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Michigan Transportation Research Program

-final report-

Leonard Newland
Harvey Zachem

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MICHIGAN TRANSPORTATION RESEARCH PROGRAM

Final Report

October 1981

Highway Safety Research Institute
The University of Michigan
Ann Arbor, Michigan 48109

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15. Supplementary Notes MTRP is an organization composed of participants from Michigan's major universities and industry. MTRP advises the Bureau of Urban and Public Transportation and other elements of Michigan government on Transportation problems, issues, and opportunities.

16. Abstract

This report describes the activities of MTRP during the past fifteen months. Studies conducted by MTRP and the nature of the MTRP organization are described.

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The opinions, findings, and conclusions expressed in this report are those of the authors, and do not necessarily represent the views of the Michigan Transportation Commission or the Michigan Department of Transportation.

Contents

I. Introduction

This report summarizes the activities and actions of the Michigan Transportation Research Program (MTRP) for the time period October 1, 1980 to September 30, 1981. Due to the significant reduction in funding for MTRP during this time period, activities were reduced to meetings of the Advisory Committee, the solicitation of funds from selected foundations (see Appendix I), and the completion of a single study task (see Appendix II). None of the MTRP Ad Hoc committees or task forces met during this time period. (See Appendix I for a list of committees and committee members.)

II. Program Activities

The Advisory Committee met on April 30, 1981 and September 23, 1981 in Ann Arbor. There were several other meetings during the year between the Co-Chairman and the Executive Secretary. A central topic discussed at all of these meetings was the future of MTRP and how it can better assist the state. No funds can be provided MTRP by the State Legislature during FY 1981-82, so the question of funding is crucial.

The Committee and the Program Director agreed that MTRP should go forward in some form. It was felt that MTRP provides a general overall perspective to UPTRAN which it would not have, otherwise. It was felt that MTRP serves to provide communication and develop joint efforts between the universities and that this was of considerable value. It was agreed that after October 1, 1981 the Committee will continue to meet at the expense of the individual members.

It was suggested that MTRP collectively identify research projects that have short term cost reduction pay offs in the Michigan Transportation program. It was felt that the legislature would be receptive and could find money for cost reduction.

It was felt that there should be more effort on joint proposals for Federal funding. The original MTRP "mandate" was to provide UPTRAN advice on UPTRAN priorities and research and demonstration projects. The slash in UPTRAN funding has made this mandate no longer relevant.

In this regard, Dr. William Taylor (MSU) indicated that he has found strong interest in the Office of the Secretary, U.S. Department of Transportation, for a program concept that would assess the impacts on state and local governments of changing federal funding mechanisms for public transportation. Dr. William Drake (UM) prepared a concept proposal document (see Appendix III) for review by the Advisory Committee members. Taylor and Drake will visit the U.S. Department of Transportation and submit the document for review.

Appendix II presents a survey of state and regional level organizations and activities to serve as a reference for contemplating future alternative roles for MTRP. Of interest is the transportation planning study of the Great Lakes Basin Commission. Only the initial portion of the planning project could be completed because the Commission's budget (federal funds) was abolished for FY 1981-82. The Commission's staff ceased to exist on October 1, 1981. The original scope of work for the study and an executive summary of the final report can be found at the end of Appendix II.

APPENDIX I

APPENDIX I

PROSPECTUS

The Michigan Transportation Research Program (MTRP)

Overview

MTRP originated as an experiment to determine if it could serve as a viable mechanism for organizing the professional and technical competence resident in Michigan and bringing it to bear on problems of state-wide importance, in this case, in the field of transportation. In Michigan, transportation is of crucial economic importance. Michigan's three largest industries--automobile manufacturing, tourism, and agriculture--are heavily transportation dependent and hence petroleum dependent. As a result the state's economy is facing an uncertain transition for the balance of this century. During this process an organization like MTRP is well suited to anticipate risks and hard decisions which will face state government, and in a positive sense indentify opportunities for the public and private sectors which inevitably grow out of the dynamics of change.

In a special transportation message to the Michigan State Legislature in 1975, Governor William G. Milliken proposed that the transportation expertise within the private and public sectors and the academic community of Michigan be brought together in order to advise state government on the technical and socio-economic aspects of Michigan's transportation system and its development. Transportation was defined in its broadest sense, including all modes: surface, maritime and air -- both passenger and freight. The Governor's office asked Dr. Charles G. Overberger, Vice President for Research, The University of Michigan to call a state-wide conference of transportation professionals to develop a means of implementing the Governor's proposal. From this conference and subsequent discussions, the MTRP emerged and was organized in the fall of 1976. MTRP was launched with a $180,000 per year contract from the Michigan Department of Transportation.

The Program Director of MTRP is Charles G. Overberger. He is supported by a state-wide Advisory Committee of professionals in transportation and related fields. The committee is comprised of individuals at the Dean, Chairman and Research Director level from Michigan's major universities, and

executives from Michigan's auto industry. The co-principal investigators of the program also serve as Co-chairman of the Advisory Committee. They are Dr. Robert L. Hess, Director, Highway Safety Research Institute, The University of Michigan; and Dr. William C. Taylor, Chairman, Civil Engineering, Michigan State University[1]. The Executive Secretary and Staff Manager is Leonard E. Newland.

Over time, the Advisory Committee has created several Ad Hoc Committees to look into specific transportation issues, such as transportation for the elderly and handicapped, energy efficiency in transportation, and demographic and land use aspects. Examples of the results of these activities are:

1) MTRP commissioned the development of a "white paper" on the implication of future transportation energy shortfalls for Michigan. Recommendations were made that the Governor form a task force to assist in the "management of change" in the state's economy, and in the reduction of adversary relationships between Michigan's private sector and federal regulatory agencies. The Advisory Committee and the Energy Efficiency Ad Hoc Committee worked closely to form an MTRP consensus. The report's recommendations were positively received by the Governor's office.

