

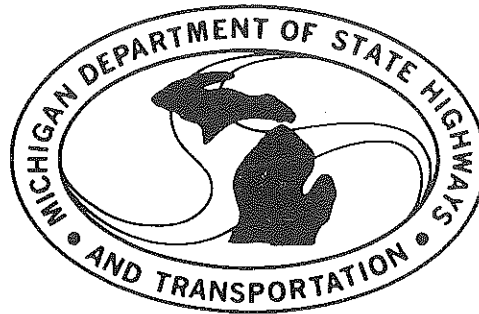
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NORTHWEST REGIONAL TRANSPORTATION STUDY

THIS
REPORT

STUDY ACTIVITIES

- * REGIONAL INVENTORY
- * TRANSPORTATION GOALS
and ISSUES
- * EXISTING TRANSPORTATION
SERVICES
- * FUTURE TRANSPORTATION
ALTERNATIVES
- PUBLIC HEARING RESULTS
- STUDY RECOMMENDATIONS



MICHIGAN DEPARTMENT OF STATE HIGHWAYS AND TRANSPORTATION

AUGUST 1978

NORTHWEST REGIONAL TRANSPORTATION STUDY

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**This report represents the findings and/or professional opinions
of the Michigan Department of State Highways and Transportation
staff and does not represent an official opinion of the
Michigan State Highway Commission.**

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PLANNING

SYSTEMS PLANNING

Determines Need & Priorities
for General Project Location

PROJECT PLANNING

Deals with Specific Locations
and Types of Facility Designs

STATEWIDE SYSTEMS PLANNING

Deals with State & National
Transportation Needs – Results
in Broad Policy Determination

STATE MODAL PLANS

1. Airports
2. Busses
3. Highways
4. Railroads
5. Waterways

REGIONAL SYSTEMS PLANNING *

Relates Statewide Planning to
all Regions to Insure Consider-
ation of Local Goals

REGIONAL TRANSPORTATION STUDIES

1. Northeast Michigan Region
2. Northwest Michigan Region
3. East Central Michigan Region
4. etc.
5. etc.

CORRIDOR LOCATION STUDIES

Required When Facility must be
Relocated or Major Problems
Anticipated. Determines
General Corridor Location

DESIGN STUDIES

Evaluates Specific Locations
and Facility Types Within
the General Corridor



THE CONCERN OF THIS STUDY

INTRODUCTION

The Constitution and Statutes of the State of Michigan make the Michigan State Highway Commission responsible for planning, building and maintaining a transportation system for our State. To fulfill these responsibilities, the Michigan Department of State Highways and Transportation has developed a planning process to guide the State and its governmental units in analyzing the adequacy of existing transportation systems and in preparing plans for future systems and facilities.

Traditionally, the planning process has been divided into two phases; systems planning and project planning (see diagram). Systems planning consists of analyzing transportation system needs and developing proposed networks designed to satisfy these needs. The process begins with the analysis of existing systems and facilities and their relationship to goals and objectives of the governmental units of the State and extends through establishment of a set of priorities for the improvement of the system by capital investment projects. Systems planning studies provide a general overview of how all modes of transportation interact in a given area. They address the physical and functional components of the various transportation systems and consider the probable general impacts to its users and non-users. A detailed Environmental Impact Statement (E.I.S.) is not required at this stage due to the general nature of the study and the broad scope of issues. The contents of this report represent a system planning study as it relates to the Northwest Region.

Project planning is the process of analyzing the proposed construction or improvements of specific transportation facilities to a point where all but one of the practical alternatives are eliminated. Because project planning deals with

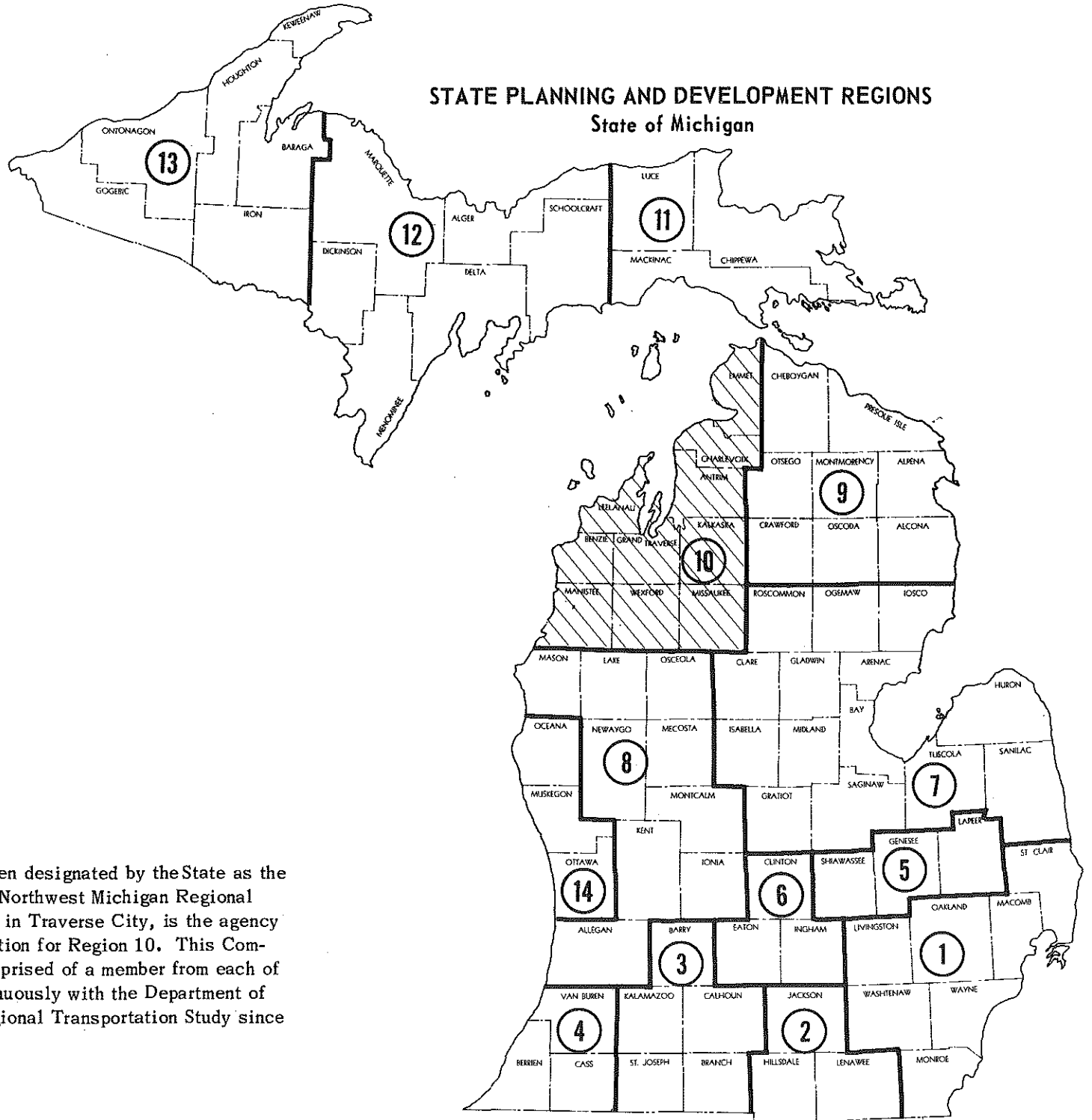
specific facility location and design, an E.I.S. may be required, depending on the extent of improvements and the intensity of impacts.

STUDY AREA

The geographic area considered in this transportation study coincides with the ten-county jurisdiction of the Northwest Michigan Regional Planning and Development Commission. This agency has been designated by the Governor's office as a multi-county regional planning agency for this area. In so doing, the Governor has requested all state agencies cooperate with the regional agency when planning various programs and to develop those programs to be consistent with regional goals and objectives. The Northwest Regional Transportation Study represents the Department of State Highways and Transportation's pledge to meeting this objective.

PURPOSE OF STUDY

The Northwest Regional Transportation Study was initiated as a "pilot project" in 1972. Since this level of planning was new throughout the Nation, a major intent was to test new concepts and procedures for conducting a regional study. Many of these new techniques were being adopted in the Michigan Action Plan, a document required by the Federal government to specify how transportation planning will be conducted by the state. But beyond this challenge, the underlying purpose of the study was to identify current and future deficiencies and recommend improvements to various transportation systems operating in the ten-county Northwest Region.



This map depicts the 14 geographical areas that have been designated by the State as the official multi-county planning regions of the State. The Northwest Michigan Regional Planning and Development Commission, with staff based in Traverse City, is the agency recognized by the State as the official planning organization for Region 10. This Commission and the Transportation Advisory Committee (comprised of a member from each of the ten County Planning Commissions) has worked continuously with the Department of State Highways and Transportation on the Northwest Regional Transportation Study since its inception.

At the inception of the project, a plan was being developed only to facilitate the flow of one mode of transportation – highway travel. The focus was to be on the improvement or relocation and reconstruction of US-31 and US-131 as mandated by Act 327 of the Public Acts of 1972. Shortly after the project had begun, however, the Governor charged the Department of State Highways with the task of providing adequate transportation by all modes of travel in the state. Consequently, the Northwest Regional Transportation Study became a multi-modal transportation planning effort and the scope of the project expanded to include integrated planning of rail, air, public transportation, water and non-motorized, as well as highway, facilities.

PLANNING METHODOLOGY

This study is being conducted by a multi-disciplinary planning team called a "study team". A multi-disciplinary team is one made up of people who have diverse educational backgrounds. The reason for using a multi-disciplinary team is to bring together people with varying perspectives, who can provide a wide variety of ideas that can be applied to problem identification and solution. Typical membership of this study team includes engineers, planners, social scientists, economists and environmentalists. In addition, the study team also has members representing the Northwest Michigan Regional Planning and Development Commission and the Federal Highway Administration.

As mentioned previously, one purpose of this study was to test new concepts and procedures of Michigan's Action Plan. A key element of this document is the

requirement to encourage the general public to become involved in the early planning stages for major transportation facilities. To accomplish this task, a three-step meeting process has been established. It consists of Pre-Study Meetings, Public Hearings and Post-Decision Meetings. These meetings are generally required for both the systems and project level planning steps. Thus, the general public will have several opportunities to review and comment on transportation proposals affecting their area. The contents of this report were assembled in preparation for the Public Hearing on the Northwest Regional Transportation Study.

In addition to the prescribed public meetings, the study team has utilized many other sources to obtain public input into the planning process. These sources include questionnaires, travel surveys, correspondence, newspaper articles, interviews with local officials, public information meetings, special interest groups, citizen advisory groups and local planning organizations. Information gathered from these sources has assisted in identifying many important transportation related issues. Within these issues are two key factors that will define much of the character of the region's future transportation systems. These are the availability of energy and growth trends. Therefore, the current planning efforts will illustrate how various multi-modal transportation networks can be developed to satisfy a range of alternative future growth and energy situations. By analyzing these various networks, the study team will be in a better position to advance planning efforts on those projects which show the greatest need and are common to most future conditions.

REGIONAL INVENTORY

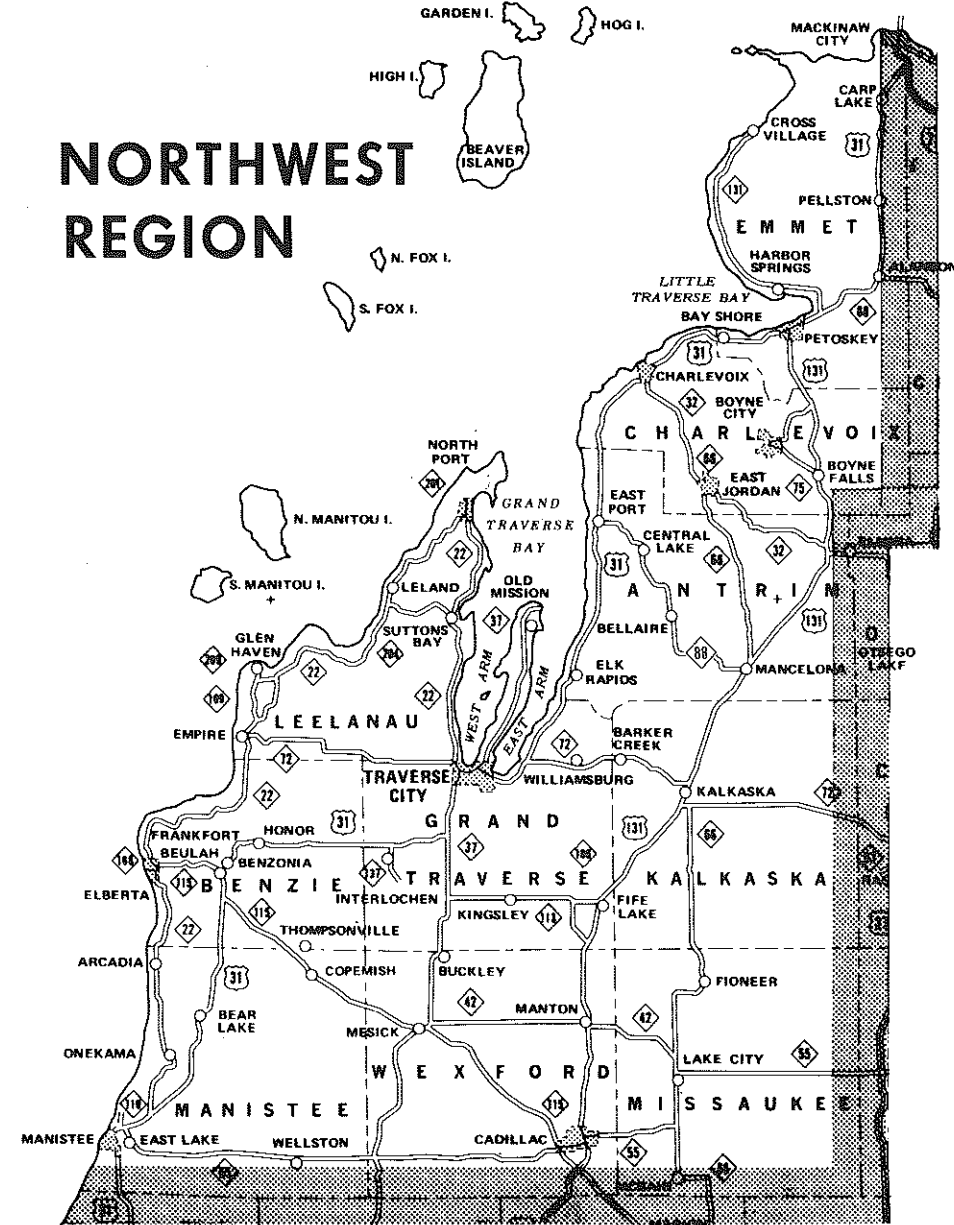
The ultimate objective of the Northwest Regional Transportation Study is to identify deficiencies and propose necessary changes in the existing transportation system. These changes will include the provision of adopting an integrated system of transportation facilities that will:

1. Adequately meet the transportation needs of the citizens and visitors of the region and the State.
2. Promote the attainment of social, economic and environmental goals of the citizens of the region and the State.

A transportation system is not an end in itself, rather it is a means to other ends. It is a service network built to facilitate the flow of goods and the movement of people. As a service network, the transportation system should be designed to provide safe and efficient movement of people and goods with minimal adverse impact on social, economic and natural systems.

When any transportation facility is constructed, there are monetary, social and environmental costs. However, if the facility is built to meet known transportation needs, there will also be benefits. These benefits will be social and economic, and possibly environmental. In determining which facilities should be built, the costs and benefits, which will be different for each alternative, must be weighed against one another. A major objective of the planning process is to facilitate the choice of a network which will provide the types of benefits desired yet incur the fewest social, economic and environmental costs.

To make a choice, decision makers must have information upon which to base their decisions. Information regarding the region's social, economic and environmental characteristics is gathered through an inventory process. This inventory is derived from state and regional data sources and serves as a key indicator of current and future transportation needs.



SOCIAL/ECONOMIC INVENTORY

The Northwest Region is predominantly rural. Wexford County is the only county where 50% or more of the 1970 population lived in a city of more than 2,500 persons.

The largest communities in the region are:

1. Traverse City, servicing the eastern portion of Benzie County, Leelanau County, Grand Traverse County, northern Wexford County, western Kalkaska County and southwestern Antrim County.
2. Cadillac, servicing Wexford and Missaukee Counties.
3. Petoskey/Charlevoix servicing Emmet County, Charlevoix County and northern Antrim County.
4. Manistee, which services Manistee County.

These four areas contain the heaviest concentration of commercial establishments, health facilities, and job opportunities. The smaller communities in the region serve primarily as convenience shopping centers for residents, tourists, and summer visitors. With 69.4% of the total 1970 regional population living in areas of less than 2,500 inhabitants and the concentration of social and economic facilities being located in the four larger cities, mobility is important to area residents.

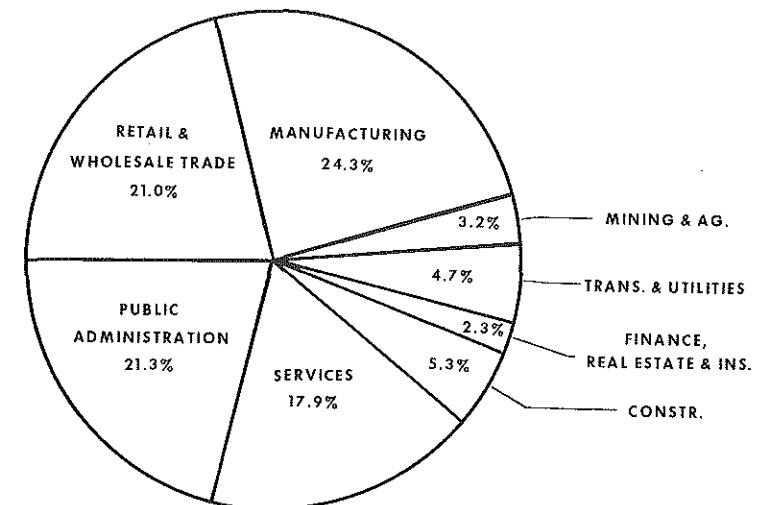
This situation is in the process of changing. The Northwest Region is considered by the U.S. Bureau of the Census to be one of the fastest growing areas in the country. The growth seems to be occurring in a band along US-31, extending from Benzie County to Emmet County. The 1970 population for the region was 158,333. According to 1980 projections by the Department of Management and Budget, this population is expected to increase by 29% as compared to 5% for the state. This growth seems to be uniformly distributed among different age groups and can be attributed primarily to in-migration, assuming a declining or steady birth rate.

The economy of the area is characterized by lower than average wages and high seasonal employment. A comparison of the 1977 unemployment rates showed 12.7% for the region and 8.2% for the state. Economic activity within the region is geared almost exclusively to small units of service and production. Only the Traverse City State Hospital and the Packaging Corporation of America near Manistee employ substantial work forces. Typical of the region would be a unit employing 50 people with employees of 200 to 500 considered large. Traditionally, there has been a low labor force participation rate due to discouragement from job shortages, low wages, and seasonal fluctuations.

There are four sectors which contribute almost 85% of the total employment. They are manufacturing, public administration, trade and services.

The largest sector is manufacturing. Public administration employment has increased and can be expected to continue. The third sector, retail and wholesale trade, has declined in importance but still continues to play a major role in the region's economic structure. The services sector has been an increasing source of employment. This sector is expected to continue growing as the tourist and recreational demand increases.

**WAGE AND SALARY EMPLOYMENT COMPOSITION
NORTHWEST MICHIGAN REGION**

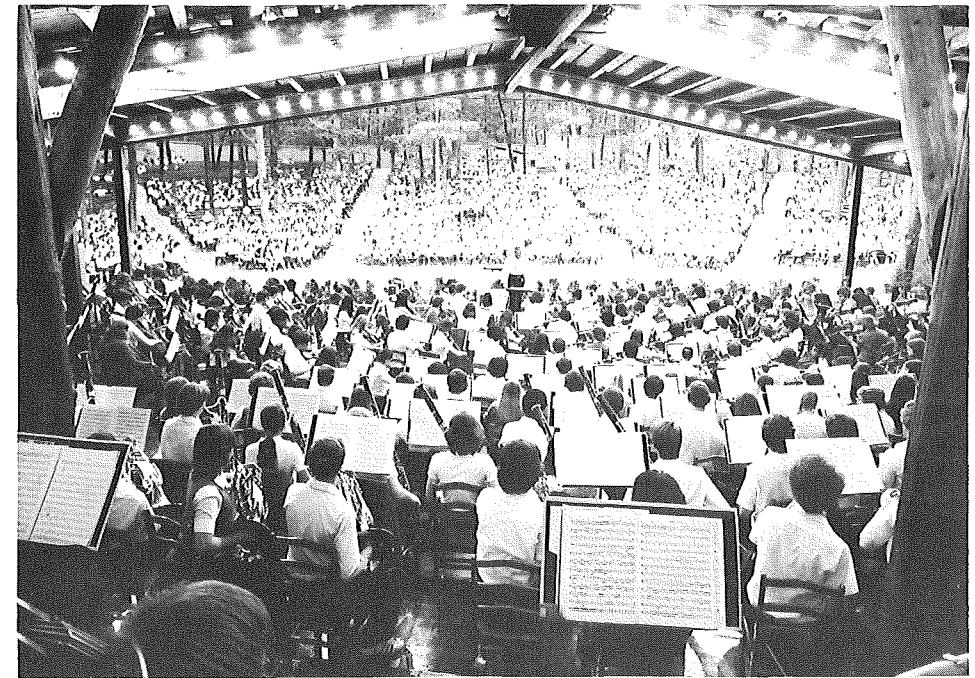


SOURCE: Michigan Employment Security Commission, 1976

Tourist-oriented industries are projected to expand in the future and provide many more jobs. However, this industry is not an ideal industry on which to base a regional economy. Although it provides jobs, many are part-time and seasonal. Also, the industry is influenced by outside economic conditions. More importantly, average wages are among the lowest. In other words, while providing jobs, the industry does not generate high incomes.

Also, it has been estimated by regional personnel that nearly 30% of the sales in the retail sector (which includes eating and drinking establishments) are made to non-residents of the region. In addition, the majority of hotel-motel receipts indicate non-resident use.

Overall, the region is highly dependent on its own natural resources to provide the basis for its economy. The area's natural beauty and the desire of people living in major metropolitan areas to leave the urban problems have been two factors cited for the recent increases in population.



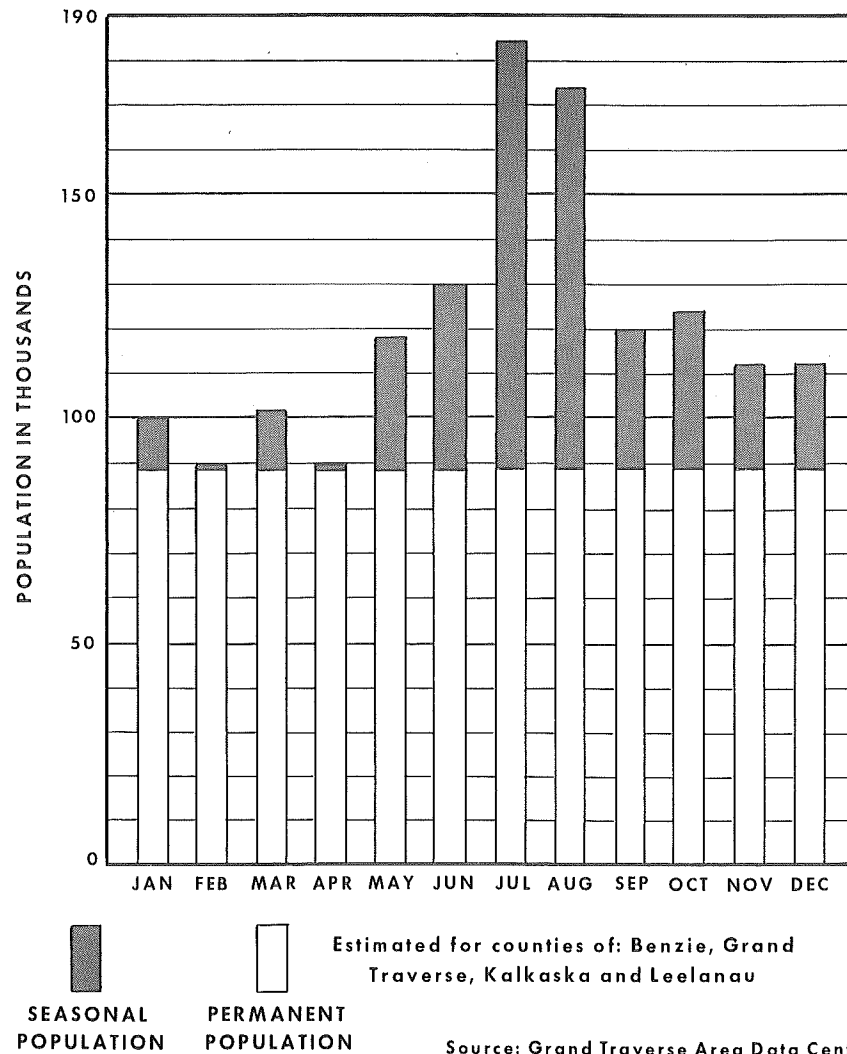
The Northwest Region has been a tourist haven for a long time. Major attractions include the many rivers, lakes and shorelines which provide fishing and other water sports, forest areas, Sleeping Bear Dunes National Park, Interlochen Center for the Arts, and special celebrations such as the Cherry Blossom Festival.

In addition, the land surrounding the lakes in the region has become developed with cabins and cottages. In 1970, 19% of the homes in the region were classified as seasonal. The greatest concentration of these is found in the following areas where from 20% to over 50% of the homes are seasonal:

1. Crystal Lake/Bear Lake/Onkema area.
2. Charlevoix/Petoskey area.
3. Lake City area.
4. Torch Lake area.
5. Leelanau County.

During the summer season, it is estimated that the population of Benzie, Grand Traverse, Kalkaska and Leelanau counties almost doubles (see following chart).

SEASONAL POPULATION TRENDS 1975



Besides tourism and recreation, the region is a major fruit producing area in the State. The most productive fruits grown in the area are cherries, apples,

peaches, blueberries and strawberries. Milk production is also becoming more important to the region's economy. Lumbering also contributes with such wood products as pallets and pulp production. The harvesting, processing and manufacture of timber products returns an estimated \$24 million to the region annually. The Michigan Energy Administration is also studying the feasibility of using wood chips as an alternative fuel source.

The region also exports minerals such as salt, sand, limestone, and petroleum.



Transportation Implications

The social and economic inventory relates several important factors regarding transportation. First, nearly 70% of the region's population lives in rural areas or small communities while social and health services and employment are

primarily located in the region's larger communities. Therefore, it is important that adequate transit and highway facilities are provided if the people are to derive the maximum benefits offered by these services.

POPULATION DISTRIBUTION

Age Group	1970	Estimated 1976
Under 5	8.5%	7.9%
5 - 19	30.8	29.9
20 - 24	5.9	8.1
25 - 39	16.3	17.9
40 - 64	26.4	23.2
65 or over	12.1	13.0

Second, 13% of the region's 1976 residents were 65 years of age or older. By the year 2000, this proportion is expected to increase. Persons in this group have different travel needs than persons in a younger age bracket. There tend to be more trips to doctors or hospitals with elderly people than younger people. Also, the elderly people tend to be located in the rural areas while the health services are in the urban areas.

Third, a survey reported in The Regional Sketch Plan of the Northwest Region indicated that a major criterion for manufacturing plant site location is 30 minutes accessibility to a freeway interchange. Assuming US-131 will be a freeway to Cadillac and US-31 will be a freeway to US-10, and given the present location of I-75 relative to Petoskey, 66% of the existing manufacturing firms in the region's growth centers already meet this accessibility criterion. The remaining 34% are located primarily in the Traverse City area. These and future manufacturers may also benefit by transportation system improvements. The degree of benefit, however, is dependent upon a variety of factors, only one of which is transportation related.

In some instances, it is doubtful that a regional economy would benefit significantly by transportation improvements, especially where a well developed system exists. On the other hand, local economies or individual businesses may derive some economic benefits. This usually occurs where there is either a shift in traffic patterns or where accessibility is improved to communities.

When highway improvements result in a higher level of service for a route connecting a community center to its surrounding area it tends to increase the frequency of trips to the community. When the route is perceived as congested or unsafe, persons tend to postpone trips into a community. Thus, individuals and families may wait until they have several needs before traveling to the community center, or they may choose alternate communities in which to satisfy those needs.

When the roadway is improved, these same individuals, instead of postponing trips, may view such trips as pleasant and increase the number of trips they make. In a similar manner, improved roads also benefit local businesses through a reduction in the cost of receiving raw materials or in shipping finished products to market.

Fourth, regarding tourism and the effect of energy supply on demand for travel, it must be kept in mind that Americans have always pursued recreation as a means of pleasure. Recently, they have been turning more and more to outdoor recreation. Whether or not this trend will continue at the same pace is difficult to say, given the prospects of reduced energy supplies. However, it can be reasonably assumed that recreational activities will continue although the frequency and duration of such trips may change.

In summation, there are two basic problems regarding transportation into and through the Northwest Region. First is the need to provide reasonable service between the local rural and urban areas. Second is serving the long-distance or statewide travel demand. This demand takes its form in tourist-oriented traffic and the movement of economic goods between the region and markets in the southern portion of the State.

ENVIRONMENTAL INVENTORY

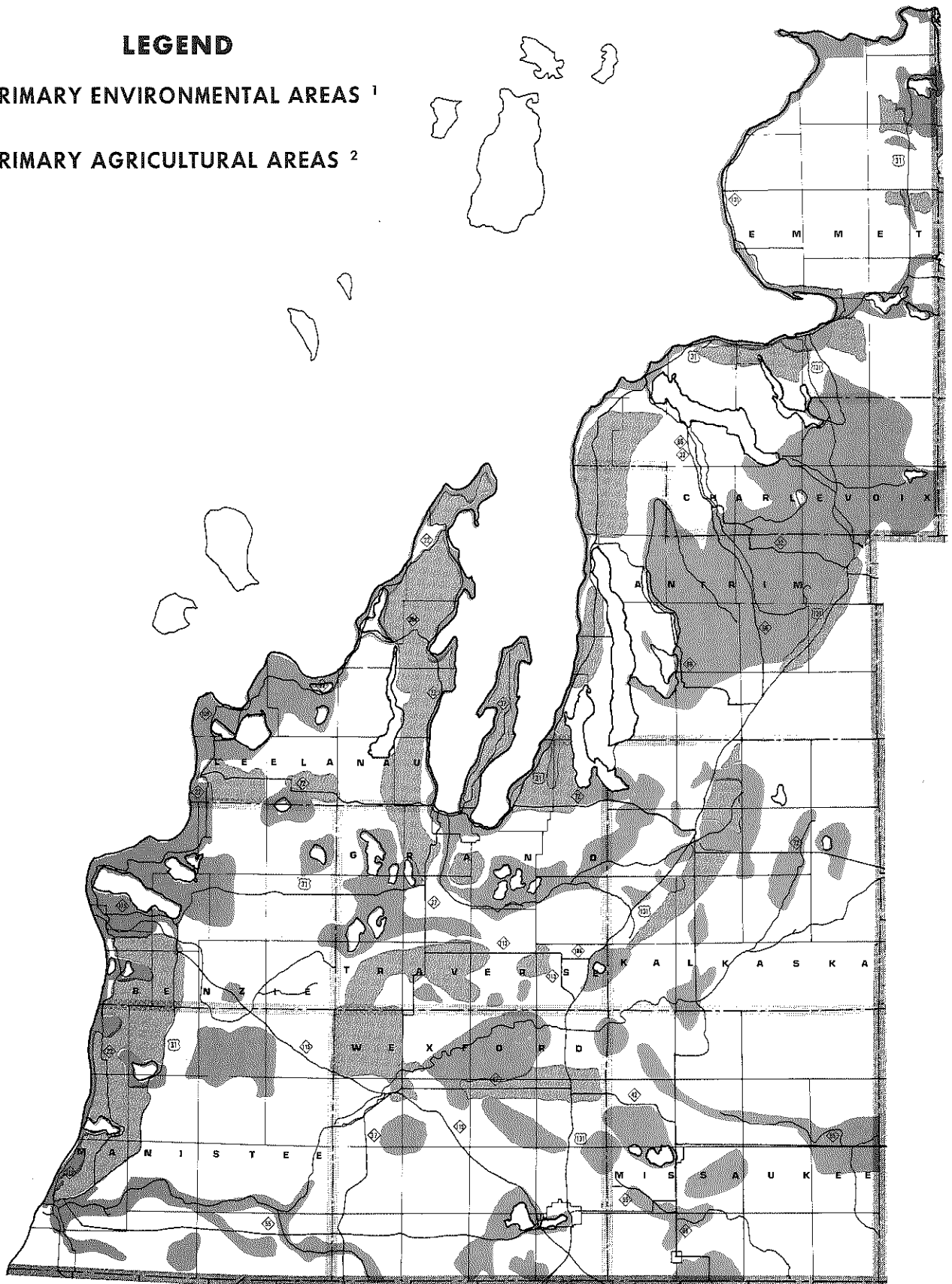
The ten county Northwest Region contains many unique and diverse natural environmental attributes. In combination, these geologic and physiographic features, forest lands, wildlife population and exceptional water resources, combined with a high level of air quality, provide a wealth of recreational and natural resource values. Therefore, in a variety of ways, the region's economy is dependent upon its environmental attributes.

The region has been called by some "the playground of Michigan". Recreation activities are available during the four seasons and are aided by a large concentra-

ENVIRONMENTALLY SENSITIVE AREAS GENERALIZED

LEGEND

-  PRIMARY ENVIRONMENTAL AREAS ¹
-  PRIMARY AGRICULTURAL AREAS ²



1. Primary Environmental Areas are those that have unusual aesthetic quality or ecological character of particular importance or fragility. These include lakes, streams, wetlands, coastal areas, steep topography, parks, wildlife refuge, and historical features. Lakes and streams are considered sensitive features even if they are not included in an area depicted on the map as sensitive.
2. Primary Agricultural Areas are those areas which have either the best existing or potential agricultural production in the region.

tion of parks, state and national forests, winter sports complexes, wildlife and quiet areas, public water access sites, scenic vistas and specially protected environmental areas.

Water resources and their surrounding land forms are the major natural attributes of the region. The region contains 461 miles (744 kilometers) of Lake Michigan shoreline, 1,930 miles (3,113 kilometers), of inland streams and rivers and 1,208 miles (1,948 kilometers) of inland lake shoreline. Twenty-five percent of the regions 454 inland lakes have surface areas in excess of 1,000 acres (405 hectares) with Torch Lake, Lake Charlevoix and Crystal Lake ranking second, third and ninth largest in the State. Twenty-two percent of Lake Michigan shoreline and fifteen percent of the inland lakes shoreline are in public ownership.

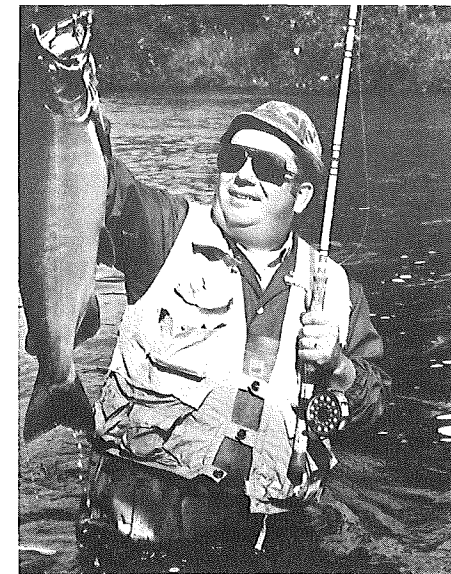


Among the most environmentally significant rivers in the region are those included or being studied for inclusion in the National Wild and Scenic Rivers Act or the Michigan Natural Rivers Act. The purpose of these programs is to preserve or enhance for all future generations, certain selected streams either nationally or statewide whose immediate environments possess outstanding values. The Manistee and Pine Rivers and the upstream portion of the Muskegon River within the region are under study for the National Wild and Scenic River Program.

The Jordan, Betsie and Boardman Rivers are designated Michigan Natural Rivers, while the Little Manistee River is under study for possible inclusion in this program.

Some of the best fishing waters in the State are encompassed in the region. Many public access sites are provided for fisherman access. Trout are very important with nearly all the region's inland rivers and streams being managed for trout. Also, Lake Michigan supports lake trout and many other fish species. The success of introducing the Coho and Chinook salmon to the Great Lakes has gained national recognition. Fall migration runs of these fish up the major river systems attracts thousands of fishermen and sightseers to the region every fall.

As development has occurred, increasing concern is being expressed for the area's wetlands. Wetlands are a significant attribute to any area, providing natural flood control, improved water quality and recharge areas for ground-water, streams and rivers. They are essential as providers of habitat for fish and wildlife resources. Wetlands also contribute to the production of agricultural and timber products and provide recreational, scientific and aesthetic resources. Wetlands are scattered throughout the region and vary widely in relative importance. Generally, the more valuable wetlands are associated with lakes and streams.



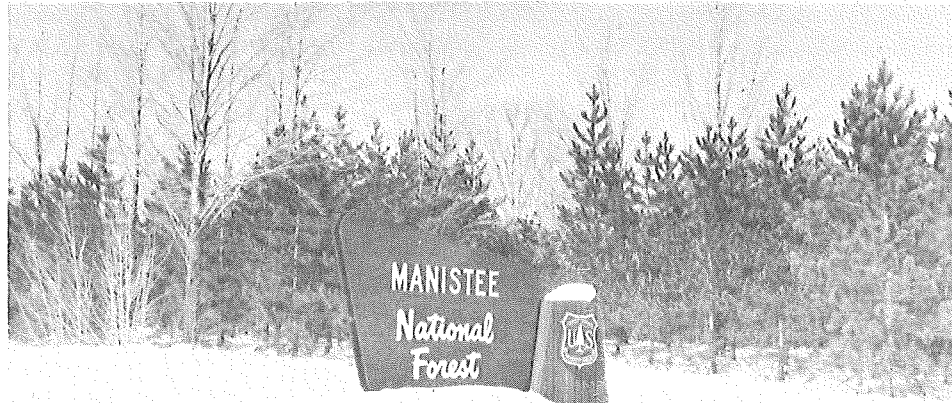
The topography has been of primary importance in directing man's activities in the region. The glaciated surface of the region has influenced the drainage patterns, forestry types, wildlife distribution and with the advent of man, his settlement pattern on transportation links. Dominating these elements is Lake Michigan and its coastline. The lake influences the region's climate, agriculture, recreational use and was responsible for establishment of many of its principal communities. The coastal zone varies dramatically from prominent headlands to rocky shorelines and major sand dune areas. The sand dunes, particularly those in Manistee, Benzie and Leelanau Counties are unusual geological features with the

uniqueness of the Sleeping Bear Dunes being recognized in its designation as a National Lakeshore. The Nation and the State have recognized the critical nature of the Nation's shorelines through the Coastal Zone Management Program designed to preserve important values along our shorelines.

