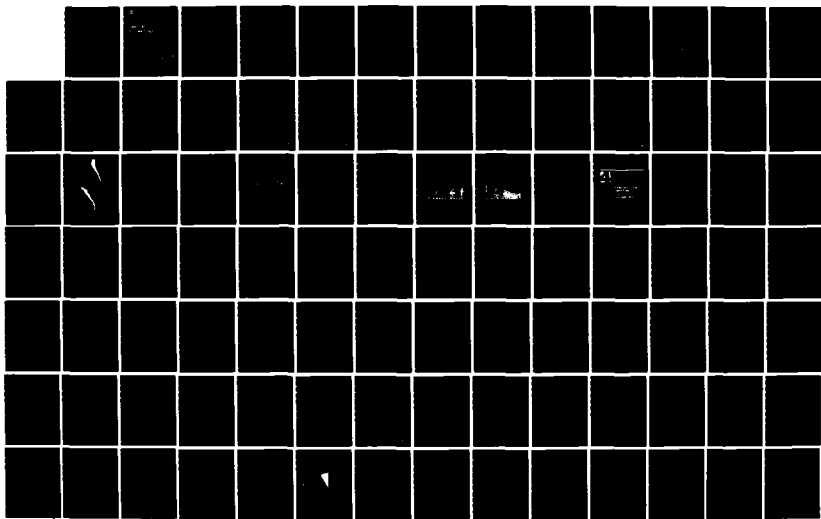
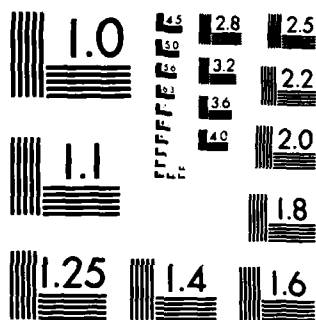


AD-A149 495 PROCEEDINGS US ARMY CORPS OF ENGINEERS SEMINAR ON WATER 1/4
PROJECT FINANCING. (U) ARMY ENGINEER INST FOR WATER
RESOURCES FORT BELVOIR VA M W MUGLER ET AL. OCT 84
UNCLASSIFIED INR-84-PS-5 F/G 5/1 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



**US Army Corps
of Engineers**

Engineer Institute for
Water Resources

⑦

AD-A149 495

Seminar Proceedings

**U.S. Army Corps of Engineers
Seminar on Water Project Financing**

**16 - 17 May 1984
Humphreys Engineer Center
Fort Belvoir, Virginia 22060**



DTIC FILE COPY

This document has been approved
for public release and sale; its
distribution is unlimited.

Policy Study 84-PS-5

October 1984

84 11 26 012

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 84-PS-5	2. GOVT ACCESSION NO. AD-A199 495	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Proceedings, U.S. Army Corps of Engineers Seminar on Water Project Financing		5. TYPE OF REPORT & PERIOD COVERED Policy Study
		6. PERFORMING ORG. REPORT NUMBER 84-PS-5
7. AUTHOR(s) Various Authors		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS U.S. Army Engineer Institute for Water Resources Water Resources Support Center Casey Building, Fort Belvoir, Virginia 22060-5586		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Policy Study 84-G550
11. CONTROLLING OFFICE NAME AND ADDRESS Water Resources Support Center Casey Building Fort Belvoir, Virginia 22060-5586		12. REPORT DATE October 1984
		13. NUMBER OF PAGES 372
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Seminar speakers and attendees; Commanders and Chiefs of Planning in FOA with Civil Works responsibilities; HQUSACE Civil Works Directorate and divisions thereof.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Financing, cost sharing, planning, water projects, water resources development, U.S. Army Corps of Engineers, states, local governments, Civil Works		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Proceedings of a seminar held 16-17 May 1984 at the Humphreys Engineer Center, Fort Belvoir, Virginia 22060-5586. Includes introductory addresses; four panel presentations on the economic and financial basis for water project development, water project financing institutions, financial feasibility of water projects and creative financing techniques; five case study presentations, questions and answers relating to flood control, navigation, recreation, municipal water supply and hydroelectric power; an open discussion session; and a summary of pre-seminar and post-seminar questionnaires.		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

This report is not to be construed as necessarily representing the views of the Federal government nor of the U.S. Army Corps of Engineers.

PROCEEDINGS

U.S. ARMY CORPS OF ENGINEERS
SEMINAR ON WATER PROJECT FINANCING

16-17 May 1984
Humphreys Engineer Center
Fort Belvoir, Virginia 22060-5586



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

TABLE OF CONTENTS

	<u>Page</u>
PREFACE.....	XI
ACKNOWLEDGMENTS.....	XIII
SEMINAR ABSTRACT.....	1
WELCOME.....	7
Address: COL George R. Kleb Commander/Director Water Resources Support Center	
OPENING REMARKS.....	9
Address: MG John F. Wall Director of Civil Works	
OVERVIEW OF FINANCING NEEDS AND OPPORTUNITIES.....	13
Address: Dr. G. Edward Dickey Deputy for Program Planning, Review and Evaluation Office of the Assistant Secretary of the Army for Civil Works	
<i>Lecture included:</i> OVERVIEW: NON-FEDERAL FINANCING <u>CONCEPTS</u> , <u>INSTITUTIONS</u> , CONSIDERATIONS AND METHODS,	
Address: Dr. John E. Petersen.....	15
Director Government Finance Research Center Government Finance Officers Association of the United States and Canada	
Handout: State and Local Debt Policy and Management.....	29

	<u>Page</u>
PANEL I: ECONOMIC AND FINANCIAL BASIS FOR WATER PROJECT DEVELOPMENT	
Address: Relationship of Benefits, Pricing and Revenues..... Dr. John J. Boland Professor of Geography and Environmental Engineering Johns Hopkins University	37
Address: Revenues, Credit Security and Project Financing..... Ms. Mary Mudryk Vice President Morgan Stanley & Co.	55
Address: Financial versus Economic Analysis of Projects: Methods and Implications..... Dr. Robert A. Leone Principal Putnam, Hayes and Barlett	67
PANEL II: WATER PROJECT FINANCING INSTITUTIONS	
Address: Organizational Alternatives for Cost Recovery and Financing: Powers, Opportunities and Limitations..... Dr. Louis F. Weschler Professor of Public Administration Center for Public Affairs Arizona State University	73
Address: The State Role in Financing Water Projects..... Mr. Kenneth I. Rubin Principal Analyst Congressional Budget Office	81
Address: Legal and Institutional Issues Affecting the Joint Federal/Non-Federal Financing of Water Projects..... Mr. Earl H. Stockdale Assistant Counsel for General Law Office of Chief Counsel Office of the Chief of Engineers	99
Questions and Answers.....	109
PANEL III: FINANCIAL FEASIBILITY OF WATER PROJECTS	
Address: Assessing the Financial Capability of a Prospective Sponsor of Water Projects..... Mr. J. D. Foust Deputy State Treasurer and Secretary of Local Government Commission State of North Carolina	113

	<u>Page</u>
Handout: "State and Local Government Finance Division".....	119
Address: Strategic Financial Planning for Municipal Utilities....	127
Mr. Robert B. Nolan, Jr.	
Senior Vice President	
Manager, Public Utilities Finance Group	
Blyth Eastman Paine Webber Inc.	
Questions and Answers.....	137
 PANEL IV: CREATIVE FINANCING TECHNIQUES	
Address: Creative Debt Financing Techniques.....	143
Mr. Wesley Hough	
Manager	
Government Finance Research Center	
Government Finance Officers Association of the United	
States and Canada	
Handout: Creative Capital Finance and Water-Related	
Infrastructure.....	155
Address: Internal Financing of Water Resources Projects.....	161
Dr. Ronald M. North	
Director	
Institute of Natural Resources	
University of Georgia	
Address: Finance Lease.....	185
Dr. A. John Vogt	
Assistant Director	
Institute of Government	
University of North Carolina at Chapel Hill	
Address: Tax-Exempt Certificate of Participation (COP) Lease.....	187
Dr. A. John Vogt	
Assistant Director	
Institute of Government	
University of North Carolina at Chapel Hill	
Questions and Answers.....	191
 TEAM BUILDING FOR FEDERAL WATER PROJECT FINANCING.....	 193
Address: Mr. Daniel A. Kucera.....	195
Managing Partner	
Chapman and Cutler	

	<u>Page</u>
Questions and Answers.....	209

cont
and Case Studies:
CASE STUDY #1: MISSISSIPPI RIVER DEEPENING STUDY

Address: Deepening the Lower Mississippi River.....	211
Mr. Joseph Cocchiara Executive Director Louisiana Deep River Study State of Louisiana	

Address: Deep River Study -- Lower Mississippi River.....	219
Mr. Albert T. Rosselli Associate Partner Tippetts-Abbett-McCarthy-Stratton (TAMS)	

Address: Economic and Financial Implications of the "Deep River" Study.....	231
Mr. Leo J. Donovan Vice President Booz, Allen and Hamilton, Inc.	

Questions and Answers.....	263
----------------------------	-----

CASE STUDY #2: TUNNEL AND RESERVOIR PLAN PROJECT: THE MUNICIPAL FISCAL STRESS STUDY

Address: Dr. John E. Petersen.....	265
Director Government Finance Research Center Government Finance Officers Association of the United States and Canada	

Questions and Answers.....	271
----------------------------	-----

CASE STUDY #3: PRIVATE SECTOR INVOLVEMENT IN RECREATION DEVELOPMENT

Address: Mr. William L. Harvey.....	273
Head, Contracts and Concessions Division Department of Parks and Recreation County of Los Angeles	

Handout: Parks That Pay Their Own Way.....	277
--	-----

Handout: Facility List.....	281
-----------------------------	-----

Questions and Answers.....	283
----------------------------	-----

	<u>Page</u>
CASE STUDY #4: WATER SUPPLY FINANCING ACTIVITIES OF THE TRINITY RIVER AUTHORITY, and	
Address: Mr. Danny F. Vance..... General Manager Trinity River Authority of Texas	285
Questions and Answers.....	293
CASE STUDY #5: HYDROPOWER AT TOWN BLUFF DAM, NECHES RIVER, ←	
Address: Mr. William R. Dawson..... Chief Program Development Branch U.S. Army Engineer District, Fort Worth	295
OPEN DISCUSSION.....	297
Moderator: Mr. Bory Steinberg Chief Program Development Division Civil Works Directorate Office of the Chief of Engineers	
CONCLUDING REMARKS.....	305
Address: MC John Wall Director of Civil Works	
APPENDICES	
Appendix A: Final Agenda.....	307
Appendix B: Biographies of Speakers and Moderator.....	311
Appendix C: List of Attendees.....	337
Appendix D: Pre-Seminar Questionnaire and Responses.....	345
Appendix E: Post-Seminar Questionnaire and Responses.....	351
Appendix F: Bibliography.....	357

PREFACE

The financing of water projects is an important challenge facing the Civil Works Program, and I am sure that the Seminar on Water Project Financing has helped us make a big step toward meeting that challenge.

Tens of billions of dollars are required to complete our active construction projects and to build needed projects which await authorization or funding. However, our budget has declined from \$3.2 billion in FY 1980 to \$2.6 billion in FY 1984, with only \$1.1 billion going for construction in 1984. In this era of fiscal austerity, increasing non-Federal cost sharing and increasing non-Federal participation in up-front financing are important if the Civil Works program is to respond to critical water resources problems.

Increased non-Federal cost sharing and financing are here to stay in one form or another, regardless of the outcomes of future elections or the status of omnibus legislation. We will not return to "business as usual".

I challenge Civil Works planners and managers to exercise leadership in developing water projects which include an expanded financing role for project sponsors. We need to institutionalize our cost sharing policies and to improve our knowledge and skills in the area of project finance.

I commend these Proceedings to you. I believe that the Seminar represents substantial progress toward two objectives: first, to develop a better ability to assess the financial capacity of sponsors and to understand their investment preferences; second, to find ways to reduce or eliminate financial obstacles to implementation of economically feasible plans and projects. Achieving these objectives will require the concentrated effort of the Corps and its non-Federal partners in future work as well.



JOHN F. WALL
Major General, USA
Director of Civil Works

PREVIOUS PAGE
IS BLANK



ACKNOWLEDGMENTS

The Seminar on Water Project Financing and the Proceedings from the seminar comprise a part of the Fiscal Year 1984 Policy Studies Program of the U.S. Army Engineer Institute for Water Resources (IWR) under the auspices of the Office of Policy, Civil Works Directorate, Office of the Chief of Engineers, U.S. Department of the Army.

The proceedings were prepared by Mr. Mark W. Mugler, Policy Analyst, IWR under the direction of Mr. Kyle E. Schilling, Chief, Policy Studies Division, IWR; Mr. James R. Hanchey, Director, IWR; and COL George R. Kleb, Commander/Director, Water Resources Support Center. Mr. Mugler has attempted to convert from spoken to written English with faithful preservation of ideas.

Dr. Bory Steinberg, Chief, Programs Division, Civil Works Directorate, Office of the Chief of Engineers, U.S. Department of the Army deserves special thanks for serving as moderator of the Seminar.

In addition to the above, Mr. Alex Shwaiko, Dr. Lewis Blakey, Mr. Donald Duncan, Mr. Curtis Clark and Dr. G. Edward Dickey participated in the formulation and development of the seminar.

Finally, we all join in thanking MG John F. Wall, who provided the overall leadership for the seminar and who has remained deeply interested in the issues the seminar addressed.

PREVIOUS PAGE
IS BLANK



SEMINAR ABSTRACT

Seminar on Water Project Financing
Humphreys Engineer Center
Ft. Belvoir, Va. 22060
16-17 May 1984

The Seminar on Water Project Financing was the first of its kind for the U.S. Army Corps of Engineers. Over 100 planners, engineers, economists and managers gathered for two days to learn and to exchange ideas and information.

The seminar had five major components. The first component was introductory addresses by MG John Wall, Director of Civil Works; Dr. G. Edward Dickey, Office of the Assistant Secretary of the Army for Civil Works; and Dr. John E. Petersen, Government Finance Research Center. Mr. Dan Kucera, Chapman and Cutler, made a presentation on team building at a later time in the seminar. These speakers provided overviews on state and local capital financing, the means by which a project financing plan is brought to fruition, the rationales for increased non-Federal participation in water project financing, and the policy issues involved.

The second component of the seminar consisted of four panels, each involving two or three presentations and a question and answer session. The first panel, "The Economic and Financial Basis for Water Project Development", focused on the following topics:

- o the identity of beneficiaries for each project purpose
- o revenue-raising measures for each project purpose
- o problems and considerations in setting a cost recovery policy
- o types of debt financing for each project purpose

- o revenue-raising and repayment ability as the basis for debt financing
- o comparison of financial analysis and economic analysis
- o effects of financial considerations on project design and operation

The second panel, "Water Project Financing Institutions", focused on the following topics:

- o institutional alternatives for sponsoring water projects
- o cost recovery and financing pro's and con's of each institutional alternative
- o state water project financing programs
- o state assistance programs to local sponsors
- o implementation aspects of up-front financing, including sponsorship and the provision of funds under local cooperation agreements.

The third panel, "Financial Feasibility of Water Projects", focused on the following topics:

- o project planning as a component of capital budgeting and debt management
- o interrelationships of sponsor's powers and financial posture, project design, and selection of cost recovery and financing techniques

- o key considerations in assessing debt capacity and financing capability
- o management measures to enhance the marketability of local debt

The fourth panel, "Creative Financing Techniques", focused on the following topics:

- o financial methods to improve the rating of municipal bonds
- o techniques to structure debt repayment obligations to match revenues
- o opportunities for water facilities to be self-supporting
- o use of pay-as-you-go (non-debt) financing
- o uses of private capital in water project financing

The third component of the seminar consisted of five case study presentations designed to reveal financing challenges associated with five project purposes: navigation, flood damage reduction, recreation, hydroelectric power and municipal and industrial water supply. Speakers representing a Corps of Engineers District, a state, a river basin authority, a county and three consulting and research organizations made presentations and answered questions. Topics which received particular emphasis, in part due to the nature of the case studies discussed, included the ability of a sponsor to finance its participation in a water project, the financial evaluation of a proposed project, recreation management at existing facilities, sponsorship and marketing of hydroelectric power, and water supply financing institutions.

The fourth component of the seminar was open discussion. During the open discussion participants revealed an interest in a number of aspects of project financing and implementation, including the relationships of project size and design standards to affordability; the conflicts between the regional or local perspective on economic benefits and the national economic development objective; the relationship of the National Economic Development and Regional Economic Development accounts; Federal versus non-Federal hydropower; the incidence of benefits and financing costs; the timing of financing payments; the equity aspects of financing requirements; and institutional arrangements for financing.

In addition, participants displayed an interest in cost shared planning, including the transition from the reconnaissance phase to the feasibility phase; the value of in-kind services; the cost and level of detail of planning studies; the time to complete studies and obtain implementation funds; and the allocation of responsibilities for financial evaluation.

The final component of the seminar was the distribution of pre-seminar and post-seminar questionnaires. Questionnaire responses raised a number of issues repeatedly, as highlighted below:

- o What are the long term implications of increased non-Federal cost sharing and financing for the Civil Works program?
- o How can the Corps of Engineers improve its project financing knowledge, skills and experience?

- o What steps can be taken to provide to field operating activities clear, consistent, predictable policies and implementing guidance for cost sharing, financing and cost shared planning?
- o How can project feasibility studies be planned and managed effectively to accommodate the expanded roles of non-Federal interests in study financing and in the execution of planning tasks?
- o What weight should be given in plan development to non-Federal concerns, investment preferences and financing capabilities?
- o What are the appropriate roles for the Corps of Engineers in providing project-related financial information and analyses and in developing and arranging for project financing?
- o How must contracts with non-Federal project sponsors and financial accounting and management procedures be adjusted to accommodate increase non-Federal cost sharing and financing?
- o How can timetables for budgeting, debt financing, appropriations and construction be coordinated for jointly financed projects?
- o How will project operation and the sale or use of project outputs be affected by an increased non-Federal role in project cost sharing and financing?

WELCOME

George R. Kleb
Colonel, USA
Commander/Director
Water Resources Support Center

Welcome to the Seminar on Water Project Financing. I am happy to participate in the discussion on this topic. We know financing will play a greater role in Civil Works project planning and development but we haven't quite worked out how. Financing has not been a traditional Corps of Engineers concern, and the world of capital improvement finance is changing rapidly. Consequently, we have a lot to learn.

This seminar had its origin in discussions between Mr. William Gianelli, Assistant Secretary of the Army, Civil Works and MG John Wall, Director of Civil Works. The Civil Works Directorate is the seminar sponsor through its Office of Policy. The Institute for Water Resources (IWR) has been tasked to develop, organize and manage the seminar. I see IWR's role as a logical extension of its prior work, including policy studies on special benefits and the discount rate and a research report on non-Federal financing and cost recovery.

The seminar is designed to present theory through four technical panels and application to Corps programs through five functional case studies. The major focus is on up-front financing and recovery of project costs by non-Federal sponsors. I expect that there is not enough time to stray from this topic. However, many attendees who responded to the pre-seminar questionnaire expressed concerns with two related subjects: cost sharing for projects; and cost sharing and financing for planning studies. Consequently, we welcome suggestions on the post-seminar questionnaire for needed follow-up on both financing and related concerns.

In conclusion, let me say that I expect this seminar to begin a more intensive dialogue on project financing issues. The active participation of all attendees will be required to get the most out of it. IWR will produce proceedings including an abbreviated version of the dialogue begun here, through your questions and answers, to facilitate the activities to follow on this subject. The Water Resources Support Center (WRSC) through IWR is pleased to work with you to initiate this process. Thank you.

PREVIOUS PAGE
IS BLANK

OPENING REMARKS

John F. Wall
Major General, USA
Director of Civil Works

Good morning. I'm glad so many of you are here, although I'm not surprised. Financing of water projects has become perhaps the most important dilemma facing us in Civil Works. I've spoken on the subject whenever I've gotten the chance.

I do not expect the issues of project financing -- particularly cost sharing with project beneficiaries -- to fade away in the near future. Lest anyone think that this is simply a temporary political issue, I'll point out that similar issues were already being raised during the Carter Administration. Budget deficits will create continuing pressure for non-Federal cost sharing regardless of the outcome of this year's elections.

I'll start with a very large number: one trillion dollars. That's more than \$4,000 from every American citizen, and that's what the Federal government plans to spend this coming fiscal year.

Unfortunately for many of us here, little of that money is going for water resources. From each one of those Federal dollars, 42 cents will go to social programs and benefit payments to individuals, 29 cents go for national defense, 11 cents to grants to states and localities, and 13 cents (up from 12 in this year's budget) are obligated to pay interest on the national debt. That leaves only 5 cents -- \$50 billion -- to pay for everything else the Federal government does. That's down from 6 cents in this year's budget.

Out of that \$50 billion "discretionary budget," \$9.8 billion, or one penny of every Federal dollar, goes to natural resources and the environment. About a third of this penny, or 1/3 of one percent of the entire budget, goes for water resources.

My Civil Works budget for FY85 is \$2.7 billion -- basically the same as this year plus an inflation factor. Nevertheless, the Corps water resources budget is down in terms of new investment. Our construction budget is far less than it has been over the past 20 years in terms of purchasing power.

This fiscal year is the first in our history where the Corps is spending more to operate and maintain existing projects than to build new ones. Only \$1.1 billion of the \$2.6 billion in the FY84 budget will go for construction. In terms of purchasing power, that's way less than one-half of what we were spending for construction (including major rehab) as recently as 1980. Our operations and maintenance budget has not kept pace with inflation, and it is now spread among more and older projects.

PREVIOUS PAGE
IS BLANK

At the current level of funding, in constant dollars, it would take more than 20 years just to complete the approximately \$20 billion in unfinished work on solid active authorized projects and projects in the authorization bills now pending in Congress, let alone any projects we're currently studying or which will be identified in the future.

Clearly, \$20 billion is more than the Federal Government is willing to spend for new investment in water resources in the reasonably foreseeable future, especially when doing so means either raising taxes or raising the deficit, neither of which would be politically acceptable.

The best solution is to encourage a new partnership among Federal, state and local governments and with the private sector. Such a proposal blends philosophy and practicality. Many who are philosophically committed to reducing Washington's role in non-Federal matters are also committed to the concept that those who benefit should be willing to pay a fair share for those benefits. For many of our projects, paying a fair share provides a practical market test for quickly and efficiently identifying worthwhile projects. By putting up a fair share of the costs, the non-Federal sponsors will be even more motivated to ensure that the project is designed to meet their needs and constructed in a timely manner.

Cost sharing is nothing new. What is new, however, is the timing. Whereas before the Federal government was able to put up the capital needed for construction, then ask for reimbursement from local sponsors over the life of the project, we are now in a position where we need to find and tap other sources of start-up capital. The purpose of this seminar is to listen to some of the innovative ideas our project sponsors have come up with to help us give them the projects they need and can afford. IWR has put together a very good study of possible financing arrangements and their applicability to various project purposes. I don't have time to go into it in detail, but I commend it to you.

We have not had an omnibus bill since 1976; the last major one that authorized construction was in 1970. Under our traditional methods for authorizing and financing projects, practically nothing has happened for 14 years. As I see it, the options are either to find an innovative way around the financial dilemma, or to accept the fact that we will have almost no new starts on urgently needed water projects.

This year, Congress has made better progress than it has in a long time in putting together an authorization bill. The water committees in both the House and Senate have held hearings and drafted bills that not only authorize a large number of projects but also address a number of policy issues. The Senate bill would authorize 131 projects at a cost of \$11.4 billion; the House bill, 170 projects at a cost of \$12.5 billion.

Both bills contain provisions for cost-sharing for most project purposes. For some, the rates are not new. Hydropower and municipal and industrial water supply, for example are already 100 percent reimbursable over the life of the project. The Administration proposes upfront financing, but there may be some flexibility in the financing arrangements case-by-case.

For separable recreation costs, the bills call for cost-sharing on a fifty-fifty basis with non-Federal sponsors and represent no major change from current policy.

For flood control projects, the Administration proposed at least a 35 percent non-Federal share. This includes the traditional "a-b-c's": lands, easements and rights of way, insurance against damages and operation and maintenance of the completed project. These "a-b-c's" generally average about 18 percent of the project cost. The Senate bill calls for a 25 percent to 35 percent non-Federal share; the House bill includes a 25 percent to 30 percent range. The Senate bill also includes a 35 percent non-Federal share for irrigation water though there are provisions to lower the share for both flood protection and irrigation in cases where the costs would place an undue hardship on the communities involved.

A major innovation has been cost-sharing for navigation. For operation and maintenance of the inland waterway system, the Army had asked a 70% share in the form of a systemwide charge per ton-mile. For new work on the waterways, the Administration had also asked for a 70% share, to be paid through segment-specific fees. A bill to that effect has been introduced in the Senate, and the Senate's authorization bill contains a limit of about \$500 million per year on Federal expenditures for the inland waterways. Anything beyond would have to come from user fees.

The issue of affordability has been overlooked for many years. Many projects that are authorized never get built because the local sponsor simply is not willing or is unable to finance the required non-Federal cost. Given the higher non-Federal costs we expect in the future, we must give more consideration to affordability. A project that goes from the traditional 10 percent non-Federal share to 25 or 35 percent will be more difficult to finance. For example, the non-Federal cost share for the Santa Anna project is expected to go from 8 percent under the old rules to 20-35 percent under the new rules. This is a big difference for a multi-billion dollar project. Affordability is one aspect of the planning process that will require greater attention in the future.

The other side to this issue is equity. Communities such as those on the Tug Fork simply don't have the tax base to support the flood protection required. We want to be sure that poor communities can afford to participate in Civil Works projects.

We are also examining cost-sharing for studies of potential new projects. We are dividing our studies into two phases. The first, to determine whether a project would be feasible, will take 12 to 18 months and be fully funded by the Federal government. The second, if the project passes the first hurdle, will select and design the best possible alternative, and will normally take 3 years and be cost shared fifty-fifty. Half of the non-Federal share could be "services in kind." The House's version of the

authorization bill contains provisions for cost-sharing of feasibility studies, but the share is only 25% non-Federal.

As you are well aware, the final word has not yet been written on cost sharing for water projects. In his letter last January to Senator Laxalt, President Reagan said that it would be up to Congress to make the final determinations on water project financing.

