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Jerry Young

COMMISSION ON OIL FINANCING
REPORT TO THE
MINNESOTA LEGISLATURE

NOVEMBER 15 1977

BEST AVAILABLE COPY

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Senate

State of Minnesota

November 15, 1977

The Honorable Edward J. Gearty
President of the Senate

and

The Honorable Martin O. Sabo
Speaker of the House of Representatives

Gentlemen:

I am transmitting herewith the Report of the Commission on 911 Financing, pursuant to Chapter 311, Section 403.12, Subdivision 3 of Minnesota Statutes, 1977 Session Laws.

The Commission's charge from the Legislature was to "study and consider alternatives for continuing financing of the Statewide 911 Telephone Emergency System". After considerable research and discussion, this task has been completed. You will find our findings and recommendations to members of the Legislature contained herein.

Sincerely yours,

Steve Keefe, Chairman
Commission on 911 Financing

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BACKGROUND

In the nearly ten years since AT&T designated the three digits, nine-one-one, as the universal emergency telephone number, approximately 700 systems throughout the United States have been implemented, serving nearly 50 million people. To date, six states have mandated 911 implementation.

The purpose of 911 is to provide the citizen with the quickest possible access to local emergency services, (police, fire and ambulance). Research has demonstrated that the various seven-digit numbers for these emergency services are difficult to remember. Further, there is frequently confusion over the correct number to dial in an emergency situation. This causes time delay in citizen entry into the emergency system and therefore delay in the appropriate response to the call. 911 can easily be used by the very young, very aged, illiterate, foreign speaking or handicapped individual.

At present, there are ten cities in Minnesota that have implemented 911 service. These include: Austin, Duluth, East Grand Forks, Faribault, Moorhead, Morton, Redwood Falls, Rochester and Zumbrota. These systems cover 14% of the State's population outside of the Metropolitan Area. Completed plans for 911 service will cover approximately 70% of the population.

During the 1977 session, the Legislature enacted, with the strong support of the Governor, legislation mandating the implementation of a Statewide 911 system in Minnesota. The Statute requires implementation in the seven-county Metropolitan Area by December 15, 1982 and in the outer-eighty counties by December 15, 1986. In addition, funds were appropriated for the current biennium to provide State support for the dedicated trunking network costs in those counties implementing 911 prior to June 30, 1979.

The Commission on 911 Financing was created in order to study and recommend to the Legislature a continuing financing method for Minnesota's 911 system.

RECOMMENDATIONS

1. That the annual recurring costs associated with the 911 network of dedicated trunking and central office out-switching equipment be paid for by the State with revenue from the General Fund. Since every Minnesotan is a potential beneficiary or user of a Statewide 911 system, it is our belief that it is appropriate for the State to finance these costs. We also have found this proposal to be the most equitable manner in which to pay for 911 service.
2. That State funds be used to reimburse telephone companies for their cost in modifying central office switching equipment for 911 service. This will provide for the orderly and timely implementation of a Statewide 911 system without passing on excessively high rate increases to telephone subscribers. Further, State payment will save telephone subscribers additional rate increases necessary to recover revenue for telephone company operating expenses.

CONCLUSIONS

General Conclusions

1. The benefits of 911 emergency telephone service will increase as more areas of the State become covered by 911 systems. These benefits include increased public awareness of the existence of the system, in addition to citizen understanding that wherever you are located, your call will be routed to the appropriate Public Safety Answering Point (PSAP).
2. Statewide 911 emergency telephone service will benefit all people in Minnesota, whether or not they own or lease telephone services, by increasing the speed of access to local police, fire, ambulance service and other emergency services.
3. The cost of providing 911 service varies greatly from one area of the State to another. Without some outside financial assistance, it will not be economically feasible for many local governments to install and maintain county-wide 911 services. An equitable method of financing a minimum level of 911 service is necessary in order to expand 911 to all areas of the State.
4. Local governments are able to afford the incremental annual cost of maintaining the minimum necessary call handling equipment at designated Public Safety Answering Points. State statutes describe these costs as "local recurring costs" to be borne by local governmental units.

5. Several studies, computing temperature curves against time, indicate the effectiveness of 911 in reducing property loss due to fire. More difficult to calculate, but a real probability, is the potential in saving lives and reducing fire injuries.
6. In regard to police emergencies, further studies have shown that reductions in response time to an emergency call, which 911 can create, do lead to increases in the rate of apprehension of criminals and the recovery of stolen property.
7. 911 is seen as a necessary component of any Comprehensive Emergency Medical Service (EMS) system. The need for 911 is demonstrated most acutely when cardiac emergencies are considered.
8. 911 planning fosters cooperation between public safety agencies, which invariably leads to a general upgrading of emergency services provided to citizens.
9. 911 implementation can result in an actual financial savings to communities through consolidation of dispatching services and retirement of costly seven digit dedicated trunks.

Conclusions Regarding Telephone Subscribers as a Revenue Source

1. The payment of annual recurring costs by telephone subscribers would result in excessive service rate increases to small independent company subscribers. Further, these rural subscribers have few emergency services and little confusion over whom to contact in the event of an emergency. Under this method, those who likely would use the service least, would pay the most.
2. The additional administrative cost to the industry of this alternative, when recovered through the rate structure, would most likely increase the total cost of the system significantly beyond that incurred under any other financing alternative.
3. This method of financing would not provide the State or local units of government with ready means for maintaining the desired level of service provided or for controlling the total cost of the system, as these functions would be assumed by the serving companies.
4. A further effect would be the placing of telephone companies in the position of having to make essential political decisions regarding the level of service, location of PSAP's, equipment special features, etc.

Conclusions Regarding the Property Tax as a Revenue Source

1. The annual cost of maintaining the "minimum 911 service" defined in Statute varies greatly from one county to another and will be beyond the financial means of many local governments.
2. If counties were to support the 911 system on their local levy, it is clear that payment of the annual recurring costs would have to be exempt from local levy limitations in order to avoid budget cuts in other county services. Legislators on the Commission expressed the reluctance of the Legislature to provide another exemption to local levy limits.

Conclusions Regarding the State's General Fund as a Revenue Source

1. This alternative is the most equitable of all proposals considered insofar as it does not single out any segment of the population to pay for 911, i.e., telephone subscribers (through higher service rates) or property owners (through placement by counties on their local levy).
2. Payment of the recurring costs through general funds will provide the State with greater control over the total costs incurred by 911 service and implementation. This will be accomplished through the statutory authority given the Department of Administration and the Public Service Commission to both adopt standards for the design of 911 systems and to review and approve all county plans.

3. State financing will enable development of a uniform 911 system that will be of particular benefit to the State's tourism industry. When fully implemented, travelers can be assured that 911 will connect them with the proper emergency services wherever they are located.
4. In fiscal 1977 the State collected over \$37,000,000 in revenue generated by the Gross Earnings Tax on the telephone industry. Current projections from the Department of Revenue show receipts from this tax to be increasing 10% annually.

Central Office Modification Costs

1. Placing capital investments incurred by telephone Central Office 911 modifications in a company's rate base will result in prohibitively high rate increases to a significant number of telephone subscribers. This would also strike a severe blow to the Public Service Commission's efforts to provide basic telephone service at the lowest cost possible.

FINDINGS

Projected Cost of 911 Service

In order to determine the probable cost of Statewide 911 service, Commission staff drew up a hypothetical configuration for 911 service in all eighty-seven counties. From this configuration, staff made estimates of both the probable cost of 911 as it is implemented over the next nine years, and the cost of a hypothetical fully-implemented system in fiscal 1978. The cost projection for a 1977 hypothetical Statewide system was used by Commission members to assess the impact and effects of various financing alternatives.

In working with these projections, the Commission assumed that 911 service will be implemented gradually over a period of the next nine years, and that the hypothetical projections were to be used only as a means for estimating the impact of 911 implementation on the various alternative revenue sources proposed by the Commission.

With the assistance of the telephone industry, the staff of the Department of Public Service, the Department of Administration, the Metropolitan Council and a consulting engineer, the Commission staff projected four separate categories of 911 related costs, as explained below and illustrated in Table A.