The region's bays and harbors support commercial, recreation, boating and fishing activities. Grand Traverse and Little Traverse Bays provide sheltered water for boating and fishing. Ports are located at Manistee, Frankfort, Traverse City, Charlevoix and Petoskey.



Forests abound in the region, providing recreational activities, wildlife habitat, timber resources and a laboratory for scientific study. At least fifty percent of each county is forested for a regionwide total of 1.88 million acres (7,611 hectares). National forest lands are located in Manistee and Wexford Counties and State forest lands are found in all counties. There are no endangered or threatened plant species listed by the Michigan Department of Natural Resources within the region.

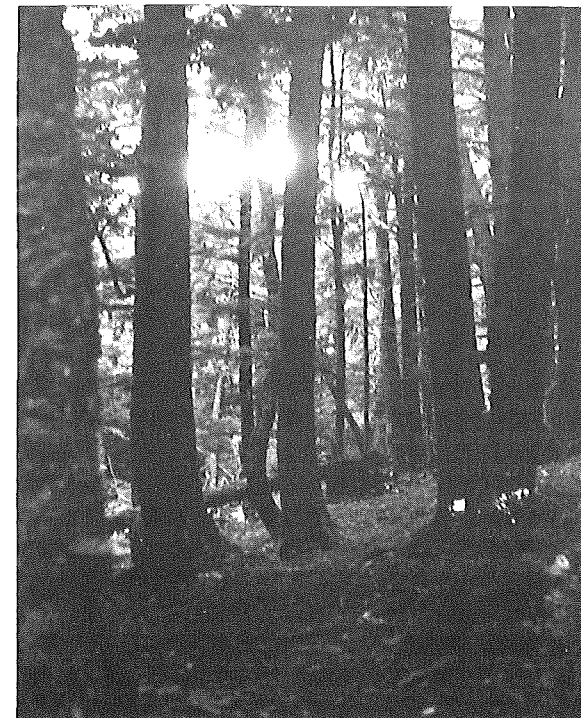


Forests as well as other ecosystems in the region provide habitat for a variety of wildlife. The relatively unpopulated and undeveloped northern and certain interior parts of the region still provide suitable habitat for animals requiring large areas of land. The interspersion of farmland which occurs most extensively within the region's southern and near coastal zones enhances wildlife diversity by encouraging those types which are frequently supported by farming activity.

Wildlife resources in the region offer opportunities for recreation and scientific study but, in some cases, require special protection. The Kirtland's Warbler is an endangered species with habitats identified in southern Kalkaska County, northeast Missaukee County and isolated pockets in Wexford County. Critical habitat areas have been identified in southeast Kalkaska County. For other species, the region includes two wildlife sanctuaries, three state game areas and two wildlife research areas which are given legal protection. The wildlife

sanctuaries are located in Benzie and Wexford Counties, the state game areas in Grand Traverse, Benzie and Manistee Counties and the research areas in Missaukee and Charlevoix Counties.

Aside from the wildlife areas, a number of specific sites within the region have been determined to be important from an environmental perspective. These sites meet the established criteria of legislatively based programs or belong to conservation organizations whose intent is to preserve the areas. Within the region, sites in the following categories of special environments can be identified; natural areas, environmental shoreline areas and high risk erosion areas as designated by the Department of Natural Resources; lands held by the Nature Conservancy; properties owned by the Michigan Nature Association; and cultural resource areas.



The Wilderness and Natural Areas Act (Act 24, P.A. 1972) was enacted to protect selected areas of high environmental value. According to the Department of Natural Resources, the only designated natural areas within the region are

found in and around Wilderness State Park in northwest Emmet County. Under the Shorelands Protection and Management Act (Act 245, P.A. 1970) the Director of the Department of Natural Resources is empowered to designate "environment areas" along Michigan's Great Lakes shores. These preserve the fisheries and wildlife values within and adjacent to these areas. Also, the Shorelines Protection and Management Act requires the establishment of local and state controls to regulate new development along the Lake Michigan shoreline in high risk erosion areas. These shoreline areas include: fifty percent of Manistee, Benzie and Leelanau Counties; 7 miles (11.3 kilometers) in Grand Traverse, Antrim and Charlevoix Counties; and 13 miles (21 kilometers) in Emmet County.

The Michigan Nature Association (MNA) has a program of habitat preservation and owns a number of nature sanctuaries and plant preserves. The association has two sanctuaries in the region, both in Antrim County. They are the 40 acre (16 hectares) Green River Nature Sanctuary and the 80 acre (32 hectares) Cedar River Nature Sanctuary.

The Nature Conservancy is a National organization which utilizes a variety of legal tools for natural land conservation. Their holdings are found in Antrim, Benzie, Charlevoix, Emmet, Kalkaska and Manistee Counties.



Parks and campgrounds provide many recreational activities for the regional visitor. Sleeping Bear Dunes National Lakeshore, established in 1970, and located in Benzie and Leelanau Counties, attracted approximately 700,000 visitors in 1976. Approximately 71,105 acres (28,787 hectares) of land and water with 31 miles (50 kilometers) of mainland and 33 miles (53 kilometers) of island shorelines are contained in this park.

There are nine state parks located in the region. Wilderness State Park in northern Emmet County is the largest with 6,925 acres (2,804 hectares) and Traverse City State Park had the most users (339,000 visitors) in 1976. In addition, numerous county and municipal parks and private campgrounds offer many opportunities to enjoy the area.

Cultural resources such as historical or archeological sites, districts and objects are located in the region. Historical districts are located primarily in the larger older established towns and archeological sites are generally located near the water areas. Since the region has never been archeologically surveyed, significant sites may still be undiscovered.

Transportation Implications

The unique environmental attributes of the Northwest Region significantly influence travel desires. Countless lakes, streams and other natural features, combined with numerous man-made attractions, create a tremendous increase in traffic, both seasonally and on a week-end basis year-round. This increase in recreational travel is often accompanied by the need for facility improvements, sometimes in the form of capacity increases. But a dilemma exists when trying to safely accommodate the surge of recreational travel without affecting the natural features which attract the visitor.

Transportation improvements involve a number of activities associated with the construction, operation and maintenance of a facility. Environmental impacts of individual projects are generally related to the amount, location and character of the land used for and affected by the facility. Of potentially greater significance is the influence that improved accessibility may have on sensitive features of the region. Both the activities associated with transportation projects and



their impacts will differ for the various transportation modes. A more extensive impact discussion is included in pages 63-73 of this report.

The preceding environmental inventory stressed those environmental areas that have some type of official designation. This is not intended to imply that these areas alone are environmentally sensitive, but rather that they are most easily identified. At the systems level of study, the primary environmental input is identification of major natural features and "protected" areas which have transportation implications. Some areas must be avoided by a facility while others require a high level of transportation service. The point should be made that conflicts often arise when naturally sensitive areas are overused. Easy access to such areas can contribute to overuse unless the areas are well managed. On the other hand, many facilities such as parks were established for public enjoyment and a safe and efficient transportation system becomes essential.

In establishing a regional transportation system, whether it includes construction of new facilities or the upgrading of existing facilities, the fact must be recognized that some environmental disruption is unavoidable.

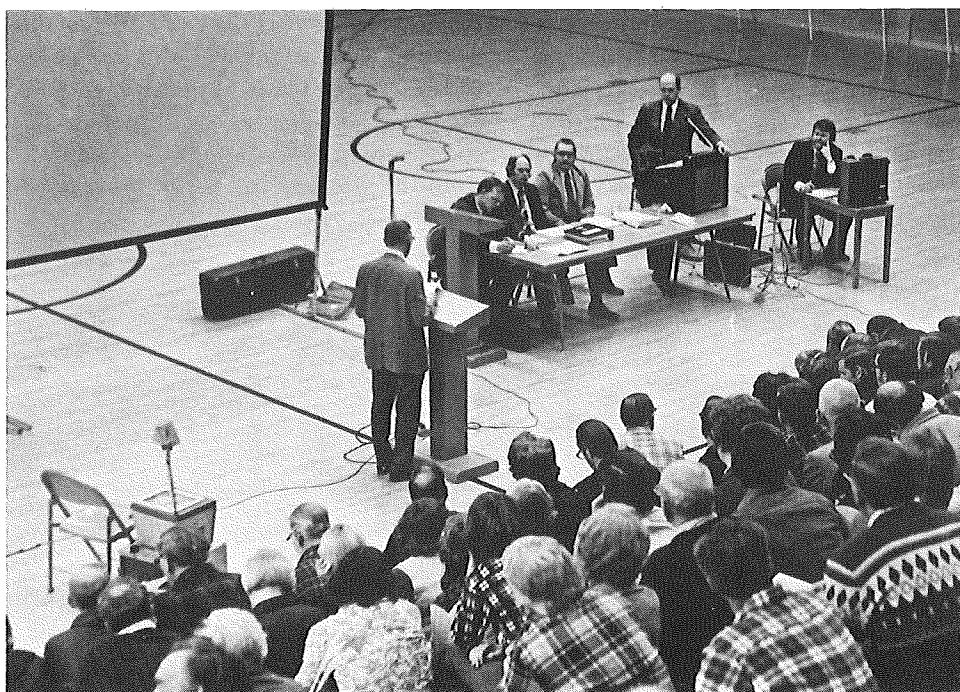
The disruption can be minimized by avoiding sensitive areas where possible and mitigating impacts where avoidance of sensitive areas is not possible. The potential secondary impact of improving access, i.e. increased development, is not as easily predicted or controlled. Although transportation facilities may direct future development, the ultimate control of land use and hence, environmental quality, rests in the authority of local governments.

TRANSPORTATION GOALS AND ISSUES

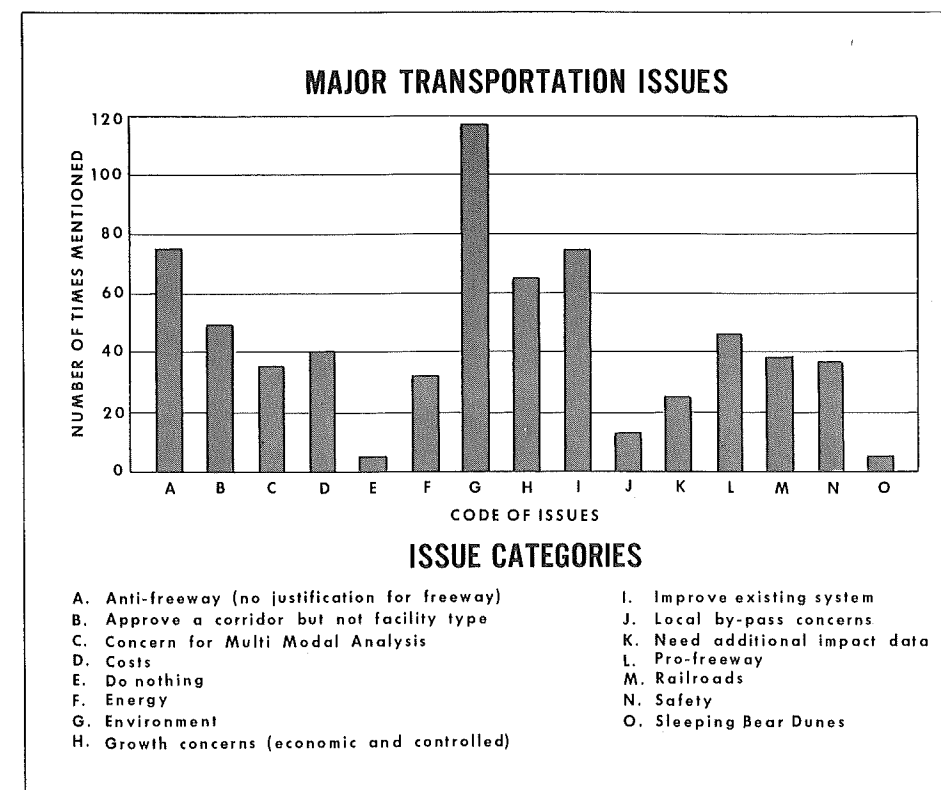
IDENTIFICATION OF ISSUES

Two years ago the study team distributed 2,200 public brochures that outlined the current status of the Northwest Regional Transportation Study. In addition, seven public meetings were held throughout the region and were attended by about 900 persons. The comments received during and after these meetings represented the greatest amount of public interest ever expressed since this study was initiated.

One objective of these meetings was to seek public input on the study team's intent to reduce the fifteen proposed highway corridor alternatives to a lesser and more manageable number for analysis. Although this objective was achieved, there were also many other important transportation related issues raised.



The following graph indicates the major issues identified as a result of the 1976 public information meetings and related correspondence. The graph simply depicts the number of times an issue was mentioned. If a person offered the comment: "I support freeway development because it will improve the economic conditions for our area and still not adversely affect the natural environment". This type of comment would be recorded under three issue categories: pro-freeway, economic growth and environment. It is necessary to point out that the numbers themselves are not important except to provide direction in determining whether the concerns of the region are being adequately covered. In other words, this effort is intended to identify issues that may have been overlooked, or which are perceived to be either over or under emphasized.



DISCUSSION OF ISSUES

In reviewing these issues, there are some definite trends indicated in the concerns or preferences of the region as a whole. The environmental concerns dominated most public meetings and subsequent correspondence received and supports the Department's intent to conduct a detailed environmental analysis for most major transportation projects. Another dominant concern expressed throughout the region was the need to improve the existing highway system. This indicates that there are many highway segments throughout the region that are already experiencing various operational deficiencies. These areas are sometimes characterized by a poor riding surface, passing sight restrictions, traffic congestion, frequent accidents and inadequate traffic lane widths. Correcting these deficiencies has recently been emphasized as a Department priority.

The "growth" and "freeway" issues are interrelated and were usually very controversial in some areas of the region. Most pro-freeway interest was expressed at the Cadillac and Kalkaska meetings. Cadillac residents were particularly concerned with potential traffic increases caused by the present US-131 freeway facility terminating just south of the city. They recommended continuation of the freeway facility around Cadillac. In general, most pro-freeway interest supported freeway development so as to encourage economic growth, control strip commercial development, promote tourism and provide a safer means of highway travel.

The anti-freeway comments expressed concerns that the resulting growth caused by freeways would place excessive development pressure on the area's natural resources. This would in turn lead to a condition already characteristic of downstate areas and thus destroy the unique beauty of the region. Several persons expressed concern about ways to control the increasing development of the North. Because transportation facilities can sometimes influence desired growth patterns, the Department will be working more closely with various local areas in solving their transportation needs.

The concern for future energy availability was mentioned at all meetings. These concerns presented a new issue that had not been adequately considered in the study at that time. Therefore, because the future energy situation could have a significant impact on future transportation proposals, the study was revised to address this issue. In addition, the revision also offered the study team an opportunity to consider alternative multi-modal solutions to the transportation problems of the region and incorporate various growth possibilities.

Other issue categories such as safety, costs, railroads, etc. represent recurring transportation concerns. The railroad issue is an even greater concern now due to possible abandonment of Chessie System tracks north of Manistee. As the study progresses, the issue identification process will continue as a means to insure proper development of future transportation plans.

GOALS AND OBJECTIVES

Planning for what? This is a fundamental question that must be asked in order to define the direction of any planning activity. Planning is viewed as a series of related actions and decisions that are organized around, and moving toward, the accomplishment of certain goals and objectives. These statements of direction are intended to accomplish the following:

1. Guide plans, which should be proposals of action, towards the achievement of a desirable end result.
2. Identify a course of action which is deemed equitable and desirable by affected interests.
3. Provide a means of measuring accomplishments.
4. Offer a comparison of state, regional and local concerns.
5. Through strategies, offer possible solutions to common problems.

Ultimately, the aim of this planning effort is to provide a desired transportation service that minimizes social, economic and environmental costs, yet still meets an identified need. Comparing the various proposals on the basis of goals makes it possible to select the most desirable transportation action.

Following are the state and regional transportation goals, objectives and strategies. These will be useful when evaluating the transportation options of this and subsequent studies. When reviewing them, three points are noteworthy. First, the state goals are preliminary, subject to modification pending finalization of the State Transportation Plan. Second, the regional strategies are summaries of the actual recommendations which are available at the Northwest Michigan Regional Planning and Development Commission's office. And third, they are listed in no particular order of importance.

State Transportation Goals

Statement of Purpose

To ensure a level of mobility for Michigan citizens, visitors and commerce that is reasonable in terms of the social, economic and environmental values of the State.

Aviation Goals

1. Provide a reasonable level of aviation services to all Michigan citizens, visitors and commerce.
2. Reduce the number and severity of accidents and promote the personal safety of air travelers.
3. Maximize economic benefits through aviation program investments.
4. Minimize environmental impacts in the planning, development and operation of airport facilities.

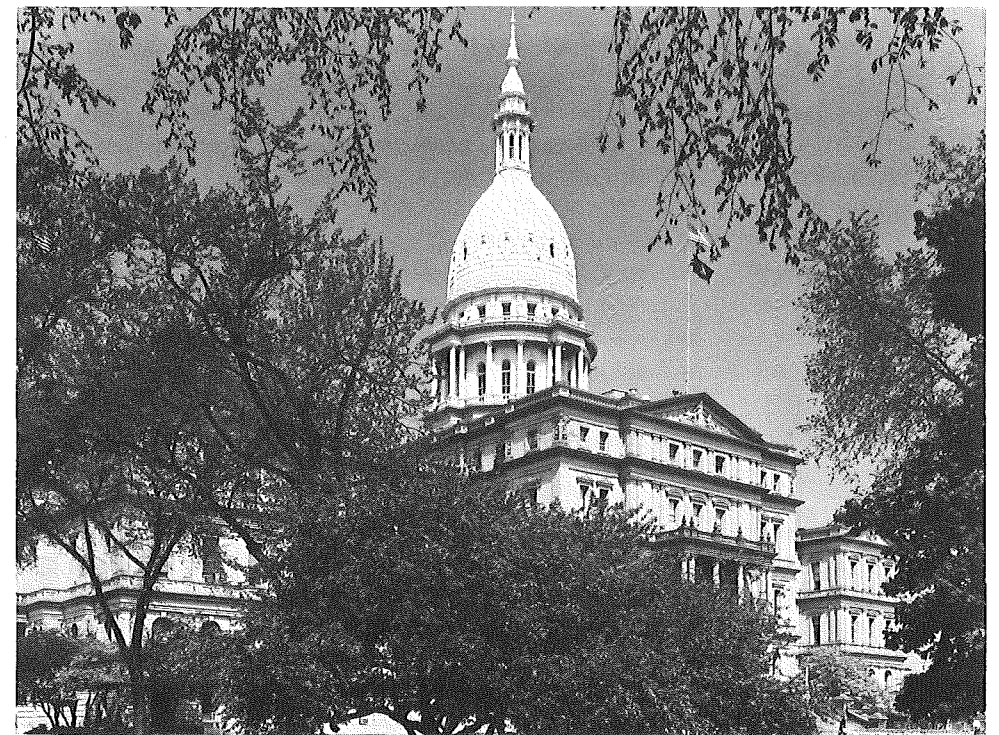
Commercial Harbor Development Goals

1. Provide and maintain an efficient commercial harbor system to meet the needs of Michigan's economic structure.
2. Promote fiscal integrity, stability and efficiency within the commercial harbor system.
3. Minimize environmental and social impacts resulting from port improvements or expansion.

Highway Goals

1. Develop a highway transportation system which will provide accessibility to existing and anticipated patterns of development throughout the state and effectively serve existing and projected travel demands.
2. Develop a functional statewide highway transportation system which will provide for appropriate types and levels of highway service commensurate with the needs of the various areas and activities in the State.

3. Alleviate traffic congestion and reduce travel time.
4. Provide for increased travel safety.
5. Provide a system which is both economical and efficient, satisfying all other objectives at the lowest possible cost.
6. Coordinate highway planning with land use planning for the development and preservation of resources.
7. Develop a system which is compatible with the aesthetic qualities of the landscape.
8. Develop a system which is integrated with other modes of transportation. Attention should be given to existing and planned terminal locations and their expected levels of activity.



Non-Motorized Goals

1. Make bicycling safer through the provision of bicycle facilities and improvements to appropriate streets and roads.
2. Promote the use of bicycle transportation for utilitarian purposes by improving bicycle accessibility and mobility.
3. Encourage the use of bicycle transportation for recreational purposes by developing long-distance touring routes and routes of shorter duration to and through aesthetically pleasing areas.
4. Provide recreational horseback riding opportunities in cooperation with other state and local agencies.

Public Transportation Goals

1. Provide a reasonable level of public transportation service for all Michigan citizens.
2. Maximize economic benefits through public transportation investments.
3. Maximize positive environmental impacts achievable through the provision of public transportation services.

Railroad Goals

1. Provide and maintain an adequate efficient railroad network within Michigan and maintain links to the regional and national networks.
2. Promote present and future financial viability, stability and efficiency within the Michigan railroad system.
3. Minimize adverse social and economic impacts of changes in railroad service.
4. Promote and maintain safe railroad freight operations consistent with public need and carrier capability.

Regional Transportation Goals

Primary Goal

To create, through comprehensive transportation planning, a system of transportation services which provide for the efficient movement of people and goods with minimum disruption to social, economic and environmental sectors in the region.

1. OBJECTIVE: To curb adverse environmental impacts.

STRATEGIES: a. Make improvements within existing roadway right-of-way where feasible.
b. Increase service capacity only to a level where ensuing growth will not cause unnecessary harm to the environment.

2. OBJECTIVE: To promote safety concerns.

STRATEGIES: a. Separate local traffic from through traffic.
b. Improve roads to contemporary standards and provide passing lanes in critical areas.
c. Develop road facilities utilizing grade separations, controlled access points, and divided traffic flows.

3. OBJECTIVE: To promote sound land development.

STRATEGIES: a. Improve transportation facilities to a level consistent with local growth-development policies.
b. Take steps today to preserve the designed functions of roads. Avoid hazardous and congested situations caused by strip development.
c. Preserve important agriculture and wetland areas.

4. OBJECTIVE: To promote energy conservation.

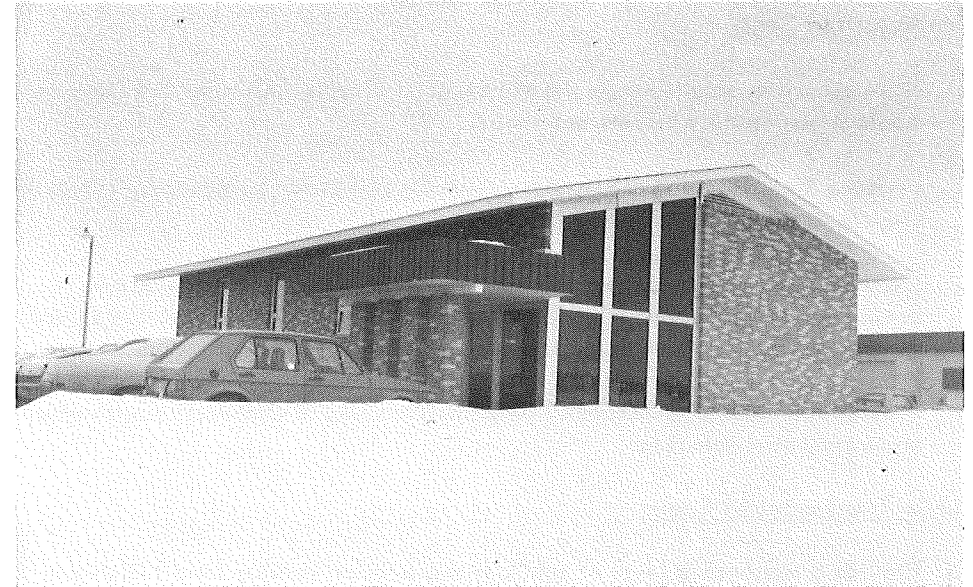
- STRATEGIES:
- a. Plan a transportation system that utilizes energy efficient modes, recognizing the rural and decentralized character of this region.
 - b. Promote car-pooling, van-pooling and public transit service where a need has been identified.
 - c. Consider the effects of energy conservation upon transportation service. Design facilities and systems with flexibility in mind so that changing travel demands and user characteristics can be accommodated.

5. OBJECTIVE: To reduce costs from the public and user point of view.

- STRATEGIES:
- a. Make investments in transportation that provide the greatest short-term and long-range benefits.
 - b. Insure that economic costs required for major facility improvements are justified, since various conditions, such as energy availability, are uncertain and may affect transportation services.
 - c. Structure transportation user charges to reflect the true cost of providing the service.
 - d. Stress increased efficiency and reduced cost in the recommended system.

6. OBJECTIVE: To provide a viable multi-modal transportation system for the region.

- STRATEGIES:
- a. Develop a transportation system based on the efficiency of various modes and the role each plays in serving the region.
 - b. Provide reasonable access to transportation services for all segments of the population.
 - c. Develop a transportation system that is direct, efficient and convenient.



Northwest Michigan Regional Planning and Development
Commission Office in Traverse City.

EXISTING TRANSPORTATION SERVICES

AVIATION

The Department's role in air transportation is to insure an orderly and timely development of the State's Aviation System. To assist in this task, the Michigan Aeronautics Commission in 1974, adopted a Michigan Airport System Plan (MASP) for the years 1975, 1980 and 1990.

A major purpose of the Plan is to show various communities their projected level of aviation demand for future time periods. This will enable them to begin an assessment of potential community and environmental impacts associated with airport development. And depending on the extent of these improvements, these considerations can be addressed in more detail as local airport master plans are prepared or updated.

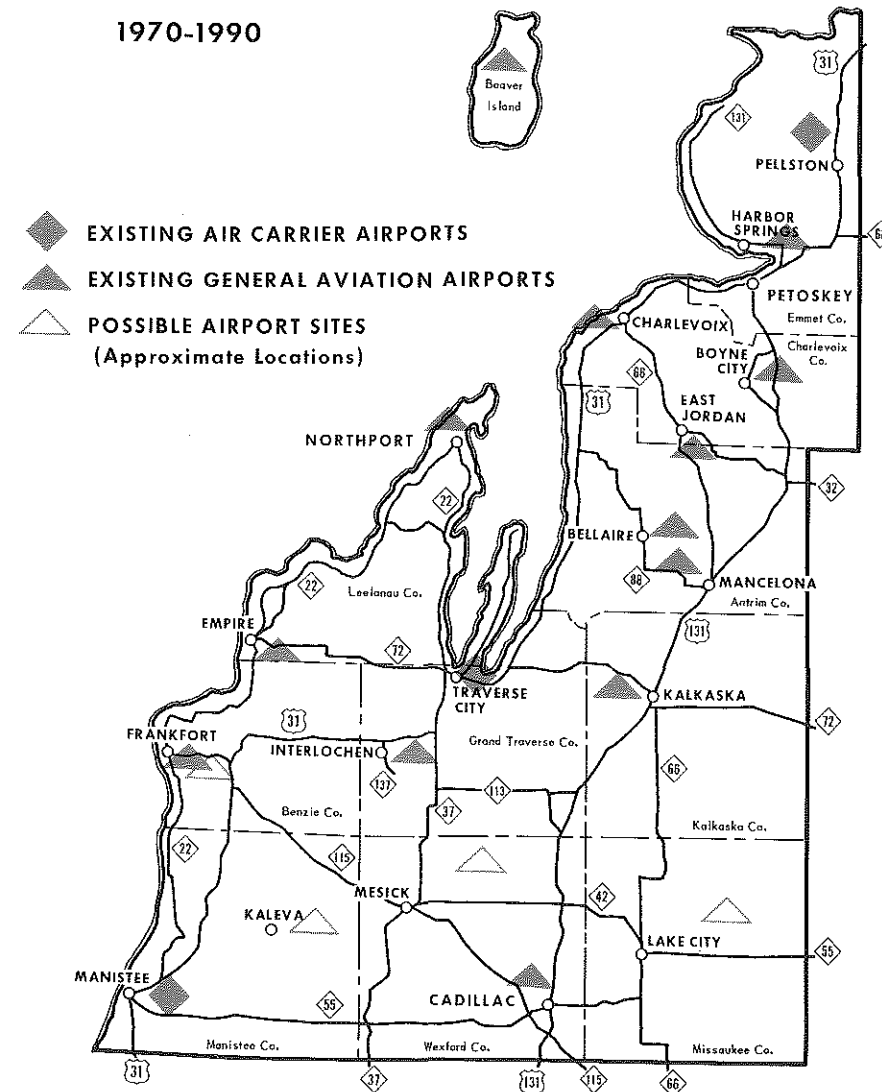
The accompanying map illustrates the 1990 recommended airport system for the Northwest Region as contained in the MASP. These airports are classified into two basic service related categories: Air Carrier Airports and General Aviation Airports.

Air Carrier System

An Air Carrier Airport is an airport used by certificated scheduled airline service. At the present time, North Central Airlines is the carrier providing passenger service to the Manistee, Pellston, and Traverse City Airports. According to a 1977 summer airline schedule, North Central provided Manistee with one flight/day, Pellston with five flights/day and Traverse City with six flights/day. Normally, air carrier airports have more than one runway, with the longest being at least 5,000 feet (1,524 meters) in length. This enables the larger, 50-passenger, Turbo-prop or jet aircraft to utilize these facilities. In addition, many smaller general aviation type aircraft are served at these facilities.

On a statewide basis, the recommended air carrier system of airports for 1990 will remain about the same as that in service today. However, some changes may be warranted as the various airlines begin to utilize different types of aircraft.

AIRPORT SYSTEM PLAN NORTHWEST REGION 1970-1990



Presently, North Central Airlines is using the 44-passenger Convair 580 Turbo-prop aircraft. In the future, these aircrafts will likely be replaced with DC-9 jet aircraft. These larger airplanes are capable of carrying up to 120 passengers. These aircrafts have higher altitude and speed characteristics, and require a runway length of approximately 6,500 feet (1,981 meters). Therefore, because Manistee County's Blacker Airport runway is 5,500 feet (1,676 meters), these larger aircraft will not be able to serve this facility. However, it is believed that the runway does not need extension as sufficient air passenger service can still be maintained by using the smaller commuter-type aircraft.

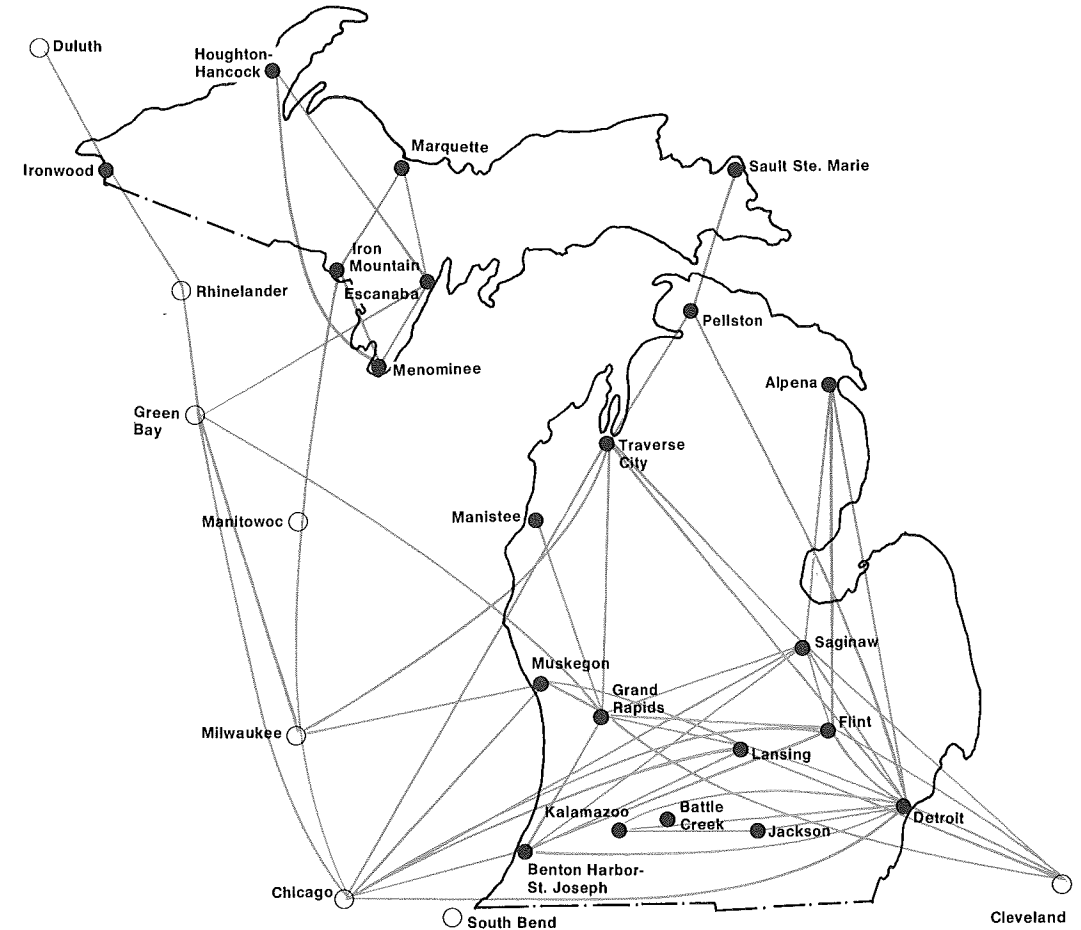


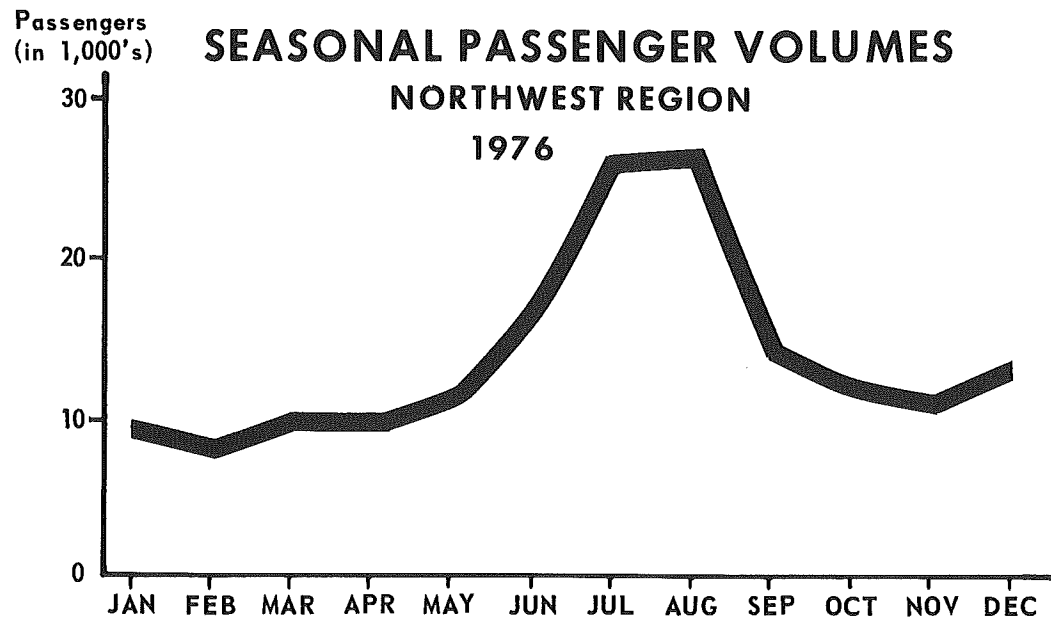
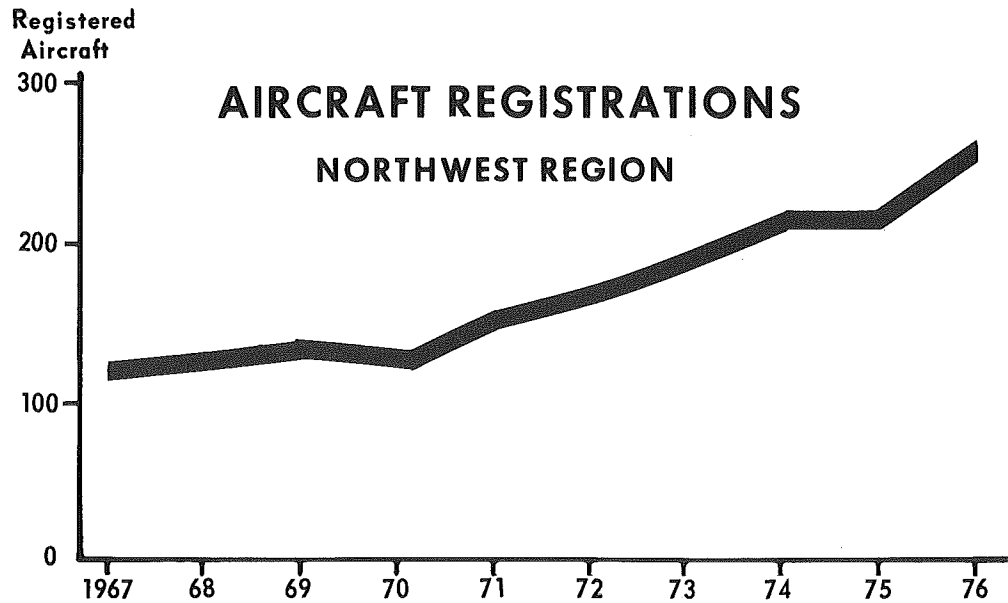
In 1977, another study of Michigan's Air Carrier Airports was conducted. Results indicated that passenger service to the Northwest Region should be improved. This study recommended that airline schedules should be altered to provide better service to the Detroit and Chicago market areas. It was suggested that if the current air carrier is unable to provide this service, then perhaps other commuter-type services could be considered.