In the meantime, he said, Federal agencies should be more flexible in negotiating financing agreements with local sponsors, making accommodations for those localities for whom financing the project would cause undue hardship, particularly on flood control projects. On the other hand, President Reagan also said the agencies are to be consistent, and honor all prior government commitments.

Whatever happens in Congress, it is clear that the old days of project financing are gone. Today we expect our sponsors not only to bear a greater share, and one more nearly consistent with the benefits they receive, but to use their own financing powers to generate part of the investment capital. We need to stretch our limited Federal dollars further if we are to meet the nation's needs in the years ahead, not only for new capital investment but for replacement and improvement or enhancement of existing Civil Works infrastructure.

We need to stay up to speed on our sponsors' considerations and approaches to project financing and cost recovery. We need to know both the opportunities and the limitations posed by the expanded non-Federal financing role that is coming.

This seminar represents possibly the best opportunity to date for us to compare notes on financing packages, problems and opportunities and to better understand the methods used by our non-Federal project sponsors. We have representatives from nearly every division and district with a Civil Works mission, from OCE, from the Assistant Secretary of the Army's office, and guests from our sister agencies.

Our speakers include representatives of the financial community, the universities, and Federal, state and local governments. We must take advantage of this opportunity, not only to listen to their presentations, but to contribute our own ideas and get a healthy idea exchange going during the question and answer sessions and open discussion periods. The pre-seminar questionnaires you filled out will provide a basis for speakers and participants being able to address the most common questions. There will also be a post-seminar questionnaire, which will help us determine the areas into which we should be looking in our financing policy studies.

I hope that you will come away from this seminar with two things: first, a better capability to assess the financing abilities of project sponsors, and a better understanding of their investment preferences; second, ways to reduce or eliminate the financial obstacles to implementing economically feasible projects.

This seminar is a first for the Corps, and I look forward to hearing your ideas on what we should be doing in the area of project financing.

Thank you.

OVERVIEW OF FINANCING NEEDS AND OPPORTUNITIES

**Dr. G. Edward Dickey
Office of the Assistant Secretary
of the Army for Civil Works**

(not available at time of publication)

OVERVIEW:
NON-FEDERAL FINANCING CONCEPTS, INSTITUTIONS,
CONSIDERATIONS, AND METHODS

John E. Petersen
Government Finance Research Center
Seminar on Water Project Financing

May 16, 1984

I. THE STATE OF STATE AND LOCAL GOVERNMENT FINANCE

The state and local government sector today has enjoyed some measure of cyclical recovery from the protracted decline of the late '70s and early '80s but continues to be in a state of secular fiscal stagnation (FIGURE A). The prospects for a sustained resurgence in state and local revenues and spending to the trends of the preceding 20 years are not good. Federal aid allowed growth in expenditures without commensurate growth in state and local tax burdens through most of the '70s, a development and an era not destined to return in the foreseeable future because of pervasive federal revenue problems. Tax and expenditure limitations of the late '70s restricted state and local revenue systems, and the recession of the 1982-83 period forced fiscal stringencies. These governments, on lean fiscal rations, are now smaller in real-spending (price-deflated) terms and will have to struggle to keep their existing revenue systems in place. The taxpayer revolt, while less newsworthy these days, is still active, as may be seen in current statewide movements in California, Florida, and Oregon. In my opinion, much of the fiscal problem is found in the lack of growth in real incomes of persons, demographic changes (older population), and a loss of confidence in the power of governmental programs to solve problems.

II. PUBLIC SECTOR CAPITAL SPENDING AND CAPITAL STOCK

One bright spot for a partial resuscitation of state and local activity may be the growing awareness by the public of the condition of the nation's infrastructure and the desire to do something about it. Any growth in real spending for public works would reverse well over a decade of decline. Capital spending in real, per capita terms hit the high-water mark in 1968 and the depreciated real value of the nation's stock of public works, in per capita terms,

PREVIOUS PAGE
IS BLANK

began to decline about 1980 (FIGURES B and C).

Generally speaking, public capital-related spending was elbowed aside by politically more pressing (and attractive) operating and transfer outlays. At the state and local level, there has been a reliance on federal aid to finance much of capital spending. This reliance was often manifested in a gearing of capital budgets to the availability of federal funds. A review of recent and contemporary financing patterns indicates the following present sources of funds for capital spending by state and local governments: 30 percent federal aid, 55 percent borrowing, and 15 percent current revenues (FIGURE D). If substantial increases in public infrastructure spending are to occur, the only source of capital funds that one can expect to grow rapidly is borrowing.

The next few years will put the test to defining and meeting public capital needs in several programmatic areas. Overall capital needs assessments, such as recounted in BUILDING PROSPERITY, call for approximately a 50 percent increase in capital spending in order to reverse the decline in the public's capital stock and to start to meet programmatic needs (FIGURE E). Although there is widespread agreement that there are multi-billion dollar unmet needs, the real battle will be fought over the means of financing them -- who gets the "beef." As noted, the prospects for any substantial growth in federal aid are poor. A possible exception may be in the area of federal credit assistance because of the relatively moderate budgetary impacts. There also seems to be growing acceptance of the twin notions that lending with the prospect of repayment may be a healthier way to encourage public capital investments and that the user/beneficiary should be expected to shoulder more, if not all, of the burden.

III. FOCUSING ON WATER-RELATED CAPITAL FINANCING: THE STATE AND LOCAL ROLE

In terms of direct spending and operations, municipalities and, to a much lesser extent, private enterprise have been concerned historically with municipal sewers and water supply; the states and their authorities with conservation, hydro-power, and to some extent flood control; and the federal government with the big multi-purpose water-control, water-transportation, and conservation projects. In addition to and much more important than direct spending, the federal government has pumped billions of grants (and a much smaller amount of

loans) into states and localities for water-related purposes.

Aside from municipal sewer, water supply, and hydro-power, there has been relatively little attempt to put the other types of projects on a self-supporting basis. Services that are easy to measure, where consumption is discrete, and where payment can be economically enforced lend themselves to user pay techniques. This is true of utility, transportation, and some recreation activities, but difficult to effectuate in other water-related zones.

Attempting to measure current spending levels on water-related capital is fraught with difficulty, but our best estimate is that in 1982, water-related capital outlays by state and local governments were \$11.4 billion. Of this amount, an estimated \$5.1 billion was funded by federal assistance, primarily in wastewater treatment (FIGURE F). Any attempt to sharply alter these relationships and to place more water-related capital spending on a self-supporting basis will run into major obstacles. This is due not only to the change in traditional relationships, but also to the high levels of competition for funds both within governmental budgets and in the capital markets.

IV. PUBLIC CAPITAL FINANCING: TRADITIONAL PRACTICES AND EMERGING TRENDS

The tax-exempt bond market is bound to be decisive in the financing of any major state and local capital commitment to water resources. (This view is conditioned only by the possibility that the federal government will not institute a new large-scale borrowing/relending program to circumvent the use of tax-exempt borrowing, which I consider unlikely.) The tax-exempt market has undergone many changes, but still operates on the principle of pledging a strong revenue stream that can be capitalized for purposes of raising cash to meet capital spending needs.

The traditional emphasis was on the pledge of tax revenues, particularly property taxes, that would be sufficient to meet debt-service needs. More recently, the pledge of project-generated revenues ... revenue bonds ... has been the preferred method. Advantages run from the desire to "price" outputs so that users pay for the circumvention of restrictions of indebtedness. Revenue bonds have grown greatly in importance in the market (representing about 75 percent of the dollar volume of

sales) and this has been accompanied by growth in authorities and special districts (FIGURE G).

Over the last few years, the municipal securities market has undergone tremendous pressures to finance new, nontraditional purposes, investor preferences have changed, and tax-exempt interest rates have become both absolutely and relatively higher and much more volatile (FIGURES H and I). The outlook for the tax-exempt market is very cloudy in view of recent interest rate developments and the heavy backlog of nontraditional bonds, temporarily held off the market because of pending tax legislation. It is a better time to think about buying tax-exempts than to be selling them.

V. FINANCIAL FEASIBILITY OF WATER PROJECTS

The state will be the critical actor in the areas of conservation and transportation. Water supply and storm-water drainage will tend to have local solutions, with local governments taking the lead, but with state assistance an important factor in many cases. Water resource needs will continue to require regional and interstate cooperation. It is unlikely, given the essential nature of water supply and conservation, that the federal government will be able to evacuate the area financially and it will need to enforce cooperation. The traditional role evolved because of the complexity of the many benefitters and the scale and extent of water-related projects.

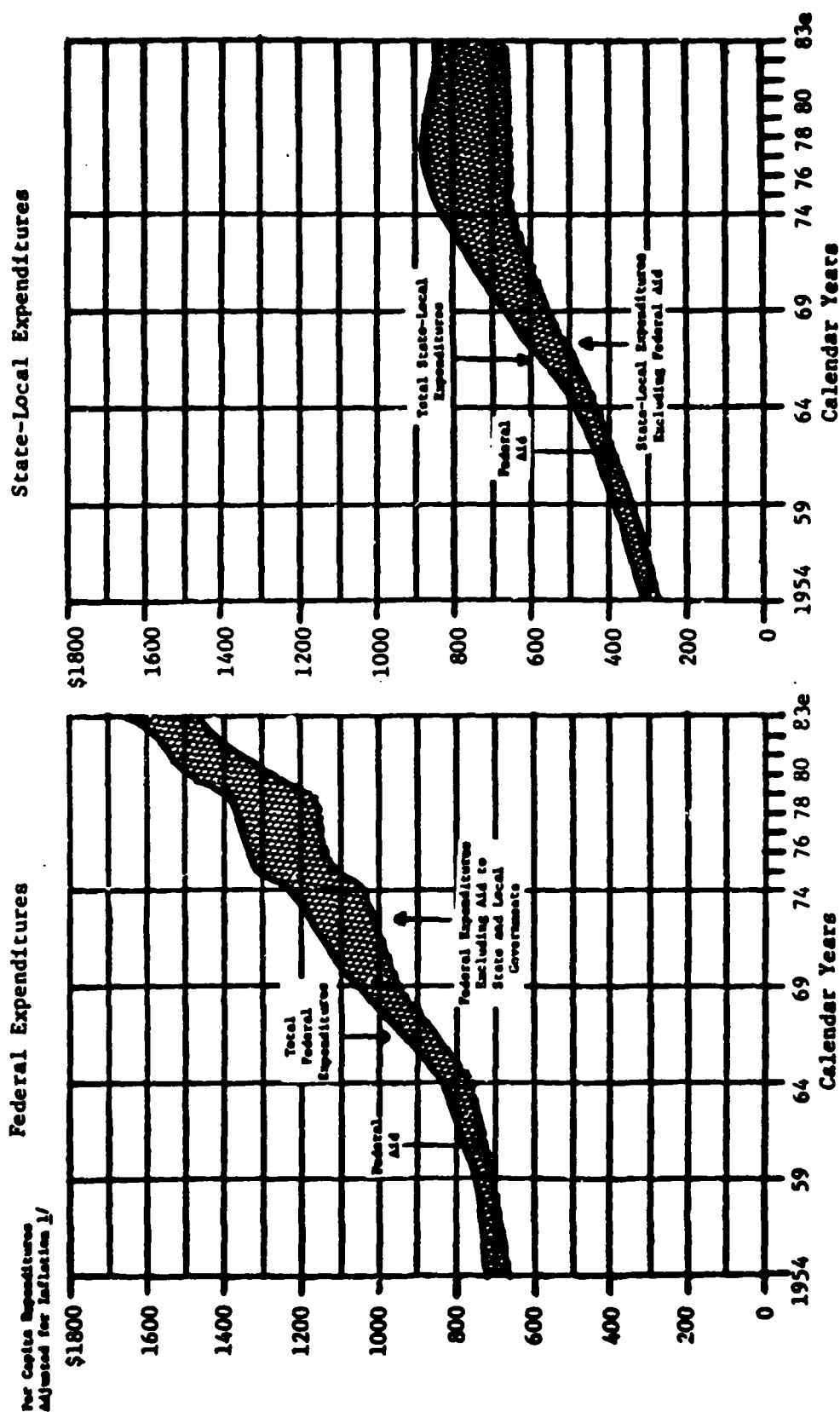
Water, being vital to the support of life and commerce, will have several advantages in the battle with other public-work claimants for fiscal resources. Water-short regions will need to take extraordinary measures to develop and protect existing sources, and regulation and conservation will generate public support for spending needed funds to maintain those uses that they can. Also, regions that are water-surplus, steadily sensing their competitive advantages, will probably stress and invest in that asset in the future. Allocation of federal funds in such a regionally competitive situation will become an increasingly political and difficult process.

Private activity in the areas of financing and operating water-resources projects will remain a minor factor (aside from special situations and the running of concessions) and will be largely determined by federal tax laws and the conditions placed on federal assistance. Because of the secular deficiencies in the federal budget,

it is unlikely that large tax-incentive programs will be feasible. With a winding-down in the importance of federal grant assistance and a lack of willingness or ability on the part of states and localities to pick up the slack, some growth in private activities may occur. But, in view of the essentially public nature and long-term paybacks intrinsic to such public works, I believe those instances will be of marginal significance.

Figure A

AFTER THE TAX REVOLT--FEDERAL AND STATE-LOCAL SPENDERS GO THEIR SEPARATE WAYS

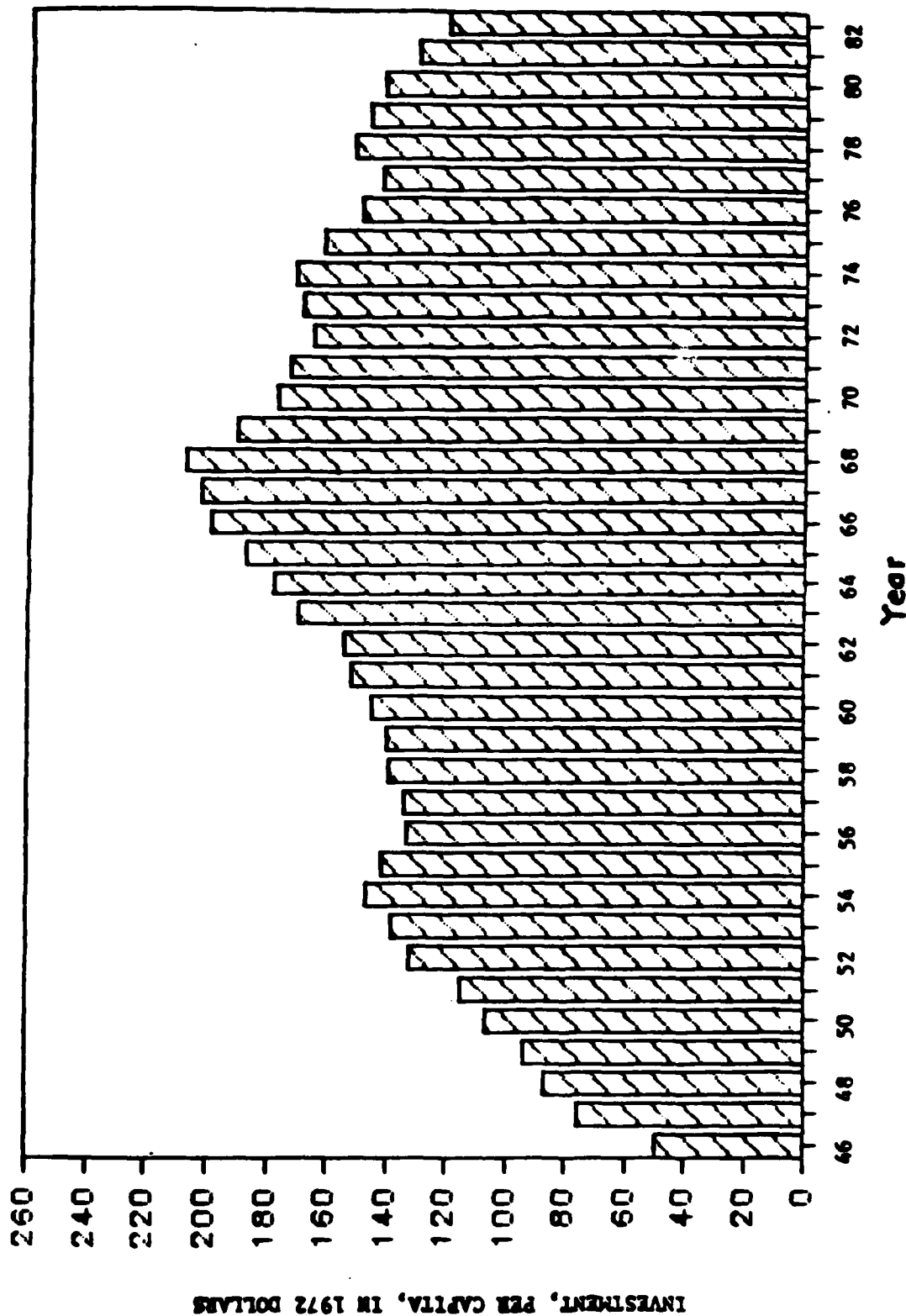


e--estimated.

1/ Inflation adjustment by GNP Implicit Price Deflator, 1972 = 100.

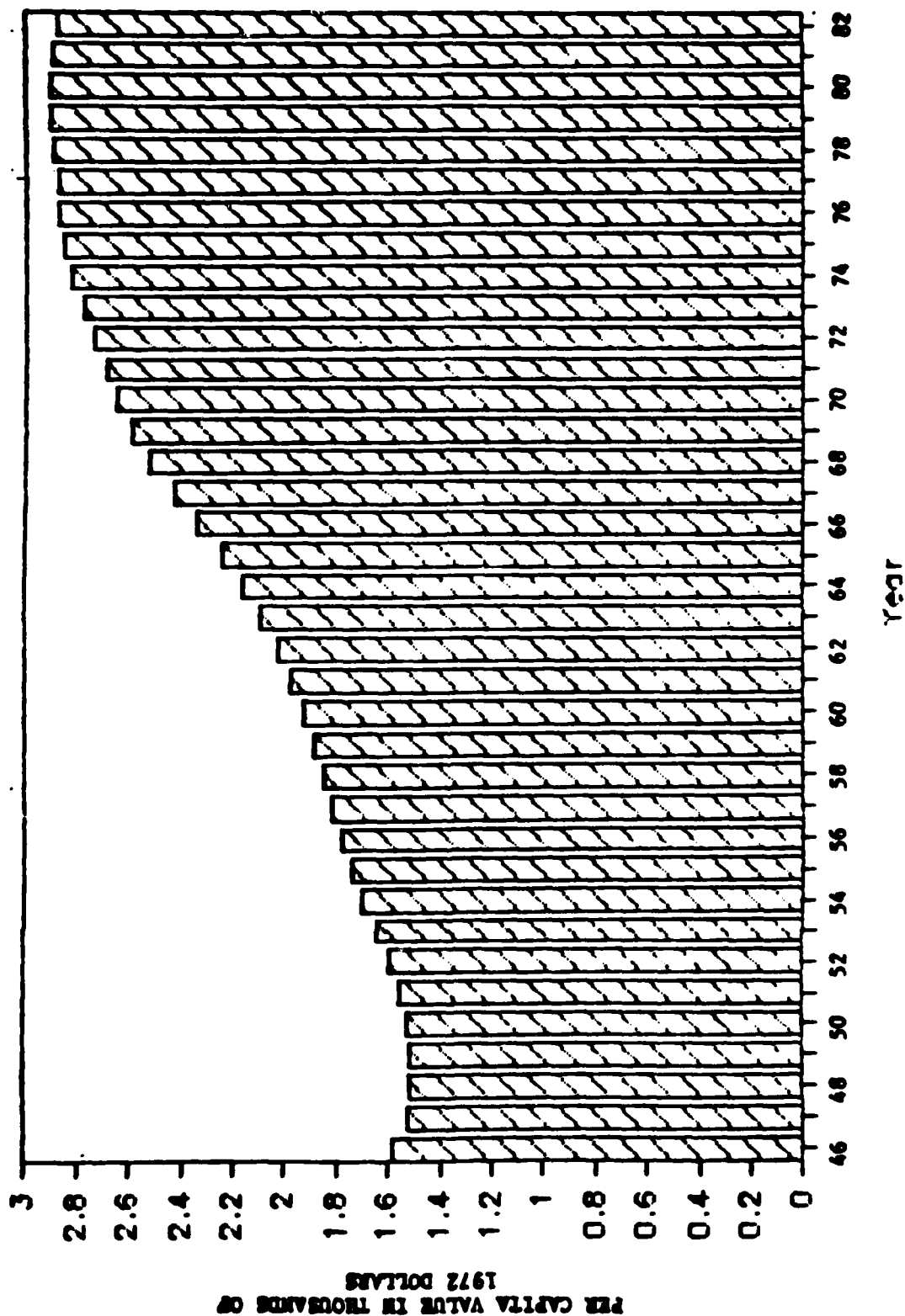
Source: ACIR computations based on U.S. Department of Commerce National Income and Product Accounts.

Figure B
NEW PUBLIC CAPITAL INVESTMENT, 1946 TO 1982



Source: ACIR staff computations, based on unpublished estimates from the U.S. Bureau of Economic Analysis (BEA), using the GNP implicit price deflator. Population figures were obtained from the U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 939 and No. 802. Population estimates in all figures include armed forces overseas and Alaska and Hawaii for 1959 to 1982. Military infrastructure is excluded in all figures. Figures shown are for calendar years unless otherwise indicated.

Figure C
TOTAL, DEPRECIATED VALUE OF THE NATION'S
PUBLIC CAPITAL STOCK, 1946 TO 1982



Source: ACIR staff computations, based on unpublished BEA estimates.

Figure D

Percent Composition of State and Local Infrastructure Financing Sources

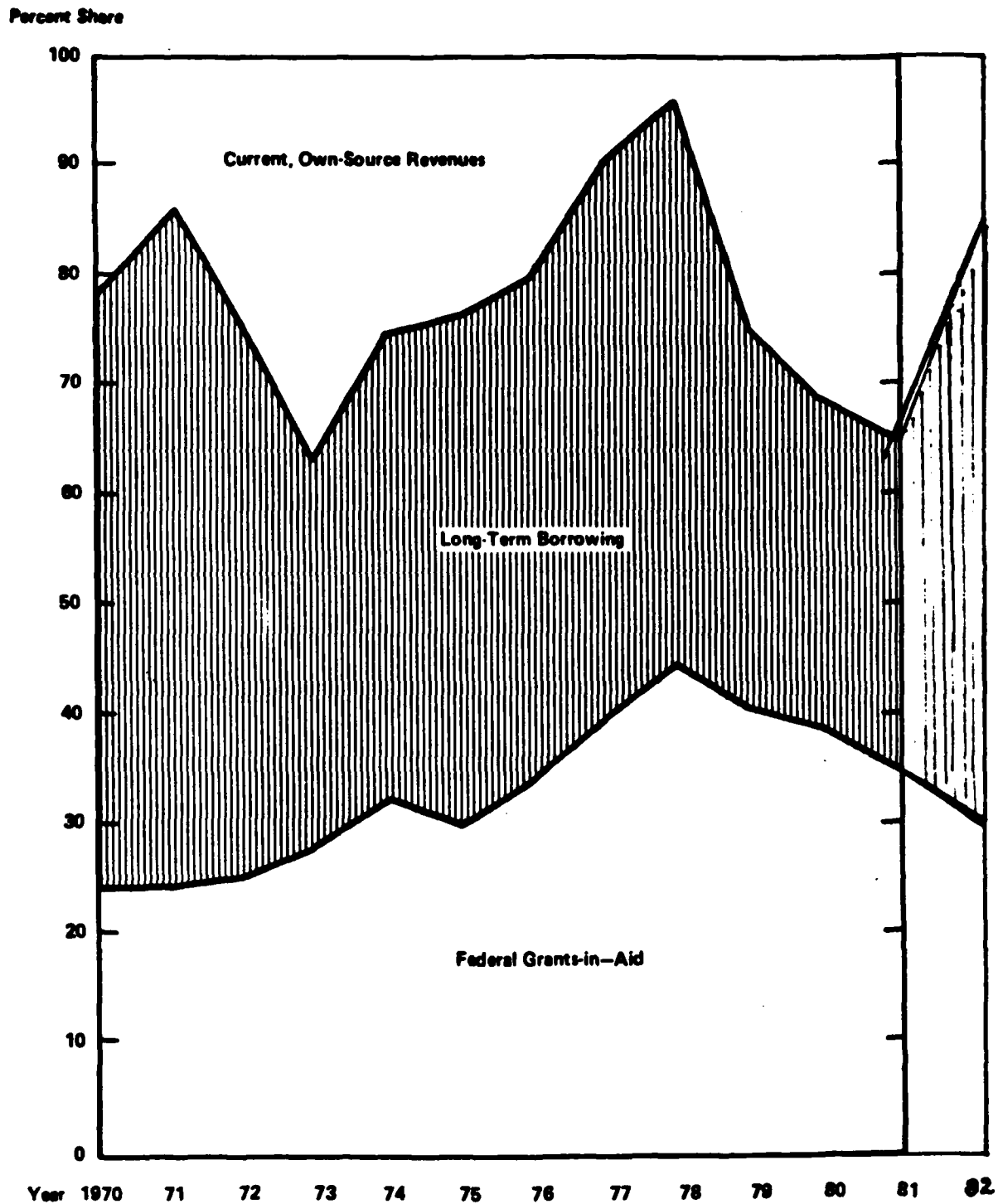


Figure 2

Annual Capital Outlay Needs of
State and Local Governments: 1984-1990

	Total Outlay	Federal Aid	Own- Financed
Education	\$12.8	*	\$12.8
Highways	27.2	\$12.6	\$14.6
Health/Hospitals	3.1	*	3.1
Sewerage	7.3	4.3	3.0
Natural Resources	2.7	.3	2.4
Community Dev.	6.5	2.5	4.0
Air Transport	1.5	.4	1.1
Water Supply	8.0	.5	7.5
Electric/Gas	9.0	*	9.0
Transit	5.5	3.7	1.8
Other	<u>12.3</u>	<u>1.3</u>	<u>11.0</u>
TOTAL	\$95.9	\$25.6	\$70.3

* Less than \$50 million.