2) The National Transportation Policy Study Commission of the U.S. Congress, and MTRP jointly funded a study of Michigan's inter-city bus industry and the implications of public policy for the health of that industry and the level of service provided its' ridership. The findings of this study among many other studies are to be considered by the Congress in formulating national transportation policy in its next session.

3) The Ad Hoc Committee on Transportation for the Mobility Limited identified the need to develop training materials for the drivers and users of buses for the elderly and handicapped. Committee members and the MTRP staff worked

[1] See Attachment 1 for a list of MTRP participants and committees.

with state government and the U.S. Department of Transportation, Urban Mass Transportation Administration, to lend weight to the need for such projects. A federal program is underway and training materials will be available in the next several months.

A staff consisting of graduate students from the major universities was formed to support the activities of the various committees and to perform short term studies at the request of the Advisory Committee. The staff, faculty and private consultants also performed studies at the request of the Michigan DOT and the State Legislature[2]. The staff has provided informational support to local agencies in their attempts to secure federal funding for transportation projects and urban renewal programs. The Staff Manager and committee members maintained ongoing liaison with Federal agencies which could fund transportation research and demonstration programs of national significance.

The Advisory Committee receives suggested research topics from its Ad Hoc Committees, its own members, and agencies and individuals outside of MTRP. It evaluates these suggestions with regard to Michigan needs and its own criteria with regard to the probability that useful results will occur. The most important projects are then ranked in order of priority and submitted to the Program Director for his review and subsequent recommendations to the Michigan Department of Transportation[3]. These recommendations are reviewed by the Department for inclusion in its annual research and demonstration program. Other projects are identified for federal funding and the Staff Director and Committee members work to obtain federal funds.

Funding Solicitation

In 1979 MTRP funds were drastically reduced by the State Legislature due to budget restrictions and changing priorities. The Advisory Committee still meets but the Ad Hoc Committees do not. The staff has been reduced to a part-time person; graduate students can no longer be employed. Funds are not available to commission studies.

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[2]See Attachment 2 for a list of MTRP reports and authors.

[3]See Attachment 3 for lists of prioritized projects recommended by MTRP to Michigan Department of Transportation for the current and past fiscal years.

Therefore, grants and gifts are sought from foundations, corporations, and individuals to restore MTRP to its former level of activity. Attachment 4 contains an estimated budget which could achieve this. Funds will also be solicited from state government. As noted in Attachment 4, Committee Members, Committee Chairman, and the Program Director serve at no compensation; travel and committee expenses are covered, however. The staff and consultants are compensated.

Depending on the extent to which the funding goal can be met, MTRP will embark on all or part of the following activities:

1) the MTRP Ad Hoc committees will be reassembled or reconstituted and will meet every two months or quarterly.

2) the MTRP staff will be reestablished and will employ graduate students under the direction of the Executive Secretary.

3) the MTRP Advisory Committee will enter into deliberations and/or commission studies and assessments that take a longer-term view of transportation problems and issues of high priority to the State of Michigan. Its findings will be communicated to state government and appropriate units in the private sector.

4) MTRP will be prepared to evaluate research and assessment activities suggested by not only its own members but by government and private-sector units or individuals.

5) It will recommend an annual research and demonstration agenda to the Michigan Department of Transportation.

6) MTRP will communicate its experience to other states and encourage the use of the MTRP organizational form to mobilize professional talent within states and regions to confront issues not only in transportation but in energy, housing, health care delivery systems, and the fields of significant interest to both the public and private sectors.

Three things have become clear from the MTRP experience thus far. For such an organization to be successful:

1) the participants must believe honestly and completely in the need for its existence, the need to bring the best of professional competence to bear on public issues which rest on the complex interplay between technology, socio-economics and politics and the need to export this experience nationally. The participants in MTRP by their actions and commitments to public service believe in all of this, unanimously.

2) the academic community must be involved, as well as the private and public sectors. The kinds of issues and problems faced by MTRP in the field of transportation alone are a preview of a long term, emerging agenda which will need to be addressed by a new breed of college graduates with new or traditionally unfamiliar skills leading to perhaps whole new careers in every sector of our society. The research opportunities which have grown from MTRP activities have proven to be compatible and supportive of educational development. The forum provided by MTRP to senior individuals in academia, corporations, and state government has given them the opportunity to converse and deliberate on issues and needs, at hand or anticipated. With this they are beginning to jointly perceive the challenges that lie ahead for the nation's young people and our institutions of higher learning.

3) sufficient degrees of freedom must be obtained for an organization like MTRP to exercise its collective intelligence openly, prescribe its own actions as well as consider requests placed before it, and develop and support its own findings. This is not easily assured with government sponsorship, solely. Both public and private sponsorship is the most desirable,since the contributions of MTRP will be applicable to all sectors.

ATTACHMENT 1

The Michigan Transportation Research Program

Director

Dr. Charles G. Overberger, Vice President for Research,
The University of Michigan.

The Michigan Transportation Research Program Advisory Committee

Dr. William C. Taylor, Chairman, Civil Engineering, 281 Engineering Bldg. Michigan State University, East Lansing, Michigan 48824 (Co-Chairman) 517-355-5107.

Dr. Robert L. Hess, Director, Highway Safety Research Institute, 2901 Baxter Road, The University of Michigan, Ann Arbor, Michigan, 48109, (Co-Chairman) 313-764-6504.

Dr. Robert W. Kaufman, Director, Institute of Public Affairs, Western Michigan University, Kalamazoo, Michigan 49008, 616-383-3983.

Dr. James A. Kent, Dean, College of Science & Engineering, Room E108, University of Detroit, 4001 West McNichols, Detroit, Michigan 48221 313-927-1216.

Dr. Tapan K. Datta, Chairman, Department of Civil Engineering, 667 Merrick, Wayne State University, Detroit, Michigan 48202, 313-577-3793.

Mr. Chris M. Kennedy, Manager, Auto Safety Relations, Chrysler Corporation, Box 1919, Detroit, Michigan 48231, 313-956-3953.

