

TRANSPORTATION RESEARCH RECORD 1014

The Evolution of Transportation Planning

TRRB

TRANSPORTATION RESEARCH BOARD
NATIONAL RESEARCH COUNCIL

WASHINGTON, D.C. 1985

Transportation Research Record 1014

Price \$6.00

Editor: Naomi Kassabian

Compositor: Joan G. Zubal

Layout: Theresa I. Johnson

modes

- 1 highway transportation
- 2 public transit

subject areas

- 11 administration
- 12 planning

Transportation Research Board publications are available by ordering directly from TRB. They may also be obtained on a regular basis through organizational or individual affiliation with TRB; affiliates or library subscribers are eligible for substantial discounts. For further information, write to the Transportation Research Board, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.

Printed in the United States of America

Library of Congress Cataloging in Publication Data

National Research Council. Transportation Research Board.
The Evolution of transportation planning.

(Transportation research record; 1014)

1. Transportation and state--United States--History--Congresses. 2. Transportation--United States--Planning--History--Congresses. I. National Research Council (U.S.). Transportation Research Board. II. Series.

TE7.H5 no. 1014

380.5 s

85-18809

[HE206]

[380.5'068]

ISBN 0-309-03903-7

ISSN 0361-1981

Sponsorship of Transportation Research Record 1014

GROUP 1--TRANSPORTATION SYSTEMS PLANNING AND ADMINISTRATION

William A. Bulley, H. W. Lochner, Inc., chairman

Statewide Modal Planning Section

Kenneth W. Shiatte, New York State Department of Transportation, chairman

Committee on Statewide Multimodal Transportation Planning

Harvey R. Atchison, Colorado Department of Highways, chairman
Philip I. Hazen, Federal Highway Administration, secretary
Lee H. Bowser, Robert E. David, Douglas H. Differt, Richard E. Esch, Peter A. Fausch, Arne L. Gausmann, Carl A. Hennum, Jack L. Housworth, Carol A. Keck, Colin Ian MacGillivray, James F. McManus, Michael D. Meyer, Lance A. Neumann, Linda Pendlebury, Harry A. Reed, David W. Schoppert, Isaac Shafran, Carl N. Swerdloff

James A. Scott, Transportation Research Board staff

The organizational units, officers, and members are as of December 31, 1984.

NOTICE: The Transportation Research Board does not endorse products or manufacturers. Trade and manufacturers' names appear in this Record because they are considered essential to its object.

Contents

Introduction	v
THE EVOLUTION OF TRANSPORTATION PLANNING: A FEDERAL PERSPECTIVE Richard B. Robertson	1
THE EVOLUTION OF TRANSPORTATION PLANNING IN CALIFORNIA Bob Datel	10
THE EVOLUTION OF TRANSPORTATION PLANNING IN PENNSYLVANIA Thomas D. Larson	12
THE EVOLUTION OF TRANSPORTATION PLANNING IN TEXAS Mark G. Goode	14
THE EVOLUTION OF TRANSPORTATION PLANNING: IOWA'S PERSPECTIVE C. I. MacGillivray	16
RESPONSE W. L. Garrison	18
RESPONSE Lawrence D. Dahms	21
SUMMATION: TRANSPORTATION PLANNING—WHEN ARE THINGS GOING TO GET BETTER? Thomas B. Deen	22

Addresses of Authors

Dahms, Lawrence D., Metropolitan Transportation Commission, 101 8th Street Metro Center, Oakland, Calif. 94607

Datel, Bob, California Department of Transportation, 1120 N Street, Sacramento, Calif. 95814

Deen, Thomas B., Transportation Research Board, National Research Council, 2101 Constitution Avenue, N.W., Washington, D.C. 20418

Garrison, W. L., Institute of Transportation Studies, University of California, 109 McLaughlin Hall, Berkeley, Calif. 94720

Goode, Mark G., Texas State Department of Highways and Public Transportation, Highway Building, 11th and Brazos, Austin, Tex. 78701

Larson, Thomas D., Pennsylvania Department of Transportation, Transportation and Safety Building, Commonwealth and Forster Streets, Harrisburg, Pa. 17120

MacGillivray, C. I., Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa 50010

Robertson, Richard B., Federal Highway Administration, HPL 1, U.S. Department of Transportation, 400 7th Street, S.W., Washington, D.C. 20590

Introduction

Transportation planning got its initial legislative endorsement through the 1934 Hayden-Cartwright Act, which set aside funds for planning purposes. Through the decades transportation planning has become, at various times, an extremely complex and controversial undertaking. Highlights of the transportation planning time line include such legislative milestones as the 1962 Federal-Aid Highway Act, the National Environmental Policy Act (NEPA), the Clean Air Act, and so on, which have been accompanied by a multitude of administrative interpretations through the regulatory process. Numerous conferences have been conducted to review regulatory actions developed to carry out transportation planning policies.

In broad terms, the advent of the Interstate highway system, the high-performance automobile, and the seemingly unlimited supplies of energy led into an era of mass consumption through the 1960s. This era was marked by plans for comprehensive long-range transportation systems. Concern about irreversible damage that such consumption would bring to man's environment led to NEPA and a subsequent era of conservation during the 1970s, especially energy conservation, which brought with it the impact of declining fuel tax revenues. Another trend dominating the 1970s was the rapid escalation of highway construction costs caused by runaway inflation. In an

effort to keep up with runaway costs, many states deferred maintenance on existing highways and bridges. In the early 1980s many states were left with partially completed highway systems and a rapidly deteriorating transportation infrastructure. Plans for long-range systems gave way to short-term emergency programs dealing with incremental improvements to the existing system. In the mid-1980s, it is appropriate that transportation planning horizons be redefined.

The meeting of the AASHTO Standing Committee on Planning (SCOP) held in March 1984 in Sacramento, California, provided an excellent opportunity to pull together transportation planning interpretations from a variety of viewpoints. Such a synthesis is invaluable as an attempt is made to answer the question, Where do we go from here? The papers in this Record provide a retrospective and interpretive look by a panel of planning officials and chief administrative officers at the historical processes through which transportation planning policy has evolved. The focus of the presentation is keyed to the interpretative aspects of the time line from both the federal perspective and various state perspectives. Two respondents offer their critique of these perspectives and an interesting summation is provided as well.

The Evolution of Transportation Planning: A Federal Perspective

RICHARD B. ROBERTSON

In defining the beginning of the highway program in the United States, I have started with the Post Office Appropriations Act of 1912, which provided for federal aid in the construction of rural post roads. The time line at the end of this paper provides a brief look at many legislative acts, conferences, reports, and regulations between 1912 and 1983. It is not complete nor is it detailed, but it does provide a quick reference to significant events for the highway program, with a special emphasis on planning. This paper presents a federal perspective (with a certain state flavor) from one individual's point of view. It does not necessarily reflect the views of this Administration.

THE FIRST 70 YEARS

Before the 1950s, the federal highway interest was focused primarily on rural areas. After World War II, there was an expansion of interest into the urban areas, primarily caused by creation of the Interstate system. Perhaps the most significant legislation was the Federal-Aid Highway Act of 1956, which provided for creation of the Highway Trust Fund and for funding of the Interstate system on a 90/10 basis.

During the 1950s some of the most notable large urban transportation studies were begun. Along with this there were several outstanding conferences dealing with urban transportation--the Hartford Conference of 1957, the Sagamore Conference of 1958, the Hershey Conference of 1962, and the Williamsburg Conference of 1965. During the 1960s there was much legislation that created a positive force for comprehensive urban transportation planning. This included

- Housing Act of 1961--amended Section 701 of the Housing Act of 1954 to provide funds for comprehensive urban transportation studies;
- Federal-Aid Highway Act of 1962--provided for the comprehensive, continuing, and cooperative (3C) urban transportation planning process;
- Urban Mass Transportation Act of 1964--encouraged planning for areawide urban mass transportation systems;
- Department of Transportation Act of 1966--created the U.S. Department of Transportation;
- Intergovernmental Cooperation Act of 1968--provided for consideration of state, local, and regional viewpoints on federal-aid projects; and
- Office of Management and Budget (OMB) Circular A-95 of 1969--provided for project notification and review by regional planning agencies.

To this point, I believe the federal actions were quite constructive and did not place too great a burden on state and local governments. However, these actions, along with legislation creating the Appalachian Regional Commission and the Economic Development Administration in 1965, provided so many new initiatives that the stage was set for a proliferation of federal regulations, massive red tape, and conflicts. The Department of Housing and Urban

Development, Appalachian Regional Commission, Economic Development Administration, OMB, UMTA, and FHWA were each marching to a different tune, listening to a different drummer. Although there is no date certain, these problems began to surface in the 1970s. One note of self-criticism to all of us involved in the major transportation studies of the 1960s appears appropriate at this point. When we developed those so-called 20-year transportation programs and showed the costs, we did not focus on reality. Although some studies broke the costs down into 5-year programs, very few studies bothered to provide realistic estimates of where the funds would come from to pay for such projects--not to mention calculating the impact of inflation. These 20-year plans may be more like 40- to 50-year plans. It is hoped that the lesson has been learned.

In 1969 the National Environmental Policy Act was passed, followed by the Clean Air Act of 1970, which created the Environmental Protection Agency. These were well-intentioned acts, brought about because state and local governments had not done enough to protect the environment. However, in the 1970s building highways became a nightmare because of regulations and policies implementing these acts as well as other laws relating to historic sites, archeological sites, endangered species, Section 404 of the Clean Water Act, and so forth.

From 1973 to 1976 there were three actions that I believe were particularly counterproductive to the highway program and transportation planning:

1. The Federal-Aid Highway Act of 1973 provided for the withdrawal of Interstate highway projects and substitution of mass transportation projects. Although the concept of the legislation was to focus on building the most efficient transportation system, in many instances this was not the result. Instead, facilities were built that were unrelated to the initial project. This was because of the concept of entitlement and, as a result, this became the highway program's major contribution to the current federal deficit.
2. The Emergency Highway Energy Conservation Act of 1974 created the national 55-mph speed limit--a massive federal intrusion born of an emotional energy policy, which may have been justified for several years.
3. In 1975 joint FHWA-UMTA urban transportation planning regulations were instituted. A number of very competent federal transportation professionals still think these were great. I would agree in part, but the regulations went too far; they represented a formal, coordinated, prescriptive mass of federal red tape and intervention into state and local matters. These became the foundation of additional, more burdensome federal requirements, which continued until 1981.

The period from 1975 to 1981 was not a pleasant one for many state transportation planners. Many ideas and policies, each having some degree of merit, began to have a collective impact that made it difficult to plan projects as part of a cost-effective, comprehensive highway program, particularly in

urban areas. There were so many laws and regulations concerning highway projects that antihighway groups could delay almost any project for years, and with minimal effort--and you may remember that these were the years of very high inflation. However, during this same period there were some very positive steps. Two of these were (a) the establishment of the Highway Performance Monitoring System (HPMS) and (b) the recognition that the federal government should help in the rehabilitation, restoration, and resurfacing of the Interstate system.

Beginning in 1981 the federal government began to eliminate much of its red tape and to reduce its intrusion into state and local matters. In 1982 FHWA issued a new Highway Planning and Research (HPR) policy, and in 1983 FHWA and UMTA issued a revised regulation for the 3C planning process. Various regulations have been eliminated or revised and work is proceeding on others. It is not a simple process, and we still have significant challenges, but I believe that a great deal will be accomplished in the next 4 years.

GEORGE ORWELL'S 1984 IS HERE

To some, 1984 must be as Mr. Orwell anticipated, but to most of us it does not appear that bad. For the first 70 years of the highway program the emphasis was more on planning, but at the present and in the future, it appears appropriate to broaden the perspective. One reason for this is my view that a key emphasis for planning is policy formulation, and thus planning must be concerned with many different issues.

Today, we appear to have many problems, or are they really opportunities? Certainly there are challenges. Let's discuss some of them:

- * The 55-mph speed limit: This national requirement was passed by Congress as a response to an energy crisis. Its continued retention has been justified on the basis of safety, but far more credit is claimed for reductions in fatalities than many people believe is supported by fact. It is an example of federal intrusion into state and local decision making, not based on engineering but on public perception.

- * Unified budget concept: Federal highway funds are user fees that are part of a highway trust fund. The highway program does not contribute to the national debt and it should not be held hostage. These funds should be made available to the states without any artificial constraints, such as placing obligation limitations by a particular quarter. We must recognize the different climatic conditions and construction seasons across the United States and provide the states with maximum flexibility.

- * Entitlement concepts: The Interstate project withdrawal and substitution legislation provided for an entitlement to federal funds. This is the type of situation that has led our country to its present massive national debt. If you don't need it, don't build it. We must refuse solutions that simply give you something you don't need--not only must we refuse federal funds for noncritical projects, but we must prevent the situation that permits such extremes.

- * Interstate cost estimates: In fiscal year 1984, the highway program was held hostage for a single massive pork-barrel project. Changes need to be made to eliminate the possibility of such situations. A major factor in the success of the federal-aid highway program is the minimization of special projects; however, there are still too many such examples.

- * Nonprogrammatic requirements: All the special interest groups like to tack on their requirements to the federal-aid highway program. Sometimes, we wonder whether we are responsible for building highways for the safe and efficient movement of people and goods, or whether we are federal agents charged with enforcement of conflicting and overlapping social and economic goals. Davis-Bacon, disadvantaged business enterprises, Section 402, endangered species, and so on, each has a certain validity, but it is difficult to recognize for someone trying to maximize the effectiveness of public funds collected from highway users to build and maintain highways.

- * Staffing: Everybody seems to like across-the-board cuts. Legislative bodies and chief executives (or their key advisors) find it a popular concept to cut the cost of government, often by cutting staff. In some instances this is valid, but often cuts will be dictated without appropriate analysis. Planning is always vulnerable because, after all, isn't it really a communistic idea, or at least socialistic? Besides, let's put all our money into asphalt and concrete. Who cares whether it is cost effective, coordinated, and so on.