FIGURE F

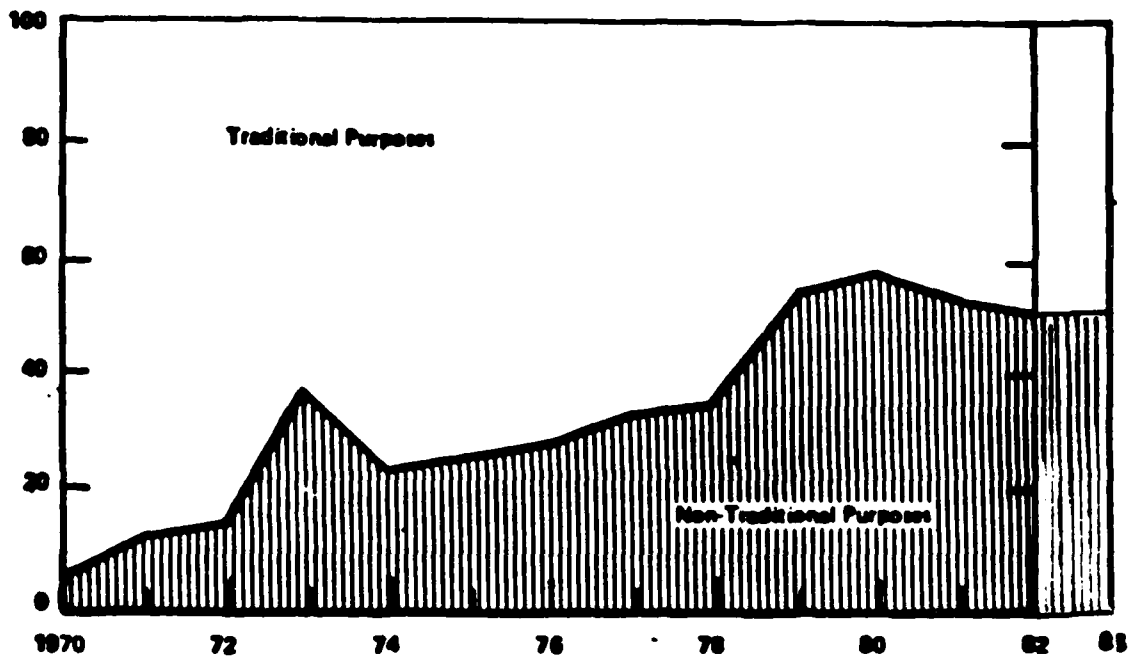
**STATE AND LOCAL GOVERNMENT
WATER-RELATED INFRASTRUCTURE SPENDING AND NEEDS
1982 Actual Outlays and Needs (Billions of 1982 dollars)**

Item:	1982 Actual Outlays	1983-1990 Needs
Total Water-Related Cap. Exp.	\$11.6	\$19.0
Water Resources */	2.0	2.7
Municipal Water Supply	3.7	8.0
Wastewater Treatment	5.9	7.3

***/ Ports, waterways, and flood control. Does not include approximately \$3.7 billion in direct federal spending.**

Figure G

Percentage Changes in the Use of Bond Proceeds for Traditional and Non-Traditional Purposes
Percent Share



Source: Computed based on figures in appendix VI

Note: "Non-traditional" uses of bonds is defined to include only housing, industrial development, pollution control, hospital and student loans.

FIGURE H

Percentage Change in the Use of General Obligation Bonds vs. Revenue Bonds

**Percent Share of
All Bonds Sold**

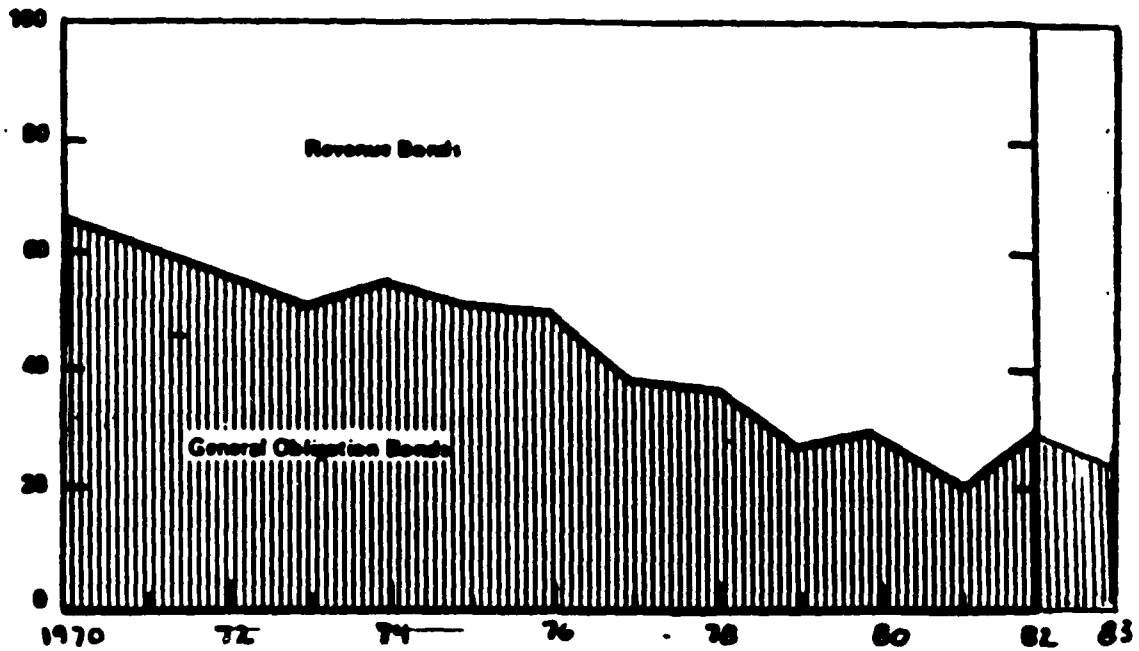
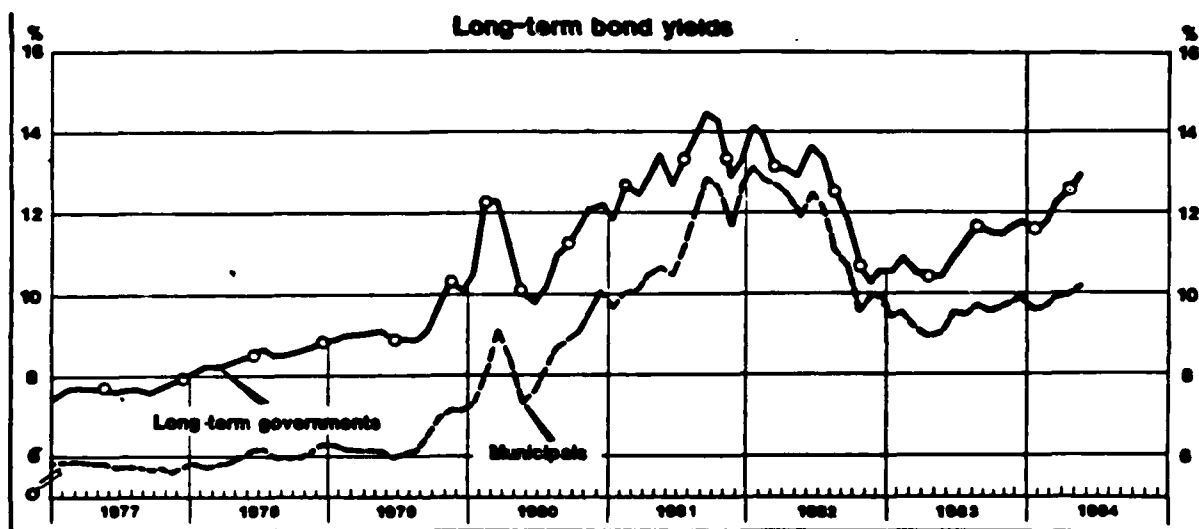


Figure I



Source: Standard & Poor's Corporation



GOVERNMENT
FINANCE
RESEARCH
CENTER

MUNICIPAL FINANCE
OFFICERS ASSOCIATION



ELEMENTS OF FINANCIAL MANAGEMENT

State and Local Debt Policy and Management

Even for the smallest governments, the raising of capital through the selling of securities to private investors can involve unfamiliar processes, technical experts and relatively large amounts of money. Therefore, public officials and administrators are well advised to be aware of the fundamental procedures and practices used in designing and marketing municipal securities. This paper reviews the following elements: formulating a debt policy, uses of debt, types of instruments, design and sale of issues, debt limitations, debt capacity and credit ratings.

Formulating a Debt Policy

Because of its visibility and long-term consequences, debt management can be a particularly important element in local government decision making. In order to borrow, governmental borrowers must appeal to the investing public for their funds. Emergencies have arisen from time to time that have caused defaults or near-defaults on the part of state and local units. Along with high rates of interest, such periods — as occurred in 1975 and again in 1980 — usually bring intense examination of the public's debt.

Debt management policies and issuing procedures should meet four requirements:

- Guidelines as to the appropriate and prudent uses of borrowing;
- Statutory and constitutional requirements placed upon the use of debt;
- Acceptable disclosure practices as enforced in the private financial markets; and
- Consideration of questions of timing and design to maximize the efficiency of borrowing under various market conditions.

For most governments, debt management involves a complex of factors born out of both practical necessity and legal tradition. A "debt policy" as such is seldom found in a particular document or set of principles, and the financial planner must take into consideration several factors in policy formulation. First, debt sold today must be repaid in the future and with interest. This will create an added fixed obligation in subsequent budgets. Furthermore, according to both practice and law, most long-term borrowing is done for purposes of financing long-lived, major capital projects. These projects become part of the public physical establishment and thereby influence patterns of growth and generate future operating expenditure requirements.

Uses of Debt

Most borrowing is done to finance capital facilities. This is true not only because of restrictions on the use of public debt, but also because capital facility financing possesses certain attributes that make the use of credit efficient and equitable. Capital investments are those whose useful lives exceed more than one period and, therefore, whose benefits accrue

over time. Such expenditures in some cases may be financed by current taxes or grants, but they are usually financed by borrowing.

The need for borrowing to finance public facilities may be particularly great in growing areas. Growth in population and income almost always requires capital outlays that anticipate the ultimate growth in tax revenues. Exclusive reliance on the pay-as-you-go approach to finance capital investments out of current savings can inhibit the growth of a jurisdiction and deter the efficiency of capital investment.

Overall debt policy must be meshed clearly with growth planning and a prudent concept of what the fiscal and economic capacity of the debtor will be in the future. It should be integrated with the process of capital programming and budgeting. Making commitments to carry out specific projects necessarily involves planning for their financing. If the capital improvements program is to be an effective guide for financial planning and a means of achieving a government's long-range physical, social and economic goals, then the capital planning and budgeting process should connect all projects systematically.

Types of Borrowing

There are two basic choices that must be made at the outset of a borrowing decision: the type of security and its maturity.

General Obligation vs. Revenue Bonds. As a general rule, the securities market is sensitive to the differences among the security types. Given a level of indebtedness, the broader the security base in terms of potential revenues to repay the obligation, the better the market will treat the security.

With general obligation debt, the general taxing power of the jurisdiction is pledged to pay both principal and interest. To sell such debt, voter approval may be required, and various debt and tax limitations usually restrict its use.

Various types of limited obligations, known as revenue bonds, frequently are sold for purposes, such as water and sewer systems, that produce revenues. Such bonds usually are not included in debt limits, as are general obligation bonds, nor do they usually require voter approval because they are not backed by the full faith and credit of the local jurisdiction, but rather are repaid from various service charges or fees.

Generally speaking, tax-supported general obligation debt is considered a superior form of debt by the market because of its standing as a full-faith obligation of the unit. It typically carries a lower interest rate than revenue-secured debt. There are many circumstances, however, where revenue-secured debt has advantages, particularly when it comes to allocating the costs of facilities to the actual users. But, the most frequent reason for using the revenue bond (and associated special-purpose funds or districts) has been to circumvent debt and referendum requirements or to finance purposes that are beyond



the legal authority of a general unit of government.

The rapidly growing use of revenue bonds to finance a variety of quasi-public purposes (such as industrial development, housing and pollution control) has added greatly to the size and complexity of the tax-exempt bond market.

Long-Term vs. Short-Term Borrowing. Another important choice in security type is between long-term borrowing (that which extends beyond a year) and short-term borrowing (that with a maturity of a year or less).

There are three types of short-term debt: (1) the bond anticipation note, which anticipates the ultimate sale of a long-term bond; (2) the tax anticipation note, which is sold to bridge gaps between expenditures and expected tax proceeds; and (3) revenue anticipation notes, short-term securities that are sold in anticipation of general revenues or grant receipts. The bond anticipation is the form of short-term security most suited to the overall problem of debt management, whereas short-term instruments in anticipation of taxes and revenues typically are cash management concerns.

Debt Issue Design and Sale

Bond issues may have several characteristics which can either detract or enhance their marketability and can either simplify or complicate the problems of debt management. It is possible to design bond instruments and sales to attract the most favorable bids and to time sales to coincide with accommodative market conditions. Among the technical features of bonds are the choice of maturity structure and the total maturity, the type of sale (competitive or negotiated), and whether or not the bonds will be subject to call prior to the stated maturity date. Sometimes, these characteristics are set by state law and are not subject to tailoring at the local level.

Most experts favor giving officials charged with bond issuance as much flexibility as possible in order to tailor bonds for the market. Unusually complex situations or the issuer's status as a "difficult deal" may require a negotiated sale. But normally, award after competitive bidding is preferable.

Another matter of growing importance is disclosure, that is, the design and dissemination of information provided to investors in conjunction with the bond sale. Recent bond market difficulties and concerns about legal exposure under antifraud provisions has greatly increased the amount of detail supplied in a bond sale. Underwriters and investors are now demanding and receiving much more extensive documentation, often including a statement by officials that the information contained in a document represents the situation truthfully.

Another aspect of selling bonds that has attracted some attention is the use of the true interest cost method (TIC) instead of the conventional net interest

cost method (NIC) in making awards. The arguments involved in favor of the TIC have to do with the subtleties of present-value mechanics. Nonetheless, it has been amply demonstrated that the use of the NIC procedure can be inefficient and can result in higher than necessary interest costs for state borrowers.

Debt Limitations

Most states have enacted constitutional or statutory restraints on the debt powers of local government units. The two primary types of restrictions that have been applied to local jurisdictions are:

- A limit on the level of debt outstanding (frequently expressed as a percentage of the taxable real property in the jurisdiction); and
- A requirement for a local referendum to authorize the issuance of bonds.

Other legal restraints have been placed on the purposes for which debt could be incurred and upon characteristics of the transactions such as maximum maturity, interest rate and method of sale.

Over the years, several problems have arisen with the use of legalistic controls on local debt activity. Debt limitations and restrictions on the use and design of financing instruments frequently proved to be too restrictive and inflexible in the flow of changing conditions. The referendum requirement likewise proved to be an obstacle to financing projects that many voters — if not a majority — thought unnecessary. Major consequences of the traditional requirements were the development of the "special fund" doctrine and the "limited obligation," and the birth of special districts and authorities that have been empowered to issue debt outside of the traditional constraints.

Debt Capacity

Legal limitations on the amount of outstanding debt provide a ceiling that is seldom hit by borrowers. Of greater practical importance is how much debt and what composition of debt is acceptable to the municipal bond market. The market is particularly concerned about the unit's capacity to support debt-service payments along with its other expenditures, and its overall economic and fiscal climate. Furthermore, the market's perceptions of what is desirable or at least acceptable will change, depending on conditions in the securities market.

Not surprisingly, the bond market does not use one individual indicator of debt capacity. Standard measures of debt capacity usually relate to the revenue base and the general level of economic activity. They can also be heavily influenced by the unit's fiscal behavior, whether or not it has operating deficits, and also the market's perception of the desirability and financial integrity of the programs being financed.

Credit Ratings

The great number of state and local issues that come to market has led to an institutionalization of much credit opinion in the form of bond ratings. Issued by rating agencies, the best known and most widely accepted opinions are those of Moody's Investor Service and Standard and Poor's. For a fee, the agencies express an opinion as to the credit quality of individual bond issues or, in the case of general obligation issues, of the borrower itself. There is no formula for weighting factors that determine the agency's opinion, but they include fiscal standing of the borrower, general economic conditions, and certain legal and administrative qualities.

The most important thing about the rating is its impact on interest costs. Although the differences among the various security grades will fluctuate depending upon market conditions, the very highest grade bonds (Aaa) often sell at interest rates a full percentage point or more below those of the lowest grade securities (Baa).

For all practical purposes, a bond issue of even small size must have a rating in order to be sold in the national markets. Ratings typically cost between \$1,000 and \$5,000, depending on the size and complexity of the bond issue.

Bibliography

Calvert, Gordon, ed. *Fundamentals of Municipal Bonds*. Washington, D.C.: Securities Industry Association, 1972. 168 pages.

Provides a brief technical description of municipal bonds, how to issue them, and the parties involved in the various transactions. Available from the publisher, 20 Broad St., New York, N.Y. 10005.

Coe, Charles K., and Stallings, C. Wayne. *A Debt Management Handbook for Small Cities and Other Governmental Units*. Chicago: Municipal Finance Officers Association, 1978. 65 pages.

Provides basic information for those with little exposure to the area of municipal finance. Besides helping with terminology, it gives a "how to" lesson, including making the decision to issue long-term debt, a step-by-step description of the process of issuing bonds and the administration of outstanding debt. Available from MFOA, 180 N. Michigan Ave., Chicago, Ill. 60601.

Doty, Robert W., and Petersen, John E. "The Federal Securities Laws and Transactions in Municipal Securities." In *Northwestern University Law Review*, vol. 71, no. 3 (July-August 1976).

A comprehensive treatment of the new role of financial reporting and disclosure in the municipal bond market. For information, contact Northwestern University School of Law, Chicago, Ill. 60611.

Forbes, Ronald W., and Petersen, John E. *Building a Broader Market*. Report of the Twentieth Century Fund Task Force on the Municipal Bond Market. New York: McGraw-Hill Book Company, 1976.

Discusses what should be done to improve the overall structure of the municipal bond market so that it can function effectively and equitably in serving local governmental borrowers, investors and the taxpayer. Available from the publisher, 1221 Avenue of the Americas, New York, N.Y. 10020.

Kaufman, George, and Hopewell, Michael. *Improving Bidding Rules to Reduce Interest Costs in the Competitive Sale of Municipal Bonds: A Handbook for Municipal Finance Officers*. Eugene, Ore.: Center for Capital Market Research, University of Oregon, in cooperation with the Municipal Finance Officers Association, 1977.

A detailed but easy-to-follow examination of bond sale procedures with emphasis on optimal bidding rules for competitive sales. Available from MFOA, 180 N. Michigan Ave., Chicago, Ill. 60601.

Moak, Lennox L. *Administration of Local Government Debt*. Chicago: Municipal Finance Officers Association, 1970.

A comprehensive textbook on all phases of debt administration and policy with numerous and detailed examples. Available from MFOA, 180 N. Michigan Ave., Chicago, Ill. 60601.

Moody's Investor Service. *Pitfalls in Issuing Municipal Bonds*. 3rd ed. New York: Moody's Investor Service, Inc., 1978.

A guide for local governments in "avoiding needless errors, omissions and faulty planning which can weaken or doom to failure an otherwise feasible financing." Available from the publisher, 99 Church St., New York, N.Y. 10007.

Mussa, Michael L., and Kormendi, Roger C. *The Taxation of Municipal Bonds: An Economic Appraisal*. Washington, D.C.: American Enterprise Institute for Public Policy Research, 1979. 228 pages.

A study of the issues surrounding the tax status of municipal bonds. Compares the current tax status of bonds (interest on them is exempt from federal income taxes) with the taxable bond option (an alternative proposed in 1978 under which municipalities could choose to issue taxable bonds with some of the interest paid by the federal government). Available from AEI, 1150 17th St., N.W., Washington, D.C. 20036.

Municipal Finance Officers Association. *Disclosure Guidelines for State and Local Governments*. Chicago: Municipal Finance Officers Association, 1979 edition.

The authoritative statement of information to be provided and disclosure practices to be followed in state and local security offerings. Available from MFOA, 180 N. Michigan Ave., Chicago, Ill. 60601.

Petersen, John E. *The Rating Game*. Report of the Twentieth Century Fund Task Force on Municipal Bond Credit Ratings. New York: The Twentieth Century Fund, 1974.

Evaluates the municipal bond rating system in view of the changed nature of the market and demands with which it has had to cope. Available from the publisher, 41 East 70th St., New York, N.Y. 10021.

Petersen, John E. *Changing Conditions in the Market for State and Local Government Debt*. Prepared for the Joint Economic Committee of the U.S. Congress and published as a Joint Committee Print. Washington, D.C.: U.S. Government Printing Office, 1976.

Describes changing conditions in the municipal bond market and their effect on the availability and cost of state and local debt. Also describes recent changes in supply of and demand for tax-exempt securities. Available from GPO, Washington, D.C. 20402.

Petersen, John E. "Small Borrowers in the Municipal Bond Market: Does Size Matter?" In *Conference on Non-Metropolitan Community Services Research*, proceedings of a conference sponsored by the U.S. Senate Committee on Agriculture, Nutrition and Forestry. Washington, D.C.: U.S. Government Printing Office, 1977.

An analysis of the small local government borrower and how it fares in the municipal bond market. Available from GPO, Washington, D.C. 20402.

Peterson, George E., with Cooper, Brian. *Tax-Exempt Financing of Housing Investment*. Washington, D.C.: The Urban Institute, 1979. 196 pages.

Studies the impact of the growth of these bonds on tax-exempt interest rates, tax revenues of the U.S. Treasury, local mortgage markets, the home buyer and

urban development patterns. Available from the publisher, 2100 M St., N.W., Washington, D.C. 20036.

Smith, Wade S. *The Appraisal of Municipal Credit Risk*. New York: Moody's Investor Service, Inc., 1979. 442 pages.

A guide to the credit aspects of municipal bonds and notes. Divides the components of municipal credit evaluation into five areas: (1) population, wealth and income; (2) governmental organization and powers; (3) financial operations; (4) general debt obligations; and (5) special and limited debt obligations. An excellent reference. Available from the publisher, 99 Church St., New York, N.Y. 10007.

Standard and Poor's. *Municipal and International Bond Ratings: An Overview*. New York: Standard and Poor's Corporation, 1979. 84 pages.

Focuses on the factors included in the rating process. Includes specific discussions of general obligation bonds and of specialized types of revenue bonds. Available from the publisher, 25 Broadway, New York, N.Y. 10004.

This series of papers on *Elements in Financial Management* is published by the Government Finance Research Center, 1750 K Street, N.W., Suite 650, Washington, D.C. 20006. (202) 466-2494. May 1980. John E. Petersen, Director. Papers for this series were contributed by Lisa A. Cole, Joanne Field, John F. Haley, Jr., Rhett Harrell, Michael O'Hanlon, John E. Petersen, Philip Rosenberg, Catherine L. Spain and Barbara Weiss. The Government Finance Research Center is the research arm of the Municipal Finance Officers Association. Funding for *Elements in Financial Management* was provided by the U.S. Department of Housing and Urban Development's Local Government Financial Management Capacity Sharing Program under Grant H-2998-RG from HUD's Office of Policy Development and Research. Papers in the series do not necessarily reflect the policies of the U.S. government in general, HUD or the Municipal Finance Officers Association.

PANEL I

ECONOMIC AND FINANCIAL BASIS FOR WATER PROJECT DEVELOPMENT

RELATIONSHIP OF BENEFITS, PRICING AND REVENUES

John J. Boland
The Johns Hopkins University
Baltimore, MD 21218

The next two days should be unusually informative for all of us. At the very least, we should develop an appreciation for the extraordinary number and diversity of financing techniques available to non-Federal co-sponsors of Corps of Engineers water projects. Among the techniques to be discussed here are some having little in common except that they share the same ambiguous, dimly understood title: pricing. It is my task to help you understand a little more about pricing; what it is, what it does, and how it can be used.

My talk has two parts. First, I will describe, in a fairly elementary way, some of the principles and issues associated with pricing. This will be followed by a brief critique of some public sector pricing practices of particular interest to water resource planners.

PRINCIPLES

As a technique for financing public sector projects, pricing has some particular characteristics. They can be stated in plain English:

- o Everybody is in favor of it
- o More people talk about it than do it
- o Those who do it often do it at the wrong time
- o If you are going to do it, it is easier when you are young

These four observations form the text for the first portion of my talk here this morning.

Everybody is in Favor

"Pricing", as an abstraction, is as uncontroversial a subject as can be imagined. We all know that it is a "good thing." Those whose memories extend back to a principles of economics course may even be able to recall the reasons:

- o Pricing promotes the efficient allocation of resources, increasing the total benefits enjoyed by society

PREVIOUS PAGE
IS BLANK 

- o Pricing satisfies some notions of equity by requiring the beneficiary to pay
- o Pricing provides a source of funds to those who provide goods or services, ensuring the continuous flow of those goods or services

Pricing, therefore, promotes efficiency, equity and financial feasibility. Many of the other financing measures to be discussed in this seminar also promise, in varying degrees, equity and financial feasibility. The unique contribution of pricing relates to economic efficiency. It may be helpful, before proceeding, to review some of the underlying arguments for the efficiency of pricing.

The simplest way to think about economic efficiency is to suppose that every economic good (or service) provided in the economy has two characteristics: (1) it provides benefits which increase with the quantity of the good; and (2) it imposes costs, which also increase with the quantity provided. Figure 1 illustrates typical relationships among benefits, costs and quantity. It can be seen that benefits are greater than costs for a range of quantities (from A to B). Society is clearly better off when resources are used to produce goods worth at least as much as the resources used. Only quantities between A and B, therefore, are desirable or economically feasible. If we make suitable assumptions, we can claim that society is best off when the excess of benefits over costs is maximized. That occurs at quantity Q^* , the economic optimum.

A better way to see the optimum quantity is to use marginal benefit and cost curves. These are derived from the total benefit and cost curves as follows: the total benefit curve in this example can be observed to increase at a decreasing rate. The marginal benefit (the incremental benefit provided by the last unit), therefore, falls with increasing quantity. Similarly, marginal cost first falls, then rises with increasing quantity. Marginal curves are shown as Figure 2.

So long as marginal benefit is larger than marginal cost, increasing quantity adds more to benefit than to cost, making society better off. When marginal benefit is less than marginal cost, society would prefer to reduce the quantity consumed, thereby reducing costs more than benefits. Only when marginal benefits and marginal costs are equal, which occurs at quantity Q^* , are net benefits maximized. This point represents economic efficiency, in the context of this simple example.

