# 1974 NATIONAL TRANSPORTATION STUDY

## NARRATIVE REPORT

**STATE OF MICHIGAN**

**WILLIAM G. MILLIKEN, GOVERNOR**

**JULY 1974**

# 1974 NATIONAL TRANSPORTATION STUDY

## NARRATIVE REPORT


STATE OF MICHIGAN

William G. Milliken, Governor

John T. Dempsey, Governor's Representative

STATE HIGHWAY COMMISSION

| | |
|---|---|
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# PART I

## GOVERNOR'S SUMMARY

The State of Michigan derived substantial benefit through participation in the 1974 National Transportation Study. We initially viewed this Study as an opportunity for improving the procedures for defining State transportation goals and establishing lines-of-communication requisite to the identification of multi-modal transportation planning elements and processes. These objectives have been met at a level consistent with the dimensions of the Study, the state-of-the-art, and the natural impedances inherent in a developmental program of this scope.

Review of this document as well as the internal support documentation, will indicate our concern with ensuring that the Study results were not limited to sets of technical, performance and cost data. We strove, with what we consider significant success to dedicate those resources necessary to develop and submit: 1) well considered responses to the DOT Policy Issue questions, and 2) develop a procedure for the development of a reasonable 1990 Transportation Plan vis-a-vis the requirements of the Study. I believe that a thorough review of this Report will make clear the emphasis my office has placed on these two areas.

With respect to the DOT charter to continue the National Transportation Study, a few observations are in order. Although I totally endorse the objectives and spirit inherent in these studies, I feel compelled to indicate that the design of future

studies should be constrained to adhere to schedule and tasks which encourage and foster participation as opposed to being considered an obligation. This objective may be achieved through participation of State Transportation Planning personnel in the design and/or review of the study scope and dimensions. It will be noted, in the appropriate section of this Report, that our 1974 NTS Coordinating Committee has some strong feelings on how we may cooperatively improve this important national effort.

The required summary table (Exhibit I.1) has been prepared and is included within this section. Although the purpose of a single summary table is evident, I would urge reviewers and interested parties to become familiar with the dimensions of the Study as provided by the DOT and review thoroughly Part II of this Report which presents specific information necessary for the appreciation of the Study results.

EXHIBIT I.1

COST SUMMARY TABLE FOR THE CAPITAL AND ANNUAL EXPENDITURES OF THE 1972 INVENTORY 1980 PROGRAM AND 1990 PLAN

| PROGRAM AREA | CAPITAL EXPENDITURES | | ANNUAL EXPENDITURES | | |
|---|---|---|---|---|---|
| | 1980 PROGRAM | 1990 PLAN | 1971 | 1979 | 1989 |
| | (thousands of dollars) | | | | |
| HIGHWAYS | 4,184,930 | 10,401,231 | 293,288 | 372,680 | 486,385 |
| URBAN PUBLIC TRANSPORTATION | 1,069,604 | 2,800,824 | 49,892 | 143,866 | 217,221 |
| AIRPORTS | 377,924 | 801,211 | 24,743 | 53,031 | 48,775 |
| PARKING (NON-FRINGE) | 4,793 | 154,530 | 4,873 | 5,679 | 6,635 |
| MARINE TERMINALS | 0 | 0 | 0 | 0 | 0 |
| OTHER PROGRAMS | 1,600 | 4,000 | 5 | 1,467 | 2,000 |
| TOTAL | 5,638,851 | 14,161,796 | 372,801 | 576,723 | 761,016 |

PART 2

# REPORT OF THE GOVERNOR'S REPRESENTATIVE

## 2-1 INTRODUCTION

This section of the 1974 National Transportation Study has been prepared in response to the Narrative requirement established by the DOT for all State participants. The results and discussion included within this section are assembled as a collateral document which is supportive to the data developed throughout the study within the State of Michigan and submitted to the DOT. The reader is recommended to review the entire document (Parts I through Part IV) vis-a-vis the DOT Instruction Manuals to develop an appreciation for the entire dimension of the study and the cooperative interfaces which were developed and expanded to ensure the results in this second national effort. For those readers interested in particular geographic, system, State, performance resources or cost data line item categories, it is recommended that reference be made to the data file available within the local jurisdiction and the Michigan State Department of Highways and Transportation.

Summaries of the capital costs and operations and maintenance cost data, developed over the period of the State's participation in the 1974 National Transportation Study, are presented in Exhibits 2-1.1 through 2-1-5. It must be remembered that the capital projection limitations set forth in the DOT study operational guidelines as well as other study-internal instructions and directives, influenced significantly the cost data provided herein. In no way should the data presented be considered as representative of transportation needs and or definite allocation policies and/or commitments. The cost data, physical state and performance measures reflect vigorously the directives of this study in terms of dimension and objectives which are by definition planning projections within definite limits, and not the results of a needs study.

EXHIBIT 2-1.1

1971 OPERATIONS AND MAINTENANCE COSTS*

| | Highway | Urban Public Transportation | Aviation | Parking | Other | Total |
|---|---|---|---|---|---|---|
| Ann Arbor | 3,966 | 469 | 118 | | | 4,553 |
| Bay City | 1,733 | 0 | 25 | | 5 | 1,763 |
| Detroit | 103,014 | 45,841 | 19,639 | 4,208 | | 172,702 |
| Flint | 8,589 | 639 | 498 | 336 | | 10,062 |
| Grand Rapids | 9,301 | 911 | 1,036 | 329 | | 11,577 |
| Jackson | 1,566 | 166 | 62 | | | 1,794 |
| Kalamazoo | 3,635 | 813 | 228 | | | 4,676 |
| Lansing | 4,172 | 320 | 415 | | | 4,907 |
| Muskegon | 2,372 | 352 | 175 | | | 2,899 |
| Saginaw | 2,625 | 69 | 498 | | | 3,192 |
| South Bend | 589 | 0 | 20 | | | 609 |
| Toledo | 214 | 0 | 20 | | | 234 |
| Urban Total | 141,776 | 49,580 | 22,734 | 4,873 | 5 | 218,968 |
| Small Urban A | 11,526 | 0 | 825 | | | 12,351 |
| Small Urban B | 8,017 | 312 | 545 | | | 8,874 |
| Rural | 131,969 | 0 | 639 | | | 132,608 |
| Total | 293,288 | 49,892 | 24,743 | 4,873 | 5 | 372,801 |

*In Thousands

EXHIBIT 2-1.2

1990 PLAN SUMMARY - CAPITAL COSTS*

| | Highway | Urban Public Transportation | Aviation | Parking | Other | Total |
|---|---|---|---|---|---|---|
| Ann Arbor | 150,567 | 1,005 | 3,998 | | 4,000 | 159,570 |
| Bay City | 64,891 | 750 | 818 | | | 66,459 |
| Detroit | 3,817,187 | 2,678,208 | 438,170 | 138,312 | | 7,071,877 |
| Flint | 445,591 | 6,968 | 28,122 | 12,843 | | 493,524 |
| Grand Rapids | 350,082 | 61,599 | 16,660 | 3,375 | | 431,716 |
| Jackson | 70,851 | 360 | 2,827 | | | 74,038 |
| Kalamazoo | 138,235 | 4,000 | 29,674 | | | 171,909 |
| Lansing | 240,531 | 9,450 | 26,826 | | | 276,807 |
| Muskegon | 109,583 | 1,630 | 6,574 | | | 117,787 |
| Saginaw | 142,927 | 706 | 21,417 | | | 165,050 |
| South Bend | 38,571 | 350 | 2,515 | | | 41,436 |
| Toledo | 28,864 | 8,734 | 1,315 | | | 38,913 |
| Urban Total | 5,597,880 | 2,773,760 | 578,916 | 154,530 | 4,000 | 9,109,086 |
| Small Urban A | 385,879 | 13,911 | 102,422 | | | 502,212 |
| Small Urban B | 329,974 | 13,153 | 27,487 | | | 370,014 |
| Rural | 4,087,498 | 0 | 92,386 | | | 4,179,884 |
| Total | 10,401,231 | 2,800,824 | 801,211 | 154,530 | 4,000 | 14,161,796 |

*In Thousands

EXHIBIT 2-1.3

1989 OPERATIONS AND MAINTENANCE COSTS*

| | Highway | Urban Public Transportation | Aviation | Parking | Other | Total |
|---|---|---|---|---|---|---|
| Ann Arbor | 8,024 | 500 | 275 | | 2,000 | 10,799 |
| Bay City | 3,368 | 589 | 80 | | | 4,037 |
| Detroit | 179,091 | 169,587 | 33,949 | 5,847 | | 388,474 |
| Flint | 20,598 | 11,014 | 1,400 | 413 | | 33,425 |
| Grand Rapids | 14,476 | 9,481 | 1,677 | 375 | | 26,009 |
| Jackson | 3,331 | 348 | 155 | | | 3,834 |
| Kalamazoo | 7,172 | 4,200 | 1,179 | | | 12,551 |
| Lansing | 10,350 | 4,687 | 1,395 | | | 16,432 |
| Muskegon | 4,957 | 950 | 307 | | | 6,214 |
| Saginaw | 6,321 | 709 | 1,103 | | | 8,133 |
| South Bend | 1,236 | 195 | 275 | | | 1,706 |
| Toledo | 1,522 | 1,637 | 80 | | | 3,239 |
| Urban Total | 260,446 | 203,897 | 41,875 | 6,635 | 2,000 | 514,853 |
| Small Urban A | 18,548 | 6,849 | 2,899 | | | 28,296 |
| Small Urban B | 15,984 | 6,475 | 1,191 | | | 23,650 |
| Rural | 191,407 | 0 | 2,810 | | | 194,217 |
| Total | 486,385 | 217,221 | 48,775 | 6,635 | 2,000 | 761,016 |

*In Thousands

EXHIBIT 2-1.4

1980 PROGRAM SUMMARY - CAPITAL COSTS*

| | Highway | Urban Public Transportation | Aviation | Parking | Other | Total |
|---|---|---|---|---|---|---|
| Ann Arbor | 61,080 | 3,977 | 1,787 | | 1,600 | 68,444 |
| Bay City | 31,720 | 578 | 539 | | | 32,837 |
| Detroit | 1,718,426 | 938,000 | 234,625 | | | 2,936,051 |
| Flint | 166,655 | 4,796 | 11,588 | 1,418 | | 184,457 |
| Grand Rapids | 103,510 | 8,692 | 5,958 | 3,375 | | 121,535 |
| Jackson | 22,066 | 525 | 1,161 | | | 24,207 |
| Kalamazoo | 41,185 | 3,500 | 25,270 | | | 69,945 |
| Lansing | 83,381 | 49,853 | 7,114 | | | 140,348 |
| Muskegon | 34,774 | 682 | 2,336 | | | 37,792 |
| Saginaw | 96,083 | 468 | 8,534 | | | 105,085 |
| South Bend | 12,759 | 0 | 1,640 | | | 14,399 |
| Toledo | 7,843 | 0 | 901 | | | 8,744 |
| Urban Total | 2,379,472 | 1,056,071 | 301,908 | 4,793 | 1,600 | 3,743,844 |
| Small Urban A | 101,983 | 6,956 | 51,848 | | | 160,787 |
| Small Urban B | 110,988 | 6,577 | 13,490 | | | 131,055 |
| Rural | 1,592,487 | 0 | 10,678 | | | 1,603,165 |
| Total | 4,184,930 | 1,069,604 | 377,924 | 4,793 | 1,600 | 5,638,851 |

*In Thousands

EXHIBIT 2-1.5

1979 OPERATIONS AND MAINTENANCE COSTS*

| | Highway | Urban Public Transportation | Aviation | Parking | Other | Total |
|---|---|---|---|---|---|---|
| Ann Arbor | 5,808 | 978 | 137 | | 1,467 | 8,390 |
| Bay City | 2,476 | 405 | 76 | | | 2,957 |
| Detroit | 140,012 | 116,800 | 42,781 | 4,579 | | 304,172 |
| Flint | 14,228 | 7,320 | 1,073 | 459 | | 23,080 |
| Grand Rapids | 1,993 | 3,138 | 1,595 | 461 | | 7,187 |
| Jackson | 2,375 | 297 | 76 | | | 2,748 |
| Kalamazoo | 5,267 | 4,000 | 914 | | | 10,181 |
| Lansing | 6,965 | 2,960 | 994 | | | 10,919 |
| Muskegon | 3,612 | 780 | 358 | | | 4,750 |
| Saginaw | 4,318 | 525 | 1,022 | | | 5,865 |
| South Bend | 884 | 0 | 83 | | | 967 |
| Toledo | 804 | 0 | 76 | | | 880 |
| Urban Total | 188,742 | 137,203 | 49,185 | 5,679 | 1,467 | 382,276 |
| Small Urban A | 14,868 | 3,425 | 1,997 | | | 20,290 |
| Small Urban B | 11,707 | 3,238 | 958 | | | 15,903 |
| Rural | 157,363 | 0 | 891 | | | 158,254 |
| Total | 372,680 | 143,866 | 53,031 | 5,679 | 1,467 | 576,723 |

*In Thousands

*In Thousands

## 2-2 STATE TRANSPORTATION POLICIES

This section includes a discussion of State goals and objectives in transportation and responses to the specific poling questions included within the 1974 NTS Narrative requirements as stipulated by the DOT.

### 2-2.1 STATE GOALS AND OBJECTIVES

The following goals have been formally stipulated by the Michigan State Department of Highways and Transportation.

- The Commission will approve programs to allow the Department to continuously plan, coordinate, construct and operate and maintain an adequate and integrated transportation system for the State as provided by law.

- All efforts of the Department will be directed toward implementing this objective (above) with the most effective and efficient use of resources available for those purposes. Within this policy, the Department will strive to the fullest extent possible to maintain the environment by providing for the minimum interference with existing ecologic systems.

- The continuing transportation needs and the anticipated transportation revenues of the State shall be identified continuously. The Governor, the legislature and the citizens of the State shall be informed of the financial capacity of the Department to meet the long range transportation needs with anticipated revenues.

  When developing, monitoring and controlling transportation work programs and allocating manpower, material and equipment resources, the Director shall see that the Department's efforts are directed toward meeting the State's immediate and long range transportation needs.

- The State Trunkline System will be maintained and operated to preserve the investment in highway facilities, to accommodate highway users with safe and reasonable convenience and to conserve aesthetic values. These objectives will be accomplished by placing continuing emphasis on the economic utilization of resources.

- The Commission, through the Director, will ensure that the State Trunkline System will be planned, developed, operated and maintained in a manner which provides maximum safety to the user commensurate with available resources.

- The Commission, being fully aware of the past and future impacts of its activities on the human environment and ecology of the land, water, and atmosphere of the State of Michigan and its' neighboring states, is in full agreement and supports the goals of the State and National Environmental Legislation.

  The Department, in the planning, construction, and operation of an adequate and integrated system of Trunkline Highways for the people of Michigan will, to the fullest extent possible, maintain or improve the present environment and provide for the minimal interference with existing ecologic systems

## 2-2.2 SPECIFIC POLICY RESPONSES

The following questions and replies represent the view of the Governor's representative with respect to the specific questions presented by the DOT as part of the 1974 National Transportation Study.

1. a) Is the present division of responsibility between State and Local Government with respect to transportation planning, programming, and development authority adequate?

   No: Under the present system, it is possible for local parochial interests to exercise nearly absolute veto power over needed transportation improvements of statewide, regional or metropolitan significance. While it is essential that local communities be able to participate in and contribute to the planning, programming and development process, present autonomy often makes it difficult to develop effective state programs for highways, airports and public transportation.

   b) If (a) is no, what changes would be desirable?

   A mechanism is needed to better address and resolve differences which may arise as a result of opposing local and state interests. This mechanism must provide for local participation while not interfering with the broader state interests. A solution, in part, may result through regional planning agencies presently being developed which could have comprehensive transportation planning responsibilities and overriding program review and approval powers for transportation projects of more than local significance.

2. a) Are you in favor of complete modal flexibility in the use of Federal Transportation Funds at the State level with a single matching requirement and under the assumption that the total level of funding is approximately equal to the total entering the State from present categorical programs?

   Yes: Complete modal felxibility would be desirable to permit the state to implement the best solutions to transportation problems regardless of mode. However, there are certain conditions that constrain flexibility. For instance, transportation systems transcend state lines and fulfillment of national system programs is necessary. We would favor a single matching requirement for all modes.

   b) Are you in favor of a direct apportionment of Federal Funds to the urban areas within the State?

   No: The newly created Department of State Highways and Transportation has responsibility for the comprehensive direction for

total transportation functions. A major purpose of reorganization was to provide a state capability to systematically evaluate transportation plans and programs developed at both the state and local level for consistency with, and support of, the long term development of a balanced transportation system. This requires a central state role in distributing transportation funds based upon need, criteria and program benefits. Such a determination may be preempted when a distribution formula to local jurisdictions is mandated at the federal level. In addition, maintaining a strong administrative role for the state is important in view of the predominance of planning and engineering capability at the state level.

"D" c) If (b) is no, how would the State allocate Federal Urban Transportation Funds among the urban areas within the State?

Allocation of urban Federal Funds by the state would be accomplished by developing a formula which would include: population, miles of arterial highways (both adequate and inadequate), adequacy of public transportation systems (as identified by planning or needs studies), miles of public transit in operation, etc.

d) Has the State Administration initiated activity directed at the establishment of a single statewide transportation trust fund?

Yes: State efforts directed at the establishment of a statewide transportation fund have been initiated.

"D" e) If (d) is yes, briefly describe the nature and status of such activity.

Act 327 of the Public Acts of 1972 has provided for the funding of public transportation, railroads, non-motorized transportation (including development of bicycle paths) and waterways, as well as highways from the State Motor Vehicle Highway Fund. However, the highway and airport development program remain funded from dedicated fund sources.

3. The following question is asked to determine which programs have the highest priorities, regardless of financing difficulties related to paresent institutional constraints. If the overall amount of Federal-aid made available to the State with no passthrough requirement were increased by 20% for the 1980 Program, and if this 20% increase (but not the rest of the Federal Funds) were available for either capital or operating expenses, for any mode of transportation, and without matching requirements, in approximately what proportions would these extra funds be spent?

A table should be completed as illustrated in Exhibit 2-2.2.2, and inserted in the Narrative Report along with any appropriate explanatory text. The discussion in the text should address the question as to whether the additional funds would be used to supplement or substitute for the funds from State and local sources as reported in the 1980 Program. Assume no increases in user taxes imposed by the Federal Government to finance the additional funding.

EXHIBIT 2-2.1.1

INDEX OF STATE POLICY QUESTIONS

| QUESTION | | SUB-ELEMENT | | | | | |
|---|---|---|---|---|---|---|---|
| SUBJECT | NO. | (a) | (b) | (c) | (d) | (e) | Page |
| Planning Responsibility | 1 | N | | | | | |
| Funding Flexibility | 2 | Y | N | | Y | | |
| Program Priorities | 3 | | | | | | |
| Coordinated Planning | 4 | N | Y | | | | |
| Energy Resources | 5 | N | Y | | | | |
| Federal Programs | 6 | Y | | Y | | | |
| Planning Grants | 7 | N | | | | | |
| General Revenue Sharing | 8 | N | | | | | |
| Federal Standards | 9 | N | | Y | | | |
| EPA Air Quality Standards | 10 | N | N | | | | |
| Operating Subsidy | 11 | Y | Y | | | | |
| Railroad and Intercity Bus | 12 | Y | N/A | Y | Y | Y | |
| Multimodal Terminals | 13 | Y | | | | | |
| Rural Public Transportation | 14 | Y | Y | | | | |
| Transportation Safety | 15 | Y | Y | | | | |
| Bicycle Programs | 16 | Y | | Y | Y | N | |
| Technology Evaluation | 17 | Y | Y | | | | |
| Gasoline Tax Changes | 18 | Y | Y | | | | |

## EXHIBIT 2-2.2.2

PRIORITIES FOR EXPENDITURE
OF AN ADDITIONAL 20% OF FEDERAL FUNDS

| PROGRAM AREA | PERCENT OF 1980 PROGRAM FUNDING[1/] | PERCENT OF ADDITIONAL FUNDS* |
|---|---|---|
| HIGHWAYS AND HIGHWAY RELATED ACTIVITIES URBAN | 40.33 | 40.33 |
| RURAL | 34.57 | 34.57 |
| URBAN PUBLIC TRANSPORTATION CAPITAL IMPROVEMENTS | 11.16 | 11.16 |
| OPERATING COSTS | 5.93 | 5.93 |
| AIRPORTS | 7.60 | 7.60 |
| PARKING (NON-FRINGE) | 0.33 | 0.33 |
| MARINE TERMINALS | 0 | 0 |
| OTHER RAIL, BUS OR TRUCK TERMINALS | 0 | 0 |
| INTERCITY RAIL PASSENGER | 0 | 0 |
| OTHER (Specify) | 0.08 | 0.08 |
| TOTAL | 100 | 100 |

1/ This column should be based on the 1980 Program data submitted on Form Y, and should not include the additional 20% in Federal Funds. Include fringe parking under urban public transportation. The percentages should be based upon the capital costs reported in the 1980 Program, plus an estimate of the total annual costs for the period 1971 through 1979.

*In the advent of 20% additional funds, a distribution function would be developed for more refined allocation - Refer #3

3. a) A 20% increase in this manner would be used to supplement, not substitute, for state and local funds. Such funds would be distributed between modes by an appropriate formula that would have to be devised. In most cases, it is expected that these funds would be used for capital expenses, but because of the unique circumstances in aviation, and public transportation, it may be appropriate to distribute some of these funds for operational expenses.

4. a) Are transportation planning and development decisions presently coordinated with comprehensive State planning and/or a State development plan?

No: Although Michigan does not have an overall State development plan, trnasportation planning and development decisions are being coordinated with other State and regional planning agencies.

b) If (4a) is no, do you see the need for such a relationship in the future?

Yes.

"D" c) If the answer to either (a) or (b) is yes, describe what procedures are followed or are considered desirable to foster such coordination.

The appropriate mechanism for comprehensive state planning and for integrating planning with the budgeting process is presently under study.

5. a) Have concern about future energy resources been considered by the State in the development of the 1980 Program and 1990 Plan?

No.

b) If (a) is no, does the State expect to apply such considerations in future planning?

Yes: It is expected that concerns for energy resources will be one of the most important aspects of future planning, and State efforts toward energy conservation are currently underway.

6. a) Are there existing Federal Transportation Programs which you believe are of marginal value to the State and should be severely modified or eliminated?

Yes.

"D" b) If (a) is yes, identify such programs and describe the nature of the recommended alternations.

Fragmented Federal programs often do not meet the most critical needs of a given state or region. More flexibility in the use

of categorical grants should be provided to the states. This applies to nearly every existing Federal program.

c) Are there new Federal Programs which you believe should be implemented in the near future?

Yes: However, an adequate response to this question would require a thorough evaluation of existing programs and needs.

7. a) Do existing Federal Transportation Planning Grant Programs support and encourage the kind of transportation planning which the State desires to implement?

No: Transportation planning supported by programs such as Highway Planning and Research and Section 138 provide sufficient flexibility for adequate transportation planning. However, many project related transportation planning programs have been inadequately conceptualized and managed and have little chance for implementation. This is primarily due to program administration at local, state and federal levels.

"D" b) If (a) is no, what changes are needed of an institutional, technical, and financial nature?

Each planning grant should require the endorsement of the state Transportation agency, with a well defined procedure for monitoring to insure that each study is necessary, timely and directly related to the state's transportation program.

8. a) Will any of the State level general revenue sharing funds which have been described to your state be used for transportation purposes?

No. However, State general fund - general purpose financing is being proposed for fiscal year 1974-75 to support public transportation improvements.

"D" b) If (a) is yes, will they substitute for or supplement present transportation expenditures?

Not applicable.

c) If the answer to (a) is yes, in which program areas and in what amounts will the General Revenue Sharing funds be used?

Not applicable.

"D" d) What is the long term policy with respect to the use of General Revenue Sharing Funds for transportation purposes?

It is not anticipated that General Revenue Sharing funds will be available for transportation purposes. These funds have, in part,

made possible the enactment of measures designed to improve the equity of the Michigan tax structure.

9. a) Do you favor the use of uniform Federal level of service standards (exclusive of design standards for safety or physical adequacy), for future transportation facility development?

No. Comment: Each area has unique problems and uniform federal service levels are not necessarily appropriate for all areas.

b) Not Applicable.

c) Should present AASHO highway design standards continue to be used by the Federal Highway Administration for project approval on Federal-Aid highways?

Yes; however, such standards should not be considered to be inflexible. It should be easier to modify the standards when such modification is justified by local conditions.

10. a) Have any of the urban areas' plans in the State been evaluated as to whether the EPA air quality standards will not be violated by the total area-wide pollutant outputs, including those associated with the travel levels and system usage estimates reported in the 1980 Program?

No: The plans have not been evaluated on a plan by plan basis, however, the air quality control regions have been evaluated as part of Michigan's Air Quality Implementation Plan. At present no air quality regions in Michigan are anticipated to be in violation of EPA air quality standards.

b) If (a) is no, will such evaluations be conducted by June 1974?

It is the intention of the Department to conduct area-wide evaluations as part of our on-going planning process. These will not necessarily be completed by June 1974.

"D" c) Not Applicable.

11. a) Does the State favor the use of Federal transportation funds for the purposes of defraying operating losses on urban or intercity public transportation systems?

Yes: While the major use of federal transportation funds would likely be for construction purposes, Michigan favors having sufficient flexibility to utilize these funds to subsidize operations. The transportation of urban citizens in a balanced transportation system is one of the key elements in solving the urban crises and restoring the vitality of urban cities. To make such a balance a reality, the emphasis of public transportation services must be on providing a service to the people. Thus, while there must,

of course, be sound management of public transit services, there must also be a recognition that transit will have to be subsidized as is presently being done through state funding.

b) Does that State favor or currently apply State funds for such purposes?

Yes: The State initiated such subsidies in 1973 for public transportation systems. Previous state efforts to prevent, or offset, operating losses were in the form of tax relief measures.

c) If (b) is yes, what criteria or formula would or does the State apply in granting such assistance?

Amount of assistance is determined by the ratio of population and transit vehicle miles to the total for all eligible agencies, with a subsidy limitation of 1/3 of the total operating costs.

12. a) Does the State presently address railroad and bus intercity transportation as part of its statewide planning process?

Yes: An interagency Railroad Task Force and an Intercity Bus Task Force have been established within the Michigan Department of State Highways & Transportation to address the problems and concerns of these modal systems.

b) Not applicable.

c) Are questions of railroad service abandonment or discontinuance being studies as a possibility?

Yes: The Michigan Department of State Highways & Transportation and the Public Service Commission review, comment and approve/disapprove requests for railroad service, abandonment or discontinuance. Review and action will be in accordance with the railroad systems plan framework currently being developed.

d) Can or will the State participate in support of railroad development or operations?

Yes: Programs are being implemented to expand railroad passenger service in Michigan. Programs to provide further support to railroads are currently under study.

e) Have the legal questions of such participation by the State been investigated?

Yes.

13. a) Has the State participated in or supported the development of passenger or freight intermodal transportation terminals, such as a joint rail and truck piggyback facility?

Yes: The State is actively promoting the concept of inter-modal transportation terminals. Joint terminals for railroads-intercity buses are expected to be implemented in the immediate future.

14. a) Has the State studies the question of the adequacy of local and intercity public transportation service within and to the rural areas of the State?

Yes - These studies have recently been initiated.

b) Is the State currently participating in any programs directed at improving such service in rural areas?

Several projects have recently been programmed as part of the State's public transportation program. One such program currently being developed is directed at public transportation service to senior citizens in rural counties. Other programs to provide for public transportation systems in rural counties are being developed, and a study is being initiated to determine the adequacy of intercity bus service. A state-local program and an airport loan program now exists to assist rural areas of the State in attracting economic development by offering air service to other parts of the State.

c) What should the Federal Government do to further research and alleviate rural transportation problems?

Section 147 of the Federal Highway Act of 1973 and the previously sited state programs adequately provide for local-state initiatives in this area. However, relaxation of entrance requirements for the National Airport System Plan would be a major step in alleviating rural air transportation problems.

15. a) Does the State have an explicit policy with regard to transportation safety (including pipelines)?

Yes.

b) Are current Federal transportation safety programs adequate?

Yes.

16. a) Does the State presently have or plan on having a program devoted to the planning and development of bicycle ways and other non-motor vehicle and pedestrian facilities?

Yes.

D" b) If (a) is yes, what agency within State government is responsible?

Michigan Department of State Highways and Transportation; as well as each unit of local government.

c) Have estimates been made concerning the future levels of usage and the level of investment needed to develop adequate facilities?

Now being studies.

d) Is current State Legislation adequate for the initiation of a bicycle or other non-motor vehicle system program by the State and local governments?

Yes.

e) Would changes in existing Federal Legislation be advantageous in this regard?

No.

17. a) Are new transportation technologies explicitly considered and evaluated by the State as part of the development of future plans for solving transportation deficiencies?

Yes: The State is sponsoring a "New Trans" design contest which provides funding for planning and engineering of new technologies public transportation systems. Consideration of new aviation technologies has been undertaken as part of the State Airport System Plan.

b) Has the dissemination of information describing new transportation technologies been adequate?

Yes; in terms of volume. However, much of the material has been so promotional that it blends fact with fantasy, resulting in considerable misinformation.

c) How can the Federal government be more useful in this regard?

The Federal Government can be more useful in dissemination of information describing new technologies, including the publication of special reports and the sponsoring of seminars with Federal, State and Local Governments as well as with industry personnel. In another direction, the Federal Government could be more useful by adopting policies of not funding planning studies concerning local application of new technologies until the technology is readily available for implementation.

18. As the Interstate Program is completed, a major use of the Federal Highway Trust Fund monies will be phased out.

a) If the Federal gasoline tax were reduced from 4 to 2 cents per gallon as a consequence, would you recommend that the State increase its gasoline tax to maintain the same overall tax level?

b) Would you be in favor of the Federal gasoline tax remaining at 4 cents per gallon, but that one-half of the funds collected be returned directly to the State to which it is attributable (i.e., on the basis of 2 cents per gallon of gasoline consumed)? These funds would be available for transportation capital or operating expendutures, with no matching or project approval requirements.

Yes.

The five highest priority policy areas are as follows:

1. #2
2. #4
3. #18
4. #11
5. #5

The entire 1974 NTS Coordinating Committee participated in the preparation of the policy question responses. In addition, the Governor Representative, Dr. John Dempsey, and the Director of the Michigan Department of State Highways and Transportation, Mr. John Woodford, reviewed and participated in the final statements.

## 2-3 THE STATE TRANSPORTATION SYSTEM TODAY

This section provides the information requested and stipulated by the DOT as the narrative requirements. The section has been organized to include Highways (2-3.1), Urban Public Transportation (2-3.2), Airports (2-3.3) and other Form Z Discussion (2-3.5) Port Development Discussion (2-3.4) is included in this section as an overview of the states responsibilities. Further discussions of ports are not relevant to the other sections of the report since the state does not operate and/or contribute directly to any port facilities development and/or operation.

## 2-3.1 EVALUATION OF THE 1972 HIGHWAY INVENTORY

The purpose of this section is to present an evaluation of the 1972 Inventory for highways in Michigan. The evaluation discussed in this section is based upon the 1972 Inventory data forms prepared by the Michigan Department of State Highways and Transportation, utilizing data files from the 1972 National Transportation Study as a starting point and updating reported Inventory information to reflect both projects completed between 1970 and 1972 and also to develop other information requested for 1974 NTS reporting purposes.

This section is oriented toward a discussion of the physical state and performance of Michigan's highway system in 1972 in terms of selected comparisons between urban areas, rural areas, and those portions of the system which are predominantly oriented toward intercity traffic movement. This relevant background status of the Michigan highway system in 1972 will form the backdrop for comparisons with the 1990 Plan and the 1980 Program in succeeding sections of this Narrative Report.

Michigan, with a land area of 57,022 square miles, ranks 23rd among the states in total land area, but 8th in total mileage of roads and streets, indicating a far more extensive highway network than the national average. As shown in Table 2-3.1.1, approximately two thirds of Michigan's roads mileage is comprised of local roads, approximately 23% Collectors, 7% Minor Arterials, 3% Principal Arterials, and the remainder Interstate. Table 2-3.1.2 depicts the composition of this road and street mileage, by 1990 functional classification, between urban areas and the rest of state as reported on the 1972 NTS forms.

TABLE 2-3.1.1

1972 ROAD AND STREET MILEAGES BY 1990 FUNCTIONAL CLASSIFICATION

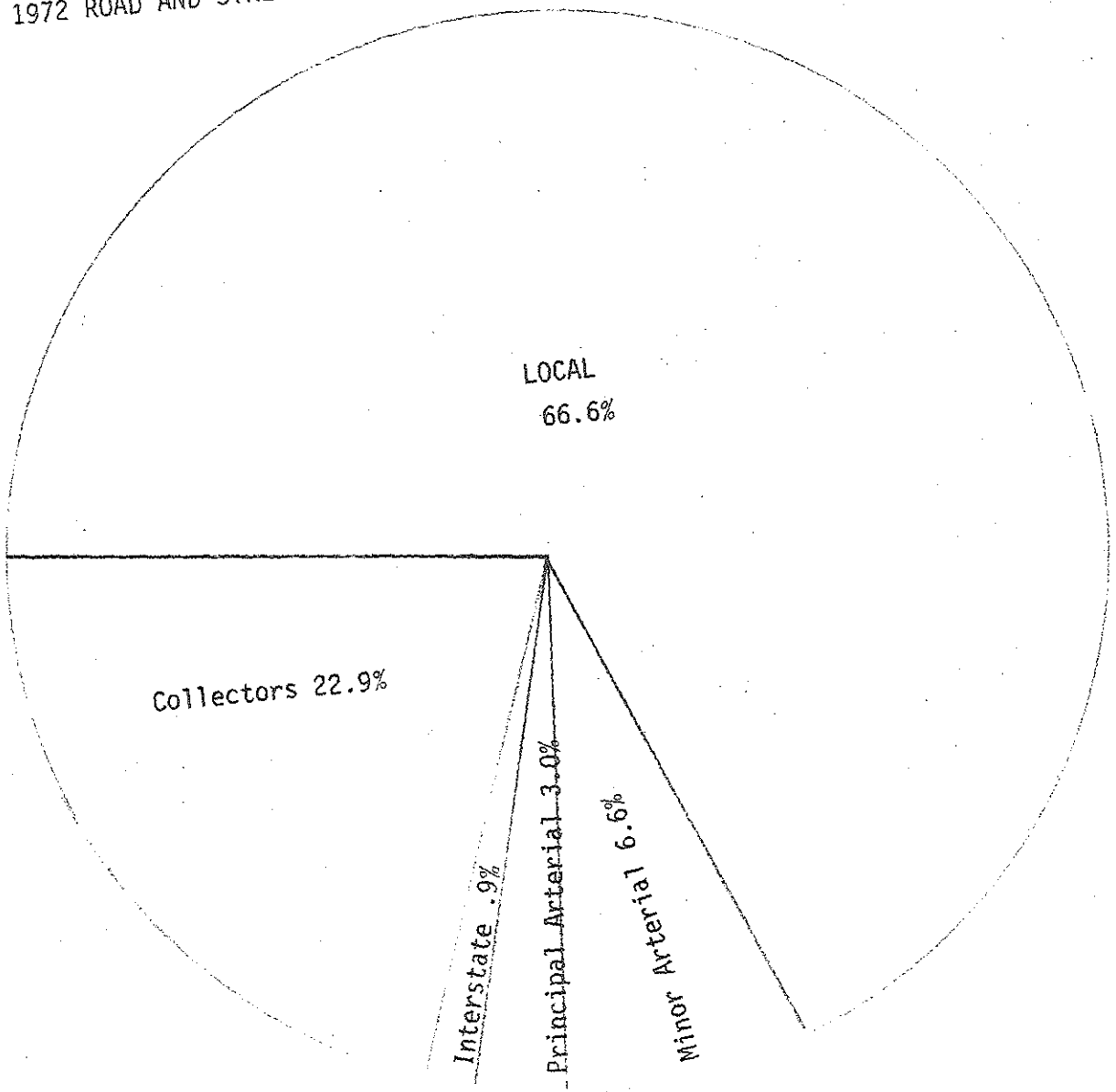

TABLE 2-3.1.2

URBAN AND RURAL MILEAGES BY 1990 FUNCTIONAL CLASSIFICATION

1972 INVENTORY

| | Urban | | Rural | | Total | |
|---|---|---|---|---|---|---|
| | Miles | % | Miles | % | Miles | % |
| Interstate | 352 | 1.6 | 640 | .7 | 992 | .9 |
| Principal Arterial | 2,203 | 9.0 | 1,201 | 1.3 | 3,404 | 3.0 |
| Minor Arterial | 3,138 | 12.8 | 4,354 | 4.8 | 7,537 | 6.6 |
| Collectors | 2,740 | 11.1 | 23,490 | 26.1 | 26,230 | 22.9 |
| Local | 16,085 | 65.5 | 60,149 | 67.1 | 76,234 | 66.6 |
| TOTALS | 24,563 | 100.0 | 89,834 | 100.0 | 114,397 | 100.0 |

As this table shows, the higher functional classifications are of increased importance in the urban areas due to the differences in trip purposes served by a given functional classification between urban and rural areas.

Although the 1974 National Transportation Study does not require reporting with respect to the condition of the system with respect to surface types and surface widths, it is appropriate to note here that a recent study performed for the State of Michigan showed that many of the existing road facilities fall quite short of being adequate with respect to structural deterioration or functional obsolescense, based upon the standards utilized in the conduct of the Needs Study. These inadequacies in the system have formed the basis for the determination of the so-called backlog needs necessary to meet present design standards. This observation with respect to highway deficiencies is particularly important to the evaluation of all of the highway data submitted for the 1974 National Transportation Study.

The failure to include deficiency related data in the 1974 National Transportation Study has necessitated that this Narrative Report, with respect to the Inventory, Plan and Program for this portion of the Study, be structured around comparisons between identified needs and the data requested by the U.S. Department of Transportation which has been developed around funding constraints imposed on the Michigan Highway Program for study purposes.

The importance of meeting these needs is further underscored by observations relating to the number of vehicle miles of travel on each of the functional classifications. The vehicle miles of travel constitute a measure of the relative importance and service value of a given functional classification. Table 2-3.1.3 shows the percentage of total vehicle miles traveled on each of the identified functional classifications and Table 2-3.1.4 shows urban and rural components of this categorization of vehicle miles traveled.

TABLE 2-3.1.3

VEHICLE MILES TRAVELED BY FUNCTIONAL CLASS

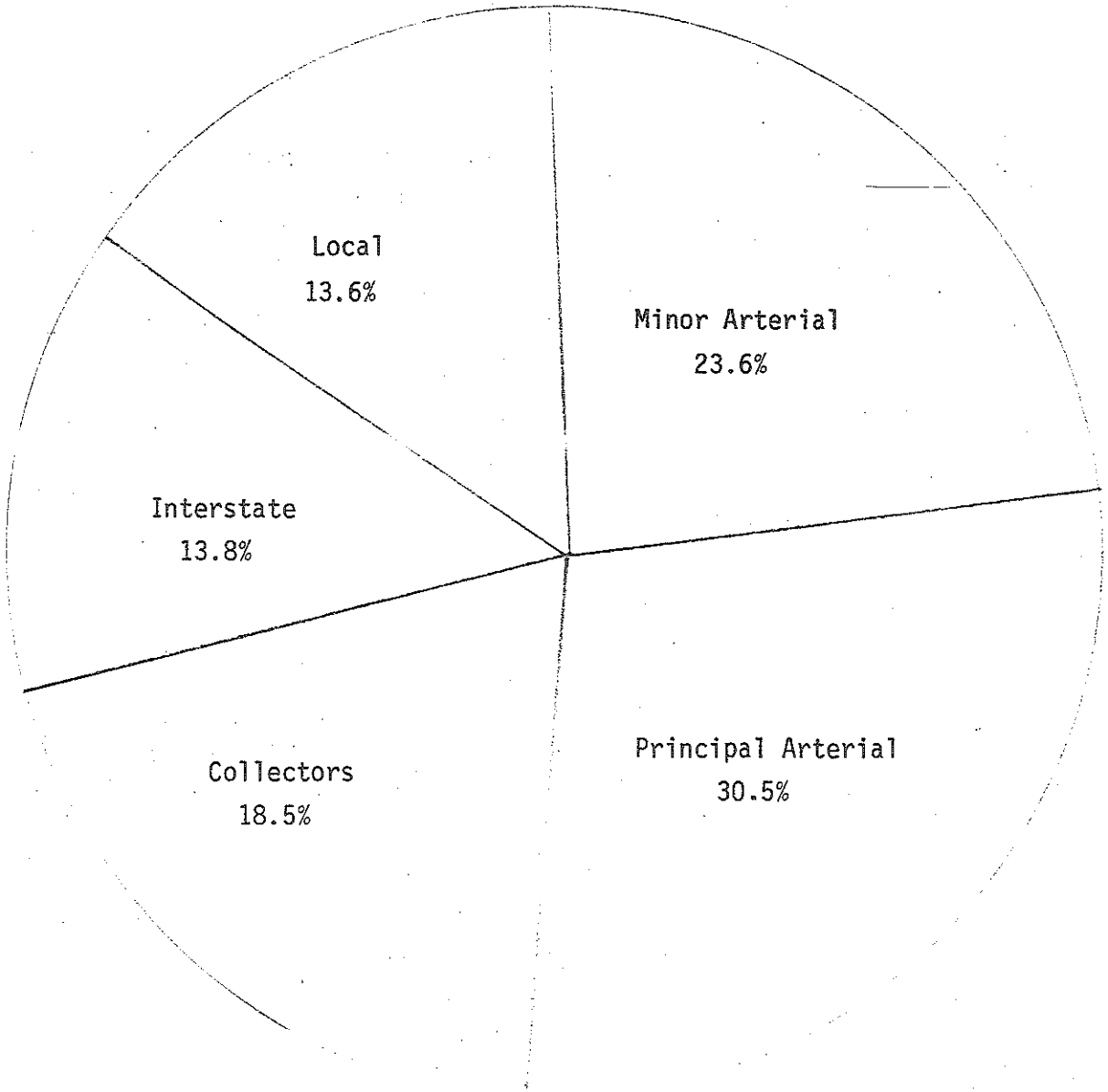

TABLE 2-3.1.4

URBAN AND RURAL VEHICLE MILES
BY 1990 FUNCTIONAL CLASSIFICATION - 1972 INVENTORY*

| | Urban | | Rural | | Total | |
|---|---|---|---|---|---|---|
| | Vehicle Miles | % | Vehicle Miles | % | Vehicle Miles | % |
| Interstate | 4,888 | 13.8 | 2,778 | 13.7 | 7,666 | 13.8 |
| Principal Arterial | 14,790 | 41.9 | 2,161 | 10.7 | 16,951 | 30.5 |
| Minor Arterial | 8,628 | 24.4 | 4,522 | 22.3 | 13,150 | 23.6 |
| Collectors | 3,161 | 8.9 | 7,128 | 35.1 | 10,289 | 18.5 |
| Local | 3,873 | 11.0 | 3,689 | 18.2 | 7,562 | 13.6 |
| Totals | 35,340 | 100.0 | 20,278 | 100.0 | 55,618 | 100.0 |

*Annual vehicle miles in millions

As these tables show, of the 55.6 million vehicle miles of highway use in 1972, approximately 13.8% was on the Interstate system, 30.5% on Principal Arterials, 23.6% on Minor Arterials, 18.5% on Collectors, and 13.6% on Local roads. A comparison of Table 2-3.1.3 with Table 2-3.1.1 reveals that, in the aggregate, Principal Arterials, which constitute a very small portion of the total mileage, account for nearly one-third of the total highway use in terms of vehicle miles. As Table 2-3.1.4 shows, the arterial system is of major importance in the urban areas with respect to traffic carrying capacity. A comparison of vehicle miles with total miles for the arterial system shows that the arterial system comprises only approximately 23% of urban highway mileage, and yet carries over 80% of the urban traffic as measured in vehicle miles. It is important to note here that deficiencies in the arterial system with respect to capacity, as will be discussed in succeeding sections of this Narrative Report, result in serious traffic impedances as of 1972, which further lead to excessively high door to door travel times for some trip purposes. This is particularly true in the urban areas and constitutes one of the major highway related problems to be addressed by the State's highway program.

It is also to be noted here that traffic volumes in Michigan are considerably above national averages. Unfortunately, data requested for the purposes of the 1972 Inventory does not allow meaningful comparisons between travel times on various portions of the system from which an insight into the magnitude of capacity deficiencies for the 1972 Inventory can be determined. Table 2-3.1.5 shows average speeds, by functional classification, for urban and rural areas for the 1972 Inventory. This Table has been developed based upon calculating average speeds by dividing vehicle miles by vehicle hours as reported in the 1972 Inventory. As this Table shows, average speeds are in general considerably lower than design speed for each functional classification.

TABLE 2-3.1.5

AVERAGE SPEEDS BY FUNCTIONAL CLASSIFICATION

| | URBAN | RURAL |
|---|---|---|
| INTERSTATE | 51.5 | 68.1 |
| PRINCIPAL ARTERIAL | 38.1 | 57.0 |
| MINOR ARTERIAL | 35.0 | 48.0 |
| COLLECTORS | 31.0 | 40.0 |
| LOCAL | 25.0 | 25.0 |

This disparity is clearly most pronounced in urban areas, where peak hour congestion tends to considerably reduce effective travel speeds and thus increases travel times.

It is important to observe at this point that these overview observations have been developed on a statewide basis for urban and rural areas. As will be discussed in succeeding sections of this report, there are considerable variations among the urban areas with respect to the status and performance of the highway system in 1972. These variations are due to differences in demographic characteristics of the urban areas. Table 2.3.1.1.6 shows that there are substantial differences between urban areas with respect to population densities. Detroit, of course, is observed to have the highest population density - 2,140 people per square mile. Low population densities are observed in the small urban aggregates, as well as the Michigan portions of the Toledo and South Bend urbanized areas. When these demographic observations are compared with the physical status of the highway system in 1972, it is observed that there are considerable differences between urban areas with respect to the highway system which serves the area. Table 2.3.1.1.7, for example, shows a summary of the population per highway mile for each urban area and for the rest of state. This table has been developed based upon aggregating all functional classifications. Here, the areas with the highest population densities, particularly Detroit, are also observed to have the lowest number of highway miles per capita. These variations between urban areas are largely due to historical factors associated with highway planning and development processes, as well as the unique highway needs of each area. Table 2.3.1.1.8 shows the number of annual vehicle miles per capita for each of the urban areas. As this table shows, the variations between urban areas with respect to automobile usage are considerably less than the variations

TABLE 2-3.1.6

POPULATION DENSITY - 1972 INVENTORY

| | POPULATION (THOUSANDS) | LAND AREA (SQ. MI.) | POPULATION/ DENSITY (THOUSANDS/SQ. MI.) |
|---|---|---|---|
| Ann Arbor | 185 | 100 | 1.85 |
| Bay City | 81 | 43 | 1.88 |
| Detroit | 4,116 | 1,710 | 2.41 |
| Flint | 352 | 231 | 1.52 |
| Grand Rapids | 366 | 204 | 1.79 |
| Jackson | 81 | 43 | 1.88 |
| Kalamazoo | 157 | 98 | 1.60 |
| Lansing | 270 | 138 | 1.74 |
| Muskegon | 110 | 82 | 1.34 |
| Saginaw | 152 | 77 | 1.97 |
| South Bend | 25 | 16 | 1.56 |
| Toledo | 15 | 30 | 0.50 |
| Small Urban A | 443 | 303 | 1.46 |
| Small Urban B | 267 | 214 | 1.25 |
| Rest of State | 2,450 | 53,528 | 0.05 |
| | 9,040 | | |

TABLE 2-3.1.7

POPULATION PER HIGHWAY MILE
1972 INVENTORY

| | POPULATION/ MILE |
|---|---|
| Ann Arbor | 283.3 |
| Bay City | 200.5 |
| Detroit | 333.4 |
| Flint | 238.2 |
| Grand Rapids | 197.1 |
| Jackson | 241.5 |
| Kalamazoo | 250.8 |
| Lansing | 176.8 |
| Muskegon | 261.6 |
| Saginaw | 284.1 |
| South Bend | 76.9 |
| Toledo | 158.8 |
| Small Urban A | 144.1 |
| Small Urban B | 27.3 |
| Rest of State | |

TABLE 2-3.1.8

VEHICLE MILES PER CAPITA

| | VEHICLE MILES/ CAPITA |
|---|---|
| Ann Arbor | 5,225.9 |
| Bay City | 4,528.4 |
| Detroit | 5,516.6 |
| Flint | 5,840.1 |
| Grand Rapids | 5,024.6 |
| Jackson | 5,732.1 |
| Kalamazoo | 5,273.2 |
| Lansing | 5,741.7 |
| Muskegon | 5,556.4 |
| Saginaw | 4,496.1 |
| South Bend | 4,444.0 |
| Toledo | 6.666.7 |
| Small Urban A | 3,476.1 |
| Small Urban B | 6,325.8 |
| Rest of State | 8,276.8 |

with respect to the size of the highway network in the urban area on a per capita basis.

This observation inevitably leads to the conclusion that there are significant variations among urban areas with respect to needed improvements in the highway system. Unfortunately, the type of information requested to be collected during the course of the 1974 National Transportation Study has not been oriented toward the acquisition of information which would be requisite to making an evaluation of the performance of the highway system as of 1972 with respect to backlog needs represented by variations of the physical state and performance of the in-place highway network.