Commuter airline services generally operate the smaller 10-20 passenger aircraft and are able to provide an intermediate level of passenger service. Seaco Airlines is now offering commuter service to Chicago from Cadillac while Chippewa

Airlines provides service between Manistee, Mt. Pleasant and Detroit. The commuter service to Chicago is provided on a trial basis.

AIR CARRIER ROUTES



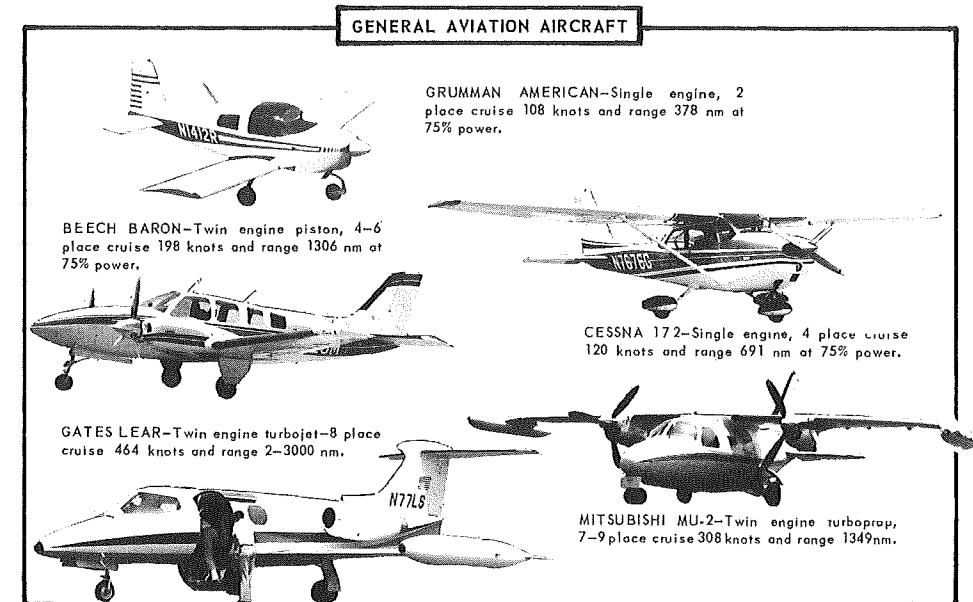


General Aviation System

General Aviation Airports provide a basic level of air service for local communities. These airports offer local communities and businesses the ability to access the vast market area provided by the entire air transportation system. In the Northwest Region, these airports are accommodating up to 28 locally based aircraft. Typical runway lengths vary from 2,700 to 5,000 + feet (823 to 1,524 meters). Air freight aircraft are able to utilize the airports with the longer runways. In general, the basic measures used to determine the need for these airports were:

1. To provide aviation capacity sufficient to accommodate forecasted levels of general aviation activity in a given geographic area.
2. To provide a reasonable geographic distribution of airports throughout the State.

The MASP recommends 162 general aviation airports of which 56 are new airports. Sixteen of the recommended general aviation airports are in the Northwest Region and four of the locations -- Frankfort, Kaleva, Lake City and Mesick (see map page 21) are proposed as new airports. At this time no site has been selected for these airports.



Funding

Although the MASP is a product of local, state, and federal planning efforts, it is the responsibility of the local community or airport authority to initiate airport development projects. After these projects have been finalized various financial arrangements are pursued. The present financial sources include:

- Federal Funds, through the Airport Development Aid Program, Upper Great Lakes Regional Commission and FAA Facility and Equipment Funds.
- State Funds, through Michigan Aeronautics Commission revenues from a tax imposed on aviation fuel.
- Local Funds, primarily through long-term borrowing.

Table I illustrates some of the typical airport development projects programmed for the Northwest Region.

**TABLE I
1978-79 RECOMMENDED AIRPORT DEVELOPMENT PROJECTS
NORTHWEST REGION**

LOCATION	PROJECTION DESCRIPTION	TOTAL ESTIMATED COST OF PROJECT	FEDERAL FUNDS REQUIRED	STATE FUNDS REQUIRED	LOCAL FUNDS REQUIRED
Bellaire	Overlay runways; construct taxiway; lighting; pavement marking	\$ 1,546,000	\$ 1,391,400	\$ 77,300	\$ 77,300
Cadillac	Purchase land; construct, light and mark runway; instrument landing system; perimeter fencing	\$ 1,000,000	\$ 900,000	\$ 35,360	\$ 64,640
Charlevoix	Purchase land; construct and light runways and taxiways; pavement markings	\$ 668,000	\$ 534,400	\$ 45,800	\$ 87,800
Pellston	Security and perimeter fencing; snow removal equipment	\$ 400,000	\$ 360,000	\$ 11,275	\$ 28,725
Pellston	Overlay, light, and mark runway	\$ 572,000	\$ 457,600	\$ 57,200	\$ 57,200
Traverse City	Construct and light taxiway; expand auto parking lot and modify access drive; snow removal equipment	\$ 1,000,500	\$ 703,575	\$ 131,465	\$ 165,460
Traverse City	Terminal building bond retirement; Fire/crash/rescue vehicle and equipment; storage building; construction	\$ 1,102,000	\$ 829,180	\$ 50,100	\$ 222,720

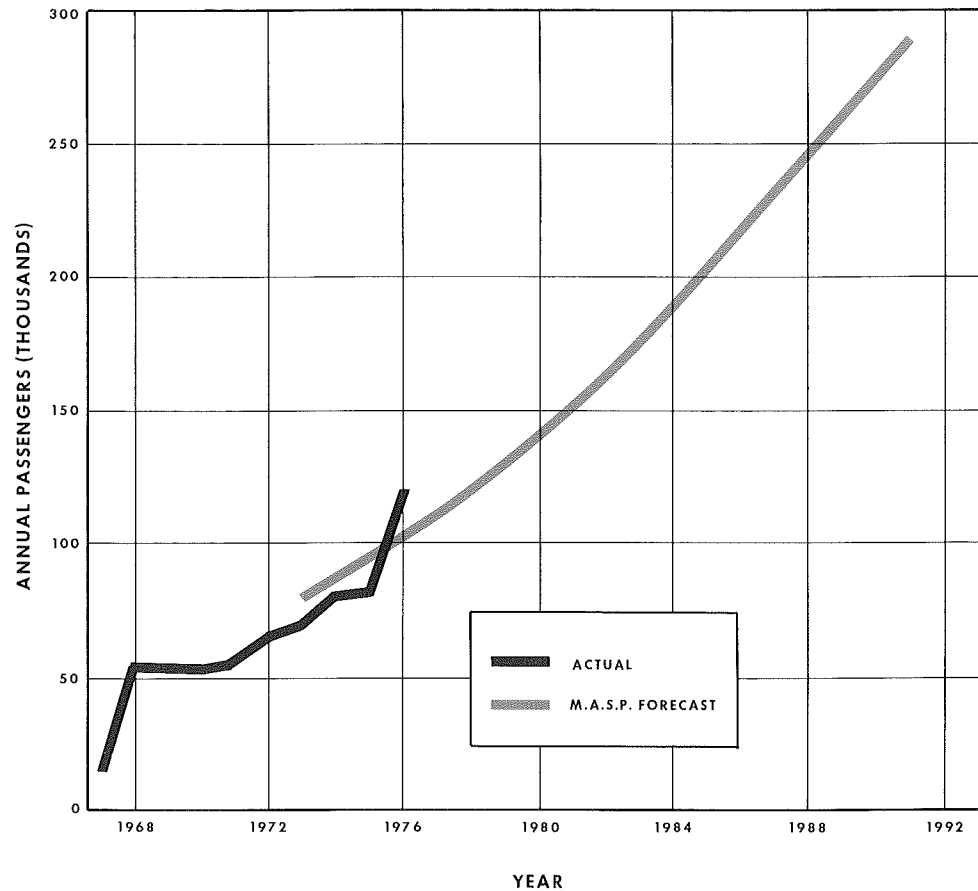
Table II illustrates the forecasted air passenger and aircraft operations for the airports located in the Northwest Region. It is important to realize that most of these forecasts were based on aviation trends existing before the emergence of the "energy crisis". In 1973-74, the curtailment of oil imports from the Middle East had a significant impact on some of Michigan's airports. For example, Flint's Bishop Airport operations were reduced by 20%. However, it is also interesting to note that during this same period, aircraft operations at Traverse City's Cherry Capital Airport were unaffected.

**TABLE II
AIR CARRIER AIRPORTS
OPERATIONAL FORECASTS**

	BASE YEAR (1970)	CURRENT DATA (1977)	FORECASTED PERIODS		
			SHORT RANGE (1973-77)	INTER-MEDIATE (1978-82)	LONG RANGE (1983-92)
Traverse City (Cherry Capital)					
Air Carrier Operations	6,600	5,600	6,600	10,200	16,800
General Aviation Operations	52,100	70,400	60,100	71,100	100,100
Air Carrier Passengers	37,000	69,500	67,000	100,000	180,000
General Aviation Passengers	35,000	51,500	41,000	48,000	68,000
Pellston (Emmet County)					
Air Carrier Operations	3,700	4,300	7,300	7,300	16,100
General Aviation Operations	17,400	15,300	17,400	19,300	25,300
Air Carrier Passengers	15,000	27,500	39,000	55,000	100,000
General Aviation Passengers	12,000	11,500	12,000	13,000	17,000
Manistee (Manistee County-Blacker)					
Air Carrier Operations	700	850	700	1,500	2,200
General Aviation Operations	17,900	17,200	19,900	23,900	32,900
Air Carrier Passengers	3,000	3,200	4,000	5,000	7,000
General Aviation Passengers	9,000	12,500	11,000	14,000	21,000

Thus, if future fuel resources do become limited, the aviation industry, along with everyone else, will be making some adjustments. The industry has already demonstrated that substantial fuel savings can be achieved by reducing air speeds and increasing passenger load factors.

AIRLINE PASSENGER TRENDS AND FORECASTS NORTHWEST REGION 1967-1992



Benefits

The airport improvement projects shown in Table I plus other MASP recommendations are expected to produce a wide range of benefits to a broad spectrum of Michigan residents and visitors. The benefits that will accrue to affected groups from the Michigan Airport System Plan are summarized as follows:

USERS

- Reduce travel time and costs for air travelers and shippers.
- Expand recreational opportunities due to increased accessibility of recreation areas and wider opportunities for pleasure flying.

AIRLINES AND AIRPORT AUTHORITIES

- Improve safety and convenience of aircraft operations.

COMMUNITIES

- Enhance business and industrial growth in areas served by both air carrier and general aviation airports.
- Increase employment opportunities and tax base (from business and industrial growth).
- Improve emergency access to communities for medical supply and evacuation.



COMMERCIAL HARBORS

Port development in the State is associated with two specific types of harbor: (1) Recreational harbors and harbors of refuge (emergency harbors) and (2) Commercial harbors. Within state government the responsibility for recreational harbors and harbors of refuge is vested primarily in the Michigan Waterways Commission of the Department of Natural Resources. The overall planning responsibility for commercial harbors lies within the Michigan Department of State Highways and Transportation.

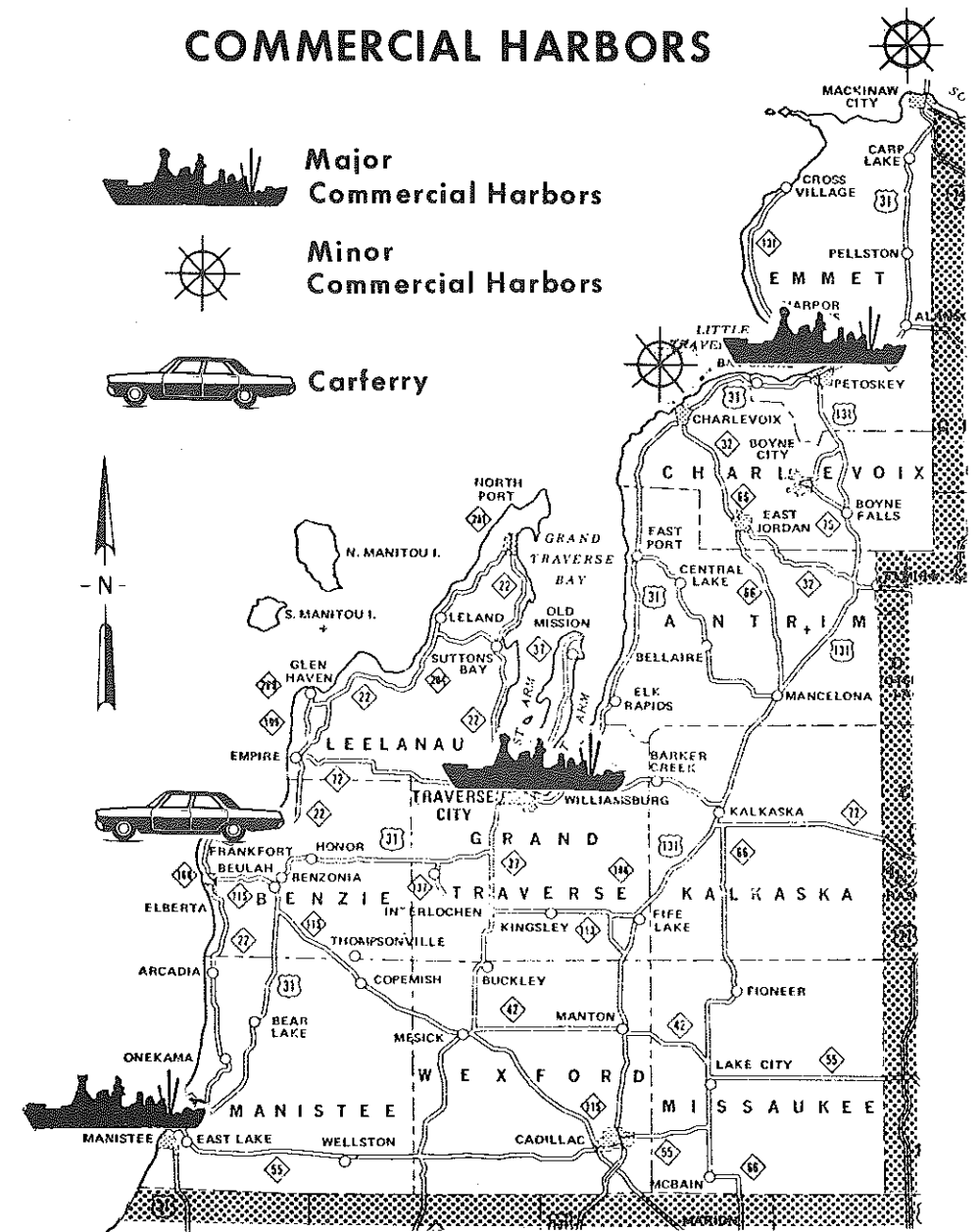
A commercial harbor within the Great Lakes – St. Lawrence Seaway Transportation System is defined as a port with one or more commercial dock facilities with a minimum water depth of 18 feet. Most of the commercial harbors in the Northwest Region were established in the mid to late 1800's to provide raw materials such as sand and lumber products to the growing population centers of Chicago, Detroit and Cleveland. As the Michigan timber resource declined, other industries moved into the commercial harbors and became the economic base for development of the region's shoreline cities.

The commercial harbors of the Northwest Region face changing conditions that require continued assessment and planning to be dealt with effectively. Historic trade patterns have essentially reversed themselves and the region's harbors are now mainly used to receive rather than ship raw materials. Shoreland has become a limited and precious resource that is desired for many non-port users. Related to this is the fact that recreational water activity has far exceeded commercial activities.

With the opening of the St. Lawrence Seaway in 1959, a new dimension was added to the Great Lakes Transportation System. This event provided the Great Lakes with accessibility to many international markets. However, ocean vessels require a controlling water depth of 27 feet (8.2 meters) and often use containerized cargos. Therefore, because the region's harbors cannot accept this type of vessel, most operations are limited to domestic or interlake commerce.

Another factor affecting port operations is the change occurring in the fleet of Great Lakes Ships. Fewer but larger vessels are gradually replacing the smaller ships. As a result, there is a decreasing number of ships available that can serve the ports located in the shallower harbors. One possible remedy to this problem is the Integrated Tug-Barge. This vessel has recently evolved from technological advancements gained during the Alaskan Oil Pipeline Project. The

COMMERCIAL HARBORS



Integrated Tug-Barge is a linkage system that converts the barge and tug into a single vessel for operation and can be separated for loading or unloading. The most economical operation is a single tug and three barges i.e., one barge in a loading port, one in a discharge port and one barge in transit between the two ports. Although barges have traditionally operated in calm waterways, these newer vessels can operate over open water and do not require a deep water port facility. Thus, these vessels may someday be seen crossing Lake Michigan.



Northwest Regional Harbors

The following represents a discussion of some of the characteristics associated with the region's commercial harbors. All of the region's water transportation operations are directly connected to truck and railroad facilities that aid in the distribution of goods to points inland. It is important to note that in addition to these harbor areas, the Lake Michigan Ports of Medusa and Penn-Dixie also provide a key water transportation link in sustaining the region's economy.

Charlevoix Harbor

The Charlevoix Harbor facilities are located in Round Lake with connecting channels to both Lake Michigan and Lake Charlevoix. The controlling depth for this harbor is 18 feet (5.5 meters) in the channel from Lake Michigan and in the channel from Round Lake to Lake Charlevoix. Water depths in Round Lake average over 30 feet (9.1 meters). The Army Corps of Engineers has approved a harbor improvement study to increase channel depth to 25 feet (7.6 meters). Funding of this project is contingent on local assurances relating to relocation of a cross channel water/sewer line.

Products moving through the harbor include receipts of coal, limestone, petroleum products and pig iron. An auto-passenger ferry serving Beaver Island is also based at Charlevoix Harbor.

Frankfort Harbor

This commercial harbor is located in Lake Betsie adjacent to the channel connecting to Lake Michigan. The controlling water depth in the outer harbor area and channel is 23 feet (7 meters) and 18 feet (5.5 meters) in the maneuvering area.

The principal use of the harbor is by the Ann Arbor Railroad carferries serving the Wisconsin port of Kewaunee. Service to Manitowac is presently embargoed due to the nonavailability of one of the two carferries. The carferries carry loaded rail cars, trucks and passenger vehicles. Petroleum products are also brought into this harbor.

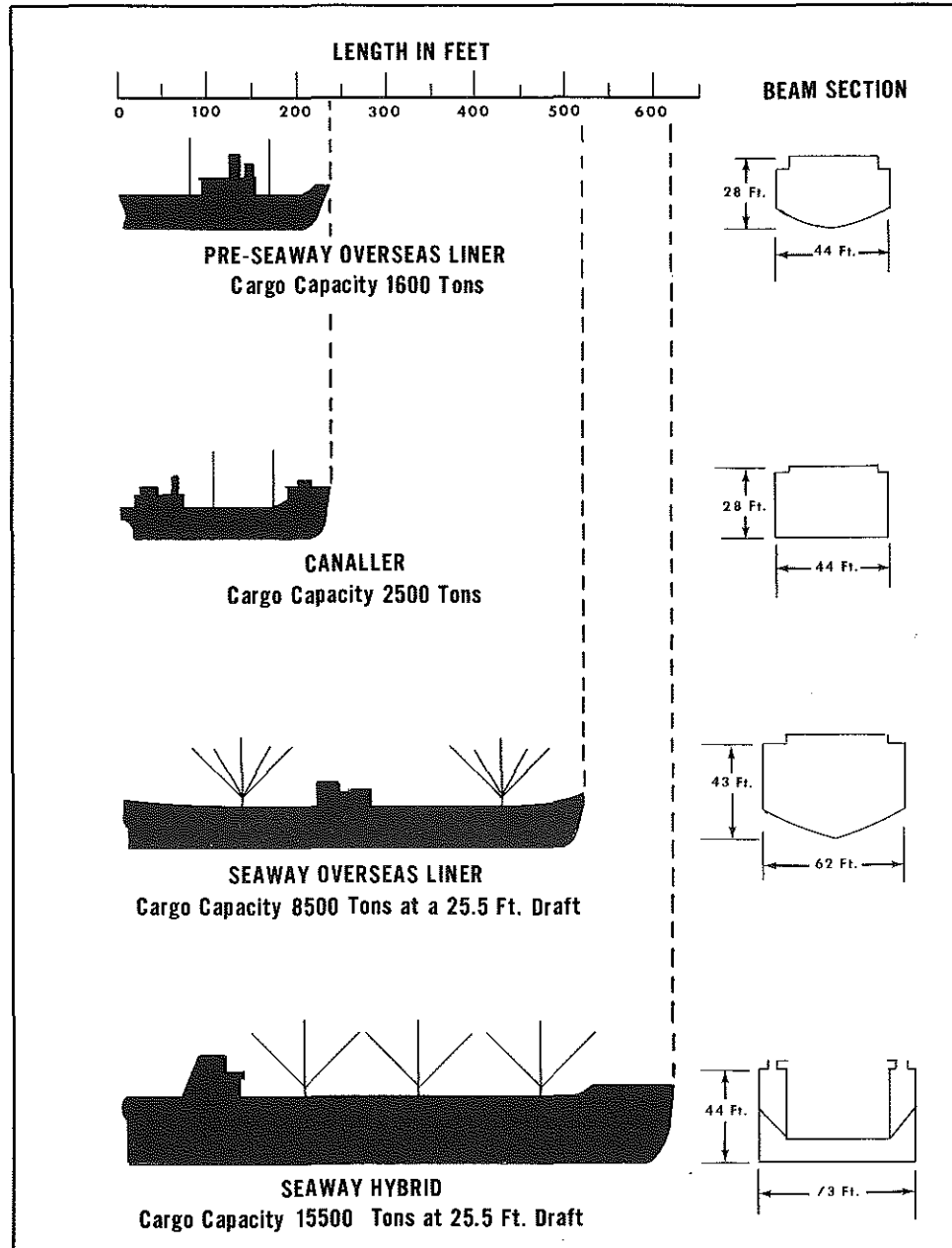
ANNUAL FREIGHT TONNAGES 1958 - 1975
(Net Tons/Year)

COMMERCIAL HARBOR	1958	1960	1965	1970	1975
Charlevoix	76,830	81,241	34,450	209,369	131,343
Frankfort	1,496,760	1,407,738	1,725,505	1,632,508	644,690
Manistee	427,118	589,765	582,918	591,907	291,991
Traverse City	220,717	175,123	221,301	278,038	362,777
Petoskey-Penn Dixie	301,203	320,884	486,507*	429,519	468,960
Region Totals	2,522,628	2,574,751	N.A.	3,141,341	1,827,761

* Represents 1968 data N.A. - Not Applicable

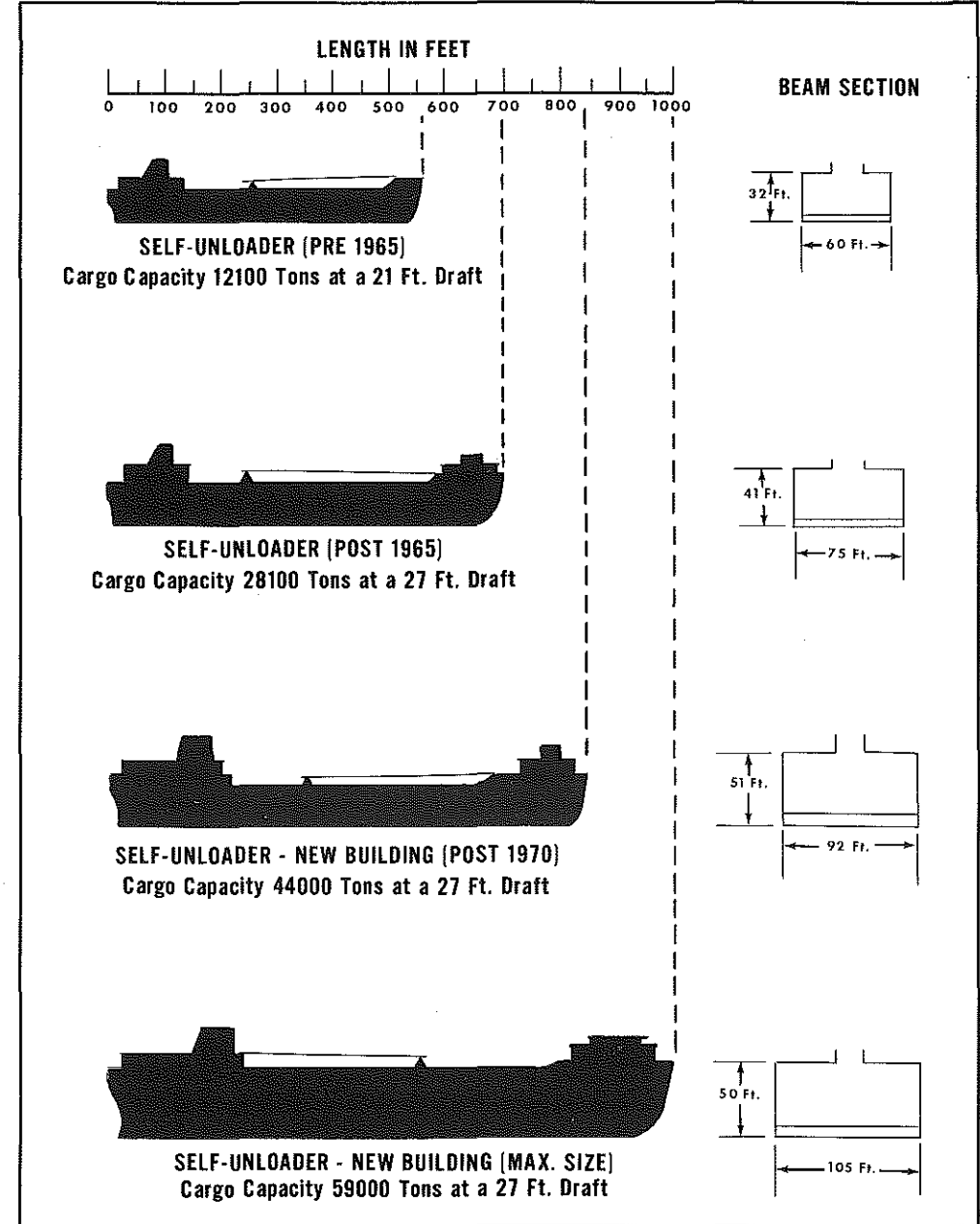
OCEAN/SEAWAY VESSELS

STANDARD TYPES



GREAT LAKES VESSELS

STANDARD TYPES



Manistee Harbor

The Manistee Harbor facilities are located along a 1½ mile (2.2 kilometers) section of the Manistee River which includes a connecting channel between Manistee Lake and Lake Michigan. This waterway is maintained by the Army Corps of Engineers at a controlling depth of 25 feet (7.6 meters) in the outer basin and channel and 23 feet (7 meters) in the river to Manistee Lake. Water depths in Manistee Lake are greater than 25 feet (7.6 meters). Salt, coal, limestone and aggregates are the main commodities flowing at this port. Sand and gravel mining used to account for a large percentage of this harbor's tonnage, but has since been discontinued.

Petoskey Harbor

Petoskey Harbor is located on the south shore of Little Traverse Bay. Although this harbor is considered a commercial facility, it is not classified as a deep-draft harbor. The harbor's depth is currently being maintained at only 14 feet (4.3 meters). Coal is the major commodity received at this port.

Traverse City Harbor

The Traverse City Harbor is located in the West arm of Grand Traverse Bay. Since the Bay has deep water close to shore, the Corps of Engineers has determined that there is no need for navigational improvements at this time. The principal products handled through the harbor include receipts of coal, petroleum products, limestone, sand and gravel. There are no recorded shipments. The Great Lakes Maritime Academy also maintains a dock on the lower Bay for its training vessels.

HIGHWAYS

HOW THE DEPARTMENT BECAME INVOLVED

Defense and stage coach travel stimulated the first roads in Michigan. In fact, the first road of statewide importance was built around 1819 by the Army, extending from Detroit to Saginaw. The demand for lumber gave further emphasis to road construction in order to move logs and lumber from regions not accessible by boat.



Many of the State's early roads were actually constructed along routes formerly used as overland Indian trails. Although the trails have long since disappeared, their replacement highways have remained. Some of these have evolved into such roads as US-12, I-94, I-96, I-75 and US-23. Thus, many of today's major state highways merely duplicate statewide travel patterns established long before the invention of the automobile.

From those early days, responsibility for the State's highways has shifted among several agencies. Townships assumed earliest responsibility, followed by a brief attempt by private enterprises to establish toll roads. Since monies collected were grossly inadequate to meet maintenance needs, and due to the expanding popularity of the automobile, the State Legislature allowed the establishment of County Road Commissions to develop and maintain major roads. It soon became apparent that a state organization would be required to administer the more important trans-state highways. This led to legislation in 1905 establishing the State Highway Department.

Since that time, numerous events have led to the expansion of the highway system in Michigan. Accessibility to rural areas, national defense and sheer public demand for personal transportation have all contributed to expansion and improvement of the highway network.

DEPARTMENT'S FUNCTION

One of the Department's foremost functions is to provide sufficient right-of-way throughout the State to permit a reasonable level of accessibility. By virtue of these continuous strips of public land, essentially every area of the State is made accessible to the general public.

The Constitution and Statutes of the State of Michigan charge the Department with the responsibility for planning, designing and maintaining highway facilities within these rights-of-way. Construction, although supervised by the Department, is carried out by private contractors. This system of highways, now totalling 9,454 miles (15,221 kilometers) offers virtually unlimited toll free usage by public and private vehicles alike.

THE PURPOSE OF HIGHWAYS

Public highways in Michigan have two basic service functions:

- 1) Provide access to property.
- 2) Accommodate the movement of through traffic.

Local rural roads and local residential streets serve the first function and major highways and freeways primarily serve the latter. Between these two extremes are a substantial number of highways, roads and streets that serve a dual function.

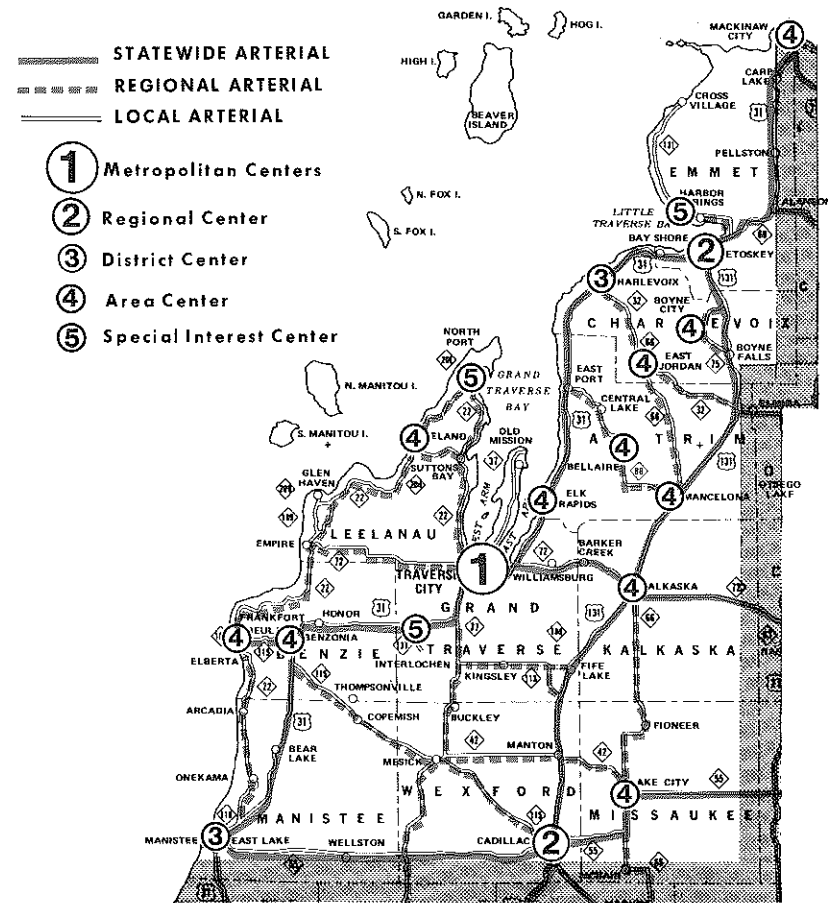
A major highway whose primary function is to accommodate long-distance traffic will often be designed with a limited number of access opportunities and with safety features commensurate with higher traveling speeds. Local residential streets, on the other hand, are designed with numerous access points for adjacent properties and often incorporate numerous curves and stops to discourage high speeds and through traffic.

HIGHWAY CLASSIFICATION

In order to properly plan and develop a state highway system, the Department has established a State Trunkline Highway Plan. From this Plan, various highway segments have been classified according to their functional usage. The major categories (classifications) include:

- a) Statewide arterials (principal and others)
- b) Regional arterials
- c) Local arterials (collectors)

STATE HIGHWAY CLASSIFICATION



Highway classification is also derived from a system of ranking the cities or places which these highways connect. The socio-economic data evaluated for all places produces an ascending scale of classes representing marked differences in importance as attractors of traffic. The accompanying exhibit indicates the classification of various highways and places in the Northwest Region according to the current State Highway Trunkline Plan.

It is important to note that numerous streets and roads exist which are not shown on the map. This map is not intended to denote only important roads, but merely those under State jurisdiction and responsibility. All roads and streets, whether large or small, fulfill an important role in the total highway network. Of those highways, only the state trunklines are a concern of this study. And then, emphasis will be placed upon the major arterial routes. However, local road and street improvements, initiated by local government agencies, should be integrated with improvements resulting from this study.

DEPARTMENT'S NEW APPROACH

On November 16, 1977, Michigan's State Highway Commission approved a revised approach to highway development. The significance of this revision is to shift emphasis from new highway route development to management of the existing system. Reconstruction and rehabilitation of existing highways has become the top priority.

This does not mean, however, that expansion or relocation of existing highways will not be pursued. Where monitoring of the highway system clearly indicates a need, and where a detailed planning process defines that need, relocations of existing highways or addition of new highways will be undertaken.

HIGHWAY DEFICIENCIES

Within this framework, it is imperative that problem areas be carefully defined and analyzed to determine the degree of improvement necessary. Many miles of the State's system are considered deficient for various reasons. Many of these deficient sections can be remedied, however, with minimal improvements involving only the existing roadway. But a few areas exist where the problems go beyond the remedial benefits of minor reconstruction and will require additional laneage. Whether these new lanes should be added to the existing facility or built on a new location is the concern of more detailed,



project level, studies. The first step, and the concern of this study, is to determine where the major problem areas are located, and the degree of magnitude they represent.

The Department has conducted research in an effort to develop an impartial method of identifying highway deficiencies. The method currently used is a sufficiency rating. These ratings are used to evaluate individual segments of the entire highway system. This information indicates which sections will require attention within a given time period and their relative urgency.

The sufficiency rating (evaluation score) is comprised of four categories: surface, base, safety and capacity. Each section of highway is evaluated in terms of these categories and given a score, or rating, based upon its adequacy, or sufficiency. If a highway segment is rated below a predetermined level, it is considered critically deficient in that category. A segment of roadway can be rated critically deficient in one or more of the four categories.

The surface rating represents the adequacy of the surface and shoulders or curbs. This category is perhaps the most noticeable to the motorists because of its visibility. The year of construction or improvement, width and surface type, along with the condition and estimated surface life are also included in this category.

The base rating represents the adequacy of everything under the surface to support the surface. It considers the average base and soil conditions, taking into account the average drainage conditions.

The safety rating calls attention to excessive or extraordinary conditions creating potential hazards. Existence of fixed objects (trees, utility poles, sign posts, abutments, etc.) in proximity to the pavement edge constitutes such a condition. Accident frequency, type and severity are also considered in this evaluation.



The capacity rating represents the ability of a section of roadway to carry existing volumes of traffic. Several factors used to determine this rating include: practical hourly capacity, sight restriction, lane width, amount of commercial traffic, and peak hour volumes.

The accompanying exhibits indicate the sufficiency evaluation of the highways in the Northwest Region. These evaluations are based upon existing conditions and traffic volumes. It is intended that these exhibits will help to determine where problems exist; where minor improvements are needed; and where more extensive, or major highway improvements, are required to eliminate critical deficiencies.

To accomplish this separation of major and minor improvement types, an attempt has been made to separate capacity deficient segments from all others. The main reason for this distinction is that capacity deficient highways sometimes require a major transportation improvement. And major improvements usually become a controversial issue when the anticipated benefits and impacts are evaluated. Thus, it becomes important to identify these areas early in the planning process so that these issues can be resolved.

Exhibit A shows those sections of state highways in the region which are critically deficient in one or more of the rated categories; surface, base, safety and capacity. Totally, there are 851 miles (1,372 kilometers) of state highways in the ten county area. Of these, 625 miles (1,008 kilometers) or 73% are rated critically deficient in one or more categories.

Exhibit B shows the highway segments which are rated critical in capacity. These segments may also be critically deficient in one or more of the other categories. Of the total 625 deficient miles in the region, 155 miles (250 kilometers) or 25% are presently rated critical in at least capacity. These critical capacity segments represent 18% of the total miles of state highways in the ten counties. Most of these critical capacity segments are either in or around the urban development; namely: Cadillac, Manistee, Frankfort, Traverse City and Petoskey.

Exhibit C indicates that highway segments which are scheduled for improvement according to the Department's March 1978 Letting Schedule. These improvements are programmed for initiation within the next five years. Projects shown range from resurfacing to minor reconstruction and are specifically related to the determined deficiencies. It is anticipated that their completion will resolve many of the deficiencies shown on Exhibit A. Totally, 122 miles (197 kilometers) of state highway in the region are programmed for improvement.

Exhibit D shows segments which are now critically deficient in capacity but are not programmed for improvement within the next five years. These segments, totaling 103 miles (166 kilometers), will require specific attention since most will likely involve adding lanes to accommodate existing traffic. It is possible, however, that some sections which are now less than 24 feet (7.5 meters) in width (standard for 2-lane roadways) can be brought up to sufficient capacity by minor widening improvements. These and other decisions regarding the remaining critical segments should be addressed in greater detail at a subsequent level of planning.