To understand the meaning of this example, we must look behind the curves shown as Figures 1 and 2. The total and marginal cost curves represent the opportunity costs to society of the good being provided. They express the value of the resources being used. The benefit curves show the value of the good to those who use it.

Values are, of course, internal and not observable. In a market economy,

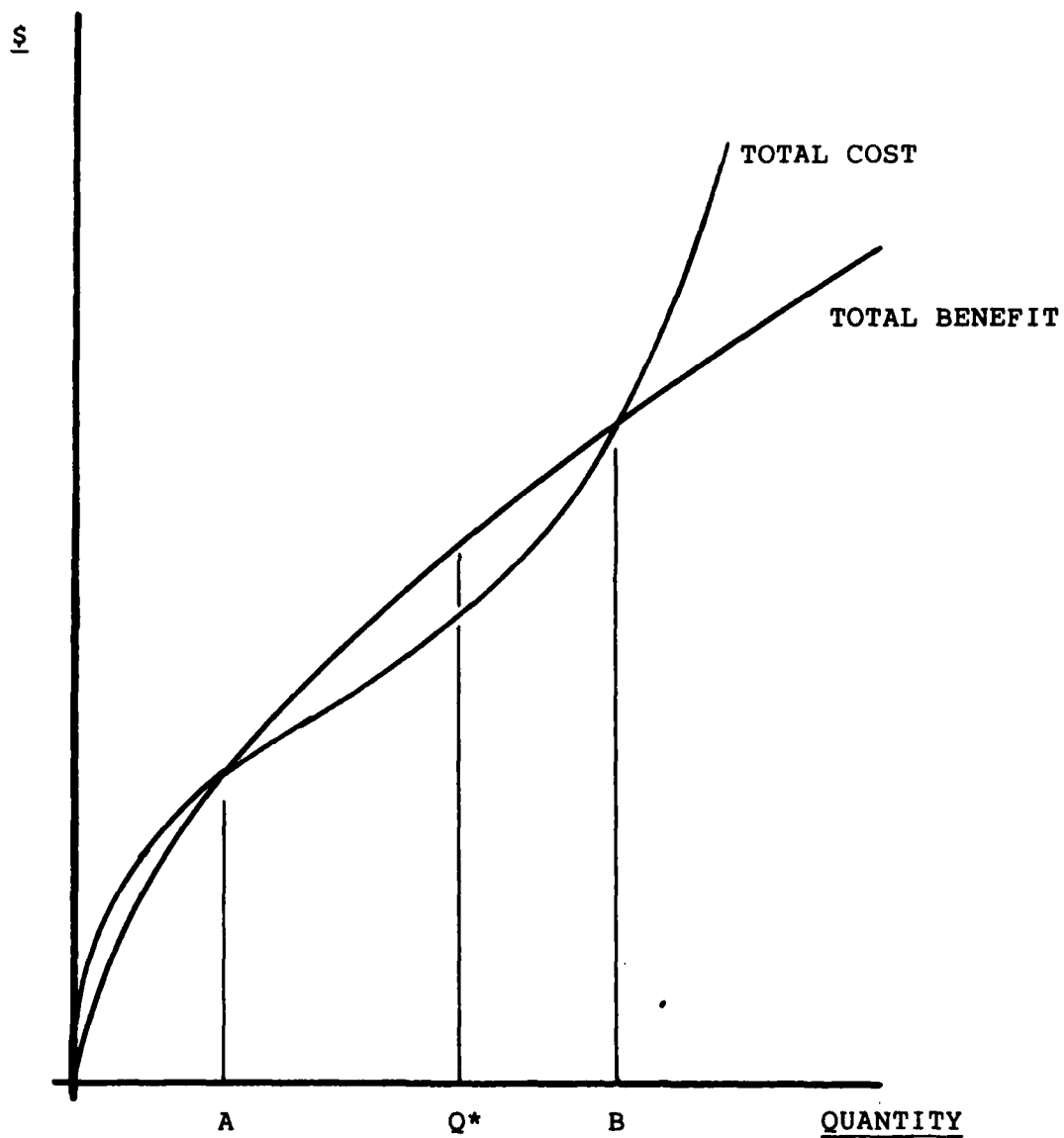


Figure 1.--Total Cost and Benefit Curves

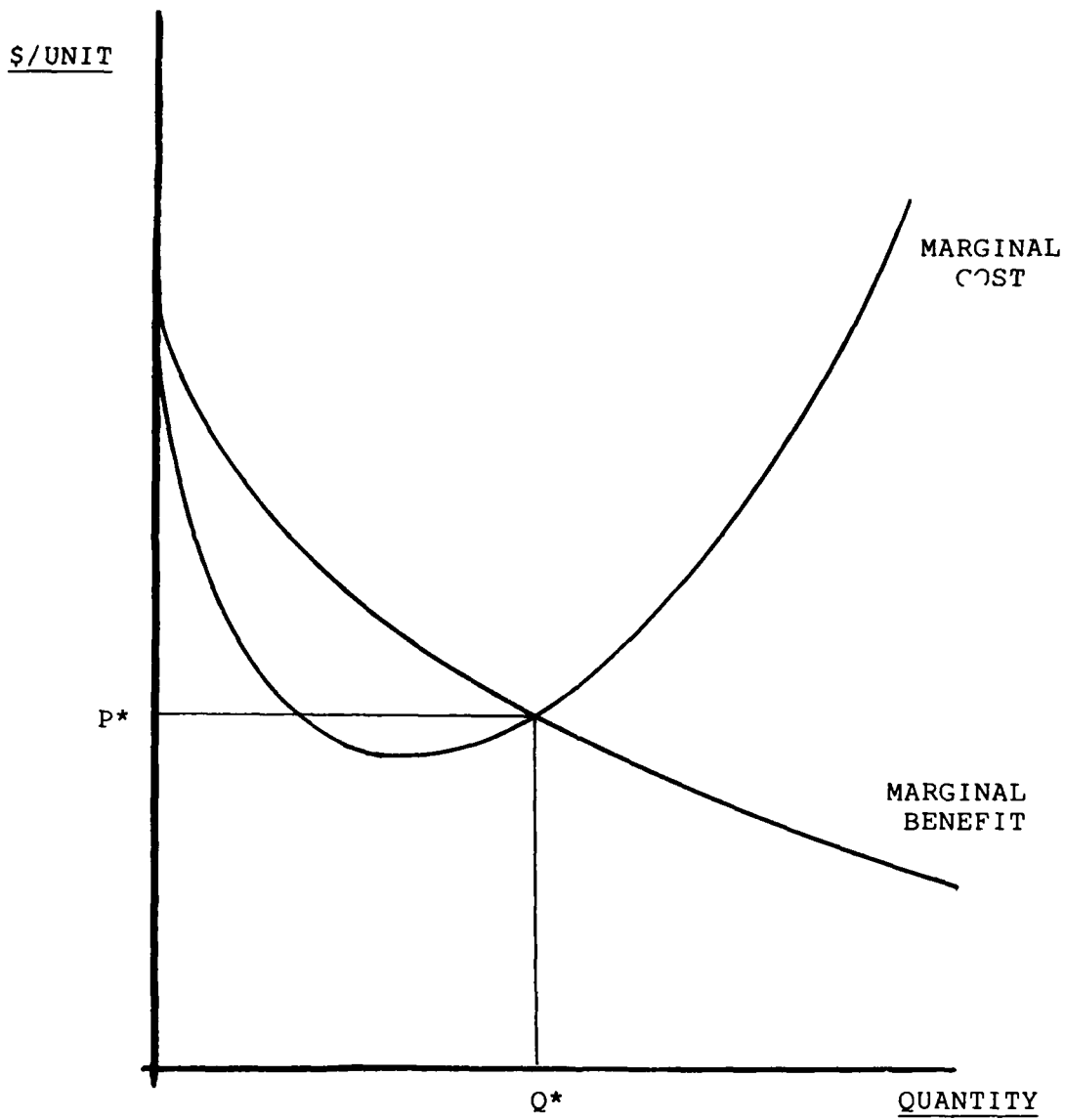


Figure 2.--Marginal Cost and Benefit Curves

we presume that individuals reveal a great deal about their values when they elect to purchase or not purchase various goods. This behavior allows us to use a consumer's willingness-to-pay for a good as a measure of the benefit which that good is expected to provide. Marginal willingness-to-pay, therefore, is a measure of marginal benefit.

A particular consumer's marginal willingness-to-pay is, in turn, represented by a demand curve, shown as Figure 3. The demand curve shows the relationship between price and quantity demanded. Since a rational consumer will stop consuming when willingness-to-pay for the next unit falls to equal the price which must be paid for that unit, each point on the demand curve shows the marginal willingness-to-pay for a particular quantity. If there were only a single user of a good, the marginal willingness-to-pay for quantity Q^* is the same as the marginal benefit associated with Q^* , as shown on Figure 2.

Since the consumer adjusts the quantity consumed according to the price, a straightforward way of insuring that the "right" quantity is consumed is to set price accordingly. The "right" price level can be found in one of two ways: (1) determine the optimal quantity (Q^*), then set the price to cause that quantity to be demanded; or (2) set the price equal to the marginal cost of whatever quantity is being produced, then let the market determine the final quantity. The latter method is the simplest and requires the least information; it is one of the most fundamental lessons of market economics.

It can be shown that an economy where all prices are set equal to relevant marginal costs is an economy where the welfare of society is maximized, all else being equal. It can also be shown the the welfare of society is maximized by the existence of universal perfect competition: every good is produced and sold in a perfectly competitive market. One of the hallmarks of perfect competition is that prices are driven down to marginal cost, as every profit-seeking producer responds to the incentives which competition creates.

The beneficial impact of universal perfect competition is the source of our characteristic national faith and trust in the free market. The knowledge that the same beneficial effect can be achieved by appropriate pricing, even without competition, invests the word "pricing" with a patriotic aura. Under the circumstances, it should be no surprise that everyone is in favor of pricing.

Talk vs. Action

To understand why prices are so little used as a means of financing public projects, it is important to understand exactly what a price is, and when a price can and cannot be used. A price is a charge, but it is a particular kind of charge: the obligation to pay a price is linked to the receipt of the good to which it applies. Also, a price is usually stated as dollars per unit of the good.

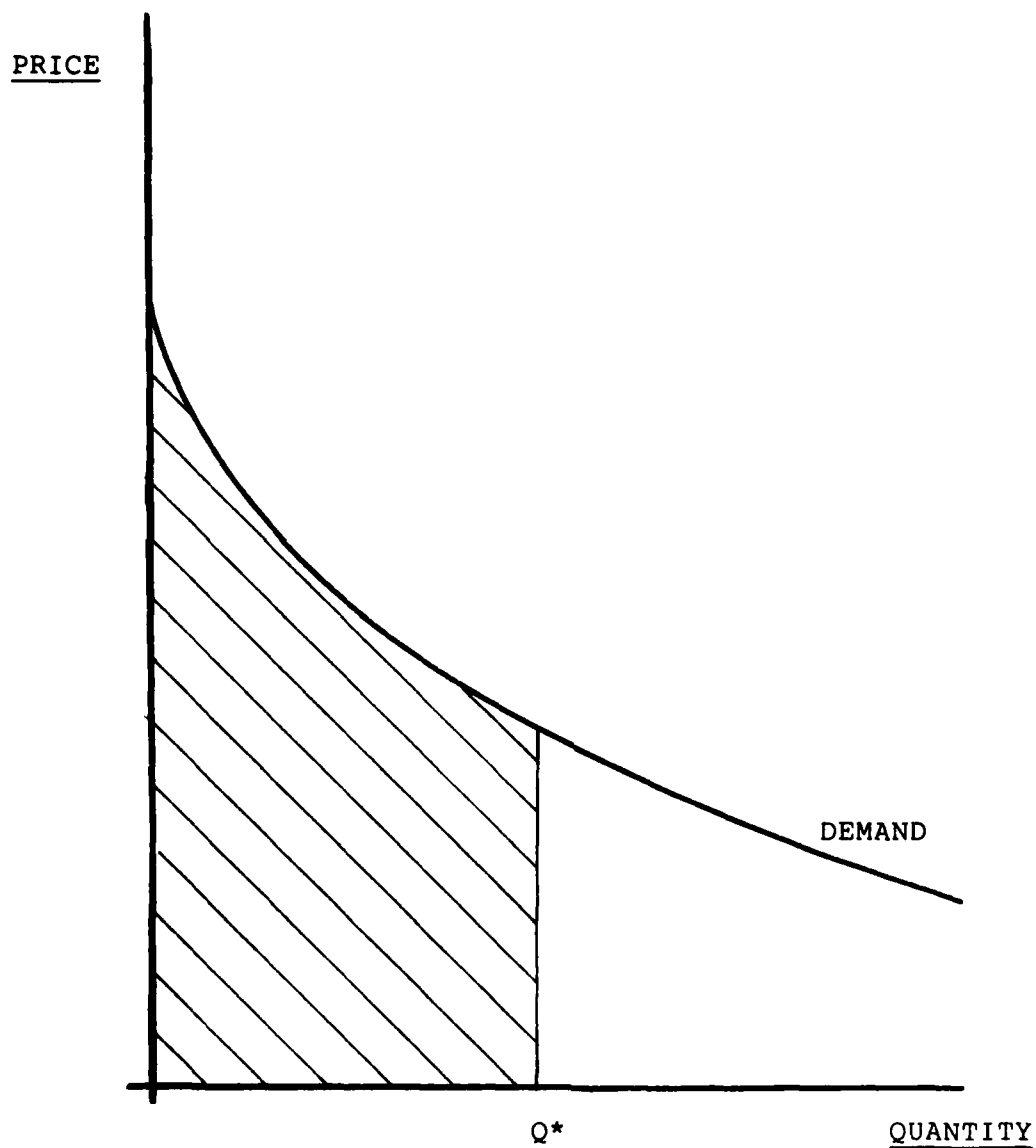


Figure 3.--Individual Demand Curve

To illustrate the difference between a price and other types of charges, it is helpful to consider financing methods commonly used by water utilities. The rate structure may include a commodity charge for the water delivered, a fixed monthly service charge, a flat quarterly fee for sewer service, and a front-foot assessment on all property in the service area. The commodity charge is a price: it is paid on each unit of water delivered, and it is not paid on any water not delivered. The monthly service charge may also be considered as the price of having the service connection, provided that the charge is eliminated if the service is disconnected.

The quarterly flat charge for sewer service, however, is a price in only the loosest sense. It is not a price for sewage treatment, since it is unrelated to the quantity of sewage delivered to the collection system. It can be thought of as a price for connection to the sewerage system, if disconnection is really an option. Where disconnection is not possible, the sewer service fee is simply a charge, not a price. Front-foot benefit assessments, which are not tied to the delivery of any identifiable good and are not avoidable, are also not prices, but simply charges.

It can be seen that a charge is a price only when tied to the delivery of some good, and when truly avoidable (not accepting the good means not paying the price). These conditions place some requirements on the nature of the good which is to be priced: (1) it must be possible to measure the quantity supplied, and (2) it must be possible and feasible to exclude non-payers. Without the first characteristic there would be no basis for the price-quantity calculation; without the second there would be no reason for anyone to pay the price.

These conditions may seem obvious, but they are not trivial. There are goods which cannot be priced because they cannot be measured. Most improvements to the aesthetic qualities of the environment fall into this category: protection of scenic resources, reduction of roadside litter, improved urban design, etc. In all of these cases, and others, it may be practically impossible to exclude non-payers: all can view scenic vistas, cleaner roads and more attractive cities. Many other examples of non-exclusion exist: improved national security, lower air pollution, improved public health, etc. There are still more cases where exclusion might be possible but is not feasible. It may be desirable to charge a price (admission) for use of a national forest or park, but it would not be reasonable to construct a fence completely around the perimeter to exclude those who do not wish to pay the price.

Goods which lack the characteristics necessary to permit the use of a price are said to be non-vendible: they cannot be measured and/or they cannot be denied to non-payers. Water resource projects include a number of purposes with non-vendible outputs. Any enhancement of environmental quality or scenic beauty is likely to fall into this category, as the goods provided are not usually measurable. Some types of flood control benefits are also not vendible, where it is effectively impossible to exclude non-payers from the benefits.

Public sector organizations also produce vendible goods. Public water supply, bulk hydroelectric energy, many types of water-based recreation activity, postal service, health care services, etc., can all be measured and restricted to those who pay, if necessary. Clearly, most public funds are devoted to the production of non-vendible, rather than vendible services. That fact explains, in part, the relatively limited application of pricing in the public sector.

The Wrong Time

In addition to the cases, just described, where pricing is not possible, there are other situations where pricing is not desirable, where society would be better off without a price than with one. To understand these situations, it is necessary to recall that I first justified price using the example of a single consumer, whose demand curve formed the social marginal benefit curve. Real applications involve large numbers of consumers, each with a unique individual demand curve. To see the role of price, individual demand curves must be combined to form an aggregate demand curve, which includes all individual curves.

The way in which demand curves are combined depends upon another characteristic of the good in question: whether it is consumed competitively or collectively. Competitively consumed goods are the ordinary market goods familiar to all: bread, shoes, gasoline, etc. Any unit consumed by one person is no longer available for consumption by others. Total quantity consumed, therefore, is the sum of individual quantities.

When a competitively consumed good is sold at a price, and when the price is the same for all who buy the good, the demand curves of each of those individuals can be summed horizontally to give the aggregate, or market demand curve (see Figure 4). The aggregate demand curve gives, for any market price, the total quantity demanded, regardless of the identity of the individual users. It also gives, for any quantity, the marginal willingness-to-pay of all users (since price is uniform, each user has the same marginal willingness-to-pay). The aggregate demand curve can, therefore, be combined with a marginal cost curve to locate the optimum quantity, as shown on Figure 2. The optimum price is equal to the marginal cost at the optimum quantity. Since units of the good are used competitively, the marginal cost of any unit provided to an individual user is the marginal cost of the last unit produced. Consequently, it is the same for every individual and corresponds to the single consumer results given earlier.

In the case of collectively consumed goods, however, demand curves cannot be added horizontally. This is because all consumers use the same units of the good at the same time, without affecting the quantity available to others. Improved air quality is an example of a collectively consumed good: if an incremental improvement is made in air quality, it is available to all and all enjoy it. The degree of one person's use of the cleaner air does not affect the

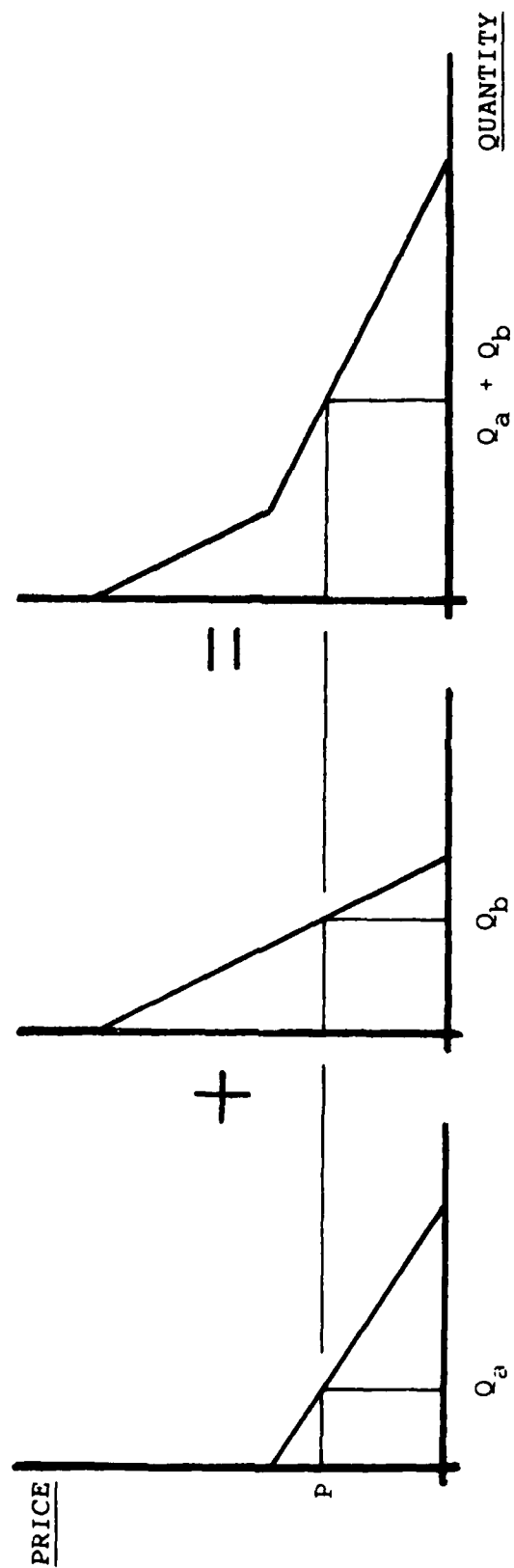


Figure 4.--Competitively Consumed Good

quality available to others. The same quantity of the good is available to each individual.

The individual demand curves, therefore, must be added vertically, since each individual consumes the same quantity at any given time (see Fig. 5). The aggregate marginal willingness-to-pay for that quantity is the sum of the marginal willingnesses-to-pay for all individuals consuming the good. This amount is found on the aggregate demand curve for any given quantity.

At this point, the analysis diverges from that shown for a single consumer. The optimum quantity is found in the same way: the intersection of the aggregate marginal willingness-to-pay and the marginal cost curves. Optimum price, however, is based on the marginal cost of the units supplied to individual consumers. Since these units are the same units supplied simultaneously to all other consumers, there is no additional cost: the marginal cost is zero. The optimum price for a collectively consumed good is, therefore, zero. Pricing is inappropriate for such a good.

In certain cases where a good may be vendible but collectively consumed, an attempt may be made to set a price. An example might be "Pay-TV", where a monthly charge is levied for the right to watch programming on a specific channel (scrambled for non-payers). In this case, it is possible to set and collect a price. Furthermore, analysis of aggregate marginal benefit and cost functions leads to identification of an optimum quantity to be provided. To charge a price would be undesirable from a social welfare point of view, since it requires individuals to pay a price (the monthly fee) much higher than the marginal cost of the service provided. Such a price is not optimum (the optimum price is no price at all). It will likely lead to aggregate consumption much below the optimal quantity. Pricing is possible, but not desirable.

Doing It While You Are Young

So far, we have found that pricing is widely admired, but narrowly practiced by public organizations. This follows from the prevalence of non-vendible goods: those which cannot be measured, or from which non-payers cannot be excluded. Also, there are additional cases where, because of collective consumption, prices are undesirable. To use a price would make society worse off, as compared to the practice of charging no price at all.

Still, there are important cases, including some associated with water projects, where prices can and should be used. Municipal and industrial water supply agencies, for example, provide a vendible, competitively used service. Obstacles to pricing remain, however, as well as additional obstacles to pricing correctly. Public administrators who choose to initiate pricing, where it has not been practiced in the past, can anticipate frustrations and setbacks. Some of the sources of these problems are described here.

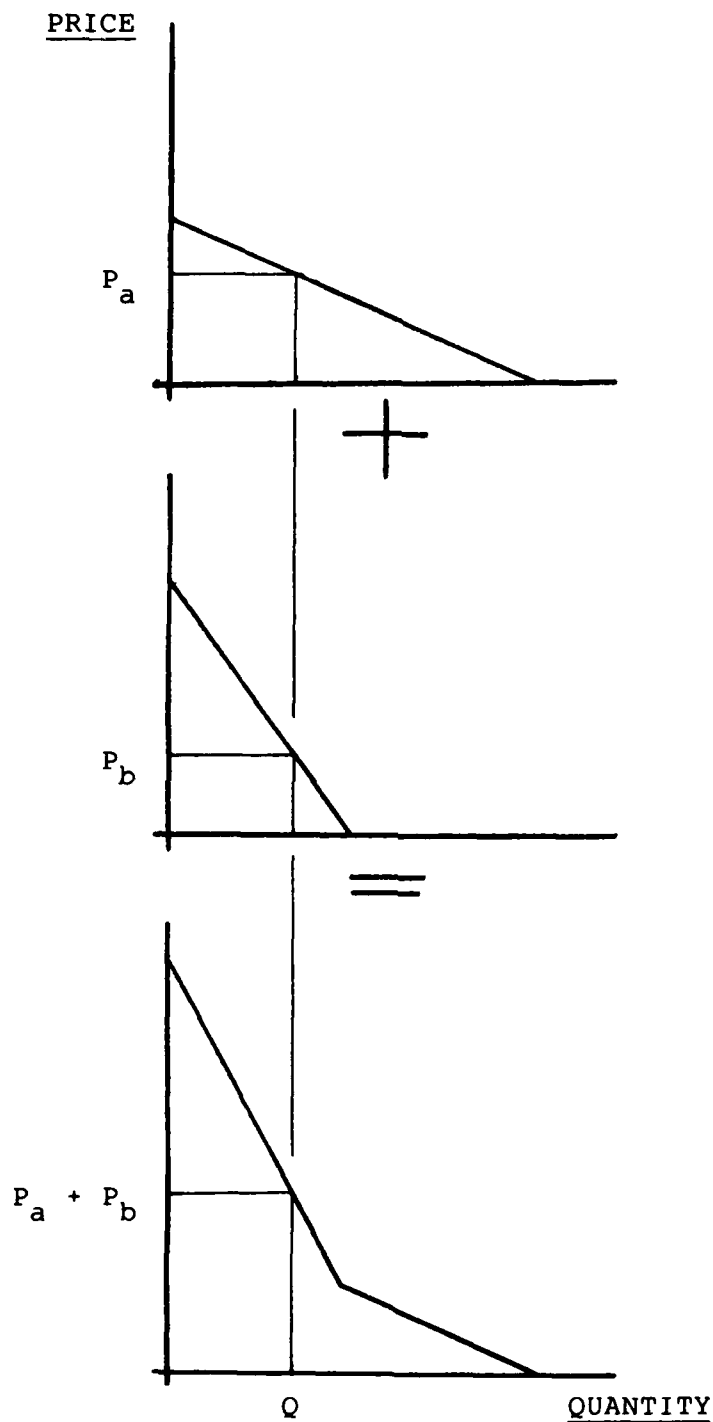


Figure 5.--Collectively Consumed Good

Price and Marginal Cost

As noted earlier, the major advantage of pricing lies in the improvement of economic efficiency. It has also been indicated that economic efficiency is achieved, given suitable assumptions about the rest of the economy, when price is set equal to marginal cost (the cost of producing one more unit of the good). Public sector prices, however, are rarely based on marginal cost, for various reasons. This insures that the beneficial effect of price on efficiency is not fully exploited, and raises the question of whether efficiency has been improved at all.

