area dominated by one telephone company.	\$400-800/month
2	25,000-50,000	Basic System with ALL FEATURES listed under Level 2 system including call transfer capability without direct lines to transfer agencies. <u>County Characteristics:</u> Generally, no large towns or cities, government generally dominated by the county. County area dominated by one telephone company.	\$800-1,500/month
3	50,000-100,000	Basic System with ALL FEATURES listed under Level 2 system including call transfer capability with direct lines. <u>County Characteristics:</u> One medium to large town with generally separate public safety agencies. One or two telephone companies generally serve the area.	\$1,000-3,000/month
4	greater than 100,000	Basic System with ALL FEATURES listed under Level 2 system including call transfer capability with direct lines. <u>County Characteristics:</u> One or more large towns with 10 or more separate public safety agencies; one or more telephone companies serve the area.	Greater than \$2,000/month

<sup>1</sup> Telephone equipment only; no consoles, furniture, office space, etc. included.

NO CATEGORY IS ESTABLISHED FOR LEVEL 3 SYSTEMS IN THE MODEL.

THE COUNTY PLANS REFLECT RECOMMENDATIONS IN CATEGORY 1 AND UP, SINCE LEVEL 2 SYSTEMS WITH FEATURES ARE RECOMMENDED. HOWEVER, AS SHOWN IN THE CHART, THERE IS GENERALLY A LARGE COST DIFFERENCE BETWEEN CATEGORY 0 AND 1. A COUNTY MAY WISH TO CONSIDER A LEVEL 1 SYSTEM IF THE COST OF A LEVEL 2 SYSTEM (WITH FEATURES) IS PROHIBITIVE.

AVAILABLE COST DATA FROM EXISTING 911 SYSTEMS IN NORTH CAROLINA AND FROM TELEPHONE COMPANY PROPOSALS WAS COMPARED TO THE COST MODEL, AND COSTS GENERALLY FELL WITHIN THE RANGES SPECIFIED IN THE MODEL ACCORDING TO POPULATION. THE NOTABLE EXCEPTIONS WERE DURHAM AND LINCOLN COUNTIES, WHERE MONTHLY COSTS WERE CONSIDERABLY HIGHER THAN THE MODEL PREDICTION. (APPROXIMATELY DOUBLED.) TELEPHONE COMPANY PROPOSALS FOR COUNTIES IN REGION Q WERE ALSO CONSIDERABLY HIGHER FOR 911 SYSTEMS WITHOUT FEATURES.

#### H. TRAINING FOR PSAP TELECOMMUNICATORS

##### 1. PRESENT SOURCES OF TRAINING MATERIALS

NORTH CAROLINA DOES NOT YET HAVE UNIFORM TRAINING REQUIREMENTS FOR TELECOMMUNICATORS. LATE IN 1976, THE TRAINING AND STANDARDS COUNCIL, AFTER CAREFULLY CONSIDERING THE SUBJECT OF TELECOMMUNICATOR TRAINING, ELECTED NOT TO PURSUE THE MATTER OF MANDATORY CERTIFICATION OF TELECOMMUNICATORS, PRIMARILY DUE TO LACK OF FUNDS AND PERSONNEL.

A 70-HOUR TRAINING PROGRAM WAS DEVELOPED BY THE COUNCIL, USING LEAA FUNDS, AND A PILOT COURSE RUN AT CATAWBA TECHNICAL INSTITUTE IN 1976. ALTHOUGH WEAKNESSES IN THE COURSE SYLLABUS HAVE NOT BEEN ADDRESSED, THIS SYLLABUS AS WELL AS ONE DEVELOPED BY APCO (ASSOCIATED PUBLIC SAFETY COMMUNICATIONS OFFICERS), AND ONE DEVELOPED BY THE COMMUNICATIONS OFFICER VOLUSIA COUNTY (FLORIDA) SHERIFF'S DEPARTMENT, CIVIL DEFENSE/ COMMUNICATIONS DIVISION, ARE AVAILABLE FOR COPYING AT THE OFFICE OF THE GOVERNOR'S CRIME COMMISSION, DOBBS BUILDING, RALEIGH, (TELEPHONE (919)/733-5013). ADDITIONAL MATERIAL, INCLUDING TRAINING COURSES DEVELOPED BY CITIES AND COUNTIES IN OTHER STATES IS AVAILABLE THROUGH THE APCO INFORMATION SERVICE, ADDRESS: APCO-IS, POST OFFICE BOX 669, NEW SMYRNA BEACH, FLORIDA 32069.