One potential indicator of system performance or deficiency would be the capacity mile information requested for the Inventory. Table 2-3.1.9 shows vehicle miles per capacity miles for the arterial highway network for urban and rural areas. Although comparisons of this type are admittedly crude with respect to an evaluation of system performance, the substantial variations shown between geographic areas within the State clearly show that there are again significant variations in the ability of the system to handle traffic demands. This rough measure related to volume/capacity ratios cannot, however, be utilized to approximate the volume/capacity ratio and thus, is of limited value with respect to its ability to be used as a basis for observations with respect to the performance of the system on an absolute basis, but do serve to underscore the difference between needs and the funding constrained Program and Plan developed for this study.

Table 2-3.1.10 summarizes pollutant emissions for the 1972 Inventory for the entire state for both urban and rural areas. This Table also shows, for each of the three major atmospheric pollutants covered by the study, the number of pounds per vehicle mile traveled, the number of miles per passenger mile traveled and the number of pounds per capita. As is the case with other

TABLE 2-3.1.9

ANNUAL VEHICLE MILES PER CAPACITY MILE (THOUSANDS)
1972 INVENTORY

| | URBAN | RURAL |
|---|---|---|
| INTERSTATE | 3.2 | 1.3 |
| PRINCIPAL ARTERIAL | 5.0 | 0.5 |
| MINOR ARTERIAL | 3.8 | 1.3 |

TABLE 2-3.1.10

SUMMARY OF HIGHWAY RELATED POLLUTANTS
1972 INVENTORY

| | POUNDS (MILLIONS) | POUNDS/ VMT | POUNDS/ PMT | POUNDS/ CAPITA |
|---|---|---|---|---|
| OXIDES OF NITROGEN | 820 | 0.0147 | 0.0106 | 90.7 |
| HYDROCARBONS | 588 | 0.0106 | .0076 | 65.0 |
| CARBON MONOXIDE | 5001 | 0.090 | 0.064 | 553.2 |

portions of the data requested for this study, it is very difficult to evaluate these pollutant emissions based upon absolute criteria. It is well known that most adverse effects of atmospheric pollutants, particularly epitomological effects, are correlated with atmospheric concentrations of the pollutant. With the data summarized in this table, as derived from the Inventory data, it is virtually impossible to make even rough cut approximations to resulting ground level concentrations of these pollutants. However, as will be discussed in the following section, there are indeed variations among urban areas with respect to the annual pounds per capita of the reported pollutants. With respect to these reported pollutants,then, the most significant observations are those resulting from comparisons between levels in the 1972 Inventory, 1990 Plan and 1980 Program.

Table 2-3.1.11 summarizes fatalities and injuries, which are highway related, for the 1972 Inventory, both in absolute terms and in terms of fatalities and injuries per vehicle mile traveled. Here again it is difficult to draw substantive conclusions with respect to the performance of the highway system in Michigan in terms of safety for the 1972 Inventory. In comparison with national injury and fatality statistics, however, Michigan compares quite favorably.

The total annual cost for highway operations and maintenance in 1972 amounted to 293.3 million dollars, for all functional classifications for both urban and rural areas, which represents an annual cost per mile of $2,560 per mile. This includes all maintenance performed by the State Highway Department, the County Road Commission, and cities and villages in the State, as well as an allocation of highway patrol and traffic police costs. To the extent possible, stop-gap and minor replacement costs which have been included as maintenance costs in annual reports required under the terms of Act 51 have been exlcuded for study reporting purposes.

TABLE 2-3.1.11

SUMMARY OF HIGHWAY RELATED FATALITIES AND INJURIES
1972 INVENTORY

| | URBAN | RURAL |
|---|---|---|
| FATALITIES - TOTAL | 1,028 | 1,114 |
| FATALITIES - PER VMT | 2.9 | 5.5 |
| INJURIES - TOTAL | 82,349 | 75,315 |
| INJURIES - PER VMT | 233.9 | 371.4 |

## 2-3.2 URBAN PUBLIC TRANSPORTATION

This section describes the transit systems in the 10 major urban areas in Michigan and those portions of the State which are included in urban areas of other states, namely:

- o South Bend, Indiana
- o Toledo, Ohio

It is not possible to discuss this as a State Urban Transit System, but rather as a set of individual systems operating within the State. Thus, each urban area will be dealt with separately. Exhibit 2-3.2.1 presents those physical and performance measures of each urban area which best describe the system in operational terms.

o Ann Arbor: Fixed route - fixed schedule service with 21 medium sized buses operating over 75 miles of route --- average fare 30 cents/trip. Good transit access for residences, moderate access for job opportunities. Average headways during peak service is 30 minutes. A complete system reorganization is currently being designed into an express service and demand responsive express feeder and local service system.

Within the Ann Arbor Urbanized Area, the University of Michigan operates its privately administered bus system for University students and personnel. The University bus system provides free transportation to its employees and students. The University bus network is overlapping with the city transit network, since the activity centers of the University and student living units are spread throughout the city with higher concentration in downtown and the northern part of Ann Arbor. As this is a public supported institution, the data associated with this system was to be reported as well. However, the data was not made available to the 1974 National Transportation Study Ann Arbor Urbanized Area Coordinating Agency and is not reported for the 1972 Inventory.

o Bay City: Bay City currently has a very limited inventory of public transportation. The last scheduled transportation system discontinued service on March 12, 1971, due to financing problems. Intra-city transit service is now limited to two taxicab companies and a handful of other limited operations, which will be described below.

The operations of taxicabs in Bay City are detailed in the accompanying material. The two companies servicing the Bay City area are: Radio Cab Company, 1012 Saginaw Street; and Checker Cab Company, 919 East Midland Street.

The other transportation system described on Form Z is a jitney-type operation for senior citizens. It is a non-profit system supported by a $5,000 yearly grant from the City Commission. It operates two cars with volunteer drivers and carries 25 to 40 passengers daily on a Monday through Friday basis. Senior citizens are the only persons eligible. They are allowed two trips per week and must call a day in advance to make a trip. The great majority of passengers are residents of the Bay City Housing Commissions' two housing for the elderly projects, although anyone over 60 in the City is eligible for service.

The Bay County Department of Social Services operates a similar system on a more limited basis for welfare clients.

The other very limited operations are available to the general public in the Bay City Area. The first is operated by the Deltabus Company from Saginaw. It is a limousine vehicle which runs once in the morning through Bay City to Delta College and then makes a return run in the afternoon. The vehicle is in intercity use during the rest of the day. On the Delta College run, it carries three or four people each way.

The other service is an airport limousine operated by the Radio Cab Company. This service meets each incoming flight at Tri-City Airport and returns to downtown Bay City. Ridership is quite variable and unpredictable.

In conclusion, Bay City has no regularly routed and scheduled public transportation. Further, it has no system of bicycle paths or pedestrian ways, no pedestrian bridges over major streets, and no transportation services or amenities available to handicapped people.

o Detroit: A major urban transit system with about 2,300 miles of route and 1,300 vehicles to cover those routes. Over 400 miles of street and roads have bus service, but only 37% of the metropolitan population has access. Less than 1/4 of the job opportunities in the metropolitan area. This low coverage is due to the large suburban areas with their high auto and low transit usage environment. There are some high travel density corridors which could support rail transit services.

o Flint: The City has recently reorganized its transit system after the private operation stopped all service. The City has twenty-six, 45-passenger buses remaining from an UMTA sponsored job transportation demonstration (MAXICAB). The buses provide limited service over 131 route miles. The buses provide access to over half of the population and 20% of the job opportunities. Average is 30 cents/trip.

o Grand Rapids: System has 35, mostly older, large buses operating on about 100 miles of street and road. Almost 2/3 of the population and close to 90% employment opportunities have good access to transit. Average trip cost is 30 cents.

o Jackson: Area has a small system of 11 relatively new, medium sized buses operating on about 18 miles of route. Almost 1/2 of the population has access to transit and 80% of the jobs are accessible by public transit. Average fare is 30 cents.

o Kalamazoo: Service is operated over 78 miles of street with about 70 somewhat older buses. The service provides good coverage (85% population, 80% jobs) although peak-hour headways are generally far apart (40 minutes average). The 10 cents fare is now underwritten by the City in order to improve patronage. This should have a significant positive impact if gas shortages and price increases continue.

A portion of the Kalamazoo transit statistics are accounted for by contract service provided by the authority for Western Michigan University and the Public School System. Roughly 40 miles of route are operated for W.M.U. and 750 (on a twice daily basis) for the Public School System. Since the 750 miles of route are on a charter basis and not equivalent to the scheduled transit service route miles, they were not included in the physical State description as this would inappropriately inflate the overall number of route miles. All other system characteristics were included, however. The W.M.U. headways are peak-hour 10-minute and average week day 15 minutes. A total of one million passenger trips are carried by the W.M.U. service with 1/2 million trips annually being carried by the school charter service.

o Lansing: The Capitol Area Transit Authority serves the cities of Lansing and East Lansing with 18 large buses over 32 miles of street. The 30 cents fare is underwritten by the two cities. Currently less than 40% of the population has access to transit and about 60% of the jobs have good accessibility. A major technical study is underway which should result in service improvements.

The data presented herein reflects calendar year 1971 local bus system operations. These data represent only that portion of the year during which the local bus system was in operation. Due to a strike, the system was operated for a period of 155 days extending over a 9-month period, April - December 1971.

Within the Lansing Urbanized Area, Michigan State University operates its privately administered bus system for University students and personnel only. As the University is a State supported institution, the data associated with that system was to be reported as well. However, the data was not made available to the 1974 National Transportation Study Lansing Urbanized Area Coordinating Agency.

o Muskegon-Muskegon Heights: Bus service in the Muskegon area was terminated on February 20, 1972, due to a lack of operating revenue. Therefore, the data reported for the 1972 Inventory has been estimated to the best possible degree of validity and completeness. Muskegon is currently in the process of assessing the county transportation needs in expectation of re-establishing bus service in the area. No date has been designated, however, for when service will be available.

During 1971, 13 medium sized buses provided service over about 50 street miles at a fare of 40 cents/trip. Almost 3/4 of the population and almost 2/3 of the jobs were within 1/4 mile of the routes, although the buses operated at 50-minute headways during peak hours.

o Saginaw: The City has only 4 large buses operating over 22 street miles - at a 40 cents/trip fare. Additional service is provided by private operators. Although about 3/4 of the population and 2/3 of the jobs are within walking distance of the bus routes, the buses operate on 60-minute headways during the peak hours.

o South Bend, Indiana: No current service.

o Toledo, Ohio: No current service.

EXHIBIT 2-3.2.1

1972 INVENTORY - URBAN PUBLIC TRANSPORTATION - BUS TRANSIT

| AREA NAME | Miles of Route | Miles of Line | Vehicles | | | Annual Passenger Mile Per Seat Mile | Transit Accessibility % Within 1/4 Mile of Route | | Average Peak Hour Performance | | Average Fare Cents |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | Avg Age | Avg Seats | | Population | Employment | Operating Speed MPH | Headway MIN | |
| ANN ARBOR | 75 | 46 | 21 | 4 | 32 | - | 90 | 60 | 15 | 30.0 | 30 |
| BAY CITY | - | - | - | - | - | - | - | - | - | - | - |
| DETROIT | 2,297 | 410 | 1,272 | 11 | 49 | 0.15 | 37 | 22 | 14 | 10.0 | |
| FLINT | 131 | 131 | 26 | 5 | 45 | 0.08 | 56 | 70 | 14 | 35.0 | 30 |
| GRAND RAPIDS | 193 | 97 | 35 | 17 | 51 | 0.09 | 64 | 88 | 14 | 34.5 | 33 |
| JACKSON | 18 | 18 | 11 | 4 | 33 | 0.10 | 45 | 80 | 12 | 30.0 | 30 |
| KALAMAZOO | 159 | 78 | 69 | 10 | 50 | 0.11 | 85 | 80 | 13 | 40.0 | 10 |
| LANSING | 65 | 32 | 18 | 6 | 44 | 0.05 | 38 | 60 | 15 | 18.0 | 30 |
| MUSKEGON Musk/Heights | 94 | 47 | 14 | 5 | 30 | ? | ? | ? | 20 | 50.0 | 35 |
| SAGINAW | 51 | 22 | 4 | 2 | 43 | 0.16 | 72 | 65 | 13 | 60.0 | 40 |
| SOUTH BEND | - | - | - | - | - | - | - | - | - | - | - |
| TOLEDO | - | - | - | - | - | - | - | - | - | - | - |
| STATE TOTAL | 3,083 | 881 | 1,469 | 10 | 48 | 0.14 | 43 | 34 | 14 | 10.5 | 26 |

## 2-3.3 AIRPORTS

The data submitted in the 1972 Inventory was, in most part, compiled from existing reports and publications, and in particular from the Michigan Airport System Plan. Because of the availability of this current data base, information submitted in the Inventory is as up-to-date and accurate as possible. Exhibit 2-3.3.1 presents a tabulation of significant parameters with respect to the Airport 1972 Inventory data submitted to the DOT as part of this Study. Operations, based aircraft and passengers enplaned are presented in the comparative evaluation Section 2-6.

To provide an overall view of the total aviation activity in Michigan, the following data has been compiled. This data is also included in the sections for 1980 and 1990 time periods.

It should be noted that the tables referenced to within this short discussion are included within the comparison of the inventory, plan and program presented in Subsection 2-6.

### Operations

Operations for the Inventory were derived from tower counts, airline records, which are recorded monthly, and estimates based on our airport traffic counter program.

For this period, there was a total of 5.1 million operations (Exhibit 2-6.3.1). General aviation accounted for 4.8 million or 93 percent. Of these operations, 45 percent were generated by the 12 urban areas, with 56 percent of the urban total in the Detroit area.

Air carrier operations are predominantly generated by the urban facilities as they account for 87 percent of the total. The Detroit area plays a dominate role as it accounts for 58 percent of the air carrier operations.

Enplaned Passengers

Of the total, 813 million enplaned passengers in 1971, they were almost evenly divided between the general aviation and air carrier categories (Exhibit 2-6.3.2). General aviation enplanements in the urban areas accounted for 35 percent of the total, with 19 percent in the Detroit area.

As would be expected, 95 percent of the air carrier enplanements were in the large urban areas. The Detroit area enplaned 91 percent of the State total and 86 percent or the urban enplanements.

Based Aircraft

From registration records, Michigan had 6,162 based aircraft in 1971 (Exhibit 2-6.3.3). Approximately half of these aircraft based in the urban areas, with 61 percent of them located in Detroit.

Operating and Maintenance Costs

To develop data relating to annual costs, information was requested from all airports. Responses were received from all air carrier and approximately half of the general aviation facilities. An attempt was made to contact the remaining airports by telephone, which unfortunately produced little additional data. Therefore, estimates were developed from the cost data collected. These estimates were based on the following classifications: basic utility - stages I and II, general utility, basic transport and general transport. These classifications are directly related to based aircraft, annual operations, and type of aircraft accommodated. Therefore, these estimates are considered to be reasonably accurate.

EXHIBIT 2-3.3.1

1972 INVENTORY - AIRPORT SYSTEM

| | Number in SASP | | | A/C Enplanements Per Operation | G/A Operations Per Capita | Pollutants-Lbs. per A/C & G/A Operations | | | Percent of Population Within | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A/C | Rel | G/A | | | C/O | NO | HC | 30 Min Any | 60 Min A/P | 30 Min Scheduled | 60 Min Service |
| Ann Arbor | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Bay City | 0 | 0 | 1 | 0 | 0.39 | 6.0 | 0.0 | 0.1 | 0 | 0 | 0 | 0 |
| Detroit | 1 | 7 | 1 | 21 | 0.21 | 10.6 | 2.4 | 9.2 | 100 | 100 | 91 | 100 |
| Flint | 1 | 0 | 0 | 10 | 0.40 | 6.1 | 0.5 | 1.5 | 100 | 100 | 100 | 100 |
| Grand Rapids | 1 | 0 | 1 | 10 | 0.44 | 6.0 | 1.0 | 3.5 | 100 | 100 | 100 | 100 |
| Jackson | 1 | 0 | 0 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Kalamazoo | 2 | 0 | 0 | 6 | 1.22 | 5.7 | 0.2 | 0.4 | 0 | 0 | 0 | 0 |
| Lansing | 1 | 0 | 0 | 10 | 0.55 | 6.1 | 0.7 | 2.3 | 0 | 0 | 0 | 0 |
| Muskegon Muskegon/Heights | 1 | 0 | 0 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Saginaw | 1 | 0 | 1 | 14 | 0.50 | 8.9 | 1.1 | 4.3 | 0 | 0 | 0 | 0 |
| South Bend | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 100 | 100 | 100 | 100 |
| Toledo | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 100 | 100 | 100 | 100 |
| Subtotal | 9 | 7 | 7 | 18 | 0.30 | 8.7 | 1.6 | 6.1 | 100 | 100 | 92 | 100 |
| Small Urban A | 7 | 0 | 26 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Small Urban B | 2 | 0 | 3 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Rest of State | 2 | 0 | 64 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Total | 20 | 7 | 100 | 18 | 0.30 | 8.7 | 1.6 | 6.1 | 97 | 100 | 72 | 94 |

## 2-3.4 TERMINALS - PORT DEVELOPMENT

The basic responsibilities of the Port Development Program are established by Act 251 of the Public Acts of 1966 which is "An Act relating to declare certain policies of the State of Michigan; to designate the Department (State Highways and Transportation) as the agency of this State to cooperate and negotiate with port districts and other; to provide for the making of grants to port districts and the administration thereof; to authorize studies to assist in stimulating traffic; to authorize the Department to represent the State before other governmental units; and to provide other powers, rights and duties of the Department.

Specifically, to cooperate and negotiate with port agencies concerning the planning, acquisition, development, operation, maintenance and administration of port and commercial harbor facilities. Principal program elements include the development of local administrative capability to address local port needs; assist in the development of project proposals for channel and harbor deepening; organiza and participate in public hearings on maintenance dredging requirements and dredged spoil disposal; and recommend State position on specific projects based on favorable benefit/cost analysis and environmental considerations.

To evaluate requests from local port agencies for matching grants for planning, acquisition or development; recommend funding sources and administer projects authorized by the legislature. A current matching grant to Monroe provides for an economic feasibility study to investigate industrial development potentials and projections for waterborne commerce that would justify harbor and channel improvements.

To cooperate and enter into agreements with federal agencies in the conduct of studies, research programs and related investigation designed

to develop information to assist in developing waterborne commerce. Studies currently in progress or proposed by the U. S. Maritime Administration - waterborne commodity projections and ferry and passenger vessel design; the U. S. Department of Transportation Seaway Development Corporation and Pilotage Administration - toll levels and policy, pilotage rates and services; and U. S. Army Corps of Engineers - extended navigation season and modification to locks and channels, require input and participation of the port development program.

To conduct investigations of transportation rates and services and represent the State before federal regulatory agencies when such rates and services affect ports or shipping operations on the navigable waters of the State. An investigation of railroad rates indicated evidence of prejudice to Michigan ports and preference to coastal ports. Proceedings were instituted before the Interstate Commerce Commission for relief and resolution of inequities.

2-3.5 OTHER TRANSPORTATION

- Ann Arbor Dial-A-Ride: Not yet in operation.
- Bay City: Senior Citizen Jitney Service: See discussion in 2-3.2 for description.

## 2-4 THE STATE PLAN

This section includes discussion of all modes as identified with respect to format by the DOT. In addition, a self-contained section on the "Demonstration of Reasonableness" is included as Section 2-4.1. Certain sections of the "Reasonableness" discussion are included in both the modal discussions and the reasonableness sub-section by necessity. The presentation of the material in this format facilitates the highlighting of the State's interest in the Reasonableness issue in a self-contained manner. It will be noted that the format of Section 2-4.1 exhibits the fact that it was prepared and submitted to the DOT as a separate document under a separate cover in February 1974.

## 2-4.1 DEMONSTRATION OF REASONABLENESS

### 2-4.1.1 Introduction

The purpose of this subsection is to present the results and supportive information to satisfy the DOT's requirement that the 1990 Plan element of the 1974 NTS submittal be analyzed with respect to "reasonableness."

The modal sections of this summary have been structured to reflect the intense concern and commitment of the State to adhere rigorously to the spirit of the DOT memorandum and manual instructions with respect to plan reasonableness. The Michigan 1974 NTS Coordinating Committee has devoted a substantial amount of resources to developing and insuring the development of this 1990 Plan. There are a significant number of support documents and Highway Plan analysis supportive data which cannot be presented in this summary. This information is however available to the DOT on request for their review as to the steps necessary to develop a highway plan which is exactly consistent (within the limits of projection) with the financial projections and stipulations within this study.

In the review of the DOT guidelines, it became clear that there was no one single definition of reasonableness which would satisfactorily detail the feasibility of implementing the plan without developing a program.

It also became especially clear that the "needs" as determined in the 1974 NTS were not reasonable from the standpoint of the ability to generate requisite funding under current levels of funding assumptions.

The primary issues in the development of the 1990 Plan resolved to 1) employing effectively the plan data base that was currently available, 2) analyzing and projecting all sources of funds for Plan implementation, and 3) development of alternative procedures which might be employed to insure that the plans and the funds were compatible.

A major activity preparatory to Plan development was devoted to a thorough analysis of three alternative approaches to the issues of Plan reasonableness. A working paper was developed which enabled the Coordinating Committee to establish operational policy on critical plan development procedures, data base issues and fund projection questions.

The first approach which was developed was referred to as the Administration approach. This approach was basically the approach suggested by the DOT in Manual II. The procedure outlined in Manual II suggested analyzing the taxpayer burden of the Plan, as well as suggested consideration of other factors which would be considered relevant. It became clear however that the taxpayer financing/burden is only part of the picture since transportation facilities are such a vital ingredient in the achievement of social and economic well-being of the State. This fact required an emphasis on the performance of the transportation system as well as its direct cost implications and mitigated toward a focus on the reasonableness of funding projections and

the use of funding projections as the constraints for Plan development through the rationing of available needs data.

The justification of reasonableness of the Plan based only upon implied "taxpayer burden" vis-a-vis historical expenditures is certainly important; however, the modal aggregation of funds for the reasonableness assessment suggested by DOT in Manual II in and of itself did not appear to be too reasonable. There are some indications of cross mode use of certain funding categories, particularly for urban transportation, however, the overwhelming institutional factor which led to these federal funding programs in the first place cannot be easily disregarded. This modal disaggregation left open to question the "taxpayer burden" approach suggested by DOT.

The second approach, the so-called Functionalized approach, was classified as an analysis of reasonableness based upon pro-rated adjustments of stated needs for allocation of Federal and State funds and the possible combinations of these factors in a formula, or function, basis. The third approach defined was a process oriented approach, wherein both funding and performance factors could be examined with justification of reasonableness at the level of granularity possible. The level of granularity would, of necessity, vary considerably between modes and geographic areas.

The three developed approaches differed not so much by the analytical procedures employed to evaluate reasonableness as they did with respect to the factors which would be emphasized. Indeed, elements of the first two approaches were inherent in the third. In the final analysis, an approach

which included elements of all three approaches was approved for use in the 1990 Plan development and analysis. The experience provided not only a framework for appreciation of the study dimensions and implications, but provided a backdrop for the resolution of all participant projections of funds.

As part of these analyses, a subactivity was concentrated on funds analysis at the Federal, State and Local levels. The State and Local funds analyses are presented within the appropriate modal sections of this summary. A short discussion of the Federal funds is required at this juncture to focus on the fact that Appendix L Targets were approached as inviolate within the study requirements. Since the Federal funds element of the total funds available through 1990 was a significant element with regards to reasonableness of capital cost estimates within a State, it was determined that thorough evaluation of the Federal targets in terms of their modal or major program sub-elements should be conducted.

In the process of reviewing the Appendix L Total Federal Funds available to the States, it was determined that Appendix L included only those funds for highway and aviation, and did not include urban mass transit. This initial observation led to a further investigation into the procedure employed by the DOT in developing these Federal targets for Michigan. In the process, a comparison was made between the Appendix L figure covering an eighteen year period and the 1972 National Transportation Federal targets employed in the Capital Improvement Program II from the 1972 NTNS. This comparison was conducted based primarily on the fact that the Department of Transportation indicated that the high level funding of CIP II was indeed

the basis upon which the Appendix L figures had been developed, exclusive of the urban mass transit element. A comparison of the Federal funds provided in the 1972 NTNS test exercise, referred to as CIP case II, and the Federal targets included in Appendix L indicated a major discrepancy in terms of total funds available for the highway and aviation element. On further examination, it became clear that the targets provided in the 1972 NTNS, although stated to have been based on 1969 constant dollars, were in actuality in current dollars. The Appendix L descriptions provided by the DOT indicated that the stream of future funds flows was discounted to 1971 at a rate of 2.4% compounded annually. It was assumed initially, based on documentation for the 1972 NTNS, that the 1969 base year dollars as stated were similarly discounted at 2.4% rate per year. Subsequent investigation uncovered this was not the case. The first task, therefore, was to 1) adjust the Appendix L dollars to include the urban mass transit element which was excluded, and 2) develop an understanding of the sensitivity of the projected Federal funds in relation to various assumptions on consumer price index behavior. The purpose of the latter analysis was to develop an understanding of the potential variance of the Federal target as impacted by a single assumption employed in the 1974 study which is not employed in the 1972 study, namely the consumer price index effect on the total Federal funds available to the State.

The process of reconciling the 1972 NTS Federal targets with the 1974 Appendix L Federal targets included a projection of the anticipated Appendix L targets based on the assumptions inherent in the 1972 NTS targets, by mode,

which required an analysis of the growth rates of each of the modal elements of total target funds and an adjustment for an additional year which is included in the 1974 study.

This comparison was based on the highway and aviation major program elements, since Appendix L included those two elements. The actual Appendix L target for the State of Michigan, exclusive of urban mass transit, was calculated by the Federal government to be 3.686 billion dollars over the eighteen year period. It was observed that this figure varied significantly from the 1972 NTS target fundamentally because of the fact that the consumer price index adjustment which was employed in the 1974 study was not employed in the 1972 study. This major discrepancy of approximately one billion dollars is attributable almost exclusively to the consumer price index effect. A number of alternative consumer price indices were assumed over a range from the base 2.4% up to and including 5% per year, to determine the CIP assumption impact on the Federal target available funds. The results indicated that a change from a 2.4% inflation rate to a 5% inflation rate has the effect of reducing the total Federal available funds over the eighteen year period by approximately a billion dollars or approximately 25%.

The results of these analyses were employed by the Coordinating Committee in meetings devoted to considering the possibility of developing the State's own projection of Federal funds for the purposes of this study. It was determined, however, that the Appendix L Federal Targets would be employed as a fixed element of funding sources and levels for Highways and Aviation and that the guidelines on UMTA funding provided in Manual II

would be employed for calculating the potential for Federal funds to the State for Urban Public Transportation.

Summary Sections (2-4.1.2 through 2-4.1.4) present the individual 1990 Plan modal discussions and data with respect to Plan development and Plan reasonableness. Section 2-4.1.2 Plan summary is included as a condensed recapitulation of 1990 Plan capital costs and 1989 Operations Cost for DOT review.

### 2-4.1.2 1990 NTS PLAN SUMMARY

This section presents a summary overview of the 1990 Plan and 1989 Operations and Maintenance Costs by mode as submitted to the DOT. Subsequent sections in the reasonableness summary present detailed information as to the sources of funds. Evaluation of the 1990 Plan and comparisons of the 1990 Plan with the 1972 Inventory and 1980 Program is included within the appropriate DOT stipulated sections of the Narrative Report

The enclosed exhibits, 2-4.1 and 2-4.2, present the 1990 Plan data by area and mode in 1971 dollars and in accordance with the procedures required by the DOT as part of the 1974 NTS.

EXHIBIT 2-4.1

1990 PLAN SUMMARY

CAPITAL COSTS
(in thousands of dollars)

| AREA | HIGHWAYS | URBAN PUBLIC TRANSPORTATION* | AVIATION | TOTAL |
|---|---|---|---|---|
| Ann Arbor | 150,567 | 5,005 | 3,998 | 159,570 |
| Bay City | 64,891 | 750 | 818 | 66,459 |
| Detroit | 3,817,187 | 2,816,520 | 438,170 | 7,071,871 |
| Flint | 445,591 | 19,811 | 28,122 | 493,524 |
| Grand Rapids | 350,082 | 64,974 | 16,660 | 431,716 |
| Jackson | 70,851 | 360 | 2,827 | 74,038 |
| Kalamazoo | 138,235 | 4,000 | 29,674 | 171,909 |
| Lansing | 240,531 | 9,450 | 26,826 | 276,807 |
| Muskegon | 109,583 | 1,630 | 6,574 | 117,787 |
| Saginaw | 142,927 | 706 | 21,417 | 165,050 |
| South Bend | 38,571 | 350 | 2,515 | 41,436 |
| Toledo | 28,864 | 8,734 | 1,315 | 38,913 |
| Urban Total | 5,597,880 | 2,932,290 | 578,916 | 9,109,086 |
| Small Urban A | 385,879 | 13,911 | 102,422 | 502,212 |
| Small Urban B | 329,974 | 13,153 | 27,487 | 370,614 |
| Rest of State | 4,087,498 | 0 | 92,386 | 4,179,884 |
| Total | 10,401,231 | 2,959,354 | 801,211 | 14,161,796 |

*Includes "Parking" and "Other"

EXHIBIT 2-4.2

1990 PLAN SUMMARY

1989 OPERATIONS AND MAINTENANCE COSTS
(in thousands of dollars)

| AREA | HIGHWAYS | URBAN PUBLIC TRANSPORTATION* | AVIATION | TOTAL |
|---|---|---|---|---|
| Ann Arbor | 8,024 | 2,500 | 275 | 10,799 |
| Bay City | 3,368 | 589 | 80 | 4,037 |
| Detroit | 179,091 | 175,434 | 33,949 | 388,474 |
| Flint | 20,598 | 11,427 | 1,400 | 33,425 |
| Grand Rapids | 14,476 | 9,481 | 1,677 | 26,009 |
| Jackson | 3,331 | 348 | 155 | 3,834 |
| Kalamazoo | 7,172 | 4,200 | 1,179 | 12,551 |
| Lansing | 10,350 | 4,687 | 1,395 | 16,432 |
| Muskegon | 4,957 | 950 | 307 | 6,214 |
| Saginaw | 6,321 | 709 | 1,103 | 8,133 |
| South Bend | 1,236 | 195 | 275 | 1,706 |
| Toledo | 1,522 | 1,637 | 80 | 3,239 |
| Urban Total | 260,446 | 212,532 | 41,875 | 514,853 |
| Small Urban A | 18,548 | 6,849 | 2,899 | 28,296 |
| Small Urban B | 15,984 | 6,475 | 1,191 | 23,650 |
| Rest of State | 191,407 | 0 | 2,810 | 194,217 |
| Total | 486,385 | 225,856 | 48,775 | 761,016 |

*Includes "Parking" and "Other"

## 2-4.1.3 Highways

### 2-4.1.3.1 Introduction

The fundamental issue addressed during the 1990 Plan phase of the 1974 NTS was the preparation of a 1990 Highway Plan which, while constrained by limited available resources, continued recognition of the State's real 1990 Highway Transportation Needs. As a necessity, it was determined that Michigan would submit two sets of highway data in satisfaction of the State's commitment to forward a 1990 Highway Plan to the DOT as part of our State's participation. The first set of forms for each urban area, small urban aggregates, and the rest of state adhered strictly to 1990 Highway Needs. These needs estimates were based on a thorough assessment of state highway needs which was performed for the 1972 NTNS. The results of the completed needs estimates were adjusted to the 1971 base dollar requirements of this study and further reduced to be consistent with the time frame of this study - namely 1972 through 1990. The use of this data base as part of our State's submittal was considered critical as an indicator of Michigan's actual highway needs. These needs, as compared with the submitted 1990 Highway Plan, make evident the obvious disparity between needs and available funding inherent within the 1974 NTS structure.

The second set of highway (1990 Plan) data adheres to strict funding projections as provided by the DOT and developed internally in accordance with the exact stipulations of the study, and policy positions of the State.

In general, it was determined that a set of available funds from Federal, State and Local sources would be developed and applied against the highway needs of the State, by area and functional class, based on legislative constraints as a first approximation. A second perturbation was made as appropriate in light of changing priorities resulting from funding limitations analyses.

The following section presents an overview of the process by which available funds were estimated, the constraints or ground rules employed in their projection and the procedure through which the constrained 1990 Highway Plan was developed and delivered from actual 1990 Needs data.

2-4.1.3.2 Procedures and Approach

The starting point for the development of the 1990 Highway Plan was a comprehensive assessment of sources of funds and their distribution to urban areas and the rest of the state. The basic source of funds included were all Federal Aid categories, including Interstate, A, B, C and D funds; Michigan Motor Vehicle Highway Fund receipts; locally raised revenues; and private revenues. The Motor Vehicle Highway Fund projections for 1972-1990 were developed based on projected fuel sales and other fees. Deductions from these on a year by year basis were projected and subtracted from total collections. The resulting funds available for distribution were discounted,

per DOT study instructions, at 2.4% per year to account for general inflation. The funds thus discounted over the eighteen year period were distributed per existing legislative requirements - 44.5% State Trunkline, 35.7% to counties and 19.8% to cities and villages. The resulting funds were then allocated to urban areas and to the rest of the state, by functional classification, in accordance with legislative requirements and historic funding patterns. The funds thus allocated from all funding sources, including Federal funding projections stipulated by DOT to be used for study purposes, were far short of 1972 NTNS Needs.

In order to finalize development of the 1990 Plan, it was thus necessary to constrain highway needs by available funds, in order that physical state data and performance measures reported for the 1990 Plan for the 1974 NTS correspond to those which would be realized via the expenditure of available funding rather than the funding levels which would be necessary to achieve 1990 Needs as reported in the 1972 NTNS.

The starting point for this analysis was the 1990 Needs. The first step was the determination of 1990 Needs, by improvement type and by 1990 functional classification, for each urban area, small urban aggregates, and the rest of the state. The major improvement types considered were: 1) new location construction and right-of-way, 2) major widening, 3) minor widening, 4) resurfacing with shoulder, 5) resurfacing, 6) structures, and 7) reconstruction. For each cell in this matrix, needs cost estimates were adjusted to account for increases in the FHWA construction cost index and historical increases in

right-of-way acquisition costs in order to update the status as of January 1, 1972. Adjustments were also made to reflect project completion up to this point.

After these needs had been updated, percent needs represented by each improvement type for each functional classification for each urban area were determined. Based upon this distribution of reported needs, funds were allocated by improvement type, in accordance with its relationship to other needs by improvement type, and final funding allocations by functional classification thus developed.

The 1974 NTS required that reported construction costs reflect the effects of differential changes between consumer price index increases and construction and right-of-way cost increases. Data furnished by DOT for study purposes indicated that this rate was 2% per year increase for construction related expenditures. Data developed from Michigan right-of-way acquisition cost data indicated that right-of-way costs have increased historically at a rate of 7% per year, or for projection purposes, a 4.6% per year increase relative to study general inflation assumptions.

The inclusion of these cost adjustment factors necessarily required that some assumptions be made with respect to project implementation schedules for each improvement. Clearly study time and resource limitations did not permit an assessment of each improvement on a project by project basis, and the subsequent scheduling of each project. In light of this, the most reasonable approach available was to segment the eighteen year study span and develop several spending profiles during each segment. These

profiles thus developed inherently assume equal rates of activity completion, e.g. equal number of miles of new construction annually for a given improvement type/functional classification combination. The three segments selected are for 1972-1981, 1981-1990 and 1972-1990 time periods. Principal project activities were allocated to the appropriate study segment. For example, all Interstate new construction was assumed to occur during the first segment. The assumption of equal annual levels of project activity results in a non-linear pattern of annual expenditures, thus compensating for the increasing receipt of funds from Federal, Motor Vehicle Highway Fund, and local sources.

The resulting construction profiles were used to adjust expenditures based upon funding allocations by improvement type and functional classification. These adjustments have the net effect of reducing allocated funds to 1971 dollars and 1971 construction cost index values. Thus they are directly comparable with the 1971 dollar stated needs, since they reflect project costs which would have been incurred were the project completed in 1971.

Percent needs met were again recomputed in a manner which reflected the true percentage of stated needs which were met by projected funding availability in the 1972-1990 time period.

Adjustments to physical state data have been made on the basis of the percentage of change between the needs and the 1972 Inventory which can be met by available funding, and thus all 1990 Plan inputs reflect the status of the Michigan highway system which would result from expenditure of projected funds as stipulated by DOT study requirements.

2-4.1.3.3 Plan Development

The Plan developed in the first step of the process was reviewed with Transportation Planning Directors or their representatives for each of the urban areas. During this series of meetings several anomalies were noted and subsequently used as a basis for refinement of the Plan.

Funding was reallocated, primarily within a given urban area, in order to reflect two key considerations. First of all, funds were reallocated in order to insure the completion of Michigan's portion of the Interstate system. Secondly, from the meetings with the urban areas, it was observed that the reduced levels of funding available would require considerably more resources for projects of a "stop-gap" nature, primarily resurfacing. Funds were thus reallocated, primarily from reconstruction, to cover the cost of requisite measures of this type. The first step in the reallocation of funds for the Interstate system was a calculation of Interstate new construction completion costs based upon study assumptions regarding relative price changes in construction and right-of-way acquisition costs. If sufficient funds for Interstate had already been allocated to a given urban area and the new location allocation was not sufficient, funds were taken from other Interstate improvement types and allocated to new location. If this was still not sufficient to insure Interstate completion, the required difference was reallocated from other urban or rural areas out of funds allocated for non-new location Interstate projects.

Thus the reallocation of funds for resurfacing activities allowed for meeting an even lower percentage of construction needs which would be

necessary to adding both mileage and capacity to the system. It was therefore necessary to make adjustments in the majority of the physical state and design type information by functional classification for each of the urban areas as well as the calculation of resulting changes in performance measures and capital costs.

The starting point for the determination of the physical state which would be realized in the 1990 Plan was the determination of total mileages by 1990 functional classification, and by 1990 design type for non-local classifications. The basis of the procedure used for these adjustments was first of all a calculation of construction costs on a per mile basis, and secondly, information available on the needs printout by improvement type. The needs printout for new location was assumed to have two principal components: 1) the needs required for new location which would add mileage to the system, and 2) the needs for major construction projects of a relocation nature which would not add mileage to the system. Based upon the reallocation of funds to the new location improvement type by functional classification, the number of miles which could be added to the system based on the needs per mile cost, as adjusted for differential price changes, was computed. If the resulting new mileage was greater than the new mileage reflected in the difference between the 1972 Inventory and the 1990 Needs, only that portion of the mileage reported for the Needs was added to the system. The remaining funds were assumed to be relocation improvements which would add capacity and design type upgrades without new mileage.

The next step in the adjustment of the physical state was the adjustment of capacity miles for Interstate, principal arterials and minor arterials. There are four basic improvement types which added capacity for the Needs. These are new location, relocation, major widening and reconstruction. Based upon the funding reallocation and the assumption that equal construction dollars for each improvement type will add equal capacity, the capacity miles were recomputed. Capacity miles added by 1990 for the Needs were determined by taking the capacity miles for the Needs and subtracting Inventory capacity miles for each of these functional classifications. The capacity miles which could be added with available funds were determined by factoring these capacity miles by the percent of needs met for each improvement type which adds capacity. Capacity mile increases due to new location construction were determined separately based on standard capacity mile per mile ratios and added to capacity mile additions from major widening, etc.

The next adjustment to be made in the physical state was the determination of annual vehicle hours to be reported for the 1990 Plan. The starting point for this analysis was the determination of average speed and volume capacity relationships for each functional classification. Average speed, by functional classification, was determined for the Inventory and for the Needs by dividing annual vehicle miles by annual vehicle hours reported. In addition, volume capacity ratio estimates were derived for 1) the Inventory, 2) the Needs, 3) an assumption of no capacity improvement, and 4) the 1990 Plan. These ratios were obtained by dividing annual vehicle miles by capacity miles. While this ratio does not represent the actual

volume capacity ratio since it is not based on one way peak hour estimates of vehicle miles and directional splits, it is nevertheless indicative of relative percentage changes in the volume capacity ratio based upon a constant relationship between the percentage of annual vehicle miles and peak hour one way vehicle miles.

It was assumed that vehicle mile assignments by functional classification (but not by design type) would remain valid for both the Needs and the 1990 Plan since vehicle mile estimates were presumably based upon an assignment of projected 1990 trips in each urban area and the resulting assignment of these trips to a highway network which was substantially the same in terms of location for both the Needs and the Plan.

A comparison of the volume capacity estimates was made and resulting average speeds by functional classification was determined. For example, if the volume capacity estimate for the Plan was substantially the same as that for the Needs, the average speed as determined from the Needs was used for the Plan. If the volume capacity relationship for the Plan was closer to that reported in the Inventory, the average speed as determined from the Inventory was used for the Plan. If the volume capacity estimate for the Plan approached the serious degradation represented by no capacity improvements by 1990 (i.e. 1990 projected vehicle miles/1972 capacity), a downward adjustment in the average speed was made for the given functional classification. Volume capacity estimates could not be made for collectors and local roads with information available in the Plan and the Needs. Since the majority of all new local road mileage was assumed to be completed by 1990 and there was

very little capacity related improvement reported in the Needs for local roads, average local road speeds remained constant from the Needs to the Plan.

Average speed for collectors for the 1990 Plan were based upon a comparison of average speeds in the Inventory and in the Needs vis-a-vis average percent completion of collector Needs which were related to capacity improvements for this functional classification.

After the determination of average speeds by functional classification for the 1990 Plan, vehicle hours for the Plan were calculated by dividing the annual vehicle miles by the adjusted average speed for each functional classification.

The next step in the refinement of the 1990 Plan was to make all requisite changes necessary for reporting mileage, vehicle miles, vehicle hours and capacity miles by 1990 design type for non-local functional classifications. The starting point for this analysis was the reporting by design type for the 1972 Inventory. New mileages added by functional classification in the Plan as previously determined were assigned to the appropriate 1990 design type. It was assumed that, if possible, all freeway mileage would be completed. Thus, all Interstate new location was assigned to freeways and remaining freeway mileage obtained from principal arterials. The remaining new location arterials were assigned to the four or more lane category. Collectors were assigned to the less than four lane category. In addition to design type changes resulting from new construction, it was recognized that many of the projects reported in the Needs were oriented toward upgrading existing principal and minor arterials from less than four lanes to four or more

lanes. The starting point for the determination of these upgraded mileages was the printout of Needs by improvement type. From this printout it was possible to determine upgrading reflected in the Needs by design type for reconstruction, major widening and relocation improvements. The number of miles to be upgraded to four or more lanes from relocation projects, if any, was calculated by using average per mile costs reported in the Needs and assigning the remainder of new location funds after all new location was completed to retiring relocation Needs. The number of miles to be upgraded in major widening and reconstruction projects for principal and minor arterials was determined from the number of miles of upgrading represented in the Needs factored by the needs which could be met with the allocation of available funding for these functional classifications and improvement types. The 1990 Plan mileage by design type was then computed by taking the net additions since 1972 for freeways and other four or more lane roads and subtracting from the less than four lane category upgraded mileage.

Vehicle mile assignments by 1990 design type were determined by factoring 1990 vehicle mile projections by the ratio of 1990 Plan to 1990 Needs mileages. Vehicle hours by design type for the Plan were determined by assigning all Interstate vehicle hours to freeways and by determining the number of other principal arterial vehicle hours assignable to freeways. Vehicle hours for other four or more lane roads were determined by dividing the number of vehicle miles assigned to this design type by the average speed for other principal arterials which was determined in a manner previously discussed. Remaining vehicle hours for non-local functional classifications

were assigned to the less than four lane category. Freeway capacity miles were determined by adding Interstate capacity miles for the Plan to the number of capacity miles of other principal arterials included in the freeway category. It was assumed that all principal arterial capacity improvements were made with freeway capacity improvements receiving the highest priority. Thus, in most cases where 1990 Needs freeway mileage could be completed with available funding, the funding was also sufficient to cover capacity additions on other principal arterial freeways. Therefore, the majority of capacity miles which could not be added in the 1990 Plan were due to unavailability of funding for projects such as Interstate major widening.

The adjustments in the physical state data reported for the 1990 Plan required that many of the performance measures (Items 7-20) be recalculated to reflect the Plan physical state rather than the 1990 Needs. It was assumed that the changes for the Plan would not result in any changes in car occupancy factors, average trip lengths, or passenger trips since these were based upon O-D trip assignments and other studies performed for each urbanized area and the rest of the state.

Items which were recomputed for the Plan included freeway capacity miles per capita, freeway capacity miles per square mile, freeway vehicle miles per capita, vehicle miles/vehicle hours and percent arterial vehicle miles on freeways. Each of these items was recomputed per DOT instructions contained in Manual II. It was also necessary to recompute freeway vehicle miles/freeway capacity miles for each of the urban areas and for the rest of the state. This was done by assuming that there would be no change between

the peak hour one way vehicle miles and total annual vehicle miles between the Needs and the Plan. The computational procedure was as follows:

Let:

$V/C_n$ = freeway volume capacity ratio determined for Needs

$V/C_p$ = freeway volume capacity ratio for Plan

R = peak hour one way freeway vehicle miles/average annual vehicle miles for Needs

$CM_n$ = Needs capacity miles

$VM_n$ = Needs freeway annual vehicle miles

$CM_p$ = Plan freeway capacity miles

$VM_p$ = Plan freeway annual vehicle miles

Then:

$$R = V/C_n \ (CM_n/VM_n)$$

and thus:

$$V/C_p = R \ (VM_p/CM_p)$$

$$= V/C_n \ (CM_n/VM_n) \ (VM_p/CM_p)$$

The resulting 1990 Plan volume capacity ratios for the urban areas in many cases shows a serious degradation of highway system performance occurring between 1972 and 1990. This is due predominantly, of course, to the lack of capability to fund projects which would add needed capacity to the arterial functional classification.

Because of the increased congestion resulting from the 1990 Plan, it was assumed that annual injury and fatality rates per 100 million vehicle

miles would be increased by 5% over the rates projected for the 1990 Needs. Because of the nature of the 1974 NTS reporting requirements for pollutants (CO, $NO_x$, HC), it was decided that the primary parameters for pollutant calculations were vehicle age distributions and other factors related to annual vehicle miles. Effects due to slight variations in average vehicle speed would not significantly affect pollutant calculations. Hence, pollutants reported for the 1990 Needs as developed by procedures documented elsewhere were used for the Plan.

2-4.1.3.4 Plan Summary

This section presents summary exhibits of Capital Needs and Capital Costs for the 1990 Highway Plan submissions and the 1989 Operations and Maintenance Cost tabulation by urbanized area and the other areal categories stipulated by the DOT. In the development of the Plan for each area a full complement of analysis exhibits were prepared at the improvement type category level. This in-depth documentation will be maintained by the appropriate urban agencies and the Michigan State Department of Highways and Transportation for future use and may be made available to the DOT upon request.

Exhibit 2-4.3 presents a summary of the State's 1990 Highway Needs by functional classification adjusted to a 1971 dollar base with adjustment for needs additions and retirements since the 1972 National Transportation Study.

Exhibit 2-4.4 presents the 1990 Highway Plan or allocation of funds which were employed against the 1990 State Highway Plan as part of this study. Capital costs were reported as a total for each of the five functional classifications. These capital costs are exactly equal to the funding allocation by functional classification, since it is assumed that each dollar allocated will be spent. Federal aid eligible costs for the Plan were assumed to be all costs for non-local functional classifications which would be incurred for all improvements except resurfacing. It is to be noted that this NTS data item does not represent Federal Aid which would be received but rather the total of all projects whose costs would be eligible for some form of Federal Aid. Capital costs developed and reported for the total capital costs over all

EXHIBIT 2-4.3

ADJUSTED 1990 HIGHWAY NEEDS

CAPITAL COSTS
(thousands of dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collector | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 40,498 | 377,943 | 91,967 | 23,687 | 534,095 | 186,160 | 720,255 |
| Bay City | 21,839 | 70,770 | 45,672 | 18,435 | 156,716 | 183,758 | 340,474 |
| Detroit | 1,088,943 | 7,498,298 | 2,775,189 | 1,175,184 | 12,537,614 | 4,688,786 | 17,226,400 |
| Flint | 170,684 | 792,937 | 323,450 | 71,682 | 1,358,753 | 646,158 | 2,004,911 |
| Grand Rapids | 39,117 | 209,337 | 244,953 | 70,869 | 564,276 | 564,737 | 1,129,013 |
| Jackson | 11,379 | 81,571 | 55,813 | 15,021 | 163,784 | 145,005 | 308,789 |
| Kalamazoo | 13,441 | 295,400 | 117,308 | 29,977 | 456,126 | 266,447 | 722,573 |
| Lansing | 42,082 | 329,593 | 167,454 | 37,267 | 576,396 | 324,149 | 900,545 |
| Muskegon | 3,881 | 96,639 | 69,454 | 26,357 | 196,331 | 233,001 | 429,332 |
| Saginaw | 86,253 | 172,424 | 76,093 | 24,429 | 359,199 | 216,502 | 575,701 |
| South Bend | | 48,323 | 4,695 | 5,848 | 58,866 | 40,276 | 99,142 |
| Toledo | | 17,056 | 38,474 | 20,829 | 76,359 | 79,242 | 155,601 |
| Small Urban A | 51,062 | 553,430 | 128,018 | 179,383 | 911,893 | 1,267,049 | 2,178,942 |
| Small Urban B | 95,274 | 437,044 | 265,709 | 60,570 | 858,597 | 745,268 | 1,603,865 |
| Rest of State | 425,097 | 2,539,248 | 1,862,964 | 2,601,264 | 7,428,573 | 7,835,707 | 15,264,280 |
| Total | 2,089,550 | 13,520,013 | 6,267,213 | 4,360,802 | 26,237,578 | 17,422,245 | 43,659,823 |

EXHIBIT 2-4.4

1990 HIGHWAY PLAN
(in thousands of dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collector | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 30,433 | 74,999 | 8,241 | 1,545 | 115,218 | 35,349 | 150,567 |
| Bay City | 8,322 | 31,964 | 9,062 | 2,012 | 51,360 | 13,531 | 64,891 |
| Detroit | 843,391 | 1,730,630 | 288,679 | 63,852 | 2,926,552 | 890,635 | 3,817,187 |
| Flint | 142,112 | 149,725 | 28,450 | 4,417 | 324,704 | 120,887 | 445,591 |
| Grand Rapids | 32,369 | 121,923 | 72,371 | 20,432 | 247,095 | 102,987 | 350,082 |
| Jackson | 8,210 | 29,305 | 10,957 | 4,383 | 52,855 | 17,996 | 70,851 |
| Kalamazoo | 13,441 | 71,470 | 13,820 | 4,605 | 103,336 | 34,899 | 138,235 |
| Lansing | 19,576 | 112,607 | 27,774 | 5,757 | 165,714 | 74,817 | 240,531 |
| Muskegon | 2,301 | 46,426 | 18,250 | 5,493 | 72,470 | 37,113 | 109,583 |
| Saginaw | 53,215 | 25,339 | 10,202 | 3,279 | 92,035 | 50,892 | 142,927 |
| South Bend | | 17,863 | 940 | 582 | 19,385 | 19,186 | 38,571 |
| Toledo | | 6,976 | 10,369 | 2,571 | 19,916 | 8,948 | 28,864 |
| Small Urban A | 35,560 | 180,758 | 26,308 | 26,305 | 268,931 | 116,948 | 385,879 |
| Small Urban B | 45,932 | 128,116 | 40,222 | 8,937 | 223,207 | 106,767 | 329,974 |
| Rest of State | 312,196 | 1,359,108 | 676,481 | 583,888 | 2,931,673 | 1,155,825 | 4,087,498 |
| Totals | 1,547,058 | 4,087,209 | 1,242,126 | 738,058 | 7,614,451 | 2,786,780 | 10,401,231 |

functional classifications were broken into five categories: right of way, new location construction, existing location construction modification, and other existing location capital costs. In addition, traffic control costs for non-local functional classifications were not available. Right of way capital costs were developed as previously discussed, taking into account relative changes between right of way acquisition costs and the consumer price index. New location construction costs were obtained from previously described funding allocations to new location construction less right of way acquisition costs. Existing location improvements were split between construction and modification and other costs in the same manner that these costs were distributed for the 1990 Needs.