Dr. William D. Drake, Professor of Urban & Regional Planning, School of Natural Resources, 2028 Dana Building, The University of Michigan, Ann Arbor, Michigan 48109, 313-761-1357.

Mr. Alvin E. Marshall, Environmental Research Office, Ford Motor Company, Suite 704 East, Parklane Towers, 1 Parklane Blvd., Dearborn, Michigan 48126, 313-337-7535.

Mr. George T. Burton, Jr., Director, Automotive Program Management, Bendix Research Laboratories, Bendix Center, Southfield, Michigan 48076, 313-827-6095.

Mr. Henry F. McKenney, Research Scientist, Environmental Research Institute of Michigan, 3300 Plymouth Road, Ann Arbor, Michigan, 48105, 313-994-1220.

Dr. Michael J. Rabins, Chairman, Mechanical Engineering Department, 667 Merrick, Wayne State University, Detroit, Michigan 48202, 313-577-3843.

Dr. Sung Lee, Director, Keweenaw Research Center, Michigan Technological University, Houghton, Michigan 49931, 906-487-2750.

(These subcommittees are no longer active:)

Energy Efficiency

Dr. Robert Kaufman, Chairperson
Western Michigan University

Dr. Donald Cleveland
University of Michigan

Mr. Henry McKenney
Environmental Research Institute
of Michigan

Dr. Herman Koenig
Michigan State University

Demonstration & Development Program

Dr. Robert L. Hess, Co-Chairperson
Highway Safety Research Institute

Dr. William C. Taylor, Co-Chairperson
Michigan State University

Mr. George Burton
Bendix Research Labs

Bus Evaluation

Mr. Herb Wood, Chairperson
Chrysler Corporation

Dr. Ernst Petrick
U.S. Army, TARADCOM

Dr. Naeim Henein
Wayne State University

Mr. Richard Winston
American Motors General

Mr. Charles Kuehl
Southeastern Michigan
Transportation Authority

Transportation for the Mobility-Limited

Dr. James Kent, Chairperson
University of Detroit

Dr. Tapan Datta
Wayne State University

Ms. Nancy Kidney
Macomb County Essential
Transportation Service

Mr. Thomas McDonald
Chrysler Corporation

Dr. J. Raymond Pearson
University of Michigan

Dr. Julius Cohen
University of Michigan

Ms. Jeanne Fitzgerald
Wayne State University

Ms. Euline McCorkle
Ann Arbor Center for
Independent Living

Dr. Leon Pastalan
University of Michigan

Mr. Kunwar Rajendra
Lansing Planning Department

Hybrid-Electric Vehicle

Dr. James Kent, Chairperson
University of Detroit

Mr. George Burton
Bendix Research Labs

Dr. Gene Smith
University of Michigan

Transportation and Urban Demography Task Force

Dr. William C. Taylor, Chairperson
Michigan State University

Mr. Daniel L. Jones, Jr.
Systems Engineering SEMTA

Mr. Gary Krause
Market Research & Planning SEMTA

Dr. Michael J. Rabins
Wayne State University

Dr. Robert Smock
University of Michigan, Dearborn

Dr. Barbara B. Murray
University of Michigan, Dearborn

Dr. Eugene D. Perle
Wayne State University

Mr. George N. Skrubb
Oakland County Administrative

ATTACHMENT 2

MICHIGAN TRANSPORTATION PROGRAM STUDY REPORTS: as of September 1981

OTHER REPORTS:	Date	Title
UM-HSRI-77-24	5/20/77	"Review of Research Evidence Bearing on the Desirability of Using Retro-reflective License Plates in Michigan" (P.L. Olson, D.V. Post; UM-HSRI)
UM-HSRI-77-59	7/77	"A Concise Annotated Bibliography of the Energy Efficiency of Various Transportation Modes" (W.J. Milczarski; MTRP Staff)
UM-HSRI-77-60	10/77	"A Study of Alternative Concepts for Providing a Lake Michigan Ferry Service" (R. Scher, V. Este, H. Bunch; UM) *INCLUDES AN "EXECUTIVE SUMMARY"
UM-HSRI-78-32	8/78	"Optimization in Dial-a-Ride Systems Analysis, A Comparison of Recent Modelling and an Expected Value Model" (N. Wallace; MTRP Staff)
UM-HSRI-78-33	8/78	"The Potential for Use of Alternative Fuels in Michigan Public Transit Systems" (H. Bunch; UM - HSRI)
UM-HSRI-78-49	9/78	"An Assessment of Waste Oil Utilization Potential in the State of Michigan" (H. Bunch; UM - HSRI)
UM-HSRI-78-35	8/78	"An Informal Study of Transit Bus Tire Procurement in Michigan" (J. Dries; MTRP Staff)
UM-HSRI-78-39	8/78	"A Preliminary Analysis of the Potential Legal Issues Associated with Car and Van Pooling in Michigan" (M. Greyson, L. Rosenstock; UM -HSRI)

Number	Date	Title
UM-HSRI-78-41	9/78	"Roles for the Private Sector in Public Transit" (J. Farrell; MTRP Staff)
UM-HSRI-78-44-1	9/78	"A Study of Digital Data Communication Features in Public Transit Systems" (Executive Summary and Technology Assessment) (T. Datta, B.L. Bowman and M.J. Cynecki; Wayne State University)
UM-HSRI-78-50	9/78	"Level-of-service Concepts in Urban Public Transportation" (W. Taylor and J. Brogan, Michigan State University)
UM-HSRI-78-60	9/78	"A Study of the Michigan Intercity Bus Industry" (R. Kaufman; Western Michigan University, W. Taylor; Michigan State University) FORTHCOMING: (sponsored jointly by MTRP and the National Transportation Study Policy Commission - NTPSC, The U.S. Congress).
UM-HSRI-79-13	4/79	"Coping with Energy Limitations in Transportation: Proposals for Michigan." (H. Koenig, Michigan State University; R. Kaufman, Western Michigan University).
UM-HSRI-79-56	8/79	"Public Transportation Interim Selection Criteria and Management Objectives" (L. Newland, MTRP Executive Secretary)
UM-HSRI-80-68	9/80	"An Assessment of the Technical and Economic Feasibility of the Development and Manufacture of Light Rail Vehicles in Michigan" (L. Newland, M. Conboy, et.al.)

