
Toward a Federal Infrastructure Strategy: Issues and Options



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EXECUTIVE SUMMARY

Toward a Federal Infrastructure Strategy documents the progress of an interagency initiative to develop a federal infrastructure strategy through a partnership including the Department of the Army, the Environmental Protection Agency (EPA), the Department of Energy, other federal agencies, state and local governments, and the private sector. Emphasis was placed on planning, design, finance, construction, operation, and maintenance.

The Advisory Commission on Intergovernmental Relations convened a series of workshops for representatives from more than 25 congressional and other federal agencies and departments, and more than 70 organizations representing state and local governments, public works providers, and related research, advocacy, professional, and user groups. The year-long consultations were guided by a federal interagency work group. The participants concluded the project with a call for federal agencies to pursue new opportunities for action on infrastructure improvements together with state and local governments and the private sector.

The findings and recommendations of earlier reports provided a framework for the dialogue. Each group also responded to questionnaires covering basic financing, performance, and governing practices. The participants advised working toward specific actions to *carry* out the recommendations contained in earlier reports rather than conducting another study.

Based on the consultations, a broad consensus emerged around five infrastructure issues that should be addressed by the federal government: (1) rationales for federal investment, (2) regulations, (3) technology, (4) financing, and (5) management.

Within each category, participants examined (in order of importance): strategic investment, regulatory and administrative relief, flexibility in federal funding, research and development plus technology transfer, intergovernmental funding, revenue diversification, and management improvement.

Rationales for Federal Investment. The issue statement focused on (1) clear goals; (2) visions of specific infrastructure systems and programs; (3) national needs studies; and (4) principles for determining appropriate federal roles.

Most public works are provided by local governments, state governments, and the private sector. Developing broad **national** infrastructure strategies, therefore, involves intergovernmental relationships and public-private partnerships. **Federal** infrastructure strategy is best understood as a subset of a broader national infrastructure strategy.

Traditional federal infrastructure programs were of two types: (1) grants (e.g., highways, transit, wastewater treatment plants, public housing, and open space), and (2) direct building and operation of federal projects (e.g., flood control facilities, harbors, and air traffic control facilities). Many grant programs have been consolidated, discontinued, or downsized, and most of the direct federal programs now require significant state or local cost sharing. There also is increasing reliance on user fees and trust funds to finance highways, transit, airports, airways, waterways, and harbors.

Federal aid for infrastructure has declined significantly over the past decade. State and local governments have been looking more to the private sector. Techniques being

used include developer exactions, impact fees, transportation management associations, and administration of community facilities by private community associations.

Federal Standards, Regulations, and Mandates. The issue statement focused on (1) standard setting, (2) regulations and mandates, (3) burdens on state and local governments, (4) flexible regulations based on performance goals, (5) stability, (6) reimbursement of state and local costs, (7) small governments, and (8) relationships.

There has been a large increase in the number and cost of regulations, most of which focus on process or technical standards rather than on performance. Proposals were made to (1) shift from technical regulations to performance standards, (2) apply sanctions when performance standards are not satisfied, and (3) require that the federal government share in the cost of implementing regulations.

New Technologies, Research, and Innovation. The issue statement focused on (1) potential for technological, managerial, legal, institutional, and other innovations; (2) innovation in procurements, reducing or spreading liabilities, and accounting; (3) a major federal role in infrastructure R&D; and (4) technology transfer.

The federal government could fulfill its leadership role in innovation and technology sharing by (1) shifting from technical to performance standards and encouraging experimentation, (2) funding federal labs, (3) spreading the risk of new technologies, (4) tort reform, (5) financing project evaluations, (6) promoting technology sharing, and (7) creating a means to facilitate information sharing.

Financing. The issue statement focused on (1) changes in infrastructure finance, (2) the “beneficiaries pay” principle, (3) intergovernmental financing, (4) revenue diversification, and (5) federal income tax treatment of infrastructure investments by state and local governments and private investors.

Most participants (1) agreed that there should be stability in funding sources, (2) saw little probability of a resurgence in federal financing, (3) thought limited resources could be used more efficiently if federal grant programs were redesigned, and (4) believed that more investments should be eligible for tax-exempt financing. Financing initiatives to be watched include (1) federal promotion of state revolving loan funds for wastewater treatment facilities, (2) the ISTEA authorization for mixing public and private funds, (3) experiences with the May 1992 executive order on privatizing public facilities acquired with federal funds, and (4) model public/private cost-sharing contracts.

Management. The issue statement focused on (1) performance rather than inputs, (2) flexibility in regulations and funding, (3) economic incentives, (4) capital improvement programming and budgeting, and (5) training.

Performance is difficult to quantify because there are too few agreed-on standards. Better measures of infrastructure services need to be constructed so that performance standards can be developed. There also is a need for better coordination and cooperation between federal agencies that have infrastructure-related responsibilities.

PREFACE

In 1990, an appropriation was made to the **U.S. Army Corps of Engineers** to develop a federal infrastructure strategy in consultation with other federal agencies, state and local governments, and private organizations. At the Corps' request, the **Advisory Commission on Intergovernmental Relations** assisted in the process by convening a series of workshops for government representatives, public works providers, and related groups.

The consultation process was bottom up, and its goal was to find practical steps that **can** be taken by federal agencies working together to improve existing programs. A number of such opportunities were identified.

Coordination within the federal government can benefit state and local governments in a variety of ways, including improving technical and managerial policies for infrastructure and developing consistent federal approaches to administrative and regulatory requirements.

This report documents the year-long consultation process and recommends that it continue, with a strong focus on developing specific opportunities for improvement. ACIR anticipates working with the Corps and a series of intergovernmental task forces on helping to make the nation's infrastructure more efficient, better coordinated, and more productive.

The Commission believes that maintaining, expanding, and modernizing America's infrastructure is essential to the nation's continued economic and environmental health. The Commission is pleased to have taken part in the consultation process and urges all governments to cooperate in developing the opportunities that are unfolding to improve the infrastructure.

Robert B. Hawkins, Jr.
Chairman

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Speakers at the various workshops were:

Peter Butkus, Public Works Manager, Department of Community Development, State of Washington;

Robert Dawson, Vice Chairman, Cassidy and Associates;

Marlene Eide, Chair, Transportation Steering Committee, National Association of Counties;

Francis Francois, Executive Director, American Association of State Highway and Transportation Officials;

Albert Grant, Immediate Past President, American Society of Civil Engineers;

Lowell Jackson, Vice President of Transportation, Greenhome & O'Mara, Inc.;

Lester Lamm, President, Highway Users Federation for Safety and Mobility;

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Edith Page, Infrastructure Project Manager, Office of Technology Assessment;

Michael Shibley, Infrastructure Partnership and National Association of Homebuilders;

John Thomas, Executive Director, American Society for Public Administration; and

Max Whitman, President, American Public Works Association.

At the Commission meeting on June 12, 1992, at which this report was adopted, the Commission was addressed by:

Edwin Dickey, Principal Deputy Assistant Secretary of the Army for Civil Works;

Thomas Larson, Administrator, Federal Highway Administration; and

Tad McCall, Deputy Associate Administrator for Federal Enforcement, U.S. Environmental Protection Agency.

The Commission expresses its sincere appreciation to all of these persons and to the 200 or so others who played significant roles in making this study a success. The Commission and staff take full responsibility for the accuracy and content of this report.

John Kincaid.
Executive Director

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INTRODUCTION

This report documents the progress, to date, of a new federal interagency initiative to develop “a federal infrastructure strategy.” The congressional committee report initiating this new effort emphasized “pursuing opportunities for providing local infrastructure facilities” through a partnership including the Department of the Army, the Environmental Protection Agency (EPA), the Department of Energy, other federal agencies, state and local governments, and the private sector. Consideration was to be given to planning, designing, financing, constructing, operating, and maintaining the nation’s infrastructure. Special mention was made of identifying public/private financing opportunities.

Major studies of the nation’s infrastructure problems were undertaken in the last ten years. These reports focused largely on transportation facilities; water resources, supplies, and quality; and the management of solid and hazardous wastes. The issues have been defined over and over again. Some progress has been made, and additional opportunities to move ahead have been identified. But the problems continue.

The federal agency representatives brought together in this effort to develop a new strategy advised working toward specific actions to carry out the recommendations contained in the previous reports rather than producing a new study. The approach taken was to consult with representatives of governments and the private sector in a series of workshops convened by the Advisory Commission on Intergovernmental Relations (ACIR). The consultations were guided by a federal interagency work group. The workshop deliberations included more than 25 congressional and other federal agencies and departments, and more than 70 organizations representing state and local governments, public works providers, and related research, advocacy, professional, and user groups (see Figure 1, next page).

¹ U.S. House of Representatives, House Report 101-536, Accompanying the *Energy and Water Development Appropriations Act, 1991*, October 19, 1990, p. 22

The workshop participants focused on three questions:

1. Can a government-wide or multi-agency federal infrastructure strategy be developed?
2. What issues should a federal infrastructure strategy address?
3. Can federal agencies work more closely together to create greater value from federal investment and involvement in infrastructure?

The past decade has brought significant changes in the federal government’s infrastructure roles—its financing role **has** declined while its regulatory role has expanded. State and local governments and the private sector are picking up greater infrastructure responsibilities, but the transition **has** not been smooth. State and local governments, like the federal government, have budget problems, and the private sector **has** been in a long economic recession.

In reassessing the appropriate size and form of the federal role, therefore, it is necessary to ask Can and should state and local governments and the private sector take greater responsibility for the nation’s infrastructure?

Whether it is practical to develop a comprehensive federal infrastructure strategy is a question that remains open. Nevertheless, based on the consultations, a broad consensus emerged around five **key** infrastructure issue areas that should be addressed by the federal government: (1) rationales for federal investment, (2) regulations, (3) technology, (4) financing, and (5) management. In the process of reaching this consensus, several potential opportunities for federal interagency cooperation were identified.

The following sections briefly set the current infrastructure debate in historical context, describe the process, still ongoing, that brought the different groups together, examine the five infrastructure issues identified above, and note opportunities for action. The report ends with a call for federal agencies to pursue these opportunities together, in cooperation with state and local governments and the private sector.