Exhibit 2-4.5 presents a summary of the results of highway funds allocations through 1989 on the Highway Needs of the State. This summary is therefore the effective net 1990 State Highway Plan subsequent to the application of all sources of funding under appropriate implementation schedules and construction cost indices. These capital costs represent the actual 1971 dollars of capital improvements which can be developed from the resources projected. Obviously, the physical state and the corresponding performance measures on the forms were generated from, and correspond to, the net capital funds projected for construction.

Exhibit 2-4.6 presents a summary of the 1989 Operations and Maintenance costs as reported on the 1974 NTS forms. Maintenance and administrative costs were developed for non-local functional classifications on a per mile cost basis for the 1990 Needs. These costs were adjusted to

EXHIBIT 2-4.5

SUMMARY OF NEEDS RETIRED
1990 HIGHWAY PLAN
(in thousands of dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collector | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 23,038 | 53,809 | 6,745 | 1,224 | 84,816 | 26,999 | 111,815 |
| Bay City | 6,299 | 24,456 | 6,975 | 1,660 | 39,390 | 10,319 | 49,709 |
| Detroit | 630,641 | 1,272,597 | 224,797 | 52,501 | 2,180,536 | 681,394 | 2,861,930 |
| Flint | 84,527 | 109,564 | 22,587 | 3,626 | 220,304 | 92,485 | 312,789 |
| Grand Rapids | 26,128 | 100,694 | 59,561 | 16,496 | 202,879 | 78,821 | 281,700 |
| Jackson | 6,215 | 22,070 | 8,732 | 3,541 | 40,558 | 13,700 | 54,258 |
| Kalamazoo | 11,469 | 54,420 | 11,019 | 3,785 | 80,693 | 26,663 | 107,356 |
| Lansing | 14,819 | 85,833 | 22,049 | 4,712 | 127,413 | 57,271 | 184,684 |
| Muskegon | 1,742 | 34,840 | 14,956 | 4,507 | 56,045 | 28,395 | 84,440 |
| Saginaw | 43,517 | 19,550 | 8,292 | 2,695 | 74,054 | 38,930 | 112,984 |
| South Bend | | 13,346 | 711 | 479 | 14,536 | 15,184 | 29,720 |
| Toledo | | 5,812 | 8,548 | 2,120 | 16,480 | 6,843 | 23,323 |
| Small Urban A | 29,018 | 135,171 | 21,018 | 21,657 | 206,864 | 89,253 | 296,117 |
| Small Urban B | 35,530 | 96,466 | 32,758 | 7,307 | 172,061 | 81,606 | 253,667 |
| Rest of State | 342,785 | 1,074,286 | 533,396 | 464,091 | 2,414,558 | 924,776 | 3,339,334 |
| Total | 1,255,728 | 3,102,914 | 982,144 | 590,401 | 5,931,187 | 2,172,639 | 8,103,826 |

EXHIBIT 2-4.6

1989 OPERATIONS AND MAINTENANCE COSTS
(thousands of dollars)

| | Non-Local (1) | Adjusted Non-Local (2) | Local $71 (3) | Adjusted Local (4) | Adjusted Total (4+2) (5) | Adjusted Plan Maintenance Total (6) | Highway Patrol & Traffic Police (7) | Adjusted Highway Patrol & Traffic Police (8) | Total Reported Maintenance & Admin Costs (6+8) (9) |
|---|---|---|---|---|---|---|---|---|---|
| Ann Arbor | 3,063 | 3,663 | 1,018 | 1,196 | 4,859 | 5,345 | 2,061 | 2,679 | 8,024 |
| Bay City | 1,019 | 1,219 | 650 | 764 | 1,983 | 2,181 | 913 | 1,187 | 3,368 |
| Detroit | 68,066 | 81,407 | 21,501 | 25,264 | 106,671 | 117,338 | 47,502 | 61,753 | 179,091 |
| Flint | 8,321 | 9,952 | 2,601 | 3,056 | 13,008 | 14,309 | 4,838 | 6,289 | 20,598 |
| Grand Rapids | 4,197 | 5,020 | 2,664 | 3,130 | 8,150 | 8,965 | 4,239 | 5,511 | 14,476 |
| Jackson | 1,009 | 1,207 | 642 | 754 | 1,961 | 2,157 | 903 | 1,174 | 3,331 |
| Kalamazoo | 2,719 | 3,252 | 1,044 | 1,227 | 4,479 | 4,927 | 1,727 | 2,245 | 7,172 |
| Lansing | 3,550 | 4,246 | 1,492 | 1,753 | 5,999 | 6,599 | 2,885 | 3,751 | 10,350 |
| Muskegon | 1,559 | 1,865 | 1,014 | 1,191 | 3,056 | 3,362 | 1,227 | 1,595 | 4,957 |
| Saginaw | 2,135 | 2,553 | 1,089 | 1,280 | 3,833 | 4,216 | 1,619 | 2,105 | 6,321 |
| South Bend | 347 | 415 | 267 | 314 | 729 | 802 | 334 | 434 | 1,236 |
| Toledo | 455 | 544 | 320 | 376 | 920 | 1,012 | 392 | 510 | 1,522 |
| Small Urban A | 4,696 | 5,616 | 4,655 | 5,470 | 11,086 | 12,195 | 4,887 | 6,353 | 18,548 |
| Small Urban B | 5,072 | 6,066 | 3,178 | 3,734 | 9,800 | 10,780 | 4,003 | 5,204 | 15,984 |
| Rest of State | 88,317 | 105,627 | 37,489 | 44,050 | 149,677 | 164,645 | 20,586 | 26,762 | 191,407 |
| Totals | | 232,652 | | 93,559 | 326,211 | 358,833 | | 127,552 | 486,385 |

account for three factors. First of all, they were adjusted to account for the increase in maintenance costs in 1971 dollars from the 1969 dollar figure developed for the Needs. Secondly, they were adjusted for differential increases in maintenance costs of 0.9% per year as described in Manual II. Thirdly, they were adjusted for Needs mileages which could not be funded under the 1990 Plan. Local road maintenance costs were developed based upon 1971 per mile local road maintenance expenditures as reported in the annual report. These per mile costs were then extended to a total by using the 1990 Plan local road mileages. The resulting local road maintenance and administrative costs were then adjusted for differential maintenance cost/CPI changes for the year 1989. For each urban area local and non-local functional classification maintenance and administrative costs were added. As described in a previous section, it was recognized that the reduced funding available for the 1990 Plan would result in increases in required maintenance activity. Consistent with the assumption used in the projection of funds available for capital costs from state and local sources, resulting maintenance and administrative costs were increased by 10% for each urban area. The state total for maintenance and administration costs for all functional classifications amounted to approximately 1/16 of the total projected state funds for 1972 to 1990 available for covering administrative and maintenance costs. With the assumed year by year profile of gas tax revenues, this amount is almost exactly the projected figure for 1989, and thus the reasonableness of 1989 maintenance and administration costs for highways is totally consistent with 1990 Plan funding projections. Capital cost ratios (Items 40-42) were computed per Manual II instructions.

### 2-4.1.3.5 Reasonableness Discussion and Conclusion

The core approach to the development of the 1990 Highway Plan as indicated above was the 1) development of the sources of funds for highways, and 2) allocation of the funds by improvement type and functional classification such that the 1990 Highway Plan reflects exactly the funds available within the guidelines of the 1974 NTS.

This section presents summary exhibits of the funding sources and applications of funding sources employed in the development of the 1990 Plan. The following table and Exhibit 2-4.7 present summaries of the sources of funds.

TABLE 2-4.7

SOURCE OF FUNDS SUMMARY

- CAPITAL COSTS -

| | | Thousands of Dollars | % |
|---|---|---|---|
| Federal Funds | | $3,470,000 | 33.36 |
| State Gas Tax | | 4,304,214 | 41.38 |
| Local Revenues: | | | |
| County | 356,400 | | |
| City | 399,600 | 756,000 | 7.27 |
| Private Funds - Subdivision Street Construction | | 1,871,017 | 17.99 |
| TOTAL | | $10,401,231 | 100.00 |

Exhibit 2-4.8 presents a summary of the State Trunkline Construction Funds and Federal-Aid Highway Funds. The distribution of the Motor Vehicle Highway Fund is presented as Exhibit 2-4.9.

The distribution of funds by area and functional classification which summarizes allocations for all types of improvements is presented as Exhibit 1-4.10. The total allocation of $10,401,231,000 equals the total projected sources of funds. These funds by area and functional classification were allocated to the improvement type needs included within the functional classification needs as presented in summary Exhibit 2-4.3.

The resultant net needs retired through the 1990 planned allocation of approximately 10.4 billion dollars is approximately 8.1 billion dollars (refer Exhibit 2-4.4.) or approximately 27% of the State's total 1990 Highway Needs.

STATE TRUNKLINE CONSTRUCTION FUNDS & FEDERAL-AID HIGHWAY CONSTRUCTION FUNDS

(thousands of dollars)

| | STL Constr Fund | Interstate | Rural Primary "A" | FAS State "B" | FAS County "B" | Primary Urban Ext "C" | Urban "D" | Total FA | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | FEDERAL AID | | | | | | | |
| State Highway Program 1972-1990 | 2,201,220 | 1,318,393 | 705,096 | 108,012 | | 319,284 | 290,328 | 2,741,113 | 4,942,333 |
| Other | | | | | 216,979 | | 511,908 | 728,887 | 728,887 |
| Totals | | | | | | | | 3,470,000 | |

EXHIBIT 2-4.8

1990 PLAN

DISTRIBUTION OF MOTOR VEHICLE HIGHWAY FUND

(Thousands of Dollars)

| | M.V.H. Fund | 44.5% STL | 35.7% Counties | | | | | 19.8% Cities & Villages | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Total | 10% Urban | Remainder | 75% Co. Pri. | 25% County Local | Total | 75% City Maj. | 25% City Local |
| 18 Year Totals | 9,893,124 | 4,402,440 | 3,531,845 | 353,185 | 3,178,660 | 2,383,995 | 794,665 | 1,958,839 | 1,469,129 | 489,710 |
| % Maintenance | | 50 | | 50 | | 60 | 70 | | 60 | 70 |
| Amount Available for Construction | 4,304,214 | 2,201,220 | | 176,593 | | 953,598 | 238,400 | | 587,652 | 146,751 |

EXHIBIT 2-4.9

EXHIBIT 2-4.10

DISTRIBUTION OF FUNDS
1990 PLAN
(thousands of dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collector | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 30,433 | 74,999 | 8,241 | 1,545 | 115,218 | 35,349 | 150,567 |
| Bay City | 8,322 | 31,964 | 9,062 | 2,012 | 51,360 | 13,531 | 64,891 |
| Detroit | 768,692 | 1,730,630 | 288,679 | 63,852 | 2,851,853 | 890,635 | 3,742,488 |
| Flint | 102,866 | 149,725 | 28,450 | 4,417 | 285,458 | 120,887 | 406,345 |
| Grand Rapids | 32,369 | 121,923 | 72,371 | 20,432 | 247,095 | 102,987 | 350,082 |
| Jackson | 8,210 | 29,305 | 10,957 | 4,383 | 52,855 | 17,996 | 70,851 |
| Kalamazoo | 15,150 | 71,470 | 13,820 | 4,605 | 105,045 | 34,899 | 139,944 |
| Lansing | 19,576 | 112,607 | 27,774 | 5,757 | 165,714 | 74,817 | 240,531 |
| Muskegon | 2,301 | 46,426 | 18,250 | 5,493 | 72,470 | 37,113 | 109,583 |
| Saginaw | 53,215 | 25,339 | 10,202 | 3,279 | 92,035 | 50,892 | 142,927 |
| South Bend | | 17,863 | 940 | 582 | 19,385 | 19,186 | 38,571 |
| Toledo | | 6,976 | 10,369 | 2,571 | 19,916 | 8,948 | 28,864 |
| Small Urban A | 35,560 | 180,758 | 26,308 | 26,305 | 268,931 | 116,948 | 385,879 |
| Small Urban B | 45,932 | 128,116 | 40,222 | 8,937 | 223,207 | 106,767 | 329,974 |
| Rest of State | 424,432 | 1,359,108 | 676,481 | 583,888 | 3,043,909 | 1,155,825 | 4,199,734 |
| Total | 1,547,058 | 4,087,209 | 1,242,126 | 738,058 | 7,614,451 | 2,786,780 | 10,401,231 |

## 2-4.1.4 Urban Public Transportation

### 2-4.1.4.1 Introduction

The urban public transportation element of the 1990 NTS Plan was developed from technical and cost data provided by the Urban Area participants and the Urban Public Transportation planning section within the Michigan Department of State Highways and Transportation. Although this relatively new state responsibility is in its developmental phase of institutionalization, the importance of the 1974 NTS was recognized and employed as an opportunity for examining key elements of urban public transportation planning - specifically, 1) assuring all cost projections are on a consistent basis, and 2) analyzing and evaluating the adequacy of currently observable funding potentials. As indicated in Section 1.0, considerable effort was expended in the early phases of this study to determine urban mass transit federal fund potentials through an evaluation of the 1972 NTS high level allocations vis-a-vis Appendix L benchmarks for highways and aviation. This approach did not compare consistently with the guidelines provided by the DOT subsequent to the passage of the 1973 legislation. Thus, a projection of federal funds availability was developed through the period December 31, 1989 under the assumption that Michigan could qualify for an allocation of 14% of the total Federal Urban Mass Funds. The approach

employed for the evaluation of funding source comparisons with the aggregate urban plans currently available permitted full analysis of the impacts of the recently passed Michigan General Transportation Fund.

As introduced in Section 2-4.1, an estimate was developed for total UMTA Federal Funds availability through December 1, 1989 by the State. This estimate of $13.18 billion was developed through an adjustment of the federal funds cited on II-43 of Manual II to compensate for the period January 1, 1973 through December 31, 1973 plus an extrapolation of the $872 million annual rate through December 31, 1989. For the purposes of the State's Urban Public Transportation input to the 1974 NTS, an allocation of approximately 14% of these funds to Michigan was assumed yielding a Federal Target Funds for the Urban Public Transportation section of $1.845 billion over the eighteen year period. This allocation rate of 14% was determined through a calculation of the capital funds projected as available, the total State urban public transit plan requirements of $2.803 billion and under the 70% Federal and 30% state/local match assumptions. Under the earlier DOT UMTA Fund projections (prior to last revisions), the State projected application for 15% of a projected UMTA Federal Funds projection of $12.201 billion. For the period June 30, 1973 (passage of General Transportation Fund) through December 31, 1989, the State funds available within the State are estimated at $418,528,000. This estimate is based on the assumption that there will be no increase in the gas tax rate over the eighteen year period - either in real terms or in response to the consumer price index. The General Transportation Fund includes yearly approved stipulations for Capital Assistance, Operations Cost Assistance,

Demonstration Program Funds and Administration. The Capital Assistance portion of the fund was assumed at a rate of 40% per year for a total of $167,411,000. Given a 70% Federal, 30% State/local match, the State and local share required additional resources of approximately $791 million over the eighteen year period to fund the entire projected Urban Public Transportation Plan at the acquisition/implementation schedule employed in the Plan.

The main thrust of the plan analysis which is summarized in this document focused on the availability of funds in the future and their relationship to the Plan. The short history of utilizing the UMTA Funds and the non-uniformity of plans among urbanized areas made evident the non-applicability of the suggested DOT procedure for modal per capita expenditure summarizations. In addition, the recent passage of the General Transportation Fund precluded even more so comparative per capita expenditures between the 1990 Plan and recent historic expenditures as a meaningful exercise.

Thus, the remaining sections highlight 1) the results of the capital and operations cost projections of the planned facilities development, 2) the projected level and sources of funds, and 3) a discussion of uncertainties and assumptions which may impact the potential levels and sources of funds.

2-4.1.4.2 Plan Summary

The following summary, Table 2-4.11, of the State's Urban Public Transportation Plan has been prepared to be consistent with the DOT areal and service type categories presented with the study guidelines and forms. The costs of the facilities and rolling stock were based on the acquisition implementation schedule for or by each participant and translated to 1971 base year dollars. Similar adjustments were made to the O&M cost projections as required by the DOT in Section II.4.

TABLE 2-4.11

URBAN PUBLIC TRANSIT CAPITAL COSTS
(Thousands of Dollars)

| | Bus | Rapid Transit | Commuter Rail | Other | Total |
|---|---|---|---|---|---|
| Urbanized Area | 537,172 | 2,228,208 | 0 | 8,734 | 2,774,114 |
| Small Urban A | 13,911 | 0 | 0 | 0 | 13,911 |
| Small Urban B | 13,153 | 0 | 0 | 0 | 13,153 |
| Rest of State | 0 | 0 | 0 | 0 | 0 |
| Total | 564,236 | 2,228,208 | 0 | 8,734 | 2,801,178 |

In compliance with the study requirements, an analysis of operating subsidy requirements for the period June 30, 1973 through December 31, 1989 was conducted. The operations and maintenance cost projections are presented below as Table 2-4.12. The analysis of the projected O&M costs through the 17.5 year operations period indicates an operations deficit of $451,500,000; this figure is the difference between projected operating costs and estimated farebox revenues. Over this period, approximately 45% of the General Transportation Fund, or $188 million, is projected to be available for

operating subsidies. The net result is a projected shortfall under study fare-structure assumptions of approximately $263 million over the 17.5 year time frame. Uncertainties in private automobile petroleum product availability and Federal, State and Local reactions to public transportation requirements may modify this program substantially.

TABLE 2-4.12

URBAN PUBLIC TRANSIT O&M COST PROJECTIONS

| | |
|---|---|
| Projected 17½-year operating deficit | $451,500,000 |
| Estimated General Transportation Fund operating assistance | 188,000,000 |
| Projected shortfall | $263,500,000 |

It is anticipated that as the General Transportation Fund matures within the State, increased emphasis will be placed on Urban Public Transportation planning and capital and O&M cost analyses and programming.

2-4.1.4.3 Reasonableness Discussion and Conclusion

As indicated in Section 2-4.1, the State attempted to adhere strictly to the guidelines and directives of the DOT with respect to the reasonableness or realism of its modal plan submissions. As indicated in Table 2-4.11, a significant portion of the Urban Public Transit plan is represented by the Detroit rapid rail system. Although there is every indication that there are a number of feasible options for financing this system in the analysis phase, it is premature to present any of them as part of this study. In-depth review of this urban system does however indicate that more refined capital cost estimates and funds and implementation analyses will be available in the near term for use in subsequent State NTS activities and internal studies.

The recently enacted passage of the State's General Transportation Fund and commitment to develop responsive Urban Public Transportation planning capability is viewed as the benchmark for continuing reassessment of transportation financing analyses in the State. It is also anticipated that recent events in the energy area will have a significant impact on Federal legislation and act as a stimulus for State and local jurisdictional reassessment of urban public transit capital improvement program requirements.

In summary, the unidentified level of funds required to meet the costs presented in the 1990 Plan are estimated at $791 million without local participation. This short fall is not considered significant when: 1) reviewing the distribution of the 1990 Plan resource requirements, 2) reviewing the public sources of additional State and local funds, specifically the Detroit Urban Area, and 3) appreciating the potential for rapidly changing attitudes and legislation with respect to urban transit development.

## 2-4.1.5 AVIATION

### 2-4.1.5.1 Introduction

The Aviation Plan through the period 1990 was based on and employed extensively the results of the State of Michigan's recently completed Michigan Aviation Systems Plan (MASP). The basic facilities requirements, cost data and implementation schedules served as the basis for the physical state data requirement and the base data for developing the adjusted capital and operations costs data files on the appropriate aviation forms. The fundamental task necessary to the completion of the 1974 NTS Aviation Plan, given the Michigan Aviation Systems Plan, resolved therefore to 1) an analysis of projected funding by total and by source of funds, and 2) evaluation and comparison of the projected profile of funds vis-a-vis the anticipated or planned implementation/development schedule as included within the MASP.

This short preview of the aviation plan evaluation addresses only the evaluation of total funds for the completion of those facilities identified as applicable through December 31, 1989. The implications and the results of the evaluation of the irregular schedule of expenditures and changes in significant performance measures over the eighteen year period will be addressed in the Narrative Report under the appropriate sections - 1980 Program Evaluation

(Section 2.5) and Program and Plan Comparisons (Section 2.6). The detailed sources of funds analysis is an integral part of the 1980 Program requirements and as such are addressed in the appropriate section of the Narrative Report - Program Evaluation (Section 2.5).

2-4.1.5.2 Plan Summary

This section presents a summary tabulation of the 1990 Aviation Plan with respect to capital costs and operations costs as they appear on the appropriate individual and summary forms as corrected subsequent to data submittal. These cost estimates, in thousands of 1971 dollars, are identified by the major geographic or areal designation consistent with the 1974 NTS guidelines.

TABLE 2-4.13

CAPITAL COST ESTIMATE

Total Aviation Plan

| | Dollars (in thousands) | % |
|---|---|---|
| Urbanized Areas | $578,916 | 72.26% |
| Small Urban A | 102,422 | 12.78 |
| Small Urban B | 27,487 | 3.43 |
| Rest of State | 92,386 | 11.53 |
| Total | $801,211 | 100.00 |

The Plan capital costs presented above include the cost of terminal, hangars, public parking and cargo complex developments not covered by the Airport Development Acceleration Act of 1973. As such, the following table is included to indicate only those facilities to be funded with Federal, State and Local funds consistent with the current Federal legislation. It has been assumed that terminal, cargo complex facilities, etc. will be funded to the extent they remain active elements of the aviation plan as determined by appropriate developers and/or sponsors. The cost the the development of the Axial

Freeway at Detroit Metropolitan Airport has been included within the 1990 State Highway Systems Plan.

TABLE 2-4.14

CAPITAL COST ESTIMATE

Adjusted Aviation Plan

| | Dollars (in thousands) | % |
|---|---|---|
| Urbanized Areas | $334,785 | 63.54 |
| Small Urban A | 89,685 | 17.02 |
| Small Urban B | 21,133 | 4.01 |
| Rest of State | 81,313 | 15.43 |
| Total | $526,916 | 100.00 |

TABLE 2-4.15

OPERATIONS COST ESTIMATE

1989

| | Dollars (in thousands) |
|---|---|
| Urbanized Areas | $41,875 |
| Small Urban A | 2,899 |
| Small Urban B | 1,191 |
| Rest of State | 2,810 |
| Total | $48,775 |

The costs cited above have been rigorously adjusted to 1971 dollars per the instructions of the DOT. The construction index and internally developed land acquisition cost index were applied against the individual facilities development

schedule included in the Michigan Aviation Systems Plan. In appreciation of the DOT's interest in indices developed by the States for use in this study, the State Narrative Report will include a documentation of the land cost index employed in the development of adjusted 1971 dollar airport land cost estimation.

2-4.1.5.3 Reasonableness Discussion and Conclusions

Given the total cost of the 1990 Michigan Aviation Systems Plan in 1971 dollars, the second phase of the analysis was to determine the aggregate source of funds estimated to be available for actual obligation toward the facilities identified in the Plan. The sources of capital funds against which the reasonableness of the Plan was analyzed was composed of Federal, State and Local funds over the eighteen year period. It was determined through an examination of the past profiles over the last five years that recent (5 year) historic comparisons were unrealistic as a basis of comparison and future evaluation since the application and use of the Federal aviation development assistance program was evident as an operational programmed source of funds in the last two years - 1971 and 1972. Thus it was determined to employ 1971 and 1972 actual Federal funds receipts as the base point and project Federal funds availability and State and local ability with respect to the 1971-72 mature patters and for determination of that portion of Appendix L Federal planning targets as supplied by the DOT (refer Section 1.0) which would be available for Aviation System development.

An analysis of the DOT 1990 Plan Appendix L benchmark funds yielded an anticipated Federal funding availability for aviation of $214,776,000 in 1971 dollars over the period January 1, 1972 through December 31, 1989. Although current events in the air service projection and Federal Sources and Levels of Funds may or may not modify this projection, a considered judgement had to be made as to the portion of the Federal Targets to be employed in the study. The projection of State and local funds availability which was based on 1972 revenue

source profiles indicates total revenue availability of $430,805,000 in 1971 dollars. State and local revenue projections were developed from a thorough analysis of sources of funds for each year and discounted to 1971 per the guidelines of the study. A thorough comparison of annual operations and maintenance costs between the 1971 and 1989 data vis-a-vis operations and service levels will be presented in the appropriate section of the Narrative.

The capital cost reasonableness analysis of the 1990 Aviation Plan has provided valuable insight requisite to the effective completion of the 1980 Aviation Program and has provided valuable input and observations necessary to the expanded evaluation and comparative analyses required for the Narrative Report. Through this phase of the study, it was determined that approximately 81% of the Michigan Aviation Systems Plan could be financed within the target DOT Appendix L funds aviation portion and State and Local match on an approximately 50% basis. Due to 1) uncertainties associated with future funding profiles provided in Appendix L, 2) changes in the matching requirements subsequent to plan development, 3) uncertainties in aviation service development as impacted by petroleum product availability, and 4) degrees of freedom in cost projections in terms of construction costs, the projection of retiring 81% of the State Aviation System Plan under the guidelines of the study is considered as a reasonable aviation plan input to the 1974 NTS. Information as to specific sources of funds by area, the non-uniformity of the planned construction and implications of federal fund levels with and without discretionary sources will be addressed in the 1980 Program discussion sections of the Narrative Report.

## 2.4.2 EVALUATION OF THE 1990 HIGHWAY PLAN

The purpose of this section is to present an evaluation of the 1990 Plan for Highways in Michigan. The evaluation discussed in this section is based upon the 1990 highway data forms prepared by the Michigan Department of State Highways and Transportation and the study consultant. Because of the constraints imposed on this study with respect to the availability of Federal funding, and the ground rules requiring that the "reasonableness" of the resulting plan be established, the State of Michigan chose to utilize the 1972 Highway Needs as the basis for the development of the 1990 Plan. As will be discussed in this section, these needs were examined in detail in order to provide a framework for prioritization and allocation of funds on an urban area and functional classification basis.

Thus, the fundamental issue addressed in this evaluation of the 1990 Highway Plan is with respect to the ability of the State of Michigan to meet its 1990 highway transportation needs in light of the constraints imposed by limited available resources. The reasonableness of the 1990 Highway Plan is discussed in Section 2.4.1.

In satisfaction of the DOT requirement for the 1990 Plan submission, it was determined that Michigan would submit two sets of Highway Plans to the DOT in conjunction with Michigan's participation in the study.

The first set of forms for each urban area, small urban aggregates, and the rest of state adhered strictly to 1990 highway Needs. These needs estimates were based on a thorough assessment of state highway needs which was performed for the 1972 NTNS. The results of the completed needs estimates were adjusted to the 1971 base dollar requirements of this study and further

reduced to be consistent with the time frame of this study - namely 1972 through 1990. The use of this data base as part of our state's submittal was considered critical as an indicator of Michigan's actual highway needs. These needs, by virtue of the fact that they were not adjusted to anticipated changes in construction costs relative to the rather unpredictable consumer price index, made it evident that the funding constraints explicitly inherent within this study's structure highlighted the obvious disparity between needs and available funding.

The second set of data adhered to strict funding projections as provided by the DOT and developed internally in accordance with the exact stipulations of the study, and policy positions of the State

Section 2.4.2.1 discusses the funding projections made for the development of the 1990 Plan per DOT requirements, and presents an evaluation of these funding projections. Section 2.4.2.2 presents a discussion of 1990 highway Needs, as adjusted for appropriate cost index changes, which is used as a benchmark for 1990 Plan evaluation. Section 2.4.2.3 discusses the development of the 1990 highway Plan based upon the 1990 Needs and the funding constraints. Section 2.4.2.4 presents an evaluation of the physical state and performance of Michigan's highway system as of 1990 as reported on the data forms for the 1990 Plan as well as an evaluation of the Plan with respect to costs, pollutants, accident, and other related measures required for 1974 NTS reporting.

### 2.4.2.1 Evaluation of Funding Projections

In the development of the 1990 Plan, it was determined that funding projections would be made for Federal, State and Local sources, by area and by functional classification, based upon legislative constraints and upon realistic levels of anticipated highway revenues. These funding projections were utilized as the starting point for the 1990 Plan development.

The starting point for the development of funding projections was the projection of available Federal funding based upon Appendix L of Manual II. This Appendix, which was developed by the U. S. DOT, projected that for the eighteen years between FY 73 and FY 90, the total available Federal funding for the State of Michigan would be $3,686 billion dollars. These funds had been discounted by DOT to be on the basis of a zero rate of general inflation. It was determined that, of this total, under current legislative constraints, 3.47 billion dollars would be available for highway related purposes. The breakdown of these funds, shown in Table 2.4.2.1 was developed based upon the current Federal-Aid highway program.

The next step in the development of the funding available for the 1990 Plan was the development of Motor Vehicle Highway Fund projections for 1972 through 1990. These funds were developed based upon projected State receipts from fuel sales and other fees. Deductions from these projections on a year-by-year basis were projected and subtracted from total collections. Table 2.4.2.2 shows the projection of funds available for highway purposes from State sources, before discounting for effects of general inflation.

The funds available for highway purposes, shown in this table as available for distribution, were then discounted, per DOT instructions, at 2.4% per year to account for general inflation. On this discounted basis, there was a total of 9.9 billion dollars available for distribution from the Motor Vehicle Highway Fund. These funds were then distributed to the State Trunkline Fund, counties, and cities and villages per current Michigan legislative requirements. Table 2.4.2.3 shows this distribution of the discounted funds between the various categories. Maintenance and administrative expenses were estimated for the State Highway Program, County Road Commissions, and cities and villages based upon a review of Act 51 Annual Reports for recent years. Based upon

TABLE 2.4.2.1

FEDERAL AID HIGHWAY FUNDS FOR THE 1990 PLAN

(Thousands of Dollars)

| | |
|---|---|
| Interstate | $1,318,393 |
| Rural Primary "A" | 705,096 |
| FAS State "B" | 108,012 |
| FAS County "B" | 216,979 |
| Primary Urban Ext. "C" | 319,284 |
| Urban "D" | 802,236 |
| Total Federal-Aid | $3,470,000 |

# TABLE 2.4.2.2

## PROJECTION OF ESTIMATED REVENUE
## MOTOR VEHICLE HIGHWAY FUND
## THOUSANDS OF DOLLARS

| AL YEAR | GASOLINE & L.P.G. | DIESEL FUEL | TOTAL FUEL TAXES | LICENSE PLATE FEES | TITLE FEES & OTHER | TOTAL REVENUE | WATE W/ COMM SION | LEGISLATIVE APPROPRIATION | COLLECTION COSTS | GENERAL TRANSPORTATION FUND | TOTAL DEDUCTIONS | AVAILABLE FOR DISTRIBUTION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 970 | 256,987 | 13,174 | 270,161 | 122,667 | 7,127 | 399,955 | 3,[illegible]5 | 4,991 | 10,879 | — | 19,723 | 380,232 |
| 971 | 266,572 | 13,945 | 280,517 | 126,681 | 7,953 | 415,151 | 3,[illegible]9[illegible] | 4,341 | 12,735 | | 21,072 | 394,079 |
| 972 | 281,968 | 15,877 | 297,845 | 134,991 | 8,977 | 441,813 | 4,[illegible]2[illegible] | 4,459 | 12,573 | | 21,259 | 420,554 |
| 973 | 323,119 | 16,500 | 339,619 | 138,500 | 9,741 | 497,860 | 4,[illegible]33 | 5,391 | 16,166 | 6,847 | 32,937 | 454,923 |
| 974 | 397,557 | 17,125 | 414,682 | 141,892 | 11,050 | 567,624 | 4,[illegible]60 | 5,490 | 15,671 | 21,803 | 47,930 | 519,694 |
| 975 | 417,435 | 17,981 | 435,416 | 146,716 | 11,426 | 593,558 | 5,[illegible]15 | 5,525 | 16,610 | 22,893 | 50,243 | 543,315 |
| 976 | 438,307 | 18,880 | 457,187 | 151,704 | 11,814 | 620,705 | 5,47[illegible] | 5,575 | 19,406 | 24,038 | 54,495 | 566,210 |
| 977 | 460,222 | 19,824 | 480,046 | 156,862 | 12,216 | 649,124 | 5,75[illegible] | 5,625 | 18,662 | 25,240 | 55,277 | 593,847 |
| 978 | 483,233 | 20,815 | 504,048 | 162,195 | 12,631 | 678,874 | 6,337 | 5,675 | 19,782 | 26,502 | 57,996 | 620,878 |
| 979 | 507,395 | 21,856 | 529,251 | 167,710 | 13,060 | 710,021 | 6,338 | 5,725 | 22,991 | 27,827 | 62,881 | 647,140 |
| 980 | 532,765 | 22,949 | 555,714 | 173,412 | 13,504 | 742,630 | 6,655 | 5,775 | 22,227 | 29,218 | 63,875 | 678,755 |
| 981 | 559,137 | 24,085 | 583,222 | 179,308 | 13,963 | 776,493 | 6,985 | 5,850 | 23,561 | 30,609 | 67,005 | 709,488 |
| 982 | 586,535 | 25,265 | 611,800 | 185,404 | 14,438 | 811,642 | 7,327 | 5,925 | 27,247 | 32,168 | 72,667 | 738,975 |
| 983 | 614,982 | 26,490 | 641,472 | 191,708 | 14,929 | 848,109 | 7,683 | 6,000 | 26,493 | 33,728 | 73,904 | 774,205 |
| 984 | 644,501 | 27,762 | 672,263 | 198,226 | 15,437 | 885,926 | 8,051 | 6,075 | 28,061 | 35,347 | 77,534 | 808,392 |
| 985 | 675,114 | 29,081 | 704,195 | 204,966 | 15,962 | 925,123 | 8,434 | 6,150 | 32,296 | 37,025 | 83,905 | 841,218 |
| 986 | 706,844 | 30,448 | 737,292 | 211,935 | 16,505 | 965,732 | 8,830 | 6,225 | 31,529 | 38,766 | 85,350 | 880,382 |
| 987 | 739,712 | 31,864 | 771,576 | 219,141 | 17,066 | 1,007,783 | 9,241 | 6,300 | 33,421 | 40,569 | 89,531 | 918,252 |
| 988 | 773,738 | 33,330 | 807,068 | 226,592 | 17,646 | 1,051,306 | 9,656 | 6,375 | 38,294 | 42,435 | 96,770 | 954,536 |
| 989 | 808,943 | 34,847 | 843,790 | 234,296 | 18,246 | 1,096,332 | 10,105 | 6,450 | 37,553 | 44,365 | 98,473 | 997,859 |
| 990 | 845,345 | 36,415 | 881,760 | 242,262 | 18,866 | 1,142,888 | 10,530 | 6,525 | 39,806 | 46,362 | 103,253 | 1,039,635 |

fotor fuel taxes were increased at an annual rate of 5% through 1980. Decreased annually, thereafter by 0.05% to 4.5% in 1990. License plate fees were increased at an annual rate of 3.4[illegible] lase year = 1974.

'Other Revenue" includes new and transfer title fees, special plate fees and in 1973, $776,000 in interest earnings; for 1974 and thereafter $2,000,000.

'Legislative Appropriations" include the grant to the Mackinac Bridge ($3,500,000) appropriations to the trunkline fund, and in 1973, andannually thereafter, $1,000,000 for the critical ridge program.

'Collection Costs" were increased at an annual rate of 6% with the assumption the new plate would be issued every third year, with tabs for the years between.



Department of State Highways
Financial Planning and Budget Sect
1/10/73

TABLE 2.4.2.3

1990 PLAN

DISTRIBUTION OF MOTOR VEHICLE HIGHWAY FUND

(Thousands of Dollars)

| | | DISTRIBUTION OF MOTOR VEHICLE HIGHWAY FUND | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | 35.7% Counties | | | | 25% | 19.8% | Cities & | Villages |
| | M.V.H. Fund | 44.5% STL | Total | 10% Urban | Remainder | 75% Co. Pri. | County Local | Total | 75% City Maj. | 25% City Loc |
| 18 Year Totals | 9,893,124 | 4,402,440 | 3,531,845 | 353,185 | 3,178,660 | 2,383,995 | 794,665 | 1,958,839 | 1,469,129 | 489,710 |
| % Maintenance | | 50 | | 50 | | 60 | 70 | | 60 | 70 |
| Amount Available For Construction | 4,304,214 | 2,201,220 | | 176,593 | | 953,598 | 238,400 | | 587,652 | 146,751 |

TABLE 2.4.2.4

STATE TRUNKLINE CONSTRUCTION FUNDS & FEDERAL-AID HIGHWAY CONSTRUCTION FUNDS

(thousands of dollars)

| | STL Constr Fund | Interstate | Rural Primary "A" | FAS State "B" | FAS County "B" | Primary Urban Ext "C" | Urban "D" | Total FA | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | FEDERAL AID | | | | | | | |
| State Highway Program 1972-1990 | 2,201,220 | 1,318,393 | 705,096 | 108,012 | | 319,284 | 290,328 | 2,741,113 | 4,942,333 |
| Other | | | | | 216,979 | | 511,908 | 728,887 | 728,887 |
| Totals | | | | | | | | 3,470,000 | |

TABLE 2.4.2.5

SOURCE OF FUNDS SUMMARY

1990 PLAN

(Thousands of Dollars)

| | | |
|---|---|---|
| State Highway Program | | 4,942,333 |
| Local Revenues | | |
| County | 356,400 | |
| City | 399,600 | 756,000 |
| CRC Urban Primary | | 132,445 |
| CRC Urban Local | | 44,148 |
| CRC Primary | | 953,598 |
| CRC Local | | 238,400 |
| Municipal - Major | | 587,652 |
| Municipal - Local | | 146,751 |
| FA Urban "D" | | 511,908 |
| FA "B" | | 216,979 |
| Sub-Total | | 8,530,214 |
| Private Funds - Subdivision Streets | | 1,871,017 |
| Total Projected Funds | | 10,401,231 |

these estimates, funds for each category which would be available for construction, on a discounted basis, were developed. These funds are also shown in Table 2.4.2.3. The funds thus discounted over the eighteen year period which would be available for capital costs were distributed per the existing legislative requirements - 44.5% to the State Trunkline Fund, 35.7% to county road commissions, and 19.8% to cities and villages.

Table 2.4.2.4 shows the total allocation of available State Trunkline Construction funds and Federal-Aid funds to the State Highway Program for the 1972-1990 time period. The remaining source of funds at the aggregate level which were projected include locally raised revenues which could be applied to capital costs by county road commissions and Michigan's cities and villages, as well as private funds which were required by DOT as part of the study.

Locally raised revenues were projected over the period to total $756,000. Of this total, $356,400 was projected to be raised by county road commissions, and the remainder by cities and villages. These projections of locally raised revenues were based upon historical analysis of the revenues generated by these sources as reported in the Annual Act 51 Reports. Private funds were projected based upon the assumption that all new subdivision streets during the reporting period would be funded by contractors and thus the total capital costs associated with subdivision streets were utilized as the total for this source of funds.

Table 2.4.2.5 summarizes the complete source of funds utilized for the development of the 1990 Plan. As this table shows, the 10.4 billion dollars projected to be available under study ground rules falls far short of Michigan's highway needs as reported in the 1972 National Transportation Study.

The next step in the projection of funds available for highway purposes consisted of the allocation of the total 10.4 billion dollars to the urban areas as required for study reporting purposes.

This process entailed considerable difficulty because of the inherent disparities between 1974 NTS reporting requirements and the legal basis in the State of Michigan for the allocation and distribution of these funds. Initial attempts were made during the course of this study to determine if there could be a sound basis for the distribution of these funds based upon either adjusted needs or upon a refinement of the present program, budgeting and evaluation system for the State of Michigan. It was determined during the course of the study that although potentially desirable any allocation scheme other than those provided under current public laws of the State of Michigan would not represent a realistic basis for the development of the 1990 Plan.

The first step in the allocation process to the urban areas, small urban aggregates and the rest of state was the distribution of General Transportation Fund revenue projections to the county road commissions and cities and villages based upon current allocation formulae. After these allocations were made, it was necessary to perform a detailed analysis of the entire State to determine the portion of the funds which had been allocated to each of the hundreds of county road commissions and cities and villages which would be available for use within the urban areas defined by the 1990 urban area boundaries as required by DOT study reporting requirements.

The next step consisted of a detailed review of State Trunkline Fund expenditures and the allocation of the State Trunkline Funds over the eighteen year period to individual urbanized areas and to the rest of state. This was done based upon an examination of the major State Trunkline projects to be completed during the study time period.

The final step in the allocation process consisted of the allocation of these projected funds by functional classification.

This allocation process entailed considerable uncertainty for two primary reasons. First of all, the DOT 1974 NTS requirements provided that the 1990 Plan be developed prior to the 1980 Program. Current state highway planning was available in considerable detail, with respect to principal projects to be performed during the 1972-1990 time period for each of the three highway program jurisdictions in most urban areas and for the rest of state. However, because of the literally thousands of highway construction projects to be undertaken in the short range program, it was not possible to make a project by project evaluation for the 1990 Plan development. Thus, the allocation of non-Interstate funds between geographic areas for the 1990 Plan was developed on an historical basis.

Table 2.4.2.6 shows the resulting distribution of the 10.4 billion dollars available for highway capital costs between urban areas by functional classification. These allocations were utilized as the basis for the development of the 1990 highway Plan.

### 2.4.2.2 1990 Highway Needs

The 1990 Needs for highways, as developed for the 1972 National Transportation Study, are believed by the State of Michigan to form the only realistic basis for the evaluation of the 1990 Plan from the standpoint of existing State transportation planning goals and policies.

The 1990 Highway Needs were developed based upon the 1972 Study results at the most highly aggregated level by a three step process. The first portion of this consisted of obtaining computer printouts of the 1990 Needs by urban area and by functional classification. This included the development of cost, physical state, and performance data. The second step of the process consisted

TABLE 2.4.2.6

DISTRIBUTION OF FUNDS

1990 PLAN

(thousands of dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 30,433 | 74,999 | 8,241 | 1,545 | 115,218 | 35,349 | 150,567 |
| Bay City | 8,322 | 31,964 | 9,062 | 2,012 | 51,360 | 13,531 | 64,891 |
| Detroit | 768,692 | 1,730,630 | 288,679 | 63,852 | 2,851,853 | 890,635 | 3,742,488 |
| Flint | 102,866 | 149,725 | 28,450 | 4,417 | 285,458 | 120,887 | 406,345 |
| Grand Rapids | 32,369 | 121,923 | 72,371 | 20,432 | 247,095 | 102,987 | 350,082 |
| Jackson | 8,210 | 29,305 | 10,957 | 4,383 | 52,855 | 17,996 | 70,851 |
| Kalamazoo | 15,150 | 71,470 | 13,820 | 4,605 | 105,045 | 34,899 | 139,944 |
| Lansing | 19,576 | 112,607 | 27,774 | 5,757 | 165,714 | 74,817 | 240,531 |
| Muskegon | 2,301 | 46,426 | 18,250 | 5,493 | 72,470 | 37,113 | 109,583 |
| Saginaw | 53,215 | 25,339 | 10,202 | 3,279 | 92,035 | 50,892 | 142,927 |
| South Bend | | 17,863 | 940 | 582 | 19,385 | 19,186 | 38,571 |
| Toledo | | 6,976 | 10,369 | 2,571 | 19,916 | 8,948 | 28,864 |
| Sub Total | 1,041,134 | 2,419,227 | 499,115 | 118,928 | 4,078,404 | 1,407,240 | 5,485,644 |
| Small Urban A | 35,560 | 180,758 | 26,308 | 26,305 | 268,931 | 116,948 | 385,879 |
| Small Urban B | 45,932 | 128,116 | 40,222 | 8,937 | 223,207 | 106,767 | 329,974 |
| Rest of State | 424,432 | 1,359,108 | 676,481 | 583,888 | 3,043,909 | 1,155,825 | 4,199,734 |
| Total | 1,547,058 | 4,087,209 | 1,242,126 | 738,058 | 7,614,451 | 2,786,780 | 10,401,231 |

of adjusting these needs to reflect projects reported in the Needs which had been completed since the 1972 Study. Table 2.4.2.7 shows the unadjusted 1990 Needs. The third step of the process consisted of adjusting these Needs, which had been reported in the 1969 base year dollars, for two factors. First of all, the 1969 base year dollars were converted to 1971 base year dollars required for 1974 NTS reporting purposes. Secondly, the capital costs of these Needs were adjusted per NTS assumptions with respect to anticipated changes in relevant construction cost and right-of-way acquisition cost indices.

Table 2.4.2.8 presents a state summary of the capital costs required to meet 1990 Needs after requisite adjustments have been made. This table shows the capital cost req-uirements on a geographic basis and on the basis of highway functional classification. For purposes of later comparisons, Table 2.4.2.9 presents these costs on the basis of expenditure category, and Table 2.4.2.10 shows these costs on a per capita basis.