THE NORTH CAROLINA STATE HIGHWAY PATROL COMMUNICATIONS TRAINING CENTER IN RALEIGH CONDUCTS REGULARLY SCHEDULED COURSES AND WELCOMES ATTENDEES FROM AGENCIES THROUGHOUT THE STATE. ABOUT HALF OF THE COURSE WOULD NOT RELATE DIRECTLY TO CITY OR COUNTY DISPATCHING OPERATIONS. TUITION IS FREE, BUT STUDENTS ARE RESPONSIBLE FOR THEIR OWN LIVING EXPENSES, AND MUST LIVE IN TRAINING CENTER DORMITORIES FOR THE DURATION OF THE COURSE.

##### 2. OPERATOR LIABILITY AND EMT TRAINING

A MATTER THAT MUST NOT BE OVERLOOKED IN OPERATING A PUBLIC SAFETY ANSWERING POINT (PSAP), IS THAT OF OPERATOR LIABILITY. THE CONSENSUS OF KNOWLEDGABLE INDIVIDUALS IN NORTH CAROLINA IS THAT COMPLAINT PROCESSORS SHOULD HAVE SOME AMOUNT OF EMS TRAINING (EMERGENCY MEDICAL TECHNICIAN), PROBABLY 45 TO 50 HOURS IN A COURSE SIMILAR TO THE FIRST RESPONDER TRAINING COURSE.

TOO GREAT AN EMPHASIS ON EMT FOR THE TELECOMMUNICATORS COULD POSSIBLY LEAD TO PROBLEMS OF LIABILITY WHERE THE COMPLAINT PROCESSOR MIGHT TEND TO RENDER DIAGNOSIS AND PRESCRIBE TREATMENT OVER THE TELEPHONE. UNDER NORTH CAROLINA LAW, G.S. 20-166(D) AS LATER AMENDED AND IN ACCORDANCE WITH A NORTH CAROLINA ATTORNEY GENERAL'S OPINION, AN EMERGENCY MEDICAL SERVICES PROVIDER IS PROTECTED TO THE EXTENT THAT HE MAY BE HELD LIABLE ONLY TO THE STANDARD TO WHICH HE IS TRAINED.

THE PROBLEM OF POSSIBLE CONSEQUENCE FROM THE LIABILITY ASPECT OF EMT TRAINED TELECOMMUNICATORS DISPENSING MEDICAL ADVICE OVER THE TELEPHONE HAS BEEN BYPASSED BY SOME COUNTIES. CALLERS WITH A MEDICAL EMERGENCY IN DURHAM, FOR EXAMPLE, ARE PATCHED DIRECTLY TO A DOCTOR OR NURSE IN THE EMERGENCY ROOM AT THE COUNTY HOSPITAL, WHILE THE EMERGENCY ASSISTANCE NEEDED IS PROMPTLY DISPATCHED.

### 3. STATE LEVEL RECOMMENDATIONS

THE PROBLEM OF UNIFORM TRAINING STANDARDS AND DEVELOPMENT OF A TRAINING COURSE WAS UNDER CONSIDERATION BY THE GOVERNOR'S CRIME COMMISSION FOR POSSIBLE LEAA FUNDING IN 1981-82. THE CONCEPT MOST FAVORED FOR POSSIBLE ADOPTION WOULD USE A MOBILE TRAINING TEAM TO CONDUCT ON-SITE TRAINING. THE TEAM WOULD ASSESS EQUIPMENT CAPABILITIES AND NEEDS, DESIGN A TRAINING PROGRAM, DEVELOP A STANDARD OPERATING PROCEDURE, AND CONDUCT ON-THE-JOB TRAINING OVER A ONE OR TWO WEEK PERIOD.