- * Mass transit: Every city with a population of more than 50,000 appears to believe that either light or heavy rail is its salvation. Some presentations sound like Elmer Gantry seeking funds at a revival meeting. Few will be built and even fewer are needed.

DOWN THE ROAD

Where should we be headed in the future, and where are we likely to go? Rather than try to differentiate between these two questions, I will focus on where planning, the highway program in general, and even a little of mass transit should be by 1990. Some of my previous comments carry over to this view of the future, but I will try to avoid repetition.

The highway program should be restructured to sort out what each level of government should do. The federal government should continue the federal Highway Trust Fund and should increase user fees periodically to meet a realistic national interest. Federal funds with federal guidelines and regulations should only apply to the Interstate system, the primary system, and to bridges and tunnels on these systems. However, a certain level of federal user fees should be collected and returned to the states for highway construction and resurfacing, restoration, rehabilitation, and reconstruction (4R) activities, with minimum federal regulations and guidelines, for use on other highways (a replacement for urban and secondary system funds). No matter what formulas are used to distribute funds for the Interstate and primary systems, the total should be made available as a block grant for use on these systems. FHWA would monitor and enforce adequate maintenance of these systems. The emphasis should be on maximum flexibility and self-determination at the state level. The state-local issue should be decided within the constitutional framework of state and local governments, without the "benevolence" of the federal government. The issue of whether toll facilities are to be built or improved with federal funds should be left to the state governments, except that a federal finding regarding no undue restriction of interstate commerce would appear appropriate.

Revenues at the state and federal levels will be a concern, particularly when we remember the events of the 1970s. We cannot count on stable revenue from the gasoline and diesel fuel taxes. Technology exists that eventually could eliminate this revenue.

We need to establish a national weight-distance tax as soon as it is feasible to do so. This would provide a basic system for taxing trucks. For the automobile we need to be thinking of a registration fee tied to mileage in the previous year. This will require attention to administrative problems such as tax evasion.

In the 1970s we recognized that highway design should be more practical and we turned to the level-of-service concept to define needs in realistic terms. Now it is time for us to recognize that some highways should be removed from a particular federal-aid system--for example, some highways on the federal-aid primary system should be on the federal-aid secondary system. It is time to recognize practicality and to reject an absolute adherence to artificial standards.

In recent years we have focused attention on the preservation of our highways. During the 1980s this emphasis will be strengthened. The decline in performance resulting from inadequate investment would have a negative impact on the gross national product and on employment. FHWA will undertake significant pavement design and rehabilitation research. We will support AASHTO's design guide and will initiate a program to evaluate data from our pavement testing to support the development of future guides. FHWA and the states must stress pavement management techniques and, where necessary, FHWA must not be timid in enforcing the provisions of Section 116 of Title 23, U.S. Code, as amended in the Surface Transportation Assistance Act of 1982.

With the issues of truck size and weight, uniformity, weight-distance taxation, weigh-in-motion, a network for the larger trucks and local access for these trucks, the states have moved more into the field of operation of vehicles on the highway systems. This is a positive evolution that will continue. One challenge is to provide the same uniformity of licensing and registration for trucks that we have for cars today. With the advent of microcomputers, satellites, microwave transponders, weigh-in-motion, and various automated devices it is possible to measure that which is using and consuming our highways quicker, more accurately, and with far less manpower. The technology exists to issue citations for speeding and weight violations and to count and classify vehicles without staff at field locations. In the 1980s this technology should be implemented on a national scale.

The 1980s might well be the decade of the micro-computer. Not only is it critical for our field work, it is essential for maximizing the effectiveness of our headquarters. Word processors are fast becoming essential to our secretaries, and the same will be true of microcomputers to our technical staff. No matter how technically competent we are and regardless of how great a manager we may be, we are shortchanging our agencies and ourselves if we do not become involved, personally, with microcomputers.

As all of you know, FHWA really has very little to do with mass transit. We support construction of high-occupancy-vehicle lanes, vanpooling, carpooling, and so on and until this year we managed the Section 18 rural public transportation program. We do support mass transit and UMTA and FHWA have developed an excellent working relationship. I believe that FHWA carries out its program in such a way that it is one of the best examples of a federal-state partnership. With that in mind, and recognizing that I am not a transit expert, there are several ideas that I believe UMTA should consider in the 1980s. The first three suggestions are based on applying some of FHWA's experience to UMTA's program, and the fourth is based on discussions with a number of

transit professionals. Perhaps these suggestions won't work, but at least they might stimulate an interesting debate.

UMTA should

1. Adopt a division structure in each state, even if it means eliminating regional offices. This would put the federal staff in more frequent touch with local and state officials and the federal staff would have a better understanding of local problems.

2. Provide for UMTA funding to flow to and through the states and eliminate direct grants to local governments. The states could be helpful to both their local governments and UMTA if they were more involved with mass transit. The concerns of the local governments must be worked out, which, it is hoped, could be done.

3. Concentrate more on providing adequate mass transit in a cost-effective manner with an emphasis on engineering, ridership, and revenue rather than on some of the secondary issues.

4. Define operational subsidies as support for labor--managers, drivers, maintenance workers, and so on--and get the federal government out of funding such costs. Then agree to support such things as construction, capital acquisition, spare parts, and fuel at an appropriate federal level. Local elected officials should recognize that mass transit will require operational subsidies from local revenue and make decisions accordingly.

I suspect that to some of you I have rambled somewhat far afield for a presentation on planning--where we have been, where we are, and what's ahead. For me, planning is an integral part of policy. The data from the Highway Performance Monitoring System and highway statistics lead to needs estimates and investment and taxation strategies, not to mention apportionments. The 3C planning process looks at needs, relates transportation to land use, provides for coordination between levels of government, and results in an integrated transportation investment strategy. Our cost-allocation work leads to taxation policies and legislation on truck size and weight issues. Data on weights, speeds, volumes, and types of traffic lead to design decisions and safety improvements.

The future role of the federal highway program should be to provide significant funding, technical assistance, guidance, leadership, and research in a framework that returns most authority to state government through block grants, minimal regulations, and maximum flexibility. This is our challenge for the 1980s--yours is to help us achieve it and then to prove to everyone else that it should remain that way.

A HIGHWAY PLANNING TIME LINE

1912 Post Office Appropriations Act: Federal Aid in Construction of Rural Post Roads

The Secretary of Agriculture, in cooperation with the Postmaster General, was to provide federal assistance to state or local subdivisions for improving rural delivery routes; the purpose was to ascertain how much rural delivery service could be improved, savings to locals in transporting their products, and costs of properly maintaining the roads.

The Secretary of Agriculture and Postmaster General were to report to Congress after 1 year with their findings and with recommenda-

- tions for providing a general plan of national aid for improving postal roads in cooperation with states and counties, bringing about uniform and equitable interstate highway regulations, and providing necessary funding.
- 1914 First Comprehensive Road Inventory
- Although an inventory of national road mileage and revenues and expenditures for construction and maintenance was done in 1904, the information was obtained entirely by correspondence and was not complete or accurate. A similar census was done in 1914 but was much more comprehensive and accurate because the information was collected directly from local authorities, road associations, postmasters, private categories, and so on.
- 1916 Federal-Aid Road Act
- Beginning of federal-aid highway program. Federal assistance provided for construction of rural post roads and roads and trails in national forests.
- 1920 Highway Research
- Formation of National Advisory Board on Highway Research to have a coordinated national research program on highway design for motorized vehicles. It included agencies and organizations engaged in highway transportation and highway research.
- 1920 Planning Surveys
- A series of transportation surveys involving 20 states over a period of 16 years was initiated by the Bureau of Public Roads (BPR). This can probably be considered the beginning of formal highway planning.
- 1921 Federal Highway Act
- Established federal-aid program characteristics.
- Funds to be apportioned.
- Contract authority:
- State highway department required
 - State matching required
- Identified federal-aid highway system (later to become the primary system) and forest highway system.
- 1934 Hayden-Cartwright Act, Section 11
- Earmarked 1.5 percent of the apportionments for the federal-aid system for planning. Provided stimulus and means for statewide planning surveys. Missouri was one of the first states to actively undertake a statewide planning survey using funding provided by the act. By the end of 1937, the number had risen to 43.
- Established emergency relief program.
- 1936 Federal-Aid Highway Act
- Established Railroad-Highway Crossing Program.
- 1937 The American Association of State Highway Officials (AASHO) Committee of Planning and Design formed to review and evaluate research and operational information on highways.
- 1938 Federal-Aid Highway Act
- Required a study and report on feasibility of building north-south and east-west superhighways, including consideration of making them toll roads.
- 1939 BPR produced the required report "Toll Roads and Free Roads," and recommended development of a 26,700-mile system of interregional highways. The report also used input from the War Department, which had studied military highway needs in 1935. This was the initial effort at identifying an Interstate highway system.
- 1941 The President appointed a National Interregional Highway Committee of highway engineers and planners to investigate need for a limited system of national highways to improve facilities then available for interregional transportation.
- 1943 An act amending certain provisions of highway acts also directed that a study be made of the need for, cost of, and approximate location of a system of express highways throughout the country. The report was due in 6 months. The work of the Interregional Committee was used and the report ultimately recommended an "optimum" system of 33,902 miles.
- 1944 First home-interview origin-destination survey in urbanized areas.
- 1944 Federal-Aid Highway Act
- Established secondary highway program.
- Established urban extension program.
- Directed the designation of a 40,000-mile national system of Interstate highways; routes to be selected by joint action of the state highway departments--no funding was provided.
- 1945 Public Roads Administration (PRA) asked each state for recommendations for Interstate system routes within its boundaries. Recommendations totaled 45,070 miles.
- 1946 PRA reduced the mileage and asked states to concur in a system map for their states. Concurrence received from 37 states. Other 11 states and PRA worked out rest of system mileage over next year.
- 1947 Federal Works Administrator approved a 37,681-mile system on August 2; 2,319 miles were held in reserve for urban circumferential routes to be selected later.
- Most states began to initiate state highway needs studies that included forecasts of future traffic demands and of funding requirements. In some cases, cost allocation of the

- financing burden among truck and automobile users and property owners was included also.
- 1952 Federal-Aid Highway Act
First Interstate system funding.
- 1956 Federal-Aid Highway Act
Significantly increased authorizations for Interstate, primary, secondary, and urban extensions of primary. This also generated significant increases in available planning and research funding.
Provided for Interstate cost estimate for report to Congress (initially every 4 years).
Established federal share of 90 percent for Interstate program.
Provided for construction in advance of apportionment.
Established Highway Trust Fund.
- 1957 Hartford Conference
To consider the need for comprehensive planning in metropolitan areas in order to address the effects of the construction of Interstate and other expressways.
- 1958 Codification of highway laws into Title 23 of the U.S. Code.
- 1958 Sagamore Conference on Highways and Urban Development
To encourage the cooperative development of highway plans and programs, held at Syracuse University.
Focused on need for regional planning to support the orderly development of urban areas. Benefits and costs of users and nonusers should be considered.
Conference recommendations were endorsed but progress was slow.
- 1959 Interregional Travel Surveys
First interregional travel survey conducted cooperatively by about 10 states as part of Mississippi Valley Multiple Screenline O-D Study. In 1971, a similar survey was conducted in the Northeast Corridor between Washington, D.C., and Boston.
- 1961 Housing Act
Amended Section 701 of Housing Act of 1954 to allow use of federal funds on comprehensive urban transportation studies.
- 1961 National Travel Surveys of U.S. Households
For the first time, the Bureau of the Census collected national transportation information on the types and amounts of daily travel related to household size, income, etc. This survey was repeated in 1969, 1977, and 1983.
- 1962 Federal-Aid Highway Act
Provided for financial and advisory relocation assistance to persons, businesses, and nonprofit organizations displaced by highway projects.
Encouraged development of comprehensive transportation systems.
Directed states to develop long-range highway plans coordinated with other modes.
Required that all federally funded highway projects be based on a continuing, comprehensive, and coordinated (3C) planning process involving states and local communities.
Defined planning focus as the urban area.
Made 1.5 percent deduction for HPR mandatory. Provided for additional 0.5 percent deduction at option of states. Also, required matching share by states.
- 1962 Hershey Conference on Urban Freeways
Response to growing concern about freeway construction in urban areas. Concluded that freeways cannot be planned independently of environs. Recommendations reinforced the need for integrated planning for highways and urban development.
Planning should be done by a team of specialists in various areas. Planning should involve the community. When properly planned, freeways provided opportunity to shape and structure the urban community in a manner that meets the needs of the people who live, work, and travel in these areas.
- 1963 Guidelines for Implementing 3C Process
Resulted in quick development of relatively standardized planning processes in all urbanized areas.
- 1964 Urban Mass Transportation Act
Encouraged planning of areawide urban mass transportation systems.
Established federal support match for acquisition and construction of transit facilities at two-thirds of cost. Federal share was limited to 50 percent when no comprehensive plan existed.
Required that all funds be channeled through public agencies to projects initiated locally.
Established a program of mass transportation research, development, and demonstrations.
- 1965 Joint Resolution
Established requirement for biennial highway needs report to Congress.
Directed that each state have highway safety program--no funding provided.
- 1965 Highway Beautification Act
Established Outdoor Advertising Control and Junkyard Control programs.