Clearly, the 10.4 billion dollars in funding projected to be available during the reporting period is insufficient to meet the 43.7 billion dollars of highway Needs in Michigan in the 1972-1990 time period. The adjusted distribution of funds available for the 1990 Plan is shown in Table 2.4.2.11. Based upon this distribution of 1990 Plan funds, Table 2.4.2.12 shows a summary of the Needs which can be retired during the 1972-1990 time period utilizing the available funding. This table shows that only 8.2 billion dollars of the total 43.7 billion dollars of Needs can be retired utilizing available funding. The 8.1 billion dollars of Needs retired is less than the 10.4 billion dollars available for highway construction because of adjustments made in the Needs to reflect construction cost indice changes with respect to general inflation over this time period. Table 2.4.2.13 shows a summary of the percent needs retired over the time period. This table shows that, with the funding

TABLE 2.4.2.7

1990 NEEDS
1971 Dollars
(thousands of dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 30,657 | 256,896 | 58,525 | 15,230 | 361,308 | 150,732 | 512,040 |
| Bay City | 16,532 | 51,638 | 32,185 | 11,705 | 112,060 | 116,672 | 228,732 |
| Detroit | 891,954 | 5,258,573 | 1,829,983 | 747,467 | 8,727,977 | 2,977,007 | 11,704,984 |
| Flint | 140,084 | 551,585 | 209,938 | 45,621 | 947,228 | 410,259 | 1,357,487 |
| Grand Rapids | 31,452 | 154,739 | 155,882 | 46,287 | 388,360 | 358,563 | 746,923 |
| Jackson | 8,614 | 57,170 | 36,660 | 9,735 | 112,179 | 92,067 | 204,246 |
| Kalamazoo | 10,175 | 218,180 | 78,850 | 19,129 | 326,334 | 169,173 | 495,507 |
| Lansing | 31,856 | 237,334 | 110,475 | 23,833 | 403,498 | 205,809 | 609,307 |
| Muskegon | 2,938 | 68,414 | 44,311 | 16,799 | 132,462 | 147,937 | 380,399 |
| Saginaw | 70,281 | 126,149 | 49,200 | 15,586 | 261,216 | 137,462 | 398,678 |
| South Bend | | 33,808 | 3,217 | 3,713 | 40,738 | 25,572 | 66,310 |
| Toledo | | 11,195 | 24,428 | 13,225 | 48,848 | 50,312 | 99,160 |
| Sub-Total | 1,234,543 | 7,025,681 | 2,633,654 | 968,330 | 11,862,208 | 4,841,565 | 16,703,773 |
| Small Urban A | 41,568 | 394,933 | 83,361 | 114,013 | 633,875 | 804,475 | 1,438,350 |
| Small Urban B | 73,566 | 312,591 | 170,315 | 38,705 | 595,177 | 473,186 | 1,068,363 |
| Rest of State | 341,536 | 1,995,355 | 1,453,252 | 1,948,760 | 5,738,903 | 4,975,052 | 10,713,955 |
| Total | 1,691,213 | 9,728,560 | 4,340,582 | 3,069,808 | 18,830,163 | 11,094,278 | 29,924,441 |

TABLE 2.4.2.8

## 1990 NEEDS CAPITAL COSTS

Adjusted
(Thousands of Dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 40,498 | 377,943 | 91,967 | 23,687 | 534,095 | 186,160 | 720,255 |
| Bay City | 21,839 | 70,770 | 45,672 | 18,435 | 156,716 | 183,758 | 340,474 |
| Detroit | 1,088,943 | 7,498,298 | 2,775,189 | 1,175,184 | 12,537,614 | 4,688,786 | 17,226,400 |
| Flint | 170,684 | 792,937 | 323,450 | 71,682 | 1,358,753 | 646,158 | 2,004,911 |
| Grand Rapids | 39,117 | 209,337 | 244,953 | 70,869 | 564,276 | 564,737 | 1,129,013 |
| Jackson | 11,379 | 81,571 | 55,813 | 15,021 | 163,784 | 145,005 | 308,789 |
| Kalamazoo | 13,441 | 295,400 | 117,308 | 29,977 | 456,126 | 266,447 | 722,573 |
| Lansing | 42,082 | 329,593 | 167,454 | 37,267 | 576,396 | 324,149 | 900,545 |
| Muskegon | 3,881 | 96,639 | 69,454 | 26,357 | 196,331 | 233,001 | 429,332 |
| Saginaw | 86,253 | 172,424 | 76,093 | 24,429 | 359,199 | 216,502 | 575,701 |
| South Bend | | 48,323 | 4,695 | 5,848 | 58,866 | 40,276 | 99,142 |
| Toledo | | 17,056 | 38,474 | 20,829 | 76,359 | 79,242 | 155,601 |
| Small Urban A | 51,062 | 553,430 | 128,018 | 179,383 | 911,893 | 1,267,049 | 2,178,942 |
| Small Urban B | 95,274 | 437,044 | 265,709 | 60,570 | 858,597 | 745,268 | 1,603,865 |
| Rest of State | 425,097 | 2,539,248 | 1,862,964 | 2,601,264 | 7,428,573 | 7,835,707 | 15,264,280 |
| TOTALS | 2,089,550 | 13,520,013 | 6,267,213 | 4,360,802 | 26,237,578 | 17,422,245 | 43,659,823 |

TABLE 2.4.2.9

CAPITAL COSTS - 1990 NEEDS

(Thousands of dollars)

| | R.O.W. | CONSTR NEW LOCA | CONSTR & MODIF EXIST LOCA | OTHER CONTROL | OTHER COSTS | TOTAL CAPITAL COSTS |
|---|---|---|---|---|---|---|
| Ann Arbor | 248,704 | 74,929 | 296,542 | 14,405 | 100,080 | 734,660 |
| Bay City | 46,895 | 52,785 | 140,013 | 6,016 | 61,118 | 306,827 |
| Detroit | 5,141,924 | 3,258,781 | 5,590,816 | 324,287 | 2,222,825 | 16,538,633 |
| Flint | 585,953 | 338,268 | 704,842 | 37,309 | 236,378 | 1,902,750 |
| Grand Rapids | 77,329 | 105,901 | 680,497 | 20,142 | 143,390 | 1,027,259 |
| Jackson | 47,719 | 38,896 | 135,929 | 5,550 | 54,946 | 283,040 |
| Kalamazoo | 131,335 | 191,693 | 213,442 | 13,301 | 128,592 | 678,363 |
| Lansing | 167,443 | 170,622 | 361,145 | 16,612 | 131,368 | 847,190 |
| Muskegon | 56,954 | 48,576 | 212,793 | 7,581 | 60,717 | 386,621 |
| Saginaw | 95,915 | 122,795 | 231,165 | 10,579 | 79,095 | 539,549 |
| South Bend | 23,800 | 28,927 | 23,045 | 1,809 | 14,676 | 92,257 |
| Toledo | 4,826 | 4,221 | 100,269 | 2,770 | 29,181 | 141,267 |
| Small Urban A | 358,724 | 242,880 | 956,075 | 19,055 | 347,776 | 1,924,510 |
| Small Urban B | 257,691 | 191,684 | 771,829 | 14,430 | 221,798 | 1,457,432 |
| Rest of State | 1,145,015 | 4,275,862 | 6,600,281 | 67,327 | 1,444,329 | 13,532,814 |
| | 8,390,227 | 9,146,820 | 17,018,683 | 561,173 | 5,276,269 | 40,393,172 |

TABLE 2.4.2.10

CAPITAL COST PER CAPITA - 1990 NEEDS
(Thousands of dollars)

| | TOTAL CAP COSTS/ CAPITA | TOTAL CAP COSTS/ VMT | TOTAL CAP/COSTS PMT |
|---|---|---|---|
| Ann Arbor | 3,113 | 0.49 | 0.35 |
| Bay City | 2,950 | 0.59 | 0.35 |
| Detroit | 3,051 | 0.46 | 0.33 |
| Flint | 3,447 | 0.53 | 0.35 |
| Grand Rapids | 2,122 | 0.40 | 0.27 |
| Jackson | 2,748 | 0.41 | 0.27 |
| Kalamazoo | 3,443 | 0.51 | 0.42 |
| Lansing | 2,575 | 0.37 | 0.26 |
| Muskegon | 2,762 | 0.43 | 0.28 |
| Saginaw | 2,916 | 0.50 | 0.33 |
| South Bend | 2,428 | 0.63 | 0.39 |
| Toledo | 3,139 | 0.88 | 0.49 |
| Small Urban A | 3,525 | 0.94 | 0.55 |
| Small Urban B | 3,260 | 0.57 | 0.34 |
| Rest of State | 8,453 | 0.39 | 0.18 |

TABLE 2.4.2.11

ADJUSTED DISTRIBUTION OF FUNDS
(Thousands of dollars)
1990 PLAN

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 30,433 | 74,999 | 8,241 | 1,545 | 115,218 | 35,349 | 150,567 |
| Bay City | 8,322 | 31,964 | 9,062 | 2,012 | 51,360 | 13,531 | 64,891 |
| Detroit | 843,391 | 1,730,630 | 288,679 | 63,852 | 2,926,552 | 890,635 | 3,817,187 |
| Flint | 142,112 | 149,725 | 28,450 | 4,417 | 324,704 | 120,887 | 445,591 |
| Grand Rapids | 32,369 | 121,923 | 72,371 | 20,432 | 247,095 | 102,987 | 350,082 |
| Jackson | 8,210 | 29,305 | 10,957 | 4,383 | 52,855 | 17,996 | 70,851 |
| Kalamazoo | 13,441 | 71,470 | 13,820 | 4,605 | 103,336 | 34,899 | 138,235 |
| Lansing | 19,576 | 112,607 | 27,774 | 5,757 | 165,714 | 74,817 | 240,531 |
| Muskegon | 2,301 | 46,426 | 18,250 | 5,493 | 72,470 | 37,113 | 109,583 |
| Saginaw | 53,215 | 25,339 | 10,202 | 3,279 | 92,035 | 50,892 | 142,927 |
| South Bend | | 17,863 | 940 | 582 | 19,385 | 19,186 | 38,571 |
| Toledo | | 6,976 | 10,369 | 2,571 | 19,916 | 8,948 | 28,864 |
| Small Urban A | 35,560 | 180,758 | 26,308 | 26,305 | 268,931 | 116,948 | 385,879 |
| Small Urban B | 45,932 | 128,116 | 40,222 | 8,937 | 223,207 | 106,767 | 329,974 |
| Rest of State | 312,196 | 1,359,108 | 676,481 | 583,888 | 2,931,673 | 1,155,825 | 4,087,498 |
| TOTALS | 1,547,058 | 4,087,209 | 1,242,126 | 738,058 | 7,614,451 | 2,786,780 | 10,401,231 |

TA 2.4 2

SUMMARY OF NEEDS RETIRED

1990 PLAN

(thousands of dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 23,038 | 53,809 | 6,745 | 1,224 | 84,816 | 26,999 | 111,815 |
| Bay City | 6,299 | 24,456 | 6,975 | 1,660 | 39,390 | 10,319 | 49,709 |
| Detroit | 630,641 | 1,272,597 | 224,797 | 52,501 | 2,180,536 | 681,394 | 2,861,930 |
| Flint | 84,527 | 109,564 | 22,587 | 3,626 | 220,304 | 92,485 | 312,789 |
| Grand Rapids | 26,128 | 100,694 | 59,561 | 16,496 | 202,879 | 78,821 | 281,700 |
| Jackson | 6,215 | 22,070 | 8,732 | 3,541 | 40,558 | 13,700 | 54,258 |
| Kalamazoo | 11,469 | 54,420 | 11,019 | 3,785 | 80,693 | 26,663 | 107,356 |
| Lansing | 14,819 | 85,833 | 22,049 | 4,712 | 127,413 | 57,271 | 184,684 |
| Muskegon | 1,742 | 34,840 | 14,956 | 4,507 | 56,045 | 28,395 | 84,440 |
| Saginaw | 43,517 | 19,550 | 8,292 | 2,695 | 74,054 | 38,930 | 112,984 |
| South Bend | | 13,346 | 711 | 479 | 14,536 | 15,184 | 29,720 |
| Toledo | | 5,812 | 8,548 | 2,120 | 16,480 | 6,843 | 23,323 |
| Small Urban A | 29,018 | 135,171 | 21,018 | 21,657 | 206,864 | 89,253 | 296,117 |
| Small Urban B | 35,530 | 96,466 | 32,758 | 7,307 | 172,061 | 81,606 | 253,667 |
| Rest of State | 342,785 | 1,074,286 | 533,396 | 464,091 | 2,414,558 | 924,776 | 3,339,334 |
| Total | 1,255,728 | 3,102,914 | 982,144 | 590,401 | 5,931,187 | 2,172,639 | 8,103,826 |

TABLE 2.4.2.13

SUMMARY OF NEEDS RETIRED

1990 PLAN

(%)

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 75.15 | 20.95 | 11.52 | 8.04 | 23.47 | 17.90 | 21.83 |
| Bay City | 38.10 | 47.36 | 21.67 | 14.18 | 35.15 | 8.84 | 21.73 |
| Detroit | 70.70 | 24.20 | 12.28 | 7.02 | 24.98 | 22.88 | 24.45 |
| Flint | 60.34 | 19.86 | 10.76 | 8.08 | 23.26 | 22.54 | 23.04 |
| Grand Rapids | 83.07 | 65.07 | 38.21 | 35.64 | 52.24 | 21.98 | 37.71 |
| Jackson | 72.15 | 38.60 | 23.82 | 36.37 | 36.15 | 14.88 | 26.56 |
| Kalamazoo | 112.72 | 24.94 | 13.97 | 19.79 | 24.73 | 15.76 | 21.66 |
| Lansing | 46.52 | 36.17 | 19.96 | 19.77 | 31.58 | 27.82 | 30.31 |
| Muskegon | 59.29 | 50.40 | 33.75 | 26.83 | 42.31 | 19.19 | 30.11 |
| Saginaw | 61.92 | 15.50 | 16.85 | 17.29 | 28.35 | 28.32 | 28.33 |
| South Bend | --- | 39.48 | 22.10 | 12.90 | 35.68 | 59.37 | 44.81 |
| Toledo | --- | 51.92 | 34.99 | 16.03 | 33.74 | 13.60 | 23.52 |
| Small Urban A | 69.81 | 34.23 | 25.21 | 19.00 | 32.63 | 11.09 | 20.58 |
| Small Urban B | 48.30 | 30.86 | 19.23 | 18.88 | 28.91 | 17.24 | 23.74 |
| Rest of State | 100.37 | 53.84 | 36.70 | 23.81 | 42.07 | 18.58 | 31.16 |
| TOTAL | 74.25 | 31.89 | 22.62 | 19.23 | 31.49 | 19.58 | 27.08 |

constraints assumed for the 1990 Plan, that only 27% of Michigan's highway Needs can be met. As this table shows, the percent of needs met for the lower functional classifications for most geographic areas is considerably smaller. For example, local roads would have only 19.6% of the needs met. As was previously mentioned, it was assumed that 100% of the local roads new construction costs would be met by private funding sources, however, the very small amount of funds available for widening, resurfacing and reconstruction required during the time period led to the small total percent of needs met. It will be noticed in this table that two of the geographic areas show needs met of somewhat over 100%. This apparent anomaly is due to the fact that this table reflects the preliminary allocation of funds presented in the preceding tables, and does not reflect minor adjustments which were made in succeeding steps of the Plan development as will be discussed in the succeeding section.

2.4.2.3 1990 Plan Development Summary - Highways

In order to finalize development of the 1990 Plan, it was thus necessary to constrain highway needs by available funds, in order that physical state data and performance measures reported for the 1990 Plan for the 1974 NTS correspond to those which would be realized via the expenditure of available funding rather than the funding levels which would be necessary to achieve 1990 Needs as reported in the 1972 NTNS.

The starting point for this analysis was, because of time and resource limitations, the 1990 Needs. The first step was the determination of 1990 needs, by improvement type and by 1990 functional classification, for each urban area, small urban aggregates, and the rest of state. The major improvement types considered were: 1) new location construction and right-of-way, 2) major widening, 3) minor widening, 4) resurfacing with shoulder, 5) resurfacing, 6) structures, and 7) reconstruction. For each cell in this matrix, needs costs estimates were adjusted to account for increases in the FHWA construction cost index and historical increases in right-of-way acquisition costs in order to update the status as of January 1, 1972. Adjustments were also made to reflect project completion up to this point.

After these needs had been updated, percent needs represented by each improvement type for each functional classification for each urban area were determined. Based upon this distribution of reported needs, funds were allocated by improvement type, in accordance with its relationship to other needs by improvement type, and final funding allocations by functional classification thus developed.

The 1974 NTS requires that construction costs reported reflect the effects of differential changes between consumer price index increases

and construction and right-of-way cost increases. Data furnished by DOT for study purposes indicated that this rate was 2% per year increase for construction related expenditures. Data developed from Michigan right-of-way acquisition cost data indicated that right-of-way costs have increased historically at a rate of 7% per year, or for projection purposes, a 4.6% per year increase relative to study general inflation assumptions.

The inclusion of these cost adjustment factors necessarily requires that some assumptions be made with respect to project implementation schedules for each improvement. Clearly study time and resource limitations did not permit an assessment of each improvement on a project by project basis, and the subsequent scheduling of each project. In light of this, it seemed that the most reasonable approach available was to segment the eighteen year study span and develop several spending profiles which would be reflective of improvement spending profiles during each segment. These profiles thus developed inherently assume equal rates of activity completion, e.g. equal number of miles of new construction annually for a given improvement type/functional classification combination. The three segments selected are for 1972-1981, 1981-1990 and 1972-1990 time periods. Principal project activities were allocated to the appropriate study segment. For example, all interstate new construction was assumed to occur during the first segment. The assumption of equal annual levels of project activity results in a non-linear pattern of annual expenditures, thus compensating for the increasing receipt of funds from Federal, Motor Vehicle Highway Fund, and local sources.

The resulting construction profiles were used to adjust expenditures based upon funding allocations by improvement type and functional classification. These adjustments have the net effect of reducing allocated funds

to 1971 dollars and 1971 construction cost index values. Thus they are directly comparable with the 1971 dollar stated needs, since they reflect project costs which would have been incurred were the project completed in 1971.

Percent needs met were again recomputed in a manner which reflects the true percentage of stated needs which are met by projected funding availability in the 1972-1990 time period.

Adjustments to physical state data have been made on the basis of the percentage of change between the needs and the 1972 Inventory which can be met by available funding, and thus all 1990 Plan inputs reflect the status of the Michigan highway system which would result from expenditure of projected funds as stipulated by DOT study requirements.

## PLAN REFINEMENT

The Plan developed in the first step of this process was reviewed with Transportation Planning Directors or their representatives for each of the urban areas. During this series of meetings several anomalies were noted and subsequently used as a basis for refinement of the Plan.

Funding was reallocated, primarily within a given urban area, in order to reflect two key considerations. First of all, funds were reallocated in order to insure the completion of Michigan's portion of the Interstate system. Secondly, from the meetings with the urban areas, it was observed that the reduced levels of funding available would require considerably more resources for projects of a "stop-gap" nature, primarily resurfacing. Funds were thus reallocated, primarily from reconstruction, to cover the cost of requisite measures of this type. The first step in the reallocation of funds for the Interstate system was a calculation of Interstate new construction completion costs based upon study assumptions regarding relative price changes in construction and right of way acquisition costs. If sufficient funds for Interstate had already been allocated to a given urban area and the new location allocation was not sufficient, funds were taken from other Interstate improvement types and allocated to new location. If this was still not sufficient to ensure Interstate completion, the required difference was reallocated from other urban or rural areas out of funds allocated for non-new location Interstate projects.

Thus the reallocation of funds for resurfacing activities allowed for meeting an even lower percentage of construction needs which would be necessary to adding both mileage and capacity to the system. It was therefore necessary to make adjustments in the majority of the physical state and design type information by functional classification for each of the urban areas as well as the calculation of resulting changes in performance measures and capital costs.

The starting point for the determination of the physical state which would be realized in the 1990 Plan was the determination of total mileages by 1990 functional classification, and by 1990 design type for non-local classifications. The basis of the procedure used for these adjustments was first of all a calculation of construction costs on a per mile basis, and secondly, information available on the needs printout by improvement type. The needs printout for new location was assumed to have two principal components: (1) the needs required for new location which would add mileage to the system, and (2) the needs for major construction projects of a relocation nature which would not add mileage to the system. Based upon the reallocation of funds to the new location improvement type by functional classification, the number of miles which could be added to the system based on the needs per mile cost, as adjusted for differential price changes, was computed. If the resulting new mileage was greater than the new mileage reflected in the difference between the 1972 Inventory and the 1990 Needs, only that portion of the mileage reported for the Needs was added to the system. The remaining funds were assumed to be relocation improvements which would add capacity and design type upgrades without new mileage.

The next step in the adjustment of the physical state was the adjustment of capacity miles for Interstate, principal arterials and minor arterials. There are four basic improvement types which added capacity for the Needs. These are new location, relocation, major widening and reconstruction. Based upon the funding reallocation and the assumption that equal construction dollars for each improvement type will add equal capacity, the capacity miles were recomputed. Capacity miles added by 1990 for the Needs were determined by taking the capacity miles for the Needs and subtracting Inventory capacity miles for each of these functional classifications. The capacity miles which could be added with available funds were determined by factoring these capacity miles by the percent of needs met for each improvement type which adds capacity. Capacity mile increases due to new location construction were determined separately based on standard capacity mile per mile ratios and added to capacity mile additions from major widening, etc.

The next adjustment to be made in the physical state was the determination of annual vehicle hours to be reported for the 1990 Plan. The starting point for this analysis was the determination of average speed and volume capacity relationships for each functional classification. Average speed, by functional classification, was determined for the Inventory and for the Needs by dividing annual vehicle miles by annual vehicle hours reported. In addition, volume capacity ratio estimates were derived for (a) the Inventory, (b) the Needs, (c) an assumption of no capacity improvement, and (d) the 1990 Plan. These ratios were obtained by dividing annual vehicle miles by capacity miles. While this ratio does not represent the actual volume capacity ratio since it

is not based on one way peak hour estimates of vehicle miles and directional splits, it is nevertheless indicative of relative percentage changes in the volume capacity ratio based upon a constant relationship between the percentage of annual vehicle miles and peak hour one way vehicle miles.

It was assumed that vehicle mile assignments by functional classification (but not by design type) would remain valid for both the Needs and the 1990 Plan since vehicle mile estimates were presumably based upon an assignment of projected 1990 trips in each urban area and the resulting assignment of these trips to a highway network which was substantially the same in terms of location for both the Needs and the Plan.

A comparison of the volume capacity estimates was made and resulting average speeds by functional classification was determined. For example, if the volume capacity estimate for the Plan was substantially the same as that for the Needs, the average speed as determined from the Needs was used for the Plan. If the volume capacity relationship for the Plan was closer to that reported in the Inventory, the average speed as determined from the Inventory was used for the Plan. If the volume capacity estimate for the Plan approached the serious degradation represented by no capacity improvements by 1990 (i.e. 1990 projected vehicle miles/1972 capacity), a downward adjustment in the average speed was made for the given functional classification. Volume capacity estimates could not be made for collectors and local roads with information available in the Plan and the Needs. Since the majority of all new local road mileage was assumed to be completed by 1990 amd there was very little capacity related improvement reported in the Needs for local roads, average local road speeds remained constant from the Needs to the Plan.

Average speed for collectors for the 1990 Plan were based upon a comparison of average speeds in the Inventory and in the Needs vis a vis average percent completion of collector Needs which were related to capacity improvements for this functional classification.

After the determination of average speeds by functional classification for the 1990 Plan, vehicle hours for the plan were calculated by dividing the annual vehicle miles by the adjusted average speed for each functional classification.

The next step in the refinement of the 1990 Plan was to make all requisite changes necessary for reporting mileage, vehicle miles, vehicle hours and capacity miles by 1990 design type for non-local functional classifications. The starting point for this analysis was the reporting by design type for the 1972 Inventory. New mileages added by functional classification in the Plan as previously determined were assigned to the appropriate 1990 design type. It was assumed that, if possible, all freeway mileage would be completed. Thus, all Interstate new location was assigned to freeways and remaining freeway mileage obtained from principal arterials. The remaining new location arterials were assigned to the four or more lane category. Collectors were assigned to the less than four lane category. In addition to design type changes resulting from new construction, it was recognized that many of the projects reported in the Needs were oriented toward upgrading existing principal and minor arterials from less than four lanes to four or more lanes. The starting point for the determination of these upgraded mileages was the printout of Needs by improvement type. From this printout it was possible to determine upgrading reflected in the Needs by design type for reconstruction,

major widening and relocation improvements. The number of miles to be upgraded to four or more lanes from relocation projects, if any, was calculated by using average per mile costs reported in the Needs and assigning the remainder of new location funds after all new location was completed to retiring relocation Needs. The number of miles to be upgraded in major widening and reconstruction projects for principal and minor arterials was determined from the number of miles of upgrading represented in the Needs factored by the needs which could be met with the allocation of available funding for these functional classifications and improvement types. The 1990 Plan mileage by design type was then computed by taking the net additions since 1972 for freeways and other four or more lane roads and subtracting from the less than four lane category upgraded mileage.

Vehicle mile assignments by 1990 design type were determined by factoring 1990 vehicle mile projections by the ratio of 1990 Plan to 1990 Needs mileages. Vehicle hours by design type for the Plan were determined by assigning all Interstate vehicle hours to freeways and by determining the number of other principal arterial vehicle hours assignable to freeways. Vehicle hours for other four or more lanes roads were determined by dividing the number of vehicle miles assigned to this design type by the average speed for other principal arterials which was determined in a manner previously discussed. Remaining vehicle hours for non-local functional classifications were assigned to the less than four lane category. Freeway capacity miles were determined by adding Interstate capacity miles for the Plan to the number of capacity miles of other principal arterials included in the freeway category. It was assumed that all principal

arterial capacity improvements were made with freeway capacity improvements receiving the highest priority. Thus, in most cases where 1990 Needs freeway mileage could be completed with available funding, the funding was also sufficient to cover capacity additions on other principal arterial freeways. Therefore, the majority of capacity miles which could not be added in the 1990 Plan were due to unavailability of funding for projects such as Interstate major widening.

1990 Plan Performance Measures

The adjustments in the physical state data to be reported for the 1990 Plan required that the many of the performance measures (Items 7-20) be recalculated to reflect the Plan physical state rather than the 1990 Needs. It was assumed that the changes for the Plan would not result in any changes in car occupancy factors, average trip lengths, or passenger trips since these were based upon O-D trip assignments and other studies performed for each urbanized area and the rest of the state.

Items which were recomputed for the Plan include freeway capacity miles per capita, freeway capacity miles per square mile, freeway vehicle miles per capita, vehicle miles/vehicle hours and percent arterial vehicle miles on freeways. Each of these items was recomputed per DOT instructions contained in Manual II. It was also necessary to recompute freeway vehicle miles/freeway capacity miles for each of the urban areas and for the rest of state. This was done by assuming that there would be no change between the peak hour one way vehicle miles and total annual vehicle miles between the Needs and the Plan. The computational procedure was as follows:

Let:

$V/C_n$ = freeway volume capacity ratio determined for Needs

$V/C_p$ = freeway volume capacity ratio for Plan

R = peak hour one way freeway vehicle miles/average annual vehicle miles for Needs

$CM_n$ = Needs capacity miles

$VM_n$ = Needs freeway annual vehicle miles

$CM_p$ = Plan freeway capacity miles

$VM_p$ = Plan freeway annual vehicle miles

Then:

$$R = V/C_n \ (CM_n / VM_n)$$

and thus:

$$V/C_p = R \ (VM_p / CM_p)$$

$$= V/C_n \ (CM_n / VM_n) \ (VM_p / CM_p)$$

The resulting 1990 Plan volume capacity ratios for the urban areas in many cases shows a serious degradation of highway system performance occurring between 1972 and 1990. This is due predominantly, of course, to the lack of capability to fund projects which would add needed capacity to the arterial functional classification.

Because of the increased congestion resulting from the 1990 Plan, it was assumed that annual injury and fatality rates per 100 million vehicle miles would be increased by 5% over the rates projected for the 1990 Needs. Because of the nature of the 1974 NTS reporting requirements for pollutants (CO, $NO_X$, HC), it was decided that the primary parameters for pollutant calculations were vehicle age distributions and other factors related to annual vehicle miles. Effects due to slight variations in average vehicle speed would not significantly affect pollutant calculations. Hence, pollutants reported for the 1990 Needs as developed by procedures documented elsewhere, were used for the Plan.

Capital Costs

Capital costs were reported as a total for each of the five functional classifications. These capital costs are exactly equal to the funding allocation by functional classification, since it is assumed that each dollar allocated will be spent. Federal aid eligible costs for the Plan were assumed to be all costs for non-local functional classifications which would be incurred for all improvements except resurfacing. It is to be noted that this NTS data item does not represent Federal Aid which would be received but rather the total of all projects whose costs would be eligible for some form of Federal Aid.

In addition, capital costs were to be reported for the total capital costs over all functional classifications broken into five categories: right of way, new location construction, existing location construction modification, and other existing location capital costs. In addition, traffic control capital costs were to be reported separately, however, data on traffic control costs for non-local functional classifications was not available. Right of way capital costs were developed as previously discussed, taking into account relative changes between right of way acquisition costs and the consumer price index. New location construction costs were obtained from previously described funding allocations to new location construction less right of way acquisition costs. Existing location improvements were split between construction and modification and other costs in the same manner that these costs were distributed for the 1990 Needs.

Maintenance and administrative costs were developed for non-local functional classifications on a per mile cost basis for the 1990 Needs. These costs were adjusted to account for three factors. First of all, they were adjusted to account for the increase in maintenance costs in 1971 dollars from the 1969 dollar figure developed for the Needs. Secondly, they were adjusted for differential increases in maintenance costs of 0.9% per year as described in Manual II. Thirdly, they were adjusted for Needs mileages which could not be funded under the 1990 Plan. Local road maintenance costs were developed based upon 1971 per mile local road maintenance expenditures as reported in the annual report. These per mile costs were then extended to a total by using the 1990 Plan local road mileages. The resulting total local road maintenance and administrative

costs were then adjusted for differential maintenance cost/CPI changes for the year 1989. For each urban area local and non-local functional classification maintenance and administrative costs were added. As described in a previous section, it was recognized that the reduced funding available for the 1990 Plan would result in increases in required maintenance activity. Consistent with the assumption used in the projection of funds available for capital costs from state and local sources, resulting maintenance and administrative costs were increased by 10% for each urban area. The state total for maintenance and administration costs for all functional classifications amounted to approximately 1/16 of the total projected state funds for 1972 to 1990 available for covering administrative and maintenance costs. With the assumed year by year profile of gas tax revenues, this amount is almost exactly the projected figure for 1989, and thus the reasonableness of 1989 maintenance and administration costs for highways is totally consistent with 1990 Plan funding projections. Capital cost ratios (Items 40-42) were computed per Manual II instructions.

Appendix S shows the detailed set of calculations utilized in the development of the 1990 Plan for each of the individual urban areas, small urban aggregates and rest of state.

## 2-4.2.4 1990 Highway Plan Cost, Physical State and Performance

Table 2-4.2.14 shows the mileages which would be added to Michigan's highway system with implementation of the 1990 Plan and a comparison of these new mileages in terms of the percentage increase in mileage and in terms of a comparison with the 1990 Needs. As this table shows, the reduced funding available for highway construction during the period results in a considerable short-fall with respect to needed new mileage for arterials and collectors.

Table 2-4.2.15 shows capacity miles which would be added to the State's highway system for the arterial functional classifications upon implementation of the 1990 Plan. This table depicts these increases in capacity miles resulting from Plan implementation for both urban areas and for the rest of state. While these percentage increases would appear to be fairly substantial during the time period, they fall far short of projected percentage increases in vehicle miles for 1990 as shown in Table 2-4.2.16.

Table 2-4.2.16 summarizes projected 1990 vehicle miles for each functional classification and shows the distribution of these projected increases between urban areas and the rest of state. Comparisons between this table and the preceding table highlight the possibility of reduced system performance in 1990 under the funding constraints imposed on the development of the 1990 Plan. Thus for example, in urban areas, Interstate volume is projected to increase by 126%, while the capacity for the Interstate system would be increased only approximately 30% under the 1990 Plan. Another area of potentially great short-fall with respect to capacity could be on principal arterials utilized for intercity traffic. For this functional classification, funding available permitted only a 46% increase in capacity, while extremely large increases are anticipated in traffic volumes on these roads. It is to be noted here that the capacity mile projections shown in Table 2-4.2.15 includes capacity to be added to the system through new highway construction during the period.

TABLE 2.4.2.14

INCREASES IN TOTAL MILES
1990 PLAN

| | 1990 Plan | | 1990 Needs. |
|---|---|---|---|
| | New Miles | % Increase | New Miles |
| Interstate | 182 | 18.4 | 182 |
| Principal Arterial | 922 | 27.1 | 1,451 |
| Minor Arterial | 434 | 5.8 | 450 |
| Collectors | 157 | 1.0 | 242 |
| Local | 10,273 | 13.5 | 10,273 |

TABLE 2.4.1.15

1990 CAPACITY MILES

(thousands)

| Functional Classification | Urban | | | Rural | | |
|---|---|---|---|---|---|---|
| | 1990 Capacity Miles | Increase from 1972 | % Increase | 1990 Capacity Miles | Increase from 1972 | % Increase |
| Interstate | 1962.1 | 449.1 | 29.7 | 2601.4 | 389.4 | 17.6 |
| Principal Arterial | 3556.6 | 599.6 | 20.3 | 5939.9 | 1860.9 | 45.6 |
| Minor Arterial | 2717.3 | 436.3 | 19.1 | 4079.7 | 723.7 | 21.6 |

TABLE 2.4.2.16

1990 VEHICLE MILES

(100 millions)

| Functional Classification | URBAN | | | RURAL | | |
|---|---|---|---|---|---|---|
| | 1990 Vehicle Miles | Increase from 1972 | % Increase | 1990 Vehicle Miles | Increase from 1972 | % Increase |
| Interstate | 110.6 | 61.7 | 126.2 | 55.3 | 27.5 | 98.9 |
| Principal Arterial | 234.3 | 86.4 | 58.4 | 80.8 | 59.2 | 274.1 |
| Minor Arterial | 116.0 | 29.7 | 34.4 | 74.6 | 29.4 | 65.0 |
| Collectors | 40.5 | 8.9 | 28.2 | 93.2 | 21.9 | 30.7 |
| Local | 48.9 | 10.2 | 26.4 | 46.6 | 9.7 | 26.3 |

Table 2.4.2.17 summarizes highway related pollutants developed for the 1990 Plan. These pollutant levels are considerably reduced in all respects from those levels of the 1972 Inventory. These effects are primarily due to anticipated decreases in vehicle exhaust emissions on a vehicle mile basis for later model year cars and trucks.

Table 2.4.2.18 summarizes anticipated highway related fatalities and injuries for the 1990 Plan. Increases are noted in total fatalities and injuries, due primarily to projected increases in total annual vehicle miles for the State's highway system. Reduction in per vehicle mile statistics are noted due to anticipated safety features of newer model cars and benefits of State highway safety programs.

Total annual costs for the 1990 Plan for maintenance and operation of the State Highway System during calendar year 1989 were 486 million dollars. Table 2.4.2.19 shows the total capital costs on a per capita, per vehicle mile, and per passenger mile basis for each geographic area in the State, as well as an annualized value for these per capita capital costs.

TABLE 2.4.2.17

SUMMARY OF HIGHWAY RELATED POLLUTANTS

1990 PLAN

| | Pounds (millions) | Pounds/ VMT | Pounds/ PMT | Pounds/ Capita |
|---|---|---|---|---|
| Oxides of Nitrogen | 517 | .0057 | .0040 | 49.7 |
| Hydrocarbons | 166 | .0018 | .0012 | 16.0 |
| Carbon Monoxide | 933 | .0104 | .0070 | 89.7 |

TABLE 2.4.2.18

SUMMARY OF HIGHWAY RELATED FATALITIES & INJURIES

1990 PLAN

| | Urban | Rural |
|---|---|---|
| Fatalities - Total | 1,890 | 1,589 |
| - per 100M VMT | 3.43 | 4.53 |
| Injuries - Total | 118,881 | 92,513 |
| - per 100M VMT | 216.02 | 263.95 |

TABLE 2.4.2. 19

CAPITAL COST PER CAPITA - 1990 PLAN

| | TOTAL CAP COST/ CAPITA (dollars) | TOTAL CAP COST/ VMT | TOTAL CAP COSTS/ PMT | ANNUALIZED COST/ CAPITA |
|---|---|---|---|---|
| Ann Arbor | 638.0 | 0.10 | 0.07 | 35.44 |
| Bay City | 623.9 | 0.12 | 0.07 | 34.66 |
| Detroit | 704.3 | 0.11 | 0.08 | 39.13 |
| Flint | 807.2 | 0.12 | 0.08 | 44.84 |
| Grand Rapids | 723.3 | 0.14 | 0.09 | 40.18 |
| Jackson | 687.9 | 0.10 | 0.07 | 38.22 |
| Kalamazoo | 701.7 | 0.10 | 0.09 | 38.98 |
| Lansing | 731.1 | 0.11 | 0.08 | 40.62 |
| Muskegon | 782.8 | 0.12 | 0.08 | 43.49 |
| Saginaw | 772.6 | 0.13 | 0.09 | 42.92 |
| South Bend | 1,015.0 | 0.26 | 0.16 | 56.39 |
| Toledo | 641.4 | 0.18 | 0.12 | 35.63 |
| Small Urban A | 691.5 | 0.19 | 0.11 | 38.42 |
| Small Urban B | 722.0 | 0.13 | 0.08 | 40.11 |
| Rest of State | 2,553.09 | 0.12 | 0.06 | 141.84 |

## 2-4.3 URBAN PUBLIC TRANSPORTATION

This section describes the transit systems in the 10 major urban areas in Michigan and those portions of the State which are included in urban areas of other states, namely:

- o South Bend, Indiana
- o Toledo, Ohio

It is not possible to discuss this as a State Urban Transit System, but rather as a set of individual systems operating within the State. Thus, each urban area will be dealt with separately. Exhibit 2-4.3.1 presents those physical and performance measures of each urban area which best describe the system in operational terms.

- o Ann Arbor: Two kinds of service will be provided:
  - o Fixed Route - Fixed Schedule Express Service
  - o Demand Responsive Feeder and Local Service
    (see 2.4.5 for description)

The Express Service will have 25 medium sized buses on 250 route miles. About 90% of the population and 70% of the jobs will have access to the entire DAR-Line haul service. Line service will operate on 15-minute headways. The Dial-A-Ride buses will provide the collector-distributor service. Trip cost will be 25 cents, with free transfers between DAR and Line Service.

- o Bay City: The system will have 19 medium sized buses operating on 30 miles of street. During the peak, the buses will operate on 30-minute headways and provide access to about 90% of the jobs. About 3/4 of the population will have access to bus service.

- o Detroit: The 7,100 miles of bus routes will be augmented by 225 miles of rapid rail service. Between the bus and rail service, nearly the entire Detroit area will have good access to both jobs and residences;

both will be operating on short headways. The average fare will be about 30 cents for bus and about 45 cents for rail.

o Flint: Service will be provided to about 60% of the population and 2/3 of the jobs with 142 buses operating at about 17-minute headways. Street miles covered will be 260. Average fare will be 50 cents.

o Grand Rapids: In order to increase transit usage, 615 buses (40-passenger) will operate on 400 street miles and 1,000 route miles. Almost the entire population and job market will have access. The buses will operate on 5-minute headways. Fare will be 35 cents.

o Jackson: Transit rerouting will increase access for the population. Otherwise, the levels of service will be the same as 1972.

o Kalamazoo: The level of service will be increased to provide access to nearly 100% of the area. The service will include 122 large buses operating on about 120 street miles and 400 route miles with 20-minute headways. Average fare will be 25 cents.

o Lansing: Service will be provided by 173 buses on 465 miles of street and road. During peak hours, headways will be 10 minutes. About 80% of the population and jobs will have access. Fare will be 25 cents.

o Muskegon-Muskegon Heights: Service will be provided with 50 small (20-passenger) buses on about 40 miles of street. Access will be available to about 40% of the population and 85% of the jobs. The average fare will be 35 cents.

o Saginaw: The City will have 16 medium buses operating on 30 street miles serving about 90% of the population and 95% of the jobs at headway of about 20 minutes during the peak. Average fare will be 30 cents.

o South Bend: The Niles, Michigan, area will have 16 vehicles operating on 20 street miles providing service to almost the entire population and about 1/2 of the jobs. Average fare will be 35 cents.

o Toledo: The Toledo area, including those parts in Michigan, will have a dual mode transit system operating on fixed guideways and local streets. Length of the Michigan service will be 22 miles of route. Service will be provided by ninety, 40-passenger vehicles at 7-minute peak-hour headways. The average trip length will be about 15 miles at a 15 cents fare.

EXHIBIT 2-4.3.1

1990 PLAN - URBAN PUBLIC TRANSPORTATION - BUS TRANSIT

| AREA NAME | Miles of Route | Miles of Line | Vehicles | | | Annual Passenger Mile Per Seat Mile | Transit Accessibility % Within 1/4 Mile of Route | | Average Peak Hour Performance | | Average Fare Cents |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | Avg Age | Avg Seats | | Population | Employment | Operating Speed MPH | Headway MIN | |
| ANN ARBOR | 250 | 250 | 25 | 7 | 30 | 0.10 | 90 | 70 | 15 | 15.0 | 25 |
| BAY CITY | 72 | 30 | 14 | 10 | 28 | 0.16 | 75 | 90 | 15 | 30.0 | 55 |
| DETROIT | 7,105 | 3,400 | 3,000 | 6 | 46 | 0.20 | 89 | 94 | 15 | 10.3 | 28 |
| FLINT | 531 | 260 | 142 | 5 | 34 | 0.30 | 58 | 78 | 14 | 17.0 | 50 |
| GRAND RAPIDS | 1,020 | 400 | 615 | 8 | 40 | 0.05 | 90 | 95 | 15 | 5.0 | 35 |
| JACKSON | 36 | 18 | 12 | 7 | 33 | 0.13 | 75 | 75 | 12 | 30.0 | 30 |
| KALAMAZOO | 410 | 118 | 122 | 6 | 45 | 0.14 | 95 | 90 | 15 | 20.0 | 25 |
| LANSING | 930 | 465 | 173 | 7 | 39 | 0.34 | 80 | 80 | 12 | 10.0 | 25 |
| MUSKEGON Musk/Heights | 82 | 40 | 50 | 7 | 20 | 0.05 | 40 | 85 | 15 | 30.0 | 35 |
| SAGINAW | 120 | 30 | 16 | 4 | 31 | 0.33 | 87 | 95 | 15 | 20.0 | 30 |
| SOUTH BEND | 32 | 20 | 16 | 5 | 18 | 0.42 | 95 | 50 | 20 | 30.0 | 35 |
| TOLEDO | - | - | - | - | - | - | - | - | - | - | - |
| STATE TOTAL | 10,588 | 5,031 | 4,185 | 6 | 43 | 0.14 | 82 | 89 | 14 | 11.0 | 29 |

## 2-4.4 AIRPORTS

The projections of aviation activity and development criteria used in the 1990 Plan correspond with the Long Range development period in the Michigan Airport System Plan. As this Long Range period uses 1990 as a base, the data is homogeneous with requirements for the 1990 Plan. Exhibit 2-4.4.1 presents a tabulation of significant parameters with respect to the 1990 Airport Plan.

### Operations

In 1990, total aviation operations are projected to reach 12.7 million (Exhibit 2-6.3.1). This represents an increase of 148 percent as compared to recorded operations for the 1971 Inventory. General aviation accounts for 12 million or 94 percent of total operations and is an increase of 150 percent. Air carrier operations are projected to reach approximately .7 million in 1990, which is an increase of 107 percent over the Inventory data.

Examining state-wide distribution of operations, it is noted that over half the general aviation operation will originate from urban areas.

Additionally, the urban areas will generate 81 percent of total state air carrier operations. The projected operations for the Detroit area account for 58 percent of the total for the state and 72 percent of those originating in the urban areas.

### Enplaned Passengers

By 1990, enplaned passengers are projected to reach approximately 22.6 million, an increase of 255 percent (Exhibit 2-6.3.2). Of this total, air carrier enplanements will represent 67 percent equaling 15 million.

A review of the state-wide distribution of enplanements is as follows: the urban areas are projected to generate 14 million or 93 percent of air carrier enplanements. Detroit is projected to generate 12 million enplanements, which is 80 percent of the state total and 86 percent of the urban total. Although Small Urban areas and the Rest of State area represent a small portion of the total enplanements, an increase of 373 percent in air carrier enplanements is forecast.

Based Aircraft

The based aircraft in Michigan is projected to increase to 14,710 by 1990 (Exhibit 2-6.3.3). This is an increase of 139 percent when compared with data in the Inventory. Approximately 55 percent of the based aircraft will be in the urban areas. While the Detroit area will represent 28 percent of the state total and 51 percent of those in the urban areas.

Operating and Maintenance Costs

The large increase in operating and maintenance costs for 1990 is attributed to the same factor discussed in the 1980 Program.

Capital Costs

For the 1990 Airport Plan, projected development costs over the 18 year period is $522,169,000 in 1971 dollars. Total projected revenues for this period is $430,805,000, which is equivalent to 30.58 percent of the above projected costs.

Of the three (3) funding sources comprising the subject revenue (Federal, State and Local contributions), the Federal portion is $215,400,000 or half of the total projected revenues. On a yearly basis, this represents $12 million

EXHIBIT 2.4.4.1

1990 PLAN - AIRPORT SYSTEM

| | Number in SASP | | | A/C Enplanements Per Operation | G/A Operations Per Capita | Pollutants-Lbs. per A/C & G/A Operations | | | Percent of Population Within | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A/C | Rel | G/A | | | C/O | NO | HC | 30 Min Any A/P | 60 Min Any A/P | 30 Min Scheduled Service | 60 Min Scheduled Service |
| Ann Arbor | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Bay City | 0 | 1 | 0 | 0 | 1.02 | 6.0 | 0.1 | 0.1 | 0 | 0 | 0 | 0 |
| Detroit | 1 | 11 | 2 | 44 | 0.47 | 9.8 | 1.9 | 7.2 | 100 | 100 | 91 | 100 |
| Flint | 1 | 1 | 0 | 13 | 1.17 | 7.2 | 0.6 | 0.3 | 100 | 100 | 100 | 100 |
| Grand Rapids | 1 | 2 | 0 | 20 | 1.07 | 7.3 | 1.2 | 0.5 | 100 | 100 | 100 | 100 |
| Jackson | 1 | 0 | 0 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Kalamazoo | 1 | 2 | 0 | 15 | 2.46 | 6.4 | 0.5 | 0.3 | 0 | 0 | 0 | 0 |
| Lansing | 1 | 1 | 0 | 16 | 0.96 | 8.8 | 1.3 | 0.5 | 0 | 0 | 0 | 0 |
| Muskegon Muskegon/Heights | 1 | 0 | 0 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Saginaw | 1 | 1 | 0 | 17 | 1.63 | 7.7 | 1.5 | 0.6 | 0 | 0 | 0 | 0 |
| South Bend | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 100 | 100 | 100 | 100 |
| Toledo | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 100 | 100 | 100 | 100 |
| Subtotal | 8 | 19 | 5 | 36 | 0.68 | 8.7 | 1.4 | 4.1 | 100 | 100 | 92 | 100 |
| Small Urban A | 7 | 0 | 28 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Small Urban B | 2 | 1 | 2 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Rest of State | 2 | 1 | 103 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Total | 19 | 21 | 138 | 36 | 0.68 | 8.7 | 1.4 | 4.1 | 100 | 100 | 73 | 95 |

with exception of the 1972 allocation, included in this amount, which totaled $11.4 million. Total Federal funding is based on the level of appropriations Michigan has received over the past several years.

Discretionary funding has been an important source of additional revenue for Michigan Aviation. While a certain portion of the subject fund is allocated to each of the 50 states, many states fail to meet criteria distribution standards--that of programmed projects and matching state and local monies. In view of this, excess funds, so derived, become available for reallocation to states such as Michigan who meet the criteria of programmed development and available matching state and local funds. Based on past history, the Michigan Aeronautics Commission anticipates continued utilization of allocated discretionary funding, plus additional amounts from the fund over and above the allocation.

The revenues from the State of Michigan will be derived from a portion of the Aviation Fuel Tax. With projected increases in operations in the future, the revenues from this source will continue to increase and provide additional monies for development, therefore, reducing the burden on local governmental sources of revenue.

### 2-4.5 TERMINALS (Not Applicable)

2-4.6 OTHER TRANSPORTATION

o Ann Arbor Dial-A-Ride: This demand responsive service will act as a feeder to the proposed all express bus sytem. All other local service will be provided by this Dial-A-Ride. The system will consist of seventy-five, 10-passenger vans. Some estimate of service measures are:

| | | |
|---|---|---|
| Passenger Trips: | Average Weekday | 10,000 |
| | Annual | 3,000,000 |
| Passenger Miles: | Average Weekday | 40,000 |
| | Annual | 12,000,000 |

The average trip length is estimated to be 4 miles in 16 minutes. The fare will be 25 cents/trip.

o Bay City Special Transportation Service: Integrated into area transit system.

## 2-5 STATE TRANSPORTATION PROGRAM

### 2-5.1 EVALUATION OF THE 1980 HIGHWAY PROGRAM

The purpose of this section is to present an evaluation of the 1980 Highway Program for Michigan. The evaluation discussed in this section is based upon the 1980 Highway Program data forms prepared by the Michigan Department of State Highways and Transportation and the study consultant.

This section will present a summary of the approach used in the development of the 1980 Program, as well as present an evaluation of the Program from the standpoint of the 1980 highway Needs, capital costs, physical state of the system as of 1980, performance of the system, and other aspects of the highway system reported on the highway data forms.

Section 2.7.1 documents the analyses performed with respect to projection of available funding from Federal, State, Local and private sources for the 1980 Program. This projection of funding, based upon the DOT study requirements, formed the initial basis for the development of the 1980 Program.

After these initial funding projections had been made, it was determined that the only realistic basis for the development of the 1980 Program would be the existing plans,as developed through the 3C process in urban areas and the existing State Highway Department program.

A Short Range Improvement Program for highways had been prepared for each of the urbanized areas, except for the Michigan portions of Toledo and South Bend. In some cases, for example, with Detroit and Ann Arbor, the Short Range Improvement Programs were somewhat incomplete. Nevertheless, an examination of these programs showed that in total they could reasonably be used as the basis for developing Michigan's 1980 Program for the National Transportation Study.

The Short Range Improvement Programs developed as part of the 3C process for the urban areas, and in most cases approved by appropriate authorities, presented the list of projects to be implemented during the time period covered by the 1980 Program. In most cases, this covered fiscal year 1973 through fiscal year 1979. Projects were identified, using the 1990 functional classification maps, with respect to their inclusion or exclusion from the 1990 boundaries required for 1974 NTS reporting. A determination was made for each project of the 1990 functional classification of the road on which the improvement was to be made. In addition, those projects which added mileage to the system via new construction, were identified. 1990 design type for each project was also identified in order to facilitate required reporting of this data. In most cases, the year of improvement was noted in the short range improvement program. In those cases where it was not, improvements were assumed to occur linearly over the time span.

Associated with each improvement was the capital cost which would be required. These cost estimates had been made by responsible county and city engineers, and thus, reflected revised estimates from those available with the Needs Study. The next step in the process was to revise these cost estimates, on a project by project basis, in accordance with DOT instructions for factoring capital costs, to account for anticipated differential changes between the appropriate construction cost index and the consumer price index.

Each of the Short Range Improvement Programs also identified the agency responsible for implementing the project - State Highway Department, County Road Commissions, or the appropriate cities or villages. Capital costs were thus accumulated on this basis in order to be comparable with the mechanism used for the projection of the source of funds for the 1980 Program as provided by applicable Michigan legislation.

Table 2.5.1.1 presents a summary of the capital costs for implementation of the 1980 Program for each of the geographic areas by 1990 functional classification. These capital costs represent essentially a full implementation of all of the Short Range Improvement Programs and the majority of projects in the State Highway Program.