1. Telephone Central Office Modification Costs

This category includes the costs to the serving telephone companies which are incurred when telephone exchange area central offices are modified to enable switching equipment to handle a 911 call.

The projected cost for central office 911 modifications in the State's 716 exchanges vary greatly. Within a number of these exchanges there exists a code conflict in what the industry refers to as the "9th level". The presence of this conflict significantly increases the cost of modification. In exchanges where electronic switching equipment (ESS) is used, costs will be minimal.

On the basis of data supplied to the Commission by Northwestern Bell Telephone Company and by the independent companies to State consulting engineers, the total estimated cost for central office 911 modifications is \$4,169,361.00. This estimate is again based on the assumption that all equipment modifications would have to be made during fiscal 1978.

Over the next ten years a substantial number of central offices will be upgraded to electronic or other more advanced equipment, thus lessening the over-all cost of modification before the mandatory implementation dates.

Furthermore, these costs can be controlled by the Department of Administration and the Public Service Commission by delaying the effective service dates in those counties where central office equipment is scheduled for upgrading prior to statutory implementation deadlines.

2. Annual Recurring Costs for 911 Dedicated Trunking Network and Out-Switching Equipment ("Minimum 911 Service" as defined by Chapter 311, MS, 1977).

In order to provide a sufficiently high grade of service so that only one 911 call out of every 100 will receive a busy signal, 911 engineering designs call for the use of dedicated trunks. These trunks will be used solely for 911 and will have to be used between each exchange central office and the designated Public Safety Answering Point. This category of costs includes the annual cost of the proposed network of dedicated trunking and out-switching equipment within and between central offices.

These costs are identified for State support during the current biennium and defined in Chapter 311, Section 403.02, Subdivision 6, (Minnesota Statutes 1977).

According to the staff-prepared hypothetical 911 configuration, the cost of Statewide 911 service in fiscal 1978 would be \$1,925,113, based on 1977 rates and tariffs.* The actual number of counties implementing 911 before December 31, 1978 will likely be no more than ten, at a projected cost of \$104,205 in fiscal 1979. Funds were appropriated for 911 annual recurring costs this past session and will be sufficient to provide State support during the current biennium.

*The criteria used to determine the cost in each exchange area were as follows: In those telephone exchange areas with a main station (number of telephones) count of 1,000 or less, one dedicated trunk would be used to relay 911 calls from the exchange telephone office to the appropriate Public Safety Answering Point, those exchanges with a count of 1,001 to 7,999, two dedicated trunks and in those with a main station count of 8,000 or more, three-dedicated trunks would be used.

In making these projections, the following assumptions were also made:

1. That a Statewide network of 911 dedicated trunking and out-switching equipment would be implemented and operational as of July 1, 1977.
2. That eighty-seven counties would order at least PO1 grade service, and in the outer-eighty counties, each trunk will have re-ring capability. Further, that the level of service in the seven-county Metropolitan Area would be that proposed by the consulting engineers, under contract to the Metropolitan Council, and would include selective routing.

3. Capital Equipment Installation

These costs will be incurred by local units of government as they install additional telephone answering and dispatching equipment in local Public Safety Answering Points (PSAP's). This one time charge is similar to that paid by a telephone subscriber when he orders installation of a telephone in his home.

It is expected that this cost will be borne by the local units of government having financial responsibility for the operation of the Public Safety Answering Points. In all likelihood, federal grants or matching funds will be available to these local governments.

4. Annual Recurring Costs for Public Safety Answering Point Equipment

This category includes those costs incurred by local units of government for rental of telephone or Public Safety Answering Point equipment used in the answering and dispatching of 911 calls. This equipment might include, for example, telephone key sets, telephones providing a direct line to a municipal ambulance service, fire department, etc. These costs will be borne by the local units of government, as currently provided in Statute.

Table A

SUMMARY OF 911 COSTS

A	B	C	D
CENTRAL OFFICE CONVERSION COSTS	CAPITAL EQUIPMENT INSTALLATION	ANNUAL RECURRING (STATE)	ANNUAL RECURRING (LOCAL)
Costs to telephone companies for modification of their central office switching equipment to enable handling of 911 calls. This is a one-time, front-end cost for 911 implementation.	Cost of installing equipment in the local PSAP for the answering and dispatching of 911 calls, (e.g. switchboard, phone sets, etc.)	Rental of dedicated 911 trunks and exchange office switching equipment.	Rental of equipment in the local PSAP, switchboard, phone sets, etc.
Commission recommendation of the Commission on 911 financing is to pay these one-time costs from state general revenues.	Cost will be borne by local unit of government ordering service. Assumption is, however, that application for federal funds will be made.	Commission recommendation is to finance the trunking network with revenue from the state's general fund.	Costs will be paid by local units of government.
Projected statewide cost over the next nine years: 4,169,361.00	Projected statewide cost from 1978 through 1987: \$ 3,350,691.00	A fully implemented statewide system in fiscal 1978 would have cost \$1,925,113, (based on assumptions for hypothetical configuration).	Estimates are this would have cost \$396,500 or roughly 10¢ per capita; in fiscal 1978 (again based on the hypothetical configuration).

Impact and Effect of Various Financing Alternatives Studied

At the onset of the Commission's study, there were five proposed methods of long-term financing summarized and presented by staff to the Commission for possible consideration. Two of these alternatives were discarded in the initial stages of the study process. The first, placing an excise tax on all intra-state telecommunications, was not studied because of members' commitment to not consider any proposal involving a new tax. The second, dedicating a percentage of revenue generated by the Gross Earnings Tax on telephone companies, was laid aside as it merely represented a specialized form of payment from the General Fund. Further, legislative members of the Commission expressed the extreme reluctance of the Legislature to dedicate specific tax revenues.

The remaining three alternatives, payment of the recurring costs by the State through biennial appropriations from the General Fund; passing the increased costs on to telephone subscribers through higher monthly service rates, and, requiring the counties implementing the service to support the recurring costs by adding them to their local property tax levy, were selected for in-depth study.

On October 11, staff presented to the Commission a report projecting the cost impact of the three proposals. A general summary of the contents of this report is as follows.

1. Payment of recurring costs by the State through biennial appropriations from the General Fund.

A. If a Statewide system were fully implemented and operating in fiscal 1978 and the annual recurring costs were paid by the State from General Fund revenues, the necessary appropriation would amount to \$1,925,113 or 48.6¢ per capita.

B. Given the same assumption as above, the cost per household in fiscal 1978 would be \$1.55.

2. System supported by the telephone companies with costs passed on to subscribers through higher service rates.

A. As of July 1, 1977, there were 1,515,314 main stations in the state of Minnesota. This figure includes telephone pay stations.

B. The average 911 cost per main station in fiscal 1978 would be \$1.27 annually. However, the actual cost would vary greatly from company to company.

C. Subscribers of small independent telephone companies in rural areas would pay significantly more for 911 service than Northwestern Bell subscribers in the more highly populated areas of the State.

D. Not all telephone main stations are revenue producing (for example, a number of pay stations are not); thus lowering substantially the total number of main stations that could be charged for 911 service. This would have the effect of driving rate increases incurred by 911 implementation even higher.

3. All recurring costs paid by counties through their local property tax levy.

- A. For the fiscal year following 1976 property assessments, taxes payable 1977, twenty-seven counties were at or over their statutory levy limitations; and therefore able to support a 911 system only by cutting expenditures elsewhere.
- B. Twenty more counties could also be classified as potentially unable to support 911 on their local levy, if one makes the assumption that those counties within \$6,000 or less of their levy limits would experience difficulty in supporting 911 without cuts elsewhere in their budgets.
- C. The mill levy required to support recurring 911 costs will vary from county to county. Due to the fact that rates for dedicated trunking are based on mileage, counties that are large in area and low in population will have excessive costs in comparison to other counties.

4

In an effort to look at financing approaches which might be considered "hybrid" in nature, the Commission turned its attention to two other alternatives. Both involved the placing of limits on the increase in per main station cost for 911 service.**

The first of these can be characterized as a uniform 911 service charge, where the average cost per main station would be used as the basis for a 911 service charge on all main stations. The industry would then utilize existing inter-company reimbursement mechanisms to cover the difference between costs recovered by these charges and total company costs.