Figure 1
Organizations Represented at One or More Workshops

Congress

Senate Environment and Public Works Committee
 House Committee on Public Works and Transportation
 House Subcommittee on Economic Development
 Congressional Budget Office
 Congressional Infrastructure Caucus
 Congressional Office of Technology Assessment
 Congressional Research Service—Library of Congress
 General Accounting Office

Executive Branch

Council of Economic Advisors
 Environmental Protection Agency
 Federal Accounting Standards Advisory Board
 General Services Administration
 Department of Agriculture—SCS
 Department of Army—
 Civil Works
 Corps of Engineers
 Department of Commerce
 Department of Energy
 Department of Interior—
 Bureau of Reclamation
 U.S. Geological Survey
 Department of Transportation—
 United States Coast Guard
 Federal Aviation Administration
 Federal Highway Administration
 Federal Railroad Administration
 Federal Transit Administration
 Maritime Administration
 Office of the Secretary
 Transportation Systems Center
 Department of Treasury

State Government

Academy for State and Local Government
 Council of State Governments
 Ohio House of Representatives, Ways and Means Committee
 State of New Jersey—Washington Office

Local Governments

International City/County Management Association
 National Association of Counties
 National Association of Regional Councils
 National Association of Towns and Townships
 National Conference of State Legislatures
 National League of Cities
 Metropolitan Washington Airports Authority
 City of Atlanta, Department of Planning and Development
 Lehigh County (Pennsylvania) Authority

Research Groups

Apogee Research
 Building Research Board
 Civil Engineering Research Foundation
 Committee for Economic Development
 Governmental Accounting Standards Board
 Infrastructure Institute
 Johns Hopkins University, Institute for Policy Studies

Manufacturers' Alliance
 National Academy for Public Administration
 Ohio State University, School of Public Policy and Management
 Taubman Center for State and Local Government
 Harvard University
 Arizona State University, School of Public Affairs
 Transportation Research Board
 University of Maryland, Department of Economics
 University of New Mexico, New Mexico Engineering
 Research Institute
 The Urban Institute

Professional Associations

American Consulting Engineers Council
 American Planning Association
 American Society of Civil Engineers
 Community Transportation Association
 Government Finance Officers Association

Policy Advocates

Advocates for Highway and Auto Safety
 Campaign for New Transportation Priorities
 National Industrial Transportation League
 National Wildlife Federation
 Public Securities Association
 Rapoza Associates
 Surface Transportation Policy Project
 Water Environment Federation

User Groups

American Trucking Association
 Bell Atlantic Network Services, Inc.
 Highway Users Federation
 International Longshoremen's and Warehousemen's Union
 National Grange

Public Works Providers

American Association of State Highway and
 Transportation Officials
 American Public Transit Association
 American Public Works Association
 American Road and Transportation Builders Association
 American Waterways Operators, Inc.
 American Water Works Association
 Associated General Contractors of America
 Association of American Railroads
 City of Baltimore, Department of Public Works
 Bovis, Inc.
 Greenhorne & O'Mara
 National Solid Waste Management Association
 National Stone Association
 New York Metropolitan Transit Authority
 Portland Cement Association
 R.W. Beck and Associates
 Sverdrup Corporation
 Tennessee Valley Authority
 Wade Miller Associates
 Washington State Public Works Trust Fund,
 Department of Community Development
 Greater Chicago Metropolitan Sanitary District,
 Water Reclamation District

CONTEXT FOR A NEW FEDERAL INITIATIVE ON INFRASTRUCTURE

The Early Reports

In 1981, *America in Ruins* charged that lack of maintenance was seriously endangering the ability of the nation's infrastructure to continue meeting essential needs. Shortly thereafter, some highway bridges fell down, with catastrophic results, and the need for action appeared urgent.

The Congress followed with three studies in rapid succession during the mid-1980s. *Hard Choices* (1984), prepared for the Joint Economic Committee, indicated that infrastructure investment needs were far outstripping the funds available. A study for the Senate Budget Committee by the Private Sector Advisory Panel (1987) also called for greater investment, emphasizing a strong federal role and greater use of trust funds, tax exempt bonds, and public/private partnerships. Finally, the Congress established the National Council on Public Works Improvement (NCPWI) to study these issues definitively.

In *Fragile Foundations* (1988), its final report, NCPWI concluded that the nation's infrastructure was "barely adequate to fulfill current requirements and insufficient to meet the demands of future economic growth and development." The council called on federal, state, and local governments, in partnership with the private sector, to double the nation's rate of capital investment in infrastructure by 2000. The

NCPWI report also identified key needs for improving the performance of public works systems, such as:

- Using better management techniques;
- Carving out more appropriate roles for the federal, state, and local governments and the private sector;
- Establishing incentives for better maintenance;
- Taking advantage of new technologies;
- Exploring low-cost methods of providing services;
- Providing better trained personnel; and
- Using innovative financing techniques.

Figure 2 contains the summary recommendations from *Fragile Foundations*.

The More Recent Reports

Fragile Foundations touched off a series of debates that continues to the present. In passing the law that established NCPWI, the Congress required the Congressional Budget Office (CBO) to evaluate the council's final report within 90 days. CBO's report, *New Directions for the Nation's Public Works* (1988), challenged the need to double the rate of investment. It emphasized, instead, the need to make sure that each infrastructure project be

Figure 2
A Strategy for Improving America's Public Works

No single approach is adequate to ensure the future viability of America's infrastructure. A broad range of measures is necessary to make a meaningful difference by the turn of the century. Specifically, these should include:

- A national commitment, shared by all levels of government and the private sector, to increase capital spending by as much as 100 percent above current levels;
- Clarification of the respective roles of the federal, state, and local governments in infrastructure construction and management to focus responsibility and increase accountability;
- More flexible administration of federal and state mandates to allow cost-effective methods of compliance;
- Accelerated spending of the federal highway, transit, aviation, and waterways trust funds;
- Financing of a larger share of the cost of public works by those who benefit from services;

- Removal of unwarranted limits on the ability of state and local governments to help themselves through tax-exempt financing;
- Strong incentives for maintenance of capital assets and the use of low-capital techniques, such as demand management, coordinated land use planning, and waste reduction and recycling;
- Additional support for research and development to accelerate technological innovation and for training of public works professionals; and
- A rational capital budgeting process at all levels of government.

None of these steps will be easy or unopposed. But the increasing cost of delay is certain. The Council urges the President, the Congress, and the nation's state and local leaders to act on this agenda immediately.

Source: Council on Public Works Improvement, *Fragile Foundations*, 1988.

carefully evaluated for its economic productivity. By thistime, a major argument was raging among economists about the macro effects of infrastructure investment on the nation's economy. Some saw infrastructure investments leveraging the economy to much higher rates of growth than others. CBO followed up in 1991with a more in-depth report, *How Federal Spending for Infrastructure and Other Public Investments Affects the Economy*.

The Congressional Office of Technology Assessment (OTA) produced two major reports on infrastructure entitled *Rebuilding the Foundations* (1990) and *Delivering the Goods* (1991).These reports examine state and local public works financing and management issues, as well as public works technology, management, and financingactivities of the federal government.

While none of these studies reached a definitive conclusion on the benefits of infrastructure investment in general, the **OTA** reports clearly pointed to substantial

needs for additional spending on infrastructure to remedy current deficiencies.

Definitions of Infrastructure

As these reports accumulated, it became apparent that definitions of infrastructure differ. Some definitions include public buildings, public housing, rural electrification, emerging telecommunications technologies, and other facilities that serve public needs, whether publicly owned or not. For the sake of manageability, NCPWI limited its studies to transportation, water, and waste. These three broad categories involve large intergovernmental systems of major national significance. Narrowing the definition of infrastructure in this way does not deny the fact that other facilities are public works of great importance. Much of what can be said of good practices in the fields of transportation, water, and waste also can be said about managing other facilities.

CONSULTING THE ACTORS

The federal infrastructure strategy project consulted separately with four constituencies and then brought representatives of all groups together into a “synthesis group” to resolve differences. The findings and recommendations of the reports summarized above were presented to workshop participants and provided a framework for much of the dialogue that occurred. The four groups convened were:

- Representatives of federal agencies as well as congressional committees and policy evaluation units having infrastructure responsibilities;
- State and local government policymakers;
- Nongovernmental policy analysts, infrastructure users, and advocacy groups; and
- Public and private infrastructure providers.

Each group was surveyed before the meetings by questionnaires covering basic financing, performance, and governing practices.

The survey questions were drawn from the recommendations of *Fragile Foundations* (see Figure 2).

The next section of the report is based on the survey responses and the professionally facilitated workshop discussions that comprised the consultation process.

FIVE ESSENTIAL INFRASTRUCTURE ISSUES AND OPPORTUNITIES FOR ACTION

In questionnaire responses and the workshops, participants identified five issues as being of primary importance in developing steps for federal action. These five issues were discussed initially as “strategies” or action statements (see Figure 3), but were not ratified in that form by the synthesis group. The issues/strategies pairs are:

- I. Rationales for Federal Investment— Invest Strategically
- II. Regulation—Agree on Roles and Responsibilities
- III. Technology—Develop and Apply New Technologies
- IV. Financing—Readjust Infrastructure Financing
- V. Management— Improve Infrastructure Management

Figure 3
Five Essential Issues to be Addressed by a Federal Infrastructure Strategy

<ul style="list-style-type: none"> • Invest Strategically <ul style="list-style-type: none"> ■ Improved infrastructure is needed to sharpen America’s competitive edge, economic productivity, and efficiency. ■ Clear national goals for infrastructure—a persuasive vision of the future—should be articulated. ■ Greater political commitment is needed to support a healthy infrastructure. ■ National needs studies should be directed toward effective achievement of clear strategic investment goals.
<ul style="list-style-type: none"> I. Agree on Roles and Responsibilities <ul style="list-style-type: none"> ■ Regulatory and administrative burdens in providing infrastructure should be reduced. ■ Flexibility in spending federal aid for infrastructure, and in complying with federal and state mandates, should be increased. ■ The intergovernmental burdens and lack of flexibility that hamper the provision of infrastructure are symptoms of differing perceptions about appropriate federal, state, local, and private roles. These differences should be narrowed by building closer partnerships. ■ Special attention needs to be given to the compliance problems of small governments.
<ul style="list-style-type: none"> II. Develop and Apply New Technologies <ul style="list-style-type: none"> ■ The potential for new technologies, and other products of research, to help solve infrastructure problems is great; it should receive greater attention. ■ Accelerated technology sharing programs should be an integral part of this effort. ■ More effective federal strategies and greater resources are essential to the success of this effort.
<ul style="list-style-type: none"> IV. Readjust Infrastructure Financing <ul style="list-style-type: none"> ■ The enormous changes in public revenue systems and expenditure patterns that have occurred over the past decade have left infrastructure at a disadvantage. ■ This situation requires significant adjustments in infrastructure financing methods. ■ Specific adjustments that should be considered include: <ul style="list-style-type: none"> Mechanisms that result in beneficiaries paying a greater share of costs Intergovernmental funding Tax-exempt funding Revenue diversification
<ul style="list-style-type: none"> V. Improve Infrastructure Management <ul style="list-style-type: none"> ■ Management methods and practices should be reformed to focus on the performance of services (as indicated by output measures) rather than on facilities and operations “inputs.” ■ There should be incentives <ul style="list-style-type: none"> (1) to stretch the safe and useful lives of public works through better maintenance, (2) to use the most cost-effective means of serving the public in each situation, and (3) to lower arbitrary barriers to using low-capital techniques. ■ Flexible funding and flexible regulations can help ensure successful performance management. ■ Capital improvement programming and prioritizing should be used more fully, in appropriate settings, by all governments.

The synthesis group wanted to explore the issues more thoroughly before committing to strategic positions. **An** extended discussion of strategies versus issues made the following points:

- A coherent (overarching) federal infrastructure strategy could offer benefits, such as: reinforcing larger national goals like international competitiveness, economic productivity, and quality of life; putting federal programs into better relationship with state, local, and private sector efforts; and developing consistency and mutual reinforcement among federal programs.
- However, a coherent (overarching) federal infrastructure strategy may not be possible because, for example: responsibilities for federal infrastructure programs are divided among too many different federal agencies and congressional committees; the missions of these institutions are very diverse; the division of infrastructure responsibilities among the nation's federal, state, and local governments—and between the public and private sectors—is too dynamic and uncertain; and proposals to establish or more fully utilize interagency policy-setting and coordinating mechanisms are unlikely to be enacted (e.g., a federal infrastructure council, a cabinet council on infrastructure, a consolidated congressional infrastructure committee, a consolidated federal infrastructure department, or an infrastructure coordination role for OMB, the Domestic Policy Council, or the Council of Economic Advisors).

Still, the federal government has an infrastructure strategy by default that **is** the net result of its diverse infrastructure programs and policies. Some thought to coordinating certain elements of these programs and policies might produce benefits. Political leadership in the Congress, at the White House, or in one or more major federal departments or agencies might help such coordination efforts to develop further. Examples of such leadership are the strategic planning process at the U.S. Department of Transportation (DOT) and the recent authorization of federal surface transportation programs in the *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)*.