- 1965 Housing and Urban Development Act
Authorized grants for comprehensive planning to regional organizations thus allowing councils of government and regional planning councils to participate in transportation planning.
- 1965 Williamsburg Conference on Highways and Urban Development
Concern that planning processes were not adequately evaluating community and social values. Concluded that transportation must be directed toward raising urban standards and enhancing aggregate community values. Highlighted the need to identify urban goals and objectives that should be used to evaluate urban transportation plans. Endorsed concept of making maximum use of existing transportation facilities through traffic management and land use controls.
- 1966 Highway Safety Act
Established highway safety program.
Directed Secretary of Transportation to develop uniform safety standards
Established highway safety research and development program.
- 1966 Department of Transportation Act
Created U.S. Department of Transportation (DOT) and provided focal point for coordinated federal transportation policy.
- 1967 Dartmouth Conference on Urban Development Models
Land Use Evaluation Committee of Highway Research Board determined that research on land use planning models needed to be developed.
Recommended that agencies sponsoring such research, generally the federal government, expand the capabilities of their in-house staff to handle these models. Concern over bridging gap between modelers and decision makers.
Early optimism in this field faded as complexity became apparent.
- 1968 Federal-Aid Highway Act
Established Traffic Operations Program for Increasing Capacity and Safety (TOPICS).
Required a study on functional highway classification (report submitted in 1970).
- 1968 Intergovernmental Cooperation Act
Required that national, state, regional, and local viewpoints be taken into account (to the extent possible) in planning of federally assisted development programs and projects.
- 1968 Reorganization Plan No. 2 from the President to Congress
Established UMTA within DOT and transferred existing urban mass transportation program from the Department of Housing and Urban Development to DOT.
- 1968 Freeway in the City
Report of the urban advisers to the Federal Highway Administrator. Includes recommendations on transportation planning.
- 1969 OMB Circular A-95
Encouraged establishment of project notification and review systems.
Required areawide comprehensive planning agencies to comment on the relationship of proposed projects to the planned development of the area.
Required that federal agencies notify governors of awards within their state.
- 1969 Policy and Procedure Memorandum 50-9
Comprehensive directive issued by FHWA that implemented Title 23, Section 134, of the U.S. Code regarding urban transportation planning.
- 1969 National Environmental Policy Act
Required the preparation of environmental impact statements for major federal actions, which would include discussions of alternatives and unavoidable adverse effects.
Required a systematic interdisciplinary approach to planning and decision making.
Created Council on Environmental Quality to implement policy.
- 1970 Federal-Aid Highway Act
Required report to Congress with specific recommendations on functional realignment of the federal-aid systems. Report on functional classification study used as base. Highway Needs Report due in 1972 to include recommendations for a continuing federal-aid highway program for period 1976-1990. Needs estimates to conform to functional alignment recommendations. Studies to be conducted in cooperation with state highway departments.
Required promulgation of guidelines (known as the process guidelines) to assure that economic, social, and environmental effects are fully considered in highway projects.
Required promulgation of standards for highway noise levels compatible with different land uses, to be applied to future federal-aid highway projects (published in 1972).
Required promulgation of guidelines to assure that future highway construction is consistent with state implementation plans to meet ambient air quality standards established as result of 1970 Clean Air Act.
Established special bridge replacement program.
Established economic growth center highways program.
Established rail crossing demonstration projects program.

- Established the federal-aid urban system.
- Authorized expenditure of highway funds on bus transit projects.
- Increased federal share for non-Interstate projects to 70 percent.
- Amended Section 134 to require consultation with local officials before any highway project was built in urban areas of 50,000 population or more.
- 1970 Clean Air Act
- Created the Environmental Protection Agency (EPA), authorized to set ambient air-quality standards.
- Required development of state implementation plan (SIP) for these standards.
- Set deadlines for meeting EPA's ambient air-quality standards.
- Required focus on low-capital and traffic management actions.
- 1971 FHWA Instructional Memorandum 50-3-71
- Established annual certification of 3C processes.
- 1972 Policy and Procedure Memorandum 90-4: Process Guidelines
- Required states to develop their own action plans to describe organization and procedures for highway planning and allowed different procedures for different categories of project (more flexibility than a federally prescribed approach).
- Topics to be covered included social, economic, and environmental effects, alternative courses of action, involvement of other agencies and the public, systematic interdisciplinary approach, decision-making process, responsibility for implementation, and fiscal and other resources.
- 1972 Williamsburg Conference on Urban Travel Forecasting
- Addressed concern that travel demand forecasting had not changed in response to new policy issues and options.
- Recommendations:
- * Upgrade existing methodology with the results of recent research.
 - * Pilot test emerging procedures in several urban areas.
 - * Perform research to transform results of travel behavior research into practical forecasting techniques.
 - * Develop dissemination method to get information on new methods to field and results back to the researchers.
- 1973 Federal-Aid Highway Act
- Established Alaska highway program.
- Established program to eliminate high-hazard locations.
- Established pavement marking demonstration program.
- Authorized rural highway public transportation demonstration program.
- Established urban high-density program.
- Redefined federal and state relationship by codifying in Title 23 the intent of a federally assisted, state-administered program.
- Required a realignment of federal-aid primary, secondary, and urban systems based on their functional usage.
- Set aside 0.5 percent of federal-aid system authorizations for metropolitan planning, funds to be apportioned to state and made available to local agency designated by state as responsible for 3C process in urban areas.
- Required distribution of portion of federal-aid urban system (FAUS) funds to attributable urbanized areas of 200,000 or more population.
- Required that governors designate metropolitan planning organizations (MPOs) in each urban area.
- Required that programs for projects on the urban system be in accordance with Section 134 planning procedures.
- Allowed expenditure of FAUS funds on urban mass transportation projects.
- Allowed withdrawal of Interstate segments and substitution of mass transportation projects.
- 1974 Emergency Highway Energy Conservation Act
- Established temporary maximum speed limit of 55 mph on all highways, effective until June 30, 1975, or until President declares no fuel shortage.
- Set up first carpool-vanpool demonstration program and allowed expenditure of federalaid funds.
- 1974 Federal-Aid Highway Act Amendments
- Continued the national maximum speed limit by providing that the Secretary of Transportation shall not approve federal-aid highway projects in any state with a maximum speed limit greater than 55 mph.
- Project approval withheld if state fails to certify that it is enforcing 55-mph speed limit or vehicle size and weight laws.
- Established access to lakes program.
- Established off-system roads program.

- 1974 Williamsburg Conference on Statewide Transportation Planning
 This first national conference concentrated on two levels of planning: policy planning and statewide systems. Issues confronting most states were summarized.
- 1975 FHWA-UMTA Joint Regulations on Urban Transportation Planning
 Comprehensive regulations consolidating separate directives issued by FHWA and UMTA.
 Required a unified planning work program and a prospectus.
 Required Transportation Systems Management.
 Required a transportation improvement program (TIP), including an annual element detailing the next year's projects. The MPO must endorse the TIP.
 Required special efforts to plan for needs of the elderly and handicapped.
- 1975 Conference on Transportation Programming Process, Orlando, Florida
 Defined programming activities required to finance, select, and schedule projects with major focus on allocation of funds.
- 1976 Federal-Aid Highway Act
 Established Interstate 3R program.
 Revised Interstate withdrawal provisions to allow substitute highway projects as well as substitute public transportation projects.
 Changed fiscal year to October 1 through September 30 and provided that apportionments be made on October 1 each year.
 Directed Secretary of Transportation to conduct (in cooperation with state, county, city, and other local organizations) a study of the factors in planning, selecting, programming, and implementing FAUS routes.
- 1977 Clean Air Act Amendments
 Tied together transportation and air-quality planning.
 Required conformity of transportation plans, programs, and projects with the SIP and established sanctions if transportation-related SIPs are not established.
- 1978 Surface Transportation Assistance Act
 Set September 30, 1986, as date by which all remaining portions of Interstate system must be under contract or be designated.
 Set September 30, 1983, as last date for withdrawing Interstate segments and for approval of substitute projects. Increased federal share for substitute projects to 85 percent.
 Made carpool and vanpool projects eligible for financial assistance with primary, secondary, and urban system funds.
- Increased basic federal matching share from 70 to 75 percent.
 Established bridge replacement and rehabilitation program with federal share of 80 percent. Also required that 15 to 35 percent of a state's apportionment be used for bridges off the federal-aid system.
 Changed period of availability of Interstate construction apportionments from 4 to 2 years and provided that any unused funds after that period go into a discretionary fund for distribution to other states.
- 1978 Guidelines for Transportation and Air-Quality Planning
 Provided guidance on coordinated transportation and air-quality planning in urban areas.
 Specified types of air-quality evaluations to be incorporated into transportation planning activities.
- 1979 DOT Regulation: Nondiscrimination of Handicapped
 Implemented Section 504 of the Rehabilitation Act of 1973 by defining how program accessibility was to be achieved for each mode.
 Prescribed transition planning process to be implemented by recipients of federal funds, with specific rules for each transportation mode.
 Required preparation of transition plans documenting how and when system accessibility would be achieved.
 Required that transition plans be developed under direction of MPOs. Specified accessibility standards.
- 1979 Airlie Conference on Statewide Transportation Planning
 Focused on challenges to be faced over next 20 years, especially in energy conservation and optimum programming of scarce state resources.
- 1979 Aspen Conference on Future Urban Transportation (sponsored by the American Planning Association)
 Consensus not reached on an image of the future but range of factors that would be important agreed on. Incremental planning seen as the only feasible and desirable approach to the future. Automobile will be dominant but public transportation will become increasingly important. Both will require increased public investment.
- 1980 Regulation of Environmental Impact and Related Procedures
 Established specific National Environmental Policy Act requirements to be followed by FHWA and UMTA. Specified three classes of actions that prescribe the necessary level of documentation. Outlined "scoping process."

- 1981 Federal-Aid Highway Act
- Redefined Interstate completion, limiting program to construction necessary to provide minimum level of acceptable service, including full access control, 20-year design, essential environmental requirements, and maximum of six lanes in rural and smaller urbanized (400,000) areas and eight lanes in larger urbanized areas. Costs limited to those included in 1981 Interstate cost estimate.
- Changed I-3R program to I-4R by adding reconstruction as a major eligible activity. Defined reconstruction to include some of the items eliminated under the redefined Interstate completion program.
- 1981 DOT Regulation: Nondiscrimination of Handicapped
- Rescinded 1979 rule in which DOT specified how program accessibility for handicapped persons was to be achieved in local areas.
- Promulgated a policy giving officials in each locality the authority to decide how to meet transportation needs of the handicapped.
- Required mass transit operator receiving financial assistance from DOT to certify that special efforts are being made to provide transportation that handicapped persons can use.
- Deleted previous requirement that regularly scheduled fixed-route mass transit operations be made accessible to all handicapped persons, including wheelchair users.
- 1981 FHWA-UMTA Policy on Applicability of Urban Planning Requirements in Newly Designated Urbanized Areas
- Minimized burden of planning and programming requirements on 95 new urbanized areas (from 1980 census). Intended to provide 2-year transition period for new areas to comply with standards.
- Allowed interim designation of MPOs, preferably existing agencies, in new areas.
- 1981- Conferences on Transportation Programming
- 1982 Issues and Practices
- Two separate conferences (Washington, D.C., and Denver, Colorado) focused on the programming process, current issues, and pragmatic responses of states to current restraints.
- 1982 Airlie House Conference on Urban Transportation Planning
- Reaffirmed need for systematic urban transportation planning, especially to maximize the effectiveness of limited public funds. Planning needs to be adjusted to nature and scope of the area's problems.
- Regulations of federal government should be streamlined. More flexibility was needed. Increased attention to system management and fiscal issues was needed.
- 1982 Woods Hole Conference on Future Directions in Urban Public Transportation
- Addressed the role of public transportation, present and future, the context with public transportation functions, and strategies for the future.
- 1982 Easton Conference on Travel Analysis Methods
- Focused on defining state of the art versus state of the practice. Gap between research and practice was wide. Technology transfer needed.
- 1982 Surface Transportation Assistance Act (STAA)
- Provided specific funding for Interstate construction discretionary by setting aside \$300 million from each year's apportionment. Established priorities for distribution.
- Created Interstate 4R discretionary funds, made up of lapsed I-4R apportionments.
- Provided contract authority and specific authorizations for Interstate highway substitute projects.
- Increased apportionments about 50 percent in FY 1983 over FY 1982 (HPR and PL funds increased same percentage).
- Earmarked 40 percent of primary, secondary, and urban apportionments for 4R-type projects.
- Established requirement for 10 percent of authorizations to be spent by disadvantaged business enterprises.
- Required states to have maximum weight limits of 80,000 lb gross, 20,000 lb single axle, 34,000 lb tandem on Interstate system; to allow twin trailer combination trucks on any segment of Interstate system and designated primary-system routes; to have a maximum width limit of 102 in. (actually established by 1983 DOT Appropriations Act and later incorporated in 1983 STAA by P.L. 98-17).
- Increased motor fuel tax from 4 to 9 cents per gallon with one-ninth of those revenues to be used for capital mass transit projects.
- Established mass transit within the Highway Trust Fund to which the one-ninth of motor fuel tax receipts will be credited.
- Established motor carrier safety grant program.
- Allowed transfer of urban system attributable allocations from urbanized areas of 200,000 or more population to another urbanized area in a state or to the state for use in any urban area in the state. Required approval of affected local officials and the Secretary.
- Provided minimum allocation grants so that each state's percentage share of apportionments should be at least 85 percent of its percentage of estimated Highway Trust Fund contributions (would benefit only 10 to 12 states).

1982 Executive Order 12372: Intergovernmental Review of Federal Programs

Replaced OMB Circular A-95 issued in 1969.

Federal government relied on state-established process for intergovernmental review of federal program.

Federal government accommodated state and local officials concerned with proposed program actions or explained basis for alternative decision.

1983 FHW/UMTA Urban Transportation Planning--Final Rule

Product of 2.5-year effort to comprehensively review the planning process to determine the appropriate federal role in the process.

Gave state and local officials more discretion in carrying out the planning process, including institutional relationships.

Strengthened the tie between planning activities and programming decisions.

The state and MPOs are required to certify that certain federal laws and regulations are met.