The second alternative consisted of placing a statutory ceiling on the 911-related annual increase in cost per main station. Companies would recover costs through their rate structure. Those companies whose annual cost per main station exceeded the ceiling, would receive a State subsidy equivalent to the difference.

** For the purposes of this study, a hypothetical 911 configuration was drawn for Chippewa, Faribault, Jackson, Mower, Olmsted, Rice, Steele, Swift, Waseca and Watonwan Counties. The cost of this ten-county system was projected to fiscal 1979. The rationale for selecting these particular counties was that each will most likely implement a 911 system during fiscal 1979.

In considering these proposals, the Commission found that:

1. Telephone company revenue requirements for operating expenses, interest, earnings and taxes would significantly increase the cost of 911 service to the telephone subscriber. In some cases, the average annual cost per main station would be double the amount actually incurred from 911 service.
2. Based on staff cost projections for fiscal 1979 there would likely be only two companies whose average annual cost per main station would fall below the statutory ceiling.

Table B on the following page illustrates the impact of these two alternatives on the cost of telephone service and State general revenue requirements.

Table B

ANNUAL RECURRING COSTS FOR DEDICATED TRUNKING

IMPACT OF 911 FINANCING ALTERNATIVES: FISCAL YEAR ENDING 6/30/79

Alternatives	(A) Annual General Fund Appropriation	(B) Annual Per Mainstation Cost/Charge	(C) Total Revenue	(D) Annual Governmental Admin. Cost	Total of (A) & (D)
1. Entirely General Fund	\$104,205	\$ -0-	\$104,205	\$31,866	\$175,540
2. Statutory Ceiling on Cost per Mainstation	\$141,264	\$.23 to \$1.35	\$243,674	\$31,866	\$173,130
3. Uniform Service Charge per Mainstation	-0-	\$2.20	\$243,674	\$31,866	\$ 31,866

Assumptions:

1. That the ten counties of Chippewa, Faribault, Jackson, Mower, Olmsted, Rice, Steele, Swift, Waseca, Watonwan will all have implemented county-wide 911 systems no later than July 1, 1978.
2. That the estimate of the annual recurring cost of providing PO1 grade of service to these ten counties will be \$104,205 during the year ending 6/30/79.
3. That there will be 110,721 telephone mainstations in use within the ten counties, during the year ending 6/30/79.
4. That only those mainstations that are within a converted exchange will bear the cost of providing 911 service in that exchange.
5. That the annual cost to the industry for administration of alternative 2 and 3 will be approximately \$100,000.

Central Office Modification Costs

The Commission found that there are approximately 716 telephone exchange areas in Minnesota served by approximately 104 companies. At present, telephone exchange central offices in sixteen (16) exchanges have been modified to handle a 911 call.

There are three basic types of central office switching equipment. The first, Electronic Switching Systems (ESS), is the most modern and costs very little to modify for 911 service. The second, Crossbar, can be modified with moderate cost to the serving company. ESS and Crossbar equipment comprise the vast majority of central office switching equipment in the Metropolitan Area's exchanges. Step-by-Step, the last of the three, is the oldest type of switching equipment still used in Minnesota and exists in the majority of out-state central offices. Step-by-Step equipment is also the most expensive to modify for 911.

The gradual implementation of Statewide 911 provided for in Statute will permit many telephone companies to make the necessary modifications in conjunction with other scheduled central office improvements.

At the time the Legislature was considering mandating 911 service, it was assumed that the costs of modification to central offices would be added to a company's rate base, or paid for with State or Federal funds in hardship situations.

Shortly after the organization of the Commission it was brought to members' attention that the Public Service Commission had adopted a policy stating that it would not approve inclusion of any central office 911 capital investments in a telephone company's rate base. The PSC's policy is designed to avoid gross inequities and disparities in telephone subscribers' rates that would result if these costs became a part of the base used for determining a company's over-all rate of return.

In light of the PSC's position, the Commission decided to further study these costs in order to determine whether State funds should be used to pay for any of the projected central office modification costs.

The Commission found that the annual revenue requirement per main station, which would be necessary to support a company's 911 investment, will vary substantially between Northwestern Bell and the independent companies. Table C contains an example of some of these disparities. Column C shows the difference between the annual revenue requirement per Northwestern Bell main station, and the revenue requirement for the subscribers of Arrowhead Telephone Company.

Table C Northwestern Bell Telephone Company

(A) <u>Central Office Capital Investment</u>	(B) <u>Number of Main Stations</u>	(C) <u>Projected Annual Cost per Main Station</u>
\$533,656	1,126,081	\$.035

Arrowhead Telephone Company

(A) <u>Central Office Capital Investment</u>	(B) <u>Number of Main Stations</u>	(C) <u>Projected Annual Cost per Main Station</u>
\$11,300	262	\$3.80

There is no precise count of the number of companies whose situation is similar to that of the Arrowhead Company. However, it does not seem unreasonable to conclude that up to 60 companies might have to pass on extremely high rate increases due to 911-related central office modifications.***

***This projection is based on the following assumptions:

1. Existing switching equipment will be very expensive to modify for those companies with 500 or fewer main stations.
2. Revenue requirements per main station will be extremely high due to the lack of a large service area to spread costs over.

SCHEDULE OF COMMISSION MEETINGS AND HEARING

Organizational Meeting, August 17, 1977

Election of Chairman and Vice-Chairman, introduction of staff, and presentation by staff of the "Initial Staff Report to the Commission on 911 Financing".

Meeting, September 1, 1977

Further presentation by staff of the "Projected Costs of Statewide 911 Implementation and Service" section of the Initial Staff Report and discussion by members. Presentation on technical aspects of 911 implementation by representatives of Northwestern Bell and the Minnesota Telephone Association.

Public Hearing, September 6, 1977

Testimony from representatives of the Department of Public Service relative to Public Service Commission's position on adding central office conversion costs to a company's rate base. Testimony on general 911 financing issues by representatives of the Metropolitan Area Ad Hoc Committee on 911 Financing, Columbia Heights Fire Department, Minnesota League of Cities and the Minnesota Telephone Association.

Visit to Rochester and Public Hearing, September 20, 1977

Commission members toured the Rochester 911 dispatch center and held a public hearing in the Olmsted County Courthouse on financing issues. Persons testifying included representatives of the Emergency Medical Services Committee of the Minnesota Heart Association; Gold Cross Ambulance Service; Rochester Department of Civil Defense and Northwestern Bell Telephone Company. A staff report on the "Projected Cost of 911 Implementation and Service on Olmsted County" was presented and discussed.

Visit to Duluth and Public Hearing, September 27, 1977

The Duluth 911 dispatch center was toured by the members, followed by a public hearing in the St. Louis County Heritage Center. Those providing testimony included a St. Louis County commissioner, the St. Louis County sheriff, the Mayor of Hermantown, and a State Highway Patrol captain. Representatives of the Duluth Police Department and municipal ambulance service also addressed the Commission. Staff presented to the Commission a report on the "Projected Cost of 911 Implementation and Service on St. Louis County".

Meeting, October 11, 1977

Staff presented for Commission discussion a report titled, "Projected Cost Impact and Effect of Three 911 Financing Alternatives".

Meeting and Hearing, October 18, 1977

Representatives of Northwestern Bell, the Minnesota Telephone Association and Department of Public Service responded to members' questions. Staff presented a report on financing alternatives suggested by individual members of the Commission for discussion.

Meeting and Hearing, October 25, 1977

Staff presented an expanded report on two proposed methods of financing 911, as discussed at the meeting on 10/18/77. Testimony was taken from representatives of the Department of Public Service, Northwestern Bell, United Telephone Company, Continental Telephone of Minnesota, Inc. and the Minnesota Telephone Association. Further discussion, followed by a motion to recommend financing from the State's General Fund. Motion and recommendation were adopted.

Meeting, November 8, 1977

Staff presentation of draft of Commission's report to the Legislature, discussion with revisions suggested by members. Final approval of Commission's report.