Care should be taken to ensure that requirements for coordination not be allowed to gridlock the decision process and prevent the provision of essential infrastructure facilities and services.

Whether or not it is possible to develop a coherent federal infrastructure strategy spanning a wide range of programs, the five essential federal infrastructure issues listed above are important to address.

Table 1 compares three perspectives on public works issues: (1) the highest priority issues cited by questionnaire respondents on an open-ended question; (2) the main points discussed at the workshop meetings of the four constituent groups; and (3) *Fragile Foundations* recommendations.

Although the four workshop groups had some common concerns, they initially had very different perspectives. Table 2 summarizes responses by each group to the open-ended survey question on the most important issues that a federal infrastructure strategy should address. The issues listed received multiple responses within each group, and they appear in the order of greatest to lowest number of multiple responses.

Table 1
Three Perceptions of Public Works Issues

	Workshop Discussions (main points receiving attention)	Questionnaires: Issue Priorities (in rank order of importance to respondents)	Fragile Foundations (summary of recommendations)
I	1. Definitions/Goals 2. A Vision	1. Strategic Investment	1. A National Commitment to Invest More 2. Clarification of Federal-State-Local Roles
II	3. Regulations	2. Regulatory/Administrative Relief 3. Flexibility of Federal Funding	3. Flexible Administration of Federal and State Mandates
III	4. Technology	4. R&D/Technology Transfer	4. Accelerate Innovation through R&D
IV	5. Financing	5. Intergovernmental Funding 6. Revenue Diversification	5. Beneficiaries Should Finance a Greater Share of Costs 6. Reduce Limits on Tax Exempt Bonds 7. Accelerated Spending of the Federal Trust Funds
V	6. Performance	7. Management Improvement	8. Accelerate Innovation through Training Public Works Professionals 9. Incentives for Maintenance 10. Incentives for Low-Capital Techniques 11. Capital Budgeting by All Governments

Table 2
Most Important Issues for a Federal Infrastructure Strategy'
(rank order by survey group)

Federal Group (N = 13)	S-L Government (N = 16)	Research/Advocacy/Users (N = 25)	Providers (N = 28)
1. National Needs Study	1. Consistency among Federal Programs	1. Political Commitment to Strategic Investment	1. Regulatory Relief
2. Multi-Modal Transportation Funding	2. Flexibility in Using Federal Funds	2 R&D plus Technology Transfer	2. Intergovernmental Funding and Mandate Reimbursement
	3. Reducing Federal Regulatory and Administrative Overload, especially for Small Governments	3. Regulatory Relief and Flexibility	3. R&D plus Technology Transfer
	4. Tax Policy	4. Reliable Revenue Sources	4. Strategic Investment
		5. Intergovernmental Funding and Fiscal Equalization	5. Privatization
			6. Management Improvement

¹ Based on Survey Question 7—What are the two or three most important infrastructure issues that the federal government needs to address? These tabulations were prepared at the time of the meetings. Later tabulations resulted in a total of 97 responses, as follows: Federal—17 (a 29 percent response); State-Local—19 (36 percent); Research, etc.—27 (35 percent); Providers—34 (68 percent).

What becomes evident most quickly from this table is that the federal working group had the most narrow programmatic concerns and the fewest concerns that received multiple responses (although many other issues were cited by a single individual on the 17 federal questionnaires returned).

Responses from the state and local government policymakers might be characterized as concerns about the federal impact on their infrastructure responsibilities. The research/advocacy/user respondents listed a broad range of strategies and practical concerns. The public works providers had the highest rate of response and the broadest mix of major concerns.

Table 2 also provides some details pertaining to the five key issues. Respondents saw the need to examine the following factors:

1. Strategic investment,
2. Regulatory and administrative relief,
3. Flexibility in federal funding,
4. Research and development plus technology transfer,
5. Intergovernmental funding,
6. Revenue diversification, and
7. Management improvement.

This list represents the composite rank order of issues raised by all four groups, with strategic investment being the highest priority. This is the ranking used to organize Table 1 and to arrive at the five larger categories of issues: rationales, regulation, technology, finance, and management.

Strategic investment was listed as the top priority by respondents from the research/advocacy/user group, who

tied it to developing political commitment to these objectives, as well as to international competitiveness and economic efficiency. The providers group linked strategic investment to economic development, productivity, efficiency, and international competitiveness. Some of the providers also linked it to a call for clear national priorities. In the words of one respondent, it is certainly easier to “follow the leader” if it is clear where the leader is going.

In a related view, the federal group’s top priority was given to national needs studies, which could be used as strategic investment tools if prepared properly. An additional federal respondent listed international competitiveness, another listed investment for performance, and others pushed national defense, transportation, and dam safety strategies. All of these responses indicate support for certain types of strategic investment.

Regulatory relief and flexibility was the second highest priority overall. It was the top priority of public works providers and was ranked third by state and local government policymakers and the research/advocacy/user group. In addition, the first-place call by state and local policymakers for consistency among federal programs reinforces the issue of regulatory and administrative overloads resulting from federal actions. The state and local policymakers also tied this issue to the special needs of small governments for relief from the increasingly technical and demanding requirements of federal programs.

Flexibility in federal funding was in third place overall. This issue placed second among the priorities of both the federal group and the state and local policymaker group. It was also imbedded in the third-place issues listed by the state/local and research/advocacy/user groups calling for flexibility and consistency among programs.

Research and development (including technology transfer) received the fourth priority overall. Although it came in second with the research/advocacy/user group and third with the providers, it did not make the top rung of issues as seen by the federal and state/local groups.

Intergovernmental funding was in fifth place overall, especially with regard to reimbursing state and local governments for the costs of meeting federal mandates. The providers gave it their second highest priority, but the research/advocacy/user group dropped it to fifth place and tied it to issues of fiscal equalization. The federal and state/local groups implied support only obliquely through their interest in flexible federal funding.

Revenue diversification, in sixth place overall, is seen in various forms in the responses from three groups. For example, revisions in tax policy, especially with respect to municipal bond authority, received a fourth-place priority from the state and local policymakers, and the research/advocacy/user group gave the same ranking to ensuring reliable revenue sources. The provider group brought this issue up in relation to privatizing financial responsibilities. The federal group did not focus on this issue.

Management improvement, including the use of performance data came in last overall. The provider group was the only one to rank this issue.

The Essential Issues

Each of the five essential infrastructure issues categories is discussed more fully below. The formal issue statement agreed to by the synthesis group is presented first. Additional details are provided from the workshop discussions and the questionnaire surveys. Related opportunities for interagency cooperation that came to light during the consultation process are then described briefly.

I. Rationales for Federal Investment

Formal Issue Statement

Clear Goals. Infrastructure is not an end in itself. Therefore, wise investment in infrastructure requires the clear articulation of other larger goals for such purposes as international competitiveness, economic productivity, health and safety, national defense, and quality of life.

Vision. Specific visions of how infrastructure systems and programs can contribute to achieving clear national goals are necessary to generate political commitment and adequate financial support.

Needs Studies. National needs studies should be conducted to calibrate the amount of infrastructure investment needed. Such studies should not be simply compilations of all available proposals, but instead should analyze alternative means of achieving measurable performance standards and seek the most cost-effective investment opportunities. Needs studies should be developed through cooperative intergovernmental and public-private processes.

Principles. Principles for determining appropriate federal roles to help meet infrastructure needs should be established. These principles should have a firm constitutional foundation, but should also reflect present conditions and intergovernmental consultations. Economies of scale and equity considerations may form the basis of some federal roles.

National vs. Federal Infrastructure Strategies

Many federal infrastructure programs finance major capital investments with high federal shares of project costs. Such programs and projects frequently receive widespread media coverage. In addition, federal environmental and other regulations often affect the construction of public works projects that are not federally financed. It is common, therefore, to view the federal government as dominant in the infrastructure field.

Nevertheless, as pointed out in *Fragile Foundations*, most public works are provided by local governments, either directly or through the private sector. Most major highways are owned by state governments. Many water supply systems are privately owned and operated. Most hazardous waste disposal is privately provided. Much of the ordinary trash collection and disposal is private. Developing broad *national* infrastructure strategies, therefore, involves many intergovernmental relationships and public-private partnerships. *Federal* infrastructure strategy is best understood as a subset of a broader national infrastructure strategy. Thus, a national strategy must be set forth before a federal strategy can be established realistically. NCPWI set forth such a strategy in 1988, calling for a federal-state-local-private partnership (see Figure 1).

Carving Out Appropriate Federal Roles for the 1990s

Traditional federal infrastructure programs were of two types: (1) grants and (2) direct building and operation of federal projects. The grants generally had fairly high federal shares of project costs, required state and local planning, and called for federal approval of the projects to be funded. These programs included highways, transit, airports, wastewater treatment plants, public housing, urban renewal, community facilities, and open space.

The direct federal programs, usually funded completely by the federal government (except perhaps for land contributed by a state or local government), included flood control facilities, dams, harbors, waterways, and air traffic control facilities. Amtrak is also heavily dependent on direct federal appropriations.

In recent years, there have been many changes in the grant and direct programs. For example, many grant programs have been consolidated, discontinued, or downsized, and most of the direct federal programs now require significant state or local cost sharing.

There also is increasing reliance on user fees and trust funds to finance the federal shares of federal infrastructure programs. These apply to highways, transit, airports, airways, waterways, and harbors. It has been the goal in recent years to move the Department of Transportation toward complete funding by user fees and trust funds. That goal has been about 80 percent achieved.

Another change was consolidation of the urban renewal, open space, and community facilities programs into the community development block grant, thereby reducing federal control. In addition, the more than 800,000 miles of federally designated highways have been replaced by a 155,000-mile national highway system and a flexible intermodal surface transportation block grant for state and local use. The wastewater treatment facilities construction grant program (with a 75 percent federal share) has been converted into a state revolving loan program. The new safe drinking water program mandates standards without offering financial assistance.

Looking at the overall record, and judging it by buying power and percentage of state and local infrastructure budgets, federal aid has declined significantly over the past decade.

With fewer federal dollars to count on, state and local governments have been looking more to the private sector to help finance and provide infrastructure. Techniques being used more frequently include residential developer exactions, impact fees, transportation management associations to mitigate the traffic impact of new commercial development and redevelopment, and administration of community facilities by private community associations rather than by local governments. Last year, the Congress voted to allow federal funds to be mixed with private funds for highways and to permit tolls to be collected more freely on federally aided highways.

It takes time for state and local governments to adjust to such changes, and still more changes may be on the way because of the federal government's deficit position. Federal infrastructure programs, in general, have been caught in the part of the federal budget getting squeezed out by the pressures of entitlements, national defense, and interest on the national debt. Maintaining the federal partnership in infrastructure programs under these conditions requires new thinking.

Criteria for Justifying a Federal Role

On April 24, 1992, the federal work group met to identify principles or criteria for judging the appropriateness of federal roles in infrastructure programs. The group reviewed lengthy excerpts and other selected quotes from five major infrastructure reports, Executive Order 12612 on Federalism (see Appendix A), and a table comparing the concepts in these sources (see Table 3). The group determined that there were three types of criteria:

- Values connoting "what's right" in terms of basic societal principles;
- Political judgments confirming collective wants or desires; and
- Technical judgments about the best ways of achieving results.

These three types of criteria do not always reinforce each other. They are like three circles or spheres of influence. If they are too far apart, there is no overlap; if they overlap some, there is at least a bit of common ground; if they are coincident, there is complete agreement. Generally, there is partial overlap and a need to resolve differences.