The Evolution of Transportation Planning in California

BOB DATEL

Transportation planning in California developed as a direct result of California's entry into the building of freeways. In 1939 the legislature established the freeway principle by statute and authorized the Division of Highways to construct any portion of the state highway system as a freeway or to make any existing highway a freeway. Since then, the state of California has made considerable progress in planning and building freeways. The boom in freeway development was spurred by the tremendous increase in California's population during the 1940s and 1950s. The population grew between 1940 and 1960 from 7 million to 15.9 million. By 1970 the state's population reached 20 million. This tremendous increase in population brought about a corresponding increase in motor vehicle registrations and miles of vehicle travel.

Because California's natural resources, manufacturing centers, and recreational areas are widely dispersed, economic activity in the state was, and still is, highly dependent on highway transportation. During the 1950s the street and road system, which was developed to serve a relatively small population dependent largely on agriculture, was no longer adequate.

California recognized the need for a highway system that had the primary purpose of linking major areas of traffic interest with high standard facilities to provide fast, safe, through traffic movement.

During the later 1950s and early 1960s, the California legislature became concerned that the rapidly expanding freeway network was not the result of a cooperatively planned system that considered local desires and plans. A legislative subcommittee report outlined these and other shortcomings in the state's highway planning procedures. In order to remedy this situation, the legislature asked the California Department of Transportation (Caltrans) to undertake development of an overall statewide freeway plan. This plan would provide a basis for state, city, and

county authorities to coordinate all transportation plans, work out necessary financial arrangements, and promote the development of land use planning. This first attempt at long-range transportation planning in California was a highly successful one.

The plan, finished in 1959, resulted in the legislative adoption with practically no controversy of the 12,250-mile California freeway and expressway system. The actual system adopted was the result of cooperation and coordination developed between Caltrans and city and county authorities in the area of transportation planning.

With the state-adopted freeway and expressway system as a framework, comprehensive transportation studies continued during the decade of the 1960s in the 10 largest urban areas in California. The advent of the computer made these complex transportation analysis and large transportation planning studies possible. Caltrans made significant strides in the field of modeling by using land use, demographic, and economic factors in transportation planning.

The new interest in cooperative transportation planning involving the state and local agencies was fostered by federal and state legislation. The first law to significantly affect transportation planning in California was the Federal-Aid Highway Act of 1962. This act required, for the first time, a "continuing, comprehensive transportation planning process carried on cooperatively" by state and local communities with urbanized areas of more than 50,000 population, which is commonly referred to as the 3C process. With the support of the 1962 Federal-Aid Highway Act, regional planning agencies quickly evolved in California's 10 largest urban areas. Caltrans' 11 districts were closely involved in much of the early transportation planning effort, which was largely staffed and paid for by the department, using state funds and federal highway planning and research (HPR) funds. As a result, the regional planning agencies did not develop into strong organ-

izations until federal and state funding legislation was enacted in later years.

The late 1960s and early 1970s ushered in a period of increasing public concern over adverse impacts on the environment resulting from the rapid development of transportation facilities. The building of freeways in many areas raised concerns about the disruption of the social and physical fabric of the cities. People demanded greater input into alternative decisions for highway projects. In response to that climate, increased emphasis was placed on transit. The California Transportation Development Act was passed in 1971 as unique state legislation providing cities and counties with additional revenue primarily for transit. Part of this revenue was also available for planning.

On the federal and state levels, response to public concern for the environment resulted in the passage of the National Environmental Policy Act (NEPA) in 1969 and the California Environmental Quality Act (CEQA) in 1970. The primary difference between the two acts is that CEQA emphasizes the physical environment whereas NEPA considers both physical and socioeconomic impacts.

In 1970 Congress enacted the Clean Air Act, which required the establishment of air basins, air quality lead agencies, and air quality plans. Caltrans has been active since then in providing assistance in the development of such plans.

Passage of Assembly Bill 69 made 1972 a landmark year for transportation planning in California. The legislature had affirmed the need for multimodal transportation solutions by the creation of a multimodal Department of Transportation to replace the highway-oriented Department of Public Works. AB 69 required that transportation planning be conducted in rural areas as well as in the urbanized areas. The 43 regional transportation planning agencies were designated and required to prepare regional transportation plans. Because many of these agencies were new, with either small staffs or no staff at all, the bill authorized the allocation of state funds to finance up to 70 percent of each regional agency's nonfederally funded transportation planning activities. Caltrans geared up to provide technical assistance and staffing to initiate the continuing regional planning process in many parts of the state.

The Division of Transportation Planning was created by this legislation and was charged with the responsibility of developing a state transportation plan. A draft plan was developed by Caltrans in 1975, but it failed to win acceptance from a diverse group of transportation constituents. This draft plan was ultimately rejected.

The legislature's frustration with the difficulties in adopting a state transportation plan led to the passage of Assembly Bill 402 in 1977, which emphasized short-range regional planning and programming. The requirement for a state transportation plan was eliminated and instead a biennial report of significant transportation issues and necessary future improvements was required. The State Transportation Board was eliminated and replaced by the California Transportation Commission (CTC), which has the responsibility of annually adopting a 5-year state transportation improvement program (STIP).

Most significantly, AB 402 required the regional planning agencies with populations greater than 50,000 to prepare a 5-year regional transportation improvement program (RTIP). The RTIPs identify state and federally funded projects for an entire planning region, both the urban and rural areas, for a 5-year period. These RTIPs are prepared on the basis of a 5-year federal and state transportation revenue estimate adopted by the CTC. Caltrans prepares a pre-

liminary STIP, which the regions must consider in developing their RTIPs. Differences between Caltrans' preliminary STIP and the RTIP are resolved in the final STIP that is adopted by the CTC. The final STIP may deviate from the RTIP only if there is an overriding state interest, insufficient funding, or conflicts between RTIPs. This programming process has influenced the importance of the transportation planning process and increased the responsibility and authority of regional planning agencies in planning and programming facilities in their regions.

Both AB 69 and AB 402 had the ultimate effect of causing closer cooperation among cities, counties, regions, and the state in developing plans and agreeing to implement priority projects. Many cities and counties developed, for the first time, multi-year plans and priorities for their own jurisdictions.

In the mid-1970s and early 1980s the state experienced an era of severe fiscal problems. Inflation caused highway construction costs to skyrocket, and state and federal funding could not keep pace because it was tied to fixed gasoline tax revenues. It became obvious that Caltrans would not be able to keep all of the commitments that had been made to the local areas over the past several decades. Caltrans was faced with the painful decisions of determining priorities for projects that should proceed and identifying projects that could not be built at all. The term "downscoping" was coined during those years, which simply meant reducing the scope of projects. This period taught an important lesson, that of recognizing the danger of over-committing resources and being cautious not to raise local expectations that cannot be met at a later date. The severe fiscal constraints of this period were eased temporarily with the 5-cent federal gasoline tax increase in 1983 and the corresponding 2-cent increase in the state gasoline tax.

Today the roles of all agencies involved in the regional planning process have changed. These changes have resulted from the growth and maturation of the regional planning agencies as well as from changes in federal planning regulations. When regional planning first began, Caltrans performed as the technical staff for many of the regional planning agencies. Most of these agencies now have increased their staffing and technical expertise. Many regional agencies conduct transportation planning activities without the help of Caltrans or with limited assistance. Caltrans' role has changed from carrying out regional planning studies to assisting and cooperating with regional planning agencies in conducting planning activities in accordance with federal and state requirements.

Recent changes in the FHWA-UMTA joint planning regulations have shifted responsibility for certification to the state and the metropolitan planning organizations (MPOs). Caltrans has been working with the MPOs to develop a procedure for the regional and state certification of the planning process and has prepared a guide to assist MPOs in carrying out their planning activities. Procedures to assist Caltrans staff to effectively monitor the regional planning process and document completed planning activities have been identified. These changes in regulation will allow Caltrans to reaffirm its commitment to the success of the regional transportation planning process and its willingness to assist and coordinate with the regional planning agencies.

In addition to regional planning activities, Caltrans has reinstated a statewide system planning effort to update within today's environment the long-range highway transportation needs. The concept

of system planning really is not new at Caltrans. The 1959 freeway and expressway system was a system plan.

Through the system planning process, Caltrans, in cooperation with the regional planning agencies, will identify current and long-range problems and possible solutions based on realistically constrained resources. The process will allow Caltrans to focus actions on the most important system problems, thus providing the most effective transportation system available within the limited resources. Priorities developed through the system planning effort will feed the Caltrans program identified in the TIP.

Unfortunately, system planning cannot solve all of California's transportation problems. The fund estimate for the 5-year STIP shows that a lack of adequate funds will continue to exist despite recent increases in federal and state gasoline taxes. Caltrans intends to maintain a position of not promising or programming projects that it cannot reasonably be expected to deliver.

In the densely urbanized areas of the state, highways are not the solution to all transportation problems. With the projected increases in population, Caltrans expects greater reliance on other alternatives to highway expansion. With the regional planning agencies, the department will have a greater role in promoting ridesharing, use of high-occupancy-vehicle (HOV) lanes, and transit.

Currently, Caltrans coordinates closely with the MPOs in developing and maintaining ridesharing programs. The department also participates with the regional transportation planning agencies and local agencies in solving specific transportation pro-

blems. For example, in the San Francisco Bay area, Caltrans, with the Metropolitan Transportation Commission, Golden Gate Bridge District, Marin County Planning Department, and the city of San Rafael, studied the needs and actions necessary to provide a satisfactory level of mobility along Route 101 in Marin County. The study resulted in the identification of a project, now programmed in the STIP, to construct HOV lanes along Route 101. When completed, this project will greatly ease the rush-hour congestion experienced by Marin County residents who work in San Francisco.

Caltrans has learned through experience that close cooperation among state, regional, and local agencies is essential to avoid log jams caused by separate and often conflicting planning efforts by various agencies with limited jurisdiction over the total transportation system. For example, Caltrans worked closely with San Diego's regional and local agencies years before the inception of the 3C process. The department lent its staff and expertise and in turn gained first-hand experience with local transportation problems and needs. The result is a well-planned, efficient transportation system that serves the needs of the region.

Caltrans is working closely with the other MPOs and rural transportation planning agencies throughout the state with the system planning effort as well as day-to-day regional planning activities through 11 district offices. The goal is to continue to use the planning process to help ensure that funds available for transportation are used in the most cost-effective manner. To Caltrans, planning is an essential tool for effective programming.

The Evolution of Transportation Planning in Pennsylvania

THOMAS D. LARSON

Everybody is feeling some inclination toward history here today, so I thought I'd go back and dig into history in a more authentic fashion. I brought my history book! This is the third volume in a four-volume history of George Washington. It's remarkable how little most of us know about the man who really set our democratic processes in place. In this particular reference, he was in his first year as President. He was traveling in New England, having a lot of trouble, I might add, because he was a Virginian. At any rate, one of his problems was that John Hancock, the Governor of Massachusetts, was a staunch advocate of states' rights. The question was, then, how could the President visit the state without appearing to capitulate to states' rights? As it happened, the President managed the circumstances by requesting Mr. Hancock to come visit him at his inn. Hancock said he wouldn't do this but eventually agreed. He actually came to the President all wrapped up in blankets, claiming grave illness to prove that he was capitulating with great personal loss.

Getting down to transportation, there is another reference here. The President, after he got to New Hampshire, said he'd had enough of New England and started for home. He was traveling by a sort of random route and had a lot of trouble. The roads were intolerable and the accommodations indifferent. A direct quote from our first President is as follows: "The roads in every part of this State are amazingly crooked to suit the convenience of every man's fields and the directions you receive from the people are equally blind and ignorant." After the trip he came home and prescribed FHWA, the A-95 process, and MPOs. It's part of the legend that it took 200 years to really have the President's wishes carried out. At least the first part of that story is true!

Getting down to my comments on transportation planning, I will be very brief. Much of what I could say has been covered, but clearly there is a difference between rural and urban settings. The rural setting was the problem that George Washington had-- a lot of crooked roads. Early on, we could not get

from point A to point B, so we used rather simplistic but effective ways of making judgments. And if you look at some of the old textbooks on highway engineering, you will find a very simplistic cost-benefit analysis used to pick one route over the other. As a professor, I used to teach those things. I didn't believe them then, and I don't really believe them now, but that was the doctrine we worked with. When we started using those concepts in urban settings, a lot of bad things happened, mostly because we applied an overly simplistic type of analysis in settings that were very complex.

I'd like to use 1969 as the division between the past and the present; this was when the National Environmental Policy Act (NEPA) was passed. That marked the difference between a time when planners were very effective advocates of road building and a time when lawyers took over as effective adversaries of road building. So that's the point in time when a lot of things changed.

There are specific examples of why this was important in Pennsylvania. We had a large Interstate system under way, but, for example, construction of I-95 in Philadelphia through what is known as Penns Landing, or the Society Hill area, was brought to a halt. Clearly, the environmental experts on Society Hill were much more effective than the Department of Transportation in Harrisburg. A \$300 million facility was stopped dead in its tracks because the environmental issues had not been dealt with adequately as prescribed by NEPA. The Vine Street Expressway, another major Philadelphia connector, was also stopped because one of the most historic Chinese Catholic churches in the country was threatened. I-78 in the Allentown-Bethlehem-Easton area, a major link serving New York City, was stopped because environmental questions were raised as to an appropriate alignment (whether to go north, south, or through a particular urban complex).

In western Pennsylvania, the Pittsburgh area, there were controversies that swirled around the so-called East Street Valley and North Shore complex of freeways that were to connect a major city to a complex of Interstate highways. In this example, the politics of relocating some 2,400 people out of the East Street Valley were simply overlooked by the highway planners.

These changing public moods had a large impact on the Department of Transportation in Pennsylvania, both internally and externally. The external impacts almost led to the downfall of the agency. We met the urban expressway needs, at least on paper, through the Interstate program and through other special programs. In the rural areas, expectations for freeway systems also were raised and we entered into a bonding program that is now a national legend, and perhaps a national disgrace--we borrowed \$2.5 billion to provide in rural areas what the Interstate program was providing in the urban setting. So when I hear people in this audience speak glibly of borrowing their way out of present difficulties, I urge them to visit us in Pennsylvania before going too far down that road. We can tell you what it's like to have a \$200 million/year debt service requiring 4 cents of our gasoline tax, and it won't go away until the year 2000.