In addition to the development of the 1980 Program based upon these existing plans, a computer run was made to determine those portions of the State's Needs which were required during the 1972-1990 time period. Table 2.5.1.2 summarizes these Needs for the non-local functional classifications. A comparison of the capital costs for the 1980 Program and the 1980 Needs shows that there are approximately 13.9 billion dollars of Needs which will not be met during the 1972-1980 time period, based upon adjusted 1971 dollars. This short-fall is particularly acute for the arterial system.

This low percentage of needs met under assumed available funding sources raises serious questions with respect to the adequacy of the available funds. With the assumed funding levels upon which the Program was developed, many projects reported in the Needs which are oriented toward adding capacity to the highway system cannot be undertaken. Table 2.5.1.3 shows the new mileages which will be added to the system with the 1980 Program, and Table 2.5.1.4 shows the capacity miles which would be added after implementation of the Program. Capacity miles to be added and the percentage increase in the highway capacity for the major functional classifications are shown in this table.

Table 2.5.1.5 depicts the 1980 vehicle miles projected for the 1974 NTS Program, as well as the percentage increases in vehicle miles between 1972 and 1980. A comparison of this table with the preceding table shows that there are disparities between projected capacity increases and projected volume increases for the 1980 Program, particularly for intercity trips.

In order to analyze the contribution of the State Highway Program to the 1980 Program for NTS reporting purposes, a detailed evaluation of the projects program by the Michigan Department of State Highways and Transportation was performed. Here again, the 1990 functional classification maps were used to identify the specific location of each State Highway project. Cost estimates for projects were again factored for construction cost index changes per DOT study requirements, utilizing the year of improvement identified in the State Highway Program and the relevant cost estimate.

For both the evaluation of the urban areas, Short Range Improvement Programs and the State Highway Program. estimates were made of capacity changes resulting from project implementation. In no case were estimates of capacity changes indicated in either the State or local plans. Estimates for these capacity changes were derived from consideration of the number of miles of improvement and the number of lanes added in the improvement by functional classification.

Thus, the result of this examination of State and local plans resulted in a Table for each urban area which contained required capital costs for implementation of existing plans by functional classification and by improvement type. These resulting capital costs were then compared to the funding available to the geographic area based upon considerations discussed in section 2-7.1. Adjustments were made to the capital costs in order to reflect projects completed between January 1, 1972 and the starting point for the State or local plan. Also, at this point estimates were made for some data items missing from local plans; for example, for the Detroit and Ann Arbor urbanized areas, plans of city and township highway agencies were not complete. As will be discussed in Section 2-7.1, it was assumed that differences between local plans and available funding would be met by locally raised revenues. In each case, this appeared to be a reasonable assumption, since observed short-falls were generally aligned with revenues historically raised at the local level.

TABLE 2-5.1.1

CAPITAL COSTS - 1980 PROGRAM

(Thousands of Dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Sub-Total | Local | Total |
|---|---|---|---|---|---|---|---|
| Ann Arbor | 18,648 | 22,373 | 3,187 | 661 | 44,869 | 16,211 | 61,080 |
| Bay City | 2,747 | 19,995 | 1,577 | 1,178 | 25,497 | 6,223 | 31,720 |
| Detroit | 516,722 | 673,827 | 100,969 | 21,472 | 1,312,990 | 405,436 | 1,718.426 |
| Flint | 63,075 | 15,107 | 28,374 | 5,369 | 111,925 | 54,730 | 166,655 |
| Grand Rapids | 4,693 | 21,251 | 24,096 | 6,727 | 56,767 | 46,743 | 103,510 |
| Jackson | 5,421 | 1,910 | 4,252 | 2,161 | 13,744 | 8,322 | 22,066 |
| Kalamazoo | 3,671 | 8,797 | 8,075 | 4,695 | 25,238 | 15,937 | 41,175 |
| Lansing | 8,469 | 25,220 | 11,657 | 4,186 | 49,532 | 33,849 | 83,381 |
| Muskegon | 3,653 | 11,130 | 2,382 | 763 | 17,928 | 16,846 | 34,774 |
| Saginaw | 52,962 | 14,582 | 4,128 | 1,383 | 73,055 | 23,028 | 96,083 |
| South Bend | 0 | 3,447 | 567 | 114 | 4,128 | 8,631 | 12,759 |
| Toledo | 0 | 2,955 | 640 | 344 | 3,939 | 3,904 | 7,843 |
| Small Urban A | 4,693 | 31,360 | 8,136 | 4,081 | 48,270 | 53,713 | 101,983 |
| Small Urban B | 28,878 | 22,078 | 9,369 | 2,202 | 62,527 | 48,461 | 110,988 |
| Rest of State | 151,707 | 825,482 | 138,214 | 38,994 | 1,154,397 | 438,090 | 1,592,487 |
| | 865,339 | 1,699,514 | 345,623 | 94,330 | 3,004,806 | 1,180,124 | 4,184,930 |

TABLE 2-5.1.2

1980 NEEDS - ADJUSTED FOR 1971 DOLLARS
(Thousands of Dollars)

| | Interstate | Principal Arterial | Minor Arterial | Collectors | Total |
|---|---|---|---|---|---|
| Ann Arbor | 7,660 | 222,014 | 48,085 | 12,400 | 290,159 |
| Bay City | 15,098 | 48,492 | 30,358 | 11,695 | 105,643 |
| Detroit | 1,300,776 | 4,955,296 | 1,701,235 | 681,161 | 8,638,468 |
| Flint | 243,469 | 368,086 | 172,470 | 39,995 | 824,020 |
| Grand Rapids | 14,162 | 119,274 | 143,737 | 40,392 | 317,565 |
| Jackson | 617 | 59,073 | 30,616 | 6,448 | 96,754 |
| Kalamazoo | 238 | 97,714 | 63,388 | 14,705 | 176,045 |
| Lansing | | 163,035 | 85,903 | 14,066 | 263,004 |
| Muskegon | | 55,979 | 47,659 | 18,518 | 122,156 |
| Saginaw | 68,063 | 78,399 | 50,117 | 15,422 | 212,001 |
| South Bend | | 32,077 | 2,978 | 4,156 | 39,211 |
| Toledo | | 11,542 | 15,379 | 13,312 | 40,233 |
| Sub Total | 1,650,083 | 6,210,981 | 2,391,925 | 872,270 | 11,125,259 |
| Small Urban A | 12,767 | 356,914 | 92,418 | 101,319 | 563,418 |
| Small Urban B | 17,172 | 256,102 | 130,938 | 34,518 | 438,730 |
| Rest of State | 235,519 | 1,185,450 | 1,463,822 | 1,924,873 | 4,809,664 |
| Total | 1,915,541 | 8,009,447 | 4,079,103 | 2,932,980 | 16,937,071 |

TABLE 2.5.1.3

INCREASES IN TOTAL MILES - 1980 PROGRAM

| | New Miles | % increase |
|---|---|---|
| Interstate | 150 | 15.1 |
| Principal Arterial | 561 | 16.5 |
| Minor Arterial | 52 | 0.7 |
| Collectors | 23 | 0.1 |
| Local | 4,567 | 6.0 |

TABLE 2.5.1.4

1980 CAPACITY MILES
(thousands)

| Functional Classification | URBAN | | | RURAL | | |
|---|---|---|---|---|---|---|
| | 1980 Capacity Miles | Increase from 1972 | % Increase | 1980 Capacity Miles | Increase from 1972 | % Increase |
| Interstate | 1,850 | 337 | 22.0 | 2,512 | 300 | 14.0 |
| Principal Arterial | 3,925 | 968 | 32.0 | 4,906 | 827 | 20.0 |
| Minor Arterial | 2,779 | 498 | 22.0 | 3,678 | 322 | 10.0 |

TABLE 2.5.1.5

1980 VEHICLE MILES
(100 millions)

| Functional Classification | URBAN | | | RURAL | | |
|---|---|---|---|---|---|---|
| | 1980 Vehicle Miles | Increase from 1972 | % Increase | 1980 Vehicle Miles | Increase from 1972 | % Increase |
| Interstate | 78 | 29 | 59.1 | 38 | 10 | 35.7 |
| Principal Arterial | 179 | 31 | 20.9 | 43 | 21 | 95.5 |
| Minor Arterial | 97 | 10 | 11.5 | 54 | 9 | 20.0 |
| Collector | 37 | 5 | 15.6 | 79 | 8 | 11.3 |
| Local | 43 | 4 | 10.3 | 41 | 4 | 10.8 |

Table 2.5.1.6 summarizes highway related pollutants developed for the 1980 Program. These pollutant levels are considerably reduced in all respects from those levels of the 1972 Inventory. These effects are primarily due to anticipated decreases in vehicle exhaust emissions on a vehicle mile basis for later model year cars.

Table 2.5.1.7 summarizes anticipated highway related fatalities and injuries for the 1980 Program. The increase noted in fatalities and injuries are due primarily to projected increases in the total annual vehicle miles for the State's highway system.

TABLE 2.5.1.6

SUMMARY OF HIGHWAY RELATED POLLUTANTS
1980 PROGRAM

| | Pounds (millions) | Pounds/ VMT | Pounds/ PMT | Pounds/ Capita |
|---|---|---|---|---|
| Oxides of Nitrogen | 585 | .008 | .006 | 60.6 |
| Hydrocarbons | 351 | .0051 | .0037 | 36.4 |
| Carbon Monoxide | 2,462 | .0357 | .0257 | 254.9 |

TABLE 2.5.1.7

SUMMARY OF HIGHWAY RELATED FATALITIES AND INJURIES
1980 PROGRAM

| | URBAN | RURAL |
|---|---|---|
| Fatalities - Total | 1,529 | 1,155 |
| Fatalities - per 100M VMT | 3.52 | 4.53 |
| Injuries - Total | 110,562 | 86,037 |
| Injuries - per 100M VMT | 254 | 337 |

## 2-5.2 URBAN PUBLIC TRANSPORTATION

This section describes the transit systems in the 10 major urban areas in Michigan and those portions of the State which are included in urban areas of other states, namely:

- o South Bend, Indiana
- o Toledo, Ohio

It is not possible to discuss this as a State Urban Transit System, but rather as a set of individual systems operating within the State. Thus, each urban area will be dealt with separately. Exhibit 2-5.2.1 presents those physical and performance measures of each urban area which best describe the system in operational terms.

In some instances, the program levels have been accelerated with respect to the 1990 Plan because of the 1973-1974 "Energy Crisis". The Program may appear ambitious compared to the Plan, but the local areas are undergoing a re-ordering of transportation priorities due to the current energy supply between now and 1980. In some other instances, the Program physical and performance data is beyond the Plan and that may be a reflection on the change in priorities. It is difficult to compare the Plan and Program because of the uncertainties of the energy supply beyond 1980.

- o Ann Arbor: Two kinds of service will be provided:
  - o Fixed Route-Fixed Schedule Express Service
  - o Demand Responsive Feeder and Local Service

    (see 2-5.5 for descriptions)

The Express Service will have 50 small (22-passenger) buses on 65 street miles and about 120 route miles. Access will be available to nearly the entire population and about 80% of the jobs. During the peak hours,

the buses will be on 10-minute headways. The Dial-A-Ride buses will provide feeder service. Fare will be 25 cents.

o Bay City: The system will have 11 medium sized buses operating on 23 miles or local streets and providing access to about 75% of the population and 90% of the jobs. Buses will operate on 30-minute headways and charge 50 cents fare.

o Detroit: The 4,700 miles of bus route will be significantly augmented by 53 route miles and rail service. About 2,100 buses will provide the service on about 1,800 miles of street. About 60% of the population and jobs will have access to the combined bus and rail system. Fares will be about 40 cents for bus and 45 cents for rail.

o Flint: Service will be provided to about 50% of the population and about 2/3 of the jobs. About 120 street miles will be traversed by a total of 95 buses. Fare will be 65 cents.

o Grand Rapids: About 80 large sized buses will provide service on 131 miles of street and maintain accessibility for about 3/4 of the population and 90% of the jobs. Buses will operate on 20-minute headway and a fare of 35 cents will be charged.

o Jackson: The area will maintain a relatively small system - 12 medium sized buses operating on 28 miles of local street. This service will provide access to about 60% of the population and 85% of the jobs. Peak service will be operated on 30-minute headways. Fares will be 30 cents.

o Kalamazoo: Service will be provided with 110 buses on about 100 street miles serving about 90% of the population and 85% of the jobs. During the peak hours, the buses will operate at 20-minute headways. Fares will be 25 cents.

o Muskegon - Muskegon Heights: Service levels will be increased to provide access to about 2/3 of the population and 85% of the jobs. About 50 miles of local streets will be traversed by 25 small (20-passenger) buses. During the peak hours, the service will be operated with 30-minute headways. Fares will be 35 cents.

o Saginaw: The 1980 system represents the partial growth toward the 1990 system. The 1980 levels are only slightly below the 1990 levels.

o South Bend, Indiana: No service anticipated in the Michigan areas.

o Toledo, Ohio: No service anticipated in the Michigan area.

EXHIBIT 2-5.2.1

1980 PROGRAM - URBAN PUBLIC TRANSPORTATION - BUS TRANSIT

| AREA NAME | Miles of Route | Miles of Line | Vehicles | | | Annual Passenger Mile Per Seat Mile | Transit Accessibility % Within 1/4 Mile of Route | | Average Peak Hour Performance | | Average Fare Cents |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | Avg Age | Avg Seats | | Population | Employment | Operating Speed MPH | Headway MIN | |
| ANN ARBOR | 118 | 65 | 50 | 3 | 22 | 0.05 | 100 | 80 | 15 | 10.0 | 25 |
| BAY CITY | 54 | 23 | 11 | 5 | 28 | 0.13 | 75 | 90 | 15 | 30.0 | 50 |
| DETROIT | 4,701 | 1,835 | 2,115 | 8 | 47 | 0.20 | 63 | 58 | 15 | 16.2 | 38 |
| FLINT | 241 | 120 | 95 | 6 | 41 | 0.19 | 44 | 67 | 14 | 11.3 | 65 |
| GRAND RAPIDS | 325 | 131 | 79 | 5 | 45 | 0.08 | 76 | 89 | 14 | 20.0 | 35 |
| JACKSON | 56 | 28 | 12 | 7 | 33 | 0.03 | 60 | 85 | 12 | 30.0 | 30 |
| KALAMAZOO | 284 | 98 | 110 | 6 | 51 | 0.13 | 90 | 85 | 14 | 20.0 | 25 |
| LANSING | 381 | 381 | 134 | 4 | 40 | 3.64 | 56 | 69 | 13 | 14.0 | 25 |
| MUSKEGON Musk/Heights | 75 | 48 | 25 | 6 | 20 | 0.08 | 65 | 85 | 15 | 30.0 | 35 |
| SAGINAW | 70 | 26 | 14 | 5 | 22 | 0.63 | 83 | 75 | 13 | 30.0 | 30 |
| SOUTH BEND | - | - | - | - | - | - | - | - | - | - | - |
| TOLEDO | - | - | - | - | - | - | - | - | - | - | - |
| STATE TOTAL | 6,305 | 2,755 | 2,645 | 7 | 45 | 0.20 | 64 | 63 | 14 | 10.4 | 22 |

## 2-5.3 AIRPORTS

Projects of aviation activity used in the development of the 1980 Program correspond with the Intermediate Range development period on the Michigan Airport System Plan. The Intermediate Range Plan uses 1980 as a base, therefore, coinciding with the NTS 1980 Program.

Exhibit 2-5.3.1 projects a tabulation of significant parameters with respect to the 1980 Program Data. Operations, based aircraft and passengers enplaned are presented in the comparative Section 2-6.

### Operations

Projections of aviation activity expected to occur in 1980 display a marked increase over corresponding statistics in the 1972 Inventory. Total activities in this period are projected to increase to approximately 8 million, which is an increase of 56 percent (Exhibit 2-6.3.1). Detailed analysis indicates that general aviation operations represent 94 percent of the total projection, an increase of 57 percent. As may be anticipated, air carrier operations account for a fractional portion of the total 1980 forecast, but at the same time increase by 163,000 operations, 48 percent above the 1972 Inventory.

### Enplaned Passengers

The 1980 Program projects an increase in enplaned passengers of almost 7 million, revealing a gross total of approximately 15.3 million. Air Carrier passenger enplanements comprise 9.5 or 62 percent of total state enplanements for this period reflecting an increase of 125 percent of all commercial enplanements.

Geographically, it is noted that over the comparative inventory 9 million or approximately 95 percent of the air carrier enplanements will be generated

from the urban areas. Of these enplanements, approximately 8 million will take place in the Detroit area, which represents 97 percent of all urban enplanements and 89 percent of the total for the state. For the Detroit area, this is a projected increase of 4.3 million enplanements or 119 percent increase.

Based Aircraft

By 1980, based aircraft in Michigan is expected to rise by 53 percent over the 1972 Inventory (Exhibit 2-6.3.3) from 6162 to 9380 units. The urban areas will account for 56 percent of these aircraft, 30 percent attributable to the Detroit area alone. Of the total based aircraft located in Urban areas, the Detroit area is expected to account for 53 percent or over half.

Operating and Maintenance Costs

Projected operating and maintenance costs for the 1980 Program are 28.5 million (excluding interest), this is an increase of 44 percent above costs for the 1972 Inventory. This increase can be attributed to the following three factors:

1. Development of additional aviation facilities.
2. Expansion and improvement of existing facilities.
3. Certification costs for air carrier facilities in accordance with federal regulations. The year 1972 saw the certification program as an added large expenditure for air carrier and reliever airports. Therefore, the use of 1971 as a base for operating and maintenance costs may be misleading.

Capital Costs

The projections of development and construction costs used in this study are derived from the Michigan State Airport System Plan. The system plan uses

the following three planning periods as a base for future development:

| Planning Period | Fiscal Years | Base for Aeronautical Activity Forecasts |
|---|---|---|
| Short Range | 1973-1977 | 1975 |
| Intermediate Range | 1978-1982 | 1980 |
| Long Range | 1983-1992 | 1990 |

Since the Intermediate and Long Range periods correspond (parallel), with the dates for the 1980 Program and 1990 Plan, it was considered expedient to use these planning periods for the Program and Plan.

However, a comparison of the adjusted cost of the intermediate range planning period with Federal, State and local revenues based on Appendix "O", produced the following results: projected revenues equal to 81 percent of the costs for air carrier facilities and 23 percent of the general aviation needs (Exhibit 2-7.3.1). (The 1980 program guidelines/targets presented in Appendix "O" were adjusted to cover the period January 1, 1972 through December 31, 1979.)

Therefore, to arrive at a balance of revenues and expenditures, it was decided to base the 1980 Program on the Short Range planning period of the MASP. In so doing, the projected development costs proved greater than anticipated revenues and met only 89 percent of air carrier and 39 percent of general aviation needs. To respond to this imbalance, consideration was then given to developing only those facilities in the Short Range period which were determined to be of critical importance in the system. Although this reduced 1980 development costs, they were still above total revenues. As a further means to bring development costs in line with revenues, reduction of development at remaining airports was then considered a proper course. At each of these airports, development was reduced to include only those items considered most critical to the operation and safety of the facility. In certain instances,

costs were reduced by rescheduling such development as parallel taxiways proposed in the Short Range period, in favor of runway lengthening so as to accommodate larger business aircraft as recommended in the Intermediate Range period.

In evaluating the funding for the 1980 Program, the following should be noted. The cost of all terminal buildings are to be financed with funds derived from revenue bonds. It is assumed that all bond issues will be repaid by income from tenants and concessionaires.

The total cost for improvements and expansion of Detroit Metropolitan Airport is assumed to be financed by revenue bonds and private funds. This decision was based on the following facts.

1. In the past, very little of Michigan's Federal and State Funds have been allocated for this facility.

2. It is assumed this airport can generate its own revenues for development.

3. Projected costs for this airport are approximately 56 percent of the total air carrier costs for the Program. Therefore, if Federal and State Funds were allocated to this airport, it would not be possible to finance an adequate level of development for the air carrier system throughout the rest of the state.

EXHIBIT 2-5.3.1

1980 PROGRAM - AIRPORT SYSTEM

| | Number in SASP | | | A/C Enplanements Per Operation | G/A Operations Per Capita | Pollutants-Lbs. per A/C & G/A Operations | | | Percent of Population Within | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A/C | Rel | G/A | | | C/O | NO | HC | 30 Min Any A/P | 60 Min Scheduled | 30 Min Service | 60 Min |
| Ann Arbor | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Bay City | 0 | 0 | 1 | 0 | 0.61 | 6.0 | 0.1 | 0.1 | 0 | 0 | 0 | 0 |
| Detroit | 1 | 11 | 2 | 30 | 0.36 | 12.7 | 3.3 | 4.3 | 100 | 100 | 90 | 100 |
| Flint | 1 | 1 | 0 | 13 | 0.96 | 6.4 | 0.4 | 0.3 | 100 | 100 | 100 | 100 |
| Grand Rapids | 1 | 2 | 0 | 15 | 0.73 | 6.7 | 1.0 | 0.4 | 100 | 100 | 100 | 100 |
| Jackson | 1 | 0 | 0 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Kalamazoo | 1 | 2 | 0 | 11 | 1.66 | 6.3 | 0.5 | 0.3 | 0 | 0 | 0 | 0 |
| Lansing | 1 | 1 | 0 | 11 | 0.76 | 6.9 | 1.0 | 0.4 | 0 | 0 | 0 | 0 |
| Muskegon Muskegon/Heights | 1 | 0 | 0 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 0 | 0 | 0 | 0 |
| Saginaw | 1 | 0 | 1 | 13 | 1.12 | 7.1 | 1.2 | 0.5 | 0 | 0 | 0 | 0 |
| South Bend | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 100 | 100 | 100 | 100 |
| Toledo | 0 | 0 | 1 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | 100 | 100 | 100 | 100 |
| Subtotal | 8 | 17 | 7 | 26 | 0.50 | 10.0 | 2.1 | 2.6 | 100 | 100 | 100 | 100 |
| Small Urban A | 7 | 0 | 28 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Small Urban B | 2 | 1 | 2 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Rest of State | 2 | 1 | 103 | 0 | 0.00 | 0.0 | 0.0 | 0.0 | N/A | N/A | N/A | N/A |
| Total | 19 | 19 | 140 | 26 | 0.50 | 10.0 | 2.1 | 2.6 | 98 | 100 | 72 | 93 |

2-5.4 TERMINALS (NOT APPLICABLE)

2-5.5 OTHER TRANSPORTATION

o Ann Arbor Dial-A-Ride

The design of this demand responsive system is based upon a pre-1972 demonstration. The system is designed to provide feeder service to express buses and local service. The fare will be 25 cents per trip. The feeder service will have headways of 20 minutes in both the peak and off-peak hours. Average weekday patronage will approach 10,000. This level of service is close to the 1990 Plan; this apparent discontinuity is predicated by the energy crisis.

o Bay City Special Transportation Service

This service will be fully integrated into the area-wide transit system.

## 2-6 EVALUATIONS AND COMPARISONS

### 2-6.1 EVALUATION AND COMPARISON OF THE HIGHWAY INVENTORY, PLAN AND PROGRAM

The purpose of this section is to present comparisons between the 1972 Inventory, 1990 Plan and 1980 Program for highways in Michigan, and to discuss these comparisons in terms of qualitative and quantitative attributes of the system.

One of the primary distinctions to be made in these comparisons will be between those portions of the system which facilitate traffic movement within urban areas, and those portions of the system which are predominantly oriented toward intercity traffic movement. Inasmuch as reporting requirements for the 1974 NTS did not distinguish between those portions of the system serving intercity traffic movement and those portions oriented toward serving rural residents of Michigan, it is assumed for discussion purposes here that the rural arterial system is primarily oriented toward serving intercity travel needs and that lower functional classifications are primarily oriented toward providing the collection and distribution function for the rural population.

Perhpas the most significant comparison which can be made between the Inventory, Program and Plan is with respect to capital costs associated with required system improvements during the two study time periods. Table 2-6.1.1 shows these cost comparisons by functional classification for 1990 urban areas and the rest of state. This table clearly reveals a uniformity of assumptions made with respect to Program and Plan development. Table 2-6.1.1(a) shows a comparison of the source of funds for highway purposes for the Plan and Program. As this table shows, State Motor Vehicle Highway Fund revenues comprise 41% of available funds during both time periods. This table shows one of the basic assumptions of the 1974 National Transportation Study which is clearly subject to debate and discussion - namely that the relative roles

TABLE 2-6.1.1

CAPITAL COST COMPARISONS

(Thousands of Dollars)

| Functional Classification | URBAN | | REST OF STATE | |
|---|---|---|---|---|
| | 1980 Program | 1990 Plan | 1980 Program | 1990 Plan |
| Interstate | 713,632 | 1,122,626 | 151,707 | 424,432 |
| Principal Arterial | 874,032 | 2,728,101 | 825,482 | 1,359.108 |
| Minor Arterial | 207,409 | 565,645 | 138,214 | 676,481 |
| Collectors | 55,336 | 154,170 | 38,994 | 583,888 |
| Local | 742,034 | 1,630,955 | 438,090 | 1,155,825 |
| TOTAL | 2,592,443 | 6,201,497 | 1,592,487 | 4,199,734 |

TABLE 2-6.1.1(a)

HIGHWAY SOURCE OF FUNDS COMPARISONS

(millions of dollars)

| | 1980 Program | % | 1990 Plan | % |
|---|---|---|---|---|
| Federal | 1,314 | 31 | 3,470 | 33 |
| State Motor Vehicle Highway Fund | 1,697 | 41 | 4,304 | 41 |
| Locally Raised Revenues | 342 | 8 | 756 | 8 |
| Private Funds | 832 | 20 | 1,871 | 18 |
| Total | 4,185 | 100 | 10,401 | 100 |

of the Federal government, State government and Local governments with respect to funding highway programs will remain relatively unchanged over the next eighteen years.

Another very significant comparison which can be made with the Program and Plan is the comparison of 1980 Needs with the 1980 Program, and of 1990 Needs with the 1990 Plan. This comparison is shown in Table 2-6.1.1(b). As this table clearly shows, there is a vast disparity between Michigan's highway needs, as developed in the 1972 NTS (and updated during the course of the 1974 NTS), and the funds available per study assumptions for Program and Plan development. This disparity is particularly evident, with potentially serious consequences, for the State's arterial and collector system.

Table 2-6.1.2 presents a comparison of highway mileages in the Inventory, Program and Plan by functional classification for the urban areas and rest of state. Table 2-6.1.3 shows the miles of new roads constructed between the 1972 Inventory and 1980 Program and between the 1980 Program and 1990 Plan. A comparison of these new mileages with the preceding table shows that the percentage changes in the State's highway system is however quite small. In light of the projected increases in traffic volumes for the two time periods, however, there may be reasonable cause to believe that the new mileages determined in the Needs study may more accurately reflect the State's requirements for highways.

It would appear that one of the major intents of the 1974 National Transportation Study was to determine the performance of the highway system under somewhat realistically constrained funding levels. Based upon data required for 1974 NTS reporting, perhaps the most significant performance related comparison which can be made are those with respect to changes in highway capacity compared with changes in projected traffic volumes.

TABLE 2-6.1.1(b)

NEEDS, COMPARISON WITH PLAN AND PROGRAM

(Thousands of 1971 dollars)

| Functional Classification | 1980 | | 1990 | |
|---|---|---|---|---|
| | Needs | Program | Needs | Plan |
| Interstate | 1,915,541 | 865,339 | 2,089,550 | 1,547,058 |
| Principal Arterial | 8,009,447 | 1,699,514 | 13,520,013 | 4,087,209 |
| Minor Arterial | 4,079,103 | 345,623 | 6,267,213 | 1,242,126 |
| Collectors | 2,932,980 | 94,330 | 4,360,802 | 738,058 |
| Local | 7,743,143 | 1,180,124 | 17,422,245 | 2,786,780 |
| Total | 24,680,214 | 4,184,930 | 43,659,823 | 10,401,231 |

TABLE 2-6.1.2

HIGHWAY MILEAGE COMPARISONS

| Functional Classification | URBAN | | | REST OF STATE | | |
|---|---|---|---|---|---|---|
| | 1972 Inventory | 1980 Program | 1990 Plan | 1972 Inventory | 1980 Program | 1990 Plan |
| Interstate | 352 | 427 | 440 | 640 | 715 | 734 |
| Principal Arterial | 2,203 | 2,314 | 2,362 | 1,201 | 1,651 | 1,964 |
| Minor Arterial | 3,138 | 3,210 | 3,227 | 4,354 | 4,379 | 4,744 |
| Collectors | 2,740 | 2,743 | 2,744 | 23,490 | 23,510 | 23,643 |
| Local | 16,085 | 18,189 | 20,817 | 60,149 | 62,612 | 65,690 |

TABLE 2-6.1.3

NEW CONSTRUCTION MILEAGES

| Functional Classification | URBAN | | REST OF STATE | |
|---|---|---|---|---|
| | 1980 Program | 1990 Plan | 1980 Program | 1990 Plan |
| Interstate | 75 | 13 | 75 | 19 |
| Principal Arterial | 111 | 48 | 450 | 313 |
| Minor Arterial | 72 | 17 | 25 | 365 |
| Collectors | 3 | 1 | 20 | 133 |
| Local | 2,104 | 2,628 | 2,463 | 2,078 |

Table 2-6.1.4 shows capacity miles comparisons for the arterial functional classifications between the three reporting periods. Table 2-6.1.5 depicts the projected additions to highway capacity expected under the 1980 Program and the 1990 Plan. A comparison of this table with the preceding table reveals that the percentage changes in capacity additions, particularly in urban areas, are considerably smaller than projected percentage increases in traffic volumes during the two time periods.

These projected changes in traffic volumes can be seen from the vehicle mile comparisons of Table 2-6.1-6 as compared with the vehicle miles shown in Table 2-6.1 .

Another interesting comparison of environmental issues of State policy concern is shown in Table 2-6.1.8. This table shows that the total emissions, in millions of pounds annually, of the three major atmospheric pollutants decrease significantly between 1972 and 1990. As can be seen from this table, the bulk of these improvements should occur in the 1972-1980 time period, due primarily to reduced pollutant emissions of newer cars on a vehicle mile basis.

Another comparison developed from the NTS Inventory, Program and Plan data is with respect to highway safety. As Table 2-6.1.9 shows, highway related injuries and fatalities are projected to increase over the study time period at a rate far lower than the anticipated increase in vehicle and passenger miles traveled in Michigan.

TABLE 2-6.1.4

CAPACITY MILE COMPARISONS
(Thousands)

| Functional Classification | URBAN | | | REST OF STATE | | |
|---|---|---|---|---|---|---|
| | 1972 Inventory | 1980 Program | 1990 Plan | 1972 Inventory | 1980 Program | 1990 Plan |
| Interstate | 1,513 | 1,850 | 1,962.1 | 2,212 | 2,512 | 2,601.4 |
| Principal Arterial | 2,957 | 3,925 | 3,556.6 | 4,079 | 4,906 | 5,938.2 |
| Minor Arterial | 2,281 | 2,779 | 2,717.3 | 3,356 | 3,678 | 4,079.7 |

TABLE 2-6.1.5

CAPACITY ADDITIONS

(Thousands)

| Functional Classification | URBAN | | REST OF STATE | |
|---|---|---|---|---|
| | 1980 Program | 1990 Plan | 1980 Program | 1990 Plan |
| Interstate | 337 | 449.1 | 300 | 389.4 |
| Principal Arterial | 968 | 599.6 | 827 | 1,860.9 |
| Minor Arterial | 498 | 436.3 | 322 | 723.7 |

TABLE 2-6.1.6

VEHICLE MILE COMPARISONS

(One Hundred Millions)

| Functional Classification | Urban | | | Rest of State | | |
|---|---|---|---|---|---|---|
| | 1972 Inventory | 1980 Program | 1990 Plan | 1972 Inventory | 1980 Program | 1990 Plan |
| Interstate | 49 | 78 | 110.6 | 28 | 38 | 55.3 |
| Principal Arterial | 148 | 179 | 243.3 | 22 | 43 | 80.8 |
| Minor Arterial | 86 | 97 | 116.0 | 45 | 54 | 74.6 |
| Collectors | 32 | 37 | 40.5 | 71 | 79 | 93.2 |
| Local | 39 | 43 | 48.9 | 37 | 41 | 46.6 |

TABLE 2-6.1.7

VEHICLE MILE CHANGES
(One Hundred Millions)

| Functional Classification | URBAN | | | REST OF STATE | | |
|---|---|---|---|---|---|---|
| | 1972 Inventory | 1980 Program | 1990 Plan | 1972 Inventory | 1980 Program | 1990 Plan |
| Interstate | NA | 29 | 61.7 | NA | 10 | 27.5 |
| Principal Arterial | NA | 31 | 58.4 | NA | 21 | 59.2 |
| Minor Arterial | NA | 10 | 34.4 | NA | 9 | 29.4 |
| Collector | NA | 5 | 28.2 | NA | 8 | 21.9 |
| Local | NA | 4 | 26.4 | NA | 4 | 9.7 |

TABLE 2-6.1.8

POLLUTANT COMPARISONS

(Annual Pounds in Millions)

| | 1972 Inventory | 1980 Program | 1990 Plan |
|---|---|---|---|
| Oxides of Nitrogen | 820 | 585 | 517 |
| Hydrocarbons | 588 | 351 | 166 |
| Carbon Monoxide | 5,001 | 2,462 | 933 |

TABLE 2-6.1.9

HIGHWAY SAFETY COMPARISONS

| | 1972 Inventory | 1980 Program | 1990 Plan |
|---|---|---|---|
| Highway Related Injuries | 157,664 | 196,599 | 211,394 |
| Highway Related Fatalities | 2,142 | 2,684 | 3,479 |

## 2-6.2 URBAN PUBLIC TRANSPORTATION

Transit service throughout the State will grow during the period 1972-1990. Exhibits 2-6.2.1 and 2-6.2.2 demonstrate this growth by urban area and State total for 1972-1990 and 1972-1980. The growth or, better, the result is best demonstrated by the transit accessibility: by 1980 about 50% more of the urban population will have access to public transit and by 1990 about 100% more will have access than had access in 1972. Buses, generally, will be smaller and younger than they were in 1972, thus providing a more attractive, more personalized service and requiring less maintenance. By 1980, 200% more street mileage will have bus service than in 1972 and by 1990, the street mileage, with transit, will have increased over 400% of the 1972 coverage. Fares will decrease from 1972 to 1980, but will rise above 1972 levels by 1990.

EXHIBIT 2-6.2.1

PERCENT CHANGE 1972-1990 - URBAN PUBLIC TRANSPORTATION - BUS TRANSIT

| AREA NAME | Miles of Route | Miles of Line | Vehicles | | | Annual Passenger Mile Per Seat Mile | Transit Accessibility % Within 1/4 Mile of Route | | Average Peak Hour Performance | | Average Fare Cents |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | Avg Age | Avg Seats | | Population | Employment | Operating Speed MPH | Headway MIN | |
| ANN ARBOR | 233 | 443 | 19 | 75 | -6 | - | 0 | 16 | 0 | -50 | -16 |
| BAY CITY | - | - | - | - | - | - | - | - | - | - | - |
| DETROIT | 209 | 729 | 135 | -45 | -6 | 33 | 140 | 327 | 7 | 1 | 3 |
| FLINT | 305 | 98 | 446 | 0 | -24 | 275 | 3 | -4 | 0 | -51 | 66 |
| GRAND RAPIDS | 428 | 312 | 1,657 | -52 | -21 | -44 | 40 | 7 | 7 | -85 | 6 |
| JACKSON | 100 | 0 | 9 | 75 | 0 | 30 | 66 | -6 | 0 | 0 | 0 |
| KALAMAZOO | 157 | 51 | 76 | -40 | -10 | 27 | 11 | 12 | 15 | -50 | 150 |
| LANSING | 1,330 | 1,353 | 861 | 16 | -11 | 580 | 110 | 33 | -20 | -44 | -16 |
| MUSKEGON Musk/Heights | -12 | -14 | 284 | 40 | -33 | - | - | - | -25 | -40 | 0 |
| SAGINAW | 1,284 | - | 25 | 100 | 75 | 100 | 20 | 46 | 15 | -66 | -25 |
| SOUTH BEND | - | - | - | - | - | - | - | - | - | - | - |
| TOLEDO | - | - | - | - | - | - | - | - | - | - | - |
| STATE TOTAL | 262 | 467 | 280 | -46 | 4 | 21 | 96 | 156 | 6 | 9 | 11 |

EXHIBIT 2-6.2.2

PERCENT CHANGE 1972-1980 - URBAN PUBLIC TRANSPORTATION - BUS TRANSIT

| AREA NAME | Miles of Route | Miles of Line | Vehicles | | | Annual Passenger Mile Per Seat Mile | Transit Accessibility % Within 1/4 Mile of Route | | Average Peak Hour Performance | | Average Fare Cents |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | No. | Avg Age | Avg Seats | | Population | Employment | Operating Speed MPH | Headway MIN | |
| ANN ARBOR | 57 | 41 | 138 | -25 | -31 | - | 11 | 33 | 0 | -66 | -16 |
| BAY CITY | - | - | - | - | - | - | - | - | - | - | - |
| DETROIT | 104 | 347 | 66 | -27 | -4 | 33 | 70 | 163 | 7 | 60 | 40 |
| FLINT | 83 | -8 | 265 | 20 | -8 | 137 | -21 | -4 | 0 | -67 | 116 |
| GRAND RAPIDS | 68 | 35 | 125 | -70 | -11 | -11 | 18 | 1 | 0 | -42 | 6 |
| JACKSON | 211 | 55 | 9 | 75 | 0 | -70 | 33 | 6 | 0 | 0 | 0 |
| KALAMAZOO | 78 | 25 | 59 | -40 | 2 | 18 | 5 | 6 | 7 | -50 | 150 |
| LANSING | 486 | 1,090 | 644 | -33 | -9 | 7,180 | 47 | 15 | -13 | -22 | -16 |
| MUSKEGON Musk/Heights | -20 | 2 | 92 | 20 | -33 | - | - | - | -25 | -40 | 0 |
| SAGINAW | 37 | 18 | 250 | 150 | -48 | 293 | 15 | 15 | 0 | -50 | -25 |
| SOUTH BEND | - | - | - | - | - | - | - | - | - | - | - |
| TOLEDO | - | - | - | - | - | - | - | - | - | - | - |
| STATE TOTAL | 104 | 212 | 80 | -30 | -5 | 35 | 48 | 81 | 5 | -1 | -16 |

Rev. 80: $62,358,000
Seat Miles ~5,400
Pass Trips ~
Pass Miles ~

## 2-6.3 AIRPORTS

This section includes display exhibits on significant aviation parameters resulting from the 1974 NTS data collection and development activity. Exhibits 2-6.3.1 through 2-6.3.3 are referenced and discussed in Section 2-3 through 2-5 of this part of the report. Exhibits 2-6.3.4 and 2-6.3.5 present percent changes between 1972 and 1990 and 1972 and 1980 respectively. The implication and interpretation of the data should be conducted only against the backdrop of the State Aviation System Plan (SASP) and the guidelines provided by the DOT. Further discussion of the reasonbleness of the Plan is presented in Section 2-4.

EXHIBIT 2-6.3.1

Operations (in hundreds)

| | 1971 | | | 1980 | | | 1990 | | |
|---|---|---|---|---|---|---|---|---|---|
| | General Aviation | Air Carrier | Total Operations | General Aviation | Air Carrier | Total Operations | General Aviation | Air Carrier | Total Operations |
| Ann Arbor | 1,100 | 0 | 1,100 | 1,800 | 0 | 1,800 | 2,560 | 0 | 2,560 |
| Jackson | 630 | 30 | 660 | 1,010 | 30 | 1,040 | 1,670 | 30 | 1,700 |
| Kalamazoo | 1,190 | 150 | 1,340 | 2,190 | 140 | 2,330 | 3,620 | 220 | 3,840 |
| Muskegon | 810 | 90 | 900 | 1,520 | 110 | 1,630 | 2,280 | 180 | 2,460 |
| Detroit | 12,080 | 1,960 | 14,040 | 20,230 | 3,170 | 23,400 | 30,280 | 4,080 | 34,360 |
| Lansing | 1,370 | 180 | 1,550 | 2,500 | 220 | 2,720 | 3,900 | 290 | 4,190 |
| Grand Rapids | 1,160 | 250 | 1,410 | 3,150 | 300 | 3,450 | 5,210 | 380 | 5,590 |
| Flint | 1,710 | 120 | 1,830 | 4,240 | 160 | 4,400 | 6,790 | 190 | 6,980 |
| Bay City | 260 | 0 | 260 | 560 | 0 | 560 | 1,010 | 0 | 1,010 |
| Saginaw | 860 | 150 | 1,010 | 1,860 | 230 | 2,090 | 3,020 | 320 | 3,340 |
| Niles (So Bend) | 324 | 0 | 324 | 790 | 0 | 790 | 1,220 | 0 | 1,220 |
| Lambertville (Toledo) | 370 | 0 | 370 | 660 | 0 | 660 | 870 | 0 | 870 |
| Total Urban Areas | 21,864 | 2,930 | 24,794 | 40,510 | 4,360 | 44,870 | 62,430 | 5,690 | 68,120 |
| Small Urban A | 7,440 | 280 | 7,720 | 12,800 | 280 | 13,080 | 19,380 | 640 | 20,020 |
| Small Urban B | 2,750 | 70 | 2,820 | 4,510 | 190 | 4,700 | 6,240 | 360 | 6,600 |
| Rest of State | 15,656 | 90 | 15,746 | 9,890 | 170 | 10,060 | 31,690 | 300 | 31,990 |
| Total of State | 47,710 | 3,370 | 51,080 | 74,900 | 5,000 | 79,900 | 119,740 | 6,990 | 126,730 |

EXHIBIT 2-6.3.2

ENPLANED PASSENGERS
(in thousands)

| | General Aviation | Air Carrier | General Aviation | Air Carrier | General Aviation | Air Carrier |
|---|---|---|---|---|---|---|
| Ann Arbor | 55 | | 91 | | 128 | |
| Jackson | 53 | 6 | 82 | 11 | 132 | 22 |
| Kalamazoo | 94 | 87 | 165 | 167 | 272 | 330 |
| Muskegon | 62 | 63 | 114 | 148 | 172 | 276 |
| Detroit | 785 | 3,640 | 1,246 | 7,960 | 1,822 | 12,135 |
| Lansing | 114 | 118 | 180 | 244 | 268 | 478 |
| Grand Rapids | 96 | | 220 | | 350 | |
| Flint | 110 | 80 | 259 | 208 | 397 | 230 |
| Bay City | 13 | | 29 | | 51 | |
| Saginaw | 71 | 139 | 137 | 305 | 214 | 560 |
| Niles (South Bend) | 15 | | 39 | | 61 | |
| Lambertville (Toledo) | 19 | | 33 | | 43 | |
| Total | 1,487 | 4,015 | 2,595 | 9,043 | 3,910 | 14,031 |
| Small Urban A | 429 | 99 | 703 | 218 | 1,059 | 456 |
| Small Urban B | 137 | 49 | 267 | 135 | 428 | 280 |
| Rest of State | 2,167 | 67 | 2,198 | 127 | 2,214 | 281 |

EXHIBIT 2-6.3.3

BASED AIRCRAFT

| | 1971 | 1980 | 1990 |
|---|---|---|---|
| Ann Arbor | 133 | 220 | 310 |
| Jackson | 97 | 140 | 213 |
| Kalamazoo | 151 | 256 | 414 |
| Muskegon | 99 | 177 | 262 |
| Detroit | 1,809 | 2,775 | 4,165 |
| Lansing | 166 | 307 | 480 |
| Grand Rapids | 147 | 383 | 640 |
| Flint | 195 | 531 | 869 |
| Bay City | 50 | 91 | 150 |
| Saginaw | 81 | 198 | 335 |
| Niles (South Bend) | 53 | 113 | 175 |
| Lambertville (Toledo) | 45 | 80 | 105 |
| Total Urban | 3,026 | 5,271 | 8,118 |
| Small Urban A | 872 | 1,531 | 2,364 |
| Small Urban B | 350 | 558 | 888 |
| Rest of State | 1,914 | 2,020 | 3,340 |
| Total State | 6,162 | 9,380 | 14,710 |

EXHIBIT 2-6.3.4

PERCENT CHANGE 1972-1990 - AIRPORT SYSTEM

| | Number in SASP | | | Annual Pass Enplaned | | | Operation | | | | | | | % of Population Within | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A/C | Rel | G/A | A/C (000) | G/A (000) | A/C Per Capita | A/C (000) | G/A (000) | A/C Enplaned Per Operation | G/A Operations Per Capita | Pollutants Pounds Per A/C & G/A Operations CO | NO | HC | 30 Min Any A/P | 60 Min Any A/P | 30 Min Scheduled Service | 60 Min Scheduled Service |
| Ann Arbor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bay City | 0 | 0 | 0 | 0 | 112 | 0 | 0 | 234 | 0 | 161 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Detroit | 0 | 57 | 100 | 349 | 143 | 241 | 114 | 184 | 109 | 123 | -7 | -20 | -21 | 0 | 0 | 0 | 0 |
| Flint | 0 | 0 | 0 | 283 | 342 | 151 | 177 | 358 | 29 | 192 | 18 | 19 | -79 | 0 | 0 | 0 | 0 |
| Grand Rapids | 0 | 0 | 0 | 243 | 171 | 160 | 75 | 216 | 100 | 143 | 21 | 19 | -85 | 0 | 0 | 0 | 0 |
| Jackson | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kalamazoo | -50 | 0 | 0 | 258 | 190 | 187 | 57 | 151 | 150 | 101 | 12 | 150 | -25 | 0 | 0 | 0 | 0 |
| Lansing | 0 | 0 | 0 | 234 | 122 | 145 | 107 | 139 | 59 | 74 | 44 | 85 | -78 | 0 | 0 | 0 | 0 |
| Muskegon Musk/Hts. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saginaw | 0 | 0 | 0 | 254 | 219 | 193 | 190 | 297 | 21 | 225 | -13 | 36 | -86 | 0 | 0 | 0 | 0 |
| So. Bend | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Toledo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | -11 | 171 | -28 | 333 | 169 | 255 | 112 | 201 | 103 | 126 | 0 | -11 | -33 | 0 | 0 | 0 | 0 |
| Small Urban A | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | N/A |
| Small Urban B | 0 | 0 | -33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | N/A |
| Rest of State | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | N/A |
| State Total | -4 | 200 | 37 | 333 | 169 | 225 | 112 | 201 | 103 | 126 | 0 | -11 | -33 | 3 | 0 | 1 | 1 |

EXHIBIT 2-6.3.5

PERCENT CHANGE 1972-1980 - AIRPORT SYSTEM



| | Number in SASP | | | Annual Pass Enplaned | | | Operation | | A/C Enplaned Per Operation | G/A Operations Per Capita | Pollutants Pounds Per A/C & G/A Operations | | | % of Population Within | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A/C | Rel | G/A | A/C (000) | G/A (000) | A/C Per Capita | A/C (000) | G/A (000) | | | CO | NO | HC | 30 Min Any A/P | 60 Min Any A/P | 30 Min Scheduled Service | 60 Min Scheduled Service |
| Ann Arbor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bay City | 0 | 0 | 0 | 0 | -4 | 0 | 0 | 75 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Detroit | 0 | 57 | 100 | 133 | 65 | 104 | 61 | 89 | 42 | 71 | 19 | 37 | -53 | 0 | 0 | -1 | 0 |
| Flint | 0 | 0 | 0 | 128 | 162 | 87 | 77 | 200 | 29 | 139 | 4 | -19 | -79 | 0 | 0 | 0 | 0 |
| Grand Rapids | 0 | 0 | 0 | 79 | 69 | 57 | 25 | 89 | 50 | 65 | 11 | 0 | -88 | 0 | 0 | 0 | 0 |
| Jackson | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Kalamazoo | -50 | 0 | 0 | 81 | 81 | 63 | 0 | 51 | 83 | 36 | 10 | 150 | -25 | 0 | 0 | 0 | 0 |
| Lansing | 0 | 0 | 0 | 70 | 54 | 47 | 57 | 60 | 9 | 38 | 13 | 42 | -82 | 0 | 0 | 0 | 0 |
| Muskegon Musk/Hts. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Saginaw | 0 | 0 | 0 | 93 | 117 | 77 | 109 | 133 | -7 | 123 | -20 | 9 | -88 | 0 | 0 | 0 | 0 |
| So. Bend | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Toledo | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal | -11 | 142 | 0 | 125 | 76 | 96 | 56 | 94 | 43 | 69 | 14 | 30 | -57 | 0 | 0 | 0 | 0 |
| Small Urban A | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | N/A |
| Small Urban B | 0 | 0 | -33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | N/A |
| Rest of State | 0 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N/A | N/A | N/A | N/A |
| State Total | -4 | -171 | 39 | 125 | 76 | 96 | 56 | 94 | 43 | 69 | 14 | 30 | -57 | 1 | 0 | 0 | -1 |

## 2-7 SOURCES OF FUNDS

### 2-7.1 HIGHWAYS

The purpose of this section is to document the analyses performed with respect to funding for the 1980 Program, as well as to discuss the implications and reasonableness of the level of taxes reported as sources of funds.

The starting point for the projection of 1980 Program funds for highways was the projection of Federal funds. Appendix O of Manual II shows that the total source of funds for the highway program for fiscal year 1973 through fiscal year 1979 was 1.1 billion dollars, as shown in Table 2.7.1.1. In order to compensate for reporting in the 1980 Program for projects completed subsequent to January 1, 1972, the Appendix O target funds were adjusted for Michigan's apportionment of Federal funds for fiscal year 1972. This was done for each of the funding categories shown as the Appendix O Federal Target Funds. This apportionment is shown in Table 2.7.1.2. The final projection of available Federal funds for projects to be completed between 1972 and 1980 is shown in Table 2.7.1.3. As this table shows, for the purposes of 1980 Program reporting, there was assumed to be available 1.3 billion dollars. This was comprised of 779 million dollars of Interstate funds, 47 million dollars priority primary funds, 208 million dollars to be applied to the state primary and secondary system, and 270 million dollars of urban program funds. This included the 4 million dollars TOPICS funds for 1972 and the 10.7 million dollars of TOPICS funds shown in Appendix O for fiscal year 1973.