Values

Four more specific criteria for determining the federal role in infrastructure were placed in the category of values—constitutionality, accountability, equity, and common sense.

Constitutionality. Federal responsibilities are those enumerated in the U.S. Constitution or "reasonably implied" from it. Judgments differed about what could be reasonably implied. The Federalism Executive Order is designed to limit the size and role of the federal government through strict interpretation of the Constitution, avoiding preemptions of state and local discretion, avoiding extraneous conditions in federal-aid programs, and promoting flexibility in the means of complying with federal requirements. To some participants, however, limiting the size of government was not as important as other goals, and it was not emphasized in the other source documents. Nevertheless, the group agreed with the "federalism assessments" required by the Executive Order for gauging the impact of major policy initiatives on state and local governments. Selective use of this technique, to avoid overburdening the rulemaking process, was recommended.

Accountability. Those responsible for making a decision should be held responsible for the consequences. Policymakers, therefore, need to take care that their policies are practical to implement without imposing impossible or inequitable burdens on others. Some unfunded federal mandates may pass an inappropriate burden to state and local governments because they are enacted without the restraint of fiscal discipline. It is easy to enact a mandate if there is no responsibility to fund it; it may not be so easy for others to find the funding. Federalism assessments under Executive Order 12612 in the Executive Branch, and fiscal notes in the Congress are designed to surface these practical issues before major decisions are made. If these processes work well, the resulting decisions are more likely to be "sustainable" over the long run because they will be practical to implement.

Equity. Those who benefit from a program should pay for it. At the same time, the beneficiaries should pay in proportion to their ability to pay. Essential needs must be supplied to everyone, even if they cannot pay. Governments as well as individuals should be treated equitably. Program needs should be considered in relation to fiscal capacities and fiscal effort.

Common Sense. Infrastructure programs should put the right facilities and services at the right place when needed, for a fair price, and the right people should pay for them. In other words, governments should reconcile diverse values, desires, and responsibilities to satisfy the "customer."

Political Judgments

The group identified three important criteria under the heading of political judgments: national interest, declared national goals and programs, and national standards.

<i>Table 3</i> Principal Elements of the Federal Government's Roles: Executive Order 12612, National Council on Public Works Improvement, Congressional Budget Office, and Office of Technology Assessment				
Principal Elements	12612	NCPWI	CBO	OTA
1. Federal Policy Goals				
A. Set Uniform Standards	X	X	X	X
B. Ensure Social Equity		X	X	X
C. Limit Size of National Government	X			
D. Coordinate Local Actions		X		
E. Address National Goals (Rather than Local Ones)	X	X	X	X
EXCEPT:				
F. Provide Services Where Benefits/Costs "Spill Over" Local Boundaries		X	X	X
G. Provide Services Where There Are Economies of Scale		X	X	X
2. Criteria for Choosing Policy Tools				
A. Stay within Constitution	X	X	X	X
B. Encourage Local Flexibility in Meeting Goals	X	X	X	X
C. Avoid Preempting Local Powers	X	X		
D. Seek Policy Stability				X
E. Keep Plans Simple				X
F. Avoid Extraneous Requirements	X			X
3. Recommended Federal Policy Actions				
A. Intra-Agency "Federalism" Officer	X			
B. Federalism Assessment for New Programs	X			
C. Benefit-Cost Analysis	X	X	X	X
D. User Fees to Ensure Beneficiaries Pay Costs		X	X	X
E. Targeted Grants to Manage Use Levels		X	X	X
F. Efficient Facility Prices		X	X	X
G. National Infrastructure Financing Bank			X	
H. Public Infrastructure Block Grants			X	
I. Improved Capital Budgets		X	X	
J. Performance Reporting		X	X	
K. Integrated and Coordinated Federal Policymaking			X	X
Note: A blank indicates that the source document did not explicitly address the issue, not necessarily that the concept was approved or disapproved.				

National Interest. There is a national interest in problems that are larger than individual states, that cannot be resolved between states because the incentives are wrong (spillover effects such as environmental pollution), and that will not be settled except by federal government action.

Declared National Goals and Programs. Irrespective of the "national interest" principle, national goals and programs that are legislated legally establish legitimate federal roles.

National Standards. It is often necessary and desirable for the federal government to set standards and issue regulations affecting state and local infrastructure activities. Minimum standards, allowing some state and local preferences to be exercised, often are preferable to uni-

form standards. Performance standards that promise uniform results without uniform actions offer an additional degree of flexibility that frequently is desirable.

Best Technical Practices

The group identified three important criteria under the heading of best technical practices—demonstrated need, economy, and effectiveness.

Demonstrated Need. There needs to be some technically accurate and reliable way to measure infrastructure needs for new construction, maintenance, and operation. These methods must be able to evaluate alternatives for demand reductions. Assumptions must be explicit and open to public view.

Federal Roles	Working Groups				Composite Rank
	Federal	State-Local	Research, etc.	Provider	
A. Direct Provision				3	
B. Capital Funding for Others	2	1	1	1	1
C. Funding Operations by Others		6	6	4	5
D. Regulating Performance		4			
E. Regulating Environmental Impacts	5			2	
F. Aesthetic and Historical Impacts					
G. Performing R&D	6		4		
H. Promoting R&D by Others	1	2	2		2
I. Sharing Technology	3	3	3		3
J. Intergovernmental Cooperation and Coordination	4	5	5	5	4
1					

Economy. Benefits (properly measured) should exceed costs. Efficiency and economies of scale should be maximized. Pricing policies to improve efficiency should be explored. Waste should be minimized.

Effectiveness. Performance goals should be established, monitored, and evaluated. Programs should be simple enough to administer, and be stable enough over time to have a reasonable chance of success. Programs should be flexible enough to be administered successfully by small and large governments.

Survey Findings on Federal Roles

Criteria for justifying a federal role are not the same as the federal roles themselves. To get at the actual roles, work group members were asked to evaluate the importance of

ten federal government roles for infrastructure. Table 4 shows responses by all four groups, and a composite ranking.

Significant importance was attached to five of the ten roles by at least three groups. Consensus among the four groups was that providing capital funds for others who build and maintain public works was the most important federal role. In second place was federal promotion of research carried out by others. The closely related role of technology sharing came in third, while fourth place went to promoting intergovernmental cooperation and coordination. All except the federal group thought that funding infrastructure operations carried out by others was an important federal role.

All the federal roles in the survey, except "aesthetic and historical impacts," were ranked important by at least one of the four work groups. Table 5 shows that the federal roles cited in this survey question are related to those

Most Important Issues (Question 7)		Importance of Federal Roles (Question 5)	
tank	Issue	Rank	Federal Role
1.	Strategic Investment	•	Direct Federal Provision
2.	Regulatory/Administrative Relief	* * *	Regulatory Performance Regulating Environmental Impacts Aesthetic and Historical Impacts
3.	Flexibility of Federal Funding	4.	Intergovernmental Cooperation/Coordination
4.	R&D/Technology Transfer	2. 3. •	Promoting R&D by Others Sharing Technology Performing R&D
5.	Intergovernmental Funding	1. 5.	Capital Funding for Others Funding Operations by Others
6.	Revenue Diversification		
7.	Management Improvement		

*The federal roles were not ranked important by most respondents even though they relate to high-priority issues.

listed as the most important infrastructure issues in the open-ended question.

Potential Opportunities for Interagency Cooperation

Federal agency representatives saw two problem areas in the “investment strategy” category that potentially could be improved through interagency cooperation. One concerns national needs studies (the most important issue identified by federal survey respondents); the other concerns the Federalism Executive Order that governs federal agency development of regulatory and legislative initiatives affecting state and local governments.

The numerous deficiencies noted in most infrastructure needs studies suggest that a major effort should be undertaken to improve methods and practice in this field. In particular, best practice calls for performance-based studies that are rare at present. All fields of infrastructure could benefit. The Department of Transportation is a leader in this activity.

It also was found that familiarity with the Federalism Executive Order is not widespread. If present trends for shifting greater infrastructure responsibilities to state and local governments continue, it would appear that more federalism assessments should be prepared. **An** interagency effort to establish principles for applying this order to public works programs could benefit all infrastructure agencies. Among infrastructure agencies, the Department of Transportation appears to be most familiar with this process.

II. Federal Standards, Regulations, and Mandates

Formal Issue Statement

Standard Setting. It is often constitutionally appropriate, cost effective, and necessary for the federal government to establish infrastructure and infrastructure-related standards. This is true especially when interstate and international considerations come into play. Such standards may promote health, safety, efficiency, equity, and program effectiveness.

Regulations and Mandates. Federal standards may be imposed on state and local governments **by** regulations that prohibit certain activities and mandate others. **An** alternative is to develop standards “nationally” by nongovernmental organizations, such as the Governmental Accounting Standards Board (GASB). In this case, guidelines for good practice are developed and applied, perhaps with technical and/or financial assistance to encourage their use.

Burdens. Many state and local governments complain that federal requirements associated with infrastructure programs unnecessarily displace too much state and local decisionmaking authority, change too frequently, create too much administrative burden, and induce too much added cost to state and local projects. Unnecessary and avoidable burdens should be reduced, but it may be difficult to determine which ones are unnecessary. Burdens that are disproportionate to benefits should be considered

for reduction. Benefit-cost analysis is one possible method for guiding such decisions.

Flexibility. Flexible regulations, based on performance goals rather than on specific design specifications, often are urged as a way to reduce regulatory burdens, to get better decisions from decisionmakers closer to the scene, and to save money by allowing economies. However, one person’s flexibility may be another’s perversion of the standards. The results of flexibility may be uncertain, and it may be difficult to write and monitor flexible regulations. Too much flexibility may indicate lack of any essential federal role. Substituting equivalent state and local regulations for federal regulations may help to reduce duplication, conflict, and waste.

Stability. Broadly applicable, infrequently changing federal regulations **can** add a degree of nationwide stability to infrastructure programs.

Reimbursement. Federally imposed burdens on state and local governments may be reduced by federal reimbursement of state and local costs in complying with federal requirements. Principles for determining what to reimburse could be helpful.

Small Governments. Because of limited tax bases and technical capabilities, small governments sometimes experience proportionally greater burdens than others in complying with federal regulations. The *Regulatory Flexibility Act of 1980* recognizes this fact, but it has not been fully used to grant needed relief.

Relationships. Those who do the regulating and those who are being regulated might get more done by working in partnership rather than in contention with each other. New federal authority for negotiated rulemaking and administrative dispute resolution might offer fruitful opportunities to reduce regulatory and administrative burdens.

Workshop Discussion

Participants in all workshops agreed that there has been an explosion of regulations affecting how state and local governments deliver infrastructure services. Most of these regulations focus on process or technical standards rather than on infrastructure performance. Some participants at each workshop expressed the view that there are too many regulations that are often conflicting, are too costly, and perhaps are not always necessary.

There were strong beliefs at all of the workshops that the federal government was:

- Shifting its participation in the infrastructure community from providing financial assistance to promulgating regulations;
- Often mandating specifications for delivering infrastructure services that are too rigid and could not be matched to many site-specific situations; and
- Not adequately balancing federal activity between promulgating regulations and providing financial assistance.

Participants at all workshops expressed their views that something needs to be done to avoid regulatory gridlock. While no clear priorities emerged, proposals were made to address concerns about the increasing number and cost of regulations. These proposals included shifting from process and technical regulations to performance standards, using regulations as a sanction when performance standards are not satisfied, and requiring the federal government to share in the cost of implementing specific regulations.