The biggest problem, however, was not the debt service but the incredible expectations raised statewide for a system that, after the Arab oil embargo and the energy crisis, simply could not be built, and the internal controversy that came along was almost as bad. Within the government we had legislators demanding that we move forward, we had governors caught in a whipsaw position, and we had the department caught squarely in the middle of all this rhetoric and increasingly aware they could not

meet public expectations. Out of all that came a lot of bad things, among them the furloughing of some 7,000 employees and, for those that were left, a feeling that there was no mission for them. The department was divided into small, isolated program areas; there was the Traffic Operations Program for Increasing Capacity and Safety (TOPICS), a program for rail-highway crossings, and a program for certain kinds of safety improvements--a true balkanization with no real spirit or mission to go forward.

We felt that planning was crucial to getting things back together again. One of the things I had read and adopted as a professor at Penn State was a view of planning advanced by Kenneth Boulding. Although Kenneth Boulding has written some things since this piece on planning that would place him to the right of Attila the Hun, this particular piece was a good one and I commend it to you. Let me cite just a few of Boulding's principles (the full article was printed in a 1978 issue of the MIT Technology Review):

1. The world moves forward into the future as a result of decisions, not as a result of plans.
2. The success of planning might be measured by the extent to which it diminishes regret. (That's my favorite principle.) Planning, to be effective, should diminish regret at some time in the future.
3. The quality of decisions depends very much on the degree of uncertainty.
4. An important source of bad decisions is illusions of certainty; computerized models, those things we just loved for a while, are almost certain to produce great illusions of certainty.
5. The most valuable planner product might be the widening of agenda and the examination of values.
6. Finally, which we all ought to take to heart, the only thing that prevents planning from being disastrous in government is that it's usually not believed.

Building on this philosophy, we adopted a very pragmatic approach to planning in Pennsylvania, perhaps more pragmatic than it should have been; we were led to it in desperation.

We had a \$300 million investment in I-95 that wasn't being used. We agreed to build \$4.5 million worth of noise barriers immediately and to stop any further work on entrances into the downtown complex until we had studied the issues and local agreement had been obtained. I am pleased to note that today we have all of the remaining segments of I-95 south of Philadelphia under contract. We had previously argued for 10 years about the sludge beds that were in the path of the highway. Finally, we simply agreed to cross this obstacle, in fact, to build a bridge over them. I-95 will be open in just a few months.

In Pittsburgh we downscaled a project--I-279. We built HOV lanes and did several other things to make this project acceptable. I have to say candidly, however, that had I been Secretary of Transportation at the outset, it would never have gone forward. I think the relocation of 2,400 people out of the East Street Valley was too high a cost to pay for that particular facility. But given the fact that all those people were gone when I arrived, there was little left to do except move forward.

What we have tried to do is use the NEPA process to regain our advocacy position rather than to simply view it as an adversarial and hopeless process. That viewpoint, or perspective, has worked to our advantage.

I agree that there has to be a long, short, and immediate view of things. More importantly, you have

to work all of these simultaneously. For example, we have a multiyear program that is required by law. It spans a 12-year period. Our previous 6-year program got so big that the political forces chose to double the time for it, because all their projects wouldn't fit within a 6-year time frame. In point of fact, however, we have divided our 12-year program into three time horizons--4, 8, and 12 years; 12 years is our view of the long term, and we are willing to look at almost any idea at that level. The term of federal funding is 4 years, though, and we want projects to be real. We want to have the kinds of facts that lead us to delivery of products.

In Pennsylvania, the programming process has become credible. We have delivered some 2,000 projects from our 12-year program, worth billions of dollars. The product of our planning has become credible only because the process has delivered results.

We have also added to our planning philosophy the concept of strategic planning. We have put a large emphasis on trying to understand what the agency is about, what it can deliver, what, in fact, is the business that we are in. I think transportation agencies need to ask themselves those kinds of questions, and each manager within the agency has to ask

such questions periodically. We think that this business concept, following from our overall administration themes of economic rebirth and community conservation, gives us a sense of reality about where we are and who we are and that is very healthy for us. We believe strongly that pavement management and some of these basic programs have to be integrated into the planning process or you'll simply miss the major investment streams with your planning impact. Follow the money and you will clearly have some impact on your agency.

In short, the planning we are now doing in Pennsylvania bears little resemblance to the classic transportation planning that raised expectations so outlandishly during the 1960s and 1970s. We still look to the future, but we create Pennsylvania's image of the future, not through computers or mathematical models but through the collective vision of the people of Pennsylvania. Computers have been relegated to the task of managing information. Planners, managers if you will, use this information for decision making where the world does indeed move into the future by decisions and not as a result of plans.

The Evolution of Transportation Planning in Texas

MARK G. GOODE

The Texas Department of Highways and Public Transportation was officially formed in 1917 after Congress set up the first federal-aid act, and our responsibility as a highway department at that time was to plan and construct, with the help and cooperation of the counties, a paved roadway system to connect all the county seats. That in itself turned out to be a pretty good chore because we have 254 county seats, but it was a very close cooperative operation between the state and the counties.

The first plan, this trunk system, during the formative years of the Department of Planning was accomplished through complicated negotiations between our district representative and local officials. We have always maintained a close communication between our district offices and the city and county officials. In the early years of the department this was primarily with the county officials because we originally had very little or no jurisdiction inside the cities. In the development of the statewide system to connect the county courthouses, or county seats, our job was to work closely with the counties and the counties' first responsibility was to furnish all the state highway right-of-ways.

In fact, the counties furnished all the state highway rights-of-ways for our department until about the mid-1950s when the Interstate system came into being; at that time we shifted to a 50-50 participation where the counties or cities furnished 50 percent of the cost of the right-of-way and the state put up 50 percent. This division has been

changed to one in which the state picks up 90 percent of the cost and the city or locality retains a responsibility for 10 percent. We believe that this is important because it gives the cities and the counties a very definite veto power to prevent the state from doing something they don't want. It does have some adverse aspects from time to time. Those of you in the planning business certainly are aware of the sections of highway built because of local interests and of the difficulty in some of the counties that are strapped for funds in encouraging them to put up their matching 10 percent for such highways.

In the early years we concentrated on the roadway design standards, proper physical spacing for arterials, and required system continuity necessary for meeting each area's anticipated growth. In the early 1940s, our department was staffed with a Director of Urban Planning to assist the local areas in developing their plans. During the 1950s and early 1960s, plans for highway development became more data oriented as urban areas began making greater use of vehicle count and driver survey results. Up until this time, the level of formal planning varied between areas but the process was constant in the effort to maintain cooperation between the department and the local officials. Until we got into more formalized planning, our planning department was primarily involved in technical data collection and the first responsibility was map development. The planning department was developed originally to map

the state and all the county roads as well as the state system. That expanded into actual traffic counts and traffic projections.

Investment of local governments in transportation planning was formalized in the 1960s with the passage of the Federal-Aid Highway Act of 1962. Section 134 of the 1962 act stated that before federal approval of any project in an urban area of at least 50,000 population could be granted, such projects needed to be based on the continuing, comprehensive, and cooperative (3C) transportation planning process, carried on by state and local officials. I envisioned this in its early stages as nothing more than a formalization of what we had been doing with our counties and cities. All the district engineers, especially in the metropolitan areas, worked with the counties and the cities and actually set up a transportation system. In the major cities that had staffs for planning we could utilize their own transportation plan and work it into our plans for the counties. We worked very closely with them in scheduling and planning projects. Those who were involved in the early development of planning in Texas in urbanized areas recall our feeling that the red tape was plentiful and the funding inadequate. However, as the years have passed we look back on the 1960s as perhaps the golden age of transportation planning.

Because of the difference between long-range plan components and the political reality of the day, local governments needed financial assistance to develop plans to address their most immediate and critical needs. Transportation system management, sketch planning, and short-range transportation improvement programs, building out of the federal requirements, were the basics. No one in our state would argue that cities and counties did not need financial help to assist the state in the development of more strategically focused transportation plans. The result was the Federal-Aid Highway Act of 1973, which set up the Section 112 or PL funds for urban transportation planning. Wording in this act appears simple: it charges the state with developing a formula and distributing the planning funds to the urbanized areas of the state in a fair manner. It also states that these funds are to be made available to the metropolitan planning organizations (MPOs) designated by the state as responsible for carrying out the Section 103 planning. This seemed appropriate phrasing for us in Texas, because at the time we had 23 study offices within the department that had been responsible for performing Section 134 planning for their metropolitan area.

This was perhaps the low point in cooperative transportation planning efforts in Texas. The cause of most of our difficulties was the joint planning regulations generated by FHWA and UMTA in 1975 to implement the 1973 act. Although it is becoming increasingly common for federal rules and regulations to strengthen the law that they were intended to implement, it is most distressing for these rules and regulations to begin encroaching on responsibilities that belong to the state and local governments. Such was the case with the joint planning regulations. They elevated the MPO to a new and a complex position. The regulations appeared to remove from the states and local governments the responsibility for transportation planning and placed this responsibility in ad hoc MPOs. The responsibility for such planning in Texas is vested by state law with the state highway department as the recipient of federal funds. Adding to our problem with the regulations was the associated confusion in attempting to interpret them. In Texas, federal officials sent to interpret the regulations were incorrectly reporting

that councils of government (COGs) had to be designated MPOs. Adding further confusion to the regulations was the misnomer "joint regulations." It was soon shown to be untrue that FHWA and UMTA would follow the same rules and procedures, the strongest point of difference being federal funding procedures. Into this confusion we all stepped, each with our agency's interpretation of what the legal intent of the regulations was.

Agencies became polarized on the issue and we struggled through a period of redefining our working roles within the transportation planning process. The basic problems associated with the MPO concept are still unresolved and are of concern to state and local governments in Texas. The federal definition of the expanded role of the MPO creates a vagueness as to who is responsible for Section 134 planning in the state.

In regard to designated MPOs an array of structures has evolved in Texas that reflects the needs of each area. We have in Texas 25 designated MPOs, of which 12 are cities, 7 are COGs, and 6 are the steering-committee-type structures. Within this framework, the staffing responsibilities for actually performing the planning work vary even further. The majority of the cities and COGs designated as MPOs perform planning work through in-house staffs or consultants. But most of these MPOs share some part of the planning responsibility and planning funds with other local government staffs or our department study staff. In an area where a steering committee is designated as MPO, planning funds are passed through to one or more local governmental planning staff of our department study staff. We thus allow our urbanized areas to operate in a style that suits their local needs. We try to give as much flexibility as possible to the MPO's designation because, in the end, the governor actually designates which organization is to become the MPO in each area. You need the MPO in order to get complete clearances on federal projects.

Texas' position on transportation planning is that it is necessary. This dynamic process, which brings together local officials, state officials, and technical professionals to define possible past to possible future is of considerable value. But the results of such efforts must be credible and workable. Transportation planning has been, until recently, primarily long range. Its focus has been the distant future and its concerns separate from the daily problems of transportation. But most states and urban areas face serious financial problems, limiting their ability to make commitments to anything but the most immediate and critical action. The call is clearly for a balanced emphasis between short- and long-range planning. Imagination in the development of low-capital measures is appropriate as well as in the development of high-capital measures. In Texas, we believe that long-range regional transportation planning must continue to play a vital role.

The last stage of balanced long- and short-range planning is system recommendation, not selection. The selection and approval of a project must continue to rest with the implementing agencies and not advisory agencies or MPOs. I think that this is one of the major misconceptions that resulted from the 1973 act. MPOs made up of many small communities have no financial responsibility for implementing any plans. No effort was made to make their planning responsive to the availability of funds, and if you are going to be responsible for the planning, it must be done by those who have the financial responsibility to implement the plan.

At one time, we developed what we called a 20-

year plan. We worked on it from the standpoint of anticipated funding for 20 years, but we now believe that we need both a long-range plan and a short-range plan. Over the next 20 years, the population of Texas is projected to go from more than 14 million to more than 21 million. Texas is supposed to be second to California in population by 2000. That's a 50 percent increase in the population of the state. We can't work with a short-range plan in this circumstance, so we are working on it as a 20-year project development.

We don't see many new roadways being built, but we do see the need for preserving and expanding the capacity of the existing system. We are going to develop a 10-year project development plan that will, it is hoped, realistically fit what funding

can be expected in the 10-year time frame. As the time frames get shorter, of course we can be much more accurate in the projects and their scheduling.

But these time frames have to be coordinated with funding, and there must be the ability to adjust whenever drastic changes occur in funding. There must be alternative plans and plan flexibility that will fit project funding. I think we were guilty in many instances of having the communities expect more than we were ever able to produce because of long-range plans, and I think it worked to our detriment.

Implementing agencies charged with responsibility of deciding the most appropriate strategies for achieving planning consistency must perform the selection and staging of projects for the programming process.

The Evolution of Transportation Planning: Iowa's Perspective

C. I. MacGILLIVRAY

To be useful and effective, planning must continuously adapt and respond to change in conditions, issues, and decision-making needs. In a certain sense, a time line of transportation events is simply a chronicle of the way that planning has responded to change in decision-making needs and to the availability of new tools, knowledge, and understanding. By taking a look at the evolution of planning and forming some judgment about how well planning has responded to change, we may come away with some ideas that can help as we face a whole new set of trends, issues, and needs.

Probably the first indication of need for some kind of highway planning, at both the state and federal levels, concerned the issue of route continuity. Our first plan in Iowa was laid out long before highway transportation was understood in its present context. Early surveyors recognized that Iowa was a flat place, and they laid out a grid system of roads. In fact, that's the biggest control we've had in transportation planning in Iowa ever since. That was in the 1860s.