The next step in the development of the source of funds for the 1980 Highway Program was the projection of estimated revenues from the Michigan Motor Vehicle Highway Fund. This was projected from fiscal year 1972 through 1979 on the basis of the current motor fuel tax rate, current license plate, title and other fees, etc. There were no general state funds considered to be available for the highway program and thus, no analysis of the burden on the general

# TABLE 2.7.1.1

FEDERAL TARGET FUNDS FOR 1980 PROGRAM

STATE OF MICHIGAN

(THOUSANDS OF ADJUSTED 1971 DOLLARS)

| | | FISCAL YEAR | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | FUNDING CATEGORY | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | TOTAL |
| | ----HIGHWAYS + PUBLIC TRANSPORTATION---- | | | | | | | | |
| 1 | INTERSTATE SYSTEM | 93678 | 83084 | 93619 | 91425 | 94065 | 91861 | 89785 | 637517 |
| 2 | PRIORITY PRIMARY ROUTES | | 2153 | 6672 | 9773 | 9544 | 9328 | 9102 | 46564 |
| | STATE NETWORK | | | | | | | | |
| 3 | PRIMARY SYSTEM | 15558 | 10491 | 18372 | 17941 | 17520 | 17110 | 16709 | 113701 |
| 4 | SECONDARY SYSTEM | 10665 | 6817 | 10498 | 10252 | 10012 | 9777 | 9548 | 66769 |
| 5 | TOTAL RURAL PROGRAM | 26223 | 16508 | 28870 | 28193 | 27532 | 26887 | 26257 | 180470 |
| | URBAN PROGRAM | | | | | | | | |
| 6 | TOPICS PROGRAM | 10729 | | | | | | | 10729 |
| 7 | URBAN EXTENSIONS | 4345 | 8599 | 11407 | 11140 | 10879 | 10624 | 10375 | 67369 |
| | URBAN SYSTEM | | | | | | | | |
| 8 | DETROIT | | 14235 | 18526 | 18092 | 17667 | 17254 | 16849 | 102623 |
| 8 | GRAND RAPIDS | | 1265 | 1646 | 1607 | 1569 | 1533 | 1497 | 9117 |
| 8 | FLINT | | 1184 | 1540 | 1504 | 1469 | 1435 | 1401 | 8533 |
| 8 | LANSING | | 823 | 1071 | 1046 | 1021 | 997 | 974 | 5932 |
| 8 | SOUTH BEND (MICH PART) | | 84 | 109 | 107 | 104 | 102 | 99 | 605 |
| 8 | TOLEDO (MICH PART) | | 43 | 55 | 54 | 53 | 52 | 50 | 307 |
| 9 | REMAINING URBAN SYSTEM FUNDS | | 5004 | 6514 | 6361 | 6213 | 6065 | 5925 | 36082 |
| 10 | TOTAL URBAN SYSTEM | 8717 | 22638 | 29461 | 28771 | 28096 | 27438 | 26795 | 171916 |
| 11 | TOTAL URBAN PROGRAM | 23791 | 31237 | 40868 | 39911 | 38975 | 38062 | 37170 | 250014 |
| 12 | TOTAL H+PT PROGRAM (EXCEPT UMTA) | 143692 | 132982 | 170829 | 169302 | 170116 | 166130 | 162314 | 1114565 |

TABLE 2.7.1.2

REVISED MICHIGAN APPORTIONMENT FOR FISCAL 1972
(Federal Funds)

| Type of Fund | Apportionment | HPR 1-1/2% | Programming |
|---|---|---|---|
| Interstate | $146,882,400 | $2,203,236 | $144,679,164 |
| Urban | 11,798,282 | 176,974 | 11,621,308 |
| Primary | 14,793,635 | 221,904 | 14,571,731 |
| Secondary | 9,761,131 | 146,416 | 9,614,715* |
| Rural Primary | 2,254,186 | 33,812 | 2,220,374 |
| Rural Secondary | 1,486,578 | 22,298 | 1,464,280 |
| Topics | 4,290,284 | 64,354 | 4,255,930 |
| Urban System | 4,639,535 | 69,593 | 4,569,942 |
| Total | $195,906,031 | $2,938,587 | $192,967,444 |

ROW Revolving Fund $3,665,832

* Secondary
State $2,191,227 + $1,464,280
County 7,423,488 - 66% of total Secondary and Rural Secondary Apportionment

Revised 11/1/71 in accordance with 1970 census

TABLE 2.7.1.3

MICHIGAN FEDERAL FUND PROJECTIONS - HIGHWAYS

(Derived from Appendix 0 and 1972 Apportionment)
1972 - 1980

(Thousands of Dollars)

| FUND | | AMOUNT (1971 dollars) |
|---|---|---|
| Interstate | | 778,805 |
| Priority Primary | | 46,564 |
| State Network: | | |
| Primary System | 130,099 | |
| Secondary System | 77,588 | |
| Total Rural Program | | 207,687 |
| Urban Program: | | |
| Topics Program | 14,885 | |
| Urban Extensions | 78,718 | |
| Urban System | 176,379 | |
| Total Urban Program | | 269,982 |
| Total Highway Program | | 1,303,038 |

taxpayer from state revenue sources has been made. Table 2.4.2.1.2 shows the projected revenues from the Motor Vehicle Highway Fund for fiscal years 1972 through 1979. As this table shows, gasoline and diesel fuel taxes, license plate fees, and other fees have projected to determine the total available revenue for each fiscal year. From these total revenues has been subtracted the appropriate collection costs, as well as that portion of the Motor Vehicle Highway Fund which is devoted to mass transit purposes as part of the General Transportation Fund. The total projected amount of highway funds available from this source over the eight year period is seen in Table 2.7.1.4 to be 4.4 billion dollars.

Per DOT instructions in Manual I, these annual receipts were discounted for each year in the 1972-1980 period to account for the effects of general inflation at an assumed rate of 2.4% per year. As Table 2.7.1.4 shows, the total amount available for highway purposes, including both construction and maintenance expenditures over the time period, was 3.9 billion dollars.

The next step in the projection of highway funds for the 1980 Program was the distribution of this 3.9 billion dollar highway program in the manner currently prescribed by Michigan law. The current allocation formula dictates that 44.5% of the funds go to the State Trunkline Fund for construction and maintenance and administration of the state highway system. The remainder of the Motor Vehicle Highway Fund is distributed to county road commissions and to cities and villages, with 35.7% to the county road commissions and 19.8% to cities and villages. Of the 35.7% distributed to the county road commissions, 10% is distributed to the state's urban system, and the remainder of these CRC funds are distributed between county primary and county local roads on a 75/25 basis. The legislation also provides that the funds distributed to cities and villages be distributed between city major and city local roads at a ratio of 75/25.

TABLE 2-7.1.4

1980 PROGRAM

MOTOR VEHICLE HIGHWAY FUND

(Thousands of Dollars)

| Fiscal Year | Available | | Inflation Factor | | Adjusted Available |
|---|---|---|---|---|---|
| 1972 | 420,554 | ÷ | 1.024 | = | 410,697 |
| 1973 | 454,923 | ÷ | 1.049 | = | 433,673 |
| 1974 | 519,694 | ÷ | 1.074 | = | 483,886 |
| 1975 | 543,315 | ÷ | 1.100 | = | 493,923 |
| 1976 | 566,210 | ÷ | 1.126 | = | 502,851 |
| 1977 | 593,847 | ÷ | 1.153 | = | 515,045 |
| 1978 | 620,878 | ÷ | 1.181 | = | 525,722 |
| 1979 | 647,140 | ÷ | 1.209 | = | 535,269 |
| TOTAL | 4,366,561 | | | | 3,901,066 |

Table 2.7.1.5 shows the resulting distribution of this 3.9 billion dollar Motor Vehicle Highway Fund. This table also shows the estimate of the percentage of these motor vehicle highway funds which would be utilized by each agency for non-construction related expenditures, including highway maintenance, administration, etc. These maintenance percentages were developed based upon an analysis of financial reports submitted by county road commissions and city developers annually as required by Act 51. This table shows, then, that there was approximately 1.7 billion dollars of the 3.9 billion dollar Motor Vehicle Highway Fund available for construction purposes in the 1972-1980 time period.

Table 2.7.1.6 shows the resulting allocation of funds to the State Highway Program for the period. This includes the 868 million dollar distribution from the Motor Vehicle Highway Fund and the 1.3 billion dollar distribution of Federal funds as previously discussed.

The next step in the distribution of the Federal and State funds was to determine the funds that would be available to each individual urbanized area, the small urban aggregates, and the rest of state. Table 2.7.1.7 shows the allocation of the non-local funds by funding category to each of the urban areas. These allocations were developed in the following manner. First of all, a detailed assessment was made for each county road commission to determine the portion of its funds, by category, which would be spent within the 1990 urban area boundaries. Secondly, for each of the cities and villages a determination was made regarding the geographic area in which it was located. Thirdly, the State Highway Program covering the 1972-1980 time period was reviewed on a project by project basis to determine those projects, or portions of projects, which were within the 1990 urban area boundaries.

TABLE 2.7.1.5

1980 PROGRAM

DISTRIBUTION OF MOTOR VEHICLE HIGHWAY FUND

(Thousands of Dollars)



| | | DISTRIBUTION OF MOTOR VEHICLE HIGHWAY FUND | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 35.7% Counties | | | | 19.8% Cities & Villages | | |
| | M.V.H. Fund | 44.5% STL | Total | 10% Urban | Remainder | 75% Co. Pri. | 25% Co. Loc. | Total | 75% City Maj. | 25% City Loc. |
| 8 Year Totals | 3,901,066 | 1,735,974 | 1,392,681 | 139,268 | 1,253,413 | 940,060 | 313,353 | 772,411 | 579,308 | 193,103 |
| % Maintenance, Administration & Debt Retirement (Non-Construction) | | 50 | | 50 | | 60 | 70 | | 60 | 70 |
| Amount Available for Construction | 1,697,305 | 867,987 | | 69,634 | | 376,024 | 94,006 | | 231,723 | 57,931 |

TABLE 2.7.1.6

1980 PROGRAM - PRELIMINARY

STATE TRUNKLINE CONSTRUCTION FUNDS & FEDERAL-AID HIGHWAY CONSTRUCTION FUNDS

(thousands of dollars)

| | STL Constr Fund | Interstate | Rural Primary "A" | FAS State "B" | FAS County "B" | Primary Urban Ext & Topic | Urban System | Total FA | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | | | FEDERAL AID | | | | | |
| State Highway Program 1972-1980 | 867,987 | 778,805 | 176,663 | 25,868 | | 93,603 | 44,095 | 1,119,034 | 1,987,021 |
| Other | | | | | 51,720 | | 132,284 | 184,004 | 184,004 |
| Totals | | | | | | | 176,379 | 1,303,038 | 2,171,025 |

TABLE 2.7.1.7

ALLOCATION OF NON-LOCAL FUNDS - 1980 PROGRAM

ADJUSTED FOR INFLATION EFFECTS

(Thousands of Dollars)

| | STATE HIGHWAY PROGRAM | CRC URBAN PRIMARY | CRC URBAN LOCAL | CRC PRIMARY | CRC LOCAL | MUNICIPAL MAJOR | MUNICIPAL LOCAL | FA URBAN SYSTEMS | FA STATE SECONDARY | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Ann Arbor | 25,155 | 1,606 | 623 | 2,921 | 996 | 4,881 | 1,149 | 3,532 | | 40,863 |
| Bay City | 3,272 | 964 | 378 | 1,073 | 331 | 2,272 | 566 | 1,561 | | 10,417 |
| Detroit | 754,260 | 26,242 | 6,723 | 127,137 | 8,836 | 129,610 | 31,784 | 81,237 | | 1,165,829 |
| Flint | 66,518 | 4,557 | 1,670 | 13,903 | 2,623 | 10,264 | 2,441 | 8,267 | | 110,243 |
| Grand Rapids | 54,989 | 1,950 | 812 | 7,359 | 1,166 | 14,063 | 3,099 | 7,249 | | 90,687 |
| Jackson | 2,662 | 1,677 | 790 | 2,324 | 926 | 2,023 | 443 | 1,547 | | 12,392 |
| Kalamazoo | 4,020 | 1,776 | 522 | 4,542 | 747 | 5,380 | 1,222 | 2,950 | | 21,159 |
| Lansing | 18,234 | 1,928 | 744 | 5,535 | 1,202 | 7,489 | 1,656 | 4,934 | | 41,722 |
| Muskegon | 2,227 | 764 | 340 | 2,742 | 623 | 4,164 | 1,031 | 2,103 | | 13,994 |
| Saginaw | 37,026 | 1,271 | 847 | 3,278 | 1,208 | 4,282 | 897 | 2,778 | | 51,587 |
| South Bend | 1,417 | 618 | 384 | 1,193 | 574 | 481 | 159 | 569 | | 5,395 |
| Toledo | 1,947 | 636 | 225 | 873 | 356 | | | 675 | | 4,712 |
| Small Urban A | 9,994 | 3,689 | 1,657 | 6,032 | 3,041 | 17,310 | 5,111 | 8,189 | | 55,023 |
| Small Urban B | 18,392 | 4,215 | 2,026 | 8,698 | 3,019 | 9,089 | 2,215 | 6,693 | | 54,347 |
| Rest of State | 986,908 | | | 188,414 | 68,358 | 20,415 | 6,158 | | 51,720 | 1,321,973 |
| Total | 1,987,021 | 51,893 | 17,741 | 376,024 | 94,006 | 231,723 | 57,931 | 132,284 | 51,720 | 3,000,343 |

The assumption was made for the development of the 1980 Highway Program that private funds would be utilized for the construction of all new subdivision streets. This same assumption was utilized in the development of the 1990 Plan. Subdivision street costs for the 1972-1980 period were developed, and these costs adjusted to account for differential changes between construction cost indices and general inflation in the 1972-1980 time period. Table 2.3.1.8 shows the private funds required for completion of the subdivision streets during the time period, by urbanized area.

Local funds were projected in a manner somewhat different than that utilized for the development of local funding for the 1990 Plan. As is discussed in Section 2.5, the 1980 Program for each urban area was developed on the basis of the Short Range Improvement Programs for Highways developed through the 3C process. Thus, local fund requirements were developed based upon perceived short-falls between the Short Range Improvement Program capital cost requirements and the funds which would be available to each geographic reporting area from Federal and State sources as previously discussed. For each urban area, a comparison was made with the projected requirements for local funding developed for the 1990 Plan, utilizing the projections from 1972-1980. In all cases for which Short Range Improvement Programs were available, required local funding was tolerably close to the initial projections, and it was believed that the local funding requirements derived from the Short Range Improvements Programs would provide the more realistic estimates. Table 2.3.1.9 shows the resulting estimate of local funding requirements for highway related capital costs during the 1972-1980 period on both an absolute and a per capita basis.

Finally, based upon all of the considerations previously discussed, Table 2.3.1.10 shows the summary allocation of all capital costs for the 1980 Program, and Table 2.3.1.11 shows, for each urban area, the distribution of these costs on a per capita basis and on a basis per passenger mile and per vehicle mile.

TABLE 2-7.1.8

PRIVATE FUNDS FOR THE 1980 HIGHWAY PROGRAM
(thousands of dollars)

| | |
|---|---|
| Ann Arbor | 9,286 |
| Bay City | 2,948 |
| Detroit | 277,677 |
| Flint | 37,647 |
| Grand Rapids | 33,223 |
| Jackson | 2,979 |
| Kalamazoo | 9,453 |
| Lansing | 24,521 |
| Muskegon | 11,619 |
| Saginaw | 15,644 |
| South Bend | 6,225 |
| Toledo | 2,661 |
| Small Urban A | 58,274 |
| Small Urban B | |
| Rest of State | 339,397 |
| Total | 831,554 |

TABLE 2-7.1.9

LOCALLY RAISED REVENUES FOR 1980 Program
(By Counties and Cities)

(thousands of dollars)

| | |
|---|---|
| Ann Arbor | 8,034 |
| Bay City | 11,745 |
| Detroit | 185,038 |
| Flint | 18,832 |
| Grand Rapids | 19,036 |
| Jackson | 3,598 |
| Kalamazoo | 9,927 |
| Lansing | 11,243 |
| Muskegon | 7,163 |
| Saginaw | 7,019 |
| South Bend | 1,289 |
| Toledo | 662 |
| Small Urban A<br>Small Urban B | 33,910 |
| Rest of State | 24,177 |
| Total | 341,673 |

TABLE 2-7.1.10

SUMMARY OF FUNDS FOR 1980 PROGRAM
(thousands of dollars)

| | |
|---|---|
| Federal Target Funds | 1,303,038 |
| Other Federal Funds | 11,360 |
| Total Federal Funds | 1,314,398 |
| State Motor Vehicle Highway Fund Funds | 1,697,305 |
| Locally Raised Revenues | 341,673 |
| Sub-Total | 3,330,656 |
| Private Funds | 831,554 |
| Total | 4,184,930 |

TABLE 2-7.1.11

CAPITAL COST PER CAPITA
1980 PROGRAM

| | TOTAL CAP COSTS/ CAPITA | TOTAL CAP COSTS/ VMT | TOTAL CAP COSTS/ PMT | ANNUALIZED COST/CAPITA |
|---|---|---|---|---|
| Ann Arbor | 293.65 | 0.05 | 0.04 | 36.71 |
| Bay City | 348.57 | 0.08 | 0.04 | 43.57 |
| Detroit | 365.93 | 0.06 | 0.04 | 45.74 |
| Flint | 377.90 | 0.06 | 0.04 | 47.24 |
| Grand Rapids | 247.04 | 0.05 | 0.03 | 30.88 |
| Jackson | 242.49 | 0.05 | 0.03 | 30.31 |
| Kalamazoo | 235.29 | 0.04 | 0.03 | 29.41 |
| Lansing | 298.86 | 0.05 | 0.04 | 37.36 |
| Muskegon | 282.72 | 0.05 | 0.03 | 35.35 |
| Saginaw | 578.81 | 0.11 | 0.07 | 72.35 |
| South Bend | 411.58 | 0.10 | 0.06 | 51.45 |
| Toledo | 270.45 | 0.06 | 0.04 | 33.81 |
| Small Urban A | 207.70 | 0.06 | 0.03 | 25.96 |
| Small Urban B | 313.53 | 0.05 | 0.03 | 39.19 |
| Rest of State | 772.68 | 0.06 | 0.03 | 96.59 |

## 2-7.2 URBAN PUBLIC TRANSPORTATION

State Mass Transit fund requirements were determined by a compilation of Federal, State and Local funding availability. Federal funds are to be totally taken from the UMTA Capital Grant funding program; no Title 23 H&PT funds are currently anticipated for use in local mass transit programs.

The State's General Transportation Fund, which is supported by the 1/2 cent gasoline tax, will assist the local urban areas in the annual operative and maintenance costs and in the matching fund requirements for UMTA Capital Grants.

The urban areas are prepared to provide the additional matching funds required for capital improvements. They will use their own General Funds to meet the operative and maintenance cost differences between fares and General Transportation Fund contributions.

Total funds required throughout the State to implement, operate and maintain public transportation in urbanized areas are summarized as follows:

EXHIBIT 2-7.2.1

1980 URBAN TRANSPORTATION PROGRAM COSTS
(Thousands of Dollars)

| | CAPITAL COSTS | O&M COSTS 1979 | ESTIMATED O&M COSTS 1971-1979 |
|---|---|---|---|
| Urban Areas | 1,056,071 | 137,203 | 747,136 |
| Small Urban A | 6,956 | 3,425 | 13,690 |
| Small Urban B | 6,577 | 3,238 | 14,200 |
| Rest of State | 0 | 0 | 0 |
| Subtotal Small Urban A, B, Rest of State | 13,533 | 6,663 | 27,890 |
| Total Urban Program | 1,069,604 | 143,866 | 802,916 |

Exhibit 2-7.2.2 demonstrates how these costs will be allocated among the Federal, State and Local funding sources. The UMTA program has been calculated at about 13.8% of the total $6.2 million.

EXHIBIT 2-7.2.2

1971 SOURCES OF FUNDS FOR 1980 PROGRAM
(Thousands of Dollars)

| | CAPITAL COSTS | O&M COSTS 1971-1979 |
|---|---|---|
| COSTS | 1,069,604 | 505,026 |
| UMTA FUNDS | 855,683 | |
| GENERAL TRANS-PORTATION FUNDS | 65,949 | 74,193 |
| LOCAL CONTRIBUTION | 147,972 | 21,009 |
| REVENUES | | 409,824 |
| SUBTOTAL STATE & LOCAL FUNDS | 213,921 | 505,026 |

Before any additional capital improvements will be made in order to implement any local elements of the 1980 Program, a Transit Development Program and Unified Work Program will be completed to UMTA's satisfaction.

## 2-7.3 AIRPORTS

The problem of raising funds to finance the cost of airport development in the State of Michigan was addressed in the Michigan Airport System Planning Study. The detail for the options for coping with the resource shortages are taken from that document.

There are two obvious approaches to dealing with the anticipated shortage of resources to fund estimated MASP costs: additional funds could be sought or planned development could be delayed (or deleted). More specific options are outlined below, and those that appear promising or likely are later incorporated in overall comparisons of MASP resources and costs.

Although State resources are a small fraction of the total required to fund the MASP, an increase in these funds might encourage some vital airport development.

A tax on aviation fuel provides the bulk of the funds for State contribution to airport development. The present tax of 3¢ per gallon is comparable to that levied in surrounding states. For air carriers, one-half of the tax is refunded. Without the refund, out-of-state purchases of fuel would be encouraged. A concerted effort by several states to raise fuel taxes would, if successful, avoid this problem, but such increased federal taxes on general aviation, as recommended by a current federal airport cost allocation study, would cause resistance to further state taxes on general aviation--and may also slow the growth of general aviation compared with this study's projections.

Increases in local funds are outside the State's ability to influence, except by encouragement. To the extent that local funding takes place through issuance of revenue bonds, selective state insurance of such bonds might achieve a lower interest rate and thereby offer encouragement to grant applications.

In most cases, however, it seems unlikely that local airport authorities will be eager to use local funds for improvements that are eligible for ADAP funds. Even to reach the local cost levels implied by the MASP would require strenuous efforts, and to then substitute local funds for some items eligible for ADAP will be regarded as an added burden.

Because of its size, Detroit Metropolitan Airport may elect to compensate for shortages in ADAP funds by increased local resources. Detroit has greater financial ability (through airport fees and charges) and more incentive than other Michigan airports to use local funds.

The state plan can only be implemented on the initiative of locally owned and controlled airports, and it is not certain at what rate future ADAP grant requests will be submitted. Local enthusiasm for implementing the MASP is questionable in light of anticipated shortages of ADAP funds.

Planned airport improvements that are not closely related to safety or to achieving needed capacity could in theory be deferred until more urgent improvements are funded. The authority to defer airport improvements currently rests with the FAA and not the MAC. This authority has not been exercised because grant requests have not yet exceeded available funds at the national level.

In the event that Michigan grant applications do exceed available funds at some point, the MAC may wish to share with the FAA the difficult judgment as to which grants should be deferred. These decisions will require assessment of the relative merits of each grant request received.

Effect of the Energy Crisis on Development

Aviation forecast provides a basis for the projections used in both the System Planning Study and the Department of Transportation Study. The State Airport System Planning Study began before the emergence of the energy crisis. At the end of our study, the effect of the energy crisis was addressed in the following manner.

Because aviation forecasts provide the basis for much of this study, it must be noted that the projects were prepared andused before the emergence of this winter's "energy crisis." Recent events, such as the curtailment of oil imports from the Middle East, have brought to full federal attention the possibility of national fuel shortages for an undertermined period. There is now, also, the prospect of substantial increases in the cost of transportation, arising from increases in fuel costs. It is judged too early to assess potential effects of such factors on future aviation activity levels in Michigan--much depends on the methods by which available fuel supplied will be priced and allocated among competing uses. For example, demand for air travel may increase if federal restrictions are imposed on automobile travel. On the other hand, high prices may curtail travel demand, including the demand for air transportation. In light of these uncertainties, the projections of this study can be viewed in several ways:

- The forecasts may significantly overstate future aviation activity.
- Projected activity may occur, but at a later date than indicated (e.g., 1980 projections may not be reached until 1985 or 1990).
- The projections may turn out to be accurate or even understated because of changes in travel patterns.

In the absence of reliable information on the pattern of future federal responses to the energy crisis, and considering that aviation is a small part of the overall energy picture, it is most reasonable to assume that past patterns will tend to persist (extreme government responses to the present crisis are likely to be temporary). If a change should occur, it is most likely to be in the direction of deferred growth. It must be emphasized that much of the recommended development of Michigan's airport system does not appear to be critically dependent on rapid growth in aviation activity.

EXHIBIT 2-7.3.1

COMPARISON OF PROJECTED CAPITAL COSTS AND REVENUES
(All Costs in Thousands of Dollars)

| | Projected Costs | | | Projected Revenue | | | | |
|---|---|---|---|---|---|---|---|---|
| | Air Carrier Costs | General Aviation Costs | Total | Air Carrier Funds | General Aviation Funds | Total | % A/C Needs Met | % G/A Needs Met |
| 1980 Program (Short Range Plan Development reduced to coincide with funds from appendix "0" plus state and local funds) | 151,389 | 34,805 | 186,194 | 151,389 | 34,805 | 186,194 | 100 | 100 |
| Short Range Plan (as per the MASP) | 169,601 | 89,111 | 258,712 | 151,389 | 34,805 | 186,194 | 89 | 39 |
| Intermediate Range Plan (as per the MASP) | 186,952 | 110,390 | 297,342 | 151,389 | 34,805 | 186,194 | 81 | 23 |
| Revenues Including Discretionary Funds | | | | | | | | |
| Short Range Plan (as per MASP) | | | | 169,601 | 45,032 | 214,633 | 100 | 51 |
| Discretionary Funds A/C 18,212 G/A 10,227 | | | | | | | | |
| Intermediate Range Plan (as per MASP) | | | | 186,952 | 45,032 | 231,984 | 100 | 41 |
| Discretionary Funds A/C 35,563 G/A 10,227 | | | | | | | | |

## 2-8 LOW AND NON-CAPITAL ALTERNATIVES

This section includes a summary of the responses of the Urban Areas. Consistent with the State goals and objectives cited in Section 2-2.1, the State anticipates encouraging and sponsoring those program alternatives which are consistent with total transportation service development within the State. Specific emphasis is now being placed on encouraging car-pooling. Exhibit 2-8.1 presents the Summary of Urban Area Responses.

# EXHIBIT 2-8.1

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | 2 | 1 | | 8 |
| | 2. Measures to encourage car pools. | 1 | 8 | 1 | 1 |
| | 3. Banning private automobiles from the CBD. | | 1 | | 9 |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | 10 |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | 10 |
| | 6. Increasing CBD daytime parking rates. | 2 | 1 | | 8 |
| | 7. Lowering transit fares during off-peak hours. | | 2 | | 7 |
| | 8. Less restrictions on taxicabs. | | | | 10 |
| | 9. Less restrictions on jitneys. | | | | 10 |
| | 10. Reserved lanes for buses. | | 3 | 1 | 7 |
| | 11. Restrictions on curbside loading and unloading in congested areas. | 3 | 2 | | 7 |
| | 12. Evening delivery by trucks in downtown areas. | | | | 8 |
| | 13. Other (describe) Peripheral Parking | 1 | 1 | | 1 |
| | 14. Improved Traffic Oper. | 1 | 1 | | |
| | 15. Bike Paths | 1 | 2 | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | 10 |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | 10 |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

## 2-9 ANALYSIS OF DISCRETIONARY FUNDS

This section includes the required data associated with Urban Public Transportation and Aviation as stipulated with the DOT 1974 Instruction Manual as amended and revised.

### 2-9.1 URBAN PUBLIC TRANSPORTATION

The impact of Table IV-1, UMTA Fund Limitation, is a shortfall of $541,030,000, that is $855,683,000 required by the urbanized areas for capital improvements less $314,653,000 allowed in Table IV-1 of Manual II. Exhibit 2-9.1.1 demonstrates this impact. No highway funds are anticipated to support any public transportation capital improvements.

EXHIBIT 2-9.1.1

TOTAL FUNDING IMPACT OF TABLE IV-1 UMTA FUNDS

(Thousands of Dollars)

| Sources of Funds | 1980 Program Response | Urbanized Areas | Remainder of State | Total State | Difference |
|---|---|---|---|---|---|
| Highways | | | | | |
| 1. DOT Federal | | | | | |
| 2. Other | | | | | |
| 3. Subtotal | | | | | |
| Urban Public Transportation | | | | | |
| 4. DOT Fed. H&PT | 0 | 0 | 0 | 0 | 0 |
| 5. DOT Fed. UMTA | 855,683 | 303,827 | 10,826 | 314,653 | 541,030 |
| 6. Total Fed. | 855,683 | 303,827 | 10,826 | 314,653 | 541,030 |
| 7. Other | 213,921 | 752,244 | 2,707 | 754,951 | -541,030 |
| 8 Subtotal | 1,069,604 | 1,056,071 | 13,533 | 1,069,604 | 0 |
| 9. TOTAL FUNDS | 1,069,604 | 1,056,071 | 13,533 | 1,069,604 | 0 |

The shortfall of $541,030,000 is anticipated to impact upon the Detroit rail system. Exhibit 2-9.1.2 shows the Detroit 1980 Urban Public Transportation Program could be re-arranged to meet this discretionary allocation. Since only Detroit is impacted by this re-allocation, the other urban areas are not included in the analysis.

EXHIBIT 2-9.1.2

IMPACT OF TABLE IV-1 UMTA FUNDS - DETROIT
(Thousands of Dollars)

| Sources of Funds | CAPITAL EXPENDITURES | | |
|---|---|---|---|
| | 1980 Program Response | Alternative Allocation of Discretionary Funds | Difference |
| Highways | | | |
| 1. DOT Federal | | | |
| 2. Other | | | |
| 3. Subtotal | | | |
| Urban Public Transportation | | | |
| 4. DOT Fed. H&PT | 0 | 0 | 0 |
| 5. DOT Fed. UMTA | 786,400 | 245,370 | 541,030 |
| 6. Total Fed. | 786,400 | 245,370 | 541,030 |
| 7. Transfers | 36,000 | 36,000 | 0 |
| 8. Local | 160,600 | 701,630 | -541,030 |
| 9. Other | | | |
| 10. Subtotal | 983,000 | 983,000 | 0 |
| 11. | 983,000 | 983,000 | 0 |

Exhibit 2-9.1.3 shows that the impact of Table IV-1 UMTA funds will have on the total Detroit program, since the re-allocated funds will be obtained from other local revenues. Since no other urban area would be effected by Table IV-1, they were not included in this analysis.

EXHIBIT 2-9.1.3

IMPACT OF TABLE IV-1 UMTA FUNDS - DETROIT
MODAL AND OPERATING COSTS

(Thousands of Dollars)

| Urban Public Transportation | 1980 Program Response | Alternative Allocation of Discretionary Funds | Difference |
|---|---|---|---|
| Capital Expenditures | | | |
| 1. Exclusive Busways | 0 | 0 | 0 |
| 2. Other Bus | 180,000 | 180,000 | 0 |
| 3. Rail Transit Line | 795,000 | 795,000 | 0 |
| 4. Other Rail | 8,000 | 8,000 | 0 |
| 5. Total Capital | 983,000 | 983,000 | 0 |
| Operating Expenditures | | | |
| 6. Bus Systems | 75,000 | 75,000 | 0 |
| 7. Rail Systems | 41,800 | 41,800 | 0 |
| 8. Total Operating | 116,000 | 116,800 | 0 |

## 2-9.2 AIRPORTS

Additional discretionary funds create a marked difference in the level of development for the 1980 Program. This is indicated by a review of cost projections, as per the MASP, for both the Short and Intermediate Range periods in comparison to available revenues plus discretionary funds (Table 2-9.2.1).

With the addition of approximately $18 million, 100 Percent of the proposed air carrier and reliever airport development in the Short Range period can be financed. Unfortunately, this is not the case with general aviation. The addition of the total discretionary funds available for general aviation, equals only 51 percent of general aviation costs in the Short Range period.

For the Intermediate Range period, an additional $35.5 million in discretionary funds would allow development of all projected air carrier and reliever needs. The use of the total general aviation discretionary funds available would satisfy only 41 percent of projected costs for the period.

Identification of all air carrier facilities requiring $5 million or more in additional discretionary funds is requested. For the 1980 Program, based on the Short Range period, there are no facilities in this category. As noted earlier, an assumption was made that Detroit Metropolitan Airport would be funded by other sources. Should this not prove to be the case, it is likely that additional funds possibly exceeding $5 million would be necessary.

EXHIBIT 2-9.2.1

TABLE FOR REPORTING USE OF ADDITIONAL
AIRPORT DISCRETIONARY FUNDS

| Sources of Funds | Capital Expenditures | | |
|---|---|---|---|
| | 1980 Program Response | Alternative Allocation of Discretionary Funds | Difference Col. (1) minus Col. (2) |
| Col. | (1) | (2) | (3) |
| Air Carrier/Reliever Airports | Millions of Adj. 1971 Dollars | | |
| 1 DOT Federal | 64.399 | 144.906 | 80.507 |
| 2 State | 10.596 | 10.586 | 0 |
| 3 Local | 60,097 | 60,097 | 0 |
| 4 Other | 208.027 | 208.027 | 0 |
| 5 Total | 343.119 | 423.622 | 80.507 |
| General Aviation Airports | | | |
| 6 DOT Federal | 8.495 | 17.320 | 8.825 |
| 7 State | 3.701 | 3.701 | 0 |
| 8 Local | 20.999 | 20.999 | 0 |
| 9 Other | 1.610 | 1.610 | 0 |
| 10 Total | 34.805 | 43.630 | 8.825 |
| 11 TOTAL AIRPORT FUNDS | 377.924 | 467.252 | 89.332 |

## 2-10 RECOMMENDATIONS FOR ACTION

The study participants appreciate the magnitude of a national multi-modal transportation study and believe the Department of Transportation should be complimented on both preparation and coordination of the 1974 National Transportation Study.

It is felt that more pre-testing by the Department of Transportation should be undertaken in forms, methodology, availability of data and uniformity of data among states and metropolitan areas. We also feel that the instructional material submitted to the participants in this study should be edited and clarified in some cases. It is suggested that the next study be timed so that after an opportunity for review of instructional material by states, the Federal Department of Transportation should hold meetings with the technicians conducting data collection and analysis in each state to ensure understanding or requests and conversely have the Federal Department of Transportation personnel become aware of state and local viewpoints on this study. These meetings should then be called periodically throughout the study so that as problems arise, they can be addressed on a coordinated state-wide basis with all parties involved present at such coordination meetings.

It may be worthwhile for the Department of Transportation to reconsider focusing the 1976 NTS Study on the financial aspects or 1980 Program type analyses with special emphasis on source-of-funds and levels-of-funds contingencies. It may also be reasonable to structure the next study and succeeding studies such that core aspects of the study continue from one NTS study through the next and that special analyses be scoped which can be accomplished within reasonable time windows such that excessive schedule modifications and slippages are avoided.

For the development of a comprehensive aviation plan and data bank, information should be collected for non-hub air carrier facilities as was for the larger hubs. Although the non-hubs represent a small portion of the total operations and enplaned passengers, geographically they serve approximately two-thirds of Michigan. It is felt that their existence and future expansion is an important factor directly related to the economic growth of the areas they serve.

Future studies should include additional analysis of third-level air carrier service as this is the only air transportation available for certain areas of Michigan. Data relating to area and population served plus investigation of the financial problems encountered for this level of service should be studied. Also, the practicality of subsidization of third-level air carrier service should be a product of analysis of this data.

It is also recommended that <u>if</u> reasonableness, arguments and analyses are required in future studies -- more internal to DOT -- effort should be expended to insure that all participants adhere at least to fiscal projections and limitations in a vigorous manner.

We would also recommend that further consideration be given to the development of a simpler, less time consuming method of applying price adjustment factors as a considerable amount of time was consumed in this exercise.

# PART 3

# REPORTS OF PARTICIPATING STATE AGENCIES

INTRODUCTION

This section includes specific comments and/or summaries with respect to the planning process as included within the Michigan State Department of Highways and Transportation. Since each modal area served on the 1974 NTS Coordinating Committee, the outline provided by the DOT is unappropriate for the State of Michigan. Part 2 of this report reflects the modal input as developed and coordinated by the Coordinating Committee.

# 3-1 HIGHWAYS

3-1.1 SUMMARY

# Michigan Department

# of

# State Highways and Transportation

POSITION PAPER PRESENTED TO THE

SUBCOMMITTEE ON TRANSPORTATION

COMMITTEE ON PUBLIC WORKS

UNITED STATES SENATE

APRIL, 1974

State Highway Commission

E. V. Erickson
Chairman

Charles H. Hewitt
Vice Chairman

Peter B. Fletcher

Carl V. Pellonpaa

Director

John P. Woodford

The Michigan State Highway Commission appreciates this opportunity to present to the United States Senate its views of transportation problems facing Michigan and of what future actions should be taken to resolve these problems. It is understood that the Senate public hearings will focus on: (1) the financing of highways and mass transit; (2) transportation in a time of energy shortages, and (3) transportation planning for the seventies. These subjects are so mutually dependent that comments on one must be considered to have a bearing or repercussions on the others. In addition, we would like to call attention to the Senate of some additional transportation problems as being especially pertinent to the people and State of Michigan.

## 1. FINANCING OF HIGHWAYS AND MASS TRANSIT

Recent state and federal needs studies reflect the same basic conclusion; that is, that current financing levels will not be adequate to meet the needs of either highways or mass transit. The 1974 National Transportation Study indicates that the revenue (in constant 1971 dollars) needed to meet Michigan's 1990 highway needs is $29.9 billion and that the mass transit needs for the same period equal $2.8 billion. When 1971 dollars are adjusted to the consumer price index, we find that, on the basis of projected levels of available income from capital improvements, 85 percent of the mass transit needs can be met, but only 24 percent of the identified highway needs can be covered.

Even if 20-30 percent of person highway trips could be diverted to some other mode of transportation, highway needs would not be substantially reduced. To attract such a high percentage of person trips, mass transit facilities would have to include many miles of low volume routes which would greatly increase the subsidies required to keep mass transit facilities in operation. By now, it should be apparent to all concerned that mass transit facilities cannot be financed from revenue collected in the fare box. In fact, few if any will even meet operating costs.

In the past, highway user taxes have provided a generally satisfactory source of revenue for financing of arterial highways, roads, and streets. However, with the rapidly increasing cost of maintenance activities, coupled with decreasing revenue due to shortages and cost of gasoline, plus increased costs of construction, state and local governments simply will be unable to meet even the most critical of their highway needs.

It appears entirely clear that if highway programs are to be effectively accomplished in sufficient time to serve needs already demonstrated (much less those anticipated) and adequate mass transit facilities are to be provided, additional sources of revenue must be found. Under existing federal, state, and local government tax structures, federal assistance appears to be the primary source for additional revenue for the essential work required to provide adequate transportation facilities.

## 2. TRANSPORTATION IN A TIME OF ENERGY SHORTAGES

No state is more aware of the repercussions of an energy shortage or energy crisis than Michigan. Waiting in line for gasoline may be disconcerting, but waiting in line for an unemployment check is far more serious to the individual. Unemployment in Michigan has soared to double the national average since the current energy crisis became apparent last fall. Although acute gasoline shortages have only occurred in isolated areas of the state, the increased

cost of gasoline, plus the tens of thousands unemployed due to automobile production cutbacks, have resulted in a reduction in travel in our state.

We are totally confident that the American people will not give up their cherished desire for personal freedom, and this freedom includes the freedom of mobility that they have enjoyed in the past and will demand in the future. We are also confident that American technology, much of it coming from Detroit, will solve the current crisis and possibly even improve on the past. This is not to imply that some changes and better utilization of the various modes of travel are not only necessary, but desirable. However, these changes should not only occur during a crisis period; they should be so structured and so conceived that they will have a long-range effect and will offer a choice to the individual even in a time of plenty.

Our General Transportation Fund, which is financed from a one-half cent per gallon tax on gasoline, amounts to approximately $23 million per year. Fifty percent of these funds are direct pass-through grants to the urban areas to help subsidize and improve transit operations. With the remainder of these funds, and with the assistance of federal grants, we have inaugurated a number of innovative programs. Although these programs could be considered an effective reaction to the current energy crisis, they were started early in 1973, at least six months before the "energy crisis" became a reality. We would be sorely disappointed if the success of these programs was due only to the current situation. In cooperation with our local units of government, we have inaugurated dial-a-ride systems in several medium-sized communities, purchased buses for larger communities, initiated demonstration projects for improved commuter rail facilities, and authorized several studies to determine the feasibility of utilizing people-mover systems in high activity centers. These programs are beneficial to the communities of Michigan and they are deserving of increased federal participation. They were not originally conceived as an answer to the shortage of energy; they were intended to help solve other problems, but they are and will continue to conserve energy if properly developed and financed in the future. Following are some of the programs inaugurated in Michigan since the beginning of the energy crisis:

A. Statewide Carpool/Buspool Programs

In a January letter to all employers with work forces larger than 500, Governor Milliken urged the establishment of carpool programs. He encouraged these large employers to contact the regional planning agency in their area for assistance. These agencies have been given responsibility for the coordination and promotion of carpool programs in their area of jurisdiction.

B. State Employee Carpool/Buspool Program

Initiated by the Michigan Department of State Highways and Transportation, this pilot program matched 3,100 capitol complex employees with other potential carpoolers. The Department will periodically update this computerized program and consider further incentives to encourage carpooling among state employees.

C. Carpool and Public Transportation Promotion and Publicity

In response to various local, state, and federal programs to encourage carpooling and the increased use of public transportation, the Michigan

news media has been instrumental in making the public aware of energy conserving measures. In a similar informational intent, the Michigan Department of State Highways and Transportation has prepared and distributed more than 2,000 "Pool It" posters to public and private businesses within the state.

D. Urban Public Transportation Energy Emergency Program

The Michigan Legislature, in December, 1973, enacted legislation permitting the expenditure of state gas tax monies for an Energy Emergency Transportation Program. Intended to provide increased public transportation service within urban areas, $1,830,943 in grants has been appropriated to ten urban areas for the purchase, lease and/or rehabilitation of approximately 250 intracity buses.

E. Michigan Park and Ride Program

The Michigan Department of State Highways and Transportation is working with local transportation authorities in the development of park and ride programs. This program involves the acquisition and development of parking facilities within the larger urbanized areas. Such sites will serve as collection points for express bus services and carpools. To date, preliminary implementation of this program has been limited to the Detroit metropolitan area.

F. Reserved Bus Lanes

The Michigan Department of State Highways and Transportation is currently evaluating potential locations for reserved bus lane projects in the state. Such segregated lanes would be limited during the peak hours for use by vehicles displaying high energy efficiency, such as express buses, intercity buses, and carpools. Initial efforts in this endeavor have been confined to the Detroit area where several major arterials are under study. Long range considerations focus on implementation of reserved bus lane projects on major Detroit freeways. State legislation will be required to implement this program. Such legislation has been introduced and should be enacted in the near future.

G. Intercity Public Transportation Programs

Effective February, with Upper Great Lakes Regional Commission funding, the state implemented a Northern Express Bus Service linking Detroit, Lansing, Kalamazoo and Jackson to northern recreation areas. This service was developed and coordinated by this Department, working in conjunction with the Michigan Tourist Council and resort owners in northern Michigan. The utilization of this service is now being analyzed to determine the feasibility of continuing this type of service in the future.

H. Statewide Carpool and Bus Parking Lot Program

An immediate action program to establish carpool parking lots adjacent to state trunklines is currently being developed by the Michigan Department of State Highways and Transportation. Sites will be graded, paved, signed, and plowed as required to make them suitable for year-round use. A longer range, more comprehensive program will be developed which may involve the purchase or lease of land and the development and improvement of larger sites using Federal-aid highway funds at entrances to major cities.

I. Speed Reduction

The State Legislature during March, 1974, enacted legislation reducing the maximum speed limit on Michigan highways to 55 miles per hour and signs have been posted. This is expected to result in a savings of 178 million gallons of gasoline annually. Prior to this time, voluntary speed reductions by Michigan drivers had occurred, with the average speed on rural freeways (previously posted at 70 m.p.h.) having dropped 6 m.p.h. to 62.3 m.p.h. On the 65 m.p.h. undivided rural highways, the average speed was 54.9 m.p.h., or 5 m.p.h. less than one year ago.

J. Urbanized Area Programs

In addition to federal and state sponsored initiatives, individual urban areas within Michigan have been instrumental in the development of transportation related energy conservation programs. The larger urban areas generally are involved in ambitious programs involving carpooling and mass transportation. These include Lansing, Grand Rapids, Detroit and Flint -- all of whom are represented at the DOT Carpool Seminar in Chicago Heights, Illinois. The Southeast Michigan Council of Governments has created a technical and administrative task force to coordinate carpool and other energy emergency programs. A work program and a funding proposal is currently being developed by this task force. Grand Rapids and Lansing have received local approval to make application for 90-10 funding (using Federal-aid urban system funds) for a carpool demonstration project under the provisions of Section 3 of the Emergency Highway Energy Conservation Act. Several other urbanized areas are also considering this type of program.

## 3. TRANSPORTATION PLANNING FOR THE SEVENTIES

Transportation planning for the seventies will have to add still another dimension to the planning process. The conservation of energy must now become a major factor in the decision-making process. Except for low profile moderate cost improvements, no innovative or extensive changes to our existing transportation systems can be planned, constructed, and in operation during this decade unless they are already well advanced through the planning stage. Therefore, we must look to the eighties as the time period for fruition of major innovative systems.

Urban Public Transportation

If mobility is to be preserved, while at the same time meeting the dual objectives of energy conservation and achievement of air quality standards, there will need to be a shift of many person trips from the private vehicle to public transportation. However, in most communities, this will require improved highway transportation service rather than fixed guideway systems. Except for Detroit and possibly some selective activity centers throughout the state, the urban public transportation systems in Michigan will consist of rubber tired vehicles operating on highways. Even in Detroit where an independent guideway system is proposed, buses will be required to feed the new transit system, as well as provide service to areas not served by the new system.

In addition to a fixed guideway system being proposed for Detroit, we are studying the feasibility of utilizing independent people-mover systems in five high activity centers. Three of these studies are in Detroit and would complement the proposed area wide transit system. The other two are in the CBD's of Grand Rapids and

Saginaw. The purpose of these studies is to determine the feasibility of utilizing relatively small people-mover systems in intensive activity centers where movement of the private motor vehicle is in constant conflict with pedestrians and the storage of these vehicles is often not the best and most productive use of land.

Here in Michigan the automobile industry is spending millions of dollars on research and development of mass transit systems. Although much of this research has not been publicized, it is known to include advanced design of completely automated people-movers operating on special guideways, improved design of both small and large buses, research on a dual-mode vehicle, and advanced propulsion systems. Some of these systems have been produced and are in operation.

Many publications and orators have used the phrase, "balanced transportation". But to our knowledge, no one has defined just what balanced transportation is. This situation probably exists because what might be balanced for one area would be unbalanced for another area. However, Michigan is actively promoting the development of public transportation facilities in all of our urban areas. This emphasis at the state level is being backed up by state funds. To accomplish meaningful advances in this area, additional funds will be required from the federal level for not only capital improvements, but operating subsidies as well.

Highways

During the next sixteen years, we would like to complete the Michigan freeway network. The Interstate System should be completed by 1980 or shortly thereafter. However, this system represents slightly less than one-half of the total freeway network necessary to adequately accommodate the major traffic desires throughout the state. The remainder of our adopted freeway plan includes very few miles in urbanized areas, but until the entire network is completed, certain areas of our state will be at an economic disadvantage in comparison to those areas now being served. At this point, we would like to emphasize that once this skeletal statewide freeway system is completed, very few additional miles of this type of highway will be required. No knowledgeable transportation planner is advocating the proliferation of freeways just for the sake of constructing freeways, but until the system is complete, certain areas of our state will not benefit from these modern highways that have meant so much to the economic development of those areas now being served.

Another very vital area of concern during the next decade and a half is the upgrading of the remainder of the arterial highway system. Because of the emphasis put on the Interstate System in the past, many very important arterial routes have been neglected, in both urban and rural areas. Primarily, these routes will only require upgrading with only minor relocations. However, time is running out on these highways; if they are not given serious attention in the near future, the cost of rehabilitating many of them will be greatly increased.

Railroads

Railroads present a critical concern for Michigan's future transportation system. The recent U.S. Department of Transportation report, "Rail Service in the Midwest and Northeast Region", identified 2,250 miles or 48 percent of lower peninsula Michigan rail route miles as "potentially excess". The new Regional Rail Reorganization Act of 1973 provides that the United States Railway Association will select those lines of bankrupt railroads for continued service, and subsidy funds are allocated to states to subsidize continued service of unprofitable operations.

The role of the state is to determine which lines are necessary to commerce and community development. The state's interests in the future of railroad operations are many.

The Department of State Highways and Transportation has been working closely with the Governor's Office to bring the problems of railroads into a multi-modal transportation planning process. At the Governor's request, an Interagency Railroad Task Force has been organized and State Railroad System Needs Analysis initiated. This study will be completed this September.

Energy preservation is of concern to the entire public. A continued energy shortage would enhance the railroad alternative as a fuel-efficient means of transport and a means to continued movement of goods at moderate transport prices. Railroads also serve as an energy efficient mover of passengers. Demands for rail passenger travel has begun to grow again.