EXHIBIT A HIGHWAY SEGMENTS CRITICALLY DEFICIENT IN ONE OR MORE CATEGORIES: SURFACE-BASE-SAFETY-CAPACITY

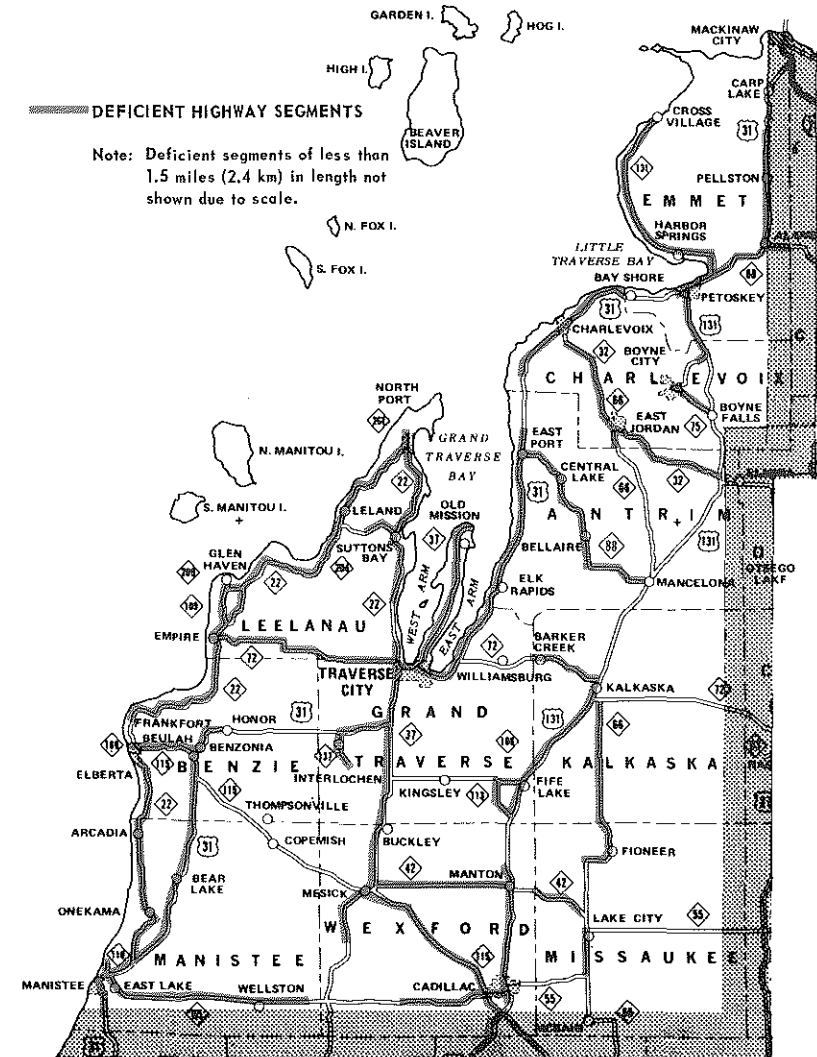


EXHIBIT B
HIGHWAY SEGMENTS CRITICALLY DEFICIENT IN AT LEAST CAPACITY

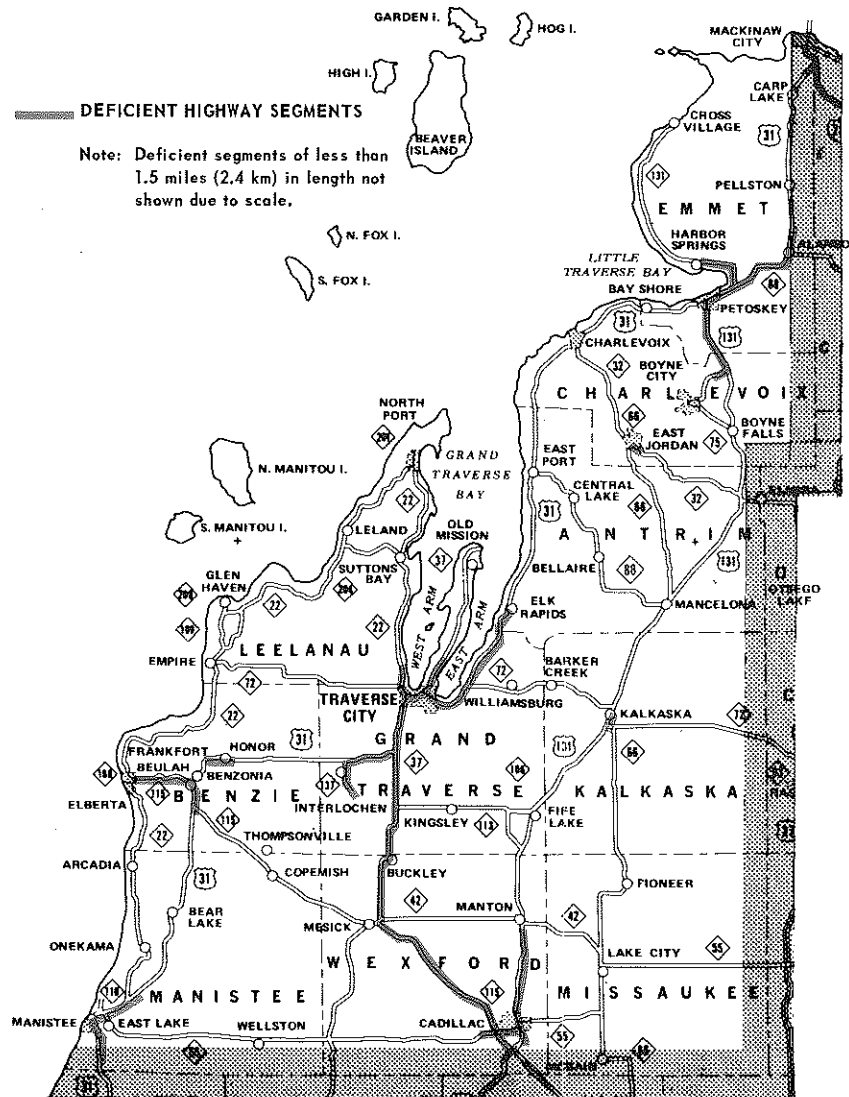


EXHIBIT C
HIGHWAY IMPROVEMENTS PROGRAMMED WITHIN FIVE YEARS SPECIFICALLY RELATED TO DEFICIENT SEGMENTS

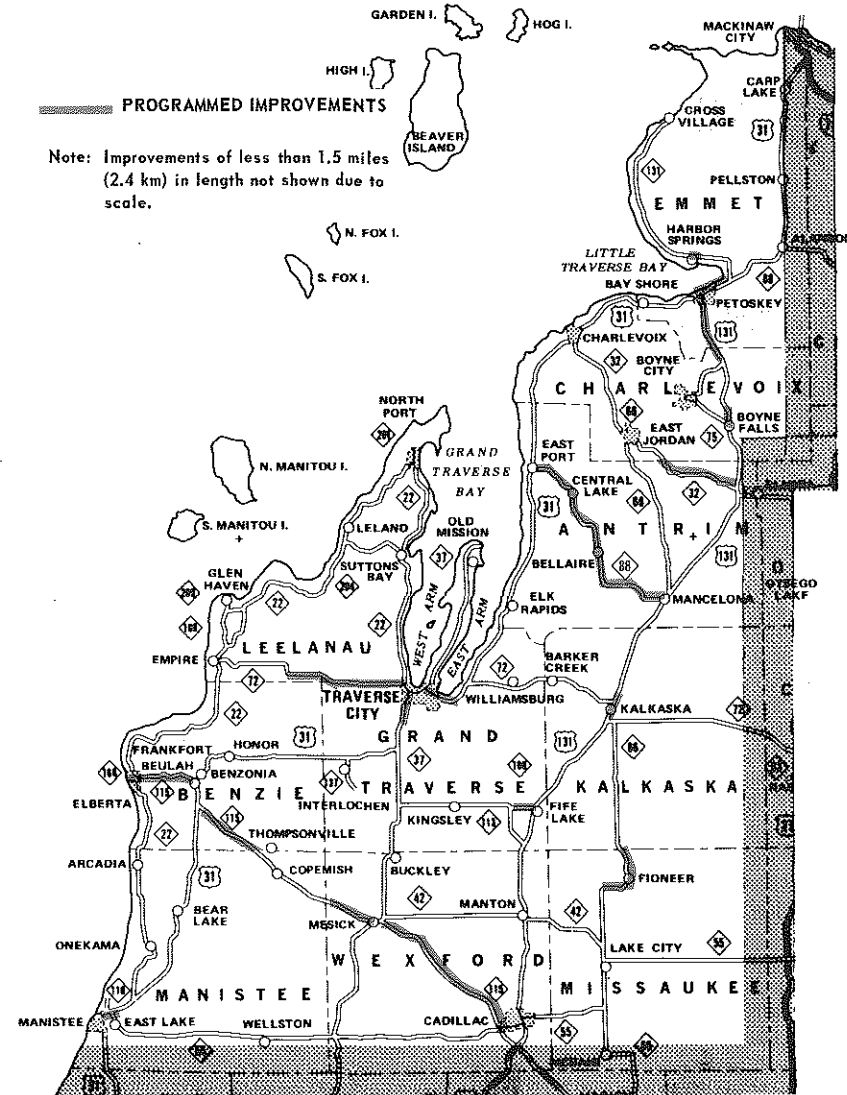
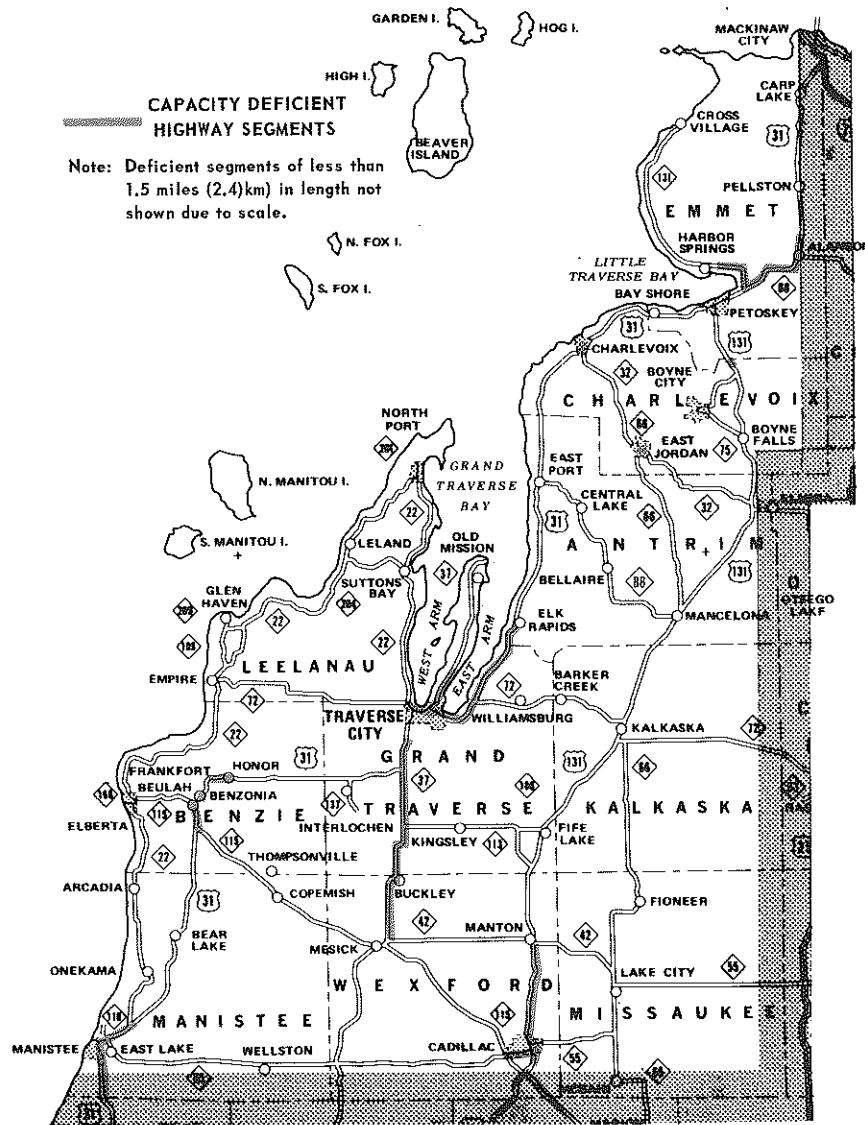
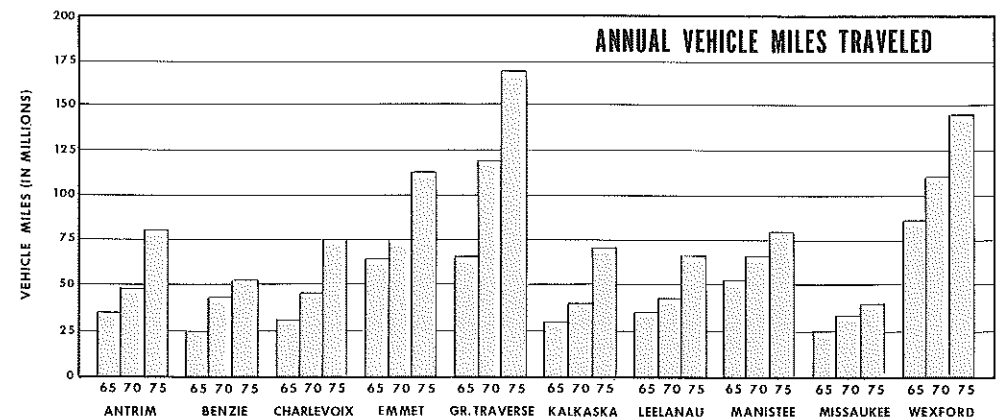
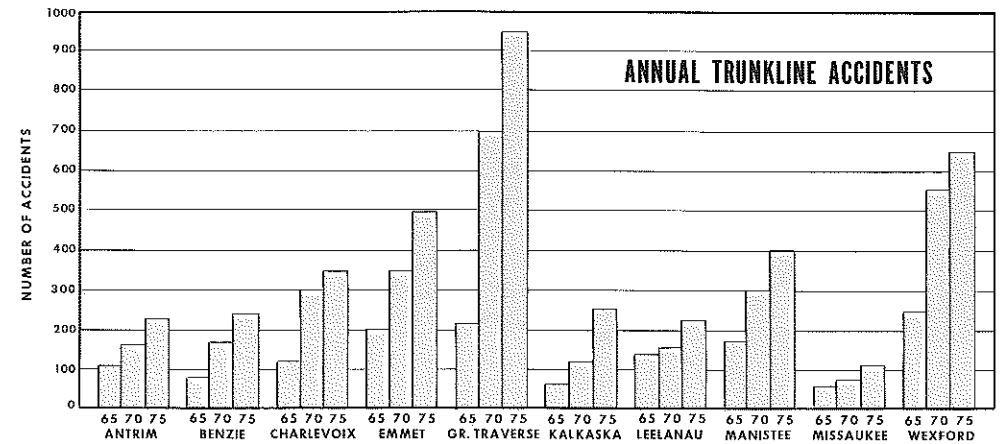


EXHIBIT D CAPACITY DEFICIENT HIGHWAY SEGMENTS NOT PROGRAMMED IN FIVE YEARS



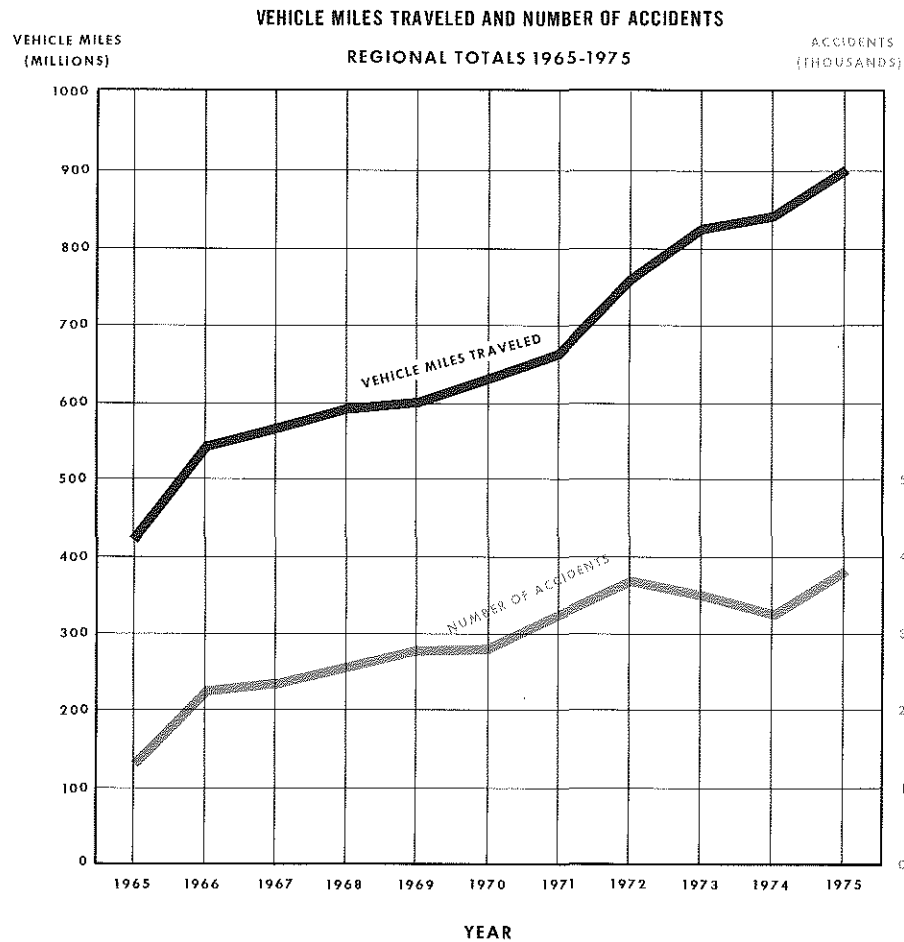
Accident Analysis

A primary goal of the Department of State Highways and Transportation is to provide safe means of travel. In a time when economic and environmental issues often dominate the public's sphere of interest, matters of personal safety are sometimes inadvertently omitted or relegated to a subordinate position. But when the possible consequences of unsafe conditions are seriously considered, the matter of safety is frequently restored to a prominent role in our order of priorities.

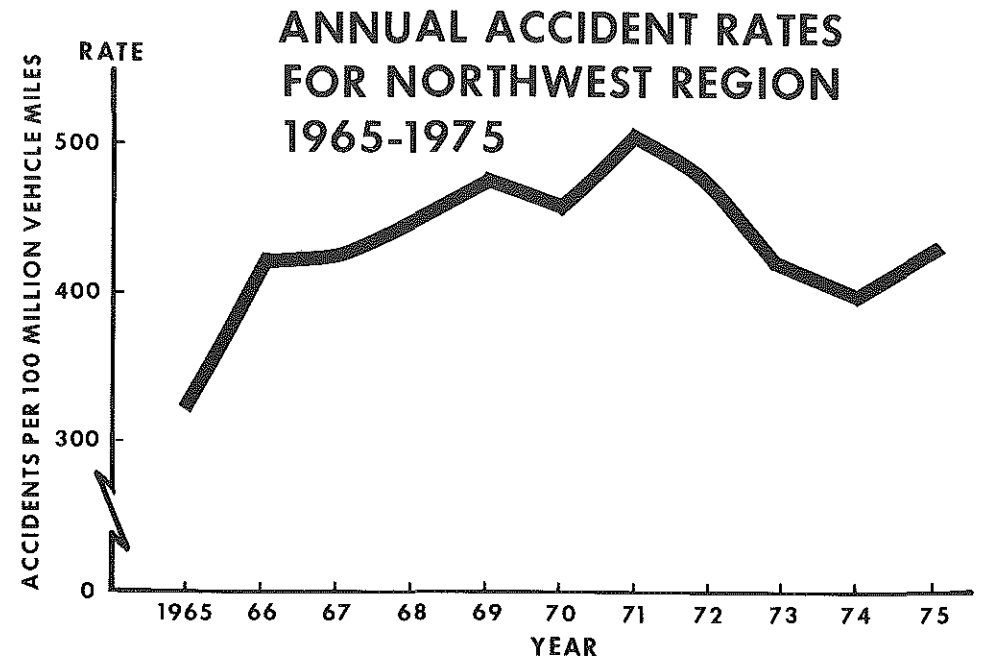


The issue of safety can be approached by reviewing accident data relative to the amount of travel which occurred during a given time period. The accompanying exhibits portray this comparison for state highways in the region.

As shown, the trend since 1965 has been a steady increase in the number of accidents occurring in each county. A review of travel data also shows an increase in vehicle miles of travel over the ten year period.

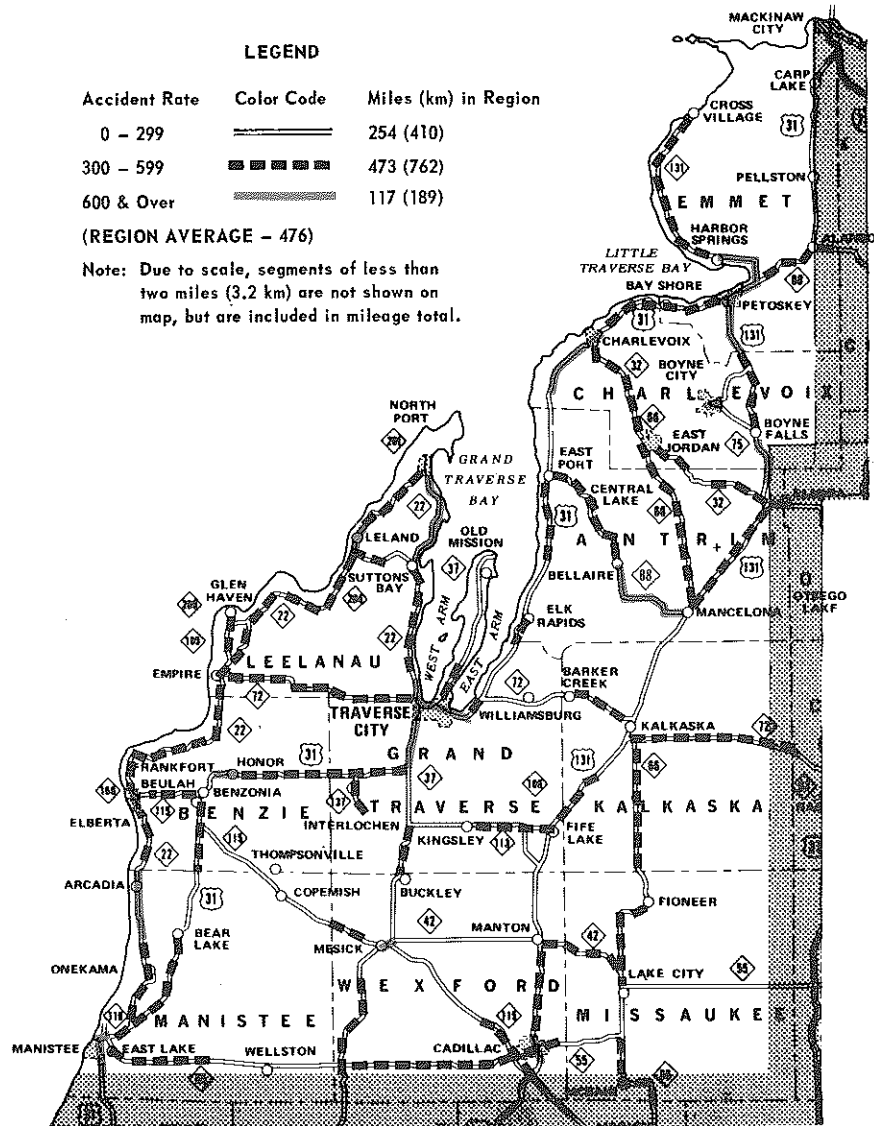


The relationship of accidents to travel is expressed in terms of an "accident rate", or "accidents per 100 million miles of travel". The graphs show an inconsistent pattern in the rates for the entire region. And although not shown, a similar degree of fluctuation is apparent in the accident rates for the individual counties.

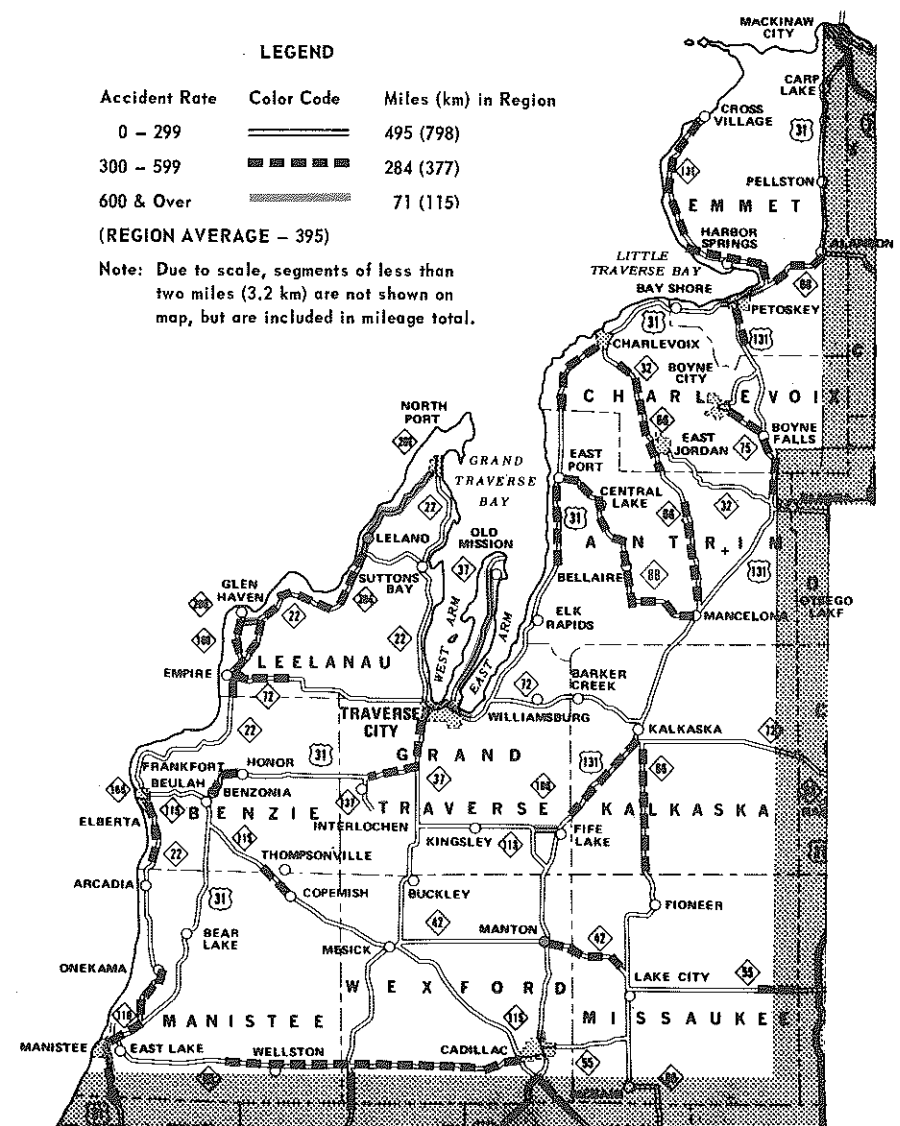


Perhaps a more beneficial use of the accident rate can be obtained by plotting those areas having different accident rates. The accompanying exhibits show the 1972, 1974 and 1975 accident rates for the state trunklines in the region. In these exhibits, the rates were arbitrarily separated into three categories. As shown, several areas consistently appear in the higher accident rate category. These are Manistee, Cadillac, Traverse City and Petoskey.

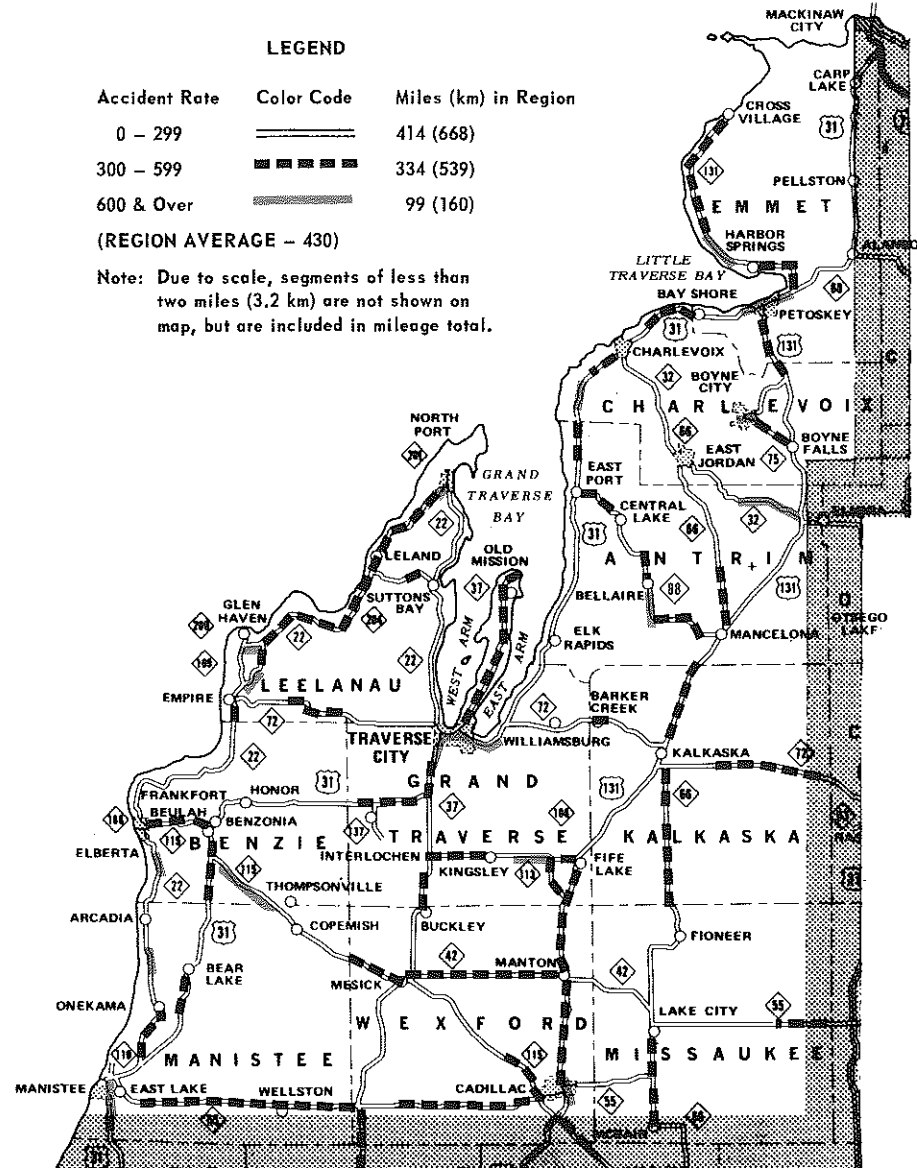
ACCIDENT RATES ON STATE HIGHWAYS 1972



ACCIDENT RATES ON STATE HIGHWAYS 1974



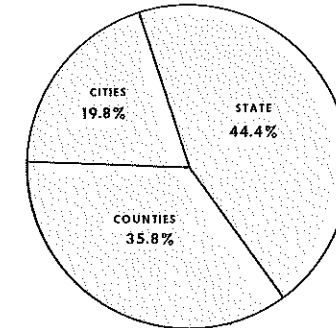
ACCIDENT RATES ON STATE HIGHWAYS 1975



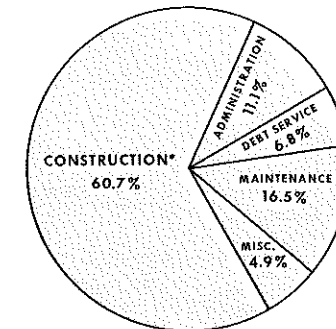
Funding

The financing of Michigan's streets and highways has undergone considerable change over time. Efforts eventually culminated in the establishment of the Motor Vehicle Highway Fund as provided for by the Public Acts of 1951. Money, provided by a tax on motor vehicles and petroleum products are allocated to the State, the 83 counties, and to municipalities on the basis of a formula established by the State Legislature. Although revised numerous times, this legislation

DISTRIBUTION OF HIGHWAY USER TAXES



EXPENDITURE OF STATE HIGHWAY FUNDS



*Construction expenditures include: New Construction, Right of Way, Engineering, Resurfacing and Safety Projects, minor Reconstruction and Turnback improvements.

remains the basic legal framework for developing and financing the State's total road and street system.

Maintaining and improving the 9,454 miles (15,221 kilometers) of state highways requires a considerable expenditure of funds. Construction and reconstruction of highways represents only part of the total financial obligation of the highway system. Administration, debt service, maintenance costs, and miscellaneous expenses must also be considered. Of the total \$424 million expenditures in 1977, approximately two-thirds was for construction, including right-of-way and engineering. However, the biggest share of the construction expense was for the nearly completed Interstate System.

Highway construction and maintenance projects in the ten-county Northwest Region are expected to total nearly \$40 million over the next five years. These monies are programmed for projects like those shown on Exhibit C (Page 34).

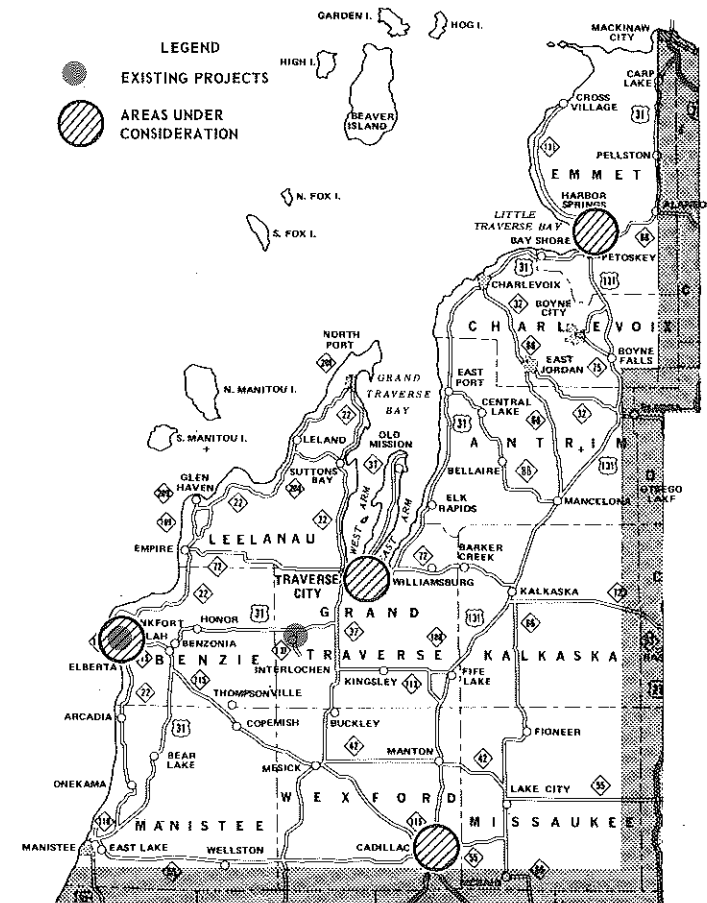
NON-MOTORIZED TRANSPORTATION

The State Legislature directed the Highway Commission to begin planning and building facilities for non-motorized transportation when it passed a package of transportation bills late in 1972. All planned highway projects now are routinely reviewed to determine whether non-motorized facilities are warranted. In addition to highway projects, the Department is also actively considering the acquisition of abandoned railroad rights-of-way for possible use as combination hiking, bicycle and equestrian trails.

Since the non-motorized transportation program was initiated, most of the projects have been built to accommodate bicycle travel. The use of the bicycle for both transportation and recreation has been increasing continuously since the late 1960's. Today it is estimated that there are over 3,500,000 bicyclists in Michigan. A recent survey by the Michigan Department of Natural Resources indicated that bicycling is the most popular recreation activity in the State in terms of hours of participation.

In the Northwest Region, the pursuit of recreational activities is a prime objective of both its residents and visitors. Therefore, it is becoming a common occurrence to see many bicycle travelers enjoying the natural beauty of the area. All of the region's roads and streets, with the exception of limited access highways, can be legally utilized for bicycle travel. Paved roads are, of course,

NON-MOTORIZED TRANSPORTATION PROJECTS NORTHWEST REGION



the most suitable for riding. Some roads are more desirable for riding than others if they have characteristics such as low traffic volumes, paved shoulders, low speed limits and special bicycle lanes. Of the state highway system in the region, approximately 80 miles (129 kilometers) of roadway have paved shoulders with another 110 miles (177 kilometers) planned for future construction. Two highway projects that have been specifically constructed to accommodate

non-motorized transportation, involve the paving of shoulders along 6.2 miles (10 kilometers) of M-22 near Frankfort (cost \$82,700) and 2.8 miles (4.5 kilometers) of M-137 between US-31 and Interlochen (cost \$29,600). Other non-motorized projects are presently being considered as part of local bikeway systems for Traverse City, Petoskey, Frankfort and Cadillac.

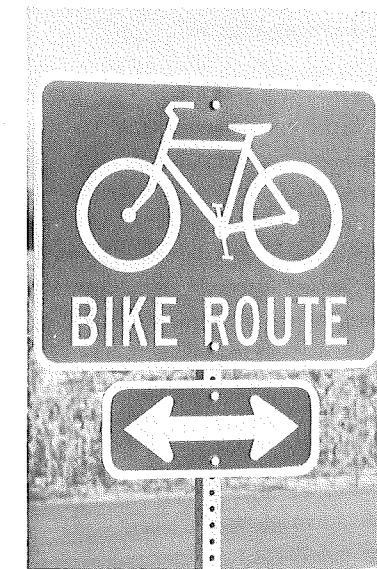
Bicycle Safety

In 1976, there were 26 car/bicycle accidents reported on the state highway system in the region. One of these accidents resulted in a fatality and 22 caused serious injury. This illustrates a central problem associated with the non-motorized transportation mode. Whenever the motorist and cyclists share a given roadway, a tense and potentially hazardous safety condition can develop. Although a lack of knowledge and respect of the basic rules of the road (on the part of both motorists and cyclists) contributes significantly to this problem, special facilities for bicycle riding – placed in strategic areas – can alleviate much of the problem.