That surveyor (or planner) was kind enough to locate most county seats in the middle of a county. So, with the advent of early urban development, our second-generation plan became more sophisticated. We connected the county seats and had a grid system of main routes. That grid is still such a dominant factor in transportation planning that we actually have outlawed diagonal highways.

With the advent and rapid increase in the ownership of automobiles came the desire for long-distance travel and a corresponding need for an interconnected road system with the characteristic of continuity and service. In Iowa, at the time this need was being felt, there existed considerable sentiment against the concept of state control of

highways. With each county responsible for developing and maintaining its own road system, the result was a patchwork of highway service defined only by county borders. It was impossible to effectively meet the travel needs as they were developing at that time.

The Federal-Aid Highway Act of 1921 may be considered a milestone for Iowa. It provided the mechanism that led to state responsibility for the primary road system in 1927. The 1921 act essentially made eligibility for federal aid contingent on state control of federal-aid roads. With this came the state's authority to make improvements based on their contribution to a planned or coordinated system.

So, although planning, in the sense of defining a highway network to meet travel needs, had begun in Iowa as early as 1917, until 1927 the state had no power to require that improvements be made in accordance with a plan. Once this authority was established, system planning became an important and ongoing activity. In fact, the development of a highway system to serve travel demand safely and in a manner consistent with the nature of that demand has been a dominating objective in transportation planning at all levels of government ever since that time. Our forecasting efforts, functional classification, and needs studies have all become well-developed activities used in support of system planning. Network planning has been an appropriate response to a trend of continuous growth in travel demand. Questions then were these:

1. Where will facilities be needed--what is the demand?
2. What kind of facilities should be provided--how will they be used?

3. How much will they cost?--issues of programming and plan implementation.

Planning has provided answers to these questions over the years.

In the 1930s our attention focused on a basic understanding and knowledge of the highway system's functioning--our efforts were devoted to data collection and the early examination of the safe operation of our routes. The first recognition of urban and rural congestion was occurring. Planning for safety and congestion relief was becoming a significant responsibility of the highway administrator.

We had an early highway engineer in Iowa that most of us are very proud to be associated with, even if we didn't have much continuity with him. His name was White. I was reading one of his reports to our Highway Commission of the 1930s recently; he was expressing concern for the growing recognition of congestion on the road system. Of course he was also talking about 1,500 vehicles a day, but it's amazing how time changes our standards.

In the 1940s there was a better understanding of the characteristics of highway travel demand and use, a knowledge that allowed a planned response. In this era forecasts and the studies of function, needs, and service were developed.

In the 1950s planning and programming began to mature as the equalization of service benefits for all users became a compelling issue. New tools began to be available to assist the planner, such as sufficiency ratings for priority rating.

During the 1960s, the transportation planner was one of the first analysts to turn to extensive application of computer technology. The development of sophisticated tools has continued to preoccupy us too much in our planning evaluations. For the first time, we had easily usable and generally accepted methodologies for objectively assessing development and traffic distribution issues.

Over time it became evident that the large-scale highway construction program was affecting communities and the natural environment in a manner and to an extent far beyond that initially anticipated. Although the 1969 National Environmental Protection Act (NEPA) was legislated in response to a variety of perceived problems, clearly highway construction was the target of its provisions. As a result of NEPA, project planning has become an important antecedent to project engineering, and today it is among our most intensive planning activities.

Sensitivity to social and environmental concerns in the decision-making process has increased as a result of NEPA requirements. In this sense, the primary objective of NEPA has been met. This success has not, however, come without its cost in manpower and other resources, response time, and overall planning productivity. Moreover, judicial interpretation of what constitutes compliance with NEPA has indicated that it is the process that counts. The information must be provided, but the decision makers are free to base their decision on other information as well. The danger in this concept is the general example being set that process is more important than results. Although this policy may be defensible, and perhaps even necessary with respect to NEPA, it is not something that is applicable to all other planning efforts. We do not wish to see it spilling over into all areas.

The area of urban transportation planning is one in which the federal government actually legislated a planning requirement. The Federal-Aid Highway Act of 1962 made continuing receipt of federal aid for highway projects in urban areas contingent on a continuing, comprehensive, and coordinated (3C) planning process. The federal government made a corres-

ponding commitment of funding in support of this new planning effort and over time they came to define in detail the actual planning activities that would be required.

During the 1960s, we invested substantial resources in the development of urban travel forecasting models. We have been providing technical assistance to our eight urban areas ever since. This was one of our real successes as planners. Perhaps, also, this was the source of our biggest mistake--the contribution to false expectations (which still plagues us today): expectations for services and facilities that couldn't and didn't materialize, expectations that system development (new construction) could solve so many urban problems that continue today.

In 1983 the 3C planning regulations were relaxed considerably. A question for today is how to redefine roles and responsibilities with a lesser federal presence. This, too, seems to be the result of an object lesson. Because of the diversity among urban areas in the nation, the federal government was never able to define planning regulations that would fit the needs of every urban area. Perhaps this is a lesson we should heed as we examine the future of urban planning and the planning process needs of each state.

Systems planning, project planning, and urban planning have all been influenced by federal requirements or initiatives, although they have been developed to meet our specific conditions and needs. We have taken the initiative more recently in monitoring what affects the viability of our transportation system as a whole, including all modes, and in developing responsive plans for that system. It is in these areas that our planning must be most responsive and relevant. For example, our changing agricultural transportation needs, with the changing national and international agricultural market, and a changing transportation system (e.g., railroad abandonments) mean new needs in highway service and highway planning to support our state's economy. So highway planners must learn all about a new industry, railroading, and a changing economy we have never dealt with, agriculture.

An example of adapting planning tools is our needs study. As we became concerned more with system management than system development, we began learning to use the needs study concept to test alternative policies and to account for fiscal constraints. Also, through constant monitoring and analysis we can anticipate problems before they occur and be prepared with a response conceived in a noncrisis atmosphere (e.g., pavement management and projecting pavement failures with planned response). For example, we were concerned with the effects of changes in truck technology on our highways before this became a major issue at the national level. We equipped ourselves to deal with issues such as truck weights, cost recovery, cost allocation, truck fees, truck route systems, and truck size policy. This preparation allowed us to gain legislative support for recovering increased highway costs due to increased truck weights at the time Iowa's truck weight limits were revised. We were able to develop, without the contention we have noted in much of the country, the new truck service route systems that provide basic service to both agricultural and urban economics. So, in this respect, monitoring and analysis is one of our most important planning activities.

The emphasis in planning has evolved over time from a concentration on physical, network planning to inclusion of management policy and planning. Although policy and management planning have always had a role in our planning program, they are assum-

ing primary importance today as we make the transition from system development to system management. This change has required adaptation of existing planning tools, as with the needs study, and the development of new tools, as in the case of the pavement management program. Existing planning efforts, and the data used in their support, are being put to new uses. For example, our roadway sufficiency rating program was initially devised to measure progress in meeting legislatively mandated equalization of service in the primary road system in all areas of the state. It is a development planning tool. But it has become an invaluable tool in establishing the location and immediacy of pavement rehabilitation needs in an aging system. It joins with our new pavement management tools as part of the kit.

Changes in planning have come about as a result of expansion in scope and shift in program emphasis. The tendency is for products of the planning process to be oriented less to a specific desired end state and more to a series of short-range studies and decisions, efforts that will have the effect of keeping our options open for a future that cannot be predicted with complete certainty. The time frame for much of our planning has become short range.

With increasing comprehensiveness has come the need for an expansion in the data base used in sup-

port of transportation planning. In cooperation with FHWA our base of information has increased, particularly with respect to the characteristics of highway use and performance. With continuing advances in computer technology, we have been able to make data more accessible and make more effective use of information from those data. Today we have weigh-in-motion and traffic telemetry systems that tell us more about use of the system, analytical procedures available to us such as the Highway Performance Monitoring System, and perhaps one of the most significant developments in a long time--the new needs study approaches that will rival in usefulness the planning tools we had in the 1960s for traffic forecasting.

In looking back at the evolution of transportation planning, our efforts corresponded pretty well with the decision-making requirements of the times. In that sense we have been successful. However, if we look around, we see examples of problems that might have been avoided through better planning. In fact, many of the problems and issues we currently face might even be blamed on poor planning or a lack of planning. Our current problems and issues should be viewed as a signal of the need to make another adaptation in our transportation planning process.

Response

W. L. GARRISON

We have heard five proud, varied, and candid papers. They are proud papers because there is much to be proud of. The states and the federal government began varieties of highway planning well before World War II and that planning flourished after World War II. With the development of the Interstate system, techniques were rapidly developed or adapted that served well.

These are varied papers because the story is different here and there. We invest in transportation systems to achieve goals; goals from the federal perspective are one thing, and goals are spelled out differently in individual states and regions.

And we have heard candid papers. Not all has gone smoothly. Sometimes rules and regulations have gotten in the way rather than served. Rules and regulations pressed by special interest groups have caused problems. We are fortunate to have speakers who can recognize problems, speakers courageous enough to name causes of problems, and speakers whose institutions have found ways to manage them.

Five proud, varied, candid papers.

REFLECTIONS

In this spirit of doing better in the future, these remarks in response to the papers will begin with what went wrong rather than accomplishments, al-

though the record is 99 percent accomplishment. We will speculate on how we might have avoided getting in trouble. Then we will seek comments that will help us understand what we ought to be doing now.

As the papers do, these comments have a historical orientation.

Making Enemies

My first observation is a simple one. It is that more attention to history would have alerted us to some of the tensions between suppliers of transportation and those who are negatively affected by it. For example, Lord Parnell's Treatise on Roads, written in the first decade in the 1800s, warned highway builders of the dangers of building through cemeteries and parks and a character in John Bunyan's Pilgrim's Progress, written in the late 1600s, longed for places where "there is no rattling with (stage) coaches, nor rumbling with wheels . . . (places where) one may think . . ."

Early railroads had some problems that sound familiar. The Stockton-Darlington, the world's first railroad, which opened in 1825, was stalled for several years by the Duke of Cleveland because the rail engineers had proposed a route through one of his fox covers. Charles Dickens hated railroads, seeing them as the cause of premature childbirth, a

symbol of power and ruthlessness, and the despoilers of the natural environment.

Later, there was great consternation when the railroads entered the cities, and in many large cities, construction faltered short of serving the center city. In London, for example, railroads were hardly able to penetrate the wealthier parts of the city at all. When they invaded workingmen's neighborhoods, displacement was a bother, and the railroads ended up operating low-fare workingmen's trains, the precursor to the money-losing commuter railroad.

Those fragments illustrate a long-standing conflict between those who build and those who are affected. They remind us that conflicts are not so new, and they tell us that if we had remembered or studied our history, we would have been ready for the revolt of the 1960s, the replay of a well-worn record. We could have avoided making so many enemies.

Inside Enemies

Some of the things we have done have set highway planners and their institutions against each other. Congress saw a danger in 1915 when it said (House Document 1510, Jan. 15, 1915):

To make State highway commissions or State highway engineers subservient to a Federal bureau would be disastrous. It would stifle initiative, discourage original research, and cause all State highway officials to await the action of federal authority.

And in his book on Telford's system of roadmaking written just over 100 years earlier, MacAdam remarked on the need for a knowledgeable, balanced institutionalized system. MacAdam was a planner and a manager. He sought a rather centralized management system, perhaps suitable for England. (And perhaps illustrating that deep in the heart of every planner lies a dictator.)

Although history should have alerted us, power did move upward in the hierarchical road planning and delivery system, with some of the results that concerned Congress in 1915.

(Those who are keen for road pricing schemes might do well to remember history, too. Eighteenth century tollroad pricing in Britain led to endless debates about what was fair and what wasn't. Indeed, the British Parliament spent more time discussing tolls than it did worrying about the revolt in the colonies--the American Revolution. Debate came to an end when, beginning in Wales and spreading like wildfire, the citizens broke the toll gates and burned down the tollkeeper's houses, a popular revolution known as the petticoat revolution. Perhaps borrowing from Bostonians' dressing as Indians and dumping tea in the harbor, outraged yeomen dressed as housewives to destroy toll collection facilities.)

Making Lots of Friends

As mentioned earlier, the highway program has been 99 percent accomplishment, and that depended on deep public support, lots of friends. Now, we remark on when and how those friends were made.

Think with me about the automobile-highway system. It came into being about 1910 with the innovation of the Model T and efficient ways to produce it. But the system grew from more than an automobile technology revolution. There was also a revolution

in highway supply. Organizationally, it involved creation of state highway departments and expansion of the Bureau of Public Roads. There were funding, programming, and construction innovations. Needs studies were developed, an early form of highway planning.

There was an operations revolution too. Some of it was in traffic engineering. In the large, it involved learning to drive vehicles on shared roadways, to substitute automobile travel for travel with other modes, and to do new things with the automobile.

Once the format of the system was established, and people knew about it, the public clamored for its deployment. Individuals were willing to buy cars, pay for roads, and learn to drive and use the system. Road bonds only had to be offered to voters to be passed, automobile shows were the big events of the social season, and automobile clubs and user lobbies enjoyed great popularity. That was the case, say, during the 1920s.

Loss of Broad Public Support

Things are different today, of course. Most say this is because the system is pretty much ubiquitous: roads have been widely improved, 90 percent of the age-eligible population has driver's licenses, and there is 0.8 of an automobile for each member of the population 18 years of age or older. The general public is not clamoring for more, and small special interest groups, be they for or against the system, dominate political debate.

But there is more to it than that.

Think about what it was like in the 1920s to become a user of the system--to buy a car and get a driver's license. One immediately got all the advantages of accessibility that the system offered. An important matter was that the system was getting better every year as roads and vehicles were improved and as places of residence, work, and shopping adjusted to the automobile. To put that in more general terms, the system was increasing its productivity markedly every year. The real cost of the automobile was decreasing and there was more car per car. Highway producers were producing more and better highways for the money expended. The reorganization of production and consumption, automobilization, was proceeding apace.