In cooperation with AMTRAK, the Michigan Department of State Highways and Transportation anticipates the initiation of passenger rail service between Port Huron and Chicago in May, 1974. Slated to begin operation with one round trip daily, this service is expected to be expanded by an additional trip during the latter portion of the year. Additional service on the current Detroit-Chicago run is also being considered.

Losses of rail route miles have implications for state highways. Commercial traffic diverted to highways, because of rail line abandonments, may cause increased highway maintenance expense and traffic accidents. Where traffic is nearing roadway capacity, major investments in new highway facilities may be required.

More broadly, presence of rail lines is a major determinant of community stability and future development potential. Products of agriculture, mining, and forestry rely on rail transportation for bulk, low-cost movement. Future demands for food products will stimulate inbound shipments of agricultural supplies and outbound shipments of products. Extraction from mines and forests remains uncertain. As scarcities develop, currently low-grade mines and forests may return to importance. Rail transportation is required to help the economy readily respond to alternative sources of raw materials.

Railroad planning is an essential part of transportation planning. As a low-cost carrier, the railroad serves as a fuel saver and as an encouragement to economic development. Often, plant locations depend on the location of railroads. Community stability depends on the employment generated by these industries. Transportation, more than any other medium, can bring about an equilibrium of growth between our densely populated urban areas and rural, small-town America.

Aviation

The chief effect of the energy crisis on the aviation phase of transportation planning and priorities of the seventies is uncertainty. This uncertainty is apparent in every segment of aviation, both in Michigan and throughout the United States.

Scheduled airlines have canceled over 2,000 flights, some of them affecting Michigan. It is estimated that fuel which previously represented 12 percent of airline operating costs now represents 20 percent. However, the reduction of flights has resulted in higher load factors for remaining flights, resulting in more profits per flight, and somewhat offsetting the increased fuel prices.

General aviation, which represents the private sector of aviation, has experienced a decline in the number of flights due to increased prices and the availability of fuel. This form of aviation is very important to business and industry. Although no figures are available, it can be assumed that the reduction in private flying has had an adverse effect on the economy.

The Bureau of Aeronautics, of Michigan's Department of State Highways and Transportation, is completing a State Airport System Study under a FAA grant. The recommendations for short-range, intermediate range and long-range in this plan may be affected by the energy crisis to the extent that projected activity may occur at airports throughout the State of Michigan, but at a later date than indicated (e.g., 1980 projections might more probably occur in 1985 or 1990).

## 3. THE PROPOSED UNIFIED TRANSPORTATION ASSISTANCE ACT OF 1974

Philosophically, we oppose the continuation of this type of federal legislation. The continuation and proliferation of federal involvement in transportation systems that are more properly a concern of state and local governments is not the most expedient or efficient method of providing transportation services to the people of this nation. Granted, this proposed legislation does offer the opportunity for the Governor of each state to assume some of the responsibilities now vested in the federal government, but we would prefer to see even greater reliance on state and local governments to solve their own problems by eliminating even more federal involvement.

The ultimate in this philosophy would be for the federal government to concern itself only with those transportation facilities necessary to the national defense and interstate commerce. These facilities should include a skeletal highway system, a national system of railroads, interstate air travel, and ports. Realistically, under the existing federal, state, and local government tax structure, federal financial assistance is absolutely essential to providing adequate transportation facilities.

However, even this reliance could be lessened if federal taxation on items such as motor fuels was lowered with the states picking up any federal decrease, or having the state merely retain a portion of the federal taxes now being assessed.

We recognize that one of the nationally held concerns that has lead to increased federal involvement in governmental programs has been the achievement of national goals regarding civil rights, environmental protection, and programs designed to insure that the constitutional rights are protected for all of our people. We submit that there are other statutory mechanisms to insure these goals are achieved and that it is essential to have federal control over the expenditure of public funds to insure the achievement of these worthwhile objectives. In fact, the dislocations that have resulted from the federal government's attempt to orchestrate all governmental mechanisms, as part of the expenditure of public monies, have contributed greatly to over-controlling our society and leading to public cynicism as to our ability to govern ourselves. Certainly, it is a federal role to assure that all of our citizens are treated equitably and that their rights are protected, but it should not be assumed that this can only be achieved through federal fine tuning of the governmental process.

Recognizing that our philosophy will probably not prevail, we offer the following comments on this proposed Act:

Basically, we would support most of the provisions of this Act; however, we believe some sections should be modified and we are concerned that it is not a complete Act. The Act only deals with the "urbanized areas" for fiscal years 1978-90. What effect will this Act have on the Federal-aid Primary and Federal-aid Secondary programs for these years?

We are concerned over the elimination of the urban areas between 5,000 and 50,000 population from the urban program, effective July 1, 1974. Based on the 1973 Federal-Aid Highway Act, we have established Federal-aid urban systems in these areas. If this 1974 Act is enacted as is, these areas would be eliminated after only one year from the urban program. This situation will bring about a strong reaction from these areas unless an alternative program (other than the FAP and FAS programs) is included in the Act.

If the urban program is revised in this manner, we support the allocation of both the Federal-aid urban extension funds and the Federal-aid urban funds on the basis of urbanized area population.

We definitely support the proposed 80-20 matching formula for both highway and public transportation facilities.

We support the provision which would allow the transfer of 40 percent between all appropriations, including rural to urban or urban to rural.

We support the expansion of the Rural Highway Public Transportation Demonstration Program, including the use of these funds for operating expenses.

We have reservations about using FAP and FAS funds for the purchase of buses for non-urbanized areas. These funds are so inadequate compared to the needs on these systems, such a diversion does not seem justified. It would appear that some type of UMTA program could be devised for this purpose.

We support all of the provisions of Title II of this proposed Act which are amendments to the 1964 UMTA Act. However, we urge that consideration be given to including urban areas of 5,000 to 50,000 population. These areas are in dire need of public transportation facilities and are usually in a less advantageous financial position to independently provide such services as are the larger urbanized areas.

We have some very serious reservations over some of the provisions of Title III which is to become effective July 1, 1977. We do not believe that rural, urban, and urbanized problems can be treated independently of each other, but should be considered as part of an overall national program.

We strongly object to the elimination of designated funds for urban extensions of FAP and FAS routes (C funds). We do not object to combining Federal-aid urban system funds with public transportation funds into a single fund; however, "C" funds must be available at the state level to assure the proper development of a statewide highway network. Without these funds, the state transportation agency would have little or no control over the funds necessary to accomplish a statewide system. If these funds were allocated to the individual urbanized areas on an annual basis, the state agency would have to rely on the appropriate local officials making these funds available

for construction of projects on the state operated and maintained system. This situation will become untenable because often projects of this nature would require several years of any one individual area's allocation of funds. Usually, urban extension funds are utilized in one or two areas of the state each year for constructing meaningful projects after which the funds are concentrated in some other area. Without this flexibility, it will be most difficult, if not impossible, to continue to develop and maintain a state highway system in the urbanized areas of our state.

We endorse the concept of a single Federal-aid urban system fund which should only include existing FAU funds and UMTA funds, not urban extension funds, for payment of operating expenses of public transportation facilities, in addition to financing highway improvements. This would provide the appropriate local officials with the flexibility necessary to meet their most pressing demands as they see them.

We strongly endorse the provision where the Governor would be empowered to assume many of the major responsibilities now assumed by the federal government.

We are opposed to changing the date for the apportionment of federal funds from on or before January preceding the commencement of the fiscal year to the first day of a fiscal year (July 1). This six month lead time is very beneficial in developing or revising programs based on the amount of funds which are to be made available.

Although this proposed Act does not advocate the direct pass-through of funds to the urbanized areas, we take this opportunity to oppose any such provision being added in the future. By making the Governor and his designated state agency responsible for all federally oriented transportation programs, allows the state to maintain equity between all urbanized areas as well as equity between the remaining areas of the state. To accomplish this equity, adjustments in state oriented programs may be necessary. However, to accomplish such equity without control or direct knowledge of all federal programs would be most difficult, if not impossible.

We not only support but urge the continuation of the Federal Highway Trust Fund beyond its current legal termination date of October 1, 1977. This fund is essential to the expeditious completion of the Interstate System. In addition, many miles of the other Federal-aid systems are in need of immediate attention. Although we support the continuation of state funded maintenance on all systems, the cost of maintaining the highway system is taking a higher percentage of state generated revenue each year leaving less for construction purposes. In a few years, thousands of miles of the Interstate System will be in need of resurfacing. In this regard, resurfacing should be considered as construction and federal funds from the trust fund be made available for this type of improvement.

## 3.2 URBAN PUBLIC TRANSPORTATION

# MASS TRANSPORTATION PLANNING PROCESS

## Michigan Department of State Highways and Transportation

The recent reorganization of the Department of State Highways into an agency responsible for highways, public transportation, aviation, railroads, and ports has resulted in the restructuring and expansion of the Bureau of Transportation Planning to encompass planning for these additional modal systems. Public transportation, in particular, is an area which will require a significant planning effort in future years. This is caused by increasing public appreciation of the potential of transit in helping to solve some of the important social, economic and environmental problems confronting our society. These concerns have been reflected in recent state and federal legislation requiring increased consideration of transit improvement programs as an alternative to other types of transportation improvements. Compliance with these mandates requires a viable public transportation planning process.

The Mass Transportation Planning Section within the Bureau of Transportation Planning was established to direct and coordinate mass transportation planning programs and activities in Michigan. The responsibilities of the section include the development of inter- and intracity public transportation planning programs and procedures and their application

to appropriate public transportation planning situations. Of special significance is the coordination which must exist between this section and other Departmental units responsible for public transportation activities. These include:

(1) The Metro Planning Division and the Multi-Regional Planning Division within the Bureau of Transportation Planning. These Divisions are responsible for the development of urbanized area (3C) and regional multi-modal transportation plans. They are also primarily responsible for Departmental liasion with local units of government and regional planning agencies.

(2) The Bureau of Urban and Public Transportation. This Bureau is responsible for the administration of General Transportation Fund programs including the distribution of operating assistance and capital grant monies to local transit agencies. This Bureau is also involved in various public transportation project planning activities.

Public transportation planning and project implementation is subject to numerous requirements imposed by federal and state laws. Specific procedures and activities necessary to comply with these requirements are contained in the MDSH&T Action Plan. Many of the State requirements are contained in Michigan Act 327 which, with a companion bill, provides

for the diversion of 1/2¢ of the 9¢ state gasoline tax for public transportation. The $22 million generated from this source is distributed on the basis of an annual public transportation plan detailing operating and capital equipment needs.

Statewide Planning

Long and intermediate range goals and policies for public transportation in Michigan will be contained in the MDSH&T Biennial State Transportation Plan. This plan will, over time, increase in specificity as state/regional/ and local transportation plans are developed and adopted. The Biennial State Transportation Plan will enunciate state policies towards the improvement of all transportation systems.

Regional Systems Planning

The Michigan Department of State Highways and Transportation, in cooperation with the designated multi-county regional planning agency, will develop a multi-modal regional transportation plan for each of the 13 Planning and Devleopment Regions in Michigan. A regional plan for public transportation will be an important part of this comprehensive plan.

Urbanized Area Planning

Each urbanized area in Michigan has an established 3C planning process with an appropriate organization to carry out necessary plans and programs required by this process. Technical and policy committees provide necessary direction and guidance to the program and have responsibility for plan development and adoption. The MDSH&T is represented on each of the committees and provides major financial and staff input. A multi-modal transportation plan is developed and maintained through this process.

Public transportation planning occurs at several different levels within urbanized areas. Act 327 requires the development of an Annual Urban Public Transportation Plan detailing operating programs and capital needs for the forthcoming fiscal year. This plan is the basis for state disbursement of General Transportation Fund money and it is acted upon by the Public Transportation Council, the State Highway Commission and the state legislature. The primary responsibility for preparation of this plan lies with the transit agency although review and coordination with the planning agency is required. Intermediate and long range transit planning is generally the responsibility of the 3C agency although coordination and

cooperation with the transit agency is strongly encouraged. This effort generally involves the preparation of a "transit development program" for a 5-10 year period as well as a longer range plan for 20 or more years. This latter plan will be developed and presented as part of a comprehensive transportation plan for the urbanized area. The intermediate and longe range plans provide the basic framework within which the annual plan is developed.

## 3-3 AVIATION

## 3-3.1 SUMMARY

Much of the basic material used in the aviation portion of the Michigan submittal for the 1974 Federal Department of Transportation National Transportation Study was taken from the Michigan State Airport System Planning Study. The System Planning Study has been approved and accepted by the Michigan Aeronautics Commission and will be submitted to the Department of State Highways and Transportation Commission before distribution of the final product.

A brief summary of the background of the State Airport System Study would be in order.

The Michigan Airport System Plan Study has been a two-year effort sponsored by the Michigan Aeronautics Commission (MAC) and made possible by a grant from the Federal Aviation Administration (FAA). The purpose of the study is to develop a plan for the orderly and timely development of a system of airports adequate to meet the air transportation needs of Michigan. Upon completion of the study and approval by its sponsors, the resulting airport system plan is expected to serve many important uses:

- Applicable portions of the plan will be integrated into the National Airport System Plan. An airport must be included in this plan to qualify for federal participation in the funding of development.

- The plan will provide a basis for coordination of airport planning with planning by state, regional and metropolitan agencies in such areas as transportation, land use and the environment, economic development, and resource utilization.

- The plan will provide a framework to assist in the development of individual airport master plans (and airport system plans at the regional or metropolitan level, if needed).

The state system plan is not intended to present detailed, unalterable design specifications for existing airports; nor is it intended to design specifications for existing airports; nor is it intended to identify the specific location of new airports. Instead, the plan identifies general locations and aeronautical roles for a coordinated system of airports. Airport development is examined to the extent necessary for determination of approximate system costs.

State Policy and Programs for Airport Development

The Bureau of Aeronautics has long encouraged the development of an adequate airport system through a number of departmental programs and the administration of federal programs to establish an aviation network in the State of Michigan. Public assistance, whether in the form of a federal-state-local program or a state-local program, has become increasingly necessary in the development of efficient airport facilities, both in the State of Michigan and in the United States as a whole. In fact, in Michigan almost half of the airports in the state were improved with some form of assistance.

In obtaining federal funds, from 1947 to 1970, the enabling legislation was the federal airport act establishing the Federal Air to Airport Program. In 1970, a new federal assistance program was enacted entitled, "The Airport Development Aid Program."

In these federal programs, the United State Government provides up to 50 percent of approved cost of a project. Eligible work includes land, construction and improvement of all or part of a public airport. The Aeronautics code of the State of Michigan appointed the Bureau of Aeronautics to act as an agent for local political subdivisions in the development of aeronautical facilities involving federal financial aid. As agent for political bodies involved in the federal program, the Bureau of Aeronautics furnished engineering and other technical services to the local airport sponsor. The state also participated financially in these federal projects by matching local funds for airport construction on the following basis:

| | | |
|---|---|---|
| Federal Government | -- | 40% |
| State of Michigan | -- | 20% |
| Local Community | -- | 40% |

The Bureau of Aeronautics through financial assistance on a matching 50-50 basis aids local units of government in the development and improvement of small airports, which do not qualify for federal assistance. In addition, the Bureau of Aeronautics has initiated several other programs to meet special aeronautical needs around the state. These are the small airports program, the small loan program, the airport marking program and the hazard removal and state navaid programs.

Obviously, the amount of airport development which can be programmed in any given year is dependent on the funds available from federal, state and local sources. Until the present time, the allocation of federal and state funds each year was made on the basis of first come first serve. The communities which showed initiative and interest in aviation programs were the ones which were given assistance. This is not to say that these projects were not needed. It is to say, however, that some areas which needed airport improvements did not receive it because of lack of local initiative. This was a definite impedement to the development of a statewide aviation system. There was no priority basis in this regard.

To provide for a long range outlook in airport programming, the State of Michigan applied for and received a Federal Aviation Administration System Planning Grant for a statewide, long-range airport study. This study would meet the aeronautical needs for the State of Michigan for the next 20 years and it classified needed improvements to the aviation system by type and by time period. When completed, this plan would become part of the National Airport System Plan of the Federal Aviation Administration. The study was also generated by the significant changes that were occurring in aviation in the late 1960's as a business recession affected the State of Michigan and caused appeals in both air carrier scheduling and general aviation growth.

## Aviation Goals, Objectives and Standards

In preparing the system plan for aviation, guidance has been provided by overall goals and objectives for aviation in Michigan. The goals, as identified by the Michigan Aeronautics Commission,* are:

1. To develop a comprehensive aviation system in Michigan
2. To achieve an efficiently operating aviation system in Michigan
3. To promote a safe aviation system in Michigan
4. To provide a convenient aviation system
5. To enhance economic values
6. To improve environmental quality
7. To shape future settlement patterns

Objectives related to these particular goals for aviation are listed in the table, together with standards for each objective. The first list is for the general aviation segment of the industry but may include some objectives for air carrier aviation. The second list, however, pertains only to air carrier aviation.

The standards which are used were either established or recommended by national organizations, such as the Federal Aviation Administration and the National Association of State Aviation. Officials, and the Bureau of Aeronautics of the Michigan Department of State Highways and Transportation.

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*National Transportation Planning Study: Phase One--Aviation Goals for the State of Michigan, prepared by Michigan Department of Commerce, Aeronautics Commission, February 1971.

## AVIATION GOALS, OBJECTIVES AND STANDARDS

### A. General Aviation

Goal: To Develop a Comprehensive Aviation System in Michigan

| Objectives | Standards |
|---|---|
| Provide adequate number of general aviation airports | Service area of general aviation airport is 15 minutes except in major metropolitan areas |
| Maximize interface with other travel modes and facilities | Airports should be located within two (2) miles of major arterial road system |

Goal: To Achieve An Efficiently Operating Aviation System

| | |
|---|---|
| Minimize air facility congestion | At least 50 percent of total general aviation aircraft should be based at general aviation airports |
| Better ground transportation to airport from major service areas | Ground transportation time of 15 minutes for a general aviation airport's service area (except in large urban areas where access time for ground transportation prohibits rapid vehicular movement and sparsely populated areas) |
| Provide accessability to all airports | Provide VOR coverage to all parts of the State at 1,000' above the ground and higher |
| Maximize accessability to major public airports | Provide published instrument approaches to all public airports with paved runways and lights |
| Achieve public ownership of the aviation system | All air carrier and major general aviation airports should be publicly owned |
| Achieve short and long range coordinated system planning | "Airport master plans" and improvement plans should be developed and periodically updated at all major airports |
| Implement short range improvement program implemented | All elements of short range improvement programs implemented |

Goal: To Promote a Safe Aviation System

| | |
|---|---|
| Protect airspace from obstructions | No cases of non-conformance with height restrictions as specified in airport zoning at public airports |

| Objectives | Standards |
|---|---|
| ou age land development that is ipa ible with air traffic | Clear zones should contain only open space uses at public owned airports |
| ou age land development that is ipa ible with air traffic | Approach zones should avoid encroachment on medium and high density residential development, places of public assembly, large employment centers, hospitals and rest homes within two (2) miles of public owned airports |
| imize use of general aviation air- t | At least 50 percent of total general aviation aircraft should be based at general aviation airports |
| imize runway illumination | All air carrier and major general aviation airports should have lighted runways |
| vide accessibility to all airports | Provide VOR coverage to all parts of the state at 1,000' above the ground or higher |
| imize accessibility to major public ports | Provide published instrument approaches to all public airports with paved runways and lights |
| imize accessibility to major public rports | Provide instrument landing systems at the general aviation airports with runways long enough to accommodate jet aircraft |
| ilability of land needed for airport pansion | Purchase land needed for airport development in foreseeable future |
| ilability of land needed for airport fety | Purchase all clear zones at airports by either "fee" or through "easement" |
| im use of "land use" and "height" ning | Zone all public owned airports according to Act 23 of 1950 and State and Federal rules |
| Goal: To Provide A Convenient Aviation System | |
| vide adequate accessibility to rports | Airports should be located within two (2) miles of major arterial road system |
| vide adequate accessibility to rports | All airports should be within two (2) miles of primary regional population concentrations |
| ntain adequate aviation services | All major airports should have at least one trained mechanic at the airport or "on call" |

| Objectives | Standards |
|---|---|
| Provide convenient aircraft parking | Airports should afford tiedown facilities or hangars for all general aviation aircraft |
| Provide convenient auto parking | Adequate parking space for general aviation passengers |
| Goal: To Enhance Economic Values | |
| Increase economic viability of regions in Michigan | Increased travel potential for existing and potential industries |
| Goal: To Improve Environmental Quality | |
| Reduce Noise Pollution | No residential areas within any approach zone exposed to high aircraft noise |
| Encourage land development that is compatible with air traffic | Approach zones should avoid encroachment on medium and high density residential developments, places of public assembly, large employment centers, hospitals and rest homes within two (2) miles of public owned airports |
| Goal: To Shape Future Settlement Patterns | |
| Improve access to all areas of Michigan | At least one general aviation airport strategically located to provide reasonable access to the air transportation system by each organized community in the state |

B. AIR CARRIER

| | |
|---|---|
| Goal: 1.00 To Develop a Comprehensive Aviation System in Michigan | |
| Provide and maintain adequate number of air carrier airports. | Service area of air carrier airport is 30 minutes except in major metropolitan areas. |
| Provide VTOL service to major generators. | VTOL service to major generators from air carrier airport if ground transportation time is greater than 60 minutes. |
| Maximize interface with other travel modes and facilities. | Air carrier airports should be served by public transportation (including taxi) with 30 minutes travel time |
| Goal: 2.00 To Achieve an Efficient Aviation System in Michigan Operationally | |
| Minimize air facility congestion at major airports. | Airports must have the capacity to meet the aircraft demands per FAA standard; "An airport's runways may generally be considered to have reached capacity when delays to departures average four minutes during the normal two peak adjacent hours of the week. At specific runways used by small aircraft only, this departure delay level is two minutes for the peak hours of the week." |

| Objectives | Standards |
|---|---|
| Increase frequency of service. | Three hour travel time to major cities of 100,000 or more population within 300 miles of air carrier airport. |
| Better ground transportation to airport from major service areas. | Ground transportation to service area, 30 minutes from air carrier airports and 15 minutes from general aviation airports. |
| Maintain adequate aviation facilities. | Sixty-five seats in air carrier terminal for each 100 air passengers enplaning in peak hour periods. |
| Maintain adequate aviation facilities. | Air carrier terminal baggage area capability adequate for peak hour demand. |
| Goal: 3.00 To Promote a Safe Aviation System in Michigan | |
| Maximize runway illumination. | All air carrier and major general aviation airports should have lighted runways. |
| Maximize accessibility to major public airports. | Provide instrument landing systems to all air carrier airports and general aviation airports with runways long enough to accommodate jet aircraft. |
| Availability of land needed for airport expansion. | Purchase land needed for airport development in foreseeable future. |
| Goal: 4.00 To Promote a Convenient Aviation System | |
| Provide adequate accessibility to airports. | Air carrier airports should be served by public transportation (including taxi) with 30 minutes travel time. |
| Establish frequent air service from air carrier airports to many destinations. | Three hour travel time to major cities of 100,000 population or more within 300 miles of air carrier airports |
| Maintain adequate aviation facilities. | Sixty-five seats in air carrier terminalsfor each 100 air passengers enplaning in peak hour periods. |
| Maintain adequate aviation facilities. | Air carrier terminal baggage area adequate for peak hour demand. |
| Provide system of ground transportation from regional airports to population centers. | Adequate system of ground transportation. |
| Consolidate air carrier service to areas. | Consolidated air carrier service to provide better schedules. |
| Goal: 5.00 To Enhance Economic Values | |
| Increase economic viability of region. | 10% of employment growth due to provisions of improved aviation facilities. |
| Increase economic viability of CBD. | 10% increase in CBD destined person-trips. |

| Objectives | Standards |
|---|---|
| Goal: 6.00 Improved Environmental Quality | |
| Reduce noise pollution. | No residential areas within any approach zone exposed to decible level greater than PNdb 100. |
| Encourage land development that is compatible with air traffic. | Clear zones should contain only open space uses at publicly owned airports. |
| Encourage land development that is compatible with air traffic. | Approach zones should avoid encroachment on medium and high density residential developments, places of public assembly, large employment centers, hospitals and rest homes, within 2 miles of publicly-owned airports. |
| Goal: 7.00 To Shape Future Settlement Patterns | |
| Foster economic development opportunities. | 10% of employment growth due to provision of improved aviation facility. |
| Concentrate intensive land development near airport. | Total trip ends increase 10% in zones within one-half mile of airport. |
| Reduce urban sprawl. | All zones with trip ends greater than 2,000 should be contiguous to other zones with trip ends greater than 2,000. |

## 3-4 RAILROADS

## 3-4.1 SUMMARY

STATEWIDE PLANNING - RAILROADS

Michigan currently has about 6,200 miles of railroad trackage operated by twenty-three separate companies. In recent years this trackage has substantially decreased, reflecting a national trend toward abandonment of light density lines.

In recognition of this trend, and in anticipation of major Federal railroad legislation, Governor Milliken requested the Department of State Highways and Transportation to coordinate a comprehensive examination of rail service problems and issues. This was initiated by the organization of an Interagency Railroad Task Force of several State agency representatives and the subsequent design of a Railroad System Needs Study Work Program. The Work Program is now underway and will be completed in 1974.

Passage of the Regional Rail Reorganization Act of 1973 on January 2, 1974, added substantially to the need for State rail planning, with specific elgibility requirements for Federal subsidy funding (Sec. 402).

A Rail Planning Section was established as part of a Modal Division under the Bureau of Transportation Planning, with responsibilities for initiating and continuing a state planning process for rail transportation and local rail services. This responsibility includes the determination of present and future rail service level needs, the roles of various governmental agencies in the planning process, and development of needed policies and programs to insure that state railroads operate most effectively. The overall purpose of the resultant Rail Planning Program is to develop, promote, and support safe, adequate and efficient rail service in the State through the conduct of necessary research, investigation and cooperative processes involving both public and private interests in rail transportation.

# 3-5 PORTS

## PORTS

The basic responsibilities of the Port Development Program are established by Act 251 of the Public Acts of 1966 which is "An Act relating to declare certain policies of the State of Michigan; to designate the Department (State Highways and Transportation) as the agency of this State to cooperate and negotiate with port districts and others; to provide for the making of grants to port districts and the administration thereof; to authorize studies to assist in stimulating traffic; to authorize the Department to represent the State before other governmental units; and to provide other powers, rights and duties of the Department.

Specifically, to cooperate and negotiate with port agencies concerning the planning, acquisition, development, operation, maintenance and administration of port and commercial harbor facilities. Principal program elements include the development of local administrative capability to address local port needs; assist in the development of project proposals for channel and harbor deepening; organize and participate in public hearings on maintenance dredging requirements and dredged spoil disposal; and recommend State position on specific projects based on favorable benefit/cost analysis and environmental considerations.

To evaluate requests from local port agencies for matching grants for planning, acquisition or development; recommend funding sources and administer projects authorized by the legislature. A current matching grant to Monroe provides for an economic feasibility study to investigate industrial development potentials and projections for waterborne commerce that would justify harbor and channel improvements.

To cooperate and enter into agreements with federal agencies in the conduct of studies, research programs and related investigation designed to develop information to assist in developing waterborne commerce. Studies currently in progress or proposed by the U. S. Maritime Administration - waterborne commodity projections and ferry and passenger vessel design; the U. S. Department of Transportation Seaway Development Corporation and Pilotage Administration - toll levels and policy, pilotage rates and services; and U. S. Army Corps of Engineers - extended navigation season and modification to locks and channels, require input and participation of the port development program.

To conduct investigations of transportation rates and services and represent the State before federal regulatory agencies when such rates and services affect ports or shipping operations on the navigable waters of the State. An investigation of railroad rates indicated evidence of prejudice to Michigan ports and preference to coastal ports. Proceedings were instituted before the Interstate Commerce Commission for relief and resolution of inequities.

PART 4

# REPORTS OF LEAD URBAN AGENCIES

REPORT

OF

ANN ARBOR

Narrative Report
1974 National Transportation Study
Ann Arbor/Ypsilanti Urban Area

1. a) Difficult to intelligently comment on because division of responsibility is presently unclear and confusing. We think a clarification of the roles, functions and responsibilities of all agencies involved - federal, state, regional, county, and local - is of paramount importance.

This questionnaire is a good example of the confusion that exists. It continually makes reference to "the urban area" or "urban area planning agency", etc. - we assume this refers to Sec. 134 planning agencies. We consider ourselves to be such an agency: we were constituted originally in response to that section of the 1962 Act; we have been so constituted since 1965; we have minimally funded ourselves through contributions from member units; we operate under adopted by-laws; we have an adopted on-going program (approved by the Michigan Dept. of State Highways and Federal Highway Administration in 1970) which is presently being revised and updated; we have a 1990 area-wide transportation study underway under contract with Barton-Aschman Associates. We have responded to all requests for input and information for such studies as this 1974 N.T.S., etc. However, we are now told by the MDSH & T that we have no real legal status and are confronted with the anomaly of doing what Federal and State guidelines and requirements mandate but are told we are not eligible for direct funding from the same Federal or State units that want us to exist so they can meet those same Sec. 134 requirements; a very circular and frustrating situation and one which requires resolution.

b) Clarification of roles, functions and responsibilities of all agencies and units of government involved in transportation planning, programming and development; appropriate funding at the local level; development of appropriate legal structure or mechanism which groups such as ours could operate under - if Sec. 134 is to be given more than lip-service.

2. a) Yes
b) Yes

3. a) Need a definition of "consortium" as we do not believe it is legally possible under existing Michigan law for a single-purpose agency to exist except as a regional agency.

b) Yes - in process of investigation.

3. c) ---

   d) No final conclusions yet, but would most likely be a single-purpose agency.

4. Cannot respond as MDSH&T has not returned 1980 Program data, Form Y, as of this date (11/28/73).

5. a) No

   b) Yes

   c) The ideal relationship would be a joint transportation and land use plan developed by the Washtenaw County Planning Commission, working concurrently with local communities and the Ann Arbor-Ypsilanti Urban Area Transportation Study Committee, and coordinated with MDSH&T and regional agencies planning.

6. a) Not sufficiently informed to respond definitively, but see (b) following.

   b) The emergency bridge replacement program should be more adequately funded; grade crossing programs should be simplified and made more readily accessible. We receive little, if any, information about UMTA and D.O.T. programs or grants.

   c) Yes

   d) 1) Add federal financial assistance for operating costs of public transportation systems. 2) Adequately fund urban area groups such as ours so as to make possible integrated and responsible planning and coordination of programming and development of transportation facilities. 3) Develop legal structure or mechanism for such urban area bodies.

7. a) Yes, assuming continuation of the presently authorized transportation planning funds in the 1973 Highway Act and assuming a satisfactory resolution as to how groups such as ours will receive such funds.

8. a) Yes

   b) Public transportation study by Washtenaw County; general transportation study by City of Ann Arbor; urban area transportation study contribution by Cities of Ann Arbor, Ypsilanti, and townships in urban area. Approximately $120,000 total.

   c) Don't know

   d) ---

9. a) Yes

   b) No

   c) There have been questions asked by the MDSH&T of the various local agencies of government during the process of preparing a draft of the Plan and our urban area group has had one presentation but very little meaningful involvement and we have learned of the Plan mostly through the news media, attendance at public hearings, etc.

10. a) No

    b) ---

    c) No

    d) The AASHO urban design standards need to be updated based on currently needed research and development.

11. a) Yes

    b) Vehicle service miles

12. a) Yes

    b) The City of Ann Arbor, County of Washtenaw, and this is being addressed in the 1990 Transportation Study this urban area group has underway.

    c) Currently under study

13. a) Yes

    b) No

    c) The Federal Government should provide regularly current information to all local transportation planning groups.

14. a) Only terminal and transfer point inventory

    b) ---

Policy Priority Area (Numbers refer to 14 question numbers):

1, 2, 3, 5, and 10.

Drafted by: Howard F. Russell, William Lawhead, and Tom Urbanik of Technical Advisory Subcommittee; reviewed and approved for recommendation to Policy Committee by Technical Advisory Subcommittee on November 1, 1973, membership list attached.

Reviewed, revised and approved by Ann Arbor-Ypsilanti Urban Area Transportation Study Committee (Policy) November 21, 1973, membership list attached.

PRIORITIES FOR EXPENDITURE
OF AN ADDITIONAL 20% OF FEDERAL FUNDS

| PROGRAM AREA | PERCENT OF 1980 PROGRAM FUNDING 1/ | PERCENT OF ADDITIONAL FUNDS 20% |
|---|---|---|
| HIGHWAYS AND HIGHWAY RELATED ACTIVITIES | | |
| Urban | | |
| Rural | | |
| URBAN PUBLIC TRANSPORTATION | | |
| Capital Improvements | | |
| Operating Costs | | |
| AIRPORTS | | |
| PARKING (non-fringe) | | |
| MARINE TERMINALS | | |
| OTHER RAIL, BUS OR TRUCK TERMINALS | | |
| INTERCITY RAIL PASSENGER | | |
| OTHER (specify) | | |
| | 100% | |

these figures not available

1/ This column should be based on the 1980 Program data submitted on Form Y, and should not include the additional 20% in Federal Funds. Include fringe parking under urban public transportation. The percentages should be based upon the capital costs reported in the 1980 Program, plus an estimate of the total annual costs for the period 1971 through 1989.

ANN ARBOR-YPSILANTI URBAN AREA POLICY COMMITTEE MEMBERS (January 1974)

| AGENCY REPRESENTED | COMMITTEE MEMBERS |
|---|---|
| Mich. Dept. of St. Highways | Sam F. Cryderman, Plng. Dir. |
| Wash. County Road Comm. | William Lynch, Commissioner |
| Wash. Cty. Metropolitan Plng. Comm. | Marilyn Thayer, Sec.-Treas. |
| Ann Arbor City | Richard Hadler, Councilman |
| Ypsilanti City | Nathalie Edmunds, Councilwoman |
| Saline City | Hubert Beach, Mayor |
| Ann Arbor Township | Charles Stuart, Supervisor |
| Lodi Township | Erwin Frederick, Supervisor |
| Pittsfield Township | Robert Lillie, Supervisor |
| Scio Township | Floyd Layton, Supervisor |
| Superior Township | Z. T. Gerganoff, Supervisor |
| Ypsilanti, Township | William Gagnon, Supervisor |
| Ann Arbor Transportation Authority | Michael Berla, Member |
| Wash. County Board of Commissioners | MeriLou Murray, Commissioner |
| | **EX-OFFICIO MEMBERS** |
| Bureau of Public Roads (FHWA) | Harry Krashen, Engineer |
| Southeastern Mich. Trans. Authority | A. D. Chaffin, Asst. Gen. Mgr. |
| Southeast Mich. Council of Governments | Gary Krause, Trans. & Land Use Manager |

ANN ARBOR-YPSILANTI URBAN AREA TECHNICAL COMMITTEE MEMBERS

| AGENCY REPRESENTED | COMMITTEE MEMBERS |
|---|---|
| Wash. Cty. Metropolitan Plng. Comm. | Thomas Fegan, Director |
| Ann Arbor City Planning | John Hyslop, Acting Director |
| Ypsilanti City Planning | Frank Leimbach, Director |
| Washtenaw County Road Commission | Clare Hoedeman, Engineer |
| Michigan Department of State Highways | Ken Underwood, Survey & Analysis Section |
| Ann Arbor Traffic Engineer | John Robbins, Engineer |
| Ypsilanti City Engineer | William Lawhead, Engineer |
| Public Works Director Ypsilanti Township | Edward Kubiske, Director |
| Southeast Michigan Council of Govts. | Gary Krause, Trans. & Land Use Manager |
| Ann Arbor Transportation Authority | Karl Guenther, Director |
| | **EX-OFFICIO MEMBERS** |
| University of Michigan, Campus Planner | Bradford Barr, Campus Planner |
| Eastern Michigan University | Jack Wilson, Campus Planner |
| Washtenaw County Road Commission | Francis Treado, Traffic Director |
| Southeastern Mich. Trans. Authority | Harry Rogers |

# Ann Arbor-Ypsilanti Urban Area Transportation Study

March 25, 1974

NARRATIVE REQUIREMENT OF THE NATIONAL TRANSPORTATION STUDY

1. "The nature of this class of study in terms of its benefits, limitations, and future usefulness under critical modification" -- It is difficult to talk about the benefits, limitations, and future usefulness of this class of study. First, we have had little, if any, meaningful feedback from the last National Transportation Study. Second, it is not clear what is meant by "under critical modification".

   Certainly this class of study creates a vast data bank of policy, opinions, objectives, and programs related to transportation for the numerous Urban Areas throughout the United States. If the raw data is properly manipulated and promptly analyzed, the Federal and State Governments would have adequate information as to the transportation priorities and problems of the Nation. The Department of Transportation could then present these realistic needs to Congress for enabling and appropriation legislation. The same steps could be taken at the State level. It is assumed that the 1973 Federal Highway Act is somewhat the result of the above procedure.

   However, for the Urban Areas and their individual local units of government, the study results have not been presented in a meaningful form. Without feedback of meaningful data, it is extremely difficult for the Regional, Urban and Local authorities to adjust priorities and to budget a capital improvement program as a hard commitment.

   The 1973 Federal Highway Act and the Michigan Transportation Act gives us about three to four years to correct our critical highways needs in the Urban Area, however, we know that the funds will not be available to meet all of our critical needs. Therefore, it must be assumed that there are limitations and only short-term benefits to this study.

   It is hoped that the 1973 National Transportation Study results will be promptly fed back to the Urban Areas so that this study group and its local units will have a sound basis for making priority adjustments and the necessary budget commitments for implementation. Until the Ann Arbor-Ypsilanti Transportation Study Committee can produce a sound comprehensive plan, which the local units are willing to adopt and

finance their share, our efforts will be in vain. The Urban Transportation Plan adopted by the local units will require a firm commitment of adequate financial aid from the Federal and State Governments. The melding of all these requirements cannot now be seen beyond the short-term because the needs far exceed the projected revenues.

2. "A clear statement of your most pressing transportation problems as seen at the urban level and what and how new or expanded programs could be of benefit" --

PROBLEM - In every urban area, there exist public service institutions which do not generate property taxes. The Ann Arbor-Ypsilanti Urban Area has its share of such institutions. However, the existence of two major state universities (University of Michigan and Eastern Michigan University) and two major medical institutions (University of Michigan Medical Center and St. Joseph Mercy Hospital) present unique problems for the Ann Arbor-Ypsilanti Urban Area. These major institutions generate a significant number of trips from both inside and outside of the urban area boundary. The number of trips generated by these institutions produces a higher level of need for road improvements and maintenance. However, these same institutions do not pay property taxes to assist in the maintenance and improvement of road systems in the urban area.

PROGRAM ASSISTANCE NEEDED - Recognition of this unique situation in the form of additional cash payments by the State of Michigan for road improvements and maintenance. These payments are an example of those that could be made in lieu of property tax payments by the institutions mentioned. Eastern Michigan University has apparently acknowledged the problem by financing a portion of two local projects. (Huron River Drive improvements and the LeForge Pedestrian Bridge.)

PROBLEM - A lack of flexibility in the use of funding for transportation projects and programs. Specific legislative acts provide funding for specific categories of projects and programs. Thus funds may be available for some priority projects in certain categories but unavailable for other high priority need categories in the urban area.

PROGRAM ASSISTANCE NEEDED - A new program of unrestricted transportation funds to urban areas. These funds would be used in accordance with priorities set at the urban

area level. Ideally, all transportation funds for capital improvement projects in the urban area should be unrestricted. The use of such capital funds would be determined by an urban area transportation agency.

PROBLEM - Lack of adequate funds to provide for the minimum transportation requirements of citizens who travel within the urban area.

PROGRAM ASSISTANCE NEEDED - A more equitable return of revenues to the urban area could result in a balanced transportation system based on the needs of each individual urban area. Such systems based on local priorities and adequately funded are most likely to meet the transportation requirements of the people in each urban area. The funds to provide the needed assistance could come from increased user fees (i.e., gasoline tax).

PROBLEM - To provide for the transportation needs of special segments of the population, i.e., senior citizens and the handicapped. Because of physical limitations and/or age, many persons must use motorized transportation for even short trips. Thus, their requirements for fuel may be relatively inelastic. Many of these same persons are on fixed incomes and therefore have great difficulty in purchasing their fuel requirements. If fuel rationing becomes a reality, these persons will not be able to obtain their minimum fuel requirements at any price. In addition, many of these people are physically unable to drive an automobile. Other groups deserving special attention include low income persons, school children, and critical industry personnel.

PROGRAM ASSISTANCE NEEDED - A new program of unrestricted funds to be used in accordance with priorities set at the urban area level. Until such funds become available, special purpose funds should be granted to meet these urgent needs.

The following are brief comments related to the listing of Low and Non-Capital Alternatives listed in Figure IV-8:

1. Staggering of Work Hours - this has been done in the City of Ann Arbor to some extent starting back in 1965 when Bendix Corporation and Parke-Davis Corporation cooperated with the City in an effort to reduce the peak hour traffic volume on Plymouth Road between US-23 and Broadway. This action proved effective for several years. A similar program is underway in the City of Ypsilanti with the two major industries which is proving fairly effective.

2. Measures to encourage car pools - The University of Michigan is in the process of collecting and computerizing information that will be used to encourage car pools.

3. Banning private automobiles from the CBD - No such program now exists; however, Ann Arbor is planning to start such a program by 1980.

4. NOT APPLICABLE TO THIS AREA.

5. NOT APPLICABLE TO THIS AREA.

6. Increasing CBD daytime parking rates - both Ann Arbor and Ypsilanti City have done this, and Ann Arbor is planning to continue this policy through 1980. The City of Ypsilanti is now reviewing their parking system. The Ann Arbor program will probably be phased out after 1980 when peripheral parking facilities become fully established.

7. Lowering transit fares during off-peak hours - No such program now exists.

8. Less restrictions on taxicabs - None of the units or agencies within the urban area has taken such steps to date.

9. NOT APPLICABLE TO THIS AREA.

10. Reserved lanes for buses - No such policy now exists in this urban area. Both Ann Arbor and Ypsilanti are considering such a policy by 1980. The policy may provide for reserved bus lanes only when the bus route has sufficient car and bus volumes at the peak-hour.

11. Restrictions on curbside loading and unloading in congested areas - The Cities of Ann Arbor and Ypsilanti now have such restrictions in effect, and plan on a continuation in their 1980 program.

12. Evening delivery by trucks in downtown areas - No such policy now exists.

13. Peripheral parking - This program is being tried in Ann Arbor by the University of Michigan with their bus line running between North and Central Campus. The University first tried this several years ago between the athletic fields and Central Campus, but it has not proven too effective. The North Campus line is getting much better response. The recently adopted General Development Plan of Ann Arbor contains a stated policy encouraging peripheral parking.

14. Improving traffic operations - This is an on-going program that is now underway by the Cities of Ann Arbor and Ypsilanti and the Washtenaw County Road Commission. The City of Ann Arbor has taken the greatest strides in this area with use of eight-phase computerized traffic signals which are low cost considering the benefit. Several T.O.P.I.C.S. projects were constructed by the City of Ann Arbor and the Washtenaw County Road Commission during the period 1972-73.

15. Fixed Route Bus Service - The City of Ann Arbor, through the Ann Arbor Transportation Authority, has had a fixed route system in operation since 1967. This system has been considered a low cost alternative, even though a budget deficit has existed each year, which the City of Ann Arbor has covered in its annual budget. A more costly system known as Teltran is now in process of implementation in Ann Arbor, which will combine fixed line with Dial-A-Ride service. Fixed line service is also being extended to the City of Ypsilanti and the townships of Ann Arbor, Superior, Pittsfield and Ypsilanti. It is too early to say what the cost per passenger-mile will actually be for Teltran and its appurtenant fixed routes.

16. Bicycleways - The City of Ann Arbor constructed several experimental bike paths in 1971. Based on this experience a comprehensive Bicycle Path Study was completed, a network developed, and the voters approved a bond issue for $800,000 in April 1973 for the construction of bikeways.

    Eastern Michigan University has developed some bikeways to date. Through the efforts of the Washtenaw County Metropolitan Planning Commission it is hoped that a county-wide bikeway network will be planned and ready for implementation in the 1980 program. The County Road Commission plans on building a few bikeways in conjunction with highway projects starting in 1974. A bikeway network plan is part of the Urban Area Transportation Study.

19. NOT APPLICABLE TO THIS AREA.

20. NOT APPLICABLE TO THIS AREA.

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | X | X | | |
| | 2. Measures to encourage car pools. | | X | | |
| | 3. Banning private automobiles from the CBD. | | X | | |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | X | X | | |
| | 7. Lowering transit fares during off-peak hours. | | | | |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | X | | |
| | 11. Restrictions on curbside loading and unloading in congested areas. | X | X | | |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) Peripheral Parking | X | X | | |
| | 14. Improving Traffic Oper. | X | X | | |
| | 15. Bus Service | X | X | | |
| | 16. Bike Paths | X | X | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

BAY CITY

## SUMMARY

The 1974 National Transportation Study as it relates to the Bay City Metropolitan Area involvement presented a number of difficulties. Most of the problems can be related to a delayed start-up. Months of valuable time were consumed in a flip-flop decision procedure on the State Agency to be responsible for the study. Once a determination was made on the agency, deadlines continually appeared, where information from localities was needed "yesterday."

The time-make-up race led to several local contacts without local coordination. Follow-up inquiries uncovered the misdirection of questionnaires. The volumes of manuals should have been accompanied by monies to hire a local reader for small agencies. Program requirements carried on concurrently by local agencies as instituted by the Department of Transportation, lacked coordination. Information developed in the "3 c" process for "Short Range Improvement Programs" that could answer segments of the "National Transportation Study" were not discovered until late in the study period.

Finally, the results of the study indicates an approximate 40% variance between transportation needs and funds available. Serious questions must be raised to rationalize such a wide variance.

NARRATIVE REPORT BAY REGIONAL PLANNING COMMISSION

1.a. The Bay Regional Planning Commission has acted as the local governmental agency to deal with the requirement of the Federal Highway Act (1965 through 1973). The agency recently has been committed to three areas of the program:

The "3 c" Transportation Planning Process
The 1974 National Transportation Study
The Urban Systems Program

At this time, the "3 c" Transportation Planning Process, for this area, has been delegated by the Governor of Michigan, to the East Central Michigan Planning and Development Region. This Region is comprised of fourteen counties and a population of 612,061. The land area, of the region, is the largest of the sub-state districts in the lower peninsula of Michigan. The population of the counties involved range from a low of just under 10,000 to a high of over 200,000.

Under the Federal Legislation and the Governor's decree, the Planning Funds, the Capital Grants and the "penalty provisions" affecting a small land area surrounding the City of Bay City, Michigan, with an estimated population of 87,000 people, is now in the hands of "the Michigan Sub-State District No. 7."

The local view on this shift in responsibility is that the arrangement cannot work either as an administrative agency or as a pass through control system. Administratively the final decision on programs must be enacted for a very local situation and must be voted on by an individual some 90 miles away from the facility. In addition, this individual is not responsible to the local voter. Under a pass-through, the county agency cannot be guaranteed more than a one year contract. Under such a contract, staffing is not possible. This leaves only the hiring of consultants, which can be done as easily by the sub-state district which is the appointed responsible agent.

1.b. The changes in the current procedures that would seem desirable should be those announced by the Michigan Department of Transportation and Highways in December of 1973. Under this program, Bay County would have been funded to an amount that would have allowed local staffing. Such a funding procedure would have given a balance of knowledge and control between the Federal, State and Local Governments.

While locally it is not felt that the Michigan Department of Transportation and Highways has used their expert skills, depth of staff or program knowledge in a biased way against local governments, the proposed funding procedure does provide a "check and balance system."

Note: Given the answers to Question Number 1, Questions 2 through 14 appear to be academic.

2.a. In the funding of Federal Transportation funds directly to urban areas, it appears that it would be better to maintain the present balanced funding program.

2.b. The ability to spend Federal urban transportation funds on a completely flexible bases could lead to an oversight of such programs as mass transit, particularly in light of the great financial needs of local communities.

3.a. In urbanized areas it appears that a more comprehensive approach is possible to the allocation of "pass-through" Federal transportation funds on the bases of a local government consortium.

3.b. No investigation has taken place by the governmental jurisdictions in the Bay Metropolitan Area on the legal or administrative problems attendant to a direct "pass-through" Federal transportation funding program.

3.c. No study is anticipated on this question of direct "pass-through" funds.

4. A table such as the one requested in this question could only be submitted through the procedures of the Technical and Advisory Committee. At the present time the Bay Metropolitan Area Committees are in a moritorium. However, a 20% increase in local transportation funding should reflect the present priorities. For delayed funding priorities, reference should be made to the "Short Range Improvement Program." This program was developed as a requirement of the "3 c" process.

5.a. Yes, major transportation decisions in the urban area have been adequately integrated with adopted Comprehensive Transportation Planning.

5.c. The ideal relationship between transportation and comprehensive planning for urban areas must be a complete integration. Directing future land use closely reflects new and improved transportation systems.

6.a. A general statement appears to be the best answer to existing Federal transportation programs which are of marginal value. The "Topics" program represented a marginal value type. The requirements, while of value, represented a commitment of great detail. At the same time, the major needs were higher in priority than the improvements allowed in "Topics." On the other hand, the Bridge Replacement Special Funds attempts to address a major national problem for certain metropolitan areas.

7.a. The answer to this question is reflected in Answer No. 1.

8. General Revenue Sharing funds appear to be used for transportation only in the more rural areas. This decision on spending seems to reflect the increased amount of problems attendant to urbanized areas.

9. Recent evidence of a wish to re-examine transportation plans as to their modal orientation has not been expressed in this area.

10. A uniform Federal level of service standards for future transportation facility development does not appear possible given such diverse areas as the Metro-Detroit, New York, etc. as compared to Metro Bay City, Michigan.