Safety problems can be alleviated through a variety of basic approaches, some of which are the responsibility of local governmental agencies. School systems should emphasize the respective responsibilities of the different modes in their driver education programs and special safety classes. Licensing of drivers and the possible licensing of bicyclists provide another opportunity to acquaint motorists and potential cyclists of vital safety precautions. The ever-increasing number of bicyclists on our streets and highways should, in itself, increase a mutual awareness between the modes as drivers and riders gain experience in dealing with each other.

Enforcement of traffic laws is another factor relevant to minimizing safety problems. State and local vehicle codes should be reviewed and altered, if necessary, to better accommodate the mix between motorized and non-motorized vehicles. State and local police should have training programs to instruct officers on the rights and responsibilities of both the motorized and non-motorized roadway users.

Michigan road agencies can also contribute to safe operation by providing non-motorized facilities, in the form of roadway additions, where they are warranted. These facilities can consist of lane striping, shoulder paving, paths, curb ramps, and special bridges. Such modifications, or additions, to the existing highway system greatly enhance leisure and work-related travel by bicycle.



Bikeway Selection

In addition to the Department's review of its proposed highway construction program, many requests for non-motorized projects are received from local governments, school districts and other local interest groups or agencies. Such projects, however, must be on the state highway system to warrant the Department's involvement. Of course, many projects are initiated by local governmental units without State involvement.

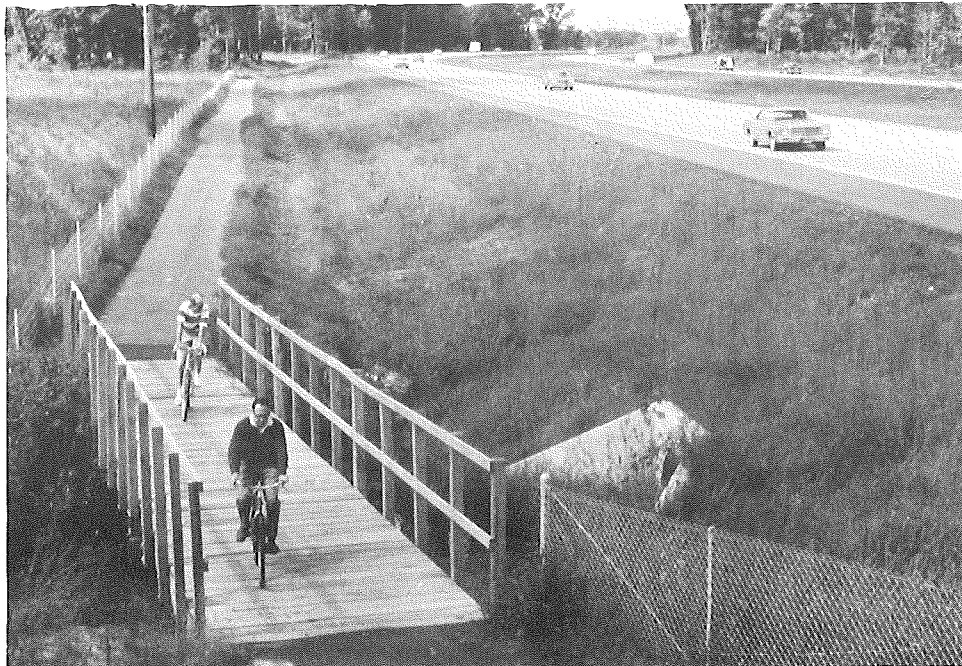
A preliminary policy plan has been adopted by the Department which guides the selection of projects and subsequent development. In general, the selection of bicycle path locations is based on the following criteria:

1. Overall traffic safety.
2. Inter-connection of recreational, school and residential areas.
3. Additions to locally developed pathway systems which involve a state highway.
4. Long distance routes.

Bikeway Classification

After a bikeway location has been determined there are several physical characteristics to consider when designing the actual bicycle facility. Bikeways have been classified according to the "degree of exclusiveness" to which the facility is preserved for bicycle use. The classification system is illustrated in the accompanying photographs.

Probably the most desirable bikeway design is that of a Class I facility. Unfortunately though, the construction of such an exclusive facility is both complex and expensive. In some cases, special drainage structures and small bridges must be built in order to insure a route's continuity. A non-motorized project of this design was constructed in southeast Michigan along 40 miles (65 kilometers) of I-275 for \$3 million.



CLASS I – A completely separated path designated for the exclusive use of bicycles. Cross-flows by pedestrians and motorists are minimized.



CLASS II – A restricted area for the exclusive or semi exclusive use of bicycles. Cross-flows by motorists, to gain access to driveways or parking facilities, is allowed. Pedestrian cross-flows, to gain access to parked vehicles, bus stops or associated land use are also allowed. Through travel by motor vehicles or pedestrians is generally not allowed. However, vehicle parking can occur adjacent to these bikeways.

The state non-motorized projects built along M-22 and M-137 represent Class II bikeways. Usually, these bikeways are located adjacent to existing motor vehicle traffic lanes. In urban areas, they are established as bikeway lanes by the use of special pavement markings. In rural areas, Class II bikeways are generally paved highway shoulders.

Many local communities are in the process of establishing Class III bikeways. These are usually inexpensive to implement since they utilize existing low volume residential streets and only require installation of a few "Bike Route" signs.

In some locations, Sidewalk Bikeways are utilized when it has become necessary to route bicycles off the street. The bicyclist must be prepared to share rights-of-way with both the motorist and pedestrian in these instances.



CLASS III – A shared right-of-way, designated as such by "Bike Route" signs placed on verticle posts or stenciled on the pavement. Any bikeway which shares it through traffic right-of-way with moving motor vehicles is considered a Class III bikeway.



SIDEWALK BIKEWAY – A sidewalk designated as a "Bike Route" and shared with pedestrian traffic.

Funding

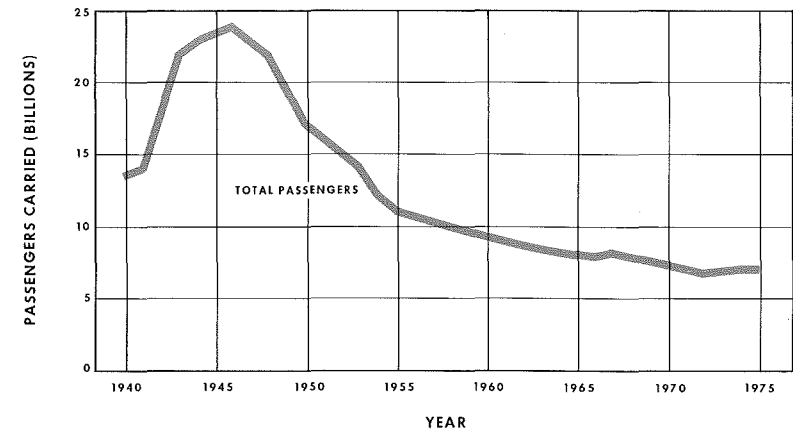
Whereas the I-275 pathway was a unique project, funded with 90 percent federal Interstate funds, most of the Department's non-motorized facilities are being funded out of the State's Motor Vehicle Highway Fund. These funds provide the primary source of road construction dollars for all highway agencies – city, county and state. Although no specific funds are "earmarked" for non-motorized facilities, highway agencies are encouraged to add non-motorized projects to highway projects, if such additions are feasible. The authorizing legislation (Act 327) suggests that agencies should spend approximately one half of one percent of their Motor Vehicle Highway Fund revenues on non-motorized transportation.

PUBLIC TRANSPORTATION

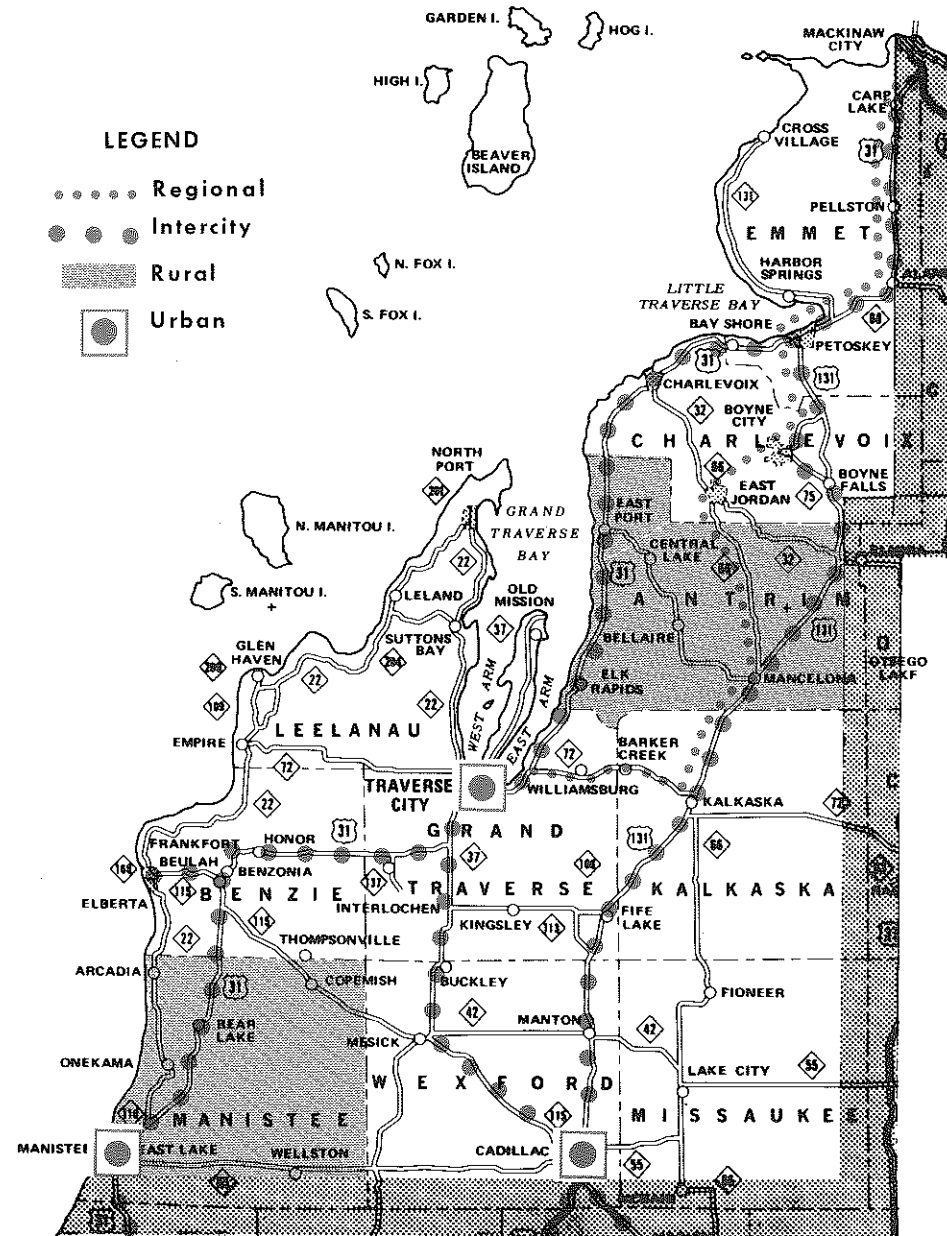
Public transportation in Michigan and the United States has recently emerged from a long period of decline. Ever since World War II, public transportation ridership has been steadily decreasing. This decrease was mainly attributed to a shift in travel habits towards the automobile and airline transportation modes. As transit ridership decreased, the corresponding loss in revenues caused many private and public transit operators to either cut back on services or else go out-of-business entirely. By the early 1970's, the only remaining public transit operating in the Northwest Region was that of the intercity carriers of Northstar and Greyhound Bus Lines. There were essentially no urban public transit systems operating at that time.

NATIONAL TRANSIT RIDERSHIP

1940 - 1975



PUBLIC TRANSPORTATION SERVICES



As a result of this condition, many social groups were experiencing a transportation disadvantage in not being able to gain reasonable access to such community opportunities as employment, education, shopping, health care, and other basic human service needs. Initially, these social groups were usually made up of the poor, the young, the elderly, and the handicapped who were either unable or else could not afford to own and operate an automobile. However, since the 1973-74 Mideast oil embargo, it has become apparent that future energy supplies may cause public transportation to take on a more active role for all of our society.

In recognition of these public transportation needs, the Michigan Legislature passed Act 327 in 1972 and Act 195 in 1975. These acts have provided new funding sources for various public transportation improvements and directed the Michigan Department of State Highways and Transportation to be the state agency responsible for administering these programs.

One of the Department's objectives in developing public transit plans is to insure that an adequate level of public transit service will exist for both residents and visitors of the Northwest Region. In most cases this means developing an overall system of public transportation services that offer a balanced mix of urban, rural, regional and intercity operations. The following information will illustrate how these various services are operating in Region 10.

Urban Public Transportation

SERVES: Traverse City and Cadillac

This level of service normally operates within the larger communities of the region. The traditional urban public transit system utilizes the standard 20-50 passenger city bus and operates on a fixed time schedule over a predetermined bus route. At the present time, Traverse City is the only community in the region operating this kind of service. This service was started in October, 1977, and is being funded under the Department's demonstration bus program. However, the city has recently indicated that it plans to continue operation of this service.

Another type of urban public transportation service is being offered by the innovative dial-a-ride transportation (DART) system. This service utilizes the smaller 10-15 passenger van-type vehicle and is not limited to any fixed route of operation. A person desiring this type service merely calls on the telephone and the van will soon arrive to pick them up and take them to their destination. In an effort to assist communities interested in this type of service the Department has

established a Small Vehicle Program to fund the initial costs of implementing a DART system. This program provides for a one-year demonstration period during which the State pays for all capital and operating costs with the exception of a \$1,000 local contribution. After the first year, the State continues to provide all capital equipment and pays for one-third of the operating costs. The remaining operating costs are provided through fare revenues and local contributions. As a result of this program, 21 communities throughout the State are now operating this service.



In the Northwest Region, Traverse City and Cadillac have been operating DART service since 1974. The Traverse City system utilizes six vans and serves about 6,500 passengers per month. The Cadillac system utilizes four vans and serves about 7,000 passengers per month. The regular fare for this service is 50¢ per ride.

Rural Public Transportation

SERVES: Manistee and Antrim Counties

The rural transit systems are intended to provide a basic level of public transportation service to the rural and small urban areas within a county. These systems also utilize van-type vehicles and operate on a demand responsive (DART) basis. However, the service provided to rural areas is not usually as frequent as that in the urban areas. For example, some system may only provide services one or two days a week and 24-hour advance notification is generally required.

Manistee County's system has been in service since 1975. It operates six vans that service about 5,000 passengers per month. Most of these trips are generated in the City of Manistee. Antrim county's four-vehicle system was initiated in 1977 and serves 2,500 passengers per month. Both of these rural systems are financially assisted by the Department's Small Vehicle Program.

FINANCIAL STATUS OF REGION'S PUBLIC TRANSPORTATION SYSTEMS (October 1976 – September 1977)

System	Number of Vehicles	Annual Ridership	Annual Operating Cost	Funding Sources		
				State	Local	Farebox
Antrim County ¹	4	20,209	\$ 57,586	\$46,900	\$ 1,000	\$ 9,686
Cadillac	4	84,194	\$109,229	\$36,410	\$46,176	\$26,643
Manistee County	6	54,518	\$ 90,240	\$30,543 ²	\$34,037	\$25,660
Traverse City	6	72,433	\$127,634	\$42,545	\$53,690	\$31,399

Notes: 1 System started January 17, 1977.

2 Includes \$694 of Federal assistance.

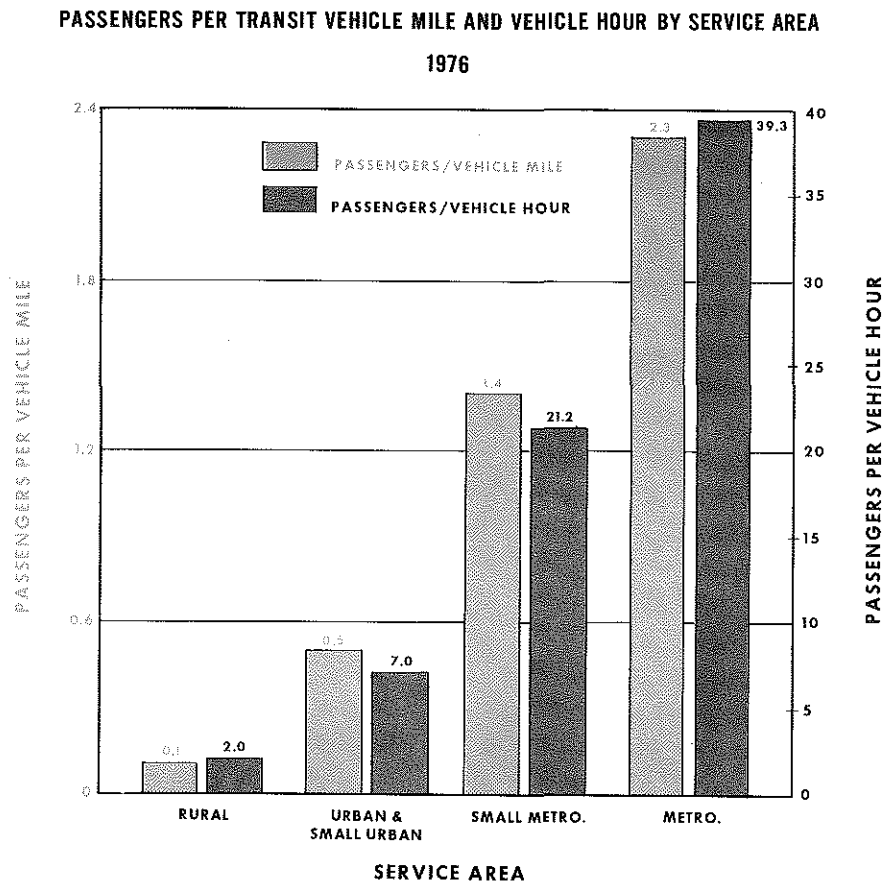
Another type of county-wide service is the state and federal senior citizen and handicapper transportation programs. These programs provide monies for the purchase and operation of vehicles in areas where public transportation services are non-existent. All counties in the Northwest Region that are not served through the State's Small Vehicle Program have a county-wide senior citizen and handicapper service. These are basic service systems with one or two vans serving the entire

county. Some of these vehicles are equipped with wheelchair lifts. The services are generally operated by private, non-profit, or social service organizations. Although this type of service is recognized as a specialized form of transportation, the Department would like to see it incorporated into a county-wide service that is available to everyone.

Regional Public Transportation

SERVES: Many urban communities in the region (see map, page 43).

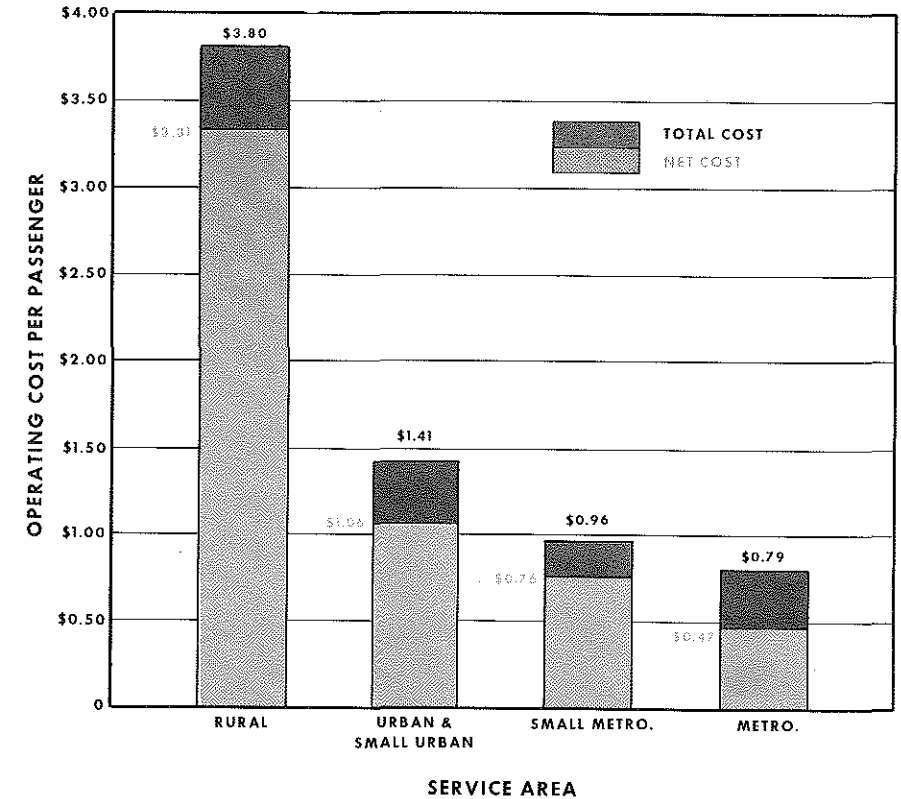
A major function of regional public transportation is to connect the various urban areas within a region. The regional service utilizes a larger intercity type of vehicle and must adhere to a predetermined time schedule over a fixed route.



Regional service can provide more comprehensive routing and more convenient schedules than the larger intercity carriers.

Wolverine Stages, Inc. provides the only regional public transportation service in the Northwest Region. The service consists of one daily round trip between Traverse City and Cheboygan with major stops at Mackinaw City, Petoskey, Boyne City, Mancelona and Kalkaska. The portion of the service between Boyne City north to Cheboygan is the sole responsibility of Wolverine Stages. The service between Boyne City south to Traverse City is being financially assisted by the Department's Intercity Bus Demonstration Program. This contract will provide service assistance through November, 1979.

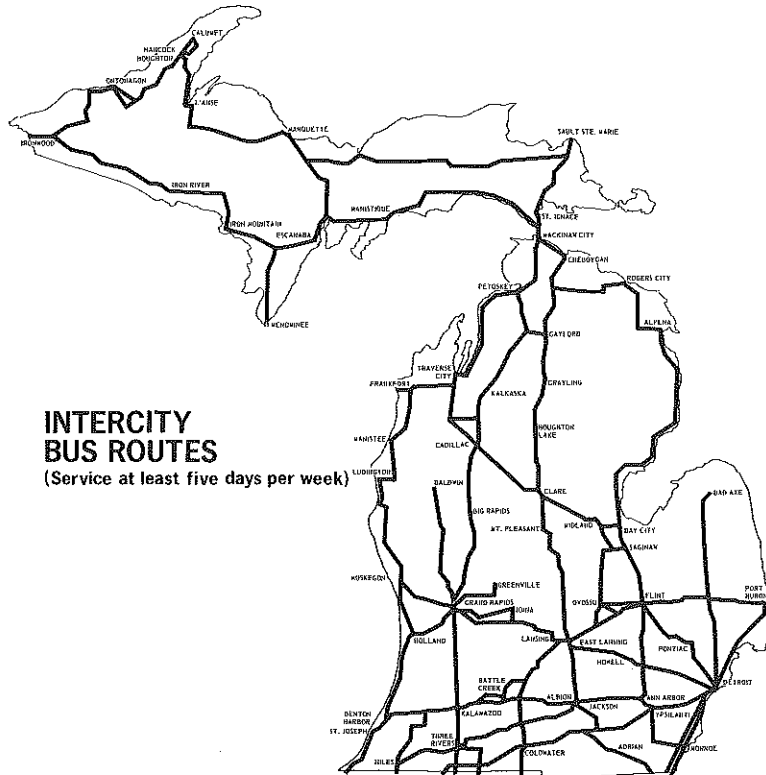
TOTAL AND NET OPERATING COSTS PER TRANSIT PASSENGER BY SERVICE AREA
1976



Intercity Public Transportation

SERVES: Major urban destinations located within and beyond the region.

Intercity systems connect major urban areas of the region with the remainder of the State and Nation. The intercity bus is designed for long distance travel and can comfortably seat 47 persons. In addition to passenger service, these buses also offer package shipments. Although intercity bus companies are privately owned, their operations are regulated by Michigan's Public Service Commission. They are required to operate over certain highway routes and abide by their advertised time schedules.



SOURCE: The Official Bus Guide, August 1977

The two principal intercity carriers in the region are Northstar and Greyhound. Cadillac, Traverse City and Petoskey are the major intercity bus stations in the region with 12 buses stopping in Cadillac per day, 10 in Traverse City and 6 in Petoskey. In addition, these buses also stop at several intermediate points along their routes.

The intercity bus industry in Michigan is experiencing a decline in ridership. It is recognized that this condition makes it difficult for some companies to consider improving services when operating costs are increasing. Therefore, in order to assist these companies in reducing some expenses, the Department has established a program that provides low interest loans to intercity bus companies to purchase new equipment. In addition, an intercity grant program also gives the intercity carrier flexibility to test new routes and schedules. Such demonstration programs are subsidized by the State for up to a two year period. The Department also has an Intercity Terminal Facilities Program to develop intercity bus terminals and to integrate, where possible, all available intercity and local public transportation services.

RAILROADS

The 1970 bankruptcy of the Penn Central Railroad caused widespread concern about the financial condition of the nation's railroads. The Ann Arbor Railroad also declared bankruptcy in 1973. Together, these bankrupt companies represented a possible loss of 2,100 miles (3,387 kilometers) of trackage that served a large number of community and industrial interests in Michigan's lower peninsula.

Although these bankruptcies were perceived as a sudden occurrence by the general public, those persons working closer to the railroad industry knew that rail service had been declining for many years. A major reason for this decline was attributed to the development of competing transportation modes.

At the beginning of this century, the railroads offered the principal means of intercity freight and passenger travel. Then, during the early 1920's and 30's, the automobile and airline industries began their development. After World War II, these new industries greatly expanded their services and caused the competitive position of the railroad to deteriorate. Revenue passenger miles declined 80 percent from 1947 to 1976 in spite of explosive growth in passenger travel. During the same period, the railroad's share of intercity freight declined from nearly 66 percent to 39 percent. Although the railroad still continues to be the

largest carrier of freight in terms of ton miles, the industry can no longer compete with the level of service offered by the trucking industry in transporting commodities over short and medium distances. The railroads are still very competitive carrying bulk cargoes over long distances.

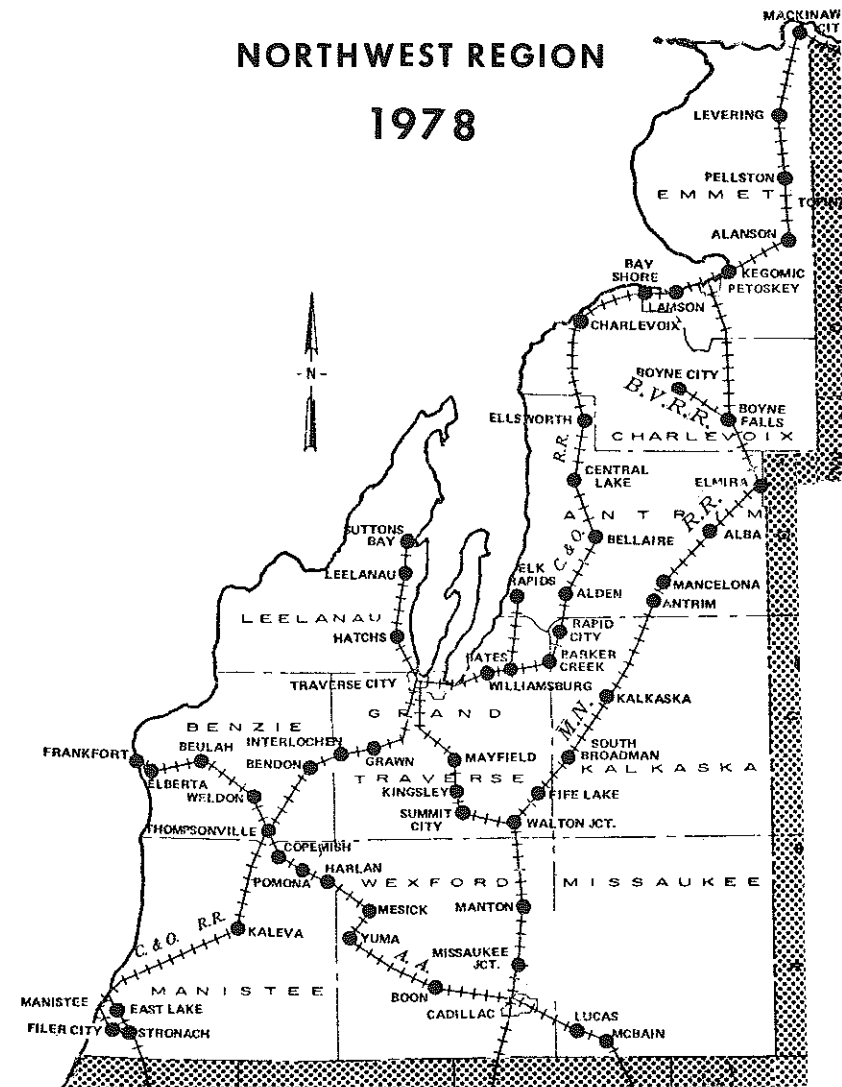
The railroad situation in the Northwest Region is critical. Virtually all of the communities in the region are faced with the prospect of railroad abandonments. The Penn Central and Ann Arbor Railroads have already gone bankrupt and their operations are currently being maintained on a year-to-year basis through government subsidy. The Chessie System, a solvent carrier, has applied to the Interstate Commerce Commission (ICC) for permission to abandon all their track operations north of Manistee. Public hearings concerning these abandonments were conducted at Traverse City in March 1978.

In recognizing the potential social-economic impacts associated with rail abandonments, the federal and state governments have enacted legislation to provide financial assistance for certain rail operations. At the federal level, the Regional Rail Reorganization (RRR) Act of 1973 provided comprehensive legislation for preserving and improving rail service. A major item in this legislation was the plan for reorganization of seven Midwest/Northeast bankrupt railroad lines into a new Consolidated Railroad Corporation (Con-Rail). However, the resulting ConRail system did not include all of the 2,100 miles (3,387 kilometers) of Penn Central and Ann Arbor trackage located in Michigan. Responding to this critical situation, the Michigan Legislature enacted the State Transportation Preservation Act of 1975 with these main features:

1. Identifying the State Highway Commission as being responsible for State Railroad Plans and Programs.
2. Permitting the State to subsidize rail service continuation.
3. Permitting the State to acquire abandoned rights-of-way for recreational or future transportation purposes.
4. Permitting the State to contract with a person, firm or corporation to provide rail or ferry service deemed to be in the best interest of the State.

The passage of the Michigan Act was significant in that it represented the State's initial commitment to maintain an adequate statewide rail network. The legislation also represents the first time that the Michigan Department of State

EXISTING RAILROAD SYSTEM



Highways and Transportation has become actively involved in the operations of the railroad business.

In 1976, the federal government amended its earlier legislation by passing the Rail Revitalization and Regulatory Reform Act (4R Act). This legislation provided federal dollars to those states like Michigan that were attempting to bear the financial burden of supporting light-density rail lines abandoned by solvent carriers and also extended the provisions of the RRR Act. Although these federal funds will extend through 1981, the amount allocated to Michigan may decrease each year. Therefore, the Department prepares an annual update of the Michigan Railroad Plan in order to assess its rail subsidy program. In making recommendations concerning the feasibility of continuing rail subsidy, the Michigan Rail Plan has adopted the following set of goals:

- To provide and maintain an adequate and efficient railroad network within Michigan and maintain links to the regional and national networks.
- To promote present and future financial development, stability, and efficiency within the Michigan railroad system.
- To promote the integration of the different modes of transportation into a balanced system and avoid inequitable government support of particular modes.
- To provide service for existing economic base activities and subsequently encourage desirable patterns of social and economic development within Michigan.
- To minimize adverse social and economic impacts of changes in railroad service.
- To improve the energy efficiency of transportation services.
- To promote the ecological and aesthetic quality of the environment.
- To maintain and promote railroad competition in the provision of transport services.

Although these state and federal rail programs have only been in effect for a short time, their impacts have been significant. In the Northwest Region, these actions have enabled the State to maintain the rail operation of 230 miles (370 kilometers), or 55% of the region's total track miles. These programs, with additional assistance from Wisconsin, have also permitted the continuation of cross lake ferry operations at Frankfort.

Future updates of the Michigan Rail Plan will determine if this level of subsidy should continue. However, it must be recognized that if future rail lines are permitted abandonment, then the Department must adjust its subsidy priorities. For example, if the Chessie System (C&O) is granted permission from the ICC to abandon its regional service, it is doubtful that the State would be able to support the operation of every rail line in the region. An analysis would then be made to determine which service lines warranted subsidy and which would be discontinued.

STATUS OF REGION'S RAILROAD SYSTEM

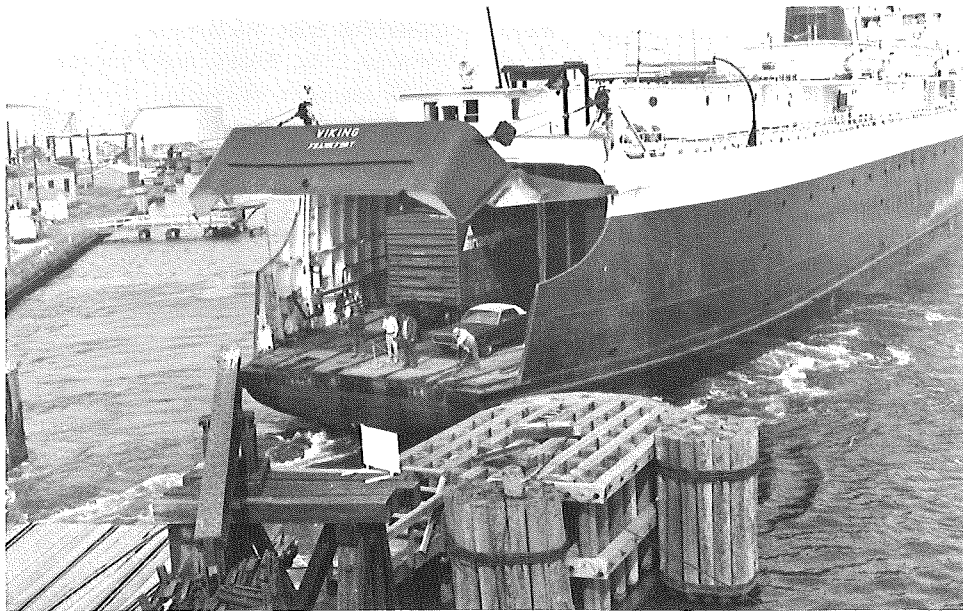
The three principal railroads now operating in the Northwest Region are the Chessie System, Michigan Northern Railway (Penn Central) and the Ann Arbor Railroad (Michigan Interstate). These railroads currently provide freight services that range from "as needed" to as often as six local freight trains per week. None of these rail lines offer passenger service. In fact, the last remaining scheduled passenger service in the region was discontinued in 1965.



Ann Arbor Railroad and Carferry

The continuation of rail service over the entire length of the Ann Arbor Railroad and Carferry route receives the State's highest priority in its rail subsidy program. This priority is based in part on the need for continuation of economic development efforts in the Northwest Region. Portions of Wisconsin and Michigan have been identified nationally as underdeveloped by the Upper Great Lakes Regional Commission. In addition, statewide tariff rates are based on the shorter rail distances provided by the Cross Lake Ferry Service. If this service was discontinued, higher rates could be charged for freight rerouted around Lake Michigan via the Chicago gateway. Therefore, the Ann Arbor Railroad and Carferry services are essential to maintaining a good business climate for the region and for rail users throughout the State.

Michigan owns portions of the Ann Arbor between Cadillac and Ashley, and between Toledo, Ohio and Ann Arbor. Existing lease arrangements with the Ann Arbor trustees and the Grand Trunk Western Railroad allow the Ann Arbor to be operated as an integral unit from Toledo to Frankfort and, using the carferry, to Kewaunee, Wisconsin.



ConRail had been the operator of the Ann Arbor from the beginning of the subsidy program in April of 1976 until October of 1977. There were concerns that ConRail, a large national carrier, was not always able to satisfy local rail interests. Therefore, in an effort to satisfy local needs, the Department has recently contracted with the Michigan Interstate Railroad Company (MIRC) of Owosso to become the principal rail carrier. It is anticipated that this company will offer the best opportunity for restoring the Ann Arbor Railroad as a solvent carrier.

The Ann Arbor Railroad provides an important economic service to various regional communities along its tracks. The Frankfort carferry generates many jobs that are either directly or indirectly associated with the carferry operation. In Yuma, where a major sand mining operation exists, 30-40 employees are involved in shipping 276,000 rail car tons (250,909 metric tons) per year. Cadillac also has many industries that benefit from rail service. Typical commodities shipped to Cadillac include food, furniture, rubber products, iron castings and building materials.

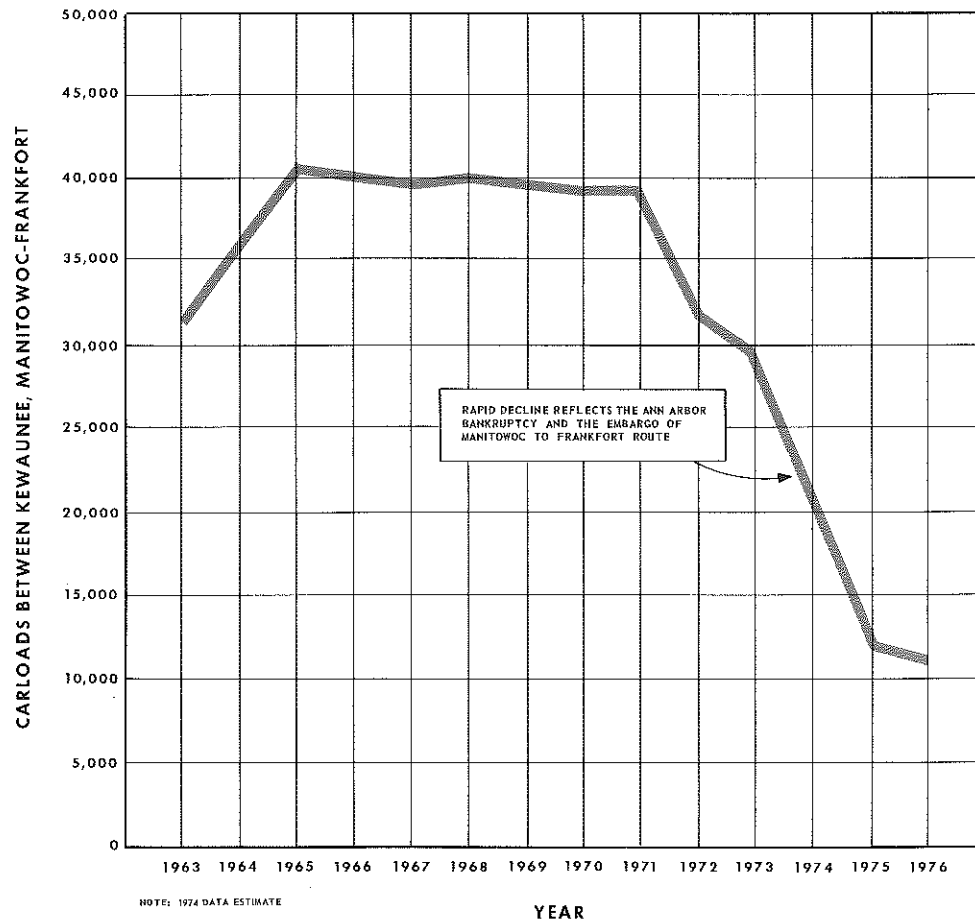
The Ann Arbor Carferries were the first in the world to transport railroad cars across open water. The service between Frankfort and Kewaunee, Wisconsin began in 1892. Service to Manitowoc, Wisconsin was started in 1896. Eventually, other carferry operations were expanded to the Upper Peninsula cities of Menominee, Gladstone and Manistique. These services have since been discontinued.