APPENDICES

ESTIMATED COST OF 911 DEDICATED TRUNKING NETWORK - FISCAL YEARS 1978-87

Counties in Service	Fiscal year 1979	1980	1981	1982	1983	1984	1985	1986	1987
Chippewa, Faribault, Jackson, Olmsted, Rice, Steele, Swift, Waseca, Watonwan	\$104,205	111,022	117,839	124,656	131,473	138,290	145,107	151,924	158,741
Chisago, Clay, Cotton- wood, Freeborn, Goodhue, Norman, Polk, Redwood, Renville, St. Louis, Sherburne, Wabasha		323,307	342,011	360,705	379,419	398,123	416,827	435,531	454,235
Anoka, Blue Earth, Carver, Dakota, Hennepin, McLeod, Ramsey, Scott, Stearns, Washing- ton, Wright			1,086,191	1,145,592	1,204,993	1,264,394	1,323,795	1,383,196	1,442,235
Benton, Brown, Carl- ton, Crow Wing, Isanti, Morrison, Nicollet, Ottertail, LeSueur, Kandiyohi, Sibley, Winona				321,896	338,587	355,278	371,969	388,660	405,351
Becker, Beltrami, Cass, Dodge, Douglas, Fill- more, Houston, Martin, Meeke, Mille Lacs, Nobles, Pine, Lac Qui Parle, Todd, Yellow Medicine					378,055	393,622	409,189	424,756	440,323
Aitkin, Koochiching, Lake, Murray, Penning- ton, Marshall, Pipe- stone, Pope, Stevens, Traverse, Wadena						168,346	176,255	184,164	192,073
Hubbard, Kanabec, Lincoln, Rock, Roseau, Wilkin							53,775	56,188	58,601
Clearwater, Big Stone, Grant, Kittson, Mahnomen								163,668	170,697
Cook, Lake of the Woods, Red Lake									28,435
TOTAL BY FISCAL YEAR	\$104,205	\$434,329	\$1,546,041	\$1,952,859	\$2,432,527	\$2,718,053	\$2,896,917	\$3,188,087	\$3,350,691
	(1979)	(1980)	(1981)	(1982)	(1983)	(1984)	(1985)	(1986)	(1987)

Appendix B

ESTIMATED COST OF CENTRAL OFFICE MODIFICATION
FISCAL YEARS 1978-87

<u>Counties in Service</u>	<u>Fiscal Year Implemented</u>	<u>Estimated Cost</u>
Chippewa, Faribault, Jackson, Mower, Olmsted, Rice, Steele, Swift, Waseca, Watonwan	1979	\$ 517,775
Chisago, Clay, Cottonwood, Freeborn, Goodhue, Norman, Polk, Redwood, Renville, St. Louis, Sherburne, Wabasha	1980	\$ 821,112
Anoka, Blue Earth, Carver, Dakota, Hennepin, McLeod, Ramsey, Scott, Stearns, Washington, Wright	1981	\$ 360,437
Benton, Brown, Carlton, Crow Wing, Isanti, Itasca, Lyon, Morrison, Nicollet, Ottertail, LeSueur, Kandiyohi, Sibley, Winona	1982	\$ 604,049
Becker, Beltrami, Cass, Douglas, Dodge, Fillmore, Houston, Martin, Meeker, Mille Lacs, Nobles, Pine, Lac Qui Parle, Todd, Yellow Medicine	1984	\$ 973,362
Aitkin, Koochiching, Lake, Murray, Pennington, Marshall, Pipestone, Pope, Stevens, Traverse, Wadena	1984	\$ 383,873
Hubbard, Kanebec, Lincoln, Rock, Roseau, Wilkin	1985	\$ 176,723
Clearwater, Big Stone, Grant, Kittson, Mahnomen	1986	\$ 272,280
Cook, Lake of the Woods, Red Lake	1987	\$ 59,750
TOTAL (Fiscal Years 1979-1987)		<u>\$4,169,361</u>
Total Northwestern Bell Exchanges	-\$ 533,656	
Total Independent Exchanges	-\$3,635,705	



STATE OF MINNESOTA
DEPARTMENT OF PUBLIC SERVICE
7TH FLOOR AMERICAN CENTER BLDG.
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September 6, 1977

Mr. Mark Westman
Commission on 911 Financing
c/o Metropolitan Council
300 Metro Square
7th & Robert
St. Paul, MN 55101

Dear Mr. Westman:

The Minnesota Public Service Commission has enunciated its policy with respect to the treatment of "911" related costs prior to and during the period the "911" issue was before the Minnesota Legislature.

The Commission is supportive of the "911" program and is also vitally interested in the method by which Minnesota citizens will ultimately pay for the availability of this service. It has been the Commission's position since the inception of "911" discussions, that the customer who benefits from the service should also be responsible for its costs. This approach of assigning cost responsibility would not permit "911" capital investment costs to become a part of the rate base upon which all subscribers rates are determined, but rather, would dictate that the treatment of "911" costs be the same as that for other equipment, such as PBX's, custom calling services, key systems, call directors, etc.. The equipment investment is still part of the telephone company's rate base, but the responsibility for supporting the investment is assigned to one subscriber. In the case of "911" the subscriber would probably be a county. This approach is not new, the rates for telephone services that are currently used by a county, police department, fire department, etc. have already been determined using this methodology.

The gross inequities of including the "911" capital investment in the rate base used to calculate the basic local service rates for all subscribers become more apparent when you consider the function of a telephone company's rate base and its impact on individual customers. The determination of a utility's authorized rate of return is based upon its capital structure, but is also applied to the rate base to derive the required revenue. For a utility to maintain its overall rate of return, while its rate base is steadily increasing, requires an increase in its subscribers' telephone rates. Rarely does a utility request increased revenues without also petitioning for an increased rate of return. The effect on the customer of increasing the rate base, the rate of return and both rate base and rate of return is shown in a hypothetical example in Exhibit "A".

There are a considerable number of other factors which add complexity to the situation. As you are aware, rarely are telephone exchange area boundaries synonymous with county boundaries. If "911" capital investment is not treated similarly to other telephone equipment offerings, but rather included in the rate base used for the determination of basic local telephone rates many potentially

undesireable situations may occur. Exhibit B illustrates a situation where a telephone company is comprized of only one exchange located in both county A and county B. Only county A has "911" emergency reporting service, yet subscribers in county B will be required to pay for county A's "911" through its basic local service rates although county B will not implement "911" for five more years.

"911" equipment has many variations, from the basic to the exotic. The choice is left to the individual county to determine the variety it prefers. Again, the county making the choice, rather than people throughout the state of Minnesota should be responsible for the costs associated with that choice.

The Public Service Commission has recently directed all Minnesota telephone utilities to supply a schedule which indicates the time period for proposed exchange upgrades. An exchange upgrade refers to an improvement in telephone service from, for example, 8 party lines to 1 or 2 party lines. The upgrade may or may not be accompanied by the installation of a new central office. An electronic office would certainly facillitate the implementation of "911" at the least cost, but there are areas throughout the state where a central office change out will not be necessary for a great number of years.

In conclusion, it is the Commission's position that "911" investment should be considered the smae as any other telephone equipment investment and priced accordingly. This is the only way to insure that telephone subscribers in some counties do not pay for the service a number of years before they actually receive it. This approach does not preclude the use of special grants or Federal funding. It does however, help enable the Minnesota Public Service Commission to maintain rates for basic telephone service at the lowest level possible, to assure as many people as it can, the availability of telephone service.

Sincerely,



Leo J. Ambrose
Secretary

LJA/1w



300 Metro Square Building, 7th Street and Robert Street, Saint Paul, Minnesota 55101 Area 612, 291-6359

August 18, 1977

Senator Steve Keefe, Chairman
Commission on 911 Financing
Room 301 State Capital
St. Paul, Minnesota 55155

Re: Cost-Effectiveness of 911

Dear Senator Keefe:

During 1976, Minnesotans suffered \$62,057,494 in fire losses and \$55,506,283 in losses due to serious crimes. More than 17,000 people in Minnesota lost their lives due to heart failure. It is reasonable to expect that statewide 911 service will help save lives and reduce economic losses due to fire and crime. It is also reasonable to expect that the value of the lives saved and the reduction in economic losses will far exceed the cost of statewide 911 service.