That is what is missing today--productivity improvements. The real price of the automobile has been flat for about 2 1/2 decades, and we are no longer getting more car per car. Productivity improvements in highway construction have been negative since 1965. The real cost of operating a vehicle has hardly changed since World War II. Furthermore, the structure of production and consumption--the way we work, consume, and play--has been well automobilized for a long time.

That's the fundamental problem of the automobile-highway system and of mass transit, the railroad system, the pipeline system, and the air transportation system as well. They are deployed; technology (hard and soft) is not offering the productivity improvement we enjoyed in the past.

The problem runs deep because our nation's development has ridden on the shoulders of the innovation and deployment of transportation systems. We have been able to increase the gross national product and real incomes because we have had transportation systems that one after another have worked better. Systems are deployed now, they are working very well, but they are not working markedly better year by year.

Improvements in productivity are much discussed, but the kind of productivity that takes center stage focuses on making old systems work a little better. We should be realistic. Much of what today's systems can do for society has already been wrung out of them. We are working against diminishing returns. We ought to be making plans for major renewal of old systems.

Doing Better

The central question for today's planning is thus different in kind from the one that preoccupied us through the deployment of the highway system and the planning toward which we are drifting. That was tactical planning; it dealt with deployment tactics. And we are drifting toward operational planning: given the system, plan its operations.

But to reenergize gains from transportation as we have known them in the past, we have to do much more. We need strategic planning, planning that takes what we have and seeks to build something an order of magnitude more productive out of it. What are the things transportation might be doing in the future? How can we take what we have now and steer in that direction?

Strategic planning looks at opportunities and asks what we might be doing in the future. Transportation has enabled order-of-magnitude improvements in the organization of production and consumption in the past: that is the task. These are some options:

- * Change the nation's energy base by decreasing the cost of moving coal from the intermountain west by an order of magnitude.
- * Increase the options for improved residential environments by major increases in the ease of commuting.
- * Decrease the cost of housing by enabling the shipment of large, heavy loads. That is, make the prefabrication and shipping of housing workable as well as the shipping and relocation of housing already available.

Strategic planning also asks how to build from existing resources--resources of facilities, people, and instructions--and it asks whether there are development pathways along which new goals may be sought. Two problems emerge when this is done. First, one cannot be certain about the development options that will be valued by the public. Second, the resources are not available.

Lessons from history will provide a comment on these problems. In the early days of the automobile, for example, no one could imagine the development options that it would offer. There was no need for it. It was a rich man's toy. Its use promised only modest reductions of manure on city streets. The vehicle was so expensive that few would ever own one; impossible-to-obtain amounts of money would be needed to improve the road system for use by automobiles.

The lesson is that innovation is the mother of necessity, and necessity pushes barriers aside.

Strategic planning for transportation should offer options that have the potential of social and economic necessity.

Summing

The papers we have heard today treat the deployment chapter in the story of highway transportation and its planning. We have sought to position that deployment chapter in a larger sweep of history.

The question now is that of the next chapter. The job of operating and maintaining the system is an important one, so a next chapter is an operations planning chapter. We are in for a rough period. The public takes the system as a given and demands that it works well. Yet the outlook for enthusiastic public support for programs is limited, for the system is no longer offering markedly new and better things for people to do.

There is the option for another chapter, a strategic chapter. Strategic planning and thinking would support our finding ways to build from the present system toward one ushering in a new transportation revolution. No one can know exactly what should be done. We need to explore major options for the future.

Would the public support new options? Support for rail transit says yes. Although it is clear that the promise of transit is very limited, the public sees transit as a metaphor for "doing something." The public says to do something that will make a difference.

READING

Reflecting broad public interest, there are many books on the history of the automobile, and I have no favorite. Very little has been written treating how the public learned to make use of the system and how it changed styles of living. Early views are available in M. L. Berger's The Devil Wagon in God's Country: The Automobile and Social Change in Rural America (Archon Books, Hamden, Conn., 1979). The highway part of the story is well told in the FHWA 1976 bicentennial history, America's Highways: 1776-1976.

The early commercial revolution and the prerail-road and canal era of road building are treated in Sidney and Bernice Webb's English Local Government: The Story of the King's Highway (1913). The Webbs tie the need for highways to evolution of local governments and intergovernmental roles, a style of government transferred in part to the United States.

Is there anything new that's worth doing? Norman Bell Geddes had modern freeways in mind when he wrote Magic Motorways in 1940. Jerry D. Ward (and others) made suggestions suiting today's situation in Toward 2000: Opportunities in Transportation Evolution (U.S. Department of Transportation, 1977). I have suggested some options also in Innovation and the Structure of Transportation Activities, in Innovation in Transportation (National Research Council, 1980).

Response

LAWRENCE D. DAHMS

Just as each of my friends here who are heads of state transportation departments probably do not want to be saddled with the responsibilities of their associates, I don't want to be saddled with the weaknesses and strengths of the other metropolitan planning organizations (MPOs) because I have my hands full running my own organization, the Metropolitan Transportation Commission (MTC). But I will in a moment refer to some of the things we do at MTC because as we consider the evolution of transportation planning, the MPO does have a role and MTC is an MPO.

A problem we have in this discussion is that the title, Evolution of Transportation Planning, is a wide-ranging question. What do we mean by planning? There are many different kinds of planning. Each of the speakers has picked on a different piece of it, so it's a little difficult for us to understand each other as well as perhaps we might. For example, I heard Bill Garrison make some reference to planning's heyday. I'm not sure planning ever had a heyday, to tell you the truth, because my perception might be a little different than Bill's as to what heyday it is we are speaking of. For the purpose of this session we are focusing on the planning generally referred to as the 3C process. Originally a mathematical model approach to transportation planning characterized this process and then with the advent of environmental concerns it became an effort to reconcile transportation development with environmental and social factors. If those were the two objectives that the 3C process was trying to achieve, it essentially failed in both instances.

In any case, I enjoyed Tom Larson's reference to Boulding's lack of belief in planning as the only thing that prevents it from being disastrous. That is not a very good conclusion for those of us who have been working on the fringes of planning for some time. I think that another way of looking at that statement is to say that we know that lots of decisions have been made in the past and in transportation a lot of very useful things have been happening. Bill referred to 99 percent of it as going very well. Maybe, but how many of the major decisions were influenced by the 3C process? That's the question.

Without trying to characterize exactly the kind of planning MTC does, I would like to refer just for a moment to our approach. President Reagan had a position with General Electric that put him in the public eye and led to his becoming a very successful politician. At General Electric they had a slogan (maybe they still do): "Progress is our most important product." Despite the adverse referrals to the concept today, I would say that at MTC, process is our most important product. I don't say that apologetically. In the United States we have a democracy that we're all proud of. Frankly, the democratic process is the most important product that we have in the United States. That's why we feel so good about the way we live in the United States.

But I do agree with Tom Larson that decisions drive the future, not plans. I would like to think that certainly our objective at MTC is for our planning process always to have a product and that product is always a decision. Usually they are small

decisions but occasionally there is a large decision. But in any case, every piece of planning work that we do has its objective of making an important decision at a milestone point. And our process is important because we have been fairly successful in achieving that objective. We are able to implement most of those decisions because we pay adequate attention to the process that is needed to secure needed agreement.

Nonetheless, despite my feeling confident about that conclusion, I would still have to admit that I often say to my staff that MTC is an experiment in good government. The jury is still out on whether the experiment is working or not. Why? Because our decisions are often seen as infringing on the ability of someone else to make a decision. The someone else is very often powerful. Our decisions can infringe on the decisions of congressmen, state legislators, local officials, transit operators, even the California Department of Transportation.

All of these actors appreciate MTC's advocacy function and to some degree they appreciate our planning process. Bob Datel referred to our partnership in the Marin 101 project, and I too am pleased with the way that partnership worked. We had a good process and made a good decision and it led to implementation. There are lots of good examples. But, despite the appreciation by most of these partners of our advocacy function, most of them are also hesitant to make the most out of the decision process that we offer them. Why does this hesitancy exist? It's largely political. But it's also because of professional reasons. Planners and managers appear to have difficulty building partnerships. In order to adapt to a new environment and a new way of doing things, we have to be willing to shed some old ideas before we can try some new ones.

I particularly enjoyed Tom Larson's reference to the principles that Kenneth Boulding enunciated. The issue of the illusion of certainty is an important one. Tom said it, but as a responder, I wish to emphasize some of the things that were said before. A major problem we have as planners and managers is pretending to our political bodies that we know more than we do. Certainly the reference to computer and mathematical models and the certainty that they seem to offer is an example of this problem. Too little of the frailties that are built into those models is acknowledged.

Certainly the point that broader agendas and an examination of values are very valuable planning exercises deserves emphasis. Again that reminder of lack of belief in planning is the only thing that prevents it from being disastrous.

Now we have to shed some of those old concepts in order to adopt the new ideas and attitudes that are needed in order to be more productive. Tom suggested using the National Environmental Policy Act as a process for identifying and resolving issues rather than taking it as a challenge to be overcome. That's a very important concept and one that has to be understood. It's something you cannot give lip service to. Another point is that planning must now be considered a function of management and not something undertaken by staff for management. Again that ties in to the notion that planning is to support

decisions. Managers are to be making those decisions. It's a generic function; it's not a side issue.

So these kinds of concepts have to become inherent in the way we do business. They cannot be something we don't understand or give lip service to.

Frankly, I don't think very many managers or planners understand that. Until these concepts are paid some attention, we will continue to have the dubious distinction of supporting planning that is not dangerous because it's not taken seriously.

Summation: Transportation Planning—When Are Things Going to Get Better?*

THOMAS B. DEEN

When Tom Larson asked me to moderate and summarize this session, he assured me that all the panelists would be in agreement and that it would be a fairly straightforward task to synthesize the main thrusts of the panel. Fortunately, Larry Dahms has just distilled this summary and it would be redundant for me to attempt the same thing. Clearly, transportation planners today are a disconsolate bunch of folks. By their own testimony, their plans and their methods, if not themselves, are in disrepute. They stand indicted and vulnerable to charges of insensitivity and nonresponsiveness to orderly shifts in public perspectives and policies that any other profession would have easily accommodated until today their superiors sometimes question their continued visibility.

Frankly, I agree with this assessment, but having done so, I see no value in dwelling on it. Since I was committed to spend 15 minutes bringing this session to an appropriate close, I was about to despair last week when I decided to send the panelists' papers to an old friend and colleague, a former transportation planner whom many of you may remember. His name is I. Seymour Goodplans, formerly director of transportation planning for Metropolitan Gobblers Gulch, located in one of the states in the South-Midwest. (I think he has a brother-in-law named Goodwrench who works for General Motors.) Anyway, Seymour quit the planning business in 1978 to become a bookie; he simply wasn't making enough money as a planner.

After waiting a few days for Seymour to read the papers, I gave him a ring and after a few introductory pleasantries, I asked, "What did you think of the papers I sent concerning our recent history of transportation planning?" Now mind you, I believe little if any of what Seymour had to say, but he was so provocative and since I couldn't think of anything else to say I would like to spend the next few minutes giving you an overview of our conversation.

"What did you think of the papers?" I asked.

"Well, frankly I thought they were ridiculously

pessimistic. All the crying about poor methodology, bad models, pressure from the Feds, the naivete of the MPOs is so much nonsense. You sound like the L.A. Raiders explaining why they didn't do better against the Redskins in the Superbowl, or like Gary Hart explaining his poor showing in the early primaries. The truth is that planners have just completed the equivalent of a hole-in-one but instead of basking in self-satisfaction they're carrying on like they just lost the war."

"But, Seymour," I explained patiently, "you probably don't realize that since you left the profession, transportation planners and the whole planning business have fallen on bad times. The management of the industry scorns planning, is cutting planning budgets, ridicules its methods, and points to all kinds of irrelevant and obsolete plans as proof that planning is not worth the effort, nor are the planners for that matter."

"The problem with you planners," said Seymour, "is that you can't see the forest for the trees. You've got to get away from it all and look back to get a proper perspective. What do you expect of yourselves? The facts of the matter are that over the past few decades you and your colleagues have built 95 percent of the biggest public works project in the history of mankind--the Interstate Highway System. The system works! It's got continuity, lane balance, and the interchanges work beautifully, for the most part. What's more, they mesh well with local streets and you must have done something right with respect to location--why else the increases in land value and urban density that I see in lots of locations. Without the powers of Napoleon, or even Robert Moses for that matter, you squeezed the system into a crowded urban fabric in a few short years. You had to be pretty good just to keep from wiping cities out. What's more, the system's accident rates went into a free fall--there are thousands of people alive today that would have been dead if you hadn't done your job. You've got increased mobility plus economic benefits running out of your ears, but instead of cheering, you're crying."

"But," I tried to interrupt.

"Hold on, I'm not through. On top of building the interstate, you simultaneously were handling the

*Reprinted with permission from ITE Journal, Aug. 1984, pp. 18-22; copyright 1984, Institute of Transportation Engineers.

shift of virtually all intercity commercial passenger traffic from big downtown railroad stations to huge new metropolitan airports that had to be carved out of the suburban landscape along with all the ground access and parking systems required to make them work. And if that weren't enough, you were planning and implementing the takeover of almost all the mass transit systems in the country--reorganizing them, buying new equipment, and turning around the ridership. So I don't know what you expected, but it seems to me that things aren't quite as bad as you're making them out to be."

"Well," I protested, "I just don't see how you can sound so optimistic. What about all the obsolete plans, the lack of credibility of planners, and the overall deemphasis in planning that we see taking place all over?"

"Look," he said, "I didn't say that planning was going to be as big a deal in the 1980s and 1990s as it was in the 1960s and 1970s. After all, the need for planning is largely a function of building and there is not as much building going on now as there was. But lots of building is still going on and planning is needed and the planners are the ones to do it."