ATTACHMENT 3

MTRP Recommended Research and Demonstration Topics

FY1979-80

Recommended Topics (in decending order of importance)

1.	Transportation Energy Contingency Plan	Wayne State University
2.	Institutional Barriers to the Use of Public Transit	Michigan State University
3.	Structural Integrity of Small Buses	Michigan Technological Universit
4.	Travel Demand of the Elderly and Handicapped	Wayne State University

(These recommendations have been approved by the Michigan Department of Transportation.)

FY1980-81

Recommended Topic (in decending order of importance)

1.	Restraint systems and tie-downs for transportation of the handicapped	University of Michigan
2.	Traffic flow improvements (to increase transportation energy efficiency)	Chrysler Corporation
3.	Inter-city bus and car pooling	University of Michigan
4.	Criteria for expanding or reducing a transit network	Michigan State University
5.	Transit demand elasticity as a function of service reliability	Wayne State University
6.	Economic impact on Michigan industries and highways due to changes in truck weight and dimensions	Wayne State University
7.	Estimation of the sensitivity to rising energy costs of transit trip demand and trip length	Wayne State University
8.	Energy efficient alternatives for sustaining tourists travel in Michigan	University of Michigan
9	Evaluation of alternative multi-modal transportation systems for movement of rural freight	Michigan Technological Universit

10.	Future scenarios for the development of the Michigan Public Transportation System	University of Michigan
11.	A monitoring system to measure the effectiveness of state transportation services	University of Michigan
12.	Impacts of diversion of freight to trucks resulting from railroad abandonment and rail service deterioration	Wayne State University
13.	Planning for intermodal rural transportation	Wayne State University
14.	Use of schoolbusses for public transportation-potentials and impediments	Wayne State University
15.	Institutional issues on the use of railroad rights of way for public transportation in Michigan	Wayne State University

(These recommendations are being considered by the Michigan Department of Transportation.)

ATTACHMENT 4

Estimated Budget - MTRP
(One Year)

1.	Staff Personnel and Consultants	159,000
2.	Staff Travel and Materials	12,000
3.	Committees Travel and Expenses	9,000
	Total	$180,000

The personal time contributed by the approximately 30 professional participants in MTRP is estimated to be $50,000 per year.

THE FORD FOUNDATION
320 EAST 43RD STREET
NEW YORK, NEW YORK 10017

DIVISION OF NATIONAL AFFAIRS

July 11, 1980

Mr. Leonard E. Newland
Executive Secretary
Michigan Transportation Research Program
Highway Safety Research Institute
The University of Michigan
2901 Baxter Road
Ann Arbor, Michigan 48109

Dear Mr. Newland:

This is in response to your recent letter to Mr. Howard Dressner inquiring about support for the Michigan Transportation Research Program. My apologies for the delay in getting back to you, but it was necessary to have your proposal reviewed by several offices in the Foundation. And after the delay, I'm afraid the news is not good. One of the casualties of the recent contraction in Ford Foundation spending has been our interest in transportation planning, along with urban and regional planning. Because of tight budgets, we are just not active in these fields and for this reason, I cannot be encouraging about working with you. The Michigan program sounds to be an imaginative and useful approach to a very difficult problem and we wish you every success in finding the resources necessary to continue it. I'm sorry that we are not able to help you.

Sincerely,

William C. Pendleton

WCP/me

cc: Willard J. Hertz

ALFRED P. SLOAN FOUNDATION
630 FIFTH AVENUE
ROCKEFELLER CENTER
NEW YORK, N.Y. ~~10020~~ 10111

JAMES D. KOERNER
PROGRAM OFFICER

May 29, 1980

Mr. Leonard E. Newland
Executive Secretary
Michigan Transportation Research Program
Highway Safety Research Institute
The University of Michigan
2901 Baxter Road
Ann Arbor, Michigan 48109

Dear Mr. Newland:

Albert Rees has asked me to reply to your May 19 letter. I was interested to read the prospectus you sent, but am afraid we cannot be of help.

We do have an interest in science, engineering, economics, and management (all of which are relevant to MTRP), but our activities in these fields are mainly in instructional programs and, in limited areas, in research. MTRP, valuable though its work is, is simply outside our domain.

I am sorry to have to respond in this fashion.

Sincerely,

James D. Koerner

James D. Koerner

JDK:gk

CHARLES STEWART MOTT FOUNDATION

August 25, 1980

Mr. Leonard E. Newland, Executive Secretary
Michigan Transportation Research Program
Highway Safety Research Institute
The University of Michigan
2901 Baxter Road
Ann Arbor, Michigan 48109

Dear Mr. Newland:

Thank you for sending the additional materials -- particularly the white paper on Coping With Energy Limitations in Transportation. Your request for Mott Foundation support of the work of the Michigan Transportation Research Program has been carefully reviewed by the Foundation. While we all agree that this is an issue that does affect the focus of the Foundation's grant program -- namely the effective functioning of community, staff do not feel that transportation as an issue can be tied to our existing grant priorities. Our limits of resources necessitate selected demonstration projects, and for these reasons we must decline to participate with you in your work.

I regret that we cannot be of support. You have made us more aware of an issue that is of growing importance to our state and I wish you success in securing the resources needed to continue your work.

Sincerely,

Robert S. Collier
Program Officer

RSC:tja

APPENDIX II

APPENDIX II

Capability of The University of Missouri For Public Technology Service

The purpose of this project was to evaluate current progress in public technology in one university system, and assess the changes needed to improve public technology service. The University of Missouri was used as a model. It has a four campus system. It was found that the University extension service is quite good in its delivery system to local governments, however providing services to state agencies is much more haphazard. The project also found that Missouri has not yet found a way to provide needed technical information and research services to its state legislature. In Missouri, as in many other states, the extension service attempts to make the facilities of the University available throughout the state. It is a means for making the University's resources readily accessible to the people.