Today, the "Viking" is the Ann Arbor's only remaining carferry in operation. This vessel provides 12 lake crossings weekly between the ports of Frankfort, Michigan and Kewaunee, Wisconsin. The Viking was built in 1925 and is operated by a 35 man crew. Although this vessel is designed to carry 22 rail cars per trip, it can also accommodate passengers and their automobiles. The docking slips at Frankfort and Kewaunee are designed for railroad cars but, through makeshift arrangements, also handle trucks, trailers, automobiles and passengers. The 64 mile (103 kilometers) Lake Michigan crossing takes about four hours.

In addition to the Viking, the Ann Arbor Railroad owns the "Arthur K. Atkinson" which is presently laid-up in Frankfort. The A.K. Atkinson was built in 1917 and assisted in operating the carferry service across Lake Michigan. However, in 1972, this vessel suffered an engine breakdown that cracked the crankshaft on the port main engine. As a result of this occurrence, the ICC issued an embargo order that

has temporarily discontinued service to Manitowoc, Wisconsin due to an insufficient number of operable vessels. In all other respects, the A.K. Atkinson is considered to be in good condition to resume operation. However, subsidy money must first be allocated in order to proceed with repairs. It should also be noted that although the Viking and A.K. Atkinson are over 50 years old, they have been reconditioned with diesel-electric engines. These engines provide for a much cleaner operation than the coal fired carferries now operating out of Ludington and Mackinaw City.

HISTORIC ANN ARBOR CARFERRY TRAFFIC



Chessie System

All lines of the Chessie System within the region, except for its line south of Manistee, have been submitted to the ICC for abandonment. It is expected that a ruling on this request will be made this year. At the present time, this railroad operates as a solvent carrier and receives no state subsidy.

Within the Northwest Region, the Chessie System is principally used to service various lumber and furniture supply companies, canneries and quarry operations. The short rail line segments to Elk Rapids and Suttons Bay provide service to lumber and cannery businesses. In 1975, 53 carloadings occurred on the Elk Rapids segment and 154 carloadings occurred on the Suttons Bay segment. Because these segments have such low traffic volumes, they are not served with regularly scheduled train service. Instead, they receive train service only when needed. The rail segment between Suttons Bay and Northport has not been in operation for over 10 years. It should be noted that these rail lines traverse scenic areas and their rights-of-way may have potential for recreational uses. The main line rail segments from Manistee to Traverse City and Traverse City to Bay View operate from 4-6 local freight trains per week. Together these rail segments accounted for about 3,000 carloadings in 1975.

Of these 3,000 carloadings, most are generated from the businesses located in the communities of Manistee, Kaleva, Traverse City, Bates, and Petoskey. These businesses use the railroad to ship such products as cement, fertilizer, steel, sand, coal, gas, lumber and other building materials.

Michigan Northern Railway

The rail lines of the bankrupt Penn Central Transportation Company have been operated, under subsidy, by the Michigan Northern Railway since April, 1976. The entire route generally parallels US-131 and US-31 highways from Grand Rapids north to Mackinaw City. Initially this line was believed to have good potential as a through or "bridge" traffic route. It provided a means of connecting the industries in the Grand Rapids area with the vast resources of the Upper Peninsula and Canada.

Despite active solicitation of bridge traffic, initial results were disappointing. Bridge traffic handled the first subsidy year (April 1, 1976, to March 31, 1977) amounted to only 57 cars. An additional 219 carloads of coal were also trans-

ported northbound to assist areas that ran short during last year's severe winter. This traffic is not expected to recur since coal is normally supplied by water transport. Due to a recent change in tariff rates, bridge traffic has increased across the Straits. However, the long term continuation of this traffic is still questionable.

The Michigan Northern operates from 1-3 freight trains per week in the region. These trains ship such commodities as petroleum, scrap steel, coal, utility poles, paper, lumber and other building materials. From 1975 to 1976, total rail traffic increased about 2% from 1,807 cars to 1,844 cars. During the first subsidy year, the carloadings amounted to 1,970. New industries have recently located in Kalkaska and may ultimately contribute an additional 400 cars per year.

**RAILROAD DEFICITS
(APRIL 1977 - MARCH 1978)**

RAILROAD	SEGMENT	OPERATING SUBSIDY	LEASE & TAXES	TOTAL DEFICIT
Ann Arbor	Toledo-Kewaunee	\$ 7,070,000	\$ 726,000	\$ 7,796,000
Michigan Northern	Comstock Park-Mackinaw City	\$ 1,150,565	\$ 783,680	\$ 1,934,245
Chessie System	Manistee - Bay View	N.A.	N.A.	\$ 2,520,000

N.A. Not Applicable

* Based on Chessie Abandonment Hearings Exhibits, March 1978.

**RAILROAD LINE SEGMENTS
NORTHWEST REGION**

RAILROAD	LINE SEGMENT	MILES IN SEGMENT	ANNUAL CARLOADS	SERVICE FREQUENCY/TYPE (IN EACH DIRECTION)	DOMINANT COMMODITY CODE	PASSENGER SERVICE	UNDER SUBSIDY PROGRAM	CODE	COMMODITY TYPE
Chessie System	Walhalla - Manistee	26	N.A.	6 Local Freights/Week	1,2	No	No	1	Pulp, paper and Allied Products
Chessie System	Manistee-Traverse City	56	1416	3 Local Freights/Week	3,4,5	No	No	2	Non-Metallic Minerals, except Fuels
Chessie System	Traverse City-Bay View	79	987	3 Local Freights/Week	4,6,7	No	No	3	Food and Kindred Products
Chessie System	Traverse City-Suttons Bay-Northport	29	125	As Needed	3	No	No	4	Lumber and Wood Products, except Furniture
Chessie System	Williamsburg-Elk Rapids	9	30	As Needed	3	No	No	5	Furniture and Fixtures
Ann Arbor 1	Ashley-Frankfort	169	5607	1 Freight/Day	8,9,10	No	Yes	6	Petroleum and Coal Products
Ann Arbor 1	Lake Michigan Carferry Frankfort-Kewaunee	64	15911	14 Trips/Week	4,1,11	Yes	Yes	7	Stone, Clay and Glass Products
Ann Arbor 1	Lake Michigan Carferry Frankfort-Manitowoc	79		(Line Temporarily Embargoed)				8	Farm Products
Michigan Northern	Rockford-Cadillac	81	972	3 Local Freights/Week	4,11	No	Yes	9	Rubber and Miscellaneous Plastic Products
Michigan Northern	Cadillac-Mackinaw City	128	720	3 Local Freights/Week	12,4,7	No	Yes	10	Transportation Equipment
Michigan Northern	Walton Jct.-Traverse City	25	34	1 Local Freight/Week	4	No	Yes	11	Chemicals and Allied Products
								12	Crude Petroleum, Natural Gas and Natural Gasoline

1. Operated by the Michigan Interstate

N.A. - Not Available

FUTURE TRANSPORTATION ALTERNATIVES

A major objective of this Study is to insure that an adequate regional transportation system is developed to meet current and future needs of the Northwest Region. To accomplish this objective, the study team has recognized two principal factors that will significantly affect the character of future transportation systems. They are:

1. The availability of liquid fuels, and
2. The continuing changes in settlement patterns of the population.

Both factors fundamentally lie outside the control of transportation planning and policymaking. In any event, both will proceed independently unless conscious public policy tries to relate them to a greater degree than has been the case in the past.

ENERGY AVAILABILITY

The availability of liquid fuels, either in the form of synthetic substitutes or in the discovery of new resources, will define the costs and much of the character of future transport services. Today, the fuel supplies are apparently adequate to meet the current travel demands. However, these supplies were severely limited during the 1973-74 Mideast oil embargo.

The embargo had a significant impact on the various transportation systems. Service stations were closed on weekends in some areas of the country and many motorists waited in long lines to fill their gasoline tanks. Commuters discovered that car pools provide a substantial economic savings in making their daily work trip and others shifted to local transit services. In some cases, the number of work trips were reduced due to employers experimenting with four day work weeks.

Another impact of the embargo was felt by the commercial airline industry. The fuel shortages caused many flight schedules to be reduced and advance reservations were required to insure a seat on a fully loaded flight.

Although the oil embargo lasted only a few months, some of its effects are still with us. For example, most everyone has now become more energy conscious. The Environmental Protection Agency (EPA) has required that the automobile fleet must average 27.5 miles per gallon by 1985. Because of this, gasoline mileage has become a prime consideration in selecting a new or used automobile. The federal government is in the process of developing a comprehensive energy policy and the maximum speed limit on the nation's freeways is still 55 mph (88 kilometers/hour).

The possibility of reduced fuel supplies can have major effects on future transportation actions. Should we continue expanding the highway system? Should we be considering more transit options? Are we going to need additional airports or will the existing facilities be adequate? Should the railroads be permitted to abandon their service? Will the region's ports be involved in transporting western coal into the Midwest? It is because of these kinds of questions that the study team has identified the "energy" issue as a central concern of future planning efforts.



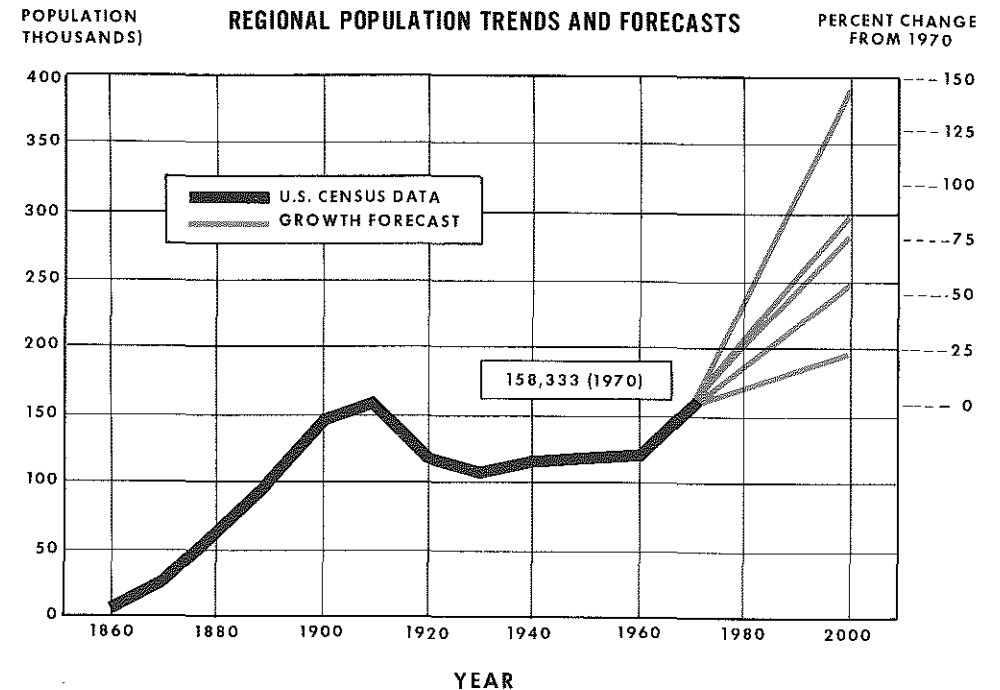
GROWTH AND DEVELOPMENT

Changes in settlement patterns will also significantly define the character of the demand for future transportation services. These population shifts, including declining urban densities, suburbanization and rural migration, are often accompanied by changes in lifestyle. As communities begin to grow and develop, various social and economic activities require an increase in many public services. In order to accommodate this growth, some local communities are faced with the prospect of extending water, sewer, gas and electric power lines. In addition, some transportation systems will have to be expanded or improved to accommodate increased travel demand.

While some communities are experiencing "growing pains", others are struggling economically due to a lack of growth. These areas are sometimes characterized by a high unemployment rate, low tax base, low income, etc. Thus, in order to improve these conditions government assistance programs are often implemented to stimulate private investment. These programs provide the dollars for such facilities as industrial parks, port development, airport improvements, education and convention centers, plus low interest loans for various housing and industrial projects.

From an economic standpoint, a growing community establishes a favorable business climate that can attract additional private investments. Socially, these investments can be beneficial by providing increased personal income and employment. In addition, a broader tax base can be used to support better educational and cultural facilities. However, from an environmental standpoint, a growing community can sometimes cause significant increases in air and water pollution levels. Land use changes can occur that will detrimentally affect environmentally sensitive areas such as parks, forests, lakes and primary agricultural lands.

After many decades of disordered development, we are now witnessing a nationwide countermovement of public pressure that is attempting to check, if not reverse, past growth trends. Some communities are starting to fashion new master plans calling for a ceiling on future growth and prescribing precise definition of settlement patterns. In view of the potential for future energy shortages, these growth management policies may not only be a desirable option, they may also become a mandatory planning action. Therefore, the future of transportation development will also depend on the rate of growth that is permitted to occur.

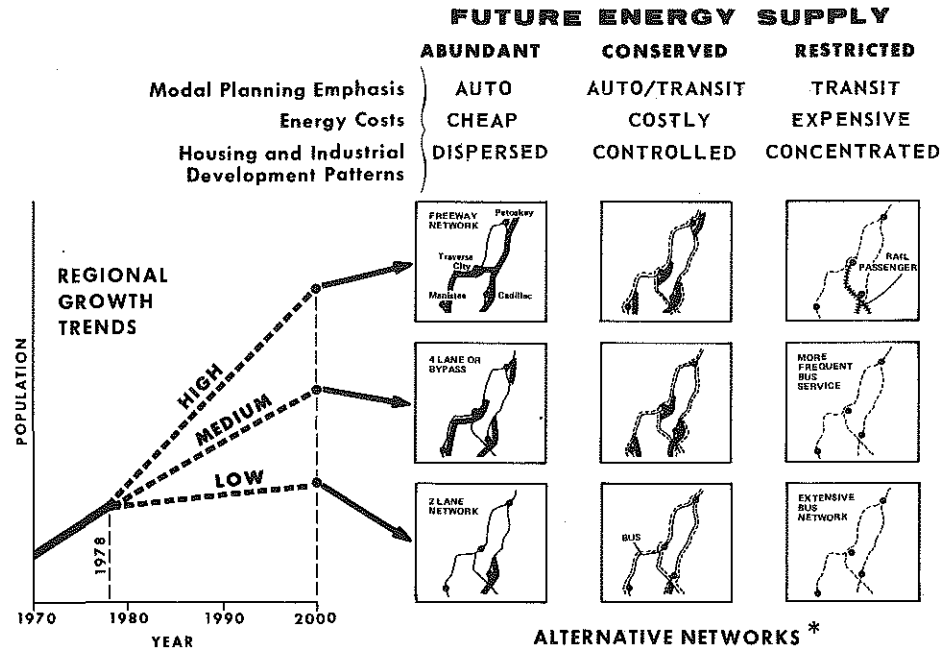


FUTURE TRANSPORTATION DEVELOPMENT STRATEGY

Numerous factors, other than energy availability and population change, will also influence the region's future transportation system needs. Economic conditions, governmental influence, incentive programs, available leisure time, and desirable lifestyles will all play an important part. Though considered in developing descriptions of the various futures, energy and population were selected as the dominant factors.

The study team has developed a planning strategy based upon these two dominant factors. It considered the possible occurrence of several future conditions based upon variations of energy supply and population growth. The alternative energy supply futures are identified as "Abundant", "Conserved" and "Restricted". The population growth futures are described as "Low", "Medium" and "High". Combinations of these factors yield nine possible situations, or futures, which are conceptually illustrated on the following page.

ENERGY AND GROWTH FUTURES (PLANNING CONCEPT)



Following is a brief explanation of the variations within the energy and growth futures.

Growth Futures

A key indicator of the region's growth potential is often expressed in its forecasted population levels. Because of this, recent trends in the Northwest Region have identified it as one of the fastest growing areas in the State.

Since 1960, the region's population has increased 32 percent, from 139,017 to an estimated 183,000 persons in 1975. Summer population levels reach even greater proportions, often doubling or tripling due to the influx of tourists and seasonal residents.

Transportation facility development is directly related to the expected mobility requirements of current and future population levels. The 1970 Census established the region's permanent population at 158,333 persons. Forecasts for the year 2000 have been derived by many different sources including the University of Michigan Population Studies Center, the Michigan Department of Management and Budget and the Northwest Michigan Regional Planning and Development Commission. These forecasts vary considerably, ranging from 196,000 to 388,000 persons. Because of this wide range of forecasts, the study team has established three possible growth levels from which to base its future planning efforts:

- HIGH GROWTH** – This future assumes that the region's year 2000 population will reach approximately 300,000 persons, a 90% increase since 1970.
- MEDIUM GROWTH** – This future assumes that the region's year 2000 population will reach approximately 250,000 persons, a 58% increase since 1970.
- LOW GROWTH** – This future assumes that the region's year 2000 population will reach approximately 200,000 persons, a 26% increase since 1970.

Energy Futures

The study team found that defining three energy futures was a more difficult task. While fuel availability was considered the determining factor, both the fuel cost per gallon and cost per vehicle mile of travel will also certainly affect its future use. The three possible energy futures are described as follows:

- ABUNDANT ENERGY** – This future assumes that there is no energy crisis. Adequate fuels are available for transportation either through the discovery of new resources or through the development of syn-

thetic fuels. The automobile remains the dominant mode of transportation, reinforcing urban expansion. This future is most typical of recent past and present conditions reflecting today's relatively affluent suburban life-style.

CONSERVED ENERGY – This future assumes that energy shortages are a long term reality. Fuel conservation is stressed but still based on voluntary efforts. The price of fuel has risen significantly enough so that it begins to make a real impact on everyday driving habits. The automobile is still the dominant mode but certain trip purposes, like work trips, are shifting to car pools or public transit.

RESTRICTED ENERGY – This future assumes that energy for transportation purposes is in very critical supply. Gasoline rationing would be in effect. Strong government programs would be implemented to insure proper utilization of the various modal transportation systems. Public transit development would be very extensive.

FUTURE TRANSPORTATION NETWORKS

There are nine multi-modal regional transportation networks illustrated on the next six pages. These networks were developed by the study team and are based on the previously described energy and growth futures. In addition, these networks were derived from the premise that:

1. The availability of future "energy supplies" determines the type of transportation mode to be developed, and
2. The amount and location of future "growth" determines the extent of transportation system development.

The future multi-modal networks are displayed so they can be compared with the existing transportation services in operation today. The purpose of the colored symbols is to indicate those areas that show the greatest potential need for a major

transportation system improvement. Some of the remaining areas may also require future transportation improvements, but of a lesser magnitude (Minor System Improvements). Typical examples of Major and Minor System Improvements are listed on page 62. This analysis affords the study team an opportunity to focus its attention on those areas that show a common transportation need – regardless of the future conditions.

In reviewing these different transportation networks, several key items are worthy of special attention. These are:

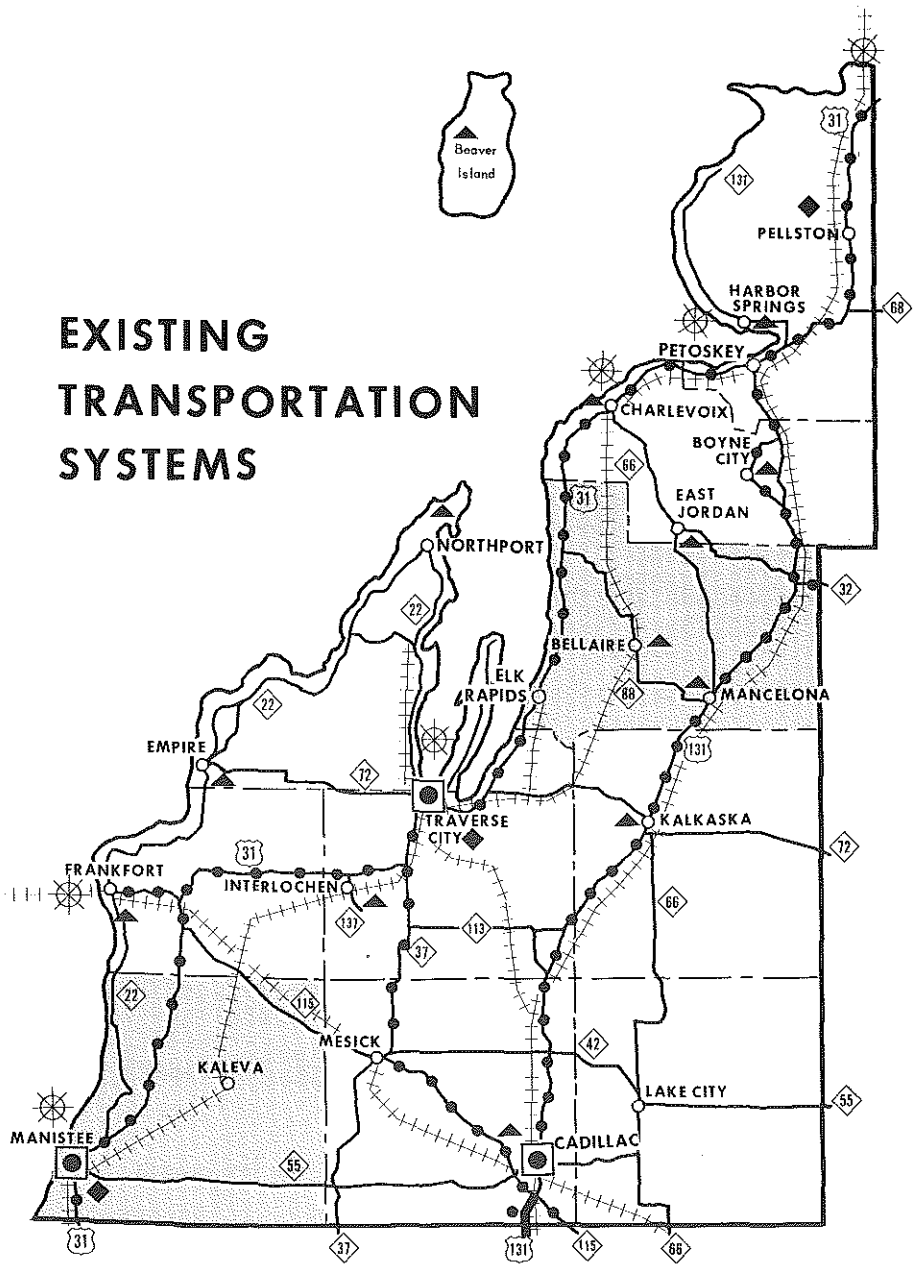
1. All future networks show a potential need for some major highway improvements.
2. All future networks show a potential need for some major transit improvements.
3. All future networks propose rural bus service in every county of the region.
4. All future networks propose that the existing rail freight service to major communities be retained.
5. All future networks propose that the existing system of commercial ports be retained.
6. All future networks propose that the existing system of air carrier airports be retained.
7. Additional general aviation airport facilities are only proposed for the abundant energy futures.
8. The most extensive amount of highway development is proposed for the high growth – abundant energy future.
9. The least amount of highway development is proposed for the low growth – restricted energy future.
10. The most extensive amount of transit development is proposed for the high growth – restricted energy future.
11. The least amount of transit development is proposed for the low growth – abundant energy future.

NOTE:

The following exhibits were not printed in time to reflect the regional bus service now operating between Traverse City and Cheboygan. However, information regarding this service is contained on pages 43 and 45.

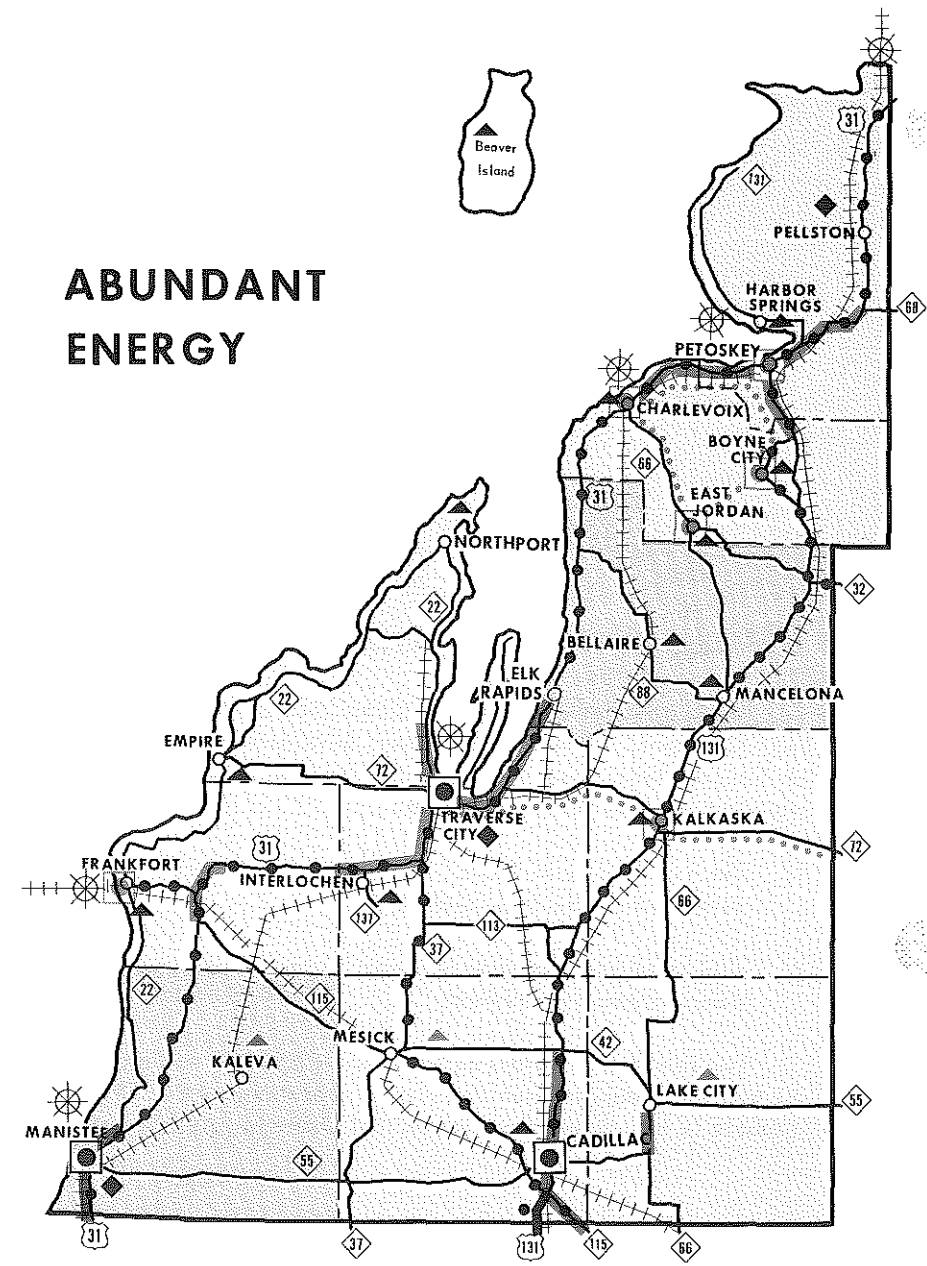
LOW POSSIBLE

EXISTING TRANSPORTATION SYSTEMS



- LEGEND**
- EXISTING
 - POTENTIAL
 - AIRPORTS**
 - Air Carrier
 - General Aviation
 - HARBORS**
 - Commercial Harbors
 - Carferry
 - STATE HIGHWAYS**
 - Two Lanes
 - More than Two Lanes
 - PUBLIC TRANSPORTATION**
 - Intercity Bus
 - Regional Bus
 - Local Bus
 - Rural Bus
 - RAILROADS**
 - Freight
 - Freight & Passenger