I base these conclusions on the results of research that was used to justify the implementation of statewide 911 emergency telephone service in Florida. The research focused on the relationship between response time and fire losses and illustrated the probable effect of 911-induced response time reductions on fire losses in Florida.

Using an approach similar to that utilized in the Florida research, we can illustrate the probable effect of statewide 911 service on projected annual fire losses in Minnesota.

Using fire loss trends charted in the 1976 FIRE MARSHAL ANNUAL REPORT (State of Minnesota, Department of Public Safety), the projected fire losses for Minnesota in 1987 should be approximately as shown below:

Residential Building Losses	\$47,097,237
Non-Residential Building Losses	\$50,376,450
Non-Building Losses	\$14,229,801

Page 2 8/18/77 Keefe
Cost Effectiveness of 911

According to the formula used in the Florida research, an average response time reduction of one minute translates into an average residential building fire loss reduction of 11% and an average non-residential and non-building fire loss reduction of 2%. If we apply these same assumptions to the projected annual Minnesota fire loss for 1987, the probable dollar savings here would be approximately \$6,472,821 per year.

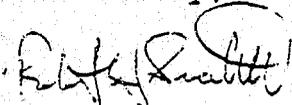
These projected savings in Minnesota fire losses could run higher, if 911 service leads to an average response time reduction greater than one minute. However, fire loss values vary widely over the many types of fires that occur; and it is prudent to use the more conservative projection.

In summary, the research results do indicate that 911 service yields dollar savings that exceed dollar costs. The projected annual 911 expense (\$3,350,691 in fiscal 1987) is roughly half of the projected savings due to fire loss reductions.

Although they are more difficult to calculate, 911 service also yields other savings by reducing response time in police and medical emergencies.

Studies show that reductions in response time do lead to increases in the apprehension of criminals and the recovery of stolen property. Also, since breathing failure of a human can result in brain damage in three minutes and death in six minutes, reductions in response time are of life-saving importance to people faced with medical emergencies. These effects, when added to those described earlier, amount to a significant benefit for all people who live or work in Minnesota.

Yours truly,


Robert H. Scarlett
911 Project Coordinator
Metropolitan Council

RHS:jmk

cc: Mark Allan Westman
Commission on 911 Financing

APPENDIX E

PROJECTED COST IMPACT OF 911
IMPLEMENTATION AND SERVICE
ON OLMSTED COUNTY

Staff Report to the Commission on 911 Financing
September 20, 1977

Introduction

This report has been prepared to provide you with information relative to the cost impact of 911 implementation and service in Olmsted County. Service level and cost information has been divided into the following sections: Present Rochester System, Impact of Proposed System on Olmsted County Budget, and Impact of Proposed System on Telephone Subscriber Rates.

Section I - Present Rochester System

The existing 911 system presently serves Northwestern Bell's Rochester Exchange Area which, in addition to the City of Rochester, includes Cascade, Haver Hill, Marion and Rochester Townships. Approaching its third year of operation, the system serves approximately 73% of the population of Olmsted County.

Total costs incurred annually by operation of 911 are \$3,846.00, or \$320.50 per month. Because approximately 12% of the population served by 911 reside outside the City of Rochester, the Olmsted County Board of Commissioners has agreed to pay for that same percentage of 911 recurring expenses.

The table on Page two illustrates present 911 costs and through what equipment and service they are incurred.

Table I-A

	<u>Monthly Rate</u>	<u>Annual</u>
Four 911 dedicated trunks to outswitch 911 calls at 21.25 each	\$ 85.00	\$ 1,020.00
Four 911 circuits from the Northwestern Bell Rochester Central Office to the Rochester PSAP at 5.50 each	22.00	264.00
PSAP equipment to permit the special features of Call Hold, Re-Ring, Timed Disconnect, Switchhook Status, Call Transfer via two out dial lines	125.00	1,500.00
Two business lines for out dial transfer at 22.25 each	44.50	534.00
Touch-Tone and Speed Calling on the two out dial lines	10.30	123.60
Two direct private lines, one to Gold Cross Ambulance and one to the Rochester Fire Department at 16.85	33.70	404.40
	<u>\$320.50</u>	<u>\$ 3,846.00</u>

Presently, expenditures to support the system are made from local funds. However, the rate of \$107.00 per month for the dedicated trunking and circuits would now be eligible for State support under the 911 legislation recently enacted. The remaining charges are incurred by Public Safety Answering Point (PSAP) equipment or installation of other local options and will remain a local responsibility.

Table I-D shows the percentage of 911 expenditures of Rochester's Public Safety Budget is eight one hundredths of one percent. The local levy required for the annual expenditure of \$3,846.00 is seventeen one thousandths of a mil. In assessing the impact of costs on Rochester's budget and millrate, the total recurring cost has been assessed to the City even though they do not financially support the entire system.

Taking the recurring costs eligible for State funding and separately impacting them on the City's budget the following is seen in Table I-B.

Table I-B

<u>Total 911 Impact</u>	<u>Percentage of Public Safety Budget</u>	<u>Levy Required</u>
1,284	0.03%	.005 mill

Assuming then that that the State will support the 911 system to the extent outlined previously, Table I-C illustrates the impact of those recurring costs that will remain a local responsibility.

Table I-C

<u>Total 911 Impact</u>	<u>Percentage of Public Safety Budget</u>	<u>Levy Required</u>
2,562	0.05%	.01 mill

TABLE I-D

Rochester 911 - Impact on Local Taxes

<u>Taxable Valuation 1976 - Payable 1977 *</u>	<u>Total Public Safety Expenditure **</u>	<u>Total 911 Impact ***</u>	<u>Percentage of Public Safety Budget</u>	<u>Levy Required</u>
230,181,778	4,619,188	3,846	0.08%	.017 mill

* From Finance Department, City of Rochester

** Total for Fiscal Year 1977; from Rochester Finance Department

*** From Data Supplied by Northwestern Bell Telephone Company

Section II - Impact of Proposed County-Wide
System on the Olmsted County Budget

In considering the costs of 911 implementation and service to Olmsted County, the following demographic information might be useful.

Olmsted County Population	87,500 (1973 est.)
City of Rochester Population	53,983 (1970 census)
Olmsted County Assessed Valuation	\$323,593,989
Number of Telephone Exchanges	7

The total cost for telephone company central office conversion is projected to be \$27,793. Northwestern Bell exchanges have already been modified to handle a 911 call or present equipment is such (crossbar or ESS), that any cost involved would be absorbed by the Company. Central Office conversion costs are outlined in Table II-A below.

Table II-A

<u>Company Name</u>	<u>Exchange Name</u>	<u>Stations in County</u>	<u>Conversion Cost</u>
NW Bell	Rochester	37,996	\$ ---
NW Bell	Stewartville	1,881	---
NW Bell	Chatfield	1,354	---
Continental	Byron	817	3,911
United	Eyota	540	1,588
Pine Island	Oronoco	540	21,294
Rock Dell	Rock Dell	545	1,000
Total Projected Cost			\$27,793

If these costs were assessed back to Olmsted County by each telephone company, the effect on the County's millrate would be eighty-five one thousandths of a mill. This is detailed in Table II-B.

Table II-B

<u>Taxable Valuation 1976 - Payable 1977</u>	<u>Total Public Safety Expenditures *</u>	<u>Total C.O. Conversion Costs</u>	<u>Levy Required</u>
323,593,989	5,703,664	27,793	.085 mill

* Includes expenditure of 1,084.476 for Public Safety by Olmsted County in current fiscal year and \$4,619,188 expended by the City of Rochester.

The total proposed recurring cost for the dedicated 911 trunking and circuits in Olmsted County is \$12,681 annually. These expenses would, under Chapter 311, Minnesota Statutes, 1977 Session Laws, be eligible for State funding in the current biennium. An exchange-by-exchange breakdown of these costs is shown in table II-C.