In almost all cases, pricing is preferable to no pricing on efficiency grounds. The no pricing alternative, of course, amounts to setting a price of zero. Compared to zero, most feasible prices are likely to be closer to the proper level (marginal cost). The only exceptions would be prices set so far above marginal cost that a zero price would be preferable. (The discussion excludes consideration of the theory of the "second best," which describes cases where optimum prices diverge from marginal cost.)

Pricing and Equity

While the distinguishing feature of pricing is its effect on economic efficiency, the equity aspects are also of interest. The use of prices distributes the cost of producing a good in a specific way, one that is determined by the price structure and the pattern of use of the good. Where a single, uniform price is used, for example, costs are allocated proportionate to use: an individual who uses twice as much as some other person pays twice as much.

This allocation of cost meets at least one standard of fairness: that cost shares should be proportionate to use. When the price is based on marginal cost, another standard of fairness is also met: each user pays only the replacement (marginal) cost of each unit used. These are not the only standards of fairness in common use, however. Many would argue that, especially for publicly-provided goods, cost shares should be influenced by users' ability to pay (as determined by income, family size, age, etc.). Others might suggest that cost shares should reflect prior rights or historical patterns of cost responsibility, or should recognize previous contributions in support of the activity. When any of these notions of fairness or equity are present, the cost shares resulting from a pricing program are unlikely to be entirely satisfactory. There may be pressure for other forms of financing which are less restrictive in this regard.

Pricing and Revenue Sufficiency

Projects undertaken in the public sector differ in important ways from those customarily conducted in the private sector. Typically, they are larger

and characterized by very substantial fixed costs and/or economies of scale. In fact, many public enterprises are decreasing-average-cost activities, as shown on Figure 6. When average cost decreases with increasing output, it is a mathematical necessity that marginal cost be less than average cost. Prices set equal to marginal cost, therefore, will not recover the full average cost of production. Revenues collected from prices will fall short of the total cost of providing the good.

Lack of revenue sufficiency is not the same problem in the public sector that it would pose for an unregulated private firm. It simply means that some other financing source must be used to collect the revenue deficiency or that prices must be raised to equal average cost. The latter strategy collects the additional revenue at the expense of economic efficiency, of course.

Externalities

The discussion so far has assumed that each production activity provides a single good, which has a cost and is distributed to those consumers willing to pay the price. The economic effects of many public sector activities extend beyond this simple cost-benefit model, however. External effects are quite common: benefits and costs which accrue to participants in other, otherwise unrelated economic activities. Public sector activities which cause a deterioration in environmental quality impose costs on others who may wish to use the environment for other purposes.

Other activities provide external benefits to non-users of the product. Public water and wastewater services may improve public health and environmental quality, for example. These improvements are over and above the basic utility and convenience which users pay for, and they are collectively (not competitively) consumed. It is usually not possible to calculate a marginal cost for such benefits, and they cannot, in any case, be priced. But to ignore the possibility of external benefits is to risk not maximizing economic efficiency. Increasing the level of service above what pricing alone would dictate may exclude social benefits which exceed the additional cost.

Calculating Marginal Cost

The final obstacle to efficient pricing is the problem of calculating the marginal cost necessary to set efficient prices. Two types of problem can be considered: (1) many of the inputs to public production are either not priced or priced incorrectly, so that social costs of inputs are not known; and (2) capital investments tend to be large, infrequent and "lumpy", complicating the calculation of long-run marginal costs. There is a growing literature on the calculation of marginal cost for public sector enterprises, and it shows that the problems are manageable and the solution accessible. The methods are unfamiliar, however, and full acceptance may be some years away.

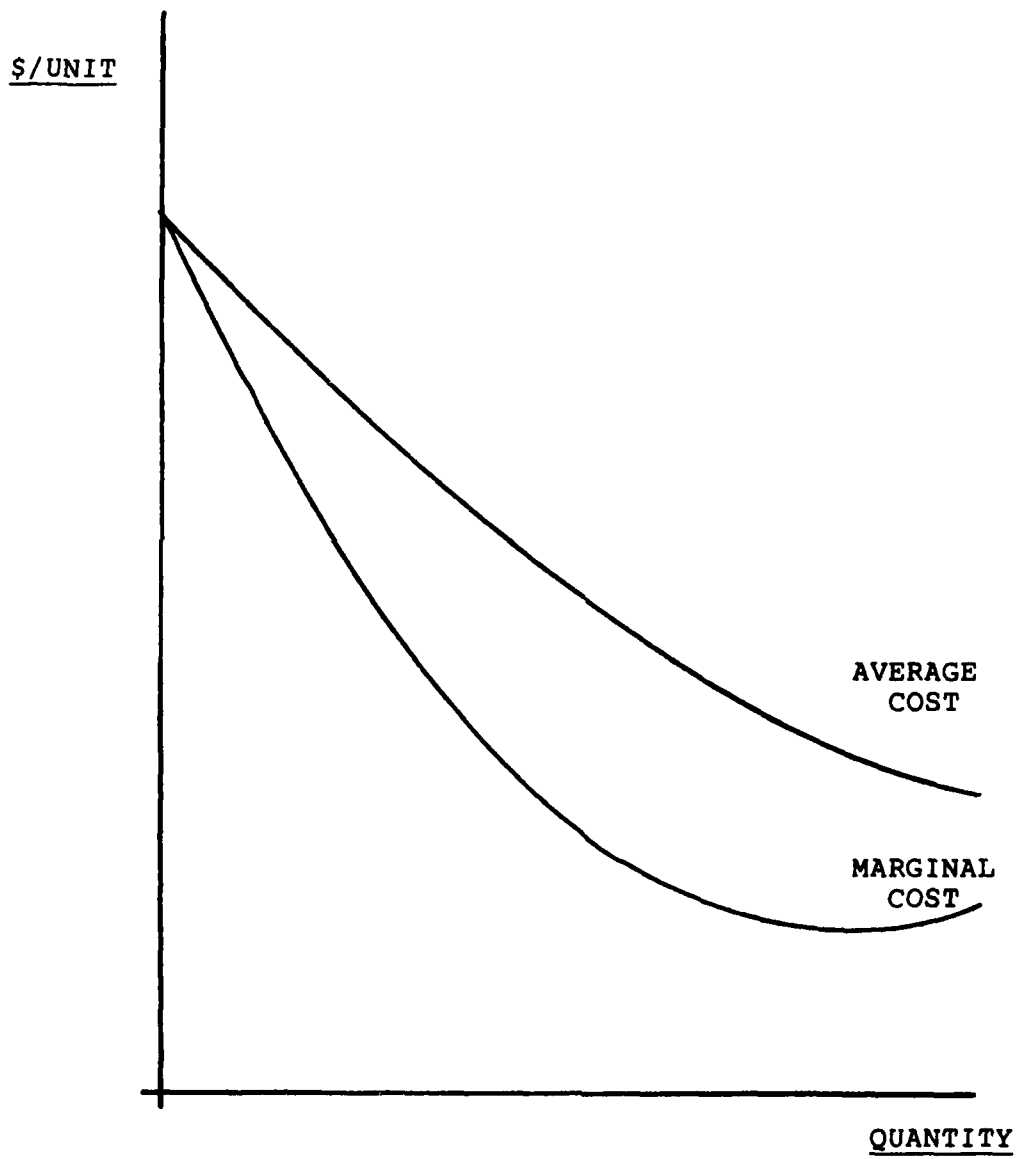


Figure 6.--Decreasing Average Cost

PRACTICE

While the list of problems and difficulties associated with pricing publicly produced goods may seem long and formidable, not all problems arise in every instance. In order to clarify the application and importance of the ideas just discussed, I will describe a number of pricing practices commonly employed by co-sponsors of Federal water resource projects.

Pricing Recreational Facilities

If recreational use is to be a vendible good, it is necessary to be able to restrict use of the facility to those who pay the price. Recreational facilities associated with Federally-planned water resource projects are often sufficiently small, or have sufficiently few access points, that pricing can be considered. In these cases, there are two types of prices in common use: (1) a price for access to the facility, usually levied as price per visit or price per day; and (2) prices for specific services, such as boat storage or boat launching.

The first type of price may be a case of pricing at the wrong time. Absent congestion, the marginal cost of granting another person access to a facility may be zero. Setting a price for this access reduces, rather than increases economic efficiency, and restricts access to those willing and able to pay the price. Should free access cause the facility to become crowded, however, another consideration arises. It is not efficient to set a zero price for a congested facility, since each additional patron causes a loss in the benefits enjoyed by all other patrons, even where the cost of operating the facility does not vary with the number of patrons. Congestion prices can be set, which would increase with increasing congestion. Some authors advocate a pricing scheme which maintains the facility at a use level equal to its design capacity, with the price rising and falling with changing demand. When demand falls short of capacity, however, the price would be zero.

Prices set for special services should correspond to the marginal costs of providing those services. Boat storage, boat launching, use of camping sites, all have costs which vary to some degree with the level of use. The prices should reflect those costs, so that the services are provided and used efficiently. Where congestion is a possibility (as with boat storage or camping site use) the price should be increased to reflect the costs of congestion.

Efficient prices for the use of recreational facilities would distinguish, therefore, between services having no variable supply cost, and those having some variable costs. Prices for services with zero marginal costs would also be zero, except during seasons, days of the week, or other periods when facilities are likely to be used at or near capacity. Prices for other services may also have a time-of-use structure, wherever possible congestion is an issue.

Pricing Urban Water Supply

Urban water utilities customarily employ complex, multi-part rate schedules. In addition to a commodity charge for water use (and sometimes for sewer service), there may be a periodic service charge, various types of benefit assessments, charges for specific services (extra meter readings, turn-ons, turn-offs, etc.), ad valorem taxes, and so forth. Some utilities have a summer-winter differential for commodity charges, others have surcharges which apply under certain conditions (excess demand, higher elevations, etc.). The commodity charge may be uniform for all customers, it may be differentiated by customer class, or it may be a block-type charge (declining-block or increasing block).

If these rate structures are to be efficient, it is important that charges for services which have non-zero marginal costs be set equal to those marginal costs. This would apply, in particular, to the commodity charges and the charges for special services. Most other charges are not variable with the use of any identifiable service and are not avoidable. They are, in other words, taxes rather than prices.

Conventional rate-making practice results in commodity charges which reflect the average cost of providing water service; moreover, these charges frequently have a declining-block form. Such practices are doubly inefficient: they fail to reflect marginal costs, and they introduce price discrimination among customers. Limited empirical work undertaken so far suggests that most utilities set rates which are in excess of the relevant marginal costs. This means that customers pay more and use less water than would be efficient. There are apparently some communities (in the Southwest, for example) where current rates are below marginal cost, and where customers pay too little and use too much.

In either case, the result is inefficiency. Whether the status quo is preferable to using no price at all is an empirical, rather than theoretical question. Based on available data, it seems that conventional pricing practices are better than no prices. Pricing has, therefore, produced some improvement in efficiency; marginal cost pricing would produce more.

Hydroelectric Energy

Federally-planned water projects often produce significant amounts of hydroelectric energy. This energy may be sold to investor-owned electric utilities, or to municipal or cooperative distribution utilities. Pricing occurs in two distinct markets: (1) the bulk power market (producer-utility or utility-utility) and (2) the distribution market (utility-user). Pricing practices differ dramatically between these two markets.

The bulk power market, even when participants are government agencies,

retains few of the characteristics of public sector pricing practices. Because electric utilities are substantially interconnected, many sources of energy are available from both public and investor-owned sources. Similarly, there are many potential customers for any particular block of energy. The result is a close approximation of a competitive market for energy, where prices tend to track marginal costs. Hydroelectric energy is sometimes an exception, since resources are limited and marginal costs are often very low. Hydro projects, therefore, sometimes collect economic rents, attributable to their scarcity and not necessarily an indication of inefficiency.

The distribution market, on the other hand, is characterized by typical public utility retail pricing practices, not greatly different from those applied to water utilities. The major difference is that marginal costs of supplying electric energy to retail customers may be higher than, the same as, or lower than the prices charged. Also, there is little use of benefit assessments or taxes. On the other hand, in recent years some utilities have eliminated block-type rates, and have adopted seasonal time-of-day charges based on marginal costs. This type of rate-making policy can be expected to result in a high level of economic efficiency.

CONCLUSIONS

Pricing, when applied to goods and services produced in the public sector, is associated with many issues and concerns. The major advantage of pricing is that, when used correctly, it promotes economic efficiency. Pricing also produces specific allocations of cost (equity) and generates revenue to defray the cost of production (revenue sufficiency). When compared to other, non-price financing methods, pricing offers the possibility of improving economic efficiency and allocates cost in proportion to use.

Many public sector goods cannot be priced (are not vendible) because their use cannot be measured and/or non-payers cannot be excluded. Other goods may be vendible but are associated with zero marginal costs with respect to individual use (collectively consumed goods, for example). These goods should not be priced, as a zero price maximizes economic efficiency.

For those goods which can and should be priced, a number of problems emerge. Overcoming these problems may require considerable energy and fortitude on the part of the public agency. They include the need to set prices equal to marginal cost if efficiency is to be achieved; to accept the distribution of cost associated with efficiency pricing, even where it may conflict with other equity objectives; to accept the revenue which comes from efficient prices, even though different from desired levels; to consider the existence and external benefits and costs, and their consequences for efficient pricing policy; and to calculate useful marginal costs even where data are missing and capital expenses large.

In spite of these obstacles, the reward for efficient pricing is large. Goods can be provided in a way which provides users with the greatest possible benefit for a given allocation of resources, and which distributes the cost of production in a consistent and fundamentally fair way. Some public sector and quasi-public sector agencies have begun to move in the direction of more efficient pricing practices, especially those electric utilities which have adopted marginal cost-based rates. Others remain rooted in pricing practices of 100 or more years standing, prime candidates for change to the benefit of all.

REVENUES, CREDIT SECURITY AND PROJECT FINANCING

Mary Mudryk
Morgan Stanley & Co.

May 16, 1984
Fort Belvoir, Virginia

Introduction

In the future, the development of water projects will require more and more financial contributions from local governments. As the Corps continues planning for the future, it is important to keep in mind how this change may affect their plans, and begin exploring how needed money will be raised by the local governments to support their share of water development.

There will be major changes in the criteria used for water project development. From the positive perspective, (depending upon one's perspective), Congress will not be the sole determinant as to whether or not a water project is financed. Although Congress will continue to be involved in certain projects, this involvement may be limited to the partial funding of projects, i.e. - feasibility studies, ownership interest in the projects, as well as the de-authorization of various water projects. From the negative perspective, (again depending upon one's perspective), the investing public to a large extent will determine which projects are developed.

Political factors from a national perspective will not be as important in the development of a water project, instead investors will be voting with their dollars on many different projects throughout the country. Investor's alternative investments will include other water projects, as well as power projects, hospital and housing projects just to name a few.

A key determinant as to whether or not investors "vote" with their dollars for a water project will be based upon their confidence in the "willingness and ability of the issuer to pay" the debt, as well as feasibility considerations and the level of interest rates. It is also important to keep in mind that the demand for capital continues to increase especially because of huge Federal deficits. The demand to finance in the tax-exempt market has doubled in only five years and last year exceeded \$120 billion. In addition, municipal bonds are no longer considered the sterling investments they once were perceived to be, particularly in light of major defaults including Washington Public Power Supply System.

The reason we are here today is to discuss how the needed water projects will be financed. When preparing for my presentation, I realized that my comments would fall under the four basic questions of Investment Banking:

1. What is the project?
2. Who is the issuer?
3. What is the security? and
4. Can Morgan Stanley be your Investment Banker?

What is the Water Project?

Is the water project for municipal and industrial water, the control of beach erosion, navigation, flood control, fishing or recreation, or is it a hydroelectric project? Certain projects are able to generate sufficient revenues from the sale of their output to cover debt service and operating and maintenance requirements. These water projects lend themselves better to an arrangement whereby the user of the output of the project pays for the service, e.g., a direct user concept. When developing the Plan of Finance, it is important to begin with certain basic questions related to the projects, such as:

1. What is the direct output involved; is it water, power or both?
2. Is the output readily measurable?
3. What has been the historical use of the output?
4. Can the forecasted use be projected with reasonable certainty?

Certain water projects provide benefits which are much more widespread and therefore it is more difficult to determine who are the exact beneficiaries. In these instances, depending upon the project, other sources of revenue may be required to financially support the project. When the benefits of the output are widespread, questions related to who will pay local costs, and how the cost will be allocated among various entities need to be answered. Local political factors often become a consideration when developing the Plan of Finance when the benefits are more widespread and may involve several jurisdictions.

Who Is The Issuer?

This question is related to who will actually sponsor a water project and thereby raise the needed capital. The issuing entities generally fall into the following categories:

1. Units of Government.

Examples include Cities and States. These units can either individually or jointly develop water projects.

2. Special Districts.

Examples of special districts include drainage and sanitary sewage districts created under State law by local referendum (i.e. - the Southwest Sewage District in Suffolk County, New York).

3. Special Districts Created by State Legislation.

An example would be the Metropolitan Water District of Southern California which was established under a State Act created to provide water service at wholesale rates to various units of government.

4. Investor-Owned Utilities.

Which are for profit entities and may include private water companies as well as power companies. Examples would include various mutual ditch companies in many western states.

5. Partnership Arrangements.

These partnership arrangements are particularly relevant to hydroelectric projects where partnerships are formed to benefit from various tax incentives granted under the Crude Oil Windfall Profits Tax Act. These tax advantages include investment tax credits (ITC), energy credits as well as accelerated depreciation.

The type of issuer or sponsor will determine the financing vehicle which will be legally available to fund these projects. Generally, there are three basic forms of financing: 1) equity; 2) debt; and 3) cash flow. The form of financing is related to the next major question

What is the Security for the Debt Being Issued?

What sources of revenue will investors look to for repayment of their loan. Obviously, if a water project could be financed from cash flows most of you would not be attending this conference. Equity financings are often used by both investor owned utilities and partnership arrangements to raise a portion of their capital requirements. For the most part, units of

government and special districts use debt financing to raise their needed capital. Since it appears to many that these entities will be the most likely financing vehicles for water projects traditionally financed by the Federal government, we will focus on their source of borrowed capital - debt. Debt financing generally falls into three categories:

1. General Obligation Debt;
2. Revenue Bond Debt; and
3. Hybrids of the two other types of debt

General Obligation Debt

The primary security for a project financed with general obligation debt is the full faith and credit of the issuing entity. This full faith and credit includes their ability to tax as well as charge rates for the output of various projects, including water projects. A general obligation may be of a state, county or city. Historically, this has been the traditional method of financing small municipally-owned water systems. When evaluating the creditworthiness of a general obligation bond, an analyst would look at:

1. Historical growth in population and assessed valuation (tax base);
2. Historical tax levies adjusted for the increase in debt for the future water project and any other projects;
3. Make up of the tax base (size and diversity), including a list of the largest taxpayers, and per capita income of the area; and
4. Review of the historical collection rate as well as delinquency rate.

When a general obligation bond is used to finance a water project, the actual economics of the water project being financed are less of a consideration when determining an issuer's ability to finance the project. It is not as important for a project financed with general obligation bonds to be self supporting since other revenues (taxes) will be available, as opposed to projects financed with revenues bonds (which will be discussed later under Revenue Bond financing).

Advantages Related to a General Obligation Type Financing

General obligation debt bears lower interest rates relative to revenue bond financing for comparable bond ratings. The reason for this relates to the nature of the security, that is, there is a general pledge rather than a specific pledge of

revenues from a project. Investors perceive this general pledge to be stronger. Another consideration is that there is less volatility in the revenue stream supporting general obligation debt. An analyst is better able to forecast taxes than output from a hydroelectric project where the output depends on weather conditions and stream flows as well as the successful operation of the project.

General obligation debt involves lower costs related to the marketing of bonds. Since the project risk is spread among the taxpayers, the marketing or description of security for the debt is relatively easier than for most revenue bonds.

Disadvantages Relating to General Obligation Debt

General obligation debt is voter approved debt. Recently various taxpayer initiatives including California's Proposition 13 and Massachusetts' 2 1/2 have indicated taxpayers' reluctance to increase taxes which a general obligation pledge would require in certain cases. Often it is hard to explain to the general public the risk versus reward of a major water project. A good example where voters elected not to construct a water project is the Peripheral Canal in California.

There are time considerations involved in issuing general obligation debt and often there are various requirements which have to be met in order for the issue to be voted on by the electorate. Certain localities have debt ceilings which could prohibit the issuance of general obligation debt.

It is important to remember that just because a project is financed with general obligation debt does not mean that only taxes will be used to pay principal and interest requirements on the loan although the issuer is always obligated to raise taxes if needed. A good example is the Metropolitan Water District of Southern California. Under State law, as a special district, they are able to issue general obligation debt. Despite the fact that they have issued general obligation debt, they pay for the major part of general obligation debt service from water revenues charged to their customers.

Another type of financing vehicle is the Special Assessment Bond, which is a type of revenue bond whereby revenues are raised by assessing levies against properties by a special government for the value of improvements. Since assessments are not taxes, they are not deductible from Federal tax liabilities and therefore from a user's perspective are often a more costly

method of financing relative to general obligation financing paid through taxes. Special Assessment Bonds are becoming more prevalent due to the various tax limitation initiatives.

Revenue Bonds

Revenue bonds are bonds which are supported by a stream of payments from the output of the project financed with bond proceeds. Over the past few years, a larger percentage of the monies raised for public finance has been raised through the issuance of revenue bonds versus general obligation bonds due to the following factors:

1. An increased use of revenue bonding authority. Such "new" types of project financing include industrial revenue bonds and single family housing bonds. Congress is in the process of attempting to limit the types of projects which may be financed with tax exempt revenue bonds.
2. Various propositions and initiatives which limit the ability of issuers to finance with general obligation bonds.
3. Legal debt ceilings.
4. The basic philosophy becoming increasingly important in the arena of public finance is that self-supporting projects should be self-financing.

There are important differences between revenue bonds and general obligation bonds.

1. Revenue bonds do not require voter approval.
2. The interest rate on revenue bonds tend to be higher than that of general obligation bonds, the reasons being a more limited pledge of revenues as well as various considerations related to specific projects.
3. The investing public will scrutinize the individual projects being financed and will form its own opinions regarding the project's feasibility, that is, the project's ability to cover the cost of operating and maintenance as well as debt service.

In addition, the issuance of revenue bonds generally involves a Feasibility Report by an independent consulting engineer. I stress the bond market's requirement that the consulting engineer be perceived as independent in that investors

need assurance that the project is economical. A summary of the feasibility report will be included in the Official Statement or prospectus related to the financing, and investors and bond rating agencies will examine:

1. The estimated cost of a project. Is the cost reasonable relative to similar projects being financed? How much of the cost is already under contract, if any? How much "cushion" in the terms of reserve and contingency funds is available to cover additional costs not anticipated?
2. Is the technology of the project standard/off the shelf or developmental. How developmental is the project?
3. What financial assumptions are used in the Feasibility Report concerning:
 1. What is the assumed borrowing cost? Is it a market interest rate? Are the assumed interest rates too low relative to existing market conditions? What effect will changes in the interest rate have on the cost of the output? This consideration is extremely important for capital intensive water projects.
 2. What is the estimated cost of service for the project?
 3. What is the historical and forecasted demand for the output of the project?
 4. Is the forecasted demand reasonable based upon the historical experience?
 5. How will changes in price affect demand for the output? A good example of why investors view this as important is what occurred during the 70's for the demand for electric energy. Demand was assumed to be "inelastic" to increase in price yet proved to be "elastic", that is, demand declined as the price increased. There are some questions as to whether or not this would occur for the demand for water in that there is no known alternative which would differentiate it from energy. It is important to remember, though, that as prices increase, conservation becomes more attractive.

6. Will all the output be used by the issuer of the debt or will there be sales of surplus output? Who will be the purchaser? What is their credit rating? What are the terms of the contract providing for the sale of the surplus? Does the obligation commence when bonds are first issued? What is the term of the contract; is it for the life of the bonds? What is the nature of the contract? Is it "take or pay" (payments are due whether or not the project generates output) or is it "take and pay" (payments are made only for output received)? A take or pay contract is the preferred contract from an investor's viewpoint.

Coverage Factor

What agreements are in place for the issuer to generate revenues in excess of operating and maintenance costs and debt service. This coverage factor depends on whether or not the issuer is a wholesale or retail supplier as well as what type of project is being financed. A wholesale supplier tends to have lower coverage factors than a retail supplier. This coverage factor would vary within a range of one times to one and one half times the debt service requirements after operating and maintenance expenses are paid.

Another question relates to how excess monies will be used; will they be used for renewals and replacements, or for reducing future debt requirements? This is an important issue in revenue bond financings.

Revenue bonds generally have reserve fund requirements in contrast to general obligation debt, therefore more bonds will have to be issued to finance the same project. Although investments in this Reserve Fund can be used to offset the interest cost from financing the reserve, there may be requirements to increase rates and charges to make up a deficiency due to a decline in the value of the reserve because of increased interest rates. In addition, revenue bonds may also require additional reserve funds to provide for weather factors. For example, the Metropolitan Water District of Southern California had a \$40 million decline in revenues over slightly more than a year but planned for such an event and had sufficient cash on hand.

Revenue bond financing generally provides a test for the issuance of additional bonds. Sometimes this test involves historical coverage requirements of debt service as well as the

projected debt service for bonds to be issued. Other times, tests are based upon projected revenues generated from the sale of output, estimated by consulting engineers.

Credit Enhancement

It is important to remember that whether or not an issuer uses a general obligation or revenue bond financing approach, certain credit enhancements may be available to reduce the cost of borrowing. You must keep in mind though, that credit enhancement is like medical insurance, the sicker you are, the less likely you are to obtain it. Credit enhancements fall into two major categories: bank arrangements and municipal bond insurance.