Emerging Forces in Conflict - Upper Midwest Council

The Upper Midwest Concil is a non-profit, non-partisan corporation promoting better understanding of regional choices for the future. The aim of this study is to identify and analyze the most significant emerging forces impacting upon business and other institutions in the Upper Midwest in the next ten years.

National Conference of State Legislatures Committee on Science and Technology - 1974 Annual Activities Report - 1974 Annual Activities Report

The initial project undertaken by the Committee was a survey to identify existing scientific and technical staff within state legislatures. One of the committee's overall objectives is to create an atmosphere among state legislatures that will be conducive to implementing policy changes in the methods of procuring scientific and technical information/advice. States inquire as to ways and means of either procuring technical expertise or establishing a Science/Technology advisory mechanism. In this way the committee serves as a clearing house for information.

Statewide Transportation Analysis and Research (Michigan)

This document published by the Statewide Transportation Planning Procedures Section lists all previous reports published by the Section, and gives a synopsis of the contents of these reports.

National Science Foundation-Division of Intergovernmental Science and Public Technology

This document gives project summaries of individual projects, in which legislative agencies of state government played a role or were subjects of the study.

Power To The States - Mobilizing Public Technology

The main point in this document is the need to harness science and technology in solving our most severe problems. State governments have a growing need for a new public technology - that is technological innovation to increase productivity in delivering government services to the citizens. State governments are generally poorly organized to perform the analysis and specific work needed for developing public technology. Their personnel systems leave much to be desired in attracting the scientists, engineers, and technicians they need. This document therefore recommends involving more technical people in government, and concurrently a partnership between the public and private sectors, with state universitites also playing a role. In this way states can apply the great resources of science and technology to administration problem solving and policy making. Technology cannot be brought off the shelf by the states, it must be developed in response to specific requirements.

Intergovernmental Science and Public Technology - Director's Program Review

The Division of Intergovernmental Science and Public Technology was established in August of 1975. It has been charged with four principal objectives (1) to integrate science and technology more fully into state and local decision making, (2) to encourage state and local innovation, (3) to test federal incentives

for increased private sector investment, (4) to establish two-way communications between the research and user communities. Each of these objectives reinforces the overall goal of accelerating the diffusion and use of scientific and technological information throughout all elements of our nation.

Innovations in Management of Research and Development

A Policy Interaction Potential (PIP) Index was used to evaluate both the projects and the program containing them in terms of three functions: information, instruction, and policy. The PIP Index was applied to programs and projects on three levels: international, federal and state. Research and development planning and control techniques were used as a basis for setting up the PIP Index.

Among the benefits of PIP (1) it can give management a good idea of the policy value of its programs and projects, just by the use of some numbers, (2) PIP is versatile. It can be applied to a program, to a project, or to tasks within a project, (3) PIP is inexpensive. It is offered in a preliminary way as an easy inexpensive time saving tool to help management obtain the best results from its research and development effort.

Science and the Illinois General Assembly

This document recognizes that the more complex our society becomes, the more dependent upon technology for survival it also becomes. There must be an integration of scientists and policy makers, for this cooperation will be highly influential in improving public policy making.

The Illinois Legislative Council (ILC) consists of 20 members drawn from both houses of the General Assembly. It directs the activities of the Research Unit. It is essentially a board of trustees for the Research Unit. The

professional staff of the Research Unit includes four lawyers, six political scientists, a former newspaper man, and a researcher. The groups served include members of the Illinois General Assembly, the Governor, the staffs of the executive and legislative branches, managers of units in state code agencies, and local government officials.

The ILC's Research Unit and Sangamon State University's Science Division which is located in Springfield, cooperate in developing science in public services for the Illinois General Assembly.

Priorities and Efficiency in Federal Research and Development (1976)

About a dozen states now have some version of a legislative support office concerned with science and technology. States and localities have traditionally played a minor role in research and development, and the prospects for much growth in state government expenditures for R&D are not good in the near term, largely because of constraints on both federal and state budgets.

State and local governments have a growing need for scientific and technical capacity - the in-house know how to cope with problems of decision making, which involve close judgements in areas of scientific or technical dispute or uncertainty. Federal policy leadership to integrate state and local governments into the R&D enterprise has been centered in the National Science Foundation (NSF). At present there are isolated patterns of co-operation in shaping common needs for R&D between the federal government and states and localities in highway research and environmental protection.

University research and development is not of much help to states and localities. The needs of governments are likely to be for quick answers to todays problems, whereas University R&D is characteristically long range and fundamental. A few states, like Illinois, have bypassed the University by creating autonomous institutes of the think tank variety in order to create new and better incentives for responsive R&D.

State of California - Science and Technology Program

The central theme of the project has been to harness science and technology and apply it intelligently at various levels of state government to aid decision making and problem solving. Problems observed include the energy crunch, urban sprawl, environmental pollution, health care services, to which solutions are recognizable. The reservoir of talent available at colleges and universities, federal research and development installations, high technology firms, and research organizations are tapped to assist the state to seek solution to many of the problems it faces. The council of state governments, and the Federal Council for Science and Technology have recommended action by the Federal Government and the states to create new programs and institutions in this field. Emphasis in California was placed on creating a state office of Science and Technology.

South Dakota

The South Dakota Academic Resources Council (ARC) is made up of representatives of all South Dakota colleges and universities, for the purpose of providing their knowledge and talent as input into state government on matters of state policy. The Council also coordinates programs involving student interns so that their talents may be utilized in accordance with the needs and objectives of state and local government ARC also keeps officials apprised of research going on in their areas of concern. A working organizational structure through which the public and private colleges and universities of the state can act as council to the Planning Agency, and other agencies is provided through ARC. ARC publishes a newsletter, and holds conferences on various issues.