TERMINATION OF THE LEAA PROGRAM BY CONGRESS HAS ELIMINATED THIS POTENTIAL SOLUTION TO THE PROBLEM, BUT THE NEED PERSISTS, AND SHOULD AGAIN BE CONSIDERED IF FUNDS BECOME AVAILABLE. IN THE INTERIM, THE PROBLEM MUST CONTINUE TO BE RESOLVED LOCALLY BY ON-THE-JOB TRAINING.

### 4. LOCAL LEVEL RECOMMENDATIONS

AN ESSENTIAL REQUIREMENT OF A 911 SYSTEM IS WELL-TRAINED OPERATORS WHO CAN DEAL WITH CITIZENS IN A CRISIS SITUATION. TRAINING IS A CRITICAL ELEMENT THAT SHOULD NOT BE OVERLOOKED IN THE 911 PLANNING PHASE. DEVELOPMENT OF STANDARD OPERATING PROCEDURES AND TRAINING REQUIREMENTS AND PROCEDURES IS A TASK THAT SHOULD BE ASSIGNED TO A SUBCOMMITTEE WHEN THE DECISION IS MADE TO IMPLEMENT 911. STANDARD OPERATING PROCEDURES

WILL INCLUDE ITEMS SUCH AS:

- WHAT INFORMATION TO OBTAIN FROM CALLER;
- HOW TO HANDLE EMERGENCY CALLS--WILL DEPEND UPON METHOD(S) OF CALL HANDLING TO BE USED (DIRECT DISPATCH, CALL TRANSFER, ETC.) AND SHOULD INCLUDE HOW TO HANDLE CALLS FROM ANOTHER JURISDICTION IF THERE IS EXCHANGE BOUNDARY OVERLAP;
- WHAT TO SAY TO NON-EMERGENCY CALLERS USING 911;
- WHAT RECORDS TO KEEP.

MINIMUM STANDARDS FOR TRAINING COMPLAINT PROCESSORS ARE IDENTIFIED IN TABLE III-3 OF SECTION III, 911 SYSTEM STANDARDS.

### I. IMPLEMENTATION GUIDELINES

THE PROCESS OF PLANNING AND IMPLEMENTING A 911 SYSTEM CAN TAKE FROM ONE TO THREE YEARS FOR COMPLETION. THE EXACT TIME FROM THE INCEPTION OF PLANNING TO THE FIRST DAY OF 911 OPERATION WILL VARY DEPENDING UPON THE DIFFICULTY OF LOCAL DECISIONS (SUCH AS SELECTION OF A PSAP), LEAD-TIMES REQUIRED BY THE TELEPHONE COMPANIES, AND PREPARATION TIME IF ITEMS SUCH AS PSAP PHYSICAL MODIFICATIONS, EQUIPMENT PURCHASES, OR CONSTRUCTION ARE REQUIRED.

SOME GENERAL IMPLEMENTATION GUIDELINES ARE LISTED BELOW.

- THE PLANNING/IMPLEMENTATION PROCESS SHOULD TAKE THE FOLLOWING GENERAL FORM:
  1. FORM A LOCAL COMMITTEE. GET TELEPHONE COMPANIES INVOLVED AT THIS TIME IN ORDER TO HAVE TIMELY INPUT ON TELEPHONE COMPANY CAPABILITIES AND PLANS.
  2. ADDRESS THE ISSUES IDENTIFIED IN FIGURE IV-8 IN SUFFICIENT DETAIL TO PROVIDE TELEPHONE COMPANY WITH INFORMATION FOR A PROPOSAL.
  3. REQUEST A FORMAL PROPOSAL FROM THE TELEPHONE COMPANY.
  4. DEVELOP THE PROPOSAL INTO A SPECIFIC PLAN AND COORDINATE IMPLEMENTATION WITH THE TELEPHONE COMPANY.