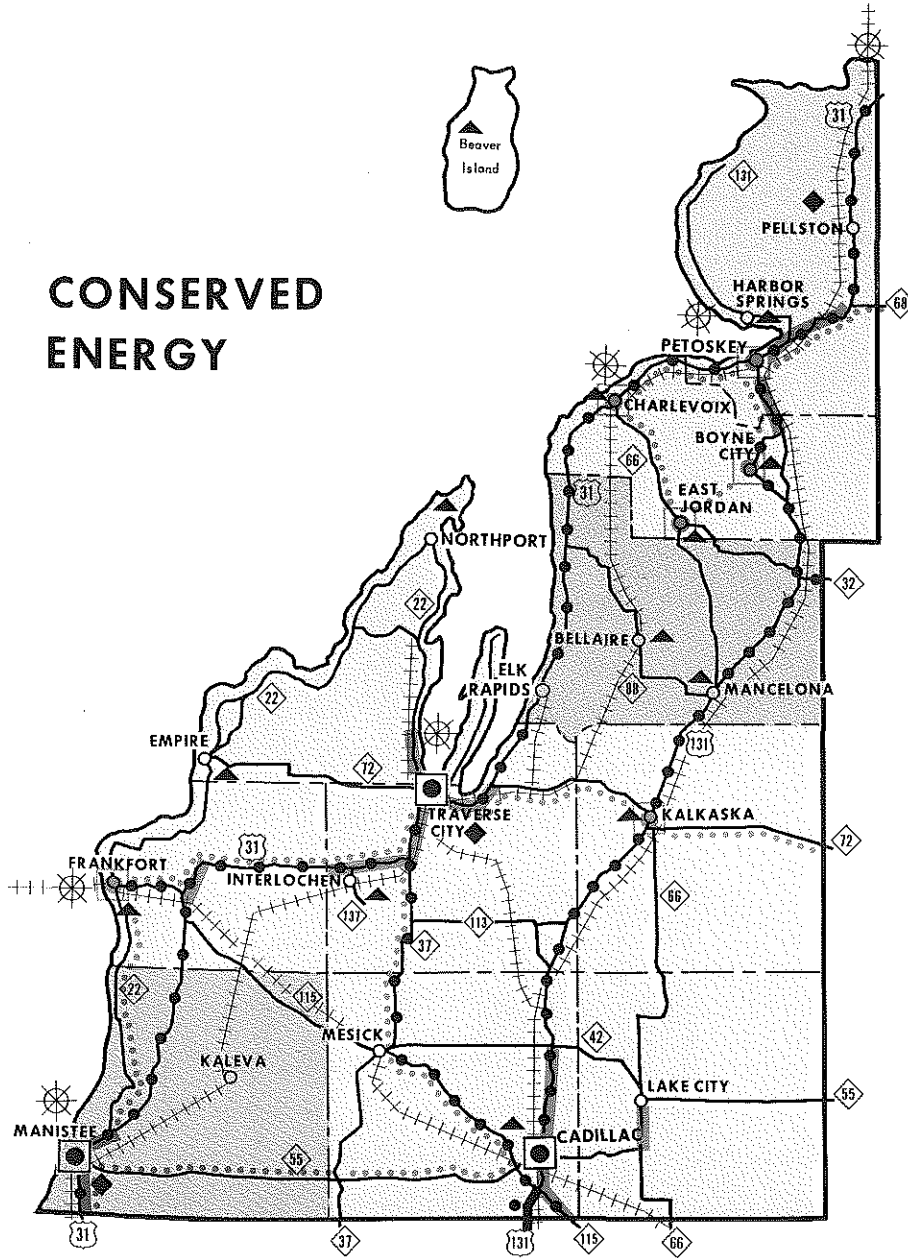
ABUNDANT ENERGY



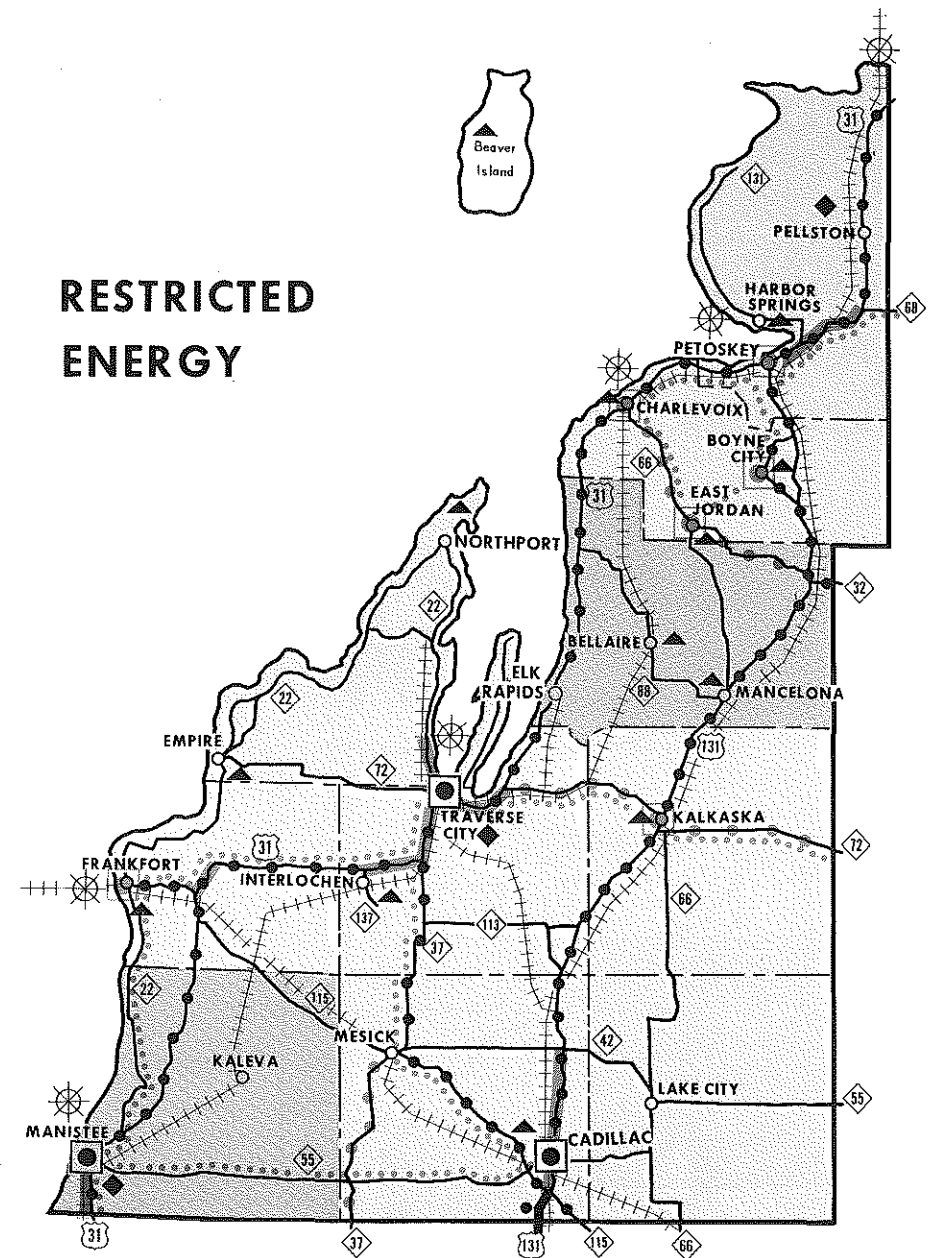
GROWTH FUTURES

TRANSPORTATION SYSTEM IMPROVEMENTS

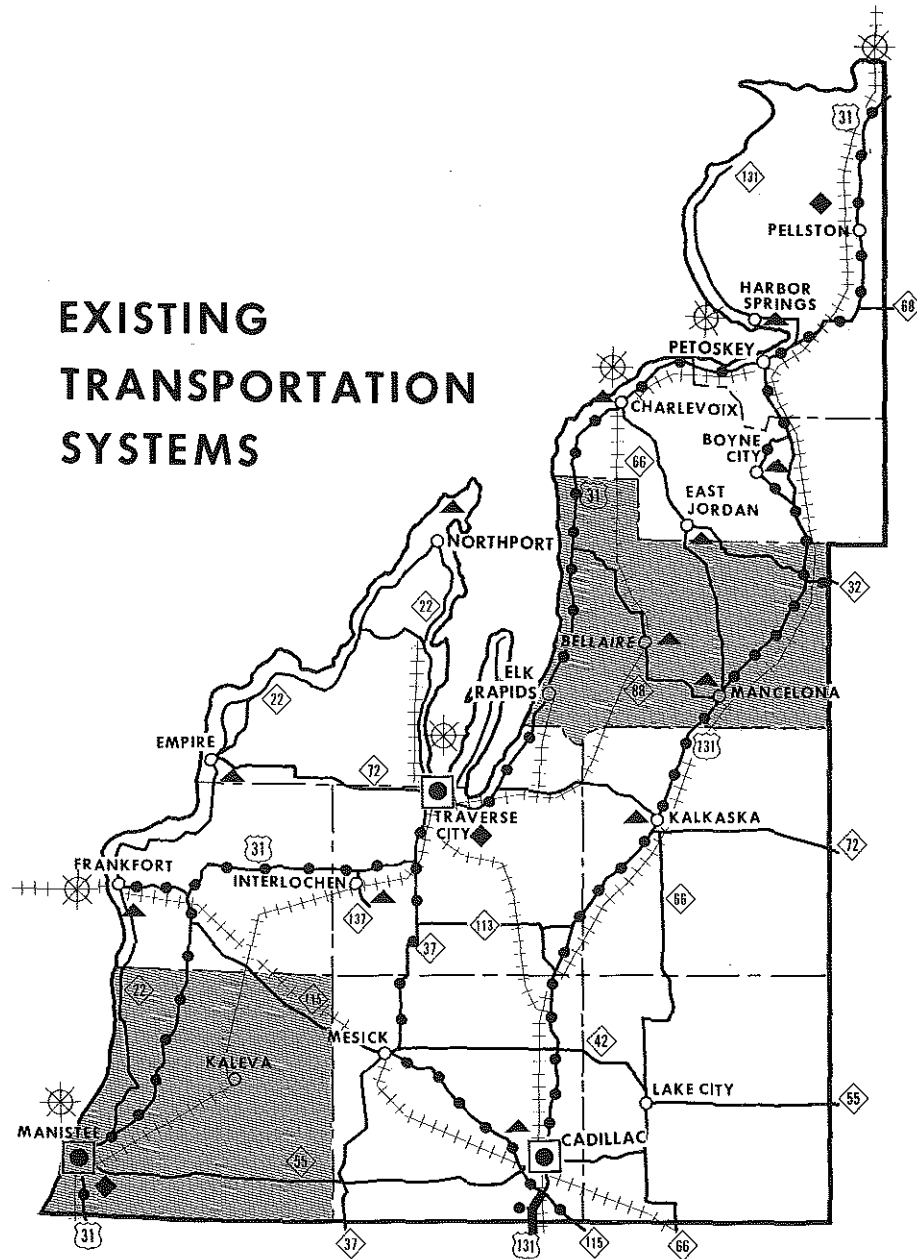
CONSERVED ENERGY



RESTRICTED ENERGY



EXISTING TRANSPORTATION SYSTEMS

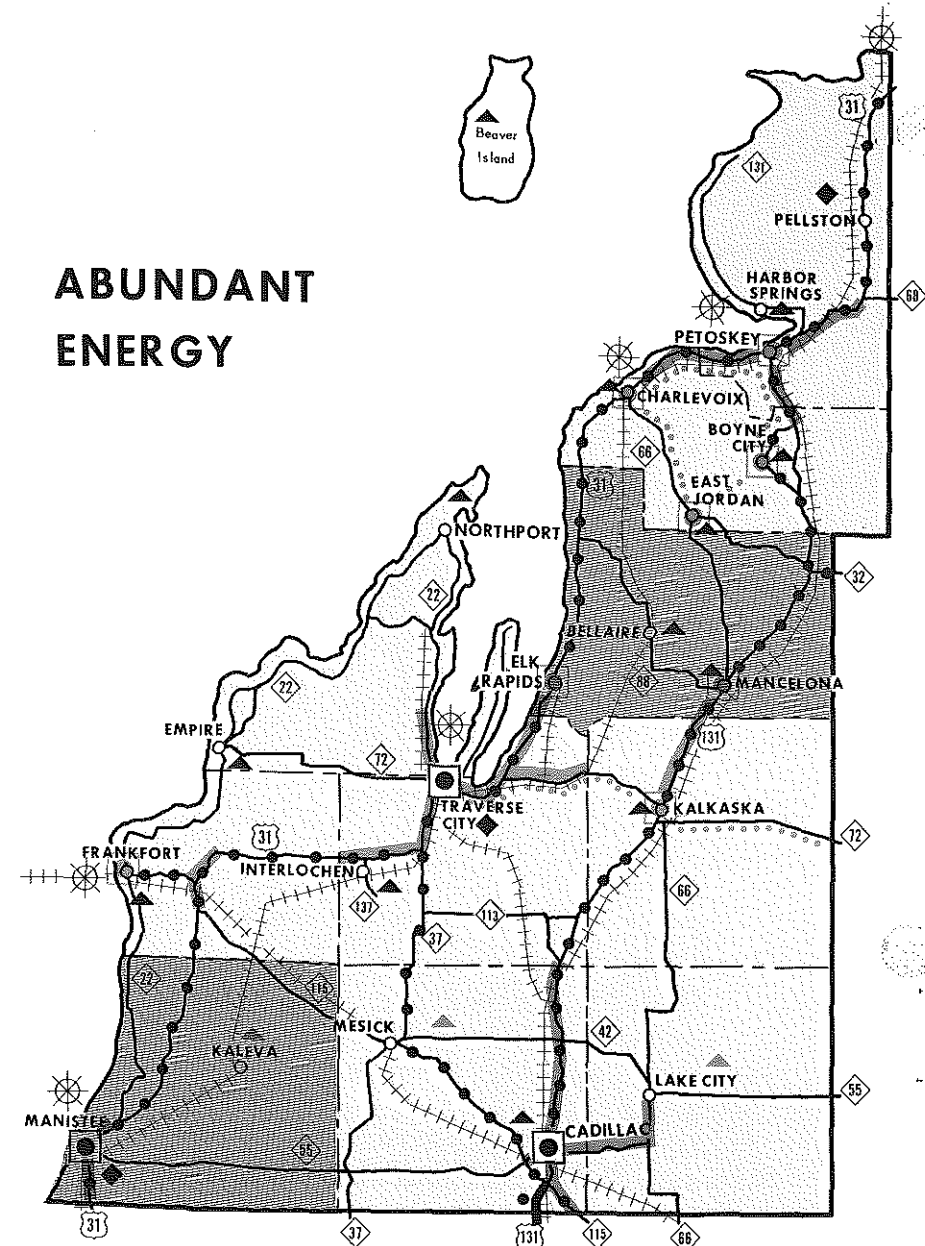


LEGEND

- EXISTING
- POTENTIAL
- AIRPORTS**
 - Air Carrier
 - General Aviation
- HARBORS**
 - Commercial Harbors
 - Carferry
- STATE HIGHWAYS**
 - Two Lanes
 - More than Two Lanes
- PUBLIC TRANSPORTATION**
 - Intercity Bus
 - Regional Bus
 - Local Bus
 - Rural Bus
- RAILROADS**
 - Freight
 - Freight & Passenger

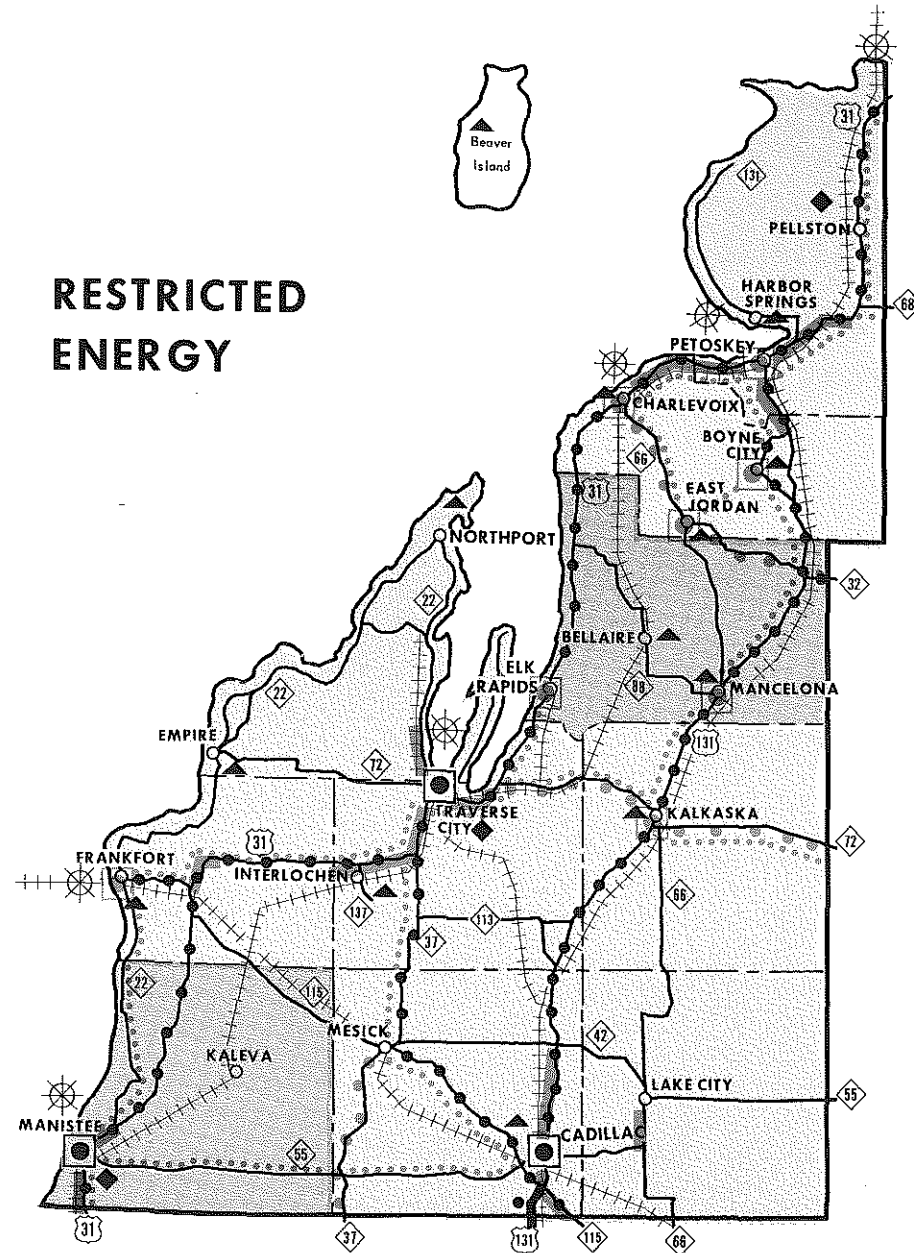
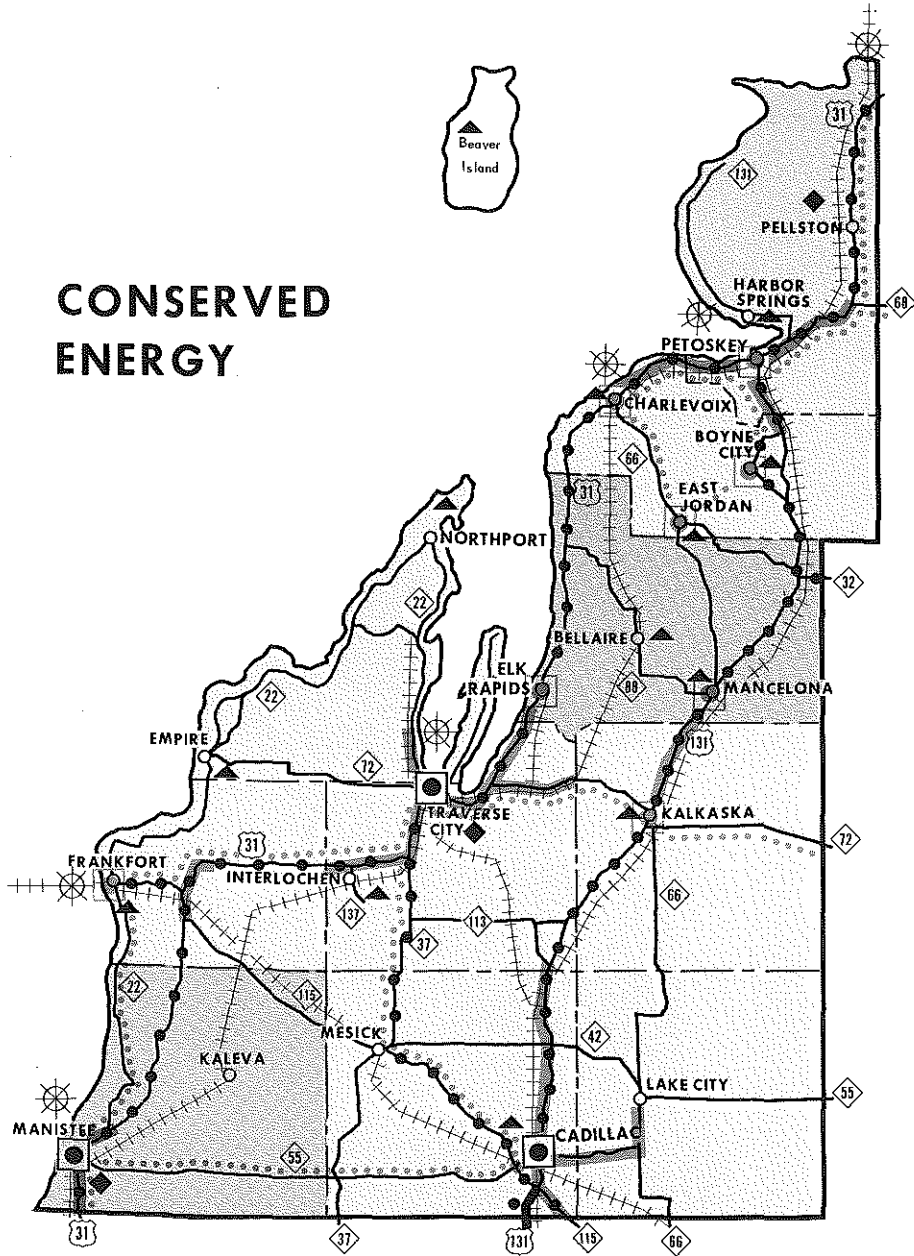
MEDIUM POSSIBLE

ABUNDANT ENERGY



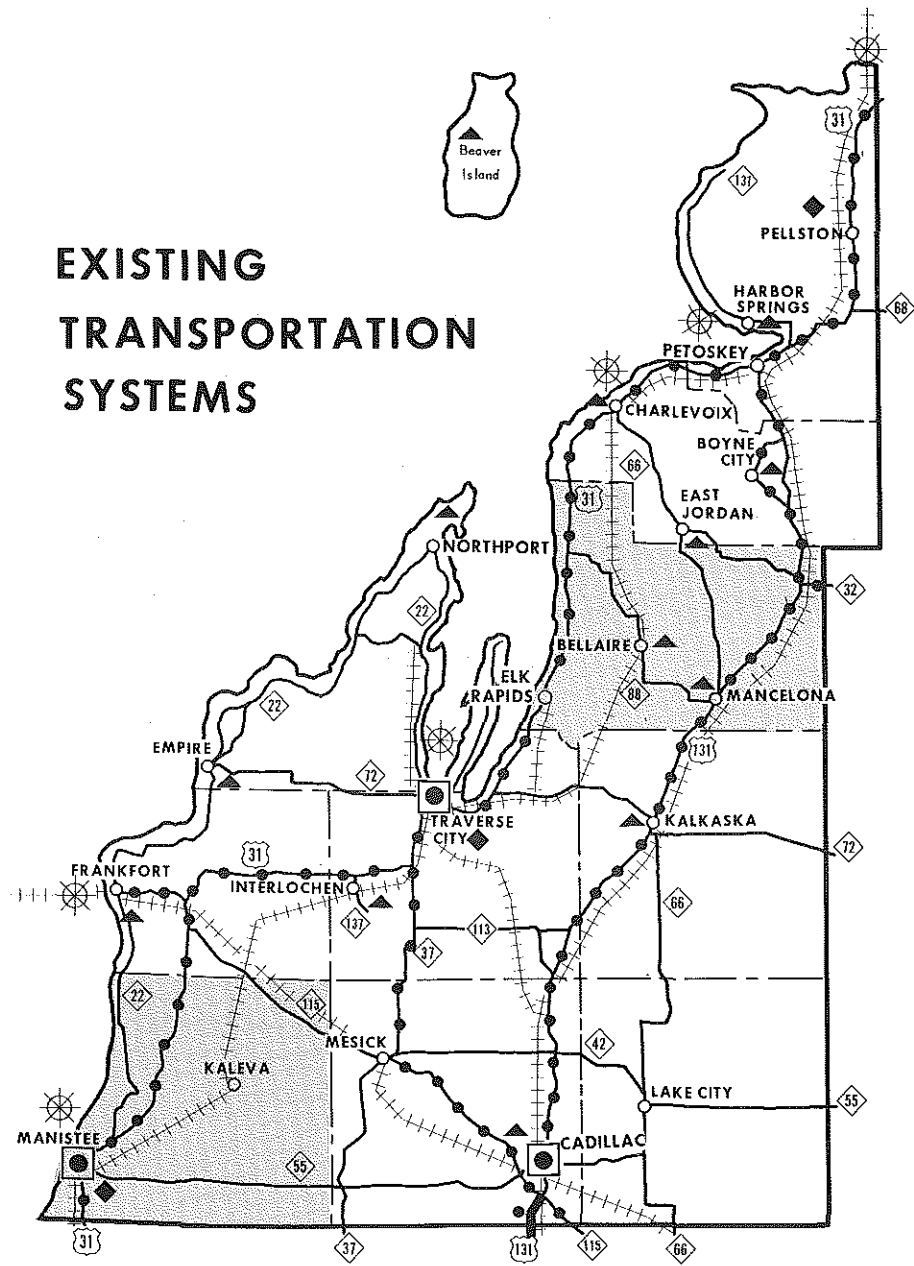
GROWTH FUTURES

TRANSPORTATION SYSTEM IMPROVEMENTS



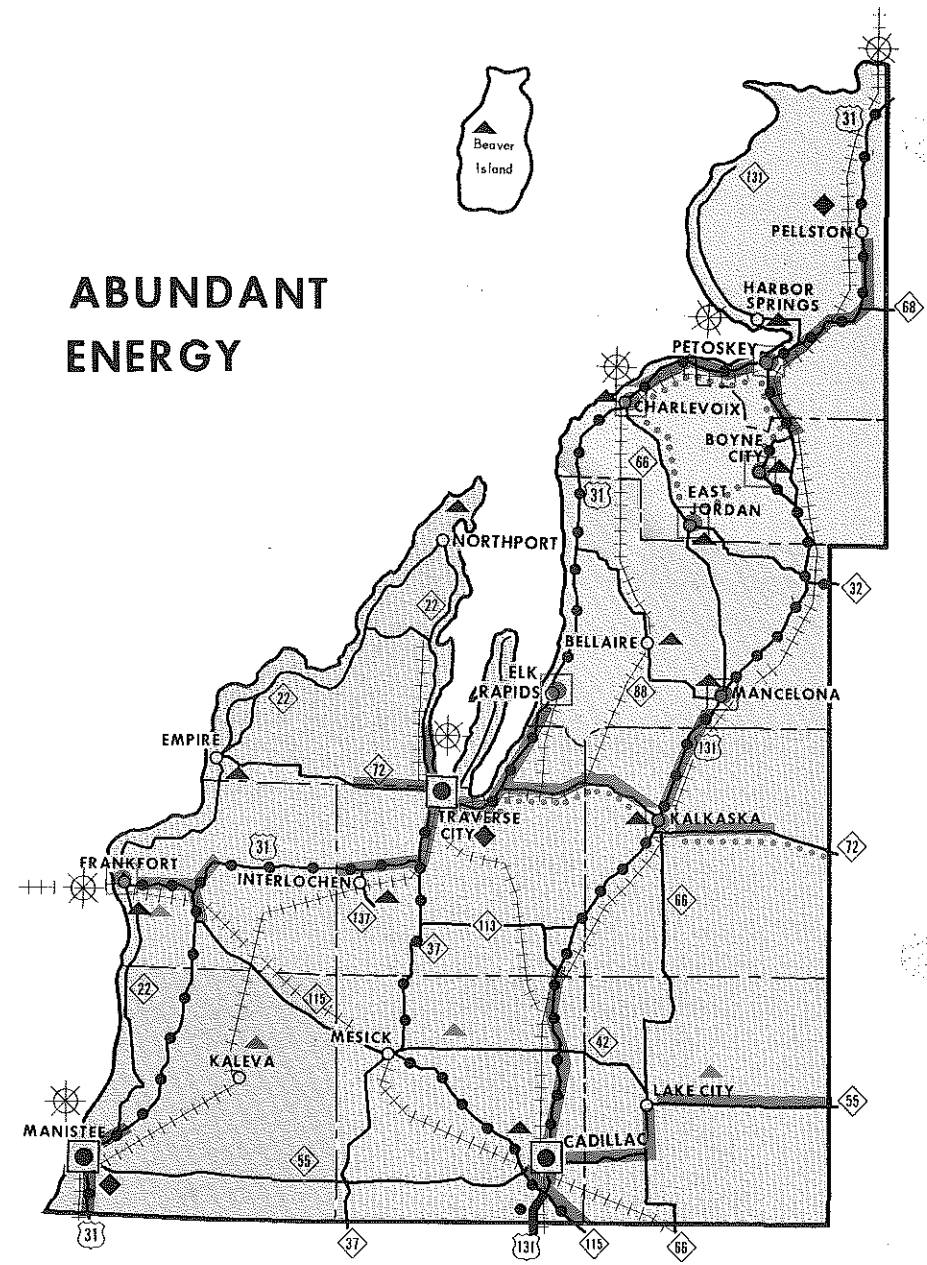
HIGH POSSIBLE

EXISTING TRANSPORTATION SYSTEMS



- LEGEND**
- EXISTING
 - POTENTIAL
- AIRPORTS**
- Air Carrier
 - General Aviation
- HARBORS**
- Commercial Harbors
 - +
 Carferry
- STATE HIGHWAYS**
- Two Lanes
 - More than Two Lanes
- PUBLIC TRANSPORTATION**
- Intercity Bus
 - Regional Bus
 - Local Bus
 - Rural Bus
- RAILROADS**
- Freight
 - Freight & Passenger

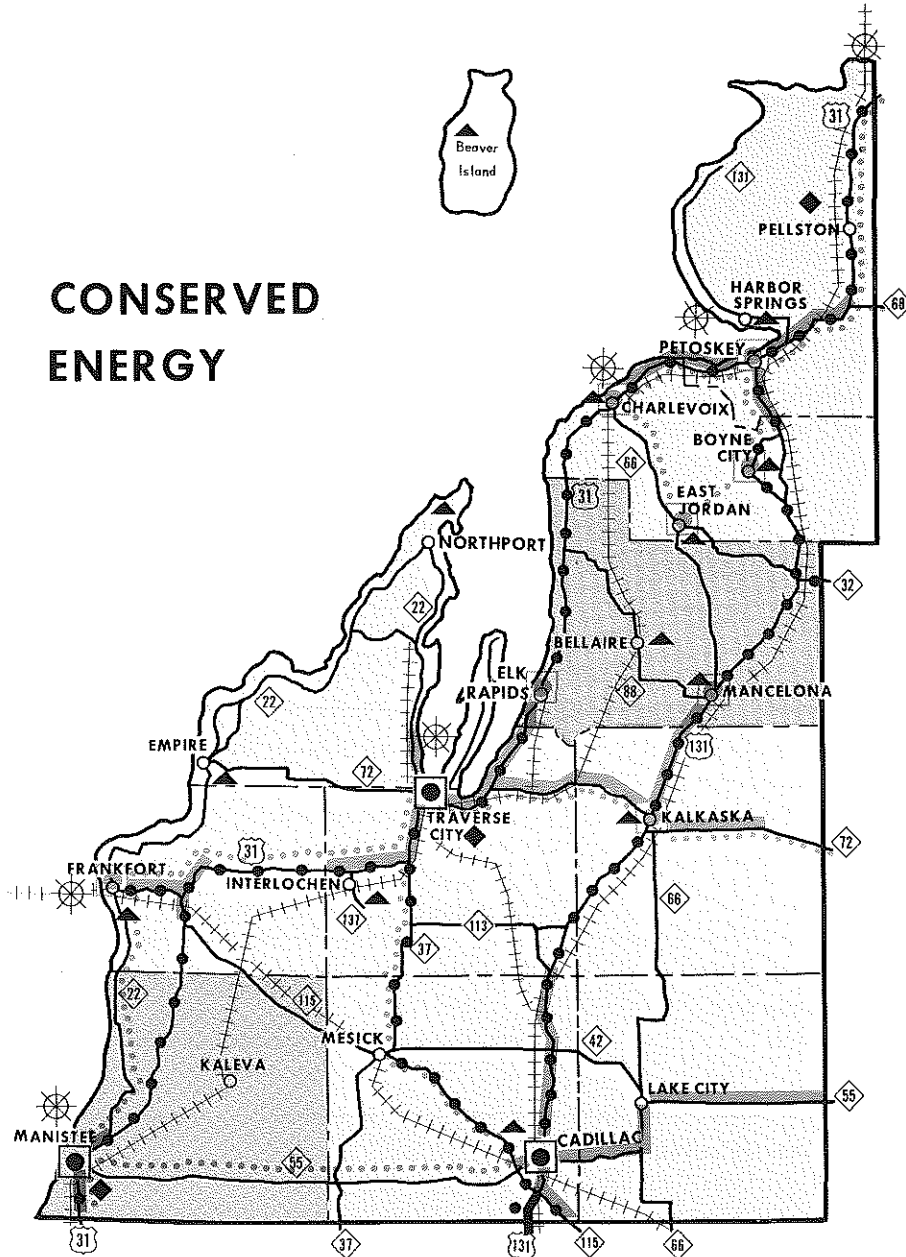
ABUNDANT ENERGY



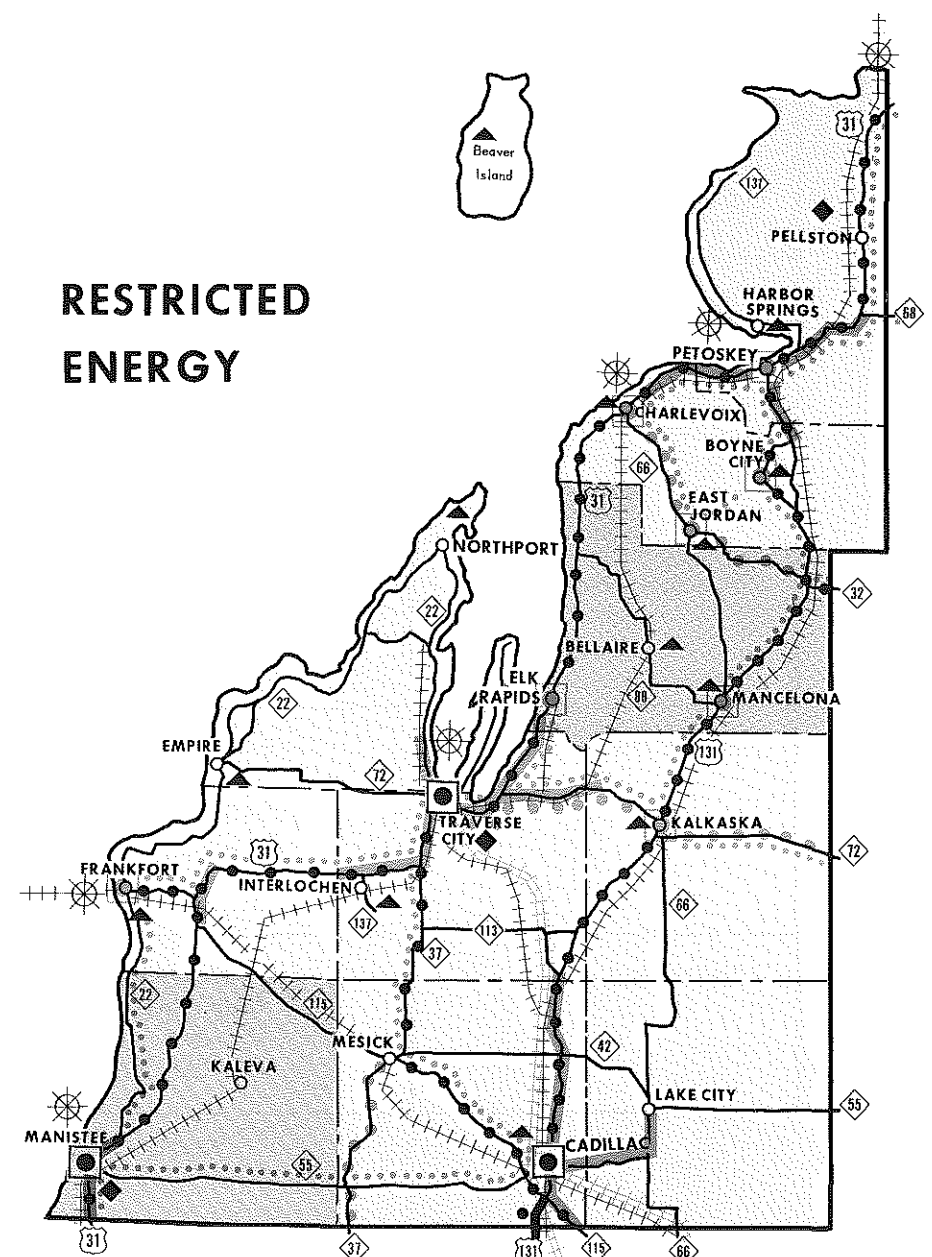
GROWTH FUTURES

TRANSPORTATION SYSTEM IMPROVEMENTS

CONSERVED
ENERGY



RESTRICTED
ENERGY



MODAL IMPROVEMENT OPTIONS

TRANSPORTATION MODE	DO NOTHING	MINOR SYSTEM IMPROVEMENTS	MAJOR SYSTEM IMPROVEMENTS
Aviation	Maintain Existing Airport Facilities	Resurface Runways Construct New Taxiways, Utility Buildings and Emergency Equipment Install Landing Systems.	New Airports Runway Extensions Additional Runways Implement Scheduled Passenger Service
Commercial Harbors	No Maintenance	Continue Maintenance to Authorized Depth	Increase Harbor and Channel Depths Improve Cargo Transfer Facilities
Highways	Maintain Existing Facilities	Resurfacing Passing Lanes Intersection Improvements Minor Realignment Traffic Control Devices	Widening Existing 2-Lane to 4 or 5 Lanes Construct 4-Lanes Divided on Existing Location Construct 2-Lanes on New Location Construct 4-Lanes on New Location - Free Access - Partial Access Control - Limited Access (Freeway)
Non-Motorized	Maintain Existing Facilities	Pave Shoulders Pavement Markings Install Signs Curb Cuts	Construct Separate Path or Bikeway
Public Transportation	Service and Equipment Maintained by Private or Local Agencies (No State Subsidy)	Continue Current Level of Bus Subsidy Programs Provide Low Interest Loans for Vehicle Purchases	Expansion of Subsidy Programs for: Intercity Carriers Regional Carriers Rural Systems Local Systems Construct New Terminal Facilities
Railroads	Service and Equipment Maintained by Current Owner (No State Subsidy)	Continue Current Level of Rail Subsidy Programs Track Rehabilitation	Institute State Ownership of Subsidized Rail Lines Institute Rail Passenger Service

NOTE: Examples of improvement options were arbitrarily selected.

MODAL IMPROVEMENT OPTIONS

The accompanying table indicates three categories of transportation improvements. These are:

1. Do Nothing
2. Minor System Improvements
3. Major System Improvements

A few examples are listed beneath each heading. These in no way represent the entire array of options available but should be helpful in associating a category with familiar improvement types.

It should be understood that these three categories of transportation improvements should not be considered interchangeable. Each is intended to satisfy a transportation problem of a certain magnitude. Minor problems should be resolved with minor system improvements. But major problems should warrant improvement alternatives of greater proportions which will solve the problem. And, of course, there exists the option of doing nothing. But, if a transportation problem exists, doing nothing would generally be considered as an irresponsible option toward solving the identified problem. This alternative would also indicate that people have decided to accept or tolerate the probable impacts associated with this option. On the other hand, the do nothing option would be the proper recommendation for those areas not anticipating transportation problems.

As an example, assume a highway transportation problem where the capacity of the existing two lane roadway is clearly inadequate to meet existing and future traffic demands. No amount of work of the type under the category of "Minor System Improvements" will solve the problem because additional lanes are required. Therefore, those options should be ruled out as alternatives for further consideration. But, each of the highway options identified as "Major System Improvements" would become logical candidates for serious consideration.

Likewise, situations may exist where a minor highway capacity deficiency could be resolved by an "up-to-standard" two-lane roadway. Only those improvement types, such as those listed under the "Minor System Improvements" category, should then be considered as alternatives to solve the problem.

The point is this – transportation problems should first be identified according to their magnitude. Then, only those options which could solve that particular problem should be considered as realistic alternatives. To seriously consider alternatives which involve either more or less than is conceivably needed would be irresponsible.

SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPLICATIONS

Alternative investment strategies for transportation improvements are not only based on, but will also affect, the social, economic and environmental conditions, activities, values and attributes of a region. Analysis of these factors must, therefore, be a major element in the process of determining the best transportation improvement option(s) for a region. Transportation, while an important item among the many factors which have a long term effect on the region's social, economic and environmental attributes, is only one of many factors which influence, and are influenced by, social and economic conditions. At the regional level of analysis, the total range of factors involved in this interaction is so great that it is not currently possible to clearly identify specific cause and effect relationships between transportation improvements on the one hand and changes or shifts in social, economic and environmental variables on the other. We can only attempt to generalize from past experience to illustrate broad potential impact areas which may result from the various modal improvement options available. These generalizations will help in considering the implications of planned system improvements, particularly in the sub-area and project level studies which will follow the Regional Systems Study.

The following discussion will be based on the matrix entitled, "Modal Improvement Options," and will provide a narrative of issues to be considered when assessing alternative courses of action. The level of detail will vary, based upon our ability to draw assumptions from the character of improvements proposed. It should be recognized at the outset that the overall level of transportation services provided to the public is as much affected by decision-making in the private sector as in the public sector.

1. The Do-Nothing Alternative

The baseline, or benchmark, alternative for all transportation modes is the do-nothing or maintenance alternative. This alternative is a minimal program which can involve nothing more than normal maintenance and upkeep of

existing transportation facilities, services, or programs. Analysis of the probable positive and negative impacts that would result from the do-nothing alternative provides a baseline from which the tradeoffs involved in the selection of other options can be compared.

The social, economic and natural environments of the Northwest Region are not static. Both internal and external factors will impact on the region and will modify the social, economic and environmental conditions and affect the ability of its transportation infrastructure to meet the demands placed upon it. Shifts in population levels, density, and location; changes in the service requirements of regional facilities, such as health care and social service centers and educational institutions; and changes in types and levels of economic activities (including agriculture) are examples of internal factors. Examples of factors external to the region are changes in the national and world economy, statewide or national energy considerations and changes in social values such as recreation and resource conservation. Maintenance of the existing transportation system, even at a high level, does not insure that the system will continue to meet the social and economic needs of the region. These dynamics all influence in one manner or another the natural environment. And it is the natural base that supports all other activities, providing through its outstanding attributes the impetus of many of the social and economic activities.

a. Aviation - (Do-Nothing Alternative)

Continuous change in aircraft technology necessitates the improvement of airport facilities even when capacity is higher than use. Changes related to the ground support system in the area of increased safety may be considered under this option and could amount to sizeable public sector transportation investments. Improvements oriented toward increased capacities as a result of physical ground support system improvements would not be considered under this option. Considerable increases in passengers and freight are possible even with this option if sufficient demand exists. The meeting of the increased demand would have to occur through private sector action, i.e., by the airlines providing more flights. Bigger aircraft and higher speeds require longer runways and larger storage facilities. Higher speeds and larger aircraft, coupled with higher load factors per aircraft, increase the energy efficiency of the air mode since fewer planes are needed to meet demand. Selection of the do-

nothing alternative for the region as a whole, then, may preclude use of larger, more efficient aircraft in parts of the Northwest Region. Precluding the use of these aircraft may tend to ultimately lower service levels, or force increased reliance on other modes. The social, economic and environmental impacts would then be a consequence of the effects associated with systems improvements to the other modes.

b. Commercial Harbors - (Do-Nothing Alternative)

Ports presently play a significant role in the regional economy. However, there is little public sector involvement other than in the provision of navigation and port access facilities. Present use is predominantly by and for private sector purposes; an exception is some passenger service on the ferries. Increased passenger service would not be accommodated under this option.

If commercial harbor maintenance activities were to cease, some of these facilities would gradually begin to fill up with river or lake sediments. As these harbors become shallower, certain ships would no longer be able to safely service the various commercial ports. Some manufacturers would not be able to continue their operations if they had to transport their products by a mode other than ship. For those communities depending on water commerce, this could result in several economic impacts.

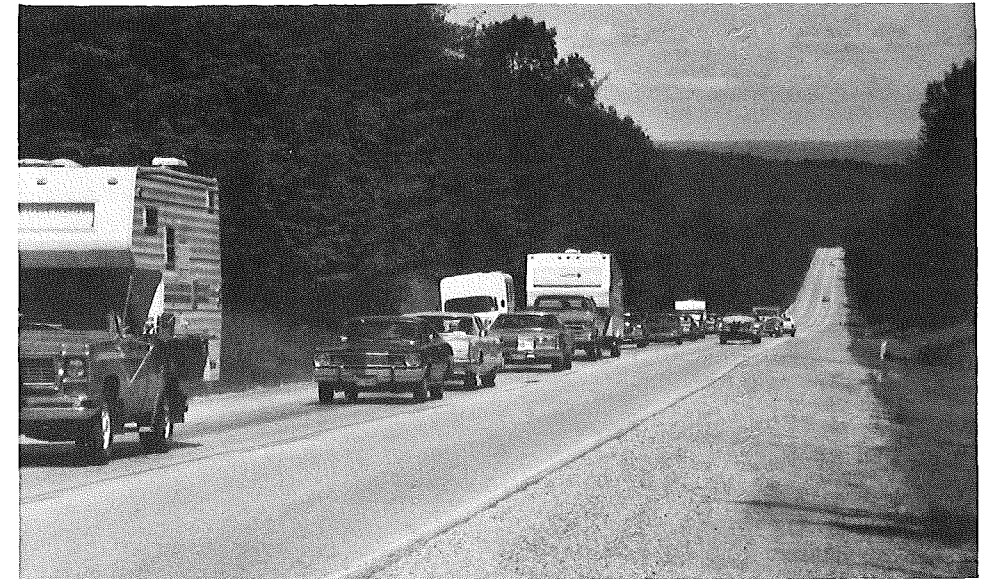
The increased use of coal as a source of energy would increase the need for adequate port facilities to serve the Northwest Region. It may require more interface between Great Lakes shipping and the rail and truck modes and may necessitate an increased public role in the public/private transportation partnership. Failure to improve service could discourage the development of some industries in the Northwest Region because an adequate, economical supply of energy would not be readily available. Conversely, if coal supplies were provided by other modes, or by lake in a manner not requiring port improvements, serious implications could accrue to the other modes. Substantial increases of coal movement by rail and/or highway could trigger the need for facilitating improvements on these systems. The social, economic and environmental impacts would then be transferred from those associated with port development to rail and highway development. Increasing pressures

for recreational development have already affected possible port development options and the possibility of increased service with existing dock facilities is limited because of a lack of storage facilities. Increased public sector involvement would not be contemplated under the do-nothing alternative.

c. Highways -- (Do-Nothing Alternative)

The existing highway network in the Northwest Region may not be able to safely and efficiently handle projected increases in the levels of population, recreational travel, and movement of goods, even if these increases were to occur at low or moderate levels. When a highway network or links within that network provide less than adequate service, numerous social and economic effects can occur. Substandard road conditions and congestion tend to discourage both residential and commercial development. They also can increase transportation costs, noise, air pollution, accidents and sometimes encourage motorists to seek alternate routes for travel. Parallel routes, in turn, may begin to load up and also become substandard. This effect has been apparent in the Northwest Region for a number of years. It is characterized by the use of alternative routings by the traveling public for trips that would normally be along state highways. The State is responsible for routes which function as major long distance routings of highway traffic. Lack of safety or capacity on a state route tends to cause a spillover to local roads of long distance trips which in turn increases safety and congestion problems on these routes. Where existing local roads provide reasonable alternative routings, the effect of the do-nothing alternative is to distribute the environmental impacts of poor safety and congestion across a number of highways and areas surrounding these highways.