"Seymour," I protested, "you've been spending too much time running to the bank and have forgotten how the real world is. Think of all those unfinished freeway links that we can't complete, our overoptimism about our resources, our missed forecasts--plans that were obsolete before the ink was dry. Many managers have just simply lost faith in planning."

"Well," Seymour said, "since you ask, I'll explain it to you though I know you'll be too blind to see it even after I've explained. The truth is that effective planning over the past three decades has been impossible because it's been a period of wild, chaotic, tumultuous change unlikely to be repeated in the immediate future. The reason I'm more optimistic for planning in the near-term future is that things are going to be more stable in the next two decades."

"I can see," I noted icily, "that your new occupation gives you little opportunity for reading. If you had, you would be familiar with Future Shock and Megatrends. Everybody--I repeat--everybody knows that change is accelerating not decelerating. If we saw lots of change in the past, we're going to see even more in the future. It's clear to me that you're so out of it that I shouldn't have even called you up."

"When everybody knows something, Deen, then it becomes the conventional wisdom and therefore it's probably wrong, or at least your concept of it is wrong. History clearly shows that change does not take place as a linear function, but that it ebbs and flows. It's not even a geometric function that constantly and smoothly increases in all fields at all times. Besides, it's fashionable these days to exaggerate change and its more dramatic consequences. Look at the Club of Rome and their apocalyptic predictions. It's fair to say they overstated their case. The people who were pushing the supersonic aircraft as an absolute, inevitable, and immediate consequence of moving technology have had to revise their thinking. Many of the people who were making dire prognostications about our energy situation in the early 1970s we now know were overdoing it. Some, perhaps many, environmentalists in retrospect were exaggerating the hopelessness of our problems. For example, oil spills from supertankers were thought to be almost irrevocable disasters, but now we find that effects of damage seem to disappear in a surprisingly short time. Even the people that were saying office automation was going to be on us

in 2 or 3 years are finding it's taking longer than they thought. Instead of 'upstaging' each other, planners like to 'upchange' each other. Given the current popularity of 'upchanging,' it might be wise not to take it all too seriously.

"Now one must acknowledge that planning requires some assumptions about the future and that forecasting is a hazardous occupation that does and should always keep its practitioners humble. Some projections and assumptions will turn out to be wrong and plans will always have to be modified. What's more, you are planning in the toughest possible environment. You're planning facilities that have a long lead time between conception and commitment, and an even longer construction time, and a longer yet service life. On top of that, they affect and are affected by virtually everything else in society."

"But," I blurted, "you've just made my point--planning is impossible and therefore useless. A pilot, if he's any good, must be able to navigate even in a storm and a planner must be able to plan even in a changing environment if he's to be of any use."

"Look," he said, "of course you must be able to plan when some things are changing, but not when all things are simultaneously and rapidly changing. As you say, one has a right to expect the pilot to navigate in a storm and even in the middle of the night. But you can't expect much if you throw in two engines on fire, all the instruments dead, the copilot in the middle of a cardiac arrest, and the automatic pilot bailing out with the only parachute! And that's the way it's been for planners in the last few decades."

"And what's so different about the last three decades?" I asked.

"If you do not know that, then you simply don't have both oars in the water. Obviously it's been a period of wild swings of public moods with Viet Nam, drugs, the kids revolution of the 1960s-1970s that attempted to throw out in one generation all the accumulated wisdom of 2,000 years, the hippies, the special interest groups, etc., etc. But setting all that aside, there are five basic reasons why transportation planning has been especially tough, if not impossible, in the recent past, but I'm only going to tell you once, so get ready to take notes.

"FIRST, transportation planning has had to be conducted within an unstable and vacillating urban policy framework over the past 30 years. This policy framework has now stabilized. In fact, we now have no urban policy so you don't have to worry about it changing for awhile.

"1949 was the first time we as a nation implicitly thought about urban policy at the national level. We perceived the problem as being a lack of low income housing and the first federal public housing act was passed. We cleared slums, built housing projects, and created urban renewal projects all over. Sixteen years later we decided slum clearance was bad, not good. We have got to save those neighborhoods, not tear them down. All we need to do is provide some assistance to the social and physical infrastructure. We passed another act and presto we had model cities--a complete about-face, from tearing down to preservation, in 16 years.

"Then we saw the need for a regional approach to urban problems and set up the A-95 review system. Almost simultaneously, our environmental consciousness exploded. Apocalyptic population growth forecasts became the conventional wisdom and we decided that we must have dozens, perhaps hundreds, of new towns to accommodate this almost unmanageable growth. By 1968 the Nixon Administration was demanding a national urban policy to coordinate all the federal initiatives, and an act was passed in that

same year requiring the executive branch to submit an urban policy document to the Congress every 2 years. Two years later, in 1970, the first of these came out and their major conclusion was that no policy was possible in a pluralistic society, that no single national prescription concocted in Washington could possibly work for all locations--about-face in 2 years.

"Five years later, in 1975, new population forecasts took into account the free fall in birth rates and we decided that growth was manageable after all. Besides many, if not most, of the new towns that we had started were failing financially so we started and stopped a major urban initiative in the space of not much over 5 years.

"Then the new focus became the limits to growth after the oil shocks. The buzz words became 'systems management' and 'make do with what you have.' Planning became short term (long term planning suddenly changed from good to bad); we became aware of the growth shift from northeast and midwest to southwest; and we perceived an uncomfortable awareness of a permanent underclass that needed attention.

"By 1982 the last of the national policy documents emerged from the White House, which basically concluded that the Feds were not effective in addressing urban problems, that they were local concerns anyway, so we should just forget it. Thus in the 14-year period between 1968 and 1982, we developed new urban policy documents each 2 years and in almost every case our diagnosis of the problem changed before we could get a program designed, let alone carried out. Now I submit that no one, but no one, can plan transportation when standing on a platform as shaky as that.

"SECOND," he continued, "all aside from the instabilities of our urban policies, our goals for transportation were just as wobbly. Back in the 1950s we were to eliminate traffic congestion, then we were maximizing mobility--remember drawing desire lines? In the early 1960s after Doug Carroll finished his Chicago Study, we were all into finding optimum economic solutions. Then after the urban riots in the late 1960s, we were providing transportation for the physically and economically handicapped. Then, rebuilding our transit systems got fashionable and our goals were to do all the above plus 'promote desirable urban development.' Before any of us could figure out what that meant the environmentalists got to Congress and we had to spend all our time learning to write environmental impact statements. Then the Arabs stopped the oil, everything else became secondary, and we got TSM, 'learning to manage what you have,' short-term planning, and TIPS. For almost three decades, our goals and objectives were jumping around like ducks in a shooting gallery, which would have made the whole planning exercise a joke if we hadn't made heroic efforts to respond. I think we did as good as we could given the situation.

"THIRD," he continued, "the entire transportation system was undergoing cataclysmic shifts the likes of which have never been seen and, in my opinion, we won't see again for awhile. Transit usage fell from 19 billion passengers in the late 1940s to 6 billion in 1975. Automobile ownership was doubling every few years. Rail passengers dropped by a factor of 10 in about 20 years. Air passengers exploded by a factor of 30 and we had to develop a complete new airport system plus ground infrastructure to support it. Note that all these changes are quantum changes--orders of magnitude in most cases--not 20 or 30 percent changes of the variety we are now seeing. On top of that, we were putting a complete new freeway system in most of our large cities. Not a link here and there, but complete new systems that we knew

were going to dramatically alter mobility patterns in each case. Simultaneously with all this, we were having wholesale shifts in goods movement, moving freight from rail to trucks until trucks now have gross revenue five times that of the rail system.

"FOURTH, on top of all the above, we were undergoing major shifts in social, economic, and geographic forces and patterns--on factors that influenced demand and supply requirements for transportation. High migrations of rural families to urban centers took place. Since almost everyone in the country now lives in cities, we aren't going to experience that again, unless you believe that everyone is now going to move back to the farm. Women were moving from the home to jobs--again something that, while still going on, is substantially done. Shifts were also going on from the center cities to the suburbs and CBD employment was declining or at best stable, while suburban employment flourished. Retail sales left downtown and we had another new traffic phenomenon to face--the regional shopping center--and hundreds of these were built in a few years. Several of these things are one-time phenomena. Some are continuing, but slower. In any event, we've now seen them before and know better their impacts.

"FIFTH and the final and most important point," he paused, catching his breath, "is that through all this we were handicapped by being captive of our own illusions about our own capabilities--what we could control and what we couldn't. When we began to see the city to suburb shifts occurring, planners universally believed that we could stop it. 'Just rejuvenate transit and change the mortgage policies,' they said, 'and people will stay in the city.' As we saw people leaving transit for cars, we said, 'Let's build rail transit and we can hold or even increase the modal split.' I think it's safe to say our aspirations are somewhat more limited today on that score. There were those who believed that the reason people were leaving passenger trains was because the railroads deliberately gave bad service because they wanted out of the business. 'Just clean up the stations and buy some new equipment,' they said, 'and people will come back and passenger rail can be profitable.' Believe that, and I've got a bridge you might be interested in. It wasn't just our illusions either--everyone believed that the government should, could, and would solve all problems. If we could send a man to the moon, we could . . . etc., etc. Finally, we believed in the technological fix if all else failed. The government and the private sector poured well over a billion dollars into exotic high-speed contraptions that could overcome the lure of cars. Government alone put more than \$700 million into tracked air cushion vehicles, linear induction motors, PRTs, people movers, Transbus, etc. Many of these can be seen today rusting away in a field outside the airport at Pueblo, Colorado, a testimony to our illusions. Well, we don't hold many such illusions anymore and neither do most of our constituents, which makes a tremendous difference in the kinds of pressures and barriers we have to leap in order to develop credible plans."

"Well," I said, "I'll have to admit you've got a couple of interesting points in there that give me some pause, but you've simply ignored the prospect for all sorts of major unanticipated changes that might be lurking right over our current horizons. For example, what about nuclear war or a major worldwide economic collapse?"

"If we have nuclear war or a major depression, then all bets are off," he retorted. "I mean, if that happens then planning is worthless, but then so is everything else. Whether you're a businessman, government administrator, whatever, it's all down

the tubes and let the devil take the hindmost. But then, planning is in the same boat with everyone else. In the past decades, others were prospering and succeeding while planners were swimming in the storm. At least now we all swim in the same water."

"All right, then," I countered, "what about energy? Isn't that a disaster just waiting to spring out and catch us unaware again?"

"O.K., I'll admit that all bets are off if we have a major sustained disruption of Middle East oil supplies," he relented. "In fact, that would probably set off either a major depression or a nuclear war, but otherwise the problem seems manageable. First, we have the strategic reserve that will help us along in the short term, and we certainly have a better grasp of energy economics. There were all kinds of people, including many in Congress, who argued in 1974 and 1975 that there was no elasticity between oil prices and either consumption or production. I don't think anyone still believes that anymore. And besides, it's not a new problem. We've seen it before; it won't suddenly be a new intervention into our whole process that we never knew or heard of before. Doubtless, we are going to see price and supply ups and downs with a gradual upward ratcheting of price, but not this doubling and tripling in price that we've just been through."

By this time I was getting pretty exasperated with Seymour. "If things are going to be so predictable," I said, "we can just kiss off planning. We will just do one plan for 20 years and that's it. Then there will be real trouble for us; we'll all be unemployed and become bookies like you."

"Hold on now," he said. "There are still plenty of live issues that will keep you occupied. The population is aging and, Deen, even you must admit that this is a sure prediction. Aging is going to have uncertain effects on travel demand--its peaking and distribution. Safety and service needs will also be affected. City decentralization is still moving steadily on and while we may have no more illusions about stopping it, it will continue to cause heartburn and plans will have to account for the resulting changes. And, of course, we've got to keep an eye on the communications revolution. The personal computers and networking allowing the possibilities of working, shopping, banking, etc., at home are going to require some fast stepping. You'd better be monitoring carefully the experience of companies that are already moving in that direction. But, then you can keep your eye on a few moving targets; it's when they all are moving that you get vertigo. And

then you'd best keep your eye on deregulation or re-regulation, changes in concepts of equity, imposition of user charges and stuff like that, but that is just noise compared to the storm we've just passed through."

"Well," I huffed, "what about some new technology coming in from left field and knocking all your future stability into a cocked hat?"

"Like what?" he said.

"Well, like space travel."

"Are you talking about the year 2000 or 2050?"

"I think we're talking about 2000," I said.

"Well, what do you think?" he iced.

I tried to recover by changing the subject, but he continued. "You have got to remember that all the technological and system changes that occurred in the 1950s and 1960s were pretty much anticipated. It wasn't that it was all so new; we knew what it was and that it was coming. We knew that the interstate was coming and was generating traffic and expanding the truck system. We knew about airplanes and jets and their economies and speed. We knew railroading was in a free fall. The problem was that it all was changing in quantum jumps, so we never could get a handle on the impacts of it all."

"Well," I said, "I just refuse to believe it's going to be so easy and, what's more, I can't believe that things wouldn't have been a lot better if we'd done a lot better job; had been more sensitive to other needs when we located the interstate; had done more in citizen participation and environmental concerns before the law required us to and . . ."

"Ah, there you go again," he almost sighed. "If you had had perfect foresight in 1960, what would you have done? I'll tell you what you would have done. You would have contrived a gigantic, cumbersome, unwieldy planning process that would have considered everything but the Battle of Armageddon. You would have alerted everyone to concerns about neighborhood disruption, environmental problems, energy crises, suburban sprawl, and things they had never heard of until they would have been so scared you would have been lucky to have built 20 percent of the interstate and probably none of the required new airports or rail transit links, and what we did build would have taken twice as long and cost twice as much. Would that have made things better or planners happier?"

When I heard that, I hung up. There is just no sense in arguing with someone as obstinate as Seymour.