- TELEPHONE COMPANIES REQUIRE FROM 12 TO 24 MONTHS LEAD TIME TO IMPLEMENT 911. MOST TELEPHONE COMPANIES SUGGEST THAT THE 911 OPERATIONAL DATE COINCIDE WITH THE ISSUE OF A NEW DIRECTORY..
- THE IMPLEMENTATION PLAN AND BUDGET SHOULD INCLUDE AN ADVERTISING CAMPAIGN TO BEGIN APPROXIMATELY TWO WEEKS BEFORE 911 BECOMES OPERATIONAL.
- WHERE 911 CANNOT BE PROVIDED FOR 3 YEARS OR MORE, IT IS RECOMMENDED THAT THE COUNTY WORK TOWARD IMPLEMENTING A SINGLE 7-DIGIT NUMBER FOR ALL EMERGENCY SERVICES. IMPLEMENTATION OF A SINGLE 7-DIGIT NUMBER MUST INCLUDE RESOLUTION OF MANY OF THE SAME DIFFICULT ISSUES ENCOUNTERED WHEN PLANNING 911--LOCATION AND RESPONSIBILITY FOR PSAP, AGENCIES TO BE SERVED, CALL HANDLING METHODS TO USE, ETC. THUS, WHEN 911 BECOMES AVAILABLE THE ORGANIZATIONAL AND PROCEDURAL STRUCTURES WILL ALREADY BE IN PLACE.

FIGURE IV-8  
ELEMENTS OF A 911 PLAN

1. Location of Public Safety Answering Point (PSAP)
2. Responsibility for operation of PSAP
3. Agencies to be included, and a call handling method for each agency
4. Interagency agreements, including:
  - standard operating procedures
  - staffing agreements
  - agreement for allocating costs
  - mutual aid agreements
5. Requirements and procedures for training PSAP personnel
6. How boundary mismatch will be handled
7. System features to be provided by the telephone company
8. Equipment needed at PSAP
9. Estimate of costs and budget (cost allocation)
10. Publicity campaign to advertise the 911 number approximately 2 weeks before operational date

## V. SUMMARY OF RECOMMENDATIONS FROM COUNTY PLANS

THE EIGHTEEN REGIONAL REPORTS CONTAIN A 911 PLAN FOR EVERY COUNTY THAT DOES NOT CURRENTLY HAVE A COUNTYWIDE 911 SYSTEM.<sup>1</sup> THE PLANS CONTAIN SPECIFIC RECOMMENDATIONS THAT ADDRESS THE ISSUES DISCUSSED IN THE PRECEEDING SECTION. WHILE THE MAJORITY OF THE RECOMMENDATIONS DIFFER FROM COUNTY TO COUNTY, THERE ARE SOME RECOMMENDATIONS THAT ARE CONSISTENT THROUGHOUT THE PLANS. THESE ARE:

### \*SYSTEM TYPE

DEDICATED SYSTEMS ARE RECOMMENDED IN ALL COUNTIES.<sup>2</sup>

### \*SYSTEM FEATURES

CALLED PARTY HOLD AND EMERGENCY RINGBACK ARE FEATURES RECOMMENDED IN ALL SYSTEMS.

### \*TRAINING

LOCALLY CONDUCTED ON-THE-JOB TRAINING IS RECOMMENDED FOR PSAP TELECOMMUNICATORS.

### \*APPROACH TO TELEPHONE BOUNDARY MISMATCH

THE AREAS OF EXCHANGE BOUNDARY OVERLAP ARE IDENTIFIED AND ALTERNATIVES FOR DEALING WITH THE PROBLEM (SEE IV-D) OUTLINED. IT IS RECOMMENDED THAT CHOICE OF THE MOST ACCEPTABLE ALTERNATIVE BE A LOCAL DECISION.

THE SPECIFIC RECOMMENDATIONS INCLUDED IN THE COUNTY PLANS FALL IN THE FOLLOWING CATEGORIES:

- \*RECOMMENDED PSAP LOCATION
  - MOST COST-EFFECTIVE ALTERNATIVE
  - OTHER ALTERNATIVES, IF APPLICABLE
- \*RESPONSIBILITY FOR PSAP (MOST ACCEPTABLE LOCALLY)
- \*RECOMMENDED MINIMUM LIST OF PARTICIPATING AGENCIES
- \*RECOMMENDED METHOD OF HANDLING CALLS FOR EACH AGENCY ABOVE
- \*REQUIREMENTS FOR INTERAGENCY AGREEMENTS
- \*EQUIPMENT REQUIREMENTS AND COST CATEGORY
- \*IMPLEMENTATION SCHEDULE

<sup>1</sup> For counties that do have a 911 system, a complete description of the existing system is included in the regional reports.