State of Hawaii - Department of Planning and Economic Development - State Center for Science Policy and Technology Assessment

This document is a report to the National Science Foundation (NSF) giving the results of a three year program to develop guidelines for science policy for the State of Hawaii. The program was carried out under the aegis of the Hawaii

State Center for Science Policy and Technology Assessment, which has been in existence for three years as part of the Department of Planning and Economic Development (DPED), operating under the NSF grant matched by state funds. The center has modified existing methodologies for application to state problems, and has carried out a number of low cost, short term technology assessments, which have been valuable in formulating policy options for the State of Hawaii. It has worked closely with the University of Hawaii, and has provided inputs to the state planning process.

In the early 1960's, the state adopted a policy of encouraging the development of science and technology capabilites and industries. The Center has met new scientific related needs in state government. Close liaison with the University of Hawaii was an important factor in the Center's success.

The Center is located in DPED, which is responsible for statewide long range comprehensive planning, economic development, economic analysis, research, and regional planning.

Research Priorities in Georgia - Findings, Conclusions, Recommendations

The Georgia Research Priorities study was initiated as part of the Goals for Georgia Program. The objectives of this study were to determine the institutional arrangements needed to assure (1) that the most critical state problems are addressed by the Georgia research community (2) pertinent results are made available on a timely basis to governmental decision makers. The study finds that many of the serious problems facing the nation today are imbued with a scientific and technological flavor. Most state and local governments are not yet adequately prepared to make maximum use of science and technology in helping to solve critical governmental and societal problems. Nevertheless during the past decade several states have initiated major efforts to incorporate science and technology into the government process. The purpose of this study was to help the state better utilize its available resources. It was funded jointly by the National Science Foundation, and the Georgia Science and Technology Commission (now the Governor's Science Advisory Council).

The main purpose of the study was to determine what institutional arrangements and information systems are needed to assure that:

1. The critical state problems are addressed by the Georgia research community

2. Pertinent results are made available on a timely basis to government decision makers

3. To identify the priority needs of Georgia in light of significant governmental and societal problems that lend themselves to resolution through research or the application of science and technology

4. To inventory past and on-going research and to determine what research should be done to meet the highest priority needs of Georgia

5. To create a mechanism for bringing state supported research programs toward solving these problems

State Departments of Transportation: A Prespective

In reference to transportation, there are three groups of states. There are those who have no department of transportation; those states which were early to implement a department of transportation and those states that were late to organize a department of transportation. The three groups of states are clearly different, with the latter two being more highly developed in terms of industrialization, population density, urbanization, wealth, and technical capabilities. The more innovative states were quicker to establish Departments of Transportation. Creation of a Department of Transportation is more feasible in states that depend less on highways for their transportation needs. Michigan is a member of the group of states that were late in organizing a Department of Transportation.

There is a slower rate of completion of interstate highways, both urban and rural, by the early DOT states. It appears that DOTs have been less active in support of the Interstate Highway Program and their Highway Department counterparts. States with DOTs spend more in urban public transit and on airports. States with DOTs also display a keener attention to non-highway modes in both past and planned expenditures. In general the more urbanized the state, the more likely it is to have a Department of Transportation.

Administering State Mass Transportation Programs in Pennsylvania

The state has taken a relatively strong and early lead in assisting urban mass transportation systems. The Department of Transportation (DOT) was created in 1969. Pennsylvania DOT offers capital grants and operating subsidies to local operators. It is responsible for multi-modal planning, operates a senior citizens fare subsidy program, promulgates standards for transit operations, indirectly provides for training, and has a research and development function. Highway related projects are the predominant interest of Pennsylvania DOT. It does not operate transit systems or engage in the construction of transit facilities. However, Pennsylvania Department of Transportation is responsible for planning mass transportation. This function is shared by the Bureau of Advanced Planning, and the Bureau of Mass Transit Systems, within Pennsylvania DOT. Regulation of private transit operators is under the aegis of the Pennsylvania Public Utilities Commission. The capital grants program is funded with bonds issued by the Transportation Assistance Authority, which is authorized to finance up to 16.7% of capital acquisition projects, for which federal funding is available, and up to 50 percent for projects in which there is no federal participation. Pennsylvania DOT can subsidize up to 2/3 of operating deficits. Widening gaps between operating needs and money available from the states general fund are expected for mass transit. A diversion of funds from highway related revenues is not considered to be feasible by Pennsylvania DOT officials. Although Penn DOT is involved with almost all modes of transportation, to a great extent it deals with each separately, it has yet to become a truly integrated multi-modal transportation agency.

Statewide Transportation Planning: The North Carolina Experience

North Carolina endeavored to improve comprehensive transportation planning at the statewide level. They used a process known as sketch planning to accomplish this goal. Sketch planning can be defined as "the statement of plan alternatives at a low level of detail, with emphasis on broad policy implications rather than on details. It is only a single step in the whole planning process. The identification of transportation requirements was accomplished by identifying existing conditions, alternative futures, and resulting development patterns, which established the data base and framework for identifying transportation requirements in North Carolina. The objective was to identify broad

system and policy issues, and alternative solutions rather than to provide detailed analyses or project level recommendations. The sketch planning process overcomes some of the shortcomings of master planning. The distinction between the two concerns their respective views of the future. Whereas master planning typically establishes a single long range future, and a detailed blueprint for its achievement, the sketch plan establishes a planning process that recognizes two important elements. First several factors could emerge. Second, while there may be a long range direction to guide short run decisions, that direction is constantly evolving as a result of a sequence of exogenous events, and the public and private response to each. Sketch planning is, therefore, very flexible.

Great Lakes Basin Commission - Transportation Memorandum

The purpose of this portion of the transportation study of the Great Lakes Basin plan is to identify regional needs and problems in the transport of commodities. The major commodity groups (coal, grain, iron ore, and general cargo) are examined, and findings on grain and coal are reported.

