# Report on Local Calling Areas

**REPORT TO THE MICHIGAN LEGISLATURE**

**ON**

**PUBLIC ACT 179 OF 1991 AS AMENDED**

**SECTION 202 (f)**

**REPORT ON LOCAL CALLING AREAS**

**December 20, 1996**

**Submitted by**

**THE MICHIGAN PUBLIC SERVICE COMMISSION**

**Michigan Department of Consumer and Industry Services**

**In Compliance With**

**Public Act 179 of 1991 as Amended by**

**Public Act 216 of 1995**

## Introduction

Telecommunications regulation has changed significantly in the last few years. The status of these changes and resulting changes to service have been reported annually to the Governor and the Legislature.

Section 202 (f) of the amendments to the Michigan Telecommunications Act of 1995 requires the Michigan Public Service Commission to report to the Legislature and Governor by January 1, 1997 on matters which have an impact on the basic local exchange activities of all residential customers in the state. Those matters include:

Part (i) The percentage of intra-LATA calls and minutes of usage which are charged as basic local exchange calls,

Part (ii) The average size and range of sizes of basic local exchange calling areas,

Part (iii) The ability of customers to contact emergency services, school districts, and county, municipal, and local units of government without a toll call,

Part (iv) Whether there are significant differences in basic local exchange calling patterns between urban, suburban, and rural areas,

Part (v) The impact on basic local exchange rates which would occur if basic local exchange calling areas are altered,

Part(vi) The impact when basic local exchange calling areas overlap LATA boundaries, and

Part (vii) The impact on basic local exchange rates which would occur if basic local exchange calling areas are expanded within LATA boundaries.

## Data Collection

Staff started the process of gathering information for this report in February of 1996. Staff arranged meetings during February with Ameritech Michigan (Ameritech), GTE North Incorporated (GTE), the Michigan Exchange Carriers Association (MECA), and the Telephone Association of Michigan (TAM) to discuss data the Michigan Public Service Commission needed to satisfy the reporting requirements of Section 202 of P.A. 216 of 1995 and the possible data sources. Ameritech, GTE, MECA, and TAM next met to compile a list of data categories from company records that would meet staff's reporting requirement. They also explored the possibility of obtaining data from company records. This list was forwarded to staff who reviewed it to determine if the listed data would meet the requirements.

TAM agreed to serve as the single point of contact between industry and staff. The collection and summarization of all the data needed from all companies to satisfy the requirements of this report was a coordinated industry effort. Staff reviewed data elements to define further the process of collecting and summarizing Extended Area Service (EAS) related data. Staff and industry representatives maintained close contact as data were collected to ensure the scope of the project would meet the objectives of the act.

The specific data required for staff to satisfy the reporting requirements of Section 202 of P.A. 216 of 1995 are listed below. Data required for Parts (v), (vi) and (vii) were not provided because companies felt that data to be proprietary.

**MPSC Reply to Section 202 (f) of P.A. 179 as amended**

**Part (i) The percentage of intra-LATA calls and minutes of usage which are charged as basic local exchange calls.**

**Methodology**

This information is available primarily in internal reports prepared by the local exchange carriers (LEC). The percentage of local usage was calculated by dividing the estimated total annual 1995 statistics of residential local usage by the sum of total residential local usage plus LEC- handled intra-LATA residential toll usage.

**Data and Assumptions**

Ameritech Michigan, GTE, and MECA prepared the estimates of 1995 annual residential usage and line data used in this calculation. If information was not available for all companies, then the following estimates were used:

** MECA residential local calls were based on the similar GTE usage.

** Local minutes of use were not available for any company. An Ameritech residential local message holding time of 4.5 minutes per call was used to convert local messages to local minutes.

** MECA originated residential toll carried by Ameritech was estimated based on originating access minutes of use. Companies assumed a 60% residential factor based on Ameritech Michigan toll.

** MECA originated residential toll carried by GTE was estimated based on the relative percentage (i.e., 7.8%) of MECA lines subtending on GTE tandems and Ameritech tandems.

** MECA and GTE originated residential toll carried by interexchange carriers was based on Ameritech's estimate per line.

**Response**

**1995 ANNUAL MINUTES OF USAGE FOR MICHIGAN**

| | Local | Intra-LATA Toll | Local Plus Toll | % Local |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Messages | 6,322,537,821 | 955,321,284 | 7,277,859,105 | 86.9 % |
| Minutes of Use | 28,451,420,196 | 4,838,952,521 | 33,290,372,717 | 85.5 % |

Intra-LATA calls are primarily basic local exchange calls.

**PART (ii) The average size and range of sizes of basic local exchange calling areas (LCA's).**

**Data and Methodology**

A matrix was established including each of the 634 exchanges (1995 data) in the state with the number of residential and business lines in the exchange and the area of the exchange in square miles. Home exchange square miles for GTE and MECA was estimated based on a digital mapping program. If a local exchange included areas in another state, then the area in that other state was not included in the analysis. Another data base was established which included the other exchanges in each home exchange's local calling area (LCA). The data bases were combined to establish the number of lines, square miles, and number of exchanges in each local calling area. Summarizing this information for all 634 exchanges allowed calculation of the average and range statistics found in the table below.