<sup>2</sup> In several cases, counties are encouraged to further consider the trade-offs between network and dedicated systems.

TABLE V-1 PROVIDES A SUMMARY OF MAJOR RECOMMENDATIONS FOR EACH COUNTY AS EXPLAINED BELOW.

RECOMMENDED PSAP: THE LOCATION RECOMMENDED AS MOST COST-EFFECTIVE. OTHER ALTERNATIVES MAY BE IDENTIFIED IN THE COUNTY PLAN.

CALL HANDLING METHOD(S): THREE METHODS--DIRECT DISPATCH, CALL TRANSFER, AND CALL RELAY ARE IDENTIFIED. A SINGLE 'X' IN ONE OF THE THREE COLUMNS INDICATES THAT THE ONE CALL HANDLING METHOD IS RECOMMENDED FOR ALL PARTICIPATING AGENCIES. MULTIPLE 'X'S INDICATE THAT DIFFERENT CALL METHODS ARE RECOMMENDED FOR DIFFERENT AGENCIES. IF INFORMATION ON SPECIFIC AGENCIES IS DESIRED, THE READER SHOULD REFER DIRECTLY TO THE COUNTY PLANS.

SIGNIFICANT BOUNDARY MISMATCH: A 'YES' OR 'NO' INDICATES WHETHER THERE IS SIGNIFICANT OVERLAP OF TELEPHONE EXCHANGE BOUNDARIES WITH COUNTY BOUNDARIES IN THE FOLLOWING CATEGORIES:

Incursion: An exchange from an adjoining county overlaps into the subject county. Residents of the subject county are thus served by an exchange terminating in the adjoining county.

Excursion: An exchange from the subject county overlaps into an adjoining county. Residents of the adjacent county are thus served by an exchange that terminates in the subject county.

COST CATEGORY: THE ESTIMATED RANGE OF 911 MONTHLY COST FOR THE COUNTY. COST CATEGORIES 1,2,3,AND 4 WERE DEFINED IN FIGURE IV-7 IN SECTION IV-G. OF THIS REPORT.

**TABLE V-1**  
SUMMARY OF RECOMMENDATIONS BY COUNTY

COUNTY	RECOMMENDED PSAP LOCATION (MOST COST-EFFECTIVE ALTERNATIVE):	METHOD OF CALL HANDLING			SIGNIFICANT BOUNDARY MISMATCH		COST CATEGORY			
		DIRECT DISPATCH	CALL RELAY	CALL TRANSFER	INCURSION <sup>1</sup>	EXCURSION <sup>1</sup>	1	2	3	4
<b>REGION A</b>										
Cherokee	County Communications Center	X					X			
Clay	County Sheriff Department	X					X			
Graham	County Sheriff Department	X					X			
Haywood	Emergency Operations Center	X		X				X		
Jackson	County Sheriff Department	X			X		X			
Macon	County Sheriff Department	X			X		X			
Swain	County Sheriff Department	X		X			X			
<b>REGION B</b>										
Buncombe	Co. Emergency Operations Ctr.	X		X						X
Henderson	Co. Emergency Operations Ctr.	X		X	X				X	
Madison	County Sheriff Department	X					X			
Transylvania	Brevard Police Department	X					X			
<b>REGION C</b>										
Cleveland	County Communications Center	X		X						X
McDowell	County Communications Center	X						X		
Polk	Tryon Police Department	X				X	Single 7-digit system recommended			
Rutherford	County Communications Center	X					X			X
<b>REGION D</b>										
Alleghany	County Communications Center	X					X			
Ashe	County Communications Center	X					X			
Avery	County 911 system in existence--See Figure II-4 for description.									
(continued)										

<sup>1</sup> Incursion means an area of the subject county is served by an exchange from an adjacent county.  
Excursion means an area of an adjacent county is served by an exchange in the subject county.