Grain is usually shipped by rail or truck from production area to port, where it is transhipped to river barge or lake carrier. The major grain shipping ports are Duluth-Superior, which handles approximately 50% of Great Lakes grain shipments, Toledo, Chicago-South Chicago, Milwaukee and Saginaw. Major grain receiving ports are Buffalo, Cleveland, and Milwaukee.

Of coal shipment with destinations in the Great Lake states in 1978, 52% of the tonnage came by rail, 20% by river barge, 16% by truck, 6% by lake carrier, and 5% by other means. There are problems in moving coal in the Great Lakes region: (1) port loading and storage facilities (2) coal road maintenance (3) lack of year-round navigation through the Great Lakes (4) St. Lawrence Seaway depth.

Work Plan

Great Lakes Basin Plan

Transportation Study

Concern has been expressed that regional studies, programs, and future planning efforts need to be interrelated to develop a better integration among the different modal systems, and a more efficient multi-modal tranportation system. The region's changing economy and energy supply require a synthesis of transportation planning activities in order to make informed decisions on transportation in the future. The Basin Commission is conducting this study of the region's highway, rail, and water transport capability for major ports and commodities to identify constraints and opportunities for meeting future transportation needs, and to assemble a range of policy options to assist federal and state agencies in responding to future transportation needs. The focus of the two year study will be on developing policy options for responding to future transporation needs of the Great Lakes region.

The reason for the emphasis on commodity and goods transportation is that the water transportation system of the Great Lakes primarily moves commodities and goods rather than passengers (although some passenger traffic does exist).

The products from the two year study will include (1) a report on the condition of the existing commodity and goods transportation system (2) projections for use of the system based on existing state, federal, and non-government reports (3) additional information needed.

A report on (1) a range of projected demand on the multi-modal transportation system serving the region and (2) the range of policy options which could be drawn on to respond to anticipated needs for moving commodities and goods through the Great Lakes region.

The study's goal and objective are:

To develop and evaluate policy options which can enhance the efficiency and capability of the Great Lakes transportation system to meet the region's economic needs.

Objectives

Through a synthesis and integration of information from existing reports:

(1) characterize current conditions and capacity of surface transportation systems by modes, major commodity groups, and major corridors.

(2) display projections for future system needs by mode, major commodity groups, major corridors, and modal split.

(3) identify future capabilities and constraints in the year 2000 for system projections

(4) describe alternative system changes needed to meet projections

(5) identify and analyze the effects of policy options for addressing decisions and issues

(6) recommend future activities

GREAT LAKES BASIN COMMISSION

CONDITION OF THE GREAT LAKES FREIGHT TRANSPORTATION SYSTEM

FINAL DRAFT

TRANSPORTATION STUDY MAIN REPORT

GREAT LAKES BASIN COMMISSION

AUGUST, 1981

PREFACE

To respond to a number of regional and interstate transportation concerns the Great Lakes Basin Commission's Standing Committee on Transportation initiated a two-year regional transportation policy options study in November 1980. This study would delineate policy options for the Great Lakes states and federal agencies to consider for regional transportation infrastructure investment decisions, based on an analysis of current conditions, regionally significant transportation studies for navigation, ports, rails and highways and available projections of traffic, by corridors if possible.

The original version of the policy options study had to be abandoned, however, when it became obvious that proposed federal budget cuts would result in the closing of the Commission in September 1981. The Standing Committee on Transportation revised the study approach in April 1981 to allow ongoing tasks to be finished before September 30, 1981, the end of the fiscal year. The result is the Main Report and a series of five transportation technical papers which are listed on the inside front cover.

The Main Report brings together the major findings of the work of the revised Transportation Study in Section 1. Section 2 provides background information on general problems and specific problem areas relating to the condition of the surface freight transportation system. Finally Section 3 draws together and compares assumptions and projections for transportation demand in recent major regional studies, which the Transportation Committee asked its staff to compare.

EXECUTIVE SUMMARY

The surface mode freight transportation infrastructure of the eight state Great Lakes region--major highways, mainline railroads, and port facilities--is in generally good condition and does not constrain movement of freight. However, two problem areas of regional significance, although not halting freight movement, stand out:

- Deteriorated local coal hauling roads to bring coal from mines to railheads or ports or market, particularly in Pennsylvania, but also in Ohio, Indiana, Illinois and New York need major improvements to bring the roads to full or even reduced standards. No state earmarks funds for such work, but Pennsylvania and some counties in Indiana have developed a mechanism to place road repair responsibility on the haulers.

- Chicago and northwestern Indiana experience major rail switching yard delays and congestion. The problems are complex and not fully resolved. Railroads have made and are making investments to alleviate switching delays.

Larger regional or national issues also impact or will impact freight movement and the split of freight traffic among modes in the near to mid-term future:

- Limited capacity on the Great Lakes - St. Lawrence Seaway has three chief elements--vessel size limits through the locks, the Welland Canal nearing its throughput capability, and the restricted navigation season -- which can impact international gain and possibly coal shipments, and severely limit vessels of newer technology such as RO-RO, LASH, and Container.

- The impact of Seaway capacity constraints on freight movement is confirmed in the projections of recent major studies. Season extension reports, the Traffic and Competition Study and the Draft Cooperative Port Planning Study generally predict an increase in Great Lakes international cargo tonnage, but that this traffic will represent a decreasing share of U.S. international waterborne traffic.

- Major resurfacing of large portions of the interstate highway system in the region will be needed to maintain freight movement efficiency, but projected highway fuel tax revenues as current rates will probably not cover the cost without tax increases.

- National policies of direct and indirect subsidy of highways, rails, and waterways affect both the competitiveness of these modes and the configuration and operation of these freight transportation networks. The complex issues of equity are often not fully explored because studies tend to be oriented to a single mode.