If no actions are taken to increase the capacity of the overloaded road system or links of the system, these impacts will become more severe over time, causing the area to become stagnant, or even depressed. Such a situation results in low property values, low levels of business activity, and generally decreases the desirability of an area for residential development. In the Northwest Region, these types of impacts are more likely to occur in and around the four regional growth centers and along the major links connecting these areas. If population and industry in the region continue to expand at current rates, or expand at very high rates,



the existing road system will be even less able to accommodate the additional demands placed on it. The tourist/recreational nature of the Northwest Regional economy will also require a high level of highway service.

The major direct effects of the do-nothing alternative are associated with declining safety and congestion. They are generally categorized as impacts to the human environment since they are associated with health, safety and quality of life in its transportation-related aspects.

Congestion on highways contributes to localized air and noise pollution impacts along existing highway corridors. Currently, the Northwest Region's air quality is within the national primary and secondary air quality standards with the exception of those for photo chemical oxidants. Violations of the photo chemical oxidant standards in areas like the Northwest Region are believed to result from the movement of air masses as opposed to local emissions. If traffic congestion were to increase, there is the possibility of violation of the carbon monoxide standard at specific locations where atmospheric conditions, such as low wind speeds and a temperature inversion, occur simultaneously.

Increased volumes, particularly when congestion occurs, contribute to increased noise pollution from stopping and starting, etc. This is presently occurring in the region and will continue to vary as the traffic volumes vary.

Those impacts to the natural environment which result from the do-nothing alternative are associated with the previously mentioned spillover effect caused from congestion and poor safety characteristics. However, the do-nothing alternative also does not provide the basis for responding to changes in economic conditions, shifts in energy utilization patterns or alterations in transportation corridor location to accommodate perceived social benefits. There are areas in the Northwest Region where the relocation of existing highways would provide environmentally or socially beneficial actions to achieve non-transportation objectives.

d. Non-Motorized – (Do-Nothing Alternative)

The do-nothing option for the non-motorized mode would involve nothing more than maintenance of existing facilities. Any effects of the do-nothing alternative for this mode would thus be of small magnitude and little significance.

e. Public Transportation – (Do-Nothing Alternative)

The primary social and economic aspects of the Northwest Region relating to the bus mode are the generally low income levels, the high percentage of aged, and the rural dispersion of the population. Bus service in the region is currently oriented toward the transportation disadvantaged persons within these groups. The do-nothing alternative will not enable increasing numbers of the older, poorer, rural residents of the region to take advantage of the employment opportunities, and other facilities and services in the metropolitan areas to the maximum extent possible.

If state subsidies are not provided, some local areas may have to discontinue services such as dial-a-ride because adequate funds may not be available. The type of service offered may have to change in view of economic realities; this could perhaps cause more emphasis on other ride-sharing activities or increased taxi service in order to maintain existing service levels.

The maintenance alternative for bus service would have implications to the natural environment only to the extent that the increased use of bus transportation would influence the alternative use of the private automobile. The nature of bus transportation would tend to better support more densely concentrated settlement patterns. It is reasonable to assume that great increases in the utilization of bus transportation would be possible in the Northwest Region without requiring the construction of new highway facilities. It therefore appears that the increased use of bus transportation might provide opportunities for limiting further intrusions into the natural areas of the region. To achieve this outcome, some limiting influence must occur that will reduce the current availability of the private automobile.

f. Railroads – (Do-Nothing Alternative)

The high bulk to value ratio for products common to the Northwest Region makes adequate rail service an intrinsic part of the area's transportation network. If the natural resources of the area, such as oil, gas, lumber and wood products, continue to provide a substantial economic base for the area, and if coal becomes a major source of energy, then business, industry and electrical power generation organizations will tend to become more rail-reliant. Thus, selection of the do-nothing option for the rail mode may, over time, retard the expansion of natural resources based industries and, in turn, increase costs to consumers and decrease the current competitive advantages of the present rail users.

The do-nothing/maintenance alternative for rail would have serious implications for branch lines facing abandonment. Unless increases in the funds available for subsidy were provided, newly abandoned branch lines would be lost or a redefinition of the priorities in the region would be required and those lines of lower priority dropped from the subsidy program.

The transfer of existing freight shipments from rail to other modes could trigger the need for highway improvements in certain specific situations. An analysis of the region's highways regarding their ability to handle existing rail freight shipments indicates no general system problem. However, there is the possibility that increased truck traffic on specific existing highways could result in deficiencies requiring correc-

tion. The resulting environmental effects of this construction would be a consequence of the overall alternative selected. Should current national plans require shifting a large percentage of energy utilization to coal, major demands for improved rail facilities may occur. In this case, attempts to compensate for the lack of rail service through the use of other modes could have serious social, economic and environmental implications.

The possibility of rail passenger service becoming practical in an economic sense would be delayed or precluded if this alternative were adopted. Current and short-range future activities could be accommodated by this alternative. However, it would ignore current inefficiencies which, if corrected, may free resources that in the long term could be applied toward increased levels of service.

2. Minor System Improvements Alternative

Minor system improvement options are those which can accommodate changes in the type and level of social and economic activities by means of transportation improvements which permit the basic transportation infrastructure to meet new or modified demands. This option normally involves improvements of only a local nature. In some cases, monetary expenditures may be substantial. Generally, however, the capital investment will be less than that needed to provide major improvements to existing transportation systems or to provide an entirely new system. The social, economic and environmental implications of the minor system improvement option will vary by mode, by the specific types of improvement which could be considered under this option and by the specific locations of those improvements.

a. Aviation - (Minor Improvement Alternative)

Minor system improvement options for airports would be those directed toward maximizing the utility of existing airports. Examples include various means of improving ground circulation and support facilities, while maintaining present capabilities of supporting current usage. The range of improvement options available with this alternative would not result in any consequential expansion in level of service, either at particular airports or, in total, on a regional basis. The safety and efficiency of ground and air movement at some airports, however, would be increased. Increased flights could be accommodated with this option.

There are no major social and economic implications of a regional nature involved with this alternative, other than that the current level of service would be maintained, and perhaps even improved if demand were sufficient. However, minor system improvements may place a specific airport in an advantageous position for future improvements in the level of service, should conditions warrant, relative to other airports that have not had improvements.

Runway paving, improvements to ground circulation, safety systems and support facilities would contribute to increases in paved areas. The effect would be to reduce vegetation and requires that consideration of stormwater runoff patterns and volumes, as well as groundwater infiltration rates, must necessarily be undertaken in such situations.

b. Commercial Harbors - (Minor Improvement Alternative)

The minor system improvement strategy for ports is significantly different for different approaches. If the strategy is designed to support current levels of port usage, the implications of the modernization of the Great Lakes fleet can be significant. The maintenance of existing service levels at ports may require substantial construction activities as ship sizes increase. The increased use of containers for general cargo transportation could increase pressure for construction of container handling facilities to maintain port viability. Such capacity needs would require the construction of docks, dredging of channels with attendant dredge disposal, etc. Dredging can result in direct fish kill, water turbidity, non-use of areas and destruction or interruption of submerged vegetation, bottomland benthic organisms, fish spawning, rearing and breeding areas. The impact scale depends on the amount of dredging and construction that is necessary to provide the facilities.

Onland activities to support port facilities are also of concern. The conversion of land areas to industrial use could result in the loss of vegetation and wildlife habitat. Storage of some bulk commodities also generates concern regarding damage to water resources through the introduction of toxic materials into the environment.

The minor system improvement alternative for this mode could also be limited to include only the maintenance of existing ports in their

current condition with only limited construction of some improved dock-side facilities in existing locations, and perhaps of minor facilities to aid modal interface with rail and/or truck. To the extent that this strategy, or others similar to it, would influence commodity circulation patterns, the social and economic implications would be distributional in character. That is, the competitive position of port shipment could be improved relative to shipment by rail or truck. At this time, this would be primarily a private sector decision, although the public sector could create a favorable climate or provide tangible impetus if such action were determined to benefit the region as a whole. It is not likely, however, that the extent of improvements included under this alternative would be great enough to have region-wide implications.



c. Highways – (Minor Improvement Alternative)

Examples of minor system improvement options for the highway mode include resurfacing of existing routes, providing passing lanes or truck climbing lanes, intersection improvements and minor realignments. The major reason for providing these improvements is to increase safety and improve the traffic flow on highways at specific locations which have demonstrated a need for such improvements. On a regional scale, the

social and economic implications of these types of improvements tend to be minimal. Primary social and economic impacts on a regional level would result only if changes in the region were so drastic, or occurred so rapidly, that a very large number of minor improvements were necessary. The cumulative effect of these improvements could then conceivably approach the magnitude of what would occur under the option of investing in a major improvement. Normally, secondary social and economic impacts will not occur as a result of choosing this option. This is not to say that major changes in the social and economic activity patterns of the Northwest Region (such as shifts in population levels and density; or changes in employment and business activity, agricultural productivity or tourism) will not occur – merely that minor improvements to the existing regional highway network would not be a principal contributor to such change.

Social and economic impacts of a primary (direct) nature might result from individual projects which could be implemented under this option. The severity of these impacts would be greater in and around the region's major population centers than in rural areas because of the density of development. An intersection improvement or the addition of a passing lane, for example, might significantly reduce personal injury or property damage accidents. The same project, on the other hand, may require the acquisition of some additional right-of-way, which could force the relocation of a business or residence, or perhaps reduce the utility of adjacent land. Specific trade-offs such as these need to be analyzed for each individual project.

Since the thrust of the minor system improvement strategy is to maximize the service of the existing system, the anticipated impacts to the natural environment tend to be minimal and of a primary impact character. As with social and economic effects, secondary and tertiary impacts would represent a reinforcement of existing trends in social and economic activity. Primary construction impacts would be associated with specific situations where existing highways conflict with the more sensitive land forms in the region, particularly wetlands and watercourses.

The improvement of existing highways can contribute to greater ease of traffic flow. This has a tendency to reduce noise and air pollution problems. However, improved traffic flow and safety may contribute

to the attraction of trips previously using alternative routings and thus increase traffic volumes. This occurrence would contribute to increased noise and air pollution along the existing route, where minor improvement projects, including widening, might move traffic closer to existing structures, marginally increasing noise.

In some cases, minor realignments of existing routes would fall in this category of activity. Such projects would require the same analysis as for any relocation. The resulting impacts would depend on the length and location of the realignment and the attributes found in the proposed construction area. They would represent potential losses in vegetation cover, forest reproduction, wet and agricultural lands, loss of wildlife habitat, etc. Particular concern for realignments and reconstructions must be taken in the Lake Michigan coastal zone to assure that this unique resource is not damaged. Special concern also will be taken in areas that have been officially designated as special environments.

d. Non-Motorized -- (Minor Improvement Alternative)

The minor system improvement option for non-motorized transportation would be directed toward accommodating increased non-motorized activities within the rights-of-way of the existing highway system. This could be done even when other highway improvements were not simultaneously being made. Emphasis could be on connecting links between activity centers served by state highways. This option could also accommodate expanded non-motorized systems on county and local roads.

Improving non-motorized transportation in the Northwest Region could encourage recreational pursuits, and thus could increase tourism in the area. However, any increase would likely be small, and any regional effects of the minor system improvement option for this mode would be of little region-wide significance. Social and economic implications would primarily involve specific benefits, such as increased safety, associated with individual projects.

e. Public Transportation -- (Minor Improvement Alternative)

With the minor system improvement option, not only would existing bus services and programs continue, but some increase in service area

or service frequency would be possible. From a regional perspective, depending on the type(s) of minor improvements that were made, the minor system improvement option could have a small, positive effect. An increase in the ease of mobility among the regional growth centers and from the rural areas to these centers could, for example, improve accessibility to places of employment, health care facilities and other opportunities and services. This strategy for public transit would not generally be anticipated to have effects on the natural environment.

f. Railroads -- (Minor Improvement Alternative)

The minor system improvement option would permit the continuation of existing rail service. It would also include the minor upgrading of service, but probably only between some selected points most in need of improvement. In most instances, the type and scope of improvements that would be made under this option would not result in any primary social or economic impacts of regional scope or significance. As in the highway mode, it is conceivable, but not very likely, that the cumulative effect of several minor improvements would be a major regional change in accessibility or in the movement and distribution of goods. Under this option, some system consolidation which would lessen rail miles while retaining or improving level of service could be undertaken. Although there would be little immediate effect upon rail users, there could be benefits to other modes, such as fewer rail crossings and land made available for recreational or non-motorized improvements. A minor system improvement strategy for rail would not generally be anticipated to have effects on the natural environment.

3. Major System Improvement Alternative

Investment strategies which include major system improvements have the greatest potential for social, economic and environmental effects. The purpose of such major improvements is to provide new or improved services, to relocate existing systems, increase the capacity of existing systems or to provide services to areas not presently serviced by the particular mode. The social and economic value of such improvements is difficult to determine in an area presently served by a modern transportation system. Changes in social and economic activity caused by the alteration of transportation delivery systems are marginal and difficult to isolate from other factors. The same problems are encountered when attempting to identify secondary and

tertiary social, economic and environmental impacts. Primary impacts are more easily determined but even these are relative.

The impacts must be viewed first from the standpoint of the specific actions proposed and secondly with regard to the particular future being considered. This is because, while the impact will be modified by the nature of the future conditions within which the action is framed, our present understanding of impacts is tied most directly to the action and the cause/effect relationship. Thus, it is difficult to spell out precisely the character impact which would result from various major improvements until specific improvements were proposed. However, general impact areas can be hypothesized to help understand the implications of systems proposals and to guide the more specific sub-area and project impact analysis.

a. Aviation – (Major Improvement Alternative)

Major improvements in the region's air mode could increase business activity, but any increase directly attributable to these improvements would tend to be small. Thus, in view of the relatively high level of existing service, the regional social and economic implications of major improvements in this mode are of smaller magnitude and lesser significance. The level of service of the air mode would tend to be a positive factor to be considered by business or industry, rather than a negative one, and likely of relatively minor importance in the total context of most business or industry expansion or relocation decisions.

At the community level, major improvements in airport facilities, including particularly the construction of a new airport, could result in substantial direct and indirect social and economic impacts. Of particular significance would be displacement and land use changes both at the airport location and along transportation routes to population centers in the area. The construction of a new airport would have significant impacts to the natural environment in almost all locations of the region. Major improvements to existing airports consisting of construction of new runways and runway extensions and support facilities could also have significant impacts to the natural environment depending on the location of the specific airport. Noise tends to be the most significant primary impact associated with airports. In some areas, the continued development of residential areas around existing airports may

lead to future pressures to relocate the airport. This result would have the tendency of encouraging significant new social, economic and environmental effects. A major thrust of airport development must, therefore, be an effort to assure the continued viability of existing airport facilities.

b. Commercial Harbors – (Major Improvement Alternative)

The increasing costs of transportation and the potential for greater use of western coal contributes to the potential for water transportation occupying a much greater role in the future. This, coupled with projected increases in ship size as part of fleet modernization may require the construction of major port improvements within the region or the advantages to the regional economy inherent in its location in the Great Lakes may be lost. Such improvements would have to be considered in light of the major environmental implications inherent in the construction of port facilities. Recent trends have been to reduce the availability of lands for port development in several of the existing ports. Continuation of this trend may require future actions to reestablish adequate port facilities should the water mode increase in importance. Consideration of the social, economic and environmental implications of this situation are important to all regional planning efforts.

c. Highways – (Major Improvement Alternative)

When measured in terms of accessibility into and within the region, northwest Michigan has a well developed highway system. Projections indicate that population and economic growth will continue to be concentrated in those areas to which highways presently provide a high level of service. Given this type of highway system and the growth projections, changes in the overall social, economic and environmental context of the region caused by improvements to the existing highway system would be marginal in character and difficult to isolate from other causative factors. However, the isolated location of the region, in terms of access to other parts of the country, imposes a transportation time and cost penalty on products shipped to and from area industry. As energy and other transportation costs increase, the relative competitive position of area industry is reduced as compared to industry located in more accessible regions. While the specific impact on any particular industry

is difficult to measure, consideration of the marginal effects of these economic forces need to be carefully considered.

Impacts resulting from major highway improvements are significantly different if the improvement is on the existing highway alignment as opposed to a relocation of the facility. Major improvements on existing highway alignments would primarily be associated with providing improved capacity and/or safety through straightening the existing roadway, adding lanes to provide four or five lane roadways or divided four lane roadways. In some cases, such widenings and alignment improvements can be constructed within the existing right-of-way. At other times, additional right-of-way has to be acquired from adjacent property owners. In these cases, direct social and economic impacts including displacement of homes and businesses, increases in noise level, and proximity damages to remaining buildings can be expected to occur. In undeveloped areas, intrusion into wetlands, floodplain areas, the removal of existing vegetation and potential erosion and sedimentation problems often occur with consequences to water quality in adjacent streams and lakes. The wider roadways add to the total area of sealed surface contributing to increased runoff rates and reduced infiltration rates to the groundwater. Special problems can occur in areas of sensitive environments such as wetlands, sand dune areas, as well as unique or prime agricultural lands. Improvements to existing highways tend to have a marginal effect toward changing the amount and location of social and economic activity. Such improvements do tend to support existing development patterns and affect natural environmental areas already impacted.

Long term problems occur when existing facilities are improved and development occurs along them. Development requires driveway access and introduces a condition termed "side friction." Side friction results from vehicles entering and leaving the highway, thereby reducing capacity and safety. A solution to this problem is the conversion of existing routes to limited access. By acquiring the rights of adjacent property owners to enter and leave from the highway, side friction is eliminated and capacity and safety enhanced.

Secondary social, economic and environmental effects are reduced, but the primary impacts, particularly social and economic, are maximized. Adjacent properties would be denied access to the route. Existing resi-



dential development would have to be served through service drives or acquired and removed. Businesses would lose access to the traffic flow and, even if served by service drives, would face severe access problems. In cases where this type of construction has occurred, an extremely high level of business closings has resulted.

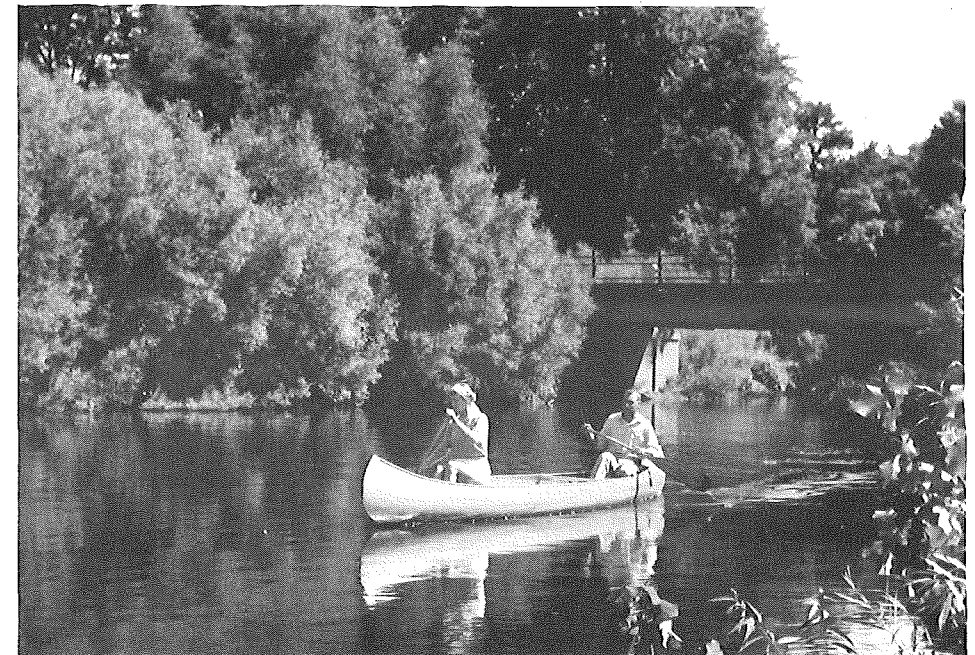
In cases where the existing road system is limited and the subject state trunkline provides not only its state and regional purpose, but is also an important local service route, the conversion of the state highway to limited access could result in severe local highway service problems with the resulting social and economic implications to the particular community.

The selection of new corridors to relocate existing highways are generally undertaken to reduce the primary social and economic impacts of the improvement. Relocated highways generally have limited direct social and economic impacts. Conversely, the primary impacts to the natural environment of relocated highways tend to be maximized, although careful location of the new routes can greatly mitigate primary impacts to the natural environment. Total elimination of such impacts is not feasible. Highways are linear facilities and therefore cannot be located to avoid all environmental attributes. Highways on new location require the conversion of land from its existing uses to a single purpose highway use. Depending on the topography, minor to major earth changes are required to construct the new highway grade. The intrusion into areas not presently affected by highways has impacts on wildlife habitat and migration routes, drainage patterns, stream channels and wetlands. Disruption to existing land use activities such as farming, recreation and open space occurs and alters the aesthetic character of the area.

If the relocation provides limited access right-of-way, secondary impacts can be controlled. The limiting of access reduces accessibility and has the tendency to direct social and economic activity. Free access routes on new location can have the effect of redistributing development in the area rather than supporting existing development patterns. Very often, it is this secondary development which has the most profound impact on the natural environment.



Clearly, a tradeoff that must be considered is that between the impacts to be anticipated when considering the alternative of reconstructing an existing highway versus relocating the route to a new corridor. The purpose of major highway system improvements is to foster social and economic benefits including reducing congestion and accidents, improving accessibility, etc. The unique character of the environmental attributes of the region requires special concern when highway improvements are considered. The region has a large number of environmentally sensitive areas, some of which should not be subjected to new highway construction. Others, if highway construction is necessary within them, should be protected through extensive mitigation of potential impacts. These areas are of several different types from national and state parklands to natural river areas, national and state forests, environmentally sensitive areas, and prime and unique agricultural land. Major highway improvements must take these values, as well as concerns for primary social, economic and environmental impacts, into consideration.



d. Non-Motorized – (Major Improvement Alternative)

Even a very large investment, such as an exclusive bikeway, would have little effect on the social, economic and environmental characteristics of either the region or individual communities.



e. Public Transportation – (Major Improvement Alternative)

Major investments and improvements to this mode imply substantially increased use of buses and less use of the automobile for personal transportation. Such a change could alter land use trends, change the location of social and economic activity, and increase the direct impacts caused by the automobile. Extensive use of the bus mode, like other mass transit modes, tends to concentrate business and residential development at the ends of service routes, and at specific points along the routes. Thus, over time, major service level increases in the bus mode may tend to reduce the rural dispersion of residential and business development and increase the urban population, if the current generally unrestrained use of the automobile is subjected to limiting factors, either through natural market forces, energy costs, etc., or through direct governmental restraints on the use of personal transportation. Land use planning could contribute to more concentrated settlement patterns which could be well served by bus transportation. These forces

could have the tendency to discourage strip development with the tendency toward commercial and residential settlement to be more clustered. Assuming that the existing highway systems have adequate capacity for a substantial increase in bus usage, the tendency would be for urban scatterization to be limited with the reinforcement of existing patterns of social and economic activity. Major improvements to bus transportation would have limited primary effects on the natural environment. Alterations in the settlement patterns described above could generally be anticipated to reduce pressure on land areas in the more remote parts of the region. However, more dense settlement patterns in some areas could result in alteration, overuse or even destruction of certain of the region's attributes if the dense settlement patterns were to be located in environmentally sensitive areas.

f. Railroads – (Major Improvement Alternative)

Presently, the rail mode in the Northwest Region is used to transport freight and does not provide passenger service. Should major improvements in the rail system include passenger service, the social and economic effects would be similar to those discussed for the bus mode.

Major improvements in rail freight service could encourage increased development of industries which harvest the region's natural resources. Changes in the alignment of railroads, however, are not likely to affect the location of these industries within the region. The locational effect would be minimal because the types of goods that the region exports have a high bulk to value ratio, and processing at the sources of the supply decreases transportation costs substantially. If coal becomes a more common source of energy for power generation, then improved rail service (including improved port/rail interface, and perhaps new railroad alignments) may become necessary. Any new alignments may have some direct impacts, chiefly displacements, but indirect impacts should be slight. However, improved rail service will tend to foster increased competition between the rail and truck modes which could result in reduced transport costs, thereby benefitting the user of either mode. Major improvements to the rail mode, if along existing rail rights-of-way, would not be expected to have a significant impact on the natural environmental attributes of the region. New rail locations would be anticipated to have primary impacts to the area traversed by the new route. However, rail lines are generally perceived to have substantially lesser impacts to the natural environment than arterial highway facilities.

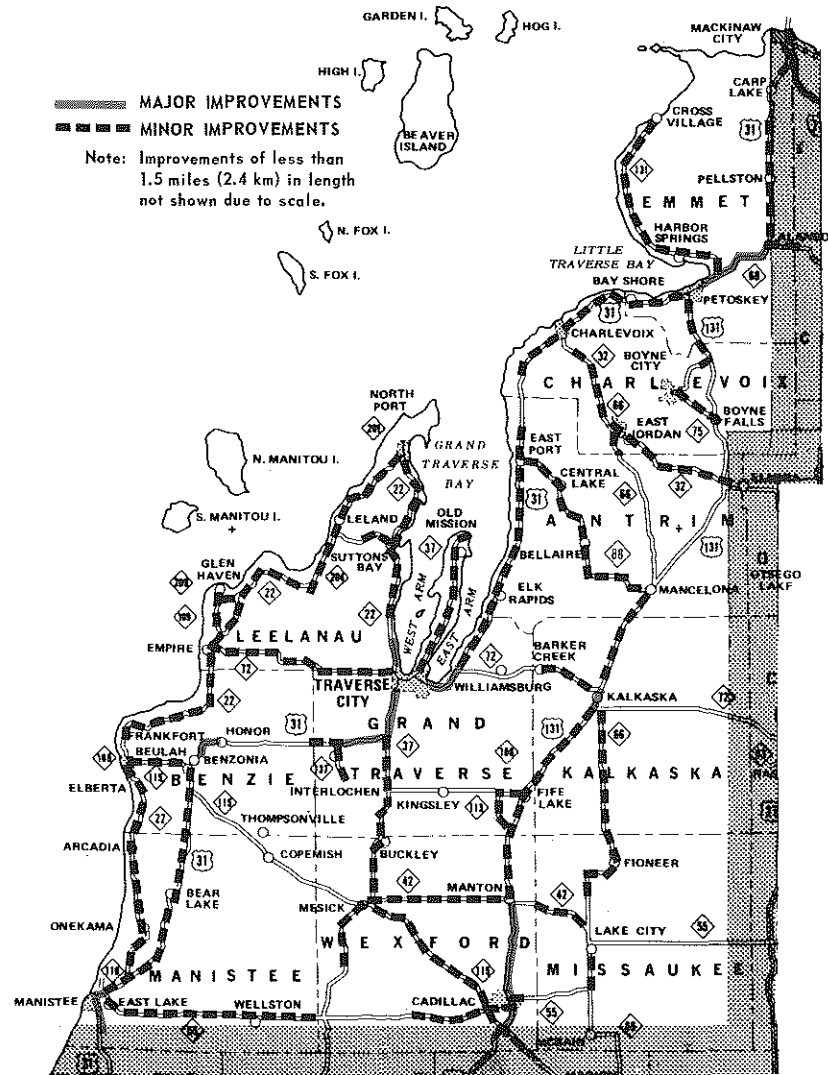
STUDY FINDINGS

Numerous conclusions have been reached during the course of this study. Obviously, they vary considerably in the degree to which they could affect transportation related decisions. While many of these findings are stated directly within the body of the report, others are less obvious. Therefore, the study team has attempted to objectively state some of those findings which are felt to be most pertinent to the choices before us. It is hoped that they will serve to highlight the major phases of the study and focus attention on the decisions that must be made.

The study findings include:

1. The Northwest Region is predominantly rural, with major concentrations of population and economic activity located in four areas: Cadillac, Manistee, Petoskey and Traverse City.
2. The region is undergoing considerable change, being one of the faster growing areas in the state and country.
3. Natural environmental features provide a wealth of recreational value to the entire state, contributing significantly to the attractiveness and economic base of the region.
4. Travel in the region reflects recreational interests, surging on weekends and during summer months.
5. Existing transportation facilities are experiencing varying degrees of deficiencies, a situation which is expected to worsen if remedial action is not taken.
6. There is a need to make multi-modal improvements to the region's transportation system to satisfy existing and future needs.
7. Future transportation needs are uncertain.
8. Energy and growth are two key variables in determining existing and future transportation needs.
9. Using energy and growth as variables produces a wide range of multi-modal transportation networks, each related to a particular future condition.
10. Numerous transportation system deficiencies occur in each future situation.
11. Some system deficiencies are common to all future situations.
12. There are basically two options to consider in dealing with these existing and future deficiencies:
 - a) Do something to correct the deficiency
 - b) Do nothing
13. Improvement options for correcting deficiencies are identified as minor or major (see page 62).
14. Minor system improvements required to eliminate deficiencies common to all futures include:
 - a. Aviation
 - Antrim County Airport: Overlay runway, construct taxiways, install lighting and pavement marking.
 - Cherry Capital Airport: Construct and light taxiway, expand auto parking and purchase snow removal equipment.
 - Emmet County Airport: Install perimeter fencing and purchase snow removal equipment.
 - Wexford County Airport: Construct taxiways, install instrument landing system and install perimeter fencing.
 - b. Commercial Harbors
 - None

EXHIBIT E
HIGHWAY DEFICIENT SEGMENTS
REQUIRING MAJOR AND MINOR
IMPROVEMENTS



c. Highways

Minor improvements are shown on Exhibit E.

d. Non-Motorized

Construct Class II Bikeway along M-22 near Frankfort.

e. Public Transportation

Continue present level of subsidy and/or assistance programs for:

Rural Bus Service in Antrim and Manistee Counties.

Local Bus Service in Traverse City and Cadillac.

f. Railroads

Continue present level of subsidy for rail freight operations.

15. Major System improvements required to eliminate deficiencies common to all futures include:

a. Aviation

Purchase 60 acres (24 hectares) and construct, light and mark a north/south runway at Wexford County Airport.

b. Commercial Harbors

Promote Integrated Tub-Barge operations at Charlevoix, Petoskey and Traverse City.

Increase Charlevoix Harbor's channel depth to 25 feet (7.6 meters).

c. Highways

Major improvements shown on Exhibit E.

d. Non-Motorized Transportation

Construct Class I or Sidewalk Bikeways to connect with local systems proposed for Traverse City, Cadillac and Petoskey.

e. Public Transportation

Establish Regional Bus Service to connect communities of Petoskey, Charlevoix, East Jordan and Boyne City.

Establish Local Bus Service in Petoskey, Charlevoix, Boyne City, East Jordan, Frankfort and Kalkaska.

Establish Rural Bus Service in Benzie, Charlevoix, Emmet, Grand Traverse, Kalkaska, Leelanau, Missaukee and Wexford Counties.

f. Railroads

None

FUTURE PLANNING ACTIVITIES

As previously indicated, an objective of the Northwest Regional Transportation Study is to identify deficiencies and recommend necessary changes to the Region's various transportation systems. However, in order for this objective to be fully realized, some additional planning steps are required. These remaining planning steps are illustrated in the accompanying diagram and discussed below.

PUBLIC HEARINGS

Purpose

The Northwest Regional Transportation Study has now reached the public hearing stage. The formal public hearing represents a crucial phase in the study since it occurs prior to a decision-making point in the planning process. It is conducted at this time because flexibility still exists to make alterations, adopt new proposals, or proceed towards plan implementation. The public hearing will insure that all interested agencies, political jurisdictions, groups and individuals will have the opportunity to make or submit public statements, ask questions, voice disagreement, offer support, or make suggestions concerning the Regional Study. Questions and statements will be answered or discussed and a public record made of these proceedings. In order to permit greater public understanding of the issues considered, this report is being made available for public review before the hearing.



The previous section of this report summarizes the primary findings of the study. This brings us to a major decision point. Before any further action can be taken, the options available to us must be thoroughly discussed with federal,

state and local public and private interests. A public hearing offers this opportunity.

Decision Point

As mentioned, we have two choices available to us:

- 1) Do something to correct identified deficiencies.
- 2) Do nothing.

Both options will have advantages and disadvantages, as pointed out in the impact assessment section of this study. Although the option of doing something to eliminate deficiencies implies obvious benefits, it may also cause certain unavoidable impacts. Likewise, the do-nothing alternative may appear to be devoid of negative impacts because nothing would be done to disrupt an area. But in reality, doing nothing could result in a continuing or worsening travel condition, thereby producing undesirable results.

If a decision is made to do something, we will continue our efforts to resolve those deficiencies which are common to all futures, thus insuring the highest degree of probability for sound investment. As shown on page 62, numerous alternatives are available for satisfying deficiencies of a certain type (minor or major). The Department's efforts would then be directed toward obtaining more detailed information that will assist in selecting alternatives which represent the most desired course of action.

If a decision is made to do nothing, planning efforts will be focused on other areas having identified transportation deficiencies.

But for now, the decision is centered around the question: Shall we do something -- or do nothing?

Your assistance in making this decision is needed.

EVALUATION AND MODIFICATION

After the public hearings have been conducted, the study team will evaluate the public comments received. They will be looking for new transportation related issues or concerns that have not been fully identified in the current plan-

ning efforts. Upon completion of this review necessary process modifications will be made to insure that proper considerations will be given to all pertinent issues before making recommendations.

Modifications to the planning process have been made before. In fact, the current planning process, reflecting future energy and growth concerns, is the result of modifications brought about by past public meetings.

RECOMMENDATIONS

Post-decision meetings will be held in the region to present the recommendations derived from the Northwest Regional Transportation Study. These meetings, a requirement of the Michigan Action Plan, are important to the public involvement process since they provide an opportunity to view and understand exactly what has been recommended. They also illustrate the logical sequence of the planning process, making key decisions only after extensive studies have been completed. Because of the general nature of the Regional Study, these recommendations will be geared toward intensifying planning activities in areas having identified transportation problems.

As illustrated in the preceding diagram, recommendations can be made to initiate a Sub-Area Study or begin detailed Project Planning. This decision is dictated by the degree of complexity of the problems identified in the Regional Study. These two planning phases are further explained in the following sections.

Sub-Area Studies

One possible recommendation of the Regional Study is to concentrate planning efforts in one or more geographic areas of the region. These Sub-Area Studies are necessary when an area, identified at the regional level, contains several potential modal projects that can influence one another. In these instances, a sub-area analysis is performed to test alternative solutions and identify specific parts of each modal network which will require project initiation.

Sub-area studies interrelate with regional studies but usually emphasize the special transportation needs of a particular community. Therefore, a stronger community involvement is reflected in the multi-modal transportation plans developed for the area.

These studies also include a refinement of various social, economic and environmental impacts associated with various transportation alternatives. And, in some ways, they lay the groundwork for subsequent project planning stages.

Preliminary areas identified as potential candidates for Sub-Area Studies are: Traverse City, Cadillac, Petoskey and Manistee.

Project Planning

As shown in the diagram, project planning can be recommended from either the Sub-Area Study or directly from the Regional Study. The first situation was discussed under Sub-Area Studies. The latter situation would occur when project needs are identified which would not likely involve another mode or another facility of the same mode.

Project planning consists of performing detailed studies on a specific part of a transportation system. Realistic alternatives for solving an identified problem are analyzed, with the most appropriate alternative being recommended for implementation.

Highway projects represent the most complex form of project planning, especially where new locations are being considered. As a result, additional highway corridor, alignment and design studies are required as a logical sequence in the project planning stage.

Project planning efforts for other transportation modes are usually not as involved since they have fewer alternatives to consider. At the present time, several modal projects in the Region are being planned. The Regional Study will lend support to these projects since they conform with identified transportation problem areas.

The Regional Study will also recommend initiation of some new project planning efforts where it has been determined that these projects will be in the best interest of the region and will not significantly affect other transportation proposals.

Listed below are examples of project planning recommendations which could evolve either directly from the Regional Study or through a Sub-Area Study.

1. Subsidizing abandoned Chessie System trackage
2. Reconstructing M-72 in Leelanau County
3. Starting a Dial-A-Ride service in Kalkaska
4. Constructing a bikeway in Petoskey
5. Port development in Frankfort
6. Improving air service to Manistee
7. Rerouting truck traffic around Cadillac
8. Increasing intercity bus service to Traverse City
9. Constructing a highway bypass around Cadillac
10. Widening M-66 south of Lake City
11. Etc.

PROJECT IMPLEMENTATION

Recommendations from project planning efforts involve all modes of transportation. Individual projects will be programmed for implementation based upon recommended priorities and available funding. Projects identified at the regional level will compete for construction priority with other projects throughout the State.

SYSTEM MONITORING

In addition to specific project recommendations, the findings of the Regional Study will also be used to guide development of statewide modal transportation plans. The study represents an ongoing planning process, continually monitoring the changes in the region's social, economic and environmental conditions. As these changes begin to affect various transportation systems, the Regional Study will initiate new proposals to adjust these systems accordingly.

Photographs Courtesy of:

Department of Natural Resources
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Michigan Tourist Council

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In addition, the Michigan Department of State Highways and Transportation has a toll free telephone number. A staff member is available to answer questions. (1-800-292-9576)