From the local perspective, there also was a concern about the independent nature of federal agencies in promulgating such regulations. As a result, when these regulations are applied at the local level, there are cases of inconsistencies, conflicts, and confusion. This was particularly true for the perceived conflict between environmental regulations and the need to provide infrastructure. The general view was that:

- The interaction between federal regulators and local officials needs to be improved.
- There needs to be better coordination among federal agencies (especially between those directly involved in infrastructure activities and the EPA).
- Local officials could improve the level and quality of infrastructure services if they had more flexibility in the use of funds.

While there was agreement that the number and cost of regulations increased significantly during the 1980s, there was not much discussion of how to determine which regulations are appropriate, which are excessive, and when a regulation is too costly. It was suggested that improved benefit-cost analysis, with performance standards, might help this situation.

Another theme that emerged during two workshops was the process of procuring infrastructure design, construction, and operation services. One concern was the impact of regulations on the time required to construct new facilities. Another major concern was that current federal procurement requirements mandate detailed technical requirements and selection of the lowest bidder for construction. It was felt that this process discourages innovation and removes accountability for system performance from the contractor. This process was contrasted with the European practice in which contractors are involved in developing design specifications and held responsible for the performance of the system after it is built. It was noted, however, that the European practice is more expensive in the short run, and would be politically difficult to follow in the United States, although it could save money in the long run.

Potential Opportunities for Interagency Cooperation

Strained relationships between the federal government and the state and local governments appear greatest in regulatory matters. The 1990 enactment of additional authority for all federal agencies to use negotiated regulation and administrative dispute resolution techniques ap-

pears to open new opportunities for easing these tensions. EPA, the U.S. Army Corps of Engineers, DOT, and perhaps other agencies have substantial experience with these mechanisms. The Administrative Conference of the United States is charged with promoting greater use of these techniques. It might be beneficial for federal infrastructure agencies to pool their experience and develop infrastructure-specific guidelines for applying this new authority.

Guidelines for applying the “small governments” provisions of the *Regulatory Flexibility Act* to public works programs are badly needed. EPA has accumulated significant experience with this issue in recent years—experience that might be of benefit to other departments and agencies.

Environmental regulations of many varieties frequently are the most difficult for state and local governments to comply with. The number, complexity, cost, and time delays of these regulations are increasing. The *National Environmental Policy Act* (NEPA) was supposed to provide linkages between these numerous regulations, but there has been difficulty in reaching that goal. The Council on Environmental Quality (CEQ), which oversees NEPA implementation, is offering workshops for federal agencies to help them take fuller advantage of the law. This is of particular relevance to infrastructure agencies.

Other regulatory issues on which federal infrastructure agencies might benefit from pooling their experience include the development of performance-standard regulations and principles for determining federal reimbursement responsibilities for federal mandates.

III. New Technologies, Research, and Innovation

Formal Issue Statement

Potential. Technological, managerial, legal, institutional, and other innovations are needed to improve the nation’s infrastructure and keep America prosperous, competitive, productive, efficient, and a nation that offers a high quality of life. Research and development (R&D) programs have greater potential than is realized to contribute to such innovation. Some participants believe that a research strategy related to achieving widely held national goals could help to achieve more cost-effective innovation.

Special Topics. Three types of innovation that need special attention are (1) the procurement process, (2) reducing or spreading the liabilities of trying new techniques and new technologies, and (3) accounting more precisely for the value and incidence of infrastructure benefits and pollution responsibilities.

Federal Role. To achieve economies of scale in R&D and to make best use of the significant technical research capabilities of the federal government (including many laboratories, some of which can be expected to shift their focus from defense to domestic issues), the federal government has a major role to play in infrastructure R&D. This role, however, should not be top-down. The long-established National Cooperative Highway Research Program provides an example of how state, federal, and other interests can work together creatively to establish effective and responsive national research priorities.

Technology Transfer. R&D efforts, to be most effective, should be matched with technology transfer programs designed to get the word out about innovations that have potential widespread applications. Some new technologies, however, are proprietary. Sharing them may be more difficult and/or more expensive.

Workshop Discussion

Participants in all the workshops agreed that there was a major federal role in promoting innovation, demonstration, evaluation, and dissemination of new technologies in the infrastructure area. This discussion reinforced the survey results that ranked research and technology transfer among the high priority infrastructure issues (see Table 2) and assigned great importance to the federal government's role in these activities (see Table 4).

A number of suggestions were made as to how the federal government could fulfill this leadership role in technological innovation and technology sharing. These recommendations included:

- Shifting from technical to performance standards and encouraging experimentation;
- Funding federal labs to develop expertise in these areas and share those innovations with infrastructure providers;
- Spreading the risk of new technologies so that innovative ideas and approaches can be tried;
- Providing tort reform so that local governments will be willing to experiment rather than feeling compelled to follow traditionally accepted engineering standards;
- Financing demonstration projects that will allow the evaluation of new technologies;
- Promoting technology sharing and dissemination of innovative approaches to infrastructure challenges; and

- Creating an organization or entity to facilitate information sharing.

Strategies for Improving the Performance of Public Works

The surveys of constituent groups indicated that certain types of research are expected to play an increasingly important role in improving public works performance, while technology transfer is not expected to grow in importance quite so much. These findings are shown in Table 6, where the four groups ranked the growing importance of seven strategies for improving the performance of public works. This table also shows the composite ranking by all four groups.

Overall, research and development on information technologies was felt to offer the most rapidly growing potential for improving public works performance. Neck and neck for the second and third ranks were intergovernmental/interagency cooperation and coordination, and education and training for present and future employees. Thus, the top three ranks all went to what many people term the "soft side" factors. In fourth place was growth in the contributions of research and development on materials technology, followed by R&D for management and policy processes. Bringing up the rear were technology transfer strategies plus research and development on risk analysis techniques. The greatest consensus among the groups was on the top-ranked strategy (R&D for information technology) and bottom-ranked strategy (R&D on risk analysis).

Potential Opportunities for Interagency Cooperation

A strong beginning on developing a national cooperative infrastructure research agenda has been made by the Civil Engineering Research Foundation. Twelve federal agencies and 25 professional organizations are participating in this effort (see Figure 4, next page). The agenda of 35 specific research projects, released in September 1991, is summarized in Figure 5 (see next page). It emphasizes revitalizing the nation's public works, keeping America

Means of Influence	Working Groups				Composite Rank	High-Low Difference
	Federal	State-Local	Research, etc.	Provider		
A. R&D						
(1) Materials Technology	4	4	2	6	4	4
(2) Information Technology	1	3	3	3	1	2
(3) Management/Policy Approaches	6	6	1	4	5	5
(4) Risk Analysis	5	7	7	5	7	2
B. Technology Transfer	7	5	4	7	6	3
C. Education/Training of Employees	3	2	5	1	3	4
D. Intergovernmental/Interagency Cooperation and Coordination	2	1	6	2	2	5
your organization (agency)?						

Figure 4
National Civil Engineering Research Needs Forum

Supported in Part by:	Cosponsors:	Participating Organizations:
Civil Engineering Research Foundation National Science Foundation	ATLSS Engineering Research Center Federal Aviation Administration Federal Highway Administration Federal Emergency Management Agency National Institute of Standards & Technology U.S. Air Force U.S. Army Corps of Engineers U.S. Department of Energy U.S. Department of Interior U.S. Environmental Protection Agency U.S. Navy	ACEC Research & Management Foundation Associated General Contractors of America AIA/ACSA Council on Architectural Research American Academy of Environmental Engineers American Association of Engineering Societies American Society of Civil Engineers ASFE/The Association of Engineering Firms Practicing in the Geosciences ASME Center for Research & Technical Development AWWA Research Foundation Building Officials & Code Administrators International Building Research Board Construction Industry Presidents Forum Earthquake Engineering Research Institute Foundation of the New Jersey Alliance for Action International Conference of Building Officials Institute of Transportation Engineers National Association of Corrosion Engineers National Conference of States on Building Codes National Institute of Building Sciences National Society of Professional Engineers Southern Building Code Congress International Technology Transfer Society Transportation Research Board WPCF Research Foundation

Source: Civil Engineering Research Foundation, *Setting a National Research Agenda for the Civil Engineering Profession*, September 1991.

Figure 5
A National Research Agenda for the Civil Engineering Profession

<p>Revitalization of Public Works</p> <ul style="list-style-type: none"> ■ Developing Tools to Make Smart Management Decisions ■ Finding New Ways to Finance Infrastructure Investment ■ Extending the Useful Life of the Infrastructure ■ Protecting Bridges from Natural Hazards ■ Identifying Structural Problems through Diagnosis ■ Removing Institutional Barriers to Innovation ■ Economic Benefits from Public Works Investments ■ Improving Water-Resource Systems Data through New Technology ■ Mitigating Coastal Damage from Natural Hazards ■ Protecting Dams against Earthquakes and Floods <p>Improvement of Competitiveness</p> <ul style="list-style-type: none"> ■ Integrated Computer-Aided Engineering ■ Making Quality a Top Priority ■ Alternate Ways to Bid Contracts ■ Making a Case for Innovation in Civil Engineering ■ How to Organize for Innovation ■ People—the Industry's Most Valuable Resource 	<p>Enhancement of the Environment</p> <ul style="list-style-type: none"> ■ Turning Wastes into Treasures ■ Improving our Water Quality ● Corraling Groundwater Pollutants ■ A Universal Approach to Site Cleanup ■ Natural and Engineered Ecosystems for Eliminating Pollutants ■ In-Situ Remediation and Treatment <p>Technological Innovation</p> <ul style="list-style-type: none"> ■ Automation Technologies for Construction Productivity ■ Robotic Technologies for Man-Remote Missions ■ Developing Super Construction Materials ■ Setting Standards to Predict the Life of Materials ■ Adapting New Materials to Civil Engineers for the 21st Century ■ Research to Application through Teamwork <p>Technology Transfer</p> <ul style="list-style-type: none"> ■ Clearing a Path to the Marketplace ■ Breaking the Legal and Regulatory Barriers to Innovation ■ Taking the Lead in Setting International Standards ■ Bringing Engineering Standards into the Computer Age ■ Identifying the Right Way and Wrong Way ■ Keeping Up-to-Date through Education
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Source: Civil Engineering Research Foundation, *Setting a National Research Agenda for the Civil Engineering Profession*, September 1991.

competitive, enhancing the environment, advancing technologies, and accelerating technology transfer.

The increases in research funding under the new surface transportation program offer significant opportunities for many federal, state, and local infrastructure agencies. Interagency pooling of these research efforts might bring greater benefits to the nation than a more limited, transportation only, use of the research. For example, work on geographic information systems (GIS) could be beneficial to many programs.

IV. Financing

Formal Issue Statement

A Time of Change. The 1980s produced major changes in infrastructure finance. The federal government is moving spending toward other goals. Local tax revolts have limited the role of property taxes in infrastructure finance. The federal tax code encouraged privatization of infrastructure in the early 1980s but reversed that position in 1986. Some federal trust funds established to support infrastructure programs have been hoarded rather than spent. Thus, the means of financing infrastructure are in flux. The following finance issues need attention in 1990s.

Beneficiaries Pay. User fees and earmarked taxes are financing increased shares of infrastructure costs. This raises questions of equity when benefits accrue to others besides users. It also raises questions of affordability for some low-income members of society. In addition to beneficiaries, some costs can be attributed to persons responsible for creating costs (for example, polluters). Thus, allocating costs equitably is a complex task, full of controversy.

Intergovernmental Financing. Allowable local revenues usually are too limited to fund all necessary infrastructure. In addition, some infrastructure has benefits that clearly extend beyond local communities. Some benefits are national in scope. At the same time, most infrastructure is owned and operated by state and local governments.