APPENDIX III

APPENDIX III

DRAFT CONCEPT PROPOSAL

Dr. William Drake
9/30/81

A RESEARCH PROGRAM FOR TRANSFERRING SOME DUTIES OF THE FEDERAL DEPARTMENT OF TRANSPORTATION TO EITHER STATE AND LOCAL JURISDICTIONS OR THE PRIVATE SECTOR

This is a proposal to establish a research consortium to study the most effective methods of transferring some of the duties of the U.S. Department of Transportation to either state and local jurisdictions or to the private sector. The State of Michigan would be the focus for specific studies, but much of the knowledge gained would be generalizable to other states.

A Michigan-based effort is unique because of two factors. First, due to its heavy involvement in the transportation sector, Michigan has an especially large stake in the outcome of any creative process that would help this industrial sector to thrive. Second, there already exists an unusual statewide organization for facilitating such an endeavor. It is called the Michigan Transportation Research Program (MTRP). This is a grouping of industry representatives and faculty from virtually all the major research universities within the state. Over the last three years, MTRP has been working directly with the State DOT, advising it and the Office of the Governor on transportation research policy, and undertaking several joint research projects on behalf of regional and local governments. Thus, close working relationships already exist in this area between the following institutions:

Office of the Governor

State Department of Transportation

Southeastern Michigan Council of Governments (SEMCOG)

University of Michigan

Michigan State University

Wayne State University

Michigan Technological University

University of Detroit

Ford Motor Company

Chrysler Corporation

Furthermore, within each institution are linking groups who are working jointly on mission-oriented problems. The MTRP and the linked institutions it represents have demonstrated a capability for conducting effective research in transportation policy planning.

Need for a Systems Viewpoint

Shifting functions from the Federal Department of Transportation to state and local institutions is usually not a straightforward task. Interestingly enough, the difficulties in making one-for-one shifts force the issues to be formulated in a way that can yield higher payoffs in the end. The fact that the state DOT or the local government transportation division is not organized in a manner parallel with the Federal DOT requires that each agency task be decomposed into its several functions. Only then is it often possible to find a counterpart at the non-federal

level. For this reason we propose to embrace the systems analysis viewpoint in this research consortium. The systems approach will permit analysis of both the federal and non-federal components, including the private sector.

Effecting a shift of function from federal to state and local organizations is worth the effort only if the pay-off exceeds the cost required to implement the change. We see at least three categories of payoff that could be associated with such a beneficial shift:

1. local control, operation, and to some extent financing, could often result in better decisions due to first-hand knowledge of prevailing circumstances;
2. local context-specific knowledge, combined with an ability to act decisively, could yield cost-saving alternatives otherwise prohibited;
3. the creative involvement of the private sector would be encouraged through more specific function descriptions and fewer tiers of bureaucracy.

Involvement of the private sector in an attempt to become more cost-effective, we believe, could yield substantial gains. Barriers currently impeding such involvement must be overcome. As true for state and local governments, the organizational configuration of DOT is not coincident with the way goods and services are rendered in the private sector. However, decomposition of the agency tasks into specific functions,

using the systems viewpoint, will help overcome this difficulty. But other problems needing resolution will still exist. First, the private sector is often structured differently, both legally and in terms of its payment systems. For instance, taxicabs charge users and pay drivers on the basis of time and distance traveled. Payment to drivers on this basis places a healthy incentive on drivers to raise productivity. That incentive does not exist now in the public transportation arena. However, to provide comparable incentive mechanisms in a restructured, publicly funded transit system would produce difficult legal and union problems. The challenge would be to work through these problems, retaining as much as possible of what is useful.

The second difficulty with transferring functions to the private sector is that a single agency, like DOT, is often only one portion of the market for many prospective goods and services providers. Thus, in order to make it possible for some service providers to respond, it would be necessary to look beyond DOT boundaries for some functions. For instance, some maintenance functions might be provided at the local level much less expensively by the private sector, provided these services are rendered to programs managed through Interior and HUD at the same time. By looking beyond the boundaries of DOT, total overall government costs could be reduced.

Thirdly, public reaction to private involvement in traditionally public-sector functions must be accommodated. Any adverse as well as favorable reactions to such moves must be assessed and dealt with; otherwise positive gains could be nullified.

Finally, the private sector is often not equipped to respond to a government request for rendering a service or product. Past interactions with governmental bureaucracies have led some firms, especially smaller ones, to refuse to consider such options. Consequently, if the full potential of the private sector is to be utilized, facilitating mechanisms must be explored. An example of such a facilitating mechanism is a request for a quotation that is simple, clear, and easy to respond to. Creating such a RFQ would be a breakthrough indeed! (The same kind of need exists also for state and local governmental units who are responding to federal DOT programs.)

Operation of the Research Consortium

We mentioned earlier the extensiveness of the Michigan Transportation Research Program -- involving all the major research universities, the industrial sector, and state government. We propose to draw upon this unique capability by providing for substantial involvement of all of the major universities. To keep the operation of the consortium from being unwieldy, we propose a simple organizational framework:

dividing the effort by functional area and assigning each university group the lead role for one functional area. Then the already-existing MTRP advisory committee would provide coordination and specific assistance in identifying needed resources within the university system for solving particular technical and institutional problems as they arise.

The research effort would emphasize producing research results that have practical usefulness. The goal is not more studies collecting dust on bookshelves but viable plans for improving the effectiveness of governing the transportation sector. Towards these ends the active involvement of the appropriate state, regional, and local governments from the onset is crucial. Plans and/or proposals that emerge will already have met the test of subnational viability.

While this effort could be phased and funding acquired for each phase as it emerges, we believe that to do so would diminish the potential for success. Rather, we suggest substantial funding from the onset, with provision for early termination if the results were not deemed worthwhile. Eleven man-years of senior faculty involvement in the six universities, together with research assistants and non-salary items, would require a funding level of approximately 1.3 million dollars per year. The first year should be funded at approximately 1/2 level, and decisions concerning refunding based upon performance should occur at the end of the second year. (Therefore, 2 M total.)