**Response**

**LINES IN LOCAL CALLING AREAS** 1995 data was not available for 3 MECA companies so 1994 data was incorporated with the 1995 data used for other companies in this table.

| | LCA Square Miles | LCA Total Lines | Number of Exchanges In LCA |
|---|---|---|---|
| Mean | 282 | 67,769 | 3.4 |
| Median | 253 | 11,988 | 3.0 |
| Minimum | 4 | 16 | 1 |
| Maximum | 1,149 | 1,261,583 | 18 |

Since area and number of lines in local exchanges are extremely varied, the mean and median values are presented. The tables below describe other attributes of the telephone infrastructure in Michigan.

| LCA Sq Mi | 0 - 99 | 100-199 | 200-299 | 300-399 | 400-499 | 500-599 | 600-699 | 700-799 | 800-899 | 900-999 | > 1000 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Of Exchanges | 87 | 147 | 161 | 112 | 56 | 28 | 19 | 8 | 6 | 7 | 3 |
| No. Of Access Lines in Exchanges (millions) | 0.2 | 3.5 | 13.5 | 1.6 | 4.6 | 2.0 | 1.8 | 0.3 | 0.8 | 0.2 | 0.6 |

| No. of Lines in LCA | No. of Exchanges | No. of Lines in Exchanges | Ave. No. of Lines |
|---|---|---|---|
| 0 - 49,999 | 464 | 4,732,206 | 10,199 |
| 50,000 - 99,999 | 55 | 3,646,515 | 66,300 |
| 100,000 - 149,999 | 28 | 3,674,881 | 131,246 |
| 150,000 - 199,999 | 28 | 5,003,401 | 178,693 |
| 200,000 - 249,999 | 11 | 2,413,201 | 219,382 |
| 250,000 - 299,999 | 12 | 3,480,785 | 290,065 |
| 300,000 - 349,999 | 12 | 3,737,457 | 311,455 |
| 350,000 - 399,999 | 3 | 1,089,820 | 363,273 |
| 400,000- 449,999 | 3 | 1,254,403 | 418,134 |
| 450,000- 499,999 | 3 | 1,385,739 | 461,913 |
| 500,000 - 999,999 | 10 | 6,573,240 | 657,324 |
| > 1,000,000 | 5 | 5,909,067 | 1,181,813 |

**PART (iii) The ability of customers to contact emergency services, school districts, and county, municipal and local units of government without a toll call.**

**Data and Methodology**

Neither the Commission nor the providers had easy ways to directly measure the ability of Michigan residents to contact government offices by a local call.

GTE and Ameritech compiled a data base correlating each local exchange in

Michigan with the cities, towns, villages, townships, and counties falling within its borders. For exchanges within a government unit that are not local to each other, some residents may need to make toll calls to reach a governmental office. Because this information was not available for all companies (MECA companies are excluded), this response does not cover all areas of the state. Of the 1,242 townships in Michigan, this study covers 1,124. Overall, the townships included in the study are the most populated townships in the state.

Cities and Villages

Three of the 259 cities analyzed for this report (Farmington Hills, Norton Shores, and Westland) would require toll calls between some exchanges found within their borders. Villages were all within a single exchange. This would imply that residents in every city except three and in all villages covered by this analysis can reach their local governmental offices and schools without having to pay a toll charge.

Townships

Townships in Michigan are square with each side being six miles long. All townships, however, are not perfectly square due to annexation by other governmental jurisdictions, etc. Local calling areas consist of one or more local exchanges. Within those exchanges calls may be made without a toll charge.

Since governmental units define townships and telephone companies define local calling areas, their boundaries do not always coincide. Of the 1,242 townships in Michigan, 509, or 41%, have some minimal number of residents who must

make toll calls to other parts of their township. When township offices are in an exchange that is a toll call from these areas, the residents there must make a toll call to reach their township offices. The exact number of cases in the 509 townships where this anomaly occurs is not available.

Counties

Toll routes were found in most counties included in this study. Calling a county government office, therefore, will require a toll call for many county citizens.

Schools

School districts most often include a village or city and parts of its surrounding townships. Calls to schools by parents or calls home by children might require a toll call for some residents who live in townships. This situation would occur when a family lives in an area of a township where its local exchange is neither the same as the school's local exchange nor an adjacent local exchange.

Emergency Services

By law, telephone service providers must make emergency service available to each area in the state by a local call. Dial 9-1-1 is available in much of the state and where it is not available (county residents have not initiated the service), a call to the operator from any telephone should enable a citizen to reach emergency services without a toll charge. By law, every telecommunications provider that offers local service is required to connect anyone who calls their operator to appropriate emergency services. **Part (iv) Whether there are significant differences in basic local exchange calling patterns between urban, suburban, and rural areas.**

**Data and Methodology**

Data available in internal Ameritech, GTE, and MECA reports included all information needed for this response. Population density was used to define urban, suburban, and rural. The database used to answer Part (ii) included total number of customer lines and square miles for each home exchange. The number of customer lines divided by home exchange square miles was calculated for each exchange in the state. Exchanges were assigned to urban if they included 650 or more lines per square mile, suburban if they included 250 to 649 lines per square mile, and rural if they included less than 250 lines per square mile. The number of local and intra-LATA calls used in this analysis was a one month usage figure. A check for reasonableness was made with the response for Part (i) which included 1995 annual data and the statewide proportion of local calls. The difference was 0.4% (86.9 % vs. 86.5%).