Table II-C

<u>Company Name</u>	<u>Exchange Name</u>	<u>Monthly Recurring</u>	<u>Total Annual Recurring</u>
NW Bell	Rochester	\$ 107.00	\$ 1,284.00
NW Bell	Stewartville	209.00	2,508.00
NW Bell	Chatfield	279.60	3,355.20
Continental	Byron	105.10	1,261.20
United	Eyota	154.75	1,857.00
Pine Island	Oronoco	93.05	1,116.60
Rock Dell	Rock Dell	108.25	1,299.00
		<u>\$1,056.75</u>	<u>\$12,681.00</u>

Detailed in Section I were the recurring costs applicable to the Public Safety Answering Point (PSAP) in Rochester, which totaled \$2,562 per year. In order to pick up the projected eight additional 911 lines needed to bring in calls from out-county exchanges, expanded station equipment in the PSAP will be necessary. Northwestern Bell price quotations project this additional cost to be \$1,641.60 per year, bringing the total recurring costs to \$4,203.60 annually.

Table II-D, on the following page, illustrates the impact on the Olmsted County budget if the total amount of recurring expenses were to be made a local responsibility. Table II-E projects the impact if, first, the recurring costs for 911 dedicated trunking and circuits were placed on the County tax base, and, secondly, the impact of the local PSAP recurring costs.

Adding the fifty-two one thousandths of a mill to the overall property tax liability to the owner of a home in Olmsted County with an assessed market value of \$30,000, his/her gross tax would increase \$.52. This figure was determined using 1977 formulae and would likely change under the new tables for property tax computation adopted by the Legislature last session.

TABLE II-D

Olmsted County - Total 911 Recurring Costs
on Tax Base

<u>Taxable Valuation 1976 - Payable 1977 *</u>	<u>Total Public Safety Expenditure **</u>	<u>Total 911 Impact ***</u>	<u>Percentage of Public Safety Budget</u>	<u>Levy Required</u>
323,593,989	5,703,664	16,884.60	0.3%	.052 mill

* From Olmsted County Auditor's Office

** Includes expenditure of 1,084.476 for Public Safety by Olmsted County in current fiscal year and \$4,619,188 expended by the city of Rochester

*** Includes total of 12,681 projected costs for dedicated trunking and circuits and 4,203.60 for local PSAP recurring costs.

Section III - Impact of Proposed System on Telephone Subscriber Rates

In projecting increases in monthly service rates incurred by 911 implementation, it is important to bear in mind that these increases do not solely affect subscribers in Olmsted County. Any increase in a particular company's rate base is spread throughout its service area in Minnesota. For instance a higher rate base for United Telephone Company, caused by 911 costs in Olmsted, will also effect United's subscribers in the Metropolitan Area.

Taking first the annual recurring costs for dedicated trunking and 911 circuits, the effect on subscribers of the four independent companies is seen in Table III-A below.

Table III-A

Continental Telephone Company

Exchange: Byron, 770 subscribers
Total Company Subscribers: 77,356
Annual Trunking and Circuit Costs: \$1261.20
Approximate Annual Cost/Subscriber: \$.017

United Telephone Company

Exchange: Eyota, 516 subscribers
Total Company Subscribers: 62,418
Annual Trunking and Circuit Costs: \$1857.00
Approximate Annual Cost/Subscriber: \$.030

TABLE II-E

Olmsted County - Trunking and Circuit Recurring Costs

<u>Taxable Valuation 1976 - Payable 1977</u>	<u>Total Public Safety Expenditure</u>	<u>Total 911 Impact</u>	<u>Percentage of Public Safety Budget</u>	<u>Levy Required</u>
323,593,989	5,703,664	12,681	0.22%	.039 mill

Olmsted County - Local PSAP Recurring Costs

<u>Taxable Valuation 1976 - Payable 1977</u>	<u>Total Public Safety Expenditure</u>	<u>Total 911 Impact</u>	<u>Percentage of Public Safety Budget</u>	<u>Levy Required</u>
323,593,989	5,703,664	4,203.60	0.07%	.013 mill

Table III-A (Continued)

Pine Island Telephone Company

Exchange: Oronoco, 480 subscribers
Total Company Subscribers: 1223
Annual Trunking and Circuit Costs: \$1116.60
Approximate Annual Cost/Subscriber: \$.913

Rock Dell Telephone Company

Exchange : Rock Dell, 268 subscribers in Olmsted County
Total Company Subscribers: 536
Annual Trunking and Circuit Costs: \$1299.00
Approximate Annual Cost/Subscriber: \$2.42

Table II-A on Page 4 projected the Central Office conversion costs for the four independent companies operating in Olmsted County. Returning to the assumption that these costs will more likely be added to each companies plant investment rate base, rather than placed on the local levy, the affect on subscribers that will be realized is presented in Table III-B.

If the data from the two preceding tables is combined, the effect on the annual recurring trunking cost and central office investment on total company subscribers is seen in Table III-C.

TABLE III-B

Effect on Subscriber Rates From
 Adding Olmsted County Central
 Office Conversion Costs to Rate Base

Continental Telephone Co.

	<u>Rate Base</u>	<u>Rate of Return</u>	<u>Annual Revenue</u>	<u>Total Number of Subscribers</u>	<u>Average Annual Cost to Subscriber</u>
Original	\$57,003,204.00	8%	\$4,560,256.00	74,126	\$61.520
C.O. Conversion	3,911.00				
New	57,007,115.00	8%	4,560,569.00	74,126	61.524 *

* Increase in subscribers' rate due to "911" service in Olmsted County is \$.004 per year.

United Telephone Co.

	<u>Rate Base</u>	<u>Rate of Return</u>	<u>Annual Revenue</u>	<u>Total Number of Subscribers</u>	<u>Average Annual Cost to Subscriber</u>
Original	\$37,697,000.00	9.2%	\$3,468,124.00	62,934	\$55.107
C.O. Conversion	1,588.00				
New	37,698,588.00	9.2%	3,468,270.00	62,934	55.109 *

* Increase in subscribers' rate: \$.002 per year.

Table III-C

Continental Telephone Company

\$.004	C. O. Costs
<u>.017</u>	Trunking and Circuit Costs
\$.021	Total Subscriber Annually

United Telephone Company

\$.002	C. O. Costs
<u>.03</u>	Trunking and Circuit Costs
\$.032	Total Subscriber Annually

Pine Island Telephone Company

\$1.87	C. O. Costs
<u>.913</u>	Trunking and Circuit Costs
\$2.78	Total Subscriber Annually

Rock Dell Telephone Company

\$.29	C. O. Costs
<u>2.42</u>	Trunking and Circuit Costs
\$2.71	Total Subscriber Annually

It should be emphasized that the above tables reflect only approximations. Data from Northwestern Bell has not been included as it was not immediately available to the Department of Public Service. Similarly, costs associated with the Public Safety Answering Point in Rochester have not been assigned to any other serving company as this will involve all Bell equipment

TABLE III- B (Continued)

Effect on Subscriber Rates From
Adding Olmsted County Central
Office Conversion Costs to Rate Base

Pine Island Telephone Co.

	<u>Rate Base</u>	<u>Rate of Return</u>	<u>Annual Revenue</u>	<u>Total Number of Subscribers</u>	<u>Average Annual Cost to Subscriber</u>
Original	\$1,516,750.00	15%	\$227,513.00	1703	\$133.60
C.O. Conversion	21,294.00				
New	1,538,044.00	15%	230,707.00	1703	\$135.47 *

* Increase in subscribers' rate: \$1.87 per year.

Rock Dell Telephone Co.

	<u>Rate Base</u>	<u>Rate of Return</u>	<u>Annual Revenue</u>	<u>Total Number of Subscribers</u>	<u>Average Annual Cost to Subscriber</u>
Original	\$357,644.00	15.3%	\$54,773.00	536	\$102.09
C.O. Conversion	1,000.00				
New	358,664.00	15.3%	54,876.00	536	102.38 *

* Increase in subscribers' rate: \$.29 per year.