11.a. The Bay Metro Area appears to support the defraying of operating losses on urban public transportation system since the area is presently re-establishing a service dependent on a subsidy.

11.b. A lack of operations at the present time allows no comparison on a formula for assistance.

12. A bicycle ways and non-motor vehicle facilities plan was an important segment of the "3 c" Transportation Plan for the Bay Metro Area. With the shift of

responsibilities in the "3 c" program, this segment remains in abeyance.

13. Since the area involved in the Bay City Metropolitan Area is one of the smallest in the country, little capability can be developed on new transportation technology.

14. Studies that relate to the movement of urban goods are far too handicapped by the present art of reporting procedures. The information on railroads serve as an example. Railroads that serve this area report their goods movements to the Michigan Public Service Commission on a District bases. The District for for this area encompasses most of Eastern Michigan and Northern Ohio. Special studies are of limited value since private businesses do not have to reply on their shipping activities.

RANK OF THE FIVE POLICY AREAS IN PRIORITY

Planning Responsibility
Consortium of Governments
Coordinated Planning
Planning Grants
Federal Pass-thru Funds and Federal Programs

Responses by:

William A. Lynch, Director
Bay Regional Planning Commission

Review by the Bay Regional Planning Commission, the appointing agency for the Policy and Technical Committees. Further circulation will be held in abeyance due to a change in the designated "3-c" agency.

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | | X | | X |
| | 2. Measures to encourage car pools. | | | | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | | | X |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | | | X |
| | 11. Restrictions on curbside loading and unloading in congested areas. | X | | | |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

DETROIT

1974 NATIONAL TRANSPORTATION STUDY

Narrative Report
Part 4
Sections 4-1.3

1. a) With mixed concern. Issues relating to Section 134 Planning Agencies and their responsibilities are not consistent with historic powers of local governments and State agencies. Time has not permitted a sorting out of roles and responsibilities based on adopted local policies.

   b) Where such facilities are not part of a total state-wide network, the responsibility should rest with the metropolitan area. For those projects not of a state-wide nature a change in the State's role to that of an advisory position.

2. a) Yes

   b) Yes

3. a) Yes

   b) No - Current Council of Government Operations tend in this direction for planning monies.

   c) No

4. Difficult to determine, most likely split would be 50% capital and 50% operational. These funds would be applied to public transit as a supplement to current on-going programs.

5. a) No

   b) Continued re-evaluation of the structure of the Council of Governments, its Unified Work Program, alternate funding sources and relationships to the region's operating agencies.

   c) Overall transportation system plans, priorities, and programs (all modes) should be set in the context of the region's 3-C planning process (land-use, utilities, etc.). Future guidelines should further incourage the participation of operating agencies, elected officials and citizen groups in the plan formation and amendment process.

6. a) No

   b) -

   c) Yes

   d) Increased latitude in the use of federal aid monies for maintenance of current highway facilities.

   Flexibility to allow public transit operating subsidies if the region determined them necessary.

7. a) No

   b) Current guidelines tend to structure the planning programs around federal desires rather then the concerns of local governments.

   Practical information needs for local governmental and regional decisions are not generally fundable under the more massive regional programs.

   Examples - Restrictions in singling out individual communities for special emphasis under the 1/2% FHWA planning monies.

   FAA Airport Master Planning Guidelines which do not recognize the need for regional system plans and priorities apart from generalized state level system plans and individual airport master plans.

8. a) Yes

   b) Operational subsidies for urban bus services within larger communities.

   In smaller communities for dial-a-ride and para-transit systems.

   In both cases in amounts currently not determinable.

c) No - not a regional policy, but is locally determined on a individual community by community basis.

d) -

9. a) Yes - this re-evaluation is a continuous process. Public hearings on the regional systems level plan will be conducted under the guidelines of the "Action Plan".

b) No

c) In southeast Michigan, a sub-committee of the COG's Council on Regional Development was inacted to review, comment and modify the draft proposal prepared by the State Department of Highways and Transportation.

10. a) No

b) -

c) No consensus from local road agencies.

11. a) Yes - State funds are currently being used.

The current State formula is based on population and vehicle miles to a maximum of 1/3 total operating costs.

b) This question cannot be answered at this time because any current rigid formula would discriminate against the introduction of new service areas, specialized service (handicapped) and specialized fare structure (senior citizens).

What is needed is some measure of innovation in service, system productivity, passengers carried, as well as to some percentage of average fare per passenger mile.

12. a) Yes

b) SEMCOG, appropriate county and city agencies (road commissions and recreation departments).

c) No

13. a) No - although sub-area distribution systems (people movers) have been designed to interface with the regional transit network.

b) No

c) By provision of actual cost and performance data for all "modes" backed with UMTA policy regarding the capital funding of such new technologies.

14. a) No - previous attempts during the period 1966-69 were hampered by a lack of data from private carriers and regulatory agencies.

b) -

Policy Area Ranking

Questions

| | |
|---|---|
| 2 | highest priority |
| 1 | |
| 11 | |
| 4 | |
| 5 | lowest priority |

Policy Question

Responses formulated by

Julien Wolfe
Director of Special Programs
Southeastern Michigan Transportation Authority

Gary Krause
Program Manager - Transportation & Land Use
Southeast Michigan Council of Governments

# DETROIT/SOUTHEAST MICHIGAN AREA

## SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | | | | X |
| | 2. Measures to encourage car pools. | | X | X | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | N/A |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | X | | |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | N/A |
| | 10. Reserved lanes for buses. | | X | X | |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | | | X |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

FLINT

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | | | | X |
| | 2. Measures to encourage car pools. | | | X | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | | | X |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | | | X |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | | | X |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

GRAND RAPIDS

# KENT - OTTAWA REGIONAL PLANNING COMMISSION

KENT COUNTY ADMINISTRATION BUILDING 300 MONROE AVE., N. W.

GRAND RAPIDS, MICHIGAN 49502


November 14, 1973

Mr. Sam F. Cryderman, Deputy Director
Bureau of Transportation Planning
Michigan Dept. of State Hwys. and Transportation
State Highways Building
Post Office Drawer K
Lansing, MI 48904

Dear Mr. Cryderman:

Enclosed is the "Narrative Report" portion of the 1974 National Transportation Study for the Grand Rapids Urbanized Area. The GRETS Policy Committee reviewed the findings of the study and agreed, with serious reservations, to give it a qualified endorsement. These reservations are detailed on the following pages. It is our hope that this Narrative Report will be reviewed not only by officials of the Highway Department, but by the Governor's office and the Federal Department of Transportation as well, because it is toward the latter two that many of our comments and criticisms are directed.

The GRETS Technical and Policy Committees are extremely interested in the results of this study and are willing to cooperate in every way possible in the conduct of any future studies. If future studies of this nature are undertaken, however, we sincerely hope that the problems which occurred during the 1974 National Transportation Study can be avoided.

Sincerely,

Don Lamoreaux

Don Lamoreaux, Chairman
GRETS Policy Committee

gmp

PHONE (616) 456 - 3731

1974 National Transportation Study

Narrative Report

as submitted by

The Grand Rapids and Environs Transportation Study

The GRETS Policy Committee, as the recognized transportation planning policy body for the Grand Rapids area, was requested by the Michigan Department of State Highways and Transportation to review the highway portion of the 1974 NTS and approve the data for the Grand Rapids urbanized area. The Committee was also told that it could make appropriate comments, suggestions and criticisms concerning the contents, methodology, conduct, etc. of the overall study. The following summarizes the views and feelings of the Policy Committee.

First, the Policy Committee has reviewed the proposed 1990 transportation needs for the Grand Rapids area as prepared by your consultants, and compared these with the anticipated revenues available to meet those needs. The results indicate that approximately 38% of all needs will be met by 1990. If the ultimate is for 100 percent of the needs to be met, this would seem to indicate that either 1) the projected needs are too high or 2) the anticipated revenue available, as calculated in the study, is too low. In light of results contained in recent needs studies conducted by the state and federal governments, it appears that the projected needs for the Grand Rapids area are fairly realistic. This is further evidenced by the apparently inflated needs projected for some other urbanized areas in Michigan. This means that the projected revenues are apparently too low. We would strongly urge a new or revised funding method so that revenues can be increased. We recognize the inherent unpopularity of a further increase in the gas tax and

suggest that alternative means be analyzed. We admit very frankly that we are not prepared to offer any substantive suggestions in this regard at this time, however.

On the basis of the foregoing information, the GRETS Policy Committee gives a qualified endorsement to the data being submitted for the 1974 National Transportation Study relative to the Grand Rapids area. The Policy Committee feels very strongly, however, that some comments are in order regarding the overall conduct of the study and its relationship to the continuing, cooperative, comprehensive transportation planning program in the Grand Rapids area.

With respect to the study conduct, both the GRETS Technical and Policy Committees take exception to the manner in which this entire 1974 National Transportation Study was conducted. This point cannot be emphasized too strongly. Our primary concern is with the degree of local input into the study and the timing of this input. Our first exposure came when we were asked to complete a questionnaire approximately one year ago. This questionnaire was, to say the least, very controversial and even objectionable to several members. It was never fully explained as to the real value of this exercise, nor was its ultimate use fully understood. There was substantial debate as to whether such subjective answers as were required in the questionnaire could be analyzed quantitatively, as the MDSHT and their consultants seemed to suggest.

Following this exercise, nothing was heard about the study for several months. We understand that there were problems at the state level as to who had ultimate responsibility for the study. When things finally got organized, there was very little time left to solicit meaningful local input and still meet the federal deadline. We realize that this delay was not the fault of the Department of State Highways and Transportation, but at the same time we

would like to point out that because of the delay and subsequent constricted time frame, the amount of local input was substantially restricted. This appears to be one more instance where uncertainty of administration and responsibility preempted the stated goals and objectives of the study, with the result that the people who were to benefit the most - the respective urbanized areas - had the least input into the end product.

It also appears to us that very little attempt was made to coordinate the 1974 NTS with the ongoing transportation planning process. On the one hand, the MDSHT prepared a financial benchmark report to meet certification requirements of the Federal Highway Administration. This report, which contained a substantial amount of financial statistics relating to the projected transportation revenues and needs of the area, was presented to the Policy Committee. On the other hand, a new set of data was prepared for the 1974 National Transportation Study, (as required by Congress) with, at least from this vantage point, little effort made to tie the two together. This reflects both a needless duplication of effort and a lack of effective coordination at both the state and federal levels. We would like to know a) to what ultimate use these statistics are going to be put by the federal government, and b) which set of statistics - the 1974 NTS or the Financial Benchmark Report - best reflects the transportation needs of the Grand Rapids area. If the cost figures as submitted in the 1974 NTS are to be utilized for future funding and cannot be reviewed or updated in the future, as conditions warrant, this Area has very serious reservations about giving its endorsement.

In conclusion, we cannot stress too emphatically our concern over the general conduct of the 1974 NTS and the apparent minimal degree of meaningful local input. It is to be hoped that in the future this situation can be corrected.

## Urban Area Policy Questions

Following are answers to the 14 sets of policy oriented questions, as required for the Narrative Report portion of the 1974 National Transportation Study. These questions were distributed to each member of the GRETS Policy Committee for their response. The answers submitted herein represent a summation of viewpoints from those questionnaires which were answered as well as the views of the Kent-Ottawa Regional Planning Commission.

1. a) How do you view the existing versus ideal division of responsibility between the state government and local government with respect to the planning, programming and development of transportation facilities?

   The existing division of responsibility was generally viewed as satisfactory.

   b) What changes in current procedures would be desirable?

   More local autonomy was mentioned as a possibly desirable change.

2. a) Are you in favor of federal transportation funds being allocated directly to urban areas, either a consortium of governments or individual general purpose units of government?

   The answer was a unanimous yes.

   b) Should federal urban transportation funds, whether or not they are allocated directly to urban areas, be completely flexible with respect to the transportation modes on which they can be expended?

   Again, an across the board yes.

3. a) Would the establishment of a consortium of governments, representing a majority of the urban area population, as a requirement for the "pass-through" of Federal transportation funds be preferred over pass-through to individual municipalities?

   The general view was yes, a consortium of governments would be desirable.

   b) Have the governmental jurisdictions in the urban area investigated the legal and administrative requirements attendant to the establishment of a representative single recipient agency,

responsible for the planning, programming and development of transportation facilities in the urban area?

Yes, as it pertains to a regional transit authority.

c) ------

d) If (b) is yes, what are the main conclusions resulting from such study? Of special interest would be whether the agency under consideration would be a single or general purpose agency, i.e., whether its responsibilities would primarily be limited to transportation, or it would encompass all or most community services including transportation, police and fire protection, sewage, water supply, housing, zoning, etc.

No conclusions were reached in the study. It simply analyzed the feasibility of such an approach and presented possible alternatives for study. The agency contemplated would probably be involved with only transportation and only as a development or service delivery body. The planning would remain a function of the comprehensive planning agency.

4. The following question is asked to determine which programs have the highest priorities, regardless of financing difficulties related to present institutional constraints. If the overall amount of Federal aid made available directly to the urban area (pass-through) were increased by 20% for the 1980 Program, and if this increase (but not the rest of the Federal funds) were available for either capital or operating expenses, for any mode of transportation, and without matching requirements, in approximately what proportion would these extra funds be spent?

Some felt it should be 100% for capital improvement, while others felt if should be split 50-50.

5. a) Are transportation planning, programming and development decisions in the urban area adequately integrated with comprehensive planning?

No.

b) If (a) is no, are actions in progress or anticipated which will result in a strengthening of this relationship?

Improvements are contemplated, particularly with respect to public transportation.

c) What should be the ideal relationship between transportation and comprehensive planning for the urban area?

The ideal relationship between transportation and comprehensive planning should be that the two are virtually inseparable. Transportation planning is a vital part of the comprehensive planning process. Because of its ability to influence land uses which in turn determine the daily activity patterns of people,

transportation planning must be integrated into the comprehensive planning process. Furthermore, integration must not occur on a piecemeal basis: that is it must not differ substantially from city to city or township to city, etc., but must be done on a uniform, regional basis.

6. a) Are there existing Federal transportation programs which you believe are of marginal value and which should be severely modified or eliminated?

General response was No.

b) If (a) is yes, identify these programs and briefly describe how they should be altered.

---

c) Are there any new programs which you believe the Federal DOT should implement?

No.

d) If (c) is yes, briefly describe the nature and purposes of such programs.

---

7. a) Do present Federal transportation planning grants provide for the kinds of planning which is locally desired and which serves local needs?

The answers were divided between yes and no.

b) If (a) is no, what changes are needed of an institutional, technical, and financial nature which will improve current transportation planning?

Those who said no thought funding was inadequate and should be increased.

8. a) Will any of the General Revenue Sharing funds which have been distributed to the jurisdictions in the urban area be used for transportation purposes?

Half of the responses said yes, and half said no.

b) If (a) is yes, in which program areas and in what amounts?

Primarily for road improvements and reconstruction.

c) Is it the long term policy that General Revenue Sharing funds be used for transportation purposes?

The answer was generally yes.

d) If (c) is yes, in what programs and in what levels will these these funds be used?

To improve local roads. No level was specified.

9. There is some recent evidence that some urban areas wish to re-examine transportation plans prepared in the past in terms of their modal orientation as well as with respect to the level of community involvement in their development.

a) Is the urban area contemplating such a restudy of existing transportation plans?

Yes.

b) Is there satisfaction with the current level of citizen and multimodal participation in the transportation planning and evaluation process?

The general feeling was yes.

c) What has been the involvement of urban area planning and operating agencies in the development of the State Action Plan to implement the Federal Highway Administration process guidelines?

Most, if not all, of the local planning and operating agencies were contacted by the MDSHT regarding attendance at a seminar being held in the Grand Rapids area concerning the Action Plan. However, no presentation was ever made to either the GRETS Technical or Policy Committees on the Action Plan. Thus, local involvement has been minimal.

10. a) Do you favor the use of uniform Federal level of service standards (exclusive of design standards for safety or physical adequacy) for future transportation facility development?

No.

b) If (a) is yes, in which program areas and for which kinds of facilities would you favor the use of Federal Standards? -----

c) Should present AASHO highway design standards continue to be used by the Federal Highway Administration for project approval on Federal-aid highways?

Yes.

d) If (c) is no, please describe the major changes in design standards that should be made. -----

11. a) Is the urban area in favor of the use of Federal and/or State funds for the purposes of defraying operating losses on urban public transportation systems?

Generally, yes.

b) What criteria or formula should be applied in granting such assistance?

Unknown.

12. a) Does the urban area presently have or plan on having a program devoted to the planning and development of bicycle ways and other non-motor vehicle facilities (e.g., jogging paths, pedestrian ways, etc.)?

City of Grand Rapids is only area which has done planning for bicycles.

b) If (a) is yes, what agency of local government is responsible? -----

c) Have estimates been made concerning the future levels of usage and the level of investment needed to develop adequate facilities?

No.

13. a) Are new transportation technologies evaluated in the current planning process in the urban area?

No.

b) In your estimation is the dissemination of information regarding new transportation technologies adequate?

Yes.

c) How can the Federal Government be more useful in this regard?

Are very useful as is.

14. a) Have there been any studies conducted for the area regarding the problem of urban goods movement?

No.

b) If (a) is yes, please cite the reports if available and the agency responsible, and summarize the main conclusions and recommendations that are endorsed by local authorities. -----

Following are the five policy areas of highest priority as taken from the foregoing list of 14 policy questions:

1. Planning Responsibility
2. Program Priorities
3. Coordinated Planning
4. Planning Grants
5. Re-examination of Plans

These responses were approved by:

Robert L. Stockman, Executive Director
Kent-Ottawa Regional Planning Commission

Names and affiliation of those participating in the responses:

Peter M. Lamberts, Mayor of Kentwood and Chairman of the KORPC

Hudson Lamoreaux, Commissioner, City of Walker

Gerald DeWindt, Supervisor, Georgetown Township

George Schweitzer, Supervisor, Alpine Township

Robert L. Stockman, Exec. Director, KORPC

David Needham, Transportation Planner, KORPC

Don Lamoreaux, Chairman, GRETS Policy Committee, Plainfield Township Supervisor

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
|---|---|---|---|---|---|
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | X | | | X |
| | 2. Measures to encourage car pools. | | | | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | X? | | |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | | | X |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | X | | |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

JACKSON

MINUTES

JACKSON AREA COMPREHENSIVE
TRANSPORTATION STUDY (JACTS)
POLICY COMMITTEE MEETING
JACKSON COUNTY BUILDING
JACKSON, MICHIGAN

Thursday, December 27, 1973.

The meeting was called to order at 10:15 a.m. by Chairman Conley.

ATTENDANCE:

Members Present: P. Conley - Mayor, City of Jackson
R. Haan - Michigan State Highways
W. Russler - Supervisor, Napoleon Township
L. True - Chairman, County Road Commission

Others Present: W. Vaclavik - City Engineer
R. Milburn - Region II Planning Commission

ITEM I - Adoption of the Guidelines for priority selection of projects on the Urban Systems Map.

Mr. Haan presented the proposed guidelines to the Committee and answered questions of the Committee.

Mr. Haan made a motion and Mr. Russler supported for the adoption of the guidelines as submitted. Vote: Yeas - 4, Nays - 0, Absent - 6.

ITEM II - Approval of projects utilizing Urban System Funds: North West Avenue and Ganson Street intersection, Ganson Street and Elm Avenue intersection, and Lansing Street Bridge widening.

Mr. Vaclavik presented the details of the three projects to the Committee.

Mr. Haan made a motion and Mr. Russler supported to approve the Ganson Street and West Avenue project for Urban System Funds. Vote: Yeas - 4, Nays - 0, Absent - 6.

Mr. Russler made a motion and Mr. True supported to approve the Ganson Street and Elm Avenue project for Urban System Funds. Vote: Yeas - 4, Nays - 0, Absent - 6.

Mr. True made a motion and Mr. Haan supported to approve the Lansing Bridge project for Urban System Funds. Vote: Yeas - 4, Nays - 0, Absent - 6.

ITEM III - Approval of Policy Questions for the National Transportation Study.

Mr. Haan reviewed the Policy Questions with the Committee and after a discussion concerning questions having two answers the following motion was made by Mr. Russler and supported by Mr. True; to adopt the answers as presented, recognizing the difference of opinion, and if these questions become prevalent, the Committee will hold a hearing to resolve the differences in the answers. Vote: Yeas - 4, Nays - 0, Absent - 6.

There being no further business, the meeting was adjourned at 10:45 a.m.

Respectfully submitted,

Ronald K. Milburn

Ronald K. Milburn
Principal Planner

RKM:mfb

1a). A more ideal division of responsibility would give more control to the local governments in applying for grants. This would include more allocations for local planning needs rather than channeled programs which apply only to specific problems. However, the State government should still maintain enough control to assure that projects are well planned, and designed with optimum benefits and are of sufficient priority to be implemented.

2a). Yes. As long as State government can act as an arbitrator between those who plan and propose projects and those who are effected by projects, and as long as state government has some voice in the proper distribution and use of funds (Refer to 1a).

2b). Yes (Regional Planning Commission).
No, if the flexibility is in respect to the transportation modes on a Federal level, yes if on a local level (County Road Commission).

3a). Yes, it eliminates duplications and promotes a unified system (Regional Planning Commission).
Yes, having the individual governmental unit having jurisdiction and responsibility for the project in mention should have a greater voice in the choice and control of the project. This could be achieved through weighted votes in the local consortium of governments (County Road Commission).

3b). No.

3c). No, however versions of the Home Rule Bill at the State Level would possibly do this.

3d). No answer required.

4). No response due to lack of Figure IV-6 in information we received (Regional Planning Commission).
90% would be spent for roads and streets with the other 10% being left flexible for the other various demands (County Road Commission).

5a). Yes (Regional Planning Commission).
In the local areas this is not always done (County Road Commission).

5b). No answer required.

5c). All proposed projects should be based on good complete comprehensive planning with a joint effort by all agencies to coordinate work.

6a). Yes.

6b). Generally, programs which are strongly idealistic, irrational, unfeasible, and uneconomic should be eliminated or sharply revised especially in terms of the amount of funds available for their study. This applies for example to some of the recent people mover programs recently introduced. Such programs are catered to the largest metropolitan areas and megalopoli while being completely unrealistic for smaller metropolitan areas (Regional Planning Commission).

6c). Yes.

6d). Programs that should be implemented include more programs for mass transit, urban transportation systems, and new programs for problems that are a result of transportation such as parking and carpools (Regional Planning Commission).

7a). Cannot be answered strictly yes or no (Regional Planning Commission).
For the most part yes (County Road Commission).

7b). No answer.

8a). Some townships have used their sharing funds on the improvement of local roads in their respective townships, however, the County has not expended any funds we know of for a similar purpose (County Road Commission).
Yes, townships and City of Jackson (Regional Planning Commission).

8b). Exact amounts not available at this time.

8c). Yes (Regional Planning Commission).
No (County Road Commission).

8d). No response.

9a). Yes (Regional Planning Commission).
No (County Road Commission).

9b). Don't know (Regional Planning Commission).
No, the only interest shown has been by special interest groups (County Road Commission).

9c). An action plan is currently being compiled by the Michigan Department of State Highways and should be accepted by all agencies as a guideline in processing projects with Federal funding (County Road Commission).

10a). No.

10b). Does not apply.

10c). Yes, but as guides only. Each project should be studied for problems which would not allow it to conform to the guidelines and alternatives studied which would take the special problem into account.

10d). Does not apply.

11a). Yes (Regional Planning Commission).
No (County Road Commission).

11b). Reimbursements either whole or in part for the operating deficit (Regional Planning Commission).
For improvements only (County Road Commission).

12a). Yes, in the City of Jackson.

12b). The City has developed a bicycle plan.

12c). Yes, in the City.

13a). Unable to answer without a clarification of what is "new".

13b). Yes.

14a). Yes.

14b). Transportation Study and Airport Study by the Regional Planning Commission.

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
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| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | | | | X |
| | 2. Measures to encourage car pools. | | | | X |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | | | X |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | X | | |
| | 10. Reserved lanes for buses. | X | | | |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | | | |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

KALAMAZOO

| Question Designation | | Answer |
|---|---|---|
| 1. | a) | The technical committee is satisfied with the existing division of responsibility between the various levels of government and can see no substantial areas in which this could be improved. Satisfaction was expressed with the workability of the present division. |
| | b) | Local personnel should be trained to provide and correlate the necessary input of local data which could best be obtained and stored at the local level. State government should provide the highly skilled personnel any equipment to massage the data in its computer programs which then could be utilized in an output form at the local level for decision making. It appears that the procedures as they are functioning now are satisfactory to this group with the expectation that they will be further refined for definition of areas of responsibility as time goes on. |
| 2. | a) | No. The present allocation of funds which allows us to work through the state with the federal government appears to have considerable merit in providing uniformity of approach among the various governmental units of the state, as well as a fair and equitable distribution of funds to the appropriate areas. This procedure provides for adequate input through state organizations and individual agencies. It seems apparent to this group that to deal directly with the federal agencies on these funds could only result in the creation of additional or the ballooning of existing federal bureaucracy in order that they be able to handle these projects in an expeditious fashion. |
| | b) | Complete flexibility does not appear to be desirable. It appears to us that the flexibility that is built into the federal legislation should be adequate to provide the flexibility needed at the local level in expenditure of these funds. |
| 3. | a) | We are satisfied with the system we currently have and would oppose any change in that system. If it should have to come down to a decision between the two alternatives provided, this group would want to have a-hellava lot more information before reaching a decision. |

| Question Designation | | Answer |
|---|---|---|
| | b) | No. |
| | c) | In all probability |
| | d) | No response. |
| 4. | | Speaking for a Road Commissioner, the answer would be a flat NO just to be on the safe side. |
| 5. | a) | Yes, within certain confines. |
| | b) | No response. |
| | c) | They should be planned on the same data base and closely integrated. |
| 6. | a) | Yes. |
| | b) | Duplication of transportation planning studies at the national level and a proliferation of various highway classifications in the national and state transportation studies creates problems. |
| | c) | Why not simplify, streamline and implement those programs that they presently have? |
| | d) | No response. |
| 7. | a) | To date, no such grants have been received in this metropolitan area on a direct basis. |
| | b) | No response. |
| 8. | a) | Yes. |
| | b) | Street and highway construction. Approximately 50% of the funds in the township areas and in the City of Kalamazoo. None in the City of Portage. |
| | c) | Competing needs will have to be evaluated on a year to year basis. |
| | d) | No response. |

9. a) We are presently in this phase of our study and these considerations are being taken into account in carrying out our study.

b) A strategy for citizen involvement has been evolved and only the future can tell us how satisfactory this will be.

c) No response.

10. a) Yes.

b) It is the feeling of this group that the decision should be made at the local level, based on the quality of transportation service that they feel can best be provided in our area to meet the needs of our particular population mix.

c) No.

d) It is our feeling that the AASHO design standards are oriented more toward expressway and major trunkline types of construction and not urban area conditions where the needs cover a much wider range and where the physical constraints vary markedly from those experienced on trunkline construction. It is our feeling that the AASHO design standards can and should be used as a ready base reference from which modifications can and should be made in accordance with sound engineering judgements on an individual basis.

11. a) Yes.

b) The use of funds in this manner should be fully justified on an annual basis and the funds taken from a source other than those necessary to the continued operation and updating of other critical transportation modes.

12. a) Yes.

b) The City of Kalamazoo's Department of Public Works.

c) No.

13. a) Yes.

b) No.

c) A well integrated newsletter with wide dissemination

to all governmental levels, including those involved in the 3c process.

14. a) No.

b) No response.

## SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | | | | X |
| | 2. Measures to encourage car pools. | | X | | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | | | X |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | | | X |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | | | X |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

LANSING

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | X | | | |
| | 2. Measures to encourage car pools. | | X | | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | X | | | |
| | 7. Lowering transit fares during off-peak hours. | | | | X |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | | | X |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | | | X |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

MUSKEGON

SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | | | | X |
| | 2. Measures to encourage car pools. | | X | | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | | | X |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | | | X |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | | | X |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) | | | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | X |
| | 21. Other (describe) | | | | |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

REPORT

OF

SAGINAW

# 1974 NATIONAL TRANSPORTATION STUDY

## NARRATIVE REPORT

Saginaw County Metropolitan Planning Commission

December 1973

## SUMMARY

4-1.1 The Narrative Report attempts to point out some of the problems with the 1974 National Transportation Study in hopes of making the next study relevant to local transportation problems. The Saginaw County Metropolitan Planning Commission found several of the short comings of this study to be: (1) more emphasis should have been placed on multi-modal relationships between such modes of transportation as highways, mass public transit or aviation, (2) the information base is too diverse which detracts from the local comprehensive planning process, (3) and the study lacks a truly local input because of the dependence on state services.

## 4-1.2 INTRODUCTION

This Narrative Report describes the 1974 National Transportation Study and a few of the problems that were encountered during it.

## 4-1.3 URBAN AREA TRANSPORTATION POLICY AND PLANNING

The original goals and objectives that were determined for the National Transportation Study last year by the Policy and Technical Committees should have been more closely related to the Saginaw Metropolitan Area Transportation Study. A more coordinated effort should have been made to bring these two studies together. Such a study would be more relevant and have more direct benefit to the continuing transportation program in the Saginaw Area. It is also the contention of the Saginaw County Metropolitan Planning Commission that these goals and objectives should have been more closely followed when determining the 1980 program and 1990 plan. For this study to be truly effective some type of local goals should have been followed to bring better local input into the study.

## 4-1.4 EVALUATION OF THE 1972 INVENTORY

This was accomplished by the MDSHT

## 4-1.5 EVALUATION OF THE 1990 PLAN

This was accomplished by the MDSHT

## 4-1.6 EVALUATION OF THE 1980 PROGRAM

This was accomplished by the MDSHT

## 4-1.7 COMPARATIVE EVALUATION OF THE INVENTORY, PLAN & PROGRAM

The Inventory, Plan and Program have several serious short comings that detract from their overall value. First they are not comprehensive in that the information base is too diverse. It comes from different study agencies, all having

a slightly different goal or idea. Also the study is not a coordinated multi-modal system that will indicate the trade-offs between the different modes of transportation, such as highways, mass public transit or aviation. Finally, the study was very dependent on the state for its computer and administrative duties. This limits the scope of local imput when the local transit needs are of importance.

4-1.8 SOURCES OF FUNDS FOR THE 1980 PROGRAM

The process of determining the 1980 Program funding went through a complex procedure that concluded with a program somewhere between the 1972 Inventory and the 1990 Plan. This funding system has left some parts of the program with an over abundance of funds while others had limited funds in which the program is to be accomplished. This seems inadequate and illogical from a comprehensive planning perspective.

4-1.9 LOW AND NON-CAPITAL ALTERNATIVES

Low and non-capital alternatives were not considered (see figure).

4-1.10 RECOMMENDATIONS FOR ACTION

The 1974 National Transportation Study to be more effective should relate to the continuing transportation study of local areas rather than to an unrealistic, general, state administrative program. As it is not coordinated with other transportation programs, the study has only a limited practical use to the local areas involved. This lack of coordination also makes the study inefficient in that much of the data collected is not usable to other transportation studies and vice versa.

4-1.11 REPORTS AND COMMENTS OF OTHER PLANNING GROUPS

None

4-1.12 PARTICIPATING AGENCIES

Saginaw County Metropolitan Planning Commission
Saginaw County Road Commission
City of Saginaw Traffic Engineering Department
Michigan Department of State Highways
Policy Committee of the Saginaw Metropolitan Area Transportation Study
Technical Committee of the Saginaw Metropolitan Area Transportation Study.

COUNTY of SAGINAW
Office of the
COUNTY PLANNER

COUNTY PLANNING DIRECTOR

LAW ENFORCEMENT BLDG. SAGINAW, MICHIGAN

December 27, 1973

Sam F. Cryderman
Engineer of Transportation Planning
State Highways Building
Post Office Drawer K
Lansing, Michigan 48904

Dear Mr. Cryderman:

Enclosed is an addition to the Narrative Report for the 1974 National Transportation Study. Specifically, the addition is section 4-1.3, Urban Area Transportation Policies.

These transportation policies were approved by the Policy Committee at the December 19, 1973, meeting of the Saginaw Metropolitan Transportation Study. The minutes of this meeting are enclosed for your reference.

If additional information is necessary, please feel free to contact us.

Sincerely,

A. Howard Kundinger
Director

AHK: pw

Enclosures

## URBAN AREA TRANSPORTATION POLICIES

1.(a) The responsibility between the Federal, State and local government with respect to planning, programming and development of transportation facilities is: (1) Federal supplies funds, planning resources and develops procedures; (2) State supplies technical assistance and guidelines for uniformity and (3) local supplies the policy that is desired by citizens and technical input.

(b) The current procedures in transportation planning are appropriate at this time, however, regions could help coordinate the transportation efforts of local areas. But, regions should only advise local areas not to attempt to determine local policies.

2.(a) Yes

(b) Yes (with local control)

3.(a) Yes

(b) No

(c) The establishment of a representative single recipient agency for transportation funds would be studies in Job 625-641 of Saginaw County Metropolitan Planning Commission's continuing planning program.

(d) _____

4. See Table 1

5.(a) Yes

(b) _____

(c) Transportation and comprehensive planning should work closely together to achieve an integrated planning program in the Saginaw Metropolitan Area.

6.(a) Yes

(b) The Saginaw Area Metropolitan Transportation Study, however, is not familiar with all the programs to make a recommendation as to what changes should be made. The Michigan Department of State Highways and Transportation is in a better position to make such recommendations.

(c) State responsibility

(d) _____

7.(a) Yes

(b) ———

8.(a) Yes

(b) General Revenue Sharing funds will be used for county and city bridges and for roads by township throughout the county.

(c) Yes

(d) The long term General Revenue Sharing policy will be spent in the area of bridges with the possibility that funds will be spent on public mass transit.

9.(a) Yes

(b) No

(c) There has only been minimal involvement of urban area planning and operating agencies in the development of the State Action Plan to implement the Federal Highway Administration process guidelines.

10 (a) Yes (uniform minimum standards)

(b) Uniform Federal level of service standards for future transportation facilities should be used basically in road construction but also when airports or public mass-transit is developed.

(c) Yes

(d) ———

11 (a) Yes

(b) The funds that would be used to defray operating losses for public mass-transit should not detract from other vital, local programs. The criteria should be flexible and consistent with community desires.

12 (a) Yes

(b) The County Planning Department and City and County Parks are responsible for the planning and development of bicycle ways.

(c) Yes

13 (a) Yes

(b) No

(c) The Federal Government could be more helpful in dessimination of information by providing a single transportation abstract.

14 (a) No (other than minor motor freight)

Table 1

# PRIORITIES FOR EXPENDITURE OF AN ADDITIONAL 20% OF FEDERAL FUNDS

| Program Area | Percent of 1980 Program Funding | Percent of Additional Funds |
|---|---|---|
| Highways and Highway Related Activities - Urban | 1 | 1 |
| - Rural | 2 | 4 |
| Urban Public Transportation - Capital Improvements | 4 | 2 |
| - Operating Costs | 5 | 3 |
| Airports | 3 | 5 |
| Parking (Non-Fringe) | — | — |
| Marine Terminals | — | — |
| Other Rail, Bus or Truck Terminals | — | — |
| Intercity Rail Passenger | — | — |
| Other (specify) | — | — |
| TOTAL | — | — |

Table 2

# INDEX OF URBAN AREA POLICY QUESTIONS

| Question | | Sub-element | | | |
|---|---|---|---|---|---|
| Subject | No | (a) | (b) | (c) | (d) |
| Planning Responsibility | 1 | D | D | X | X |
| Federal Pass-thru Funds | 2 | Y | Y | X | X |
| Consortium of Governments | 3 | Y | N | D | — |
| Program Priorities | 4 | D | X | X | X |
| Coordinated Planning | 5 | Y | — | D | X |
| Federal Programs | 6 | Y | D | ? | — |
| Planning Grants | 7 | Y | — | X | X |
| General Revenue Sharing | 8 | Y | D | Y | D |
| Re-examination of Plans | 9 | Y | N | D | X |
| Federal Standards | 10 | Y | D | Y | — |
| Operating Subsidy | 11 | Y | D | X | X |
| Bicycle Programs | 12 | Y | D | Y | X |
| Technology Evaluation | 13 | Y | N | D | X |
| Urban Goods Movement | 14 | N | — | X | X |

Y - yes N - no D - discussion ? - State

Minutes of Meeting

POLICY COMMITTEE

Saginaw Metropolitan Transportation Study

Wednesday, December 19, 1973 - 12:00 Noon
Sullivan's North, Shannon Room
3475 Bay Road, Saginaw

1. Roll: Policy Committee

| | |
|---|---|
| Frank W. Jones, Chairman | Saginaw Township |
| Mearl Talsma | MDSHT |
| Al Janson | County Road Commission |
| Val Nowaczyk | Carrollton Township |
| Arnold Schluckbier | Bridgeport Township |
| Gerald Blair | City of Saginaw |

Staff

| | |
|---|---|
| Howard Kundinger | County Planning |
| Gordon Ely | Road Commission Engineer |
| Randall Derifield | County Planning |

Guests

| | |
|---|---|
| Mark Rummel | The Saginaw News |

2. Business:

A. Approval of Minutes for September 11, 1973 moved by Blair, supported by Schluckbier. Motion carried.

B. Communications

Many communications were received, but most were routine procedural items that are not of policy significance. Chairman Jones directed that staff highlight only significant letters or letters that require action:

- Received letter from Robert B. Wallace seeking assistance from our office in developing a regional, private transit system that would serve the Tri-Cities and its regions. Staff assisted by providing contact with Michigan Department of State Highways and Transportation and the Michigan Public Service Commission of the Department of Commerce.
- Staff sent letter to Saginaw City Manager seeking clarification of City position on using I-675 when Zilwaukee High Level Bridge on I-675 is open. City responded that it felt this is not in its best interests.

- County Board Chairman Gustafson sent letter to Governor Milliken requesting that he designate the county metropolitan planning commission the metropolitan transportation planning agency instead of State Region 7.

  Reliable rumors have it that the Governor will designate the regions. Director also wrote letter to Governor requesting clarification of role of region. Governor responded with cliche-ridden, issues evading letter that was of no practical value.

  Moved by Nowaczyk, supported by Blair to go on record opposing designation of regions as they are not properly staffed, represent too large an area, and as the two most critical transportation modes: highways and mass transit are essentially metropolitan - not regional - in character. Motion carried.

- Received letter from City of Saginaw requesting transportation study review of their proposed "New Tran" system for a moving sidewalk in the central business district. Technical Committee has reviewed it and recommends approval.

  Moved by Jones, supported by Janson to endorse the the City's "New Tran" proposal. Motion carried.

C. Unfinished Business

- Policy Committee developed policy input for National Transportation Study. Attached is a summary of that input. Moved by Nowaczyk, supported by Schluckbier to submit this to MDSHT.

- Federal Aid Urban System should be expanded to include all Primary, Secondary (State and County) and Urban Links within the Federal Aid Urban Boundary. Also, Elmwood Ave. from Hess to Gallagher should be added. A special committee of the Technical Committee composed of Road Commission Engineer Ely, City Traffic Engineer Blair and his Federal Projects Engineer Walther, and SCMPC Director Kundinger concur that this is desirable. Moved by Nowaczyk, supported by Jones to accept the recommendation. Motion carried.

- Kundinger advised that federal government is moving toward making the Policy Committee a consortium of of governments that will actually make decisions on priority of federal transportation projects in the area. It was a consensus that this would be no problem in Saginaw because the county road commission, county planning, City of Saginaw Traffic Engineering and local officials already cooperate to a high degree.

D. New Business

- The Annual Report of activity of the Saginaw Metropolitan Area Transportation Study was distributed. The intent is to develop a popular brochure to acquaint the community with our tasking. Barring loss of responsibility to regions, we will be preparing these on an annual basis.

- Transit Document

  Staff summarized the Annual and Multi-Year Urban Public Transportation Plan that was submitted to MDSHT to meet guidelines of Act 327 of Michigan Public Acts of 1972, the UMTA Regional Planning Determination and 1974 National Transportation Study in one document. Basically, the document synthesizes the Functionally Integrated Transit Plan, with which the Policy Committee is already familiar. Moved by Jones, supported by Nowaczyk to approve of this staff submittal. Motion carried.

- Transportation Review. Although not a legal or administrative requirement, staff will bring all OMB A-95 Clearinghouse Reviews related to transportation before the SMATS Committees.

  1. Tri-City Airport notifies of its intent to overlay its runway system to strengthen it to 727-200 capacity and improve lighting. Project will cost $1,077,000 and has no significant environmental impact. It is an important safety need and is being expedited on an emergency basis. Moved by Blair, supported by Janson to endorse the project. Motion carried.

  2. I-75 Shoulder Improvements are proposed by MDSHT from Kochville Road in Saginaw County to Kawkawlin in Bay County. Project cost is $600,000 and would pave shoulders (now gravel) with asphalt. It has no significant environmental impact but is of safety value and reduces maintenance needs. Staff recommends approval as long as median should is not paved if widening is anticipated in the near future. Gordon Ely said that maintenance costs are high and that if it is most economical to pave even for a few years, this should be encouraged. Moved by Schluckbier, supported by Blair to approve staff recommendation as modified by Ely's comments. Motion carried.

- Mearl Talsma impressed on local transportation agencies the need to commit funds on FAUS because of statewide balance. Balir and Ely noted that the area already has committed several years of funding.

3. Adjournment: Being no further business, the committee adjourned at 1:50 P.M.

Howard Kundinger, SMATS Secretary
SCMPC Director

## SUMMARY OF LOW AND NON-CAPITAL ALTERNATIVES

| | Program Alternative | PERIOD OF IMPLEMENTATION | | | |
|---|---|---|---|---|---|
| | | 1972 Inventory | 1980 Program | 1990 Plan | Not Being Considered |
| HIGHWAY AND URBAN PUBLIC TRANSPORTATION | 1. Staggering of work hours. | | | | X |
| | 2. Measures to encourage car pools. | | X | | |
| | 3. Banning private automobiles from the CBD. | | | | X |
| | 4. Raising tolls on toll bridges and tunnels during peak hours. | | | | X |
| | 5. Lowering tolls on toll bridges and tunnels during off-peak hours. | | | | X |
| | 6. Increasing CBD daytime parking rates. | | | | X |
| | 7. Lowering transit fares during off-peak hours. | | | | X |
| | 8. Less restrictions on taxicabs. | | | | X |
| | 9. Less restrictions on jitneys. | | | | X |
| | 10. Reserved lanes for buses. | | | | X |
| | 11. Restrictions on curbside loading and unloading in congested areas. | | | | X |
| | 12. Evening delivery by trucks in downtown areas. | | | | X |
| | 13. Other (describe) Bike Trails | | X | | |
| | 14. " | | | | |
| | 15. " | | | | |
| | 16. " | | | | |
| | 17. " | | | | |
| | 18. " | | | | |
| AIRPORTS | 19. Rescheduling aircraft operations to reduce peaking. | | | | X |
| | 20. Diverting low-passenger operations from air carrier airport runways to general aviation facilities. | | | | |
| | 21. Other (describe) | | | | X |
| | 22. " | | | | |
| | 23. " | | | | |
| | 24. " | | | | |
| | 25. " | | | | |

PART 5

APPENDICES

A. STATEWIDE PLANNING AND PROGRAMMING
(Refer Section 2-2.1, Section 2-4 through 2-6 and Part III)

B. STUDY ORGANIZATION
(Refer Work Program)

C. BASIS OF 1974 NTS
(Refer Section 2-4 through 2-6 and see Attachment)

D. MARINE
(Not Applicable)

E. COST OF 1974 NTS EFFORT
(To be provided under separate cover)

F. COMMENTS
(Refer Part IV)

G. SUGGESTIONS
(Refer Section 2-10)

H. COMMENTS
(Same as F. and G.)

I. LIST OF PLACES
(See attachment)

J. OTHER MATERIAL
(Refer separate cover report on PBES-TRANSPORTATION STUDY)

M-Z NOT AVAILABLE

## APPENDIX C

## DATA SOURCES USED FOR PREPARATION OF 1974 NTS HIGHWAY FORMS

1. "Michigan Highway Needs Summary, 1970-1990," prepared for Michigan Department of State Highways, County Road Association of Michigan, and Michigan Municipal League, Wilbur Smith and Associates, December, 1972.

2. "Michigan Highway Fiscal Analyses, 1970-1990," prepared for Michigan Department of State Highways, County Road Association of Michigan, and Michigan Municipal League, Wilbur Smith and Associates, December 1972.

3. Michigan Annual Progress Reports for the Department of State Highways, County Road Commissions, Incorporated Cities and Villages of Michigan, under the terms of Act 51 of the Public Acts 1951 as amended and supplemented, State of Michigan, Department of State Highways.

4. 1990 Highway Functional Classification Maps prepared by Michigan Department of State Highways and Transportation.

5. Short-Range Improvement Programs, 1973-1978, Bay City Area Transportation Planning Study.

6. "20 Year Regional Highway Priority Improvement Program, Southeast Michigan Region," Southeast Michigan Council of Governments, Unified Work Program Number 5.40, July, 1973.

7. "Working Paper Number 11: Financing Highway Construction in the Southeast Michigan Region, 1970-1990," Southeast Michigan Council of Governments, June, 1972.

8. "Technical Work Paper, Financial Resources Available for Transportation System Improvements in the Flint/Genesee County Area," Planning Section, Transportation Planning Division, Michigan Department of State Highways, May 1973.

9. "Short-Range Improvement Program, 1973-1980", Flint/Genesee County Area.

10. "Technical Work Paper, Financial Resources Available for Transportation System Improvements in the Jackson Urbanized Area," Planning Section Transportation Planning Division, Michigan Department of State Highways, May, 1973.

11. "Short-Range Improvement Programs,1973-1978," Jackson Urbanized Area.

12. "Forecasting of Financial Resources Available for Transportation System Improvements," Kalamazoo Area Transportation Study, Michigan Department of State Highways, June, 1973.

13. "Short-Range Improvement Program," Kalamazoo Area Transportation.

14. "Technical Work Paper, Financial Resources Available for Transportation System Improvements in the Grand Rapids Urbanized Area," Planning Section, Transportation Planning Division, Michigan Department of State Highways, April, 1973.

15. "Short-Range Improvement Program, 1973-1980," Grand Rapids and Environs Transportation Study.

16. "Technical Work Paper, Financial Resource Available for Transportation System Improvements in the Lansing Tri-County Region," Planning Section, Transportation Planning Division, Michigan Department of State Highways, May, 1973.

17. "Arterial Street and Highway Improvement Program, Lansing Urban Area, 1973-1995," Michigan Department of State Highways, June, 1973.

18. "1995 Transportation System Elements," Muskegon Urbanized Area.

19. "Comprehensive Capital Improvements Program for Saginaw County, 1972-73 to 1977-78," Saginaw County Metropolitan Planning Commission, February, 1973.

20. "Niles State Highway Plan," Urban Planning Section A, Office of Planning, Michigan Department of State Highways.

21. "1972 National Transportation Study, Data Summaries and Tapes."

22. Michigan Department of State Highways and Transportation Action Plan, Draft Copy.

## APPENDIX I

## ELIGIBLE AREAS

| Urbanized Areas | 1970 Population |
|---|---|
| Ann Arbor | 178,605 |
| Bay City | 78,097 |
| Detroit | 3,970,584 |
| Flint | 330,128 |
| Grand Rapids | 352,703 |
| Jackson | 78,572 |
| Kalamazoo | 152,083 |
| Lansing | 229,518 |
| Muskegon | 105,716 |
| Saginaw | 147,552 |
| Niles (South Bend) | 23,424 |
| Southern Monroe County (Toledo) | 11,861 |

| Urban Places as Defined by the U.S. Bureau of Census | 1970 Population |
|---|---|
| Adrian | 20,382 |
| Albion | 12,112 |
| Alma | 9,790 |
| Alpena | 13,805 |
| Battle Creek | 38,931 |
| Belding | 5,121 |
| Benton Central (U) | 8,067 |
| Benton Harbor | 16,481 |
| Big Rapids | 11,995 |
| Cadillac | 9,990 |
| Charlotte | 8,244 |
| Cheboygan | 5,553 |
| Coldwater | 9,099 |
| Davison * | 5,259 |
| Dowagiac | 6,583 |
| Escanaba | 15,368 |
| Fenton | 8,284 |
| Gladstone | 5,237 |
| Grand Haven | 11,844 |
| Grand Ledge | 6,032 |
| Greenville | 7,493 |
| Hastings | 6,501 |
| Hillsdale | 7,728 |
| Holland | 26,337 |
| Houghton | 6,067 |
| Howell | 5,224 |
| Ionia | 6,361 |
| Iron Mountain | 8,702 |
| Ironwood | 8,711 |
| Ishpeming | 8,245 |
| Kincheloe (U) | 6,331 |
| Kingsford | 5,276 |
| K. I. Sawyer (U) | 6,679 |
| Lakeview (U) | 11,391 |
| Lapeer | 6,270 |
| Ludington | 9,021 |
| Manistee | 7,723 |
| Marquette | 21,967 |
| Marshall | 7,253 |
| Marysville | 5,610 |
| Mason | 5,468 |
| Menominee | 10,748 |
| Midland | 35,176 |
| Monroe | 23,894 |
| Mount Pleasant | 20,504 |
| Negaunee | 5,248 |
| Owosso | 17,179 |
| Petoskey | 6,342 |
| Port Huron | 35,794 |
| St. Johns | 6,672 |
| St. Joseph | 11,042 |
| Sault Ste. Marie | 15,136 |
| South Haven | 6,471 |
| Sturgis | 9,295 |
| Tecumseh | 7,120 |
| Three Rivers | 7,355 |
| Traverse City | 18,048 |
| Wurtsmith (U) | 6,932 |

(U) Unincorporated

* Included in Flint Federal-Aid Urban Area