Bank Arrangements

1. Letter of Credit

A letter of credit is an unconditional agreement by a bank to pay the principal and sometimes interest of a financing. Obtaining a letter of credit involves payment of an initial fee and an annual assessment for the principal amount of the letter of credit. Domestic commercial banks currently charge up to 1% of the balance of the letter of credit amount per year. Foreign banks, in the interest of being competitive, charge $3/8\%$ to $1/2\%$. When obtaining a letter of credit, the bank rating is extremely important. A bank with a credit rating of less than AA should not be considered whereas those with an AAA rating are preferred. Letter of credit agreements generally do not extend for more than 5 years, and the investors are protected in a bank bankruptcy. These agreements have been used as additional credit support for tax-exempt commercial paper, notes, and adjustable rate financing vehicles.

2. Line of Credit

A line of credit is a liquidity support arrangement involving a commercial bank. The obligation is not unconditional and to the extent a line of credit is drawn upon, there may or may not be an arrangement to fund out the drawdown in the form of a term loan. Due to the nature of the obligation, the cost of a line of credit is less than that of a letter of credit and generally varies from $1/8\%$ to $1/4\%$ of the principal amount. This form of credit enhancement is used by relatively strong credits.

Municipal Bond Insurance

There are two major municipal bond insurance companies: AMBAC and MBIA. Bonds which are guaranteed by AMBAC and MBIA receive a AAA rating from Standard and Poor's Corporation and therefore allow an issuer to benefit from lower interest rates. Moody's Investors Service does not recognize the insurance when assigning a credit rating. The cost is negotiated for each bond insured and involves payment of an initial fee. The obligation of the insurance company would be to pay all principal and interest on insured bonds if the issuer was unable to make such payments. It is important to remember from a business perspective that benefits derived from insurance must exceed the cost, i.e., issuing entities which have a AAA rating would not derive any benefits from this type of insurance. Issuing entities with Baa credit or A credit can usually use insurance to reduce interest cost. The insurance companies will not insure all bond issues in these rating categories and are limited by certain guidelines of principal amounts insured.

There has been a recent entry into the municipal bond insurance arena called FGIC. This company was formed by several investment banking companies to compete with AMBAC and MBIA. Bonds insured by FGIC also carry a AAA rating.

Statewide Financial Intermediaries

Water projects may also be financed through financial intermediaries. The West Virginia Water Development Authority was formed by state legislation to help finance rural sewage and water projects. The state appropriated \$3.25 million to be used as a special reserve for bonds issued. The State would have the option, but is not required to make up any deficiencies in the reserve used to pay debt service. This financing arrangement is known as a "bond bank concept" where several water districts are included in one bond issue and the principal and interest payments are "passed through" to the local districts. The Authority has developed several variations on the program since its first financing in 1978, including provisions for interest rate subsidies.

Other states have been assisting in the development of water projects. Colorado passed legislation for a water and power authority and appropriated \$30 million to assist in developing water projects within the state. Wyoming has currently allocated a portion of a coal excise tax to help finance water projects. Montana and North Dakota have also dedicated a portion of their resource tax for water projects. Federal legislation is being considered which would provide for a water insurance fund to guarantee bonds issued for the development of reclamation water

projects. The bill is being sponsored by Congressman Pashayan. The insurance fund would be initially funded through appropriations from the Reclamation Fund. In addition, legislation providing for local cost sharing for the Hoover Dam unrating provides for an assessment on the cost of power to be used for salinity control.

In conclusion, the basic questions: what is the project?, who is the issuer? and what is the security are much more complicated than might have originally been believed. There are many ways to finance a water project as evidenced by historical precedent. New financing methods will be developed for the future. It is important to determine at an early date the state and local priorities regarding the development of water projects as well as how these needs fit with other demands upon the state resources?

In closing, I would suggest that when considering financing water projects there be early contact with both state and local officials in order to assess what financing vehicles are already in place which may be used to finance water projects. In addition, I would recommend obtaining financial and legal advice early in the development process so that financing structures will best achieve the goals related to water projects in your region.

FINANCIAL VERSUS ECONOMIC ANALYSIS OF PROJECTS:
METHODS AND IMPLICATIONS

Dr. Robert A. Leone
Principal, Putnam, Hayes and Bartlett
Lecturer in Public Policy
John F. Kennedy School of Government, Harvard University

This talk addresses two issues: the differences between financial and economic analyses of water projects; and the role of public non-federal co-sponsors in such projects. Ostensibly, these are two separate issues. In practice, there are important interrelationships between these two topics.

Consider first the issue of economic versus financial analysis. These are not competing perspectives, but complementary perspectives which address two very different questions. Economic analysis asks why we want to build a particular project in the first place; financial analysis asks how we will get it done. (In concept, the more attractive a project is, the more likely it will get done. But this is not always so. Just as it is often easier and cheaper to borrow \$200,000 to buy a new house than it is to borrow \$25,000 to fix up an old one, it is often cheaper and easier to finance large-scale, capital-intensive and otherwise marginal public projects than it is to finance small-scale, less capital-intensive but otherwise highly productive public projects.)

There are three basic areas in which the interests of economic and financial analysts differ: risk, interest rates, and cash flow analysis.

The economist focuses attention on project risk, including the risk of technical failure (such as the collapsing of a dam) and the risk associated with insufficient demand for the output of the project (such as recreational services or water for irrigation). The financial analyst, not surprisingly, focuses attention on financial risk. The financial risk relates to the likelihood that the lender will be repaid the principal and interest on any capital invested.

The difference between project and financial risk is especially important in Federal projects, because the financial risk is often extremely low since lenders have a strong expectation that the Federal government will make good on any debts. Thus, even if a dam collapses and is otherwise of little use to society, investors in that dam are very likely to be paid off.

Economists and financial analysts also differ in their approach to the cost of capital. Economists tend to focus on the social cost of capital, while financial analysts focus on the market cost of capital. The principal difference is that the market cost of capital takes into account issues of taxation, which are viewed largely as wealth transfers to economists, and those aspects of financial risk which may be of little interest to economists.

The key difference between financial and economic analysis, however, typically involves questions of cash flow analysis. From the economist's



standpoint, cash flow is an important input to a net present value calculation, but the economist is usually otherwise indifferent to the actual pattern of cash flows over time. In sharp contrast, the pattern of cash flow itself, as well as the net present value, is basic to an assessment of financial risk, tax costs, reinvestment opportunities, etc. In the financial world, cash flow analysis is the "name of the game." It is the reason why financial analysts as opposed to economists typically worry about questions like leasing versus ownership, the front loading of capital charges, and the problem of financing projects on an historic cost basis.

The second major issue I wish to address involves Federal versus non-Federal involvement in Corps projects. In considering this question, it is important to ask why we have Federal involvement in such projects in the first place. There are four reasons: first, the external benefits from such projects are presumed to be widespread; second, the scale of the projects is typically large, necessitating governmental action; third, Federal financing can lower the risk to investors of participation in such projects; and fourth, public sponsorship offers some obvious political advantages.

Non-Federal involvement is attractive in today's world of limited budgets, but it is important to recognize that such involvement materially narrows the scope of the relevant externalities that can be captured in any project. Indeed, non-Federal involvement requires a more detailed accounting of such externalities in the first place because of the danger that "free riders" -- that is, non-sponsors -- will reap benefits. Such an accounting requirement in large fixed cost investments inevitably entails a somewhat artificial allocation of joint costs and benefits, thereby compounding the politics of such project financing substantially. Indeed, Federal involvement was often rationalized in the first place on the grounds that it would avoid such counterproductive nitpicking among political jurisdictions.

Because of the scale of non-Federal sponsors, non-Federal involvement also encourages smaller projects. In today's environment, I personally find this one of the most attractive characteristics of non-Federal participation in Corps activities.

Non-Federal involvement heightens the importance of cash flow immensely. Because non-Federal sponsors are smaller, they tend to have smaller portfolios of investment projects, and cannot absorb projects with long payback periods. In addition, many state and local sponsors often are financed through revenues closely linked to the projects in question. Such revenue-expenditure links increase the importance of early cash returns to capital projects.

Non-Federal involvement necessarily requires some innovation on the part of the non-Federal sponsors, since this is an unfamiliar form of Federal project sponsorship. When we are dealing with relatively small-scale projects where it is necessary to closely adapt a project to the peculiarities of the circumstances, this can constitute a substantial disincentive to non-Federal participants who feel that they have to incur the high costs of setting precedent for other non-Federal participants, with relatively little benefits themselves.

And finally, I think it is important not to ignore the institutional obstacles to non-Federal involvement. From the non-Federal perspective, the notion of non-Federal entities having to put up money to sponsor what have heretofore been Federal projects rubs the wrong way. This reversal of traditional Federal, state and local fiscal relationships runs the risk of creating a beggar-thy-neighbor attitude among non-Federal participants who seek gains at the expense of other political jurisdictions.

From the Corps' perspective, non-Federal involvement in capital projects represents a significant strategic challenge. Historically, the Corps has had to develop strategic skills to build large-scale projects with long lead times. In such circumstances, centralized decision-making and sophisticated management of Congressional politics combined with systematic decision criteria to create a rather effective bureaucratic and political apparatus for undertaking such projects. If the future involves more non-Federal participation, I expect to see smaller-scale projects with shorter planning horizons and ones in which more flexible "marketing" of political benefits will be required. More ad hoc analysis will be necessary and decentralized political and project decision-making will also be essential.

In conclusion, I think it is important to note that our current interest in non-Federal participation in Federal projects is a response to two realities. The first reality is clearly political: budget deficits are so large that non-Federal participation is essential if anything is going to be done. The second and more important reality is that the very nature of water projects changes dramatically as they rise in cost, decline in scale, and face increasingly high political hurdles. The new economics require projects which are "cut to fit" local economic and political circumstance, have shorter lead times, and require less centralized decisionmaking.

Interest in non-Federal participation in water projects is a real change in the Corps' operating environment and not a passing political fad. The fivefold challenge to the Corps is : Number one, reduce the scale of the projects in which it wishes to engage in order to bring them to a level consistent with the size of non-Federal participants. Number two, shorten the planning and construction time horizons so that such smaller-scale projects can meet the legitimate political, financial and economic needs of non-Federal entities. Number three, reduce the capital intensity of Federal projects in order to address directly the changing importance of cash flow to non-Federal participants. Number four, in program evaluation, articulate clearly both the level and the distribution of economic and non-economic benefits from such projects. (The focus on questions of distribution is a new one.) Number five, become more sophisticated marketers of such projects, because no longer will there be the obvious political attraction of multi-billion dollar large-scale efforts; rather, it will be necessary to sell a large number of relatively small projects to very specific political constituencies.

And finally, the challenge to the Corps is to recognize that the interest in non-Federal participation in water projects is a reflection of economic imperatives and not merely the political imperatives of a conservative President. The economics which call for smaller-scale, shorter lead time projects with more up front cash flow generation are important forces which will outlast this and even the next several Presidential administrations.

PANEL II
WATER PROJECT FINANCING INSTITUTIONS

PREVIOUS PAGE
IS BLANK 5

ORGANIZATIONAL ALTERNATIVES FOR COST RECOVERY AND FINANCING:
POWERS, OPPORTUNITIES, AND LIMITATIONS

Louis F. Weschler

Center for Public Affairs
Arizona State University

INTRODUCTION

Localities have considerable powers, options, and opportunities for development of front end financing of capital projects. There are, however, several restraints upon their capacity to fully use all of their options. Among the most important are: (1) Revenue and expenditure limitations, (2) Unstable and unpredictable local public economies, and (3) Changes in local governance.

In many localities, full use of local powers will require some kind of state level support such as state revolving funds, insurance or guarantees of loans, or grants programs.

Inside of tighter local financial affairs there is a fair amount of experimentation. Among the innovations are: (1) More use of nonproperty tax revenues and user charges, (2) Increased use of third and private sector provision of services to relieve the burden on the local budgets, (3) Shifting of expenditure priorities, and (4) Increased conservation of energy and other resources such as water and land.

Thus, availability of capacity for front end financing of large capital projects is a mixed bag. Localities have a variety of institutional forms and options, but the exercise of options may be rather restrained in different states and localities.

In passing, one should note that it is difficult to make valid generalizations in a federated system with more than 70,000 local governments and 50 state governments. What follows is typical, of all regions, but there is so much variation that one is sure to find exceptions to all of the general statements.

POWERS OF LOCALITIES

The following is a short review of the basic institutional arrangements and powers of local governments in the United States. It is offered as a basic review. Most of the details will cover the range of revenue generating powers of governmental units with which the US Army Corps Engineers is likely to be working in the near future.

Three Forms of Governance

Local governments usually are one of three types: (1) General purpose, such as municipalities, which provide many services to all citizens within their boundaries, (2) Special districts or other authorities, which provide a limited array of services to citizens within their boundaries, and (3) Assessment or user zones, which match to use of a service to the direct payment for it; these are found inside of general purpose and special district governments.

Some Important Differences

General purpose governments have the most powers and the greatest flexibility in generating funds for capital development. They may set up revolving funds, borrow money, sell bonds, enter contracts, and the like. There is the great competition for the use of capital funding. Conflict among the many demands for use of funds, conflicting priorities, service equity issues, and fiscal constraints all make up front financing of projects an unsure, very political issue in general purpose governments such as cities.

Special districts may be very large, as in the case of the Metropolitan Water District of Southern California which provides wholesale water to an area bigger than some states and includes several municipal water systems, irrigation districts, and water authorities. They may also be relatively small, serving an area no longer than a small city or rural community.

Special districts often set up to finance capital projects, but their tax base and taxing powers are usually more limited than those of general purpose governments. Further, their bonding powers are focused on special purposes and sometimes are limited to project bonds which are less attractive in the bond market. They

have been especially hard hit by revenue and expenditure caps and limits of recent times.

Assessment or user zones are time honored devices used to fit the use of and payment for services together. Some common examples are sewer assessment zones, street maintenance zones, and library districts. They usually reflect the fiscal capacities of their mother unit, but often are tied to revolving funds or revenue bonds.

Some critics see assessment zones as "hidden" taxes and ways to maldistribute services. There are equity issues involved in the use of such zones and potential litigation on their use.

General Fiscal Issues in Local Governance

The general property tax has suffered many attacks in recent years, but it still the major source of funds for localities. The high demands placed upon it and recent restraints on increasing tax rates have pushed localities to consider "non-tax" sources of revenues such as fees and user charges.

Although fees such as impact assessments, connection fees, and subdivision fees have increased considerably, contributing perhaps as much as 40% of all "tax" revenues in some localities, many local governments do not fully utilize user charges.

Another issue is the degree to which different revenue systems and expenditure patterns subsidize one population at the expense of another. In the past, local water systems have been used to raise revenues for the general fund and to "subsidize" other services. As energy costs have increased, this has been less the case, but there is still concern over possible spatial inequities involved in the use of assessment zones.

IMPORTANT CHANGES IN LOCAL POWERS AND INCENTIVE SYSTEMS

Although conditions vary considerably from region to region and state to state, local governments generally are facing fiscal hard times. This is a period of major adjustment in the system of federalism and localities are learning once more to do it on their own. Further, there is a general trend toward privatism and market provision things once produced by governments.

Institutional Revenue and Expenditure Caps

The post-Proposition 13 world is grim for many localities. Several states and many local governments have formal, structural limits on the use of general taxes such as the property tax and many limit the level at which expenditures may change from year to year.

This tends to limit the level of funds made available for capital financing. In many areas, the surpluses of the 1950's and 1960's are no longer available. Further, the mood often is to hold down front end capital financing in favor of balancing operating budgets without recourse to tax increases.

Politics of Limits

The past two decades have seen major changes in the way local politics is played. The game has new players, new values, and some new rules.

Different kinds of people--minorities, conservationists, women--have become actively involved in local governments. They are being elected to office and are imposing new values upon resource development issues.

They have been joined by Neo-conservatives who stress fiscal conservatism, local control, decentralization, privatization, and reduction in government efforts. Combined, these actors and their values have considerably altered receptiveness to requests for large scale public expenditures which are resource consumptive.

Local politics is often now the politics of confrontation. The older models of calm, behind the scenes negotiations are more and more being replaced with approaches which produce more open conflict, higher chips, and emotional exchanges. Such issues as social equity, growth control, trade offs among services priorities, and cutback have come to be equal to or more important than their conventional counterparts.

Innovations in Local Finance

Changes in local governance and politics coupled with the alterations in national spending and New Federalism have pushed many localities to their fiscal limits. The local governmental

response has been interesting. This is a period of considerable innovation and experimentation in local finance.

Development Fees

Local governments have been especially innovative in the applications of fees and charges to private development activities. Such charges as connection fees, plan filing fees, and the like are increasing in magnitude and usage throughout the nation. In addition, several localities are using impact fees at the time of initial development to offset upfront infrastructure costs.

The general rationale for these fees are the impose on the developer and the parties of first purchase as many of the social impact cost of development as possible. In addition, localities are being opportunistic in using the fees to replace revenues lost through revenue caps, reduced federal funds, and destabilized local economies.

Some areas are making much higher demands on developers in the form of exactions. The upfront exactions may include gifts of land, payment of fees, exchange of property, off site development, contributions to time and funds to none development projects, and other forms of legal leverage for cost recovery. This has made development of land and associated infrastructure a much more open, bargaining process with heavy imposition of early public costs on the developer.

Joint Venture and Private Market Systems

A few localities are entering true joint ventures with the private developers to share in the upfront costs and in the long term returns on investment. Use of enterprise zones, development areas, etc. have permitted localities to join with the developer in both the capital risks and the returns. Instead of taxes alone, localities are receiving a share of the rent income over time.

Contracting, leasing, and leasing purchase arrangements also are used for capital development by localities. Generally, these trade reduced upfront costs for higher long term costs. The some times avoid issues involved with project bonds and permit capital expansion cost to be creatively financed.

Cutback and Conservation Efforts

Finally, some localities have cutback both capital and operating costs by reducing production of services, cutbacks in personnel, and conservation efforts. The latter is especially important for this seminar: serious conservation efforts often are seen contrary to attempts to develop new projects. Some recent state water reforms have stressed conservation in terms of reduced usage. This will result in some tension with efforts to use local fiscal capacity for upfront costs of new projects

LEARNING TO COPE

There are a few things which can be done to increase the probability that upfront financing will be available as localities cope with an era of fiscal limits.

(1) Localities need increase utilization of user fee and charge systems. This will help produce pools of funds which can be devoted to capital needs. There is, however, a dampening effect: there is price elasticity of demand for water and water related activities. Higher user charges will tend to exhaust effective demand and perhaps level off revenue generation.

(2) Some localities and states need to pay more attention to reduction of demand for water and use of water. Reduction of use, recycling of water, conjunctive management schemes, and peak pricing strategies all can reduce effective demand for water and reduce both average and seasonal use of water.

Savings could be used for financing of really important capital projects. There is, however, going to be rather intense competition for the use of the remaining capital financing capacity.

(3) Localities and states need to engage in serious resetting of priorities. Revenue and fiscal systems are linked; the budget processes need to be interlinked as well.

As this interdependency comes home, political competition at the state level is likely to be strong and no holds barred. Local project sponsors, water system managers and interests all will need assistance in their lobby efforts in the governor's office and state legislature.

(4) Finally, localities will have to give more and more attention to issues of political and spatial equity. Although many of the projects in which the US Army Corps of Engineers may be

partners do not themselves appear to have spatial equity issues in them, this does not mean that the issue will not be raised.

Local governments more and more will be faced with equity issues. As they make capital financial efforts for any good or service, such values as who may participate in the decision, who benefits, who pays, what social costs, and redistribution of income are likely to be part of the upfront costs of decisions. Equity in times of stress and limits is truly difficult.

REFERENCES

American Water Works Association. MANAGING WATER RATES AND FINANCES. 1975.

Baker, Janet, et al. PAYING THE PIPER: NEW WAYS TO PAY FOR PUBLIC INFRASTRUCTURE IN CALIFORNIA. Sacramento, Ca.: Office of Planning and Research, December 1982.

Governor's Blue Ribbon Panel, State of Colorado. PRIVATE CHOICES, PUBLIC STRATEGIES, DEVELOPMENT AND INVESTMENTS, COLORADO, 1981-2001. Denver: State of Colorado, February 1981.

Hagman, Donald G. and Dean J. Misczynski (eds.). WINDFALLS AND WIPEOUTS: LAND VALUE CAPTURE AND COMPENSATION. Washington D.C.: Planners Press, American Planning Association, 1978.

Ingram, Helen M. and David J. Allee. "Equity and Cost Sharing -- A Neglected Opportunity for Improving Water Policy." Cornell Agricultural Economics Staff Paper, No. 76-1, January 1976. Ithaca, NY: Cornell University, Department of Agricultural Economics.

Kirlin, John J. and Anne M. Kirlin. PUBLIC CHOICES -- PRIVATE RESOURCES: FINANCING CAPITAL INFRASTRUCTURE FOR CALIFORNIA'S GROWTH THROUGH PUBLIC-PRIVATE BARGAINING. Sacramento: California Tax Foundation, July 1982.

Leshy, John D. "Special Project Irrigation Districts". Special Issue of the ARIZONA STATE LAW JOURNAL. 1982:2.

McCarty, D. J. Jr. LOCAL GOVERNMENT LAW. St. Paul, Minn.: West Publishing Co., 1975.

Mark W. Mugler. NON-FEDERAL COST RECOVERY AND FINANCING FOR WATER PROJECTS. Research Report 84-R-1. Fort Belvoir, Va.: U.S. Army Corps of Engineers, Engineer Institute for Water Resources, March 1984.

Douglas R. Porter and Ricahrd B. Peiser. FINANCING
INFRASTRUCTURE TO SUPPORT COMMUNITY GROWTH. Washington D. C.: The
Urban Land Institute, 1984.

Savas, E. S. "An Empirical Study of Competition in Municipal
Service Delivery," PUBLIC ADMINISTRATION REVIEW. 37:6
(November/December 1977). 717-724.

THE STATE ROLE IN FINANCING WATER PROJECTS

Presented by
Kenneth I. Rubin
Principal Analyst
Congressional Budget Office

U.S. Army Corps of Engineers Seminar on Water Financing
Fort Belvoir, Virginia

May 16, 1984

THE STATE ROLE IN FINANCING WATER PROJECTS

Over the last 150 years, the federal government has gradually accepted increasing responsibility for financing and paying for the development of the nation's water resources. Federal investments have provided valuable services to a developing nation, including navigation on the inland waterways and coastal ports, irrigation of Western lands, flood control in all major river basins and hydroelectric power and water supply primarily in the West and South. Today, with a more mature national economy, and with most nationally important water projects in place, the need for a strong federal role in new water development is less compelling. The future of water development in this nation depends on striking a balance between moving forward with the most economically efficient water resources investments and relieving the federal government of the principal financial burdens of doing so.

Who then will substitute for a reduced federal role? Prudent investment principals would argue that the states, local units of government, and direct private beneficiaries of water projects must become more involved in project financing and cost sharing. This paper explores the many options open to these entities for capital formation (financing) and cost recovery.

PREVIOUS PAGE 5 
IS BLANK

CURRENT SPENDING

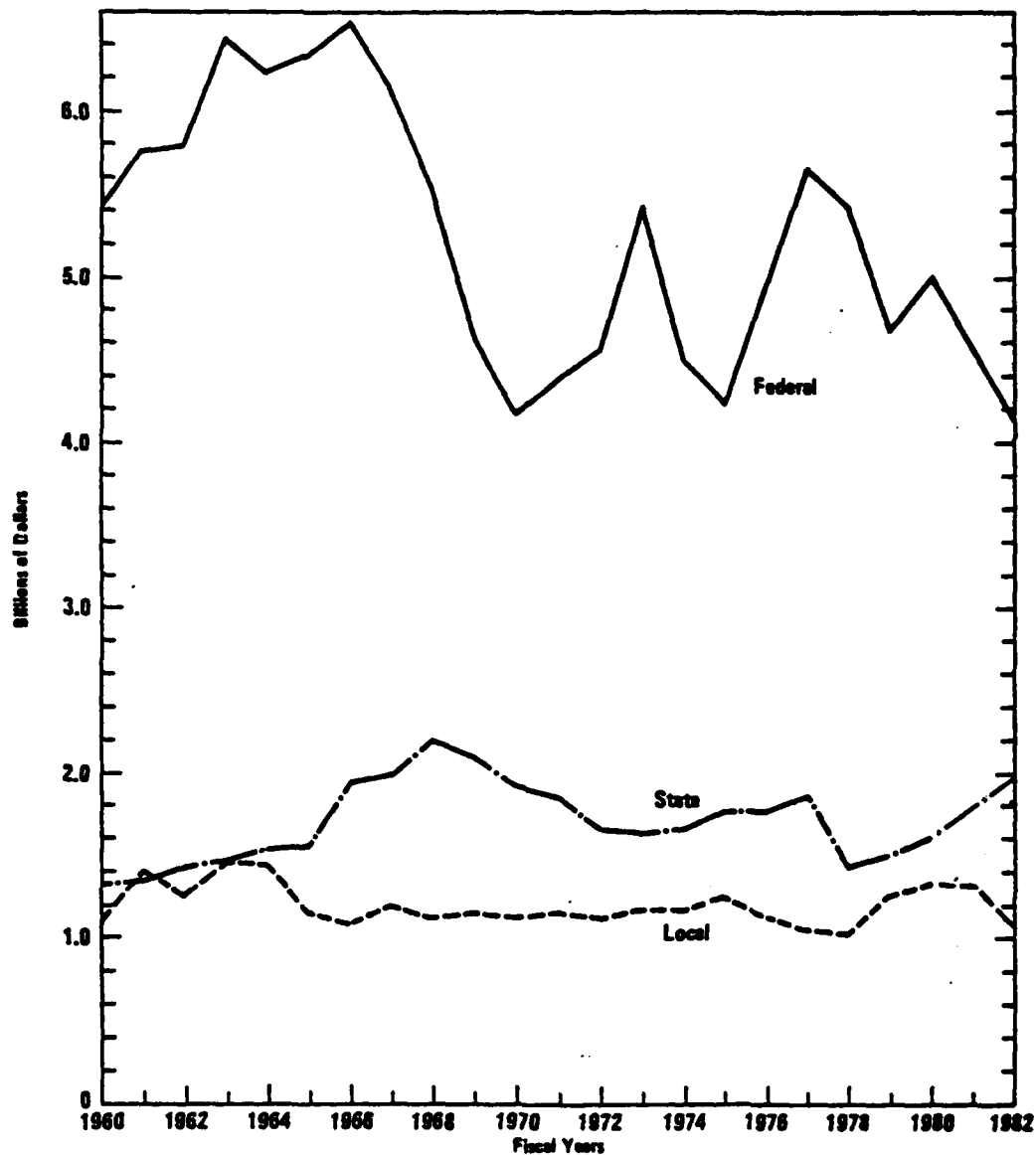
Between 1960 and 1980, annual federal spending on water resources averaged about \$5 billion a year (in 1982 dollars). Over this same period state spending has averaged about \$1.8 billion a year. Since 1978, however, federal spending has declined by some 40 percent while state spending has increased by about 30 percent (see Figure 1).