Federal and state aid for infrastructure is common. During the 1980s, however, federal infrastructure aid declined proportionally while state aid played an increasing role. The proper roles of federal and state aid depend on judgments about the relative infrastructure roles and responsibilities of the federal, state, and local governments and the private sector. Further realignment in state and federal aid infrastructure programs may be needed.

Revenue Diversification. The federal government and most state and local governments lack adequate funds to meet perceived infrastructure needs. Little or no growth is expected in the use of general funds and grants for this purpose. Alternative means of raising additional funds are being examined intensively. Increased use of user fees, earmarked taxes, trust funds, special districts, revolving loan funds, cost sharing, regulation, and privatization are the primary alternatives being used or considered. The need to consider a replacement for the per-gallon gasoline tax is becoming urgent in the minds of

some observers because of energy and air quality policies designed to reduce the use of that fuel.

The Tax Code. Federal income tax treatment of infrastructure investments by state and local governments, as well as by private investors, may increase or decrease the cost of these investments. The wide swing in tax policy between 1981 and 1986 illustrates the controversial nature of this issue. Much of the argument revolves around the definition of what constitutes legitimate public works and the extent to which there is a federal interest. Interest in readjusting some of the 1986 tax reforms affecting infrastructure investments is apparent among some constituencies. There also is substantial support for tax code simplification and the lessening of certain compliance burdens, especially in the area of tax-exempt financing.

Workshop Discussion

The federal role in financing the nation's infrastructure was a major topic of discussion at each of the workshops. The key question concerned the impact of declining federal infrastructure financing on the federal interest and role in ensuring adequate levels and quality of infrastructure services. Most participants agreed that there should be stability in funding sources so that a long-term perspective could be taken in providing infrastructure services.

Most participants conceded that the probability of a near-term resurgence in federal financing for infrastructure was low or nonexistent. It was pointed out that many infrastructure networks developed by the federal government are virtually completed. Many workshop participants thought the limited resources allocated through these mechanisms could be used more efficiently if federal grant programs were redesigned. For example, the current priority given by some federal grants to capital investment may bias local decisions against cost-effective maintenance and operational improvements. *The Intermodal Surface Transportation Efficiency Act of 1991* provides flexibility in highway and transit programs to overcome such biases.

Participants at the state and local workshop raised questions about the matching ratios of federal infrastructure grants. In some cases, the participants thought the federal matching ratios may be too high, while in others they may be too low. Differences in such matching ratios change relative prices paid by local officials, thereby encouraging some behavior and discouraging other behavior. The participants felt that increased local discretion in allocating federal grant dollars would reduce any bias. In addition, there was some feeling that federal infrastructure grant programs limited to governmental entities may introduce bias against private providers of infrastructure services.

Concern was expressed about federal restrictions on the use of tax-exempt financing for infrastructure over the last decade. Efforts to limit access to tax-exempt financing treats different types of infrastructure investment differently. The general view was that there should be more consistency across categories of infrastructure, and the focus should be on making more investments eligible for tax-exempt financing.

Pricing of infrastructure services also drew comment. Individual users of many infrastructure facilities can be identified, charged a price, and excluded if they do not pay that price. This is generally true for mass transit, water supply, and wastewater treatment, and for the collection, storage, and disposal of solid and hazardous wastes. Some infrastructure services are provided directly by the private sector because of their pricing and profit potential. Examples include energy supply, telecommunications, and water supply, and the collection, storage, and disposal of solid and hazardous waste.

In such an environment, charging a price per unit of service consumed aligns the benefits received from infrastructure facilities with the price paid. Thus, pricing can increase the level and quality of infrastructure service being provided. The survey results indicated strong expectations by all four work groups that more use will be made of infrastructure pricing strategies in the future.

Some concerns were expressed, however, about the general applicability of such pricing, for several reasons:

- The beneficiaries of infrastructure facilities may not be limited to the users. Thus, pricing mechanisms designed to recover the full cost of providing the service will overcharge the actual users. In such circumstances there may be a need for general fund support.
- If the efficiency gains attributed to such pricing strategies are to be realized, individuals must have sufficient income to make choices. This is not the case for families with limited incomes, so there is an important distribution issue to address.
- Pricing policies may inhibit innovation because the beneficiaries of new technologies may not be known and identified before such technologies are developed and tried.

As reflected here, most of the discussion of financing issues focused on the strengths and weakness of various tools used by the federal government to provide financial support.

Survey Findings on Infrastructure Financing

Three questions in the survey related to finance: investment trends, influences on infrastructure spending, and the relative importance of various financing sources. These trend questions were designed to help assess changes that are likely to occur. The measure used in evaluating responses to these questions, therefore, is the ranking of expected degrees of change.

Investment Trends. Table 7 shows the median response in each work group and the average of these medians for present and expected spending on new construction; maintenance, reconstruction, and modernization; and operations. All four groups showed new construction holding its own at the present time, but two of them expected it to grow in the future. For maintenance, reconstruction, and modernization, the research/advocacy/user group saw a present decline, the federal group saw spending holding the line, and state and local officials and public works providers saw current spending increases. All saw moderate spending increases in the future. The four groups saw spending on operations holding the line at present, but all except the federal group expected future increases.

Overall, the trend seemed to be for moderate increases expected in spending for operations, maintenance, reconstruction, and modernization, but less increase for new construction.

Influences on Infrastructure Spending. Table 8 shows the rankings by each of the four groups and composite of the importance of ten different means of influencing infrastructure spending strategies. Overall, regular reporting of system and/or facility performance got the top

Type of Infrastructure Investment	Working Groups				Average	Rank Strength
	Federal	State-Local	Research, etc.	Provider	Median	of Increase
A. New Construction						
■ Present	0	0	0	0	0.00	
■ Future	0	0	+1	+1	+0.5	3
B. Maintenance, Reconstruction, and Modernization						
■ Present	0	+1	-1	+1	+0.25	
■ Future	+1	+2	+1	+2	+1.50	1
C. Operations						
■ Present	0	0	0	0	0.00	
■ Future	0	+1	+1	+1	+0.75	2
Composite Score	+1	+4	+2	+5	+3.00	
1						

Means of Influence	Working Groups				Composite Rank	High-Low Difference
	Federal	State-Local	Research, etc.	Provider		
A. Strategic Planning	4	8	5	1	5	7
B. Performance Rating	6	3	1	2	1	5
C. Needs Studies	7	10	4	8	9	6
D. Benefit-Cost Evaluations	8	1	3	5	4	7
E. Capital Improvement Programming	2	7	2	4	2	5
F. Available Resources	1	2	8	6	3	7
G. Environmental Protection Requirements	5	6	10	3	6	7
H. Citizen Participation	9	4	6	9	8	5
I. Political Considerations	*	5	9	*	10	9
J. Required Planning/Programming by Others	3	9	7	7	7	6
1						

ranking for expected growth of importance in influencing expenditure strategies. The next fastest growing technique was capital improvement programming, followed by estimates of available resources, benefit-cost evaluations, and strategic planning. In the bottom half of the rankings were environmental protection requirements, required planning and programming by others, citizen participation, needs studies, and political considerations. It should be noted that political considerations are quite influential, and two groups (federal and public works providers) expected no change.

Table 8 also shows a relatively large spread in how the groups ranked their expectations for the rising influence of these investment planning factors. The greatest divergence was on the question of political considerations, with state and local policymakers ranking this in the middle range of increasing influence, while the other three groups saw little change. Considerable diversity was also observed with respect to increases in strategic planning, benefit-cost evaluations, estimates of available resources, and environmental protection requirements. The narrowest differences were in expectations for increased use of performance reporting (expected to increase the most), needs studies, capital improvement programming, citizen participation, and required planning and programming by others.

The growing influence of capital improvement programming was ranked second highest. Thus, there was a considerable degree of consensus among the groups on the rapid increase of the two top ranked techniques for influencing expenditure strategies.

Importance of Financing Sources. Table 9 shows the expectations for shifts in financing sources in the future. The use of general funds was expected to decrease by all of the groups except the state and local policymakers. The

use of federal and state grants was not expected to change overall. The other sources of funding were expected to grow in importance, with increased cost sharing taking the lead. Growth of user fees and the use of earmarked taxes, trust funds, and special districts were next. Shifting costs to others through regulation and tax incentives was expected to increase less. Overall, if these expectations were to be realized, they would strongly support the sixth most important issue identified in the open-ended question, namely, revenue diversification.

Potential Opportunities for Interagency Cooperation

One of the biggest financing challenges is assigning responsibilities for meeting costs. If governments were to follow the currently popular "beneficiaries pay" principle more closely, they would need better data on costs and benefits. Benefit accounting and cost accounting, when done at all, generally are limited to direct benefits and costs. Secondary benefits and costs also can be significant. In order to set fair and productive infrastructure service prices and to allocate intergovernmental aid properly, public accounting systems would have to be reformed fundamentally. Relative tax capacities and efforts also would figure into such calculations. The new Federal Accounting Standards Advisory Board might be a mechanism to help establish standards for use by public agencies to account for benefits and costs more accurately.

Lessons learned from new financing initiatives should be shared widely. For example, federal promotion of state revolving loan funds for wastewater treatment facilities is now several years into implementation. The potential for applying this concept to other types of infrastructure could be explored.

Table 9
Importance of Financing Sources'
(rank order by growth in importance)

Federal Roles	Working Groups				Composite
	Federal	State-Local	Research, etc.	Provider	Rank
A. General Fund	*	5	*	*	*
B. User Fees	2	2	4	2	2
C. Earmarked Taxes, Trust Funds, and Special Districts	4	3	1	5	3
D. Federal and State Grants	NA	6	***	6	***
E. Shifting Financial Responsibilities to Others					
(1) by Regulation	5	1	5	4	4
(2) by Increased Cost Sharing	1	4	2	3	1
F. Tax Incentives	3**	7**	3	1	5

Another initiative to be watched might be the new authorization for mixing public and private funds under **ISTEA**. Similarly, experiences with the May 1992 executive order on privatizing public facilities acquired with federal funds also should be monitored. Model cost-sharing contracts between the public and private sectors might be explored.

V. Management

Formal Issue Statement

Focus on Performance. Many infrastructure management practices have grown up around construction or maintenance of particular types of facilities. Traditionally, there has been little opportunity to transfer funds between programs. These narrow programs focus on inputs rather than on outcomes for the user, and they limit the problem solving ability of management.

Increasingly, infrastructure goals are being defined more broadly. For example:

- Mobility of persons is replacing highway construction.
- Communication is becoming a clearer alternative to transportation.
- Coordinated management and water conservation are becoming alternatives to building new dams.
- Landfills, incinerators, ocean dumping, and recycling are alternatives to each other, holding different implications for the cleanliness of land, water, and air resources.

These broader goals require greater freedom to assess a range of alternatives and transfer funds where they

are needed to achieve the **best** overall outcomes. Intermodal transfer authority is becoming more common in transportation programs, but intermedia flexibility for environmental protection and exchanges of surface-water with groundwater are rare.

The new congestion management systems required by **ISTEA** may provide a model for outcome-oriented management. Congestion measurements and their effects on **air** quality will be the focus of attention rather than any single input such as a new lane of highway or a new bus route. Various combinations of construction, equipment, maintenance, operational, and demand reduction improvements should be tried until acceptable results are attained.

Flexibility. Obviously, more than new performance monitoring and management techniques will be required for output-oriented performance management to work. Many inflexible regulations and funding restrictions will need to be reformed. For example, block grants rather than narrow categorical grants, or transfers of funds among categorical programs should be considered. They offer means of lowering arbitrary barriers to sound performance management practices.