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SYSTECH CORPORATION

TABLE V-1 CONTINUED

COUNTY	RECOMMENDED PSAP LOCATION (MOST COST-EFFECTIVE ALTERNATIVE):	METHOD OF CALL HANDLING			SIGNIFICANT BOUNDARY MISMATCH		COST CATEGORY			
		DIRECT DISPATCH	CALL RELAY	CALL TRANSFER	INCURSION <sup>1</sup>	EXCURSION <sup>1</sup>	1	2	3	4
<b>REGION D (cont.)</b>										
Mitchell	County Sheriff Department	X				X	X			
Watauga	Boone Police Department	X		X				X		
Wilkes	County Communications Center	X							X	
Yancey	County Sheriff Department	X					X			
<b>REGION E</b>										
Alexander	County Sheriff Department	X					X			
Burke	County Sheriff Department	X		X	X	X			X	
Caldwell	County Sheriff Department	X		X	X				X	
Catawba	County 911 system on order-- See Figure II-4 for description.									
<b>REGION F</b>										
Cabarrus	County Sheriff Department	X			X	X			X	
Gaston	Combined City/County system	X		X	X	X				X
Iredell	Emergency Communications Ctr.	X		X	X	X			X	
Lincoln	County 911 system in existence--See Figure II-4 for description.									
Mecklenburg	County 911 system in existence--See Figure II-4 for description.									
Rowan	County Communications Center	X			X				X	
Stanly	County Communications Center	X		X		X		X		
Union	County Communications Center	X							X	
<b>REGION G</b>										
Alamance	County 911 system on order - See Figure II-4 for description.									
Caswell	County Communications Center	X			X	X	X			
Davidson	County Communications Center	X		X	X	X				X
Guilford (continued)	County Sheriff Department	X		X		X				X

<sup>1</sup> Incursion means an area of the subject county is served by an exchange from an adjacent county.  
Excursion means an area of an adjacent county is served by an exchange in the subject county.

SYSTEMCH CORPORATION  
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TABLE V-1 CONTINUED

SYSTEMCH CORPORATION  
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COUNTY	RECOMMENDED PSAP LOCATION (MOST COST-EFFECTIVE ALTERNATIVE):	METHOD OF CALL HANDLING			SIGNIFICANT BOUNDARY MISMATCH		COST CATEGORY			
		DIRECT DISPATCH	CALL RELAY	CALL TRANSFER	INCURSION <sup>1</sup>	EXCURSION <sup>1</sup>	1	2	3	4
<u>REGION G (cont.)</u>										
Randolph	Medical Rescue Comm. Center	X		X	X				X	
Rockingham	County Communications Center	X		X		X			X	
<u>REGION H</u>										
Anson	Wadesboro Police Department	X					X			
Montgomery	County Sheriff Department	X				X	X			
Moore	County Communications Center	X		X	X	X		X		
Richmond	County Sheriff Department	X		X	X			X		
<u>REGION I</u>										
Davie	County Communications Center	X					X			
Forsyth	County Communication Center in addition to existing system in Winston-Salem	X		X	X	X				X
Stokes	County Jail	X			X	X		X		
Surry	County Sheriff Department	X		X				X	X	
Yadkin	County Sheriff Department	X			X			X		
<u>REGION J</u>										
Chatham	County Communications Center	X		X	X			X		
Durham	County 911 system in existence--See Figure II-4 for description.									
Johnston	County Communications Center	X		X	X	X			X	
Lee	County Communications Center	X		X	X	X		X		
Orange	County 911 system in existence--See Figure II-4 for description.									
Wake	Raleigh Police Department	X		X		X				X

<sup>1</sup> Incursion means an area of the subject county is served by an exchange from an adjacent county.  
Excursion means an area of an adjacent county is served by an exchange in the subject county.