States secure water development capital from four sources:

- o General Obligation Bonds
- o Revenue Bonds
- o Appropriations from General Revenues, and
- o Dedicated Taxes and User Fees

In 1981-1982, about 49 percent of all state water development capital (some \$1.1 billion) came from the proceeds of general obligation bond issues (see Figure 2). Another 37 percent (or \$850 million) came from the proceeds of revenue bond issues. About 8 percent (\$184 million) was appropriated from the states' general funds and the remaining 6 percent (\$138 million) came from dedicated taxes or retained user fees.

Federal, State, and Local Spending for Water Resources, 1960-1982



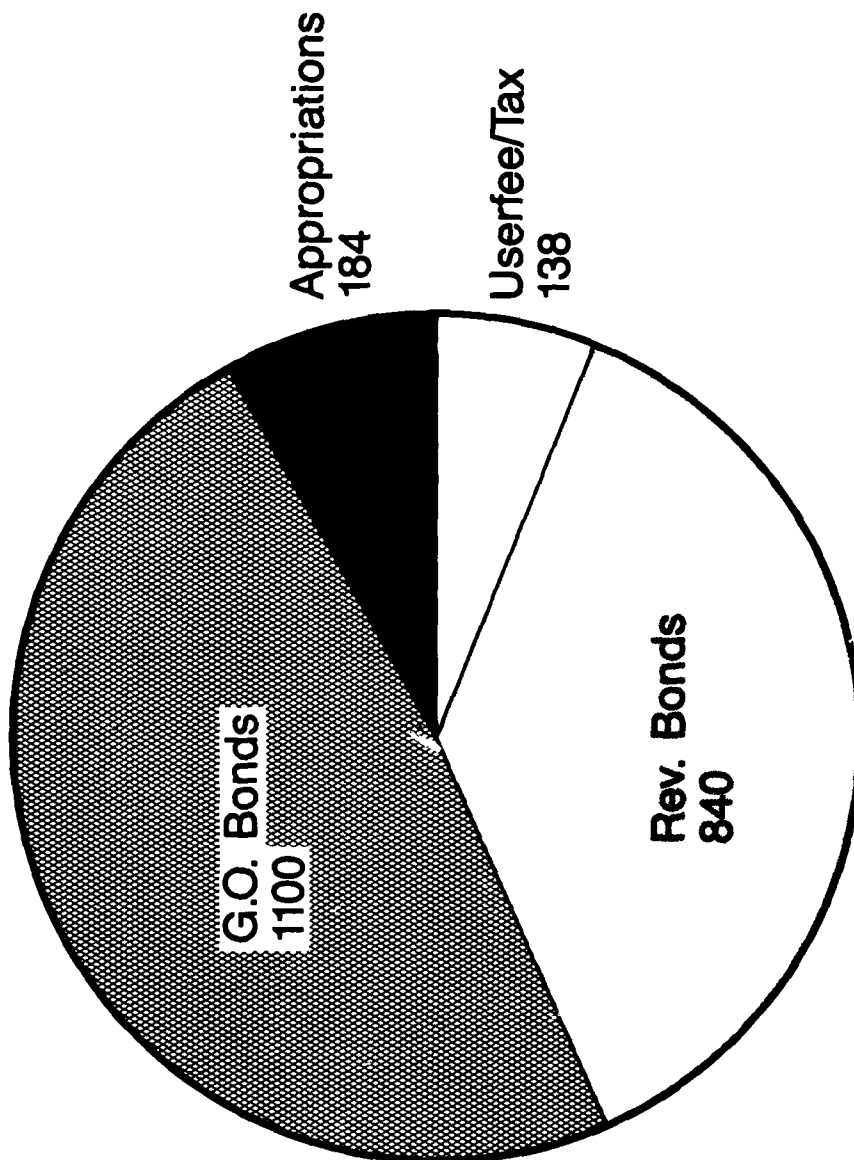
SOURCE: Congressional Budget Office from data supplied by the Congressional Research Service and the U.S. Department of Commerce, Bureau of the Census.

State Funding for Water Resources Projects

(By Source, 1981-1982)

In Millions of Dollars

Sum of Funding Grouped by Source



Source: Congressional Budget Office

These figures probably understate the relative share currently contributed by general obligation and revenue bonds. State bonding activity has increased substantially since the 1981-1982 period. These two years were characterized by unusually high nominal interest rates that peaked in the second quarter of 1982. During this period, many states deferred bond issuance while waiting for rates to drop.

GENERAL OBLIGATION BONDS

General Obligation (GO) bonds are tax-exempt municipal bonds secured by the full faith and credit (taxation powers) of a state. In 1981 and 1982, 23 states issued bonds to help finance water projects. The issuance of GO bonds at the state level is prohibited in 4 states.

Proceeds from general obligation bonds helped finance a broad array of water projects including: water supply, hydroelectric power, port and harbor development, urban and rural flood control, fish and wildlife, shore erosion, and recreation.

REVENUE BONDS

Most states issue GO bonds rather than revenue bonds. Consequently, only 11 states issued revenue bonds in 1981-1982. Revenue bonds are also tax-exempt securities, but they are backed by an anticipated stream of revenues from a particular project. Thus, their application is limited to water projects with marketable benefits such as water supply, hydroelectric power, inland navigation, or port improvements. Some states pledge receipts from unrelated projects (mostly oil, gas, and coal extraction) to back debt intended to fund water resources projects.

APPROPRIATIONS FROM GENERAL REVENUE

In 1981-1982, 36 states funded water development, at least in part, through direct appropriations from general revenues. Most such appropriations were small (averaging about \$5 million each) and were used as seed money for local water projects. States may very well be in a position to increase their appropriation to meet water project needs. The 1981-1982 period was marked by deficits in most state budgets. This held down appropriations of all types. But in 1984, all states combined had a \$10 billion budget surplus (exclusive of funds dedicated to pensions).

DEDICATED TAXES AND USER FEES

Dedicated taxes and revenues are the least important source of state water development capital. In 1981-1982, while 28 states used such revenues to finance water projects, the average state contributed only about \$5 million. Examples of special taxes and fees include millage taxes on real estate values dedicated to water supply development, sales taxes dedicated to all types of water projects, mineral extraction taxes dedicated to fisheries, gasoline taxes dedicated to recreation facilities, cigarette taxes dedicated to flood control, horse racing revenues dedicated to water supply development, and water supply user fees dedicated to reservoir operation and maintenance.

FINANCING VERSUS COST SHARING

Financing is concerned with capital formation to build a water project. Cost-sharing policy sets the terms of repayment with which each partner must comply over the project life. By combining financing and cost sharing mechanisms suited to the type of water project, states (or local jurisdictions) can become more involved in water resources development without adversely affecting state budgets or state bond ratings. These two concepts--financing and cost sharing--are often confused by policy makers,

but rarely confused by finance officers. Two examples drawn from the water resources field will demonstrate several key concepts.

User fees are most appropriate for recovering the costs of water projects that yield marketable products. As such, the combination of a state revenue bond to raise development capital and a proper user fee schedule to repay the bond's interest over time and retire its principal at maturity is ideally suited to such water projects as: municipal water supply, hydropower, irrigation, port improvements, and recreation. If managed properly, a portion of each year's (or quarter's) fees will pay the coupon yields to investors while the remainder will be set aside, perhaps in a sinking fund, to repay investor's principal when the bond matures. Under such an arrangement, no state funds would have to be appropriated and the state could build a credit history in the bond market.

Alternatively, limited tax bonds backed by special tax assessments against beneficiaries may be more appropriate financing mechanisms for projects with public goods benefits. For example, a municipality could issue such a bond to help finance a local flood control project, pledging as security, the revenues from a property tax surcharge to be collected from land-owners who receive flood protection. Such a tax would have to be sanctioned by those receiving benefits so only worthwhile projects would go

forward. In addition, if properly managed, the municipality would put no capital at risk and build a good credit history.

Under both arrangements, only users who benefit from a water project would pay for the investment made on their behalf by a state or local government entity. Users or taxpayers would pay in proportion to their use or receipt of benefits. In addition, they would pay equally over time, putting future users and current users on an equal footing.

MANAGING WATER PROJECT CAPITAL

Timely and adequate financing as well as efficient and equitable cost-sharing depend in part on how capital is managed. Ordinarily, a responsible government entity will manage funds collectively for the beneficiaries of water projects. Two examples of capital management by state government include revolving funds and bond banks.

Revolving Funds

Revolving or special funds earmarked for state water development were active in 27 states over the 1981-1982 period. These funds are

capitalized principally from the four sources mentioned previously. A fund is revolving if repayments to the fund from users accumulate for redistribution at a later time. Most funds were single-purpose funds coupled to grant and loan programs for small flood control, recreation, or soil and water conservation projects. Six states (Colorado, Massachusetts, Montana, Nebraska, Oklahoma, and Utah) maintained revolving funds to finance a full array of water development projects. Matching requirements, interest rates on loans, and payback periods varied considerably from state to state.

Bond Banks

To reduce the cost of capital to localities, some states purchase local bonds, repackage them, and issue a larger bond at the state level, taking advantage of a more favorable state credit rating. This is a common practice in Alaska, Maine, New Hampshire, Nevada, North Dakota, and Vermont. In the aggregate, these six state bond banks represent over 700 local issuers with about \$656 million in outstanding debt.

RECENT DEVELOPMENTS IN STATE BONDING FOR PUBLIC WATER SUPPLY^{1/}

It has already been shown that states are active in financing almost all types of water projects. This section will focus on the state role in raising water supply capital through the tax-exempt bond market.

Between 1977 and 1983, some 2,323 tax-exempt water supply bonds were issued bearing a total face value of about \$16 billion (1983 dollars). Of that total, states were responsible for issuing 61 bonds (less than 3 percent) raising some \$1.9 billion (12 percent of the total capital raised by all types of issuers). However, only 14 states were active over this 7-year period (see Table 1).

Funds collected from state bond issues are used in three ways. First, some states practice bond banking, a concept discussed previously. Second, at least California issues bonds to help finance a state owned and operated water project. Finally, the majority of states that issue water supply bonds do so for redistribution to localities as grants or loans. In New Jersey, for

-
1. Much of this material comes from an upcoming Congressional Budget Office study, State and Local Use of the Tax-Exempt Bond Market For Water Supply, 1977-1983.

TABLE 1. WATER SUPPLY BONDS ISSUED BY STATES, 1977-1983 (Total dollar volume in millions of 1983 dollars)

State	1977	1978	1979	1980	1981	1982	1983	1977-1983
California	204.1	110.3	a/	80.6	57.0	107.0	115.0	674.0
Massachusetts	4.7	19.1	a/	a/	a/	a/	a/	23.8
Montana	a/	a/	a/	a/	a/	a/	1.3	1.3
N. Carolina	47.1	22.8	a/	a/	51.3	a/	90.0	211.2
New Jersey	78.5	a/	63.5	a/	34.2	11.8	a/	187.9
Nevada	20.4	a/	27.0	a/	a/	3.2	6.0	56.6
New York	188.4	30.9	a/	a/	5.5	36.8	9.6	271.1
Ohio	3.3	87.5	4.2	a/	a/	a/	2.3	97.2
Oregon	a/	a/	14.5	5.3	4.3	18.5	a/	42.7
Pennsylvania	a/	a/	a/	a/	a/	a/	18.0	18.0
Texas	78.5	36.8	a/	a/	a/	a/	50.0	165.3
Utah	a/	36.8	a/	13.6	a/	15.0	a/	65.4
Washington	50.2	14.7	13.5	12.4	a/	8.1	a/	99.0
Wyoming	a/	a/	2.8	a/	a/	a/	a/	2.8
TOTAL	675.3	358.7	125.4	112.0	152.3	200.3	292.2	1,916.1

SOURCE: Congressional Budget Office.

a. No bonds issued.

AD-A149 495

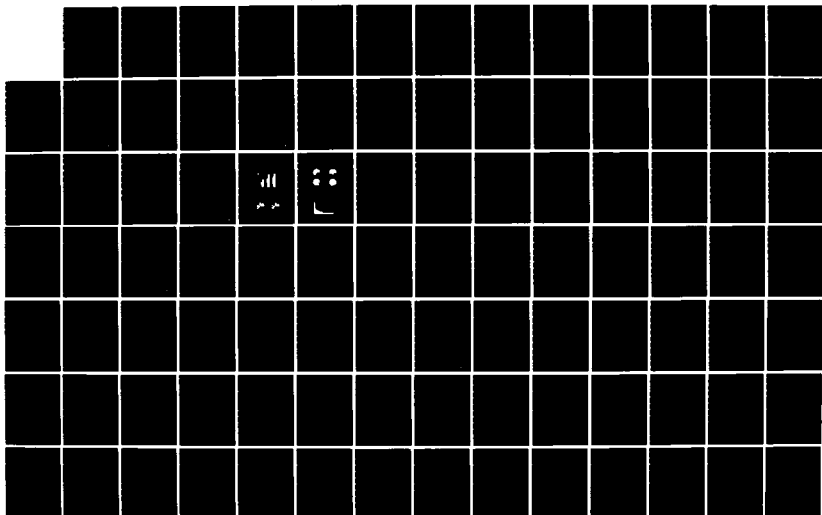
PROCEEDINGS US ARMY CORPS OF ENGINEERS SEMINAR ON WATER
PROJECT FINANCING. (U) ARMY ENGINEER INST FOR WATER
RESOURCES FORT BELVOIR VA M W MUGLER ET AL. OCT 84
IMR-84-PS-5

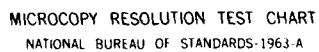
2/4

UNCLASSIFIED

F/G 5/1

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

example, five water supply bond issues have raised some \$188 million in water supply capital since 1977, providing grants or low-cost loans to localities that would otherwise have had to seek higher cost capital on their own. Similarly, Texas periodically issues bonds to capitalize the state Water Development Assistance Fund. This fund makes loans to localities to assist local water supply development.

State bonds generally receive better investment ratings and pay a lower rate of interest than bonds issued by any other type of issuer. This is because states usually issue general obligation bonds that as a group are considered a lower risk than either revenue bonds or limited tax bonds. Municipalities and special districts, on the other hand, rely more heavily on revenue bonds to raise water supply capital.

For example, between 1977 and 1983, GO bonds accounted for 79 percent of all bonds issued by states but just 57 percent of municipalities' bonds. Every state bond carried a Moody's rating of A or better while only 81 percent of municipalities' bonds carried such a rating. In addition, half of all capital raised by states carried an Aaa rating--Moody's highest. By comparison, only 5 percent of all capital raised by municipalities carried an Aaa rating.

Investment ratings affect interest rates payable on tax-exempt bonds. ^{2/} Since 1981, A-rated water supply bonds issued by states have paid the lowest interest--from 10 to 30 basis points (100 basis points equals one percentage point) less than the next lowest issuer, towns (see Table 2). In 1983, for example, state bonds paid an average of 8.11 percent while municipalities' bonds paid an average of 8.27 percent. Special districts paid an average of 9.67 percent.

CONCLUSIONS

Significant opportunities exist to improve the efficiency of water resources investments and help reduce the federal deficit. However, states and local jurisdictions must take a greater role in financing water projects. Similarly, users must take a greater role in paying for the benefits they receive.

-
2. Other factors also affect interest rates. A range of interest rates is supplied exogenously to the tax-exempt market as dictated by federal fiscal and monetary policies as well as international events. Within this range, however, a wide array of factors affect rates including: investment ratings, supply of tax-exempt securities, type of offering, years to maturity, and region of issue. For details, see Lennox L. Moak, Municipal Bonds Planning, Sale, and Administration, Municipal Finance Officers Association (1982).

TABLE 2. AVERAGE INTEREST RATE ON A-RATED LONG TERM WATER SUPPLY BONDS BY TYPE OF ISSUER BY YEAR,
1977-1983

Year	State	County	Municipality	Town	Special District	State Utility Authority	Local Utility Authority	Other State Authority	Other Local Authority	Average All Types
1977	5.85	4.62	5.30	5.01	5.44	a/	a/	a/	5.46	5.31
1978	6.26	6.51	5.70	5.13	5.73	a/	6.26	a/	5.80	5.79
1979	a/	5.78	6.12	6.10	7.14	a/	6.59	8.25	5.96	6.27
1980	a/	7.32	7.81	a/	7.97	a/	8.64	8.08	8.93	7.97
1981	9.53	11.76	10.72	9.86	11.53	a/	9.98	a/	a/	10.71
1982	9.80	10.55	10.15	9.87	11.42	12.23	11.53	a/	a/	10.36
1983	8.11	8.97	8.72	8.27	9.67	9.03	9.34	a/	9.26	8.72

SOURCE: Congressional Budget Office from Public Securities Association data.

a. No bonds issued.

Many states have already accepted such a role with the result that states in the aggregate are now spending more on water resources than ever before. Four sources of development capital have been widely tapped by the states: appropriations from general revenues, general obligation bonding, revenue bonding, and dedicated taxes or user fees. In addition, states are becoming more sophisticated in their management of water development capital with revolving funds, loan and grant programs, and bonding assistance.

Finally, the tax-exempt credit markets appear to favor states as issuers of long-term debt to finance water projects. This implies that states could take an even more active role in intrastate water project financing. At the very least, states appear to be in an excellent position to reduce the local cost of capital through bond banking or to supplement locally raised development capital through state loan and grant programs.

LEGAL AND INSTITUTIONAL ISSUES AFFECTING THE JOINT FEDERAL
AND NON-FEDERAL FINANCING OF WATER RESOURCES PROJECTS

Earl H. Stockdale
Office of Chief Counsel
Office of the Chief of Engineers

I. INTRODUCTION

Thank you Mr. Steinberg. Its a pleasure to be here today. As the Assistant Counsel for General Law, I have been asked before to address large groups of attorneys, but until today have never had the opportunity to speak to such a large and, I might add, impressive gathering of professionals outside the legal community. I truly appreciate being given the chance to speak to you today and to participate in this very important seminar.

The sponsors of this conference have asked me to talk about legal and institutional issues which impact on the joint Federal and non-Federal financing of water resource projects. That's a considerable topic to cover in 30 minutes and I agonized for hours in preparation of this talk trying to figure out how to approach the subject. After much frustration, I turned to the questionnaires that were sent to you on this conference to see what topics were of interest to you. To the extent I could discern a recurrent theme, it was a desire on your part to learn more about the Assistant Secretary's program of revised cost sharing and the issues that have been raised in connection with efforts to implement that program. Since this dovetails nicely with my prior involvement in the new construction starts program and my efforts to develop financing agreements for the projects included in the FY 1983 new starts program, as well as with my work in the legislative arena providing comments on legislation pending before the Congress on cost sharing, I feel uniquely qualified to address these matters.

I intend to discuss three major topics with you today. I will first discuss the Asst. Secretary of the Army's program of revised cost sharing and the problems the Corps has encountered and is likely to encounter in its interface with the Congress, with other Federal agencies and with non-Federal interests on cost sharing issues. These are controversial subjects and the thoughts I express on them are my own. My intent will be to point out the need for clear direction on cost sharing issues and to touch on problems which are likely to develop if such clear direction is not provided by the Congress and the Administration. Next, I will discuss the issues and problems that the Corps has encountered at

hydropower projects where project sponsors have agreed to provide funds for hydropower construction, but expect to receive from the Corps as quid pro quo for the agreement on funding, a guarantee on the receipt of power. To the extent that time allows, I will conclude my remarks by providing an overview of the financing agreements that were prepared for the projects included in the FY 1983 new construction starts program and by describing briefly some of the more interesting issues and problems that were resolved in connection with the formulation of these agreements.

I'd like to begin my remarks by emphasizing what I hope is the obvious--the legal and institutional issues that I'll be discussing today are legal and institutional issues which impact on enhanced cost sharing by non-federal interests.

Define enhanced cost sharing and emphasize distinction between minimum cost sharing requirements and financial participation in projects over and above such cost sharing minimums.

A. Minimum non-federal requirements are cost sharing requirements set forth in individual project authorizations or in generic law, which address the cost sharing terms on which various project purposes are to be included in authorized projects--examples include, in addition to specific project authorizations, the Water Supply Act of 1958, the Federal Project Recreation Act and the Flood Control Act of 1936, etc.

B. Enhanced cost sharing means cost sharing in projects over and above the statutory minimums described above. For purposes of this discussion:

1) the term includes all amounts above the statutory minimums - whether required legislatively or administratively (without legislation)

2) it also includes, in addition to strict cost sharing percentages, all financing terms.

II. Disagreement over cost sharing; the Assistant Secretary's program of enhanced cost sharing, where we've been, where we're going and the potential for problems.

A. As you know, there has been some agreement on the need for changes in cost sharing; however, this agreement has been coupled with almost universal

disagreement on how cost sharing should be changed.

This disagreement over cost sharing has intensified of late and has precluded efficient development of our water resources. It has been a complicating factor in obtaining funds for new construction in the case of authorized projects and a principal factor in precluding enactment of omnibus authorizing legislation, which would authorize construction of new and additional projects.

B. In an effort to break the impasse that has existed with respect to new construction at authorized projects and to prompt the Congress to deal with cost sharing issues with respect to new and as yet unauthorized projects, the former Assistant Secretary of the Army for Civil Works (ASA) has endeavored to implement an administrative program (without legislation) of enhanced cost sharing. Generally, efforts have been focused on enhanced cost sharing for authorized projects. Most of you should be familiar with the ASA's program of up-front financing.

1. Touch on percentages and desires of ASA for up-front financing (35% for flood control, etc., and funds during term of construction).

2. Program is founded on statutory authorities which authorize the ASA to accept and expend voluntary contributions of funds provided by non-federal interests for authorized project construction. Object of relying on these authorities was, of course, to precipitate changes and to resolve issues with respect to cost sharing.

3. The authorities were considered well suited to this end: (a) they would obviate the need for legislation to change cost sharing for authorized projects; (b) would afford Congress and non-Federal interests with an opportunity to get comfortable with the concept of additional non-Federal participation in

authorized projects; and (c) would prove a point--that where good projects are proposed for construction, project sponsors will pay a greater share of project costs.

C. While it was recognized that there would be no legal requirement for additional authorizing legislation in connection with the ASA's program of enhanced cost sharing as it applied to authorized projects, it also was recognized that there would be a need to coordinate closely with the Congress during the appropriation process to obtain funds for construction of these projects. In this regard, the ASA was a leading spokesman for the Administration on the issue of enhanced cost sharing. He testified at length about his cost sharing percentages and desires for up-front financing and worked diligently to obtain Congressional approval for the program. Accomplishments in this area were significant: (1) commitments were obtained for additional financing for projects from a number of project sponsors; and (2) actual financing agreements were formulated and negotiated for several of the projects--discuss this later.

D. D/A efforts to administratively implement a program of revised cost sharing came to a virtual halt in 1983. In specific legislative provisions found in the Continuing Resolution for FY 1983 (P.L. 97-377) and in Committee Report Language accompanying other appropriation bills since that time, the Congress made it clear that the Corps was not to move forward with implementation of the ASA's program of revised cost sharing until such time as the Congress dealt comprehensively with the subject of cost sharing. (So that there will be no misunderstanding on this point, I'm not blaming the Congress for the delay in new construction. As stated, it was the intent of the ASA to involve the Congress in the program of revised cost sharing and to prompt it to deal with cost sharing issues.)

E. True to its word, the Congress is now considering a number of legislative proposals which deal with cost sharing for various projects. The bills include: (1) two omnibus acts which deal with cost sharing for water projects in general; (2) a

new starts bill which addresses new construction starts alone: and (3) additional legislation which addresses cost sharing for inland and deep-draft navigation projects. I'm not here to comment on the merits or demerits of this legislation or to predict the chances of enactment. What compromises will be struck in this area, and how enacted law will dovetail with recent Administration pronouncements on cost sharing in President Reagan's letter to Senator Laxalt is anybody's guess (explain Laxalt letter and emphasis on cost sharing based on the particular project sponsors ability to pay). However, I see potential for significant issues to develop, if: (1) Congress does not enact legislation which addresses cost sharing; or (2) if Congress enacts legislation, but the legislation does not deal comprehensively with the subject and water resource agencies are left to pursue their own initiatives in the area, without either clear direction from the Congress or the Administration.

F. Describe illustrative problems and explain how such problems could impact on Federal and non-Federal interests; i.e. those in the audience who may be either: (1) asking non-Federal interests to additionally cost share in projects; or (2) being asked by a Federal interest to additionally cost share in a project. In a sense, anything related to cost sharing that is left unaddressed either in law or in well defined Administration policy at this juncture, generates the potential for problems. [This includes how Federal projects are to be funded (One time Federal appropriation vs. multiple appropriations during construction), actual cost sharing percentages and precise payment or repayment terms and conditions.]

(1) As mentioned, the ASA's program of revised cost sharing generally has been directed at effecting changes in cost sharing for authorized projects. There is a considerable block of legislative history which now exists and which indicates that the Congress does not want the Federal agencies to administratively impose additional cost sharing

requirements on non-federal interests at authorized projects. To the extent that any law does not precisely define the cost sharing terms on which a previously authorized project is to be constructed, it may be reasonable to expect arguments that no change in cost sharing was intended.

(2) In the area of agency interface, there is potential for problems if cost sharing terms and percentages are not clearly defined and the roles of the water resource development agencies are left unspecified.

(a) Potential for competition among the agencies for development of desirable sites, particularly in view of the Laxalt letter. Could start at the planning stage, prior to authorization.

(b) Problem especially acute where agency authorities overlap, as in the case of the Corps and the DOI for M&I water under the Water Supply Act of 1958.