Incentives. When certain behaviors are clearly necessary but absent, an alternative to heavy-handed requirements and mandates is to offer economic incentives. For example, the maintenance of **U.S.** highway pavements, bridges, and transit facilities and equipment is now inadequate. In addition to requiring annual management plans for rectifying this situation, **ISTEA** provides special funding for these purposes. There also is a provision for special funding to encourage congestion management and **air** quality compliance. Similar approaches should be considered for other types of infrastructure.

Capital Improvement Programming and Budgeting.

This technique is used routinely by most state and local governments in preparing annual capital budgets. The federal budget has no separate section or subtotal for capital investments. There is only supplementary reporting on capital investments, such as OMB's annual report required by the *Public Works Improvement Act of 1984*. There is a long history behind the difference in approach between the federal government and the state and local governments, and there is strong resistance to change.

Nevertheless, long-term capital improvement programming and priority-setting, as distinct from actual budgeting, are used by some of the physical development departments and agencies of the federal government. There also is a growing public concern about declining infrastructure that may induce other agencies to consider capital improvement programming.

The use of capital improvement programming is expected to become increasingly influential in setting federal, state, and local capital investment policies in the future. Providing a firmer, more analytical basis for capital improvement programming could help it live up to these high expectations.

Training. Good management requires well trained employees. As the scope of infrastructure concerns expands, as the current wave of retirements bites deeper, as public budgets shrink, and as the issues to be addressed become more complex, an adequate supply of qualified public works employees is becoming more problematic. The training of existing and future employees needs attention.

Workshop Discussion

There was a consensus that more attention needs to be paid to the level and quality of infrastructure services being produced. It was felt that this is not being done now because the performance of infrastructure networks is difficult to quantify and because there are too few agreed-on standards to gauge performance. Better measures of infrastructure services need to be constructed so that performance standards can be developed.

If better performance standards and measurements can be developed, then alternative service delivery approaches can be explored. In this context, workshop participants saw opportunities for infrastructure services to be provided in a manner that could maximize public benefits at the least cost to the private sector.

A number of participants also thought it was critical to develop a system that rewards good management practices and provides incentives to focus on demand management issues in addition to new construction. If there were improved performance standards and measurements, there would be more incentives to seek the most effective and efficient management of existing facilities.

Another major theme at each workshop was the need for better coordination and cooperation. Specifically, there needs to be improved coordination of federal agencies that have infrastructure related responsibilities; the Congress and federal agencies need to coordinate policy objectives across seemingly disparate programs; local offi-

cial need to be involved in the promulgation and development of federal regulations from the earliest possible moment; and infrastructure systems that extend beyond the political boundaries of state and local governments create a need for regional coordination.

Discussion of these issues raised many questions. For example, participants at the federal workshop raised questions about the difficulties in motivating agencies with different objectives to coordinate their activities, and the need to provide institutional incentives that could promote coordination/cooperation both among federal agencies and with the state and local governments.

Survey Findings on Importance of Federal Coordination

Table 10 shows the survey responses of the four work groups, with a composite ranking, to five types of coordination within the federal establishment. Most important, overall, is coordination of research resources, results, and expertise. The federal and research work groups gave this top priority, while the other two groups ranked it second. This reinforces the relatively great importance of research and development as an issue on the open-ended survey question.

In second place, overall, is the importance of coordinating planning and decisionmaking procedures. The state and local policymakers and public works providers felt especially strongly about this need, and their responses relate strongly to the high ratings given to the issue of flexibility in federal funding.

In third place is the need for coordinating federal regulatory strategies. This reinforces the ranking of regulatory relief as the second most important issue overall.

The fourth place finish of the need to coordinate federal program structures and grant conditions compares to the third place finish of administrative relief and flexibility among the most important overall issues.

The need for coordinating federal funding strategies came in last. This relates to the fifth most important issue—intergovernmental funding.

Potential Opportunities for Interagency Cooperation

A key concept in improving infrastructure management is the focus on performance. This focus is strongly fixed in the new surface transportation program. Thus, other federal agencies have an opportunity to watch how the new required management systems play out in the DOT programs. The President's Council on Management Improvement and the Competitiveness Council might want to consider nudging this process along.

In addition, there are new opportunities in the data and accounting fields that should be explored. Good management systems are data dependent. The U.S. Geological Survey chairs two recently reformulated data committees of key interest to infrastructure agencies: the Federal Geographic Data Committee that is at the cutting edge of GIS operations, and the Water Information Coordination Program. Both are interagency and intergovernmental activities that could provide significant benefits to infrastructure agencies.

Table 10
Importance of Federal Program/Agency Coordination¹
(rank order of types of coordination)

Types of Coordination	Working Groups				Composite	
	Federal	State-Local	Research, etc.	Provider	Rank	
A. Program Structures and Grant Conditions	4	5	4	4		
B. Funding Strategies	4		5	5	1	5
C. Regulatory Strategies	3	3	2	3	1	3
D. Research	1	2	1	2		
E. Planning and Decisionmaking Procedures	3	1	3	1		
1						

On the accounting side, there is an opportunity to make some headway against one of the toughest problems—deferred maintenance of capital facilities. The solution may come through some form of capital asset accounting. This topic was broached a few years ago by the Governmental Accounting Standards Board, but is relatively dormant. The concept is to inspect capital facilities regularly, determine the cost of needed maintenance, and either make the repairs or report the financial amount of needed repairs not made as a liability in the annual financial report. Tracking this financial record annually would allow management, policymakers, and citizens to assess the status of infrastructure maintenance much more precisely and realistically than is possible now and would save money by avoiding the catastrophic failures of facilities that often trigger large replacement costs. The opportunity to reopen this issue is occasioned by creation of the Federal Accounting Standards Advisory Board.

Other management techniques that might benefit from pooled federal agency development and coordination efforts with a special infrastructure emphasis are capital improvement programming, priority setting, and budgeting; benefit-cost analysis; administrative dispute resolution; and negotiated rulemaking.

Based on current involvement and expertise, DOT

might take the lead on the first; the U.S. Army Corps of Engineers might lead the second; and the other two might involve EPA, DOT, the Corps, and the Administrative Conference.

Conclusion

ACIR conducted a year-long consultation process on improving the nation's infrastructure with working groups representing federal, state, and local governments, public works providers and users, and research, professional, and advocacy organizations. This report documents that process, which sought to identify opportunities for federal interagency cooperation and coordination to help improve public works. A number of such opportunities were found.

Coordination within the federal establishment can benefit state and local governments in a variety of ways, including (1) improving technical and managerial practices and (2) providing consistency among federal agencies in their approaches to the administrative and regulatory requirements that state and local governments must meet.

Based on the results of the initial consultation process, ACIR recommends that the process continue with a strong focus on developing specific opportunities for improvements.

RECOMMENDATION

The Commission finds that maintaining, expanding, and modernizing America's infrastructure is essential to the nation's continued economic and environmental health and to raising the quality of life for every American. The Commission finds, furthermore, that fiscal stresses in federal, state, and local budgets, along with growing competition from other nations, demand urgent efforts to improve investment efficiency, program coordination, and economic productivity in the nation's infrastructure programs. Finally, the Commission finds that numerous timely opportunities exist to improve the nation's infrastructure by these means.

The Commission recommends, therefore, that the nation's state and local governments, and the several federal infrastructure agencies, work more closely together, and in cooperation with the private sector, to take advantage of opportunities to make the nation's infrastructure more efficient, better coordinated, and more highly productive. The opportunities that should be considered in working toward these goals include:

(a) Establishing programs to educate the general public, public officials, and public works professionals about the importance of public works to the nation and the innovations that are needed to keep America's infrastructure systems among the world's most productive;

(b) Developing improved methods for preparing performance-based infrastructure needs studies reflecting strategic objectives;

(c) Establishing infrastructure-specific guidelines for applying the Federalism Executive Order, the "small governments" provisions of the Regulatory Flexibility Act, the Administrative Dispute Resolution Act of 1990, and the Negotiated Rulemaking Act of 1990;

(d) Making greater use of the National Environmental Policy Act as an interagency focus to combine reviews and streamline the process for issuing environmentally sound infrastructure permits;

(e) Pooling federal agency experiences in using performance-standard regulations and mandate reimbursement practices;

(f) Developing a national cooperative infrastructure research program, including a strong technology transfer component;

(g) Removing or minimizing the barriers and risks confronted when innovating new technologies and practices;

(h) Establishing principles and guidelines for public agency benefit, cost, and deferred maintenance accounting;

(i) Evaluating the benefits and limitations of innovative financing techniques — including user fee systems, state revolving loan funds, tax exempt financing, and privatization techniques — and publicizing successful innovations;

(j) Improving the methods and practices of capital improvement programming and benefit-cost analysis; and

(k) Promoting geographic data coordination.

APPENDIX

**Executive Order 12612, Federalism
President Ronald Reagan
October 26, 1987
(Federal Register, Vol. 52, No. 210,
October 30, 1987, p. 41685)**

By the authority vested in me as President by the Constitution and laws of the United States of America, and in order to restore the division of governmental responsibilities between the national government and the States that was intended by the Framers of the Constitution and to ensure that the principles of federalism established by the Framers guide the Executive departments and agencies in the formulation and implementation of policies, it is hereby ordered as follows:

Section 1. Definitions. For purposes of this Order:

(a) “Policies that have federalism implications” refers to regulations, legislative comments or proposed legislation, and other policy statements or actions that have substantial direct effects on the States, on the relationship between the national governments and the States, or on the distribution of power and responsibilities among the various levels of government.

(b) “State” or “States” refer to the States of the United States of America, individually or collectively, and, where relevant, to State governments, including units of local government and other political subdivisions established by the States.

Section 2. Fundamental Federalism Principles. In formulating and implementing policies that have federalism implications, Executive departments and agencies shall be guided by the following fundamental federalism principles:

(a) Federalism is rooted in the knowledge that our political liberties are best assured by limiting the size and scope of the national government.

(b) The people of the States created the national government when they delegated to it those enumerated governmental powers relating to matters beyond the competence of the individual States. All other sovereign powers, save those expressly prohibited the States by the Constitution, are reserved to the States or to the people.

(c) The constitutional relationship among sovereign governments, State and national, is formalized in and protected by the Tenth Amendment to the Constitution.

(d) The people of the States are free, subject only to restrictions in the Constitution itself or in constitutionally authorized Acts of Congress, to define the moral, political, and legal character of their lives.

(e) In most areas of governmental concern, the States uniquely possess the constitutional authority, the resources, and the competence to discern the sentiments of the people and to govern accordingly. In Thomas Jefferson’s words, the States are “the most competent administrations for our domestic concerns and the surest bulwarks against antirepublican tendencies.”

(f) The nature of our constitutional system encourages a healthy diversity in the public policies adopted by the people of the several States according to their own conditions, needs, and desires. In the search for enlightened public policy, individual States and communities are free to experiment with a variety of approaches to public issues.

(g) Acts of the national government—whether legislative, executive, or judicial in nature—that exceed the enumerated powers of that government under the Constitution violate the principle of federalism established by the Framers.

(h) Policies of the national government should recognize the responsibility of—and should encourage opportunities for—individuals, families, neighborhoods, local governments, and private associations to achieve their personal, social, and economic objectives through cooperative effort.

(i) In the absence of clear constitutional or statutory authority, the presumption of sovereignty should rest with the individual States. Uncertainties regarding the legitimate authority of the national government should be resolved against regulation at the national level.