**Response**

**CALLS BY POPULATION DENSITY, TOLL VS. LOCAL**

| | Local Calls | Toll Calls | Total Intra-LATA Calls | % Local Calls |
|---|---|---|---|---|
| Urban | 322,227,676 | 45,616,836 | 367,844,512 | 87.6 % |
| Suburban | 76,737,795 | 8,447,742 | 85,185,537 | 90.1 % |
| Rural | 125,312,488 | 28,005,964 | 153,318,452 | 81.7 % |
| Total State | 524,277,959 | 82,070,542 | 606,348,501 | 86.5 % |

Calls per Line by Density

| | | | | | | | |
|---|---|---|---|---|---|---|---|

| | Exchanges | Lines | No. Of Local Calls/Line | % Of Local Calls/Line | No. Of Toll Calls/Line | % Of Toll Calls/Line | TotalCalls/ Line |
|---|---|---|---|---|---|---|---|
| Urban | 35 | 1,993,188 | 162 | 87.6 % | 23 | 12.4 % | 185 |
| Suburban | 26 | 593,630 | 129 | 90.2 % | 14 | 9.8 % | 143 |
| Rural | 573 | 1,343,750 | 93 | 81.6 % | 21 | 18.4 % | 114 |
| Total State | 634 | 3,930,568 | 133 | 86.4 % | 21 | 13.6 % | 154 |

Calling patterns vary between urban, suburban, and rural areas. The difference between the percentage of suburban toll calls per line (9.8%) and rural toll calls per line (18.4%) is

nearly 9%.

**Part (v) The impact on basic local exchange rates which would occur if basic local exchange calling areas are altered.**

**Response**

Specific answers to this and Part (vi) and Part (vii) were withheld by the three major provider representatives. They considered the information to be proprietary. The companies indicated their competitive position may be jeopardized if they had to divulge it. They did, however, provide a general reply. The Commission included some of this information in its Final 1994 Report to the

Governor and Legislature. An estimate of potential rate increases that would occur if Extended Area Service were expanded so that each telephone user could make a local call to any other telephone within 25 miles was calculated using non-proprietary Ameritech Michigan data. The following table presents the estimate of increased cost to the ratepayer if revenue neutrality is assumed.

**COST OF 25 MILE PLAN**

| | One Time Expense Per Year for 5 Years (millions) | On-Going Expense Per Year (millions) |
|---|---|---|
| MBT (Ameritech Michigan) | $47.4 to $48.3 | $281.5 to $316.6 |
| GTE | $ 7.2 to $ 7.5 | $ 43.3 to $ 48.6 |
| MECA | $ 2.9 to $ 3.0 | $ 17.9 to $ 20.1 |

These costs would be reflected in residential rates on a per access line basis as $1.31-$1.34 in one-time charges and $7.82-$8.80 per month in recurring charges. Dollar amounts in original study have been adjusted to reflect effects of CPI changes from 1994 to 1996. Source is *WEFA Group U.S. Economic Outlook 1996-1998, September 1996*. To expand or change an expansive EAS network means cost or revenue shifting. Programs like the 25 mile plan will substantially increase costs. These costs may not be offset by the increased benefits derived from a larger local calling area.

**Part (vi) The impact when basic local exchange calling areas overlap LATA boundaries, and**

**Part (vii) The impact on basic local exchange rates which would occur if basic local exchange calling areas are expanded within LATA boundaries.**

**Response**

The industry did not provide specific responses for Part (vi) and Part (vii) as noted in the response to Part (v). They provided a general comment, however.

Overall, the primary impact on basic local exchange rates due to altering existing local calling areas would be inversely related to the impact the alteration could have on current toll revenue. An expansion would decrease toll revenue but would increase basic local exchange rates assuming constant or growing revenue. A contraction would have the opposite effect. If the alteration is limited by LATA boundaries then only intra-LATA revenues would be affected. If not limited by LATA boundaries, then any alteration would affect both intra-LATA and inter-LATA toll revenue.

**Conclusion** From the information presented above, it appears that, with few exceptions, persons living in cities and villages in Michigan can reach their municipal government offices, schools and emergency services without having to make a toll call. In approximately 41% of townships, a minimal number of residents may need to make a toll call to reach their township offices. A 25-mile radius local calling area would still not ensure that all citizens could reach their county seat without making a toll call. For example, portions of Gogebic, Ontonagon, and St. Clair counties are located more than 25 miles from the county seat. Assuming constant or growing total company revenues, expanding local calling areas would probably result in greater increased costs for all ratepayers than it costs any person to make the calls he or she must make to schools to report a sick child, talk to a teacher about a problem, or make necessary calls to their township and county offices.

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