TABLE V-1 CONTINUED

SYSTEMCH CORPORATION  
57

COUNTY	RECOMMENDED PSAP LOCATION (MOST COST-EFFECTIVE ALTERNATIVE):	METHOD OF CALL HANDLING			SIGNIFICANT BOUNDARY MISMATCH		COST CATEGORY			
		DIRECT DISPATCH	CALL RELAY	CALL TRANSFER	INCURSION <sup>1</sup>	EXCURSION <sup>1</sup>	1	2	3	4
<u>REGION K</u>										
Franklin	County Communications Center	X			X					
Granville	Oxford Police Department	X						X		
Person	Roxboro Police Department	X						X		
Vance	Henderson Police Department	X		X		X		X		
Warren	Warrenton Police Department	X		X	X		X			
<u>REGION L</u>										
Edgecombe	Tarboro Police Department in addition to Rocky Mount	X		X		X				X
Halifax	County Sheriff Department	X		X		X				X
Nash	County Sheriff Department	X		X	X	X				X
Northampton	County Sheriff Department	X			X		X			
Wilson	County Sheriff Department	X		X	X	X				X
<u>REGION M</u>										
Cumberland	County 911 system in existence---See Figure II-4 for description.									
Harnett	County Sheriff Department	X			X	X			X	
Sampson	County Sheriff Department	X		X	X	X			X	
<u>REGION N</u>										
Bladen	County Communications Center	X							X	
Hoke	County Sheriff Department	X			X		X			
Robeson	At discretion of Local Com- mittee					X				X
Scotland	County Sheriff Department	X			X				X	

<sup>1</sup> Incursion means an area of the subject county is served by an exchange from an adjacent county.  
Excursion means an area of an adjacent county is served by an exchange in the subject county.

TABLE V-1 CONTINUED

SYSTEMCH CORPORATION  
58

COUNTY	RECOMMENDED PSAP LOCATION (MOST COST-EFFECTIVE ALTERNATIVE):	METHOD OF CALL HANDLING			SIGNIFICANT BOUNDARY MISMATCH		COST CATEGORY			
		DIRECT DISPATCH	CALL RELAY	CALL TRANSFER	INCURSION <sup>1</sup>	EXCURSION <sup>1</sup>	1	2	3	4
<u>REGION O</u>										
Brunswick	County Sheriff Department	X		X	X			X		
Columbus	Co. Law Enforcement Communi- cations Center	X							X	
New Hanover	County Communications Center	X		X	X	X			X	
Pender	County Communications Center	X			X	X	X			
<u>REGION P</u>										
Carteret	County Communications Center	X		X	X			X		
Craven	County Communications Center	X			X	X			X	
Duplin	County Communications Center	X		X	X	X		X		
Greene	County Sheriff Department	X	X		X		X			
Jones	County Sheriff Department	X		X	X		X			
Lenoir	Kinston Police Department	X		X					X	
Onslow	County Communications Center	X		X		X				X
Pamlico	County Sheriff Department	X					X			
Wayne	Goldsboro Fire and Police Complex	X		X		X			X	
<u>REGION Q</u>										
Beaufort	County Communications Center	X		X				X		
Bertie	County Sheriff Department	X			X	X	X			
Hertford	County Communications Center	X		X	X		X			
Martin	County Communications Center	X		X				X		
Pitt	County Communications Center	X		X		X			X	

<sup>1</sup> Incursion means an area of the subject county is served by an exchange from an adjacent county.  
Excursion means an area of an adjacent county is served by an exchange in the subject county.

TABLE V-1 CONTINUED

COUNTY	RECOMMENDED PSAP LOCATION (MOST COST-EFFECTIVE ALTERNATIVE):	METHOD OF CALL HANDLING			SIGNIFICANT BOUNDARY MISMATCH		COST CATEGORY				
		DIRECT DISPATCH	CALL RELAY	CALL TRANSFER	INCURSION <sup>1</sup>	EXCURSION <sup>1</sup>	1	2	3	4	
59 SYSTEMECH CORPORATION	REGION R										
	Camden	Refer to Pasquotank County									
	Chowan	Edenton Police Department	X				X				
	Currituck	County Sheriff Department	X				X				
	Dare	County Sheriff Department	X		X		X				
	Gates	Hertford Co. Communications Center	X		X		X				
	Hyde	County Sheriff Department	X				X				
	Pasquotank	Elizabeth City Police Dept.	X					X			
	Perquimans	County Dispatch Center	X				X				
	Tyrrell	County Law Enforcement Center	X				X				
	Washington	Plymouth Police Department	X		X		X				

<sup>1</sup> Incursion means an area of the subject county is served by an exchange from an adjacent county.  
Excursion means an area of an adjacent county is served by an exchange in the subject county.