PROJECTED COST IMPACT OF 911
IMPLEMENTATION AND SERVICE
ON ST. LOUIS COUNTY

Staff Report to the Commission on 911 Financing
September 27, 1977

Introduction

This report has been prepared in order to provide you with information relative to the cost impact of 911 implementation and service in St. Louis County. Service level and cost information has been divided into the following sections: Present Duluth System, Impact of Proposed System on St. Louis County Budget, and Impact of Proposed System on Telephone Subscriber Rates.

Section I - Present Duluth System

The present Duluth 911 system is slightly more complex than that in Rochester insofar as it involves five telephone exchanges as opposed to just one. Currently, these include the Douglas, Calumet, Melrose, Hemlock and Lakeside Exchange Areas, all of which are served by Northwestern Bell.

The 911 coverage area does include a number of outlying townships, some of whom have their own municipal services such as fire fighting, that are located in one of the five exchange areas. Although a 911 call from a citizen in one of these townships is automatically routed to the Public Safety Answering Point in Duluth, dispatchers have assumed the responsibility of re-directing such a call to the appropriate jurisdiction.

Annual costs for dedicated trunking and circuits incurred by operation of the system are \$6,801.00, or \$566.75 per month. These are paid for entirely by the City of Duluth out of local funds. Table I-A on the following page gives an exchange-by-exchange breakdown of these recurring costs, which would qualify for State funding under current statute.

Table I-A

<u>Exchange Name</u>	<u>Number of Main Stations</u>	<u>Monthly Recurring</u>	<u>Total Annual Recurring</u>
Douglas	2,090	\$ 178.90	\$ 2,146.80
Calumet	9,033	99.70	1,196.40
Melrose	18,911	75.30	903.60
Hemlock	12,737	109.95	1,319.40
Lakeside	5,148	102.90	1,234.80
		<u>\$ 566.75</u>	<u>\$ 6,801.00</u>

Data from Northwestern Bell Telephone Company indicates the increase in costs at the Duluth Public Safety Answering Point (PSAP) due to 911 is \$108.00 per month, or \$1,296.00 annually. It should be borne in mind that the degree of sophistication in PSAP equipment is a local decision, thus it is not unusual to have higher 911 related PSAP costs in Rochester even though their service area is approximately half the size of Duluth's.

If the dedicated trunking and circuit costs are paid for by the State, which is contingent upon approval of the design of Duluth's system by the State Department of Administration, the impact of those costs associated with the PSAP is .0059 of a mill. This is illustrated in the table below.

Table I-B

<u>Total 911 Impact</u>	<u>Percentage of Public Safety Communications Budget *</u>	<u>Levy Required</u>
1,296	5. %	.0059 mill

*Based on an allocation of \$23,670 by the City of Duluth for the current fiscal year. This line item includes expenditures for public safety telecommunications, supplies and some equipment. Total public safety (Police and Fire) expenditure by Duluth is \$6,530,000.

Taking the recurring costs eligible for State funding and separately impacting them on the City's budget the following is seen in Table I-C.

Table I-C

<u>Total 911 Impact</u>	<u>Percentage of Public Safety Communications Budget</u>	<u>Levy Required</u>
6,801	30. %	.031 mill

Table I-D assesses the current impact of recurring costs on Duluth's budget and mil rate. With a total recurring cost of \$8,097, (total of Table I-B and I-C) the levy required is thirty-seven one thousandths of a mill.

The Pike Lake and Island Lake exchange central offices have the capability to accept and transmit 911 calls, and if political questions can be resolved, could become part of the Duluth system. This would give approximately 9,837 more citizens access to 911 service.

Expansion of the Duluth system in such a manner would add \$4,887.60 in annual recurring charges to the over-all cost. Additional PSAP equipment necessitated by the expansion would amount to \$300.00 annually. The impact on the local levy of these increased expenditures is contained in the table below.

Table I-E

<u>Total 911 Impact</u>	<u>Percentage of Public Safety Communications Budget</u>	<u>Levy Required</u>
13,284.60	56. %	.061 mill

TABLE I-D

Duluth 911 - Impact on Local Taxes

<u>Taxable Valuation 1976 - Payable 1977 *</u>	<u>Total Public Safety Expenditure **</u>	<u>Total 911 Impact ***</u>	<u>Percentage of Public Safety Communications Budget</u>	<u>Levy Required</u>
219,337,827	23,670	8,097	34. %	.037 mill

- * From Finance Director's Office, City of Duluth
- ** See previous explanation following Table I-B.
- *** Based on data supplied by Northwestern Bell Telephone Company.

Section II - Impact of Proposed County-Wide
System on the St. Louis County Budget

St. Louis County, with a population of 218,900 (1973 estimate), has a total of thirty-three telephone exchange areas. All but two of these are served by Northwestern Bell and Continental Telephone Company.

Excluding the seven exchange offices in the Duluth area which have already been modified to handle 911 calls, the total cost for central office conversion is projected to be \$116,468. An exchange-by-exchange breakdown of these costs is contained in Table II-A below.

Table II-A

<u>Company Name</u>	<u>Exchange Name</u>	<u>Stations in County</u>	<u>Conversion Cost</u>
Northwestern Bell	Biwabik	1,166	\$ 2,544
Northwestern Bell	Buhl	738	2,544
Northwestern Bell	Chisholm	3,280	2,544
Northwestern Bell	Cook	1,171	----
Northwestern Bell	Calumet	9,033	----
Northwestern Bell	Douglas	2,090	----
Northwestern Bell	Hemlock	12,737	----
Northwestern Bell	Island Lake	980	----
Northwestern Bell	Melrose	18,911	----
Northwestern Bell	Mt. Iron	642	1,452
Northwestern Bell	Lakeside	5,148	----
Northwestern Bell	Pike Lake	2,955	----
Northwestern Bell	Hibbing	9,218	2,184
Northwestern Bell	Orr	398	2,544
Northwestern Bell	Virginia	12,628	----
Continental +	Alborn	314	18,338
Continental	Brimson	142	2,026
Continental	Crane Lake	105	2,026
Continental	Brookston	95	2,079
Continental	Babbitt	1,012	2,026
Continental	Aurora	1,130	2,613
Continental	Ely	2,908	3,509
Continental	Embarras	441	2,026
Continental	Floodwood	653	7,495
Continental	Greaney	100	2,026

Table II-A (continued)

<u>Company Name</u>	<u>Exchange Name</u>	<u>Stations in County</u>	<u>Conversion Cost</u>
Continental	Hoyt Lakes	1,021	\$ 10,731
Continental	Kabetogama	193	2,026
Continental	Palo	455	31,378
Continental	Toivola	102	2,080
Continental	Tower	876	2,451
Continental	Meadowlands	427	2,026
Arrowhead	Cotton	187	7,800
Arvig	Ash River	47	*
Total Projected Cost			<u>\$116,468</u>

+ Projections for Continental Central Offices are from the March, 1975 consultant's report, "Basic Planning Data for 911 Implementation in Eighty Minnesota Counties." Continental officials stated they would not do an in-depth up-date of the original projections until a request for actual conversion was made.

* Data not immediately available.

Assuming these costs are assessed back to St. Louis County by each of the four companies, the additional levy of twenty-four one hundredths of a mill would be required for payment, as detailed in Table II-B.

Table II-B

<u>Taxable Valuation 1976 - Payable 1977</u>	<u>Total Central Office Conversion Costs</u>	<u>Levy Required</u>
492,134,416	116,468	.24 mill

In projecting the costs for a county-wide system, it should be noted that planning in St. Louis County is not as advanced as that in Olmsted. Therefore, the projections contained in this section involve assumptions which may or may not actually be implemented.

The first assumption is that the second Public Safety Answering Point (PSAP) will be located in Virginia, with the first remaining in Duluth. With the location of County PSAP's in these two cities, the projected recurring costs for dedicated trunking and circuits is \$91,356 annually. Under current statute, these costs can be identified as eligible for State funding. Table II-C gives a breakdown of the projected recurring costs. In determining the number of dedicated trunks running from each exchange central office to the PSAP in Virginia or Duluth, the following criteria were used: for those exchange areas with a main station (number of telephones) count of 1,000 or less, 1 trunk; for those with a count of 1,001 to 7,999, 2 trunks and for those exchanges with a count of 8,000 or more, 3 trunks.