Section 3. Federalism Policymaking Criteria. In addition to the fundamental federalism principles set forth in section 2, Executive departments and agencies shall adhere, to the extent permitted by law, to the following criteria when formulating and implementing policies that have federalism implications:

(a) There should be strict adherence to constitutional principles. Executive departments and agencies should closely examine the constitutional and statutory authority supporting any Federal action that would limit the policymaking discretion of the States, and should carefully assess the necessity for such action. To the extent practicable, the States should be consulted before any such action is implemented. Executive Order No. 12372 (“Intergovernmental Review of Federal Programs”) remains in effect for the programs and activities to which it is applicable.

(b) Federal action limiting the policymaking discretion of the States should be taken only where constitutional authority for the action is clear and certain and the national activity is necessitated by the presence of a problem of national scope. For the purposes of this Order:

(1) It is important to recognize the distinction between problems of national scope (which may justify Federal action) and problems that are merely common to the States (which will not justify Federal action because individual States, acting individually or together, can effectively deal with them).

(2) Constitutional authority for Federal action is clear and certain only when authority for the action may be found in a specific provision of the Constitution, there is no provision in the Constitution prohibiting Federal action, and the action does not encroach upon authority reserved to the States.

(c) With respect to national policies administered by the States, the national government should grant the States the maximum administrative discretion possible. Intrusive, Federal oversight of State administration is neither necessary nor desirable.

(d) When undertaking to formulate and implement policies that have federalism implications, Executive departments and agencies shall:

(1) Encourage States to develop their own policies to achieve program objectives and to work with appropriate officials in other States.

(2) Refrain, to the maximum extent possible, from establishing uniform, national standards for programs and, when possible, defer to the States to establish standards.

(3) When national standards are required, consult with appropriate officials and organizations representing the States in developing those standards.

Section 4. Special Requirements for Preemption

(a) To the extent permitted by law, Executive departments and agencies shall construe, in regulations and otherwise, a Federal statute to preempt State law only when the statute contains an express preemption provision or there is some other firm and palpable evidence compelling the conclusion that the Congress intended preemption of State law, or when the exercise of State authority directly conflicts with the exercise of Federal authority under the Federal statute.

(b) Where a Federal statute does not preempt State law (as addressed in subsection (a) of this section), Executive departments and agencies shall construe any authorization in the statute for the issuance of regulations as authorizing preemption of State law by rulemaking only when the statute expressly authorizes issuance of preemptive regulations or there is some other firm and palpable evidence compelling the conclusion that the Congress intended to delegate to the department or agency the authority to issue regulations preempting State law.

(c) Any regulatory preemption of State law shall be restricted to the minimum level necessary to achieve the objectives of the statute pursuant to which the regulations are promulgated.

(d) As soon as an Executive department or agency foresees the possibility of a conflict between State law and Federally protected interests within its area of regulatory responsibility, the department or agency shall consult, to the extent practicable, with appropriate officials and organizations representing the States in an effort to avoid such a conflict.

(e) When an Executive department or agency proposes to act through adjudication or rulemaking to preempt State law, the department or agency shall provide all affected States notice and an opportunity for appropriate participation in the proceedings.

Section 5. Special Requirements for Legislative Proposals. Executive departments and agencies shall not submit to the Congress legislation that would:

(a) Directly regulate the States in ways that would interfere with functions essential to the States’ separate and independent existence or operate to directly displace the States’ freedom to structure integral operations in areas of traditional governmental functions;

(b) Attach to Federal grants conditions that are not directly related to the purpose of the grant; or

(c) Preempt State law, unless preemption is consistent with the fundamental federalism principles set forth in section 2, and unless a clearly legitimate national purpose, consistent with the federalism policymaking criteria set forth in section 3, cannot otherwise be met.

Section 6. Agency Implementation.

(a) The head of each Executive department and agency shall designate an official to be responsible for ensuring the implementation of this Order.

(b) In addition to whatever other actions the designated official may take to ensure implementation of this Order, the designated official shall determine which proposed policies have sufficient federalism implications to warrant the preparation of a Federalism Assessment. With respect to each such policy for which an affirmative determination is made, a Federalism Assessment, as described in subsection (c) of this section, shall be prepared. The department or agency head shall consider any such Assessment in all decisions involved in promulgating and implementing the policy.

(c) Each Federalism Assessment shall accompany any submission concerning the policy that is made to the Of-

Office of Management and Budget pursuant to Executive Order No. 12291 or *OMB Circular No. A-19*, and shall:

(1) Contain the designated official's certification that the policy has been assessed in light of the principles, criteria, and requirements stated in sections 2 through 5 of this Order;

(2) Identify any provision or element of the policy that is inconsistent with the principles, criteria, and requirements stated in sections 2 through 5 of this Order;

(3) Identify the extent to which the policy imposes additional costs or burdens on the States, including the likely source of funding for the States and the ability of the States to fulfill the purposes of the policy; and

(4) Identify the extent to which the policy would affect the States' ability to discharge traditional State governmental functions, or other aspects of State sovereignty.

Section 7. Governmentwide Federalism Coordination and Review

(a) In implementing Executive Order No. 12291 and *OMB Circular No. A-19*, the Office of Management and Budget, to the extent permitted by law and consistent with the provisions of those authorities, shall take action to ensure that the policies of the Executive departments and agencies are consistent with the principles, criteria, and requirements stated in sections 2 through 5 of this Order.

(b) In submissions to the Office of Management and Budget pursuant to Executive Order No. 12291 and *OMB Circular A-19*, Executive departments and agencies shall identify proposed regulatory and statutory provisions that have significant federalism implications and shall address any substantial federalism concerns. Where the departments or agencies deem it appropriate, substantial federalism concerns should also be addressed in notices of proposed rulemaking and messages transmitting legislative proposals to the Congress.

Section 8. Judicial Review. This Order is intended only to improve the internal management of the Executive Branch, and is not intended to create any right or benefit, substantive or procedural, enforceable at law by a party against the United States, its agencies, its officers, or any person.

**Memorandum on Federalism Executive Order
for the Heads of Executive Departments
and Agencies
President George Bush
February 16, 1990**

I wish to take this opportunity to reaffirm an important Executive order, issued when I served as Vice President, and call for your personal commitment in ensuring your department's or agency's compliance with its provisions. This order, which is entitled "Federalism" (No.

12612, October 26, 1987), establishes fundamental principles and criteria to guide you in developing and implementing policies that have substantial direct effects on States and local governments. Let me note a few of the order's more important provisions:

- In most areas of governmental concern, the States uniquely possess the constitutional authority, the resources, and the competence to discern the sentiments of the people and to govern accordingly.
- The nature of our constitutional system encourages a healthy diversity in the public policies adopted by the people of the several States according to their own conditions, needs, and desires. In the search for enlightened public policy, individual States and communities are free to experiment with a variety of approaches to public issues.
- Federal action limiting the policymaking discretion of the States should be taken only where constitutional authority is clear and certain and the national activity is necessitated by a problem of national scope.
- With respect to national policies administered by the States, the national Government should grant the States the maximum administrative discretion possible.
- When undertaking to formulate and implement policies that have Federalism implications, Federal executive departments and agencies should (1) encourage States to develop their own policies to achieve program objectives and to work with appropriate officials in other States; (2) refrain, to the maximum extent possible, from establishing uniform national standards for programs and, when possible, defer to the States to establish standards; and (3) when national standards are required, consult with appropriate officials and organizations representing the States in developing those standards.

The Executive order has special requirements dealing with preemption and with legislative proposals. It also requires that, when a proposed policy has sufficient Federalism implications, the agency must prepare a Federalism Assessment. This assessment is intended to provide the agency and the Administration with an evaluation of the extent to which the policy imposes additional costs or burdens on States and local governments. You are to consider the Federalism Assessment before adopting and implementing the policy.

The order also requires that you designate an official to be responsible for ensuring your agency's implementation of the order. Please ensure that your agency has provided the name of the designated official to the Director of the Office of Management and Budget.

I want to stress that the principles of this order are central to my Administration. I ask that each of you personally review the provisions of Executive Order No. 12612 and assure that the mechanisms necessary to ensure their implementation are in place.

Recent ACIR Publications

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Medicaid: Intergovernmental Trends and Options

Medicaid is increasing in cost and decreasing in effectiveness in many areas. Medicaid spending nearly tripled between 1980 and 1990 (from \$24.8 billion to \$71.3 billion), and the expenditures are projected to continue to rise sharply. The report identifies major trends in Medicaid and presents recommendations intended to restore the program's original goals and design by (1) increasing state and local roles in Medicaid policymaking; (2) increasing state and local program flexibility; (3) adopting interim modifications to Medicaid and implementing comprehensive health care reform by 1994; (4) transferring local Medicaid administration and financing to the states; (5) transferring the cost of long-term care to the federal government under Medicare; and (6) improving the targeting of federal Medicaid funds. The recommendations are intended to slow the growth of Medicaid expenditures for the states, allow the states to serve the health care needs of their populations better, and bring more accountability, balance, and certainty to Medicaid service delivery and financing.

A-119

1992

\$10

Local Boundary Commissions: Status and Roles in Forming, Adjusting, and Dissolving Local Government Boundaries

To determine the status of the boundary review commissions (BRC) that operate in 12 states, ACIR interviewed staff members and conducted a survey of state associations of municipalities, townships, and counties. Eight states established BRCs between 1959 and 1969 (Alaska, California, Michigan, Minnesota, Nevada, New Mexico, Oregon, and Washington). The other BRCs are in Iowa (1972), Utah (1979), Virginia (1980), and St. Louis County, Missouri (1989). The commissions exercise decision-making or advisory authority over the establishment, consolidation, annexation, and dissolution of units of local government, within the framework of state constitutional and legislative provisions. For the most part, the commissions are small and have limited funding. Annexation and mediation of interjurisdictional boundary conflicts top the BRC agendas. Some commissions have developed new techniques for resolving disputes and negotiating agreements for service delivery and tax sharing. Despite 30 years of experience with BRCs, no comprehensive evaluation of their work or effectiveness could be found.

M-183

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What Is ACIR

The U.S. Advisory Commission on Intergovernmental Relations (ACIR) was created by the Congress in 1959 to monitor the operation of the American federal system and to recommend improvements. ACIR is an independent, bipartisan commission composed of 26 members—nine representing the federal government, 14 representing state and local government, and three representing the general public.

The President appoints 20 members—three private citizens and three federal executive officials directly, and four governors, three state-legislators, four mayors, and three elected county officials from states nominated by the National Governors' Association, the National Conference of State Legislatures, the National League of Cities, U.S. Conference of Mayors, and the National Association of Counties. The three Senators are chosen by the President of the Senate and the three Representatives by the Speaker of the House of Representatives.

Each Commission member serves a two-year term and may be reappointed.

As a continuing body, the Commission addresses specific issues and problems the resolution of which would produce improved cooperation among federal, state, and local governments and more effective functioning of the federal system. In addition to examining important functional and policy relationships among the various governments, the Commission extensively studies critical governmental finance issues. One of the long-range efforts of the Commission has been to seek ways to improve federal, state, and local governmental practices and policies to achieve equitable allocation of resources, increased efficiency and equity, and better coordination and cooperation.

In selecting items for research, the Commission considers the relative importance and urgency of the problem, its manageability from the point of view of finances and staff available to ACIR, and the extent to which the Commission can make a fruitful contribution toward the solution of the problem.

- After selecting intergovernmental issues for investigation, ACIR follows a multistep procedure that assures review and comment by representatives of all points of view, all affected governments, technical experts, and interested groups. The Commission then debates each issue and formulates its policy position. Commission findings and recommendations are published and draft bills and executive orders developed to assist in implementing ACIR policy recommendations.