(3) Even timing could be an issue and could make for problems, especially if Congress fails to enact comprehensive legislation and acts on a piecemeal basis. The expectation of legislation for a particular kind of project could impact on efforts to obtain additional non-Federal funds for projects. Project sponsors might reasonably wish to postpone discussions with a Federal agency on any voluntary contributions of funds that might be provided until Congress enacts legislation on the subject.

(4) Additionally, there is potential for controversy over exercise of available authorities which provide for the acceptance and expenditure of voluntary contributions of funds. The Corps has deferred exercising these authorities out of deference to the Congress, but

pressures may mount to move forward administratively, especially if legislation is not reasonably forthcoming. This could engender controversy between the Corps and the Congress over use of these authorities.

(5) I raise these issues not to alarm you, but to point out the need that has arisen for clear direction on cost sharing matters because of administrative and legislative efforts that have been directed at changing cost sharing for water projects. In a sense, this is an overriding legal and institutional issue, and it appears, at least from my personal point of view, that this is one time where it will be very important to have the Administration and the Congress understand and agree on what's been said and left unsaid on cost sharing. A variety of interests have expressed views on the subject of cost sharing. Those views have not always been in agreement and to the extent exact cost sharing terms and conditions are not clearly addressed issues will develop.

II. Discussion of hydropower issues.

A. Under existing law, the Corps cannot provide surplus power directly to project sponsors that have contributed funds for construction of hydropower facilities. Surplus power (i.e., power not required for operation of the project) is delivered to the various power marketing agencies of DOE for marketing to preference customers in accordance with principles of Section 5 of the Flood Control Act of 1944. This lack of authority to market power directly does not, however, preclude the Corps from consummating agreements with non-Federal interests so that power can be provided to project sponsors in recognition of the contributions that have been made, so long as the power marketing agencies are appropriately involved. While express legislation on the subject would be helpful, it is the Corps' view that there is sufficient flexibility in the existing legal/institutional structure so that: (1) non-Federal funds can be accepted and spent on hydropower construction and (2) that power can be delivered to the funding non-Federal interest. The only requirement is that the non-Federal interest, the Corps and the affected power market agency be involved through appropriate agreements.

B. While as a general matter, the Corps and the DOE seem to agree in principle on the above, we have had limited success in

resolving details of implementation. A number of issues have arisen centering on the preference clause in Section 5, and questions have been raised as to who and how potential project sponsors should be given notice of proposed developments (publication in the Federal Register and by whom, etc. discuss Bradley Lake and Strube Cougar developments). Also, some problems may be attributable to the different statutory responsibilities of the power marketing agencies and to the different management theories of the various Regional Administrators (mention BPA as an example).

C. The difficulties we have had in finalizing agreements between the power marketing agencies and those who propose to contribute funds for construction of projects could be a significant road-block to effective changes in the area of cost sharing for hydropower projects to the extent these problems are not resolved, either administratively or through legislation. Project sponsors will continue to expect reasonably a guarantee on either receipt of power from the Federal project or receipt of an equivalent yield of power from the Federal power marketing system. In cases where project sponsors expect to raise revenues through the sale of bonds, this desire for a commitment on the receipt of power may be an absolute requirement.

III. Project financing agreements and pertinent issues.

A. As mentioned, I played a major role in formulating the draft cost sharing agreements that were prepared for the projects included in the ASA's 1983 new construction starts program. To the extent that time allows, I want to touch briefly on some of the issues that were considered in formulating those agreements.

B. Contract format. Remember, we were (1) working without express authorizing language and (2) attempting to implement a program of cost sharing that was based on voluntary contributions of funds (i.e. no legislation expressly recognizing the ASA's program). The first problem was to agree on a format and approach for the agreements. In effect, we were trying to draft an agreement that would bind a project sponsor to provide a gift. For a lawyer that posed a number of interesting problems. (Discuss credits given for required local cooperation specified in project documents and relationship of Section 221 of P.L. 91-611.)

C. Host of funding issues. Presumption was that federal funds would be made available through yearly appropriations, and not through a one time lump sum appropriation. Non-Federal funds

were to be made available to the Government in advance of obligations to insure their availability and to avoid Anti-Deficiency Act problems. (Anti-Deficiency Act prohibits obligations or expenditures in advance of appropriations.) Had to devise a credit and notice scheme that recognized the reality of the cycle of non-Federal appropriations and was flexible enough to allow for differences in Federal and non-Federal fiscal years. Statutory and constitutional provisions also had to be considered and had a bearing on a project sponsor's ability to additionally participate in projects. At one project, a project sponsor was only statutorily empowered to provide lands, easements, rights-of-way, and utility alterations and relocations required in the project document, and additional authorizing legislation was necessary to allow the project sponsor to additionally participate in the project. Also, states can have constitutional prohibitions against binding future legislatures. This too was and is a consideration.

D. Our experience was that project sponsors expected a greater say in project development in return for their agreement to additionally participate in project construction. To an extent this is reasonable and proposed agreements did provide for coordination with project sponsors on construction scheduling, etc. However, it was determined that to undertake the projects as anything other than federal projects in accordance with federal regulations and policies applicable to such projects or to provide or confer a special attribute of project development (such as ownership) on a non-Federal interest, additional legislation would be required.

IV. Conclusion.

I have covered a number of subjects today and have touched lightly on a variety of issues. I would be happy to answer any questions that you may have.

QUESTIONS AND ANSWERS

WATER PROJECT FINANCING INSTITUTIONS

MOD: I think that Corps of Engineers projects are not as subject to the social equity issue as Dr. Weschler described. If you look at the landmark cases such as Hawkins vs. the Town of Shaw, we don't have that kind of an issue. It's different when you have one side of the town without fire hydrants, without paved roads, or without street lights, and the other side of town with them. But if a community doesn't have flood control, neither the rich nor the poor have flood control. Once you provide a levee or flood walls, both the rich and the poor have them.

CMT: We are in courts on an equity problem: environmental suits claiming inadequate study or inadequate mitigation.

MOD: We know about the environmental issues, but Dr. Weschler was talking about issues such as one segment of the population having better education than another segment.

On the issue of state financing, I am surprised that despite the significant cutbacks in revenue sharing, the states seem to have large surpluses. Could Mr. Rubin explain where the states are getting all the money? Are they just cutting back on their expenditures?

Mr. Rubin: It's a combination of cutting back on expenditures, cutting back the payrolls of workers, and increasing certain taxes, but mostly it's tax increases. The tax revenues have increased incredibly at the state and local levels in the past few years, and that causes surpluses. You have to be careful when you cite these numbers because not every state has a small section of that \$10 billion surplus. At present about half the states have a surplus and the other half don't.

Q: I agree wholeheartedly with Dr. Weschler about the power of the local community, particularly in New England, where local governments are much stronger and better organized than the state governments. I'd like to ask Mr. Stockdale how we can cost share with sponsors if we don't have the authority to deal with a sponsor because we've never determined its credentials and ability to cost share. Are we going to be precluded from cost sharing even if the Congress does act fairly on cost sharing? Will the sponsors need to have additional legislation?

Mr. Stockdale: No. What I was trying to get at is that the Department of the Army has been trying to implement on its own the administrative program of cost sharing, working with local interests. We have in fact had great success in moving toward implementation of that program. We have authority to implement that program under existing law: as I said, we are authorized to accept contributions of funds. We found in our dealings with potential project sponsors that they have been able to meet our needs with respect to participation in the project, with the exception of the unique problems which

PREVIOUS PAGE
IS BLANK

I've talked about in the hydropower area. What I'm suggesting is that while we were going forward with that effort, Congress temporarily put us on hold, saying that it wants to deal with cost sharing comprehensively as it affects authorized projects, projects yet to be authorized, etc. Also, we hope that Congress will deal with our administrative efforts that implement cost sharing so that if anything is not addressed specifically in legislation, and we're given freedom to continue the administrative program for voluntary participation, we're not left with this morass of unresolved issues or questions which have been generated to date by Congress' treatment of the administrative program.

PANEL III

FINANCIAL FEASIBILITY OF WATER PROJECTS

**ASSESSING THE FINANCIAL CAPABILITY OF A
PROSPECTIVE SPONSOR OF WATER PROJECTS**

J.D. Foust

Deputy State Treasurer and Secretary of the Local Government Commission

The State Treasurer is responsible for issuing debt for the State and all North Carolina units of local government. State debt must be authorized by the General Assembly and local government debt has to be approved by the Local Government Commission -- general obligation debt must also have voter approval.

The State of North Carolina is rated Triple A by both Moody's and Standard and Poors and is required, by the Constitution, to operate on a balanced budget. Because of that, there is no problem with market access. The State's bonds are in great demand and always sell at very favorable rates. The last State bond sale was for \$90,000,000 Clean Water Bonds on April 26, 1983. The Bond Buyer Index (BBI) on that date was 9.09%. The North Carolina bonds sold by sealed bid for 7.86% which was 123 basis points below the index, a saving of 13.5% over the life of the bonds. During the past eight years we have not sold any general obligation bonds for the State or a local unit that did not sell below the BBI.

Any North Carolina city, county, sanitary district, metropolitan water district or water authority that wishes to issue debt can do so only after approval by the Local Government Commission. All of these except the water authority have statutory authority to issue general obligation bonds and we always begin by exploring general obligation financing since that is the least expensive method for a governmental unit to borrow money. Having the full faith and credit behind the bonds does not mean that the debt will necessarily be paid with tax funds. Revenue producing projects such as water facilities are expected to be operated as an enterprise and should be

fully self-sustaining, covering debt service as well as operation and maintenance.

As we analyze the feasibility of a project, we look at the need or demand for the proposed service. For an existing water system -- how many customers are there? What is the anticipated growth? What effect will the project have on the existing system? What are the expenses of operation and maintenance? What are the current charges? How will the charges and expenses change with the new project? Will monthly costs be within a range the people can afford and will pay? For a new project the questions are essentially the same except there may not be a proven customer base, only a projected one. One must ask how have the people received water in the past? Why is the new system needed? What assurance is there that the new service will be used sufficiently to provide the needed revenues? Is there a better alternative? One must also consider how debt service cost will impact the project. Ten years ago debt service would average 30% of the system costs. With record high interest rates, we have seen debt service costs run as high as 50%.

We must determine if the Local Government Commission has the ability to market the proposed bonds at reasonable interest rates. The State's General Statute (G.S. 159-34) requires that "each unit of local government and public authority shall have its accounts audited as soon as possible after the close of each fiscal year by a certified public accountant. As a minimum, the required report shall include the financial statements prepared in accordance with generally accepted accounting principles. The audit also shall be performed in conformity with general accepted auditing standards.

Prior to the audit, the audit contact must be approved by the Secretary of the Local Government Commission. The finance officer shall file a copy of the audit report with the secretary for his approval. It shall be unlawful for any unit of local government or public authority to pay or permit the payment of such bills or claims without this approval."

Each unit's audit is carefully reviewed to determine financial weakness and letters are written to elected officials with suggestions for strengthening areas where weakness appears. Often the letter is followed by a visit by one of our staff accountants. Our work in fiscal management is continuous. The audits are kept for five years and we have a complete financial file on each unit which includes a record of their debt.

The things that we consider as we assess a unit's ability to issue new debt include:

1. The nature and amount of outstanding debt of the issuing unit.
2. The unit's debt management procedure and policies.
3. The unit's tax and special assessment collection record.
4. The unit's compliance with the Local Government Budget and Fiscal Control Act.
5. Whether the unit is in default in any of its debt service obligations.
6. The unit's present tax rates, and the increase in tax rate, if any, necessary to service the proposed debt.
7. The unit's appraised and assessed value of property subject to taxation and date of the last appraisal.

8. The ability of the unit to sustain any additional taxes necessary to service the debt.
9. The ability of the Commission to market the proposed bonds at reasonable interest rates.
10. If the proposed issue is for a utility or public service enterprise, the probable net revenues of the project to be financed and the extent to which the revenues of the utility or enterprise, after addition of the revenues of the project to be financed, will be sufficient to service the proposed debt.
11. Whether the amount of the proposed debt will be adequate to accomplish the purpose for which it is to be incurred.

Credit ratings are very important to the marketability of bonds. For the bonds to be bank eligible they must be rated. A large majority of North Carolina cities and counties with outstanding debt are rated by both Moody's and Standard and Poors. The ratings are very good. In fact, we have more units rated AAA by both agencies than any other state -- the State and six local units. We cherish our good ratings and watch them very closely. If a unit fails to send its annual information to the rating agencies, we give it a little push to assure it doesn't lose its rating. As we prepare sales documents, we also go with the unit to the rating agencies and have been very successful in getting ratings improved.

We also have the North Carolina Municipal Council which rates local units. Some of the very small units are not able to get a rating by the national rating agencies but all of them are rated by the NCMC. They give a numerical rating and debt of any unit with a rating of 75 or above is

eligible for the banks to purchase. Bonds which are not bank eligible are usually sold to a federal agency such as Farmers Home Administration.

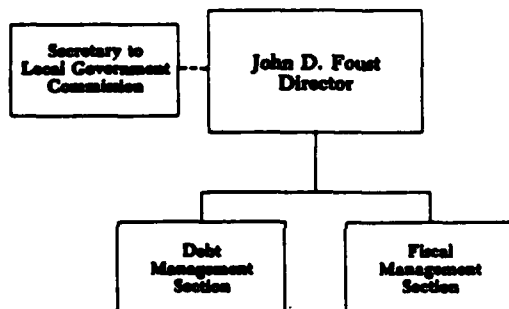
As we assess the capability of a unit to enter into the financing of a water project, we look to see what other resources are available to assist with the project to make it more affordable. We try to blend all of the resources into the total project. For instance some projects have included a basic grant from EDA, a supplemental grant from the Appalachian or Coastal Plains Regional Commission, a State Clean Water Grant with the remainder from local bonds. Our clean water bond money is about gone but the 1983 Legislature approved an additional 1/2¢ local option sales tax and required that a minimum of 40% of each municipalities' funds be used for water and sewer projects.

The needed water resources will continue to be very important to the future of our growing region. Many of the resources that we have been accustomed to in financing these facilities are gone. More and more the responsibility will fall on State and local units of governments. This is happening at a time when we also have a large volume of private purpose bonds. Water projects must compete with public power, health care facilities, industrial revenue and housing bonds in the marketplace. It is very important that we keep our fiscal house in order and that we protect our good credit standing. Where fees and charges are used to recover costs, it is essential that they be kept within an affordable range -- that can be done only through good management and wise use of the resources.

State and Local Government Finance Division

The State and Local Government Finance Division is organized to provide the State Treasurer and the Local Government Commission with staff assistance in fulfilling their respective statutory functions. The Division is organized along functional lines into two major groups of services: Debt Management and Fiscal Management.

Table of Organization



Assistance is rendered to local governments and public authorities in North Carolina on behalf of the Local Government Commission. The North Carolina Local Government Commission, a part of the Department of State Treasurer, approves the issuance of the indebtedness of all units of local government and assists these units in the area of fiscal management. The Commission is composed of nine members: the State Treasurer, the Secretary of State, the State Auditor, the Secretary of Revenue, and five others by appointment (three by the Governor, one by the Lieutenant Governor, and one by the Speaker of the House of Representatives). The State Treasurer serves as Chairman and selects the Secretary of the Commission, who heads the administrative staff serving the Commission.

In providing staff assistance to the State Treasurer, the Division handles the sale and delivery of all State debt and monitors the repayment of State debt.

Operational Highlights

• At a time when the bond ratings of other states were being downgraded, North Carolina was able to maintain its Triple A rating, the highest attainable.

• By marketing bonds at interest rates below the national average, the Division was successful in enabling State and local government units to save substantially on interest costs.

• Official statements were revised so that the financial data presented meets the requirements of generally accepted accounting principles.

• Investment earnings for local units of similar size were compared, and units with below-average interest earnings within their population groups were counseled and advised on investment alternatives.

• After the issuance of controversial NCGA Statement 3, in which criteria were established for defining the entities to be included in the reporting entity, the Division distributed guidelines and suggestions to CPAs and local units to ensure a consistent application of the criteria across North Carolina.

• Forty-three counties in North Carolina issued industrial revenue bonds totaling \$300.2 million for 96 projects, resulting in the creation of 8,960 jobs and the saving of 4,399 jobs.

• The North Carolina Cash Management Trust Fund, a mutual fund designed for North Carolina local government entities, became operational in September 1982, and by the end of the year had 282 participants.

• A pilot program, the Governmental Moneys Transfer System, was started under which local governments will be able to receive all moneys transmitted from the State by wire transfer, thus reducing float losses.

• The Division negotiated a sale of \$1.1 billion for the N.C. Municipal Power Agencies to assist in financing the ownership of power-generating facilities, enabling its member cities to reduce power costs to households by more than 10%.

• The Division assisted in drafting legislation and took appropriate action to allow North Carolina governmental entities to issue bonds in registered form under the regulations of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA).

• On behalf of the North Carolina Housing Finance Agency, the Division sold \$2.3 million of bonds for the new Home Improvement Loan Program, the proceeds being used for approximately 300 homeowner loans at an interest rate significantly below the conventional rate.

Tax Exempt Bonds in General

Tax exempt bonds have traditionally been used by the State and local governments to finance the construction of public facilities such as schools, roads,

sewers, water systems, office buildings, parks and libraries. General obligation debt for traditional public purposes has risen from \$2,078,345,754 in 1977 to \$2,776,821,497 in 1983, a growth of 33.6 percent. In recent times, there has been a marked trend toward using the tax exempt bonding authority for what have, in the past, been thought of as private purposes. These purposes include low-income housing mortgages, industrial and pollution control facilities and equipment, health care facilities and equipment, and electric power generating facilities. Since 1977, most of the growth in State and local borrowing in North Carolina has been for these semi-private purposes; the total outstanding debt for special purposes has increased from \$297,008,867 in 1977 to \$4,616,385,553 in 1983, a growth of 1,454 percent.

Basic Functions

Debt Management - The Division, under the direction of the State Treasurer, issues and monitors all State debt secured by a pledge of the taxing power of the State. After the approval of the bond issue, the Division, with the assistance of other State agencies, determines the cash needs, plans for the repayment of debt (maturity schedules) and schedules bond sales at the most appropriate time. An Official Statement describing the bond issue, and other required disclosures about the State, is prepared with the advice and cooperation of bond counsel. Finally, the Division handles the actual sale and delivery of the bonds, maintains the State bond records and register of bonds and monitors the debt service payments. At June 30, 1983, authorized and unissued general obligation bonds for the State amounted to \$46,000,000 and general obligation bonds outstanding amounted to \$937,400,000. See Schedule H-2.

In addition, the Division is responsible for the authorization and sale of revenue bonds for the North Carolina Medical Care Commission, the Public Power Agencies and the North Carolina Housing Finance Agency. These bonds are secured only by the specific revenues pledged in payment thereof. The staff works with the agency personnel in determining the feasibility and scheduling of the offering, in structuring the issue and underlying security documents, and in preparing the data which must be presented to the Local Government Commission for its approval of the authorization and sale.

The Division assists the State Treasurer in representing the State in all presentations to Moody's Investor Service, Inc., and Standard and Poor's Corporation, the two national bond rating agencies used by the State and local governmental units in North Carolina. As a result of the efforts of the State Treasurer, North Carolina continues to have a "Triple-A" rating, the highest rating attainable. This favorable rating has enabled the State to sell its bonds at an interest rate considerably below the Bond Buyer's Index, thereby providing tremendous savings to North Carolina's tax-

payers. The estimated savings on the \$90 million State bonds sold during this fiscal year will approximate \$12,714,300 over the life of the bonds.

Probably the most important function of the Commission is the approval, sale and delivery of all North Carolina local government bonds and notes. The Division staff counsels and assists the local governmental units in determining the necessity of the project, size of the issue, and the most expedient form of financing. A review is made of the debt management policies of the unit, the effect of the financing on the tax rate, and the unit's compliance with the Local Government Budget and Fiscal Control Act. Sale dates are scheduled depending on the need for the money, the anticipated interest rates, and at times when the bonds can be sold with a minimum of competition. The staff strives to resolve all problems and determine that all statutory requirements are met before applications are presented to the Local Government Commission for approval.

After approval is granted, the governmental unit and its bond counsel assist the staff in gathering and assembling information for an official statement which is mailed to a large group of investment bankers nationwide. The general obligation bonds are serial bonds and are awarded through the competitive bid process on the basis of lowest total net interest cost to the governmental unit.

After the sale, the staff delivers and validates the definitive bonds and sees that the moneys are promptly transferred from the buying brokers to the governmental unit.

In addition to bond sales, the staff assists the units in selling certain short-term debt obligations. These may be bond anticipation notes to provide interim funding of projects until the definitive bonds are sold, or other notes secured by specific pledges of taxes, grants or future revenues. Authorization for short-term debt obligations is also based upon Local Government Commission approval.

Debt records are maintained for all units on principal and interest payments coming due in the current and future years. Through a system of monthly reports, all debt service payments are monitored.

At June 30, 1983, authorized and unissued general obligation bonds for local governments amounted to \$299,570,900, and general obligation bonds outstanding amounted to \$1,765,552,546. (See Exhibit H). During 1982-83, bonds and notes were sold in the amount of \$284,397,900. This is more fully described in Chart 8. Of the \$172,939,100 general obligation bonds marketed for local units, \$30,629,100 were sold to governmental agencies. The remaining \$142,310,000 were sold at interest rates averaging approximately 70 points below the national average (according to the Bond Buyer's Index), thus saving the local units approximately \$1 million in interest costs for the first year. Over the life of these bonds the

issuers are expected to save in excess of \$12.8 million in interest costs. This is a result, in part, of the Division's successful efforts in maintaining and upgrading the

bond rating of the State and local units and in monitoring the fiscal soundness of the individual local units.

Chart 8

PURPOSES FOR WHICH LOCAL GOVERNMENTS SOLD BONDS AND NOTES

Fiscal Year 1982-83

	<u>Schools</u>	<u>Utilities</u>	<u>Other</u>	<u>No.</u>	<u>Total</u> <u>Amount</u>
G. O. Bonds					
Counties	\$16,000,000	\$ 5,935,000	\$20,745,000	11	\$ 42,680,000
Cities and towns	—	65,099,100	32,070,000	42	97,169,100
Districts	—	3,090,000	30,000,000	7	33,090,000
Total G. O. Bonds	16,000,000	74,124,100	82,815,000	60	172,939,100
Revenue Bonds					
Counties	—	—	14,150,000	2	14,150,000
Districts	—	—	12,470,000	1	12,470,000
Authorities	—	—	24,250,000	1	24,250,000
Total Revenue Bonds	—	—	50,870,000	4	50,870,000
Notes					
Bond anticipation				47	57,588,800
Tax anticipation				1	3,000,000
Total Notes				48	60,588,800
Total Bonds and Notes				112	\$284,397,900

The Division staff also assists in the sale of revenue bonds which must have Commission approval in order to be issued by municipalities, joint municipal electric power agencies, county industrial facilities and pollu-

tion control financing authorities. These bonds are secured only by specific revenues pledged in payment thereof. See Chart 9.

DEBT MANAGEMENT ACTIVITIES (In Millions of Dollars)

	FY 1980 - 81		FY 1981 - 82		FY 1982 - 83	
	No.	Amt.	No.	Amt.	No.	Amt.
Bonds Sold for State						
General Fund	1	\$ 45.0	1	\$ 25.0	1	\$ 90.0
Highway Fund	1	105.0	—	75.0	—	—
Total	2	150.0	1	100.0	1	90.0
Bonds and Notes Sold for Local Governmental Units:						
G. O. Bonds	51	188.5	52	192.9	60	172.9
Revenue Bonds	—	—	4	10.5	4	50.9
Notes	63	87.6	75	89.8	48	60.6
Total	114	276.1	131	293.2	112	284.4
Special Obligation Bonds and Notes Sold for Medical Care Commission:						
Revenue Bonds	5	36.5	1	6.0	3	26.6
Revenue Anticipation Notes	2	.7	2	1.1	1	.6
Sold for Housing Finance Agency:						
Bonds	1	23.9	2	82.0	2	23.6
Notes	—	—	1	7.4	—	—
Sold for Power Agencies:						
Revenue Bonds	1	125.0	2	600.0	3	1,100.0
Revenue Anticipation Notes	—	—	1	100.0	1	137.0
Sold for Industrial Facility and Pollution Control Authorities:						
Revenue Bonds	93	335.0	108	295.3	96	300.2
Total Special Obligation Bonds and Notes	102	521.1	117	1,091.8	106	1,588.0
Grand Total	218	\$947.2	249	\$1,485.0	219	\$1,962.4

Fiscal Management — An important function of this Division is monitoring certain fiscal and accounting standards prescribed for local governmental units by The Local Government Budget and Fiscal Control Act. As a part of its role in assisting local units and monitoring their fiscal programs, the Division provides assistance to them in following generally accepted accounting principles and good cash management practices. The Local Government Budget and Fiscal Control Act requires each unit of local government to have its accounts audited annually by a certified public accountant or by an accountant certified by the Commission as qualified to audit local government accounts. Because of recent changes in the field of governmental accounting, the Division has had a particularly complex task in monitoring the annual audit reports for compliance with generally accepted

accounting principles.

The Division's staff counsels the units in treasury and cash management, budget preparation, and investment policies and procedures. Upon request, on-site assistance is furnished to local governments in administering existing financial and accounting systems, as well as aid in establishing new systems. Educational programs, in the form of seminars or classes, are also provided in order to accomplish these tasks. The staff members make presentations throughout the year at various workshops sponsored by the Institute of Government, the finance officers' associations, and numerous other county, municipal, and school organizations.

Continued assistance is provided to the independent auditors of local governments, particularly in the area of professional education. The staff helped to prepare

and update two continuing professional education courses in governmental accounting. Each was presented several times to independent auditors through the auspices of the North Carolina Association of Certified Public Accountants.

Significant Accomplishments

Debt Management

Special Airport Tax District: Bonds in the amount of \$30 million were sold for the Special Airport District of Durham and Wake Counties created by 1979 legislation. Representatives of the Division assisted in preparing and presenting information to the two national rating agencies from which Triple A bond ratings were received. By issuing general obligation bonds instead of revenue bonds for the Raleigh-Durham airport, several million dollars will be saved over the life of the bonds because of the lower interest rate paid on higher-rated general obligation bonds.

Home Improvement Loan Program: This new program, established for the North Carolina Housing Finance Agency, represents a joint effort by the Division, the Finance Agency, a bank, an insurance company and local community development agencies. The Division sold \$2