Table II-C

<u>Company Name</u>	<u>Exchange Name</u>	<u>Monthly Recurring</u>	<u>Total Annual Recurring</u>
Northwestern Bell	Biwabik	\$ 136.10	\$ 1,633.20
Northwestern Bell	Buhl	83.20	998.40
Northwestern Bell	Chisholm	216.90	2,602.80
Northwestern Bell	Cook	287.60	3,451.20
Northwestern Bell	Calumet	99.70	1,196.40
Northwestern Bell	Douglas	178.90	2,146.80
Northwestern Bell	Hemlock	109.95	1,319.40
Northwestern Bell	Island Lake	235.00	2,820.00
Northwestern Bell	Melrose	75.30	903.60
Northwestern Bell	Mt. Iron	28.60	343.20
Northwestern Bell	Lakeside	102.90	1,234.80
Northwestern Bell	Pike Island	172.30	2,067.60
Northwestern Bell	Hibbing	370.80	4,449.60
Northwestern Bell	Orr	230.85	2,770.20
Northwestern Bell	Virginia	18.00	216.00

Table II-C (continued)

<u>Company Name</u>	<u>Exchange Name</u>	<u>Monthly Recurring</u>	<u>Total Annual Recurring</u>
Continental	Alborn	\$ 230.85	\$ 2,770.20
Continental	Brimson	230.85	2,770.20
Continental	Crane Lake	246.00	2,952.00
Continental	Brookston	246.00	2,952.00
Continental	Babbitt	380.90	4,570.80
Continental	Aurora	186.60	2,239.20
Continental	Ely	481.90	5,782.80
Continental	Embarrass	113.50	1,362.00
Continental	Floodwood	261.15	3,133.80
Continental	Greaney	225.80	2,709.60
Continental	Hoyt Lakes	227.00	2,724.00
Continental	Kabetogama	387.40	4,648.80
Continental	Palo	103.40	1,240.80
Continental	Toivola	180.35	2,164.20
Continental	Tower	138.75	1,665.00
Continental	Meadowlands	200.55	2,406.60
Arrowhead	Cotton	148.85	1,786.20
Arvig	Ash River	352.05	4,224.60
		<u>\$ 6,688.00</u>	<u>\$ 80,256.00*</u>

* An additional \$ 11,100.00 for 911 connections (approximated at \$ 25.00 per circuit, per month), would be added to the annual recurring costs, making the projected total \$ 91,356.00 for county-wide service.

The recurring costs associated with 911 service to the PSAP in Duluth (expanded to include the Pike Lake and Island Lake Exchange Areas), are \$1,596 per year. The costs incurred in the Virginia PSAP can only be approximated. In view of the fact there will be more exchanges and dedicated trunks terminating at the Virginia PSAP and, therefore, costs higher than in Duluth, the figure of \$3,000 per year will be used for the purposes of this report. The total projected PSAP recurring costs are then \$4,596 per year.

If the total recurring costs (PSAP and dedicated trunking), were to be placed on the St. Louis County budget, the levy of two-tenths of one mill would be necessitated to support 911 service.

The impact of this is illustrated in Table II-D on the following page. Table II-E projects the impact of, first, the recurring costs for 911 dedicated trunking and circuits on the county tax base, and secondly, the impact of local PSAP recurring costs.

TABLE II-D

St. Louis County - Total 911 Recurring Costs
on Tax Base

<u>Taxable Valuation 1976 - Payable 1977 *</u>	<u>Total Public Safety Communica- tions Expenditure **</u>	<u>Total 911 Impact ***</u>	<u>Percentage of Public Safety Communications Budget</u>	<u>Levy Required</u>
492,134,416	219,110	95,952	45 %	.2 mill

* From St. Louis County Auditor's Office

** Includes radio network/telecommunications budgets for St. Louis County Sheriff's Department and Civil Defense Department; from St. Louis County Auditor's Office.

*** Includes total of 91,356 projected for dedicated trunking and circuits and \$4,596 for local PSAP costs.

TABLE II-E

St. Louis County - Trunking and Circuit
Recurring Costs

<u>Taxable Valuation 1976 - Payable 1977</u>	<u>Total Public Safety Communica- tion Expenditure</u>	<u>Total 911 Impact</u>	<u>Percentage of Public Safety Communications Budget</u>	<u>Levy Required</u>
492,134,416	219,110	91,356	42%	.19 mill

St. Louis County - Local PSAP
Recurring Costs

<u>Taxable Valuation 1976 - Payable 1977</u>	<u>Total Public Safety Communica- tions Expenditure</u>	<u>Total 911 Impact</u>	<u>Percentage of Public Safety Communications Budget</u>	<u>Levy Required</u>
492,134,416	219,110	4,596	0.02 %	.0093 mill

Using 1977 formulae, the additional two-tenths of one mill, when added to the over-all property tax liability of the owner of a home in St. Louis County with an assessed market value of \$30,000, increases his/her gross tax \$2.10.

Section III - Impact of Proposed System on Telephone Subscriber Rates

It is again important to bear in mind that any increase in monthly service rates incurred by implementation will be passed on to subscriber's throughout the State and not solely St. Louis County. For instance, the increases projected in this section for Continental Telephone Company would be in addition to those projected in the Olmsted County staff report.

Table III-A below shows the impact on service rates for Continental and Arrowhead subscribers due to 911 operation. Data from Northwestern Bell and Arvig Telephone Company was not immediately available, thus the impact on those companies subscribers has not been included.

Table III-A

Continental Telephone Company

Exchanges: Alborn, Brimson, Crane Lake, Brookston,
Babbitt, Aurora, Ely, Embarrass, Flood-
wood, Greaney, Hoyt Lakes, Kabetogama,
Palo, Toivola, Tower, Meadow Lands;
9,474 subscribers

Total Company Subscribers: 74,126

Annual Trunking and Circuit Costs: \$44,730.00

Approximate Annual Cost/Subscriber: \$.61

Arrowhead Communications Systems, Inc.

Exchange: Cotton, 178 subscribers

Total Company Subscribers: 262

Annual Trunking and Circuit Costs: \$1,786.20

Approximate Annual Cost/Subscriber: \$6.82

The projected cost of Central Office conversion in St. Louis County was illustrated in Table II-A on Page 5. If the Public Service Commission allows the adding of these costs to each company's rate base, the effect that will be realized on subscriber's rates is documented in Table III-C.

Combining the approximate rate increases projected in Tables III-A and III-C, the total effect on Continental and Arrowhead subscribers is seen below in Table III-B.

Table III-B

Continental Telephone Company

\$.11 C. O. Conversion Costs
.61 Trunking and Circuit Costs
\$.72 Total Subscriber Annually

Arrowhead Communications Systems, Inc.

\$ 2.50 C. O. Conversion Cost
6.82 Trunking and Circuit Costs
\$ 9.32 Total Subscriber Annually

TABLE III - C

Effect on Subscriber Rates From
Adding St. Louis County Central
Office Conversion Costs to Rate Base

Continental Telephone Company

	<u>Rate Base</u>	<u>Rate of Return</u>	<u>Annual Revenue</u>	<u>Total Number of Subscribers</u>	<u>Average Annual Cost to Subscriber</u>
Original	\$57,003,204	8%	\$4,460,256	74,126	\$61.52
C. O. Conversion	101,356				
New	57,104,560	8%	4,568.365	74,126	61.63*

*Increase in subscribers' rates due to 911 service in St. Louis County is \$.11 per year.

Arrowhead Communications Systems, Inc.

	<u>Rate Base</u>	<u>Rate of Return</u>	<u>Annual Revenue</u>	<u>Total Number of Subscribers</u>	<u>Average Annual Cost to Subscriber</u>
Original	\$610,307	8.4%	\$51,266	262	\$195.67
C. O. Conversion	7,800				
New	618,107	8.4%	51,921	262	198.17*

*Increase in subscribers' rates due to 911 service in St. Louis County is \$2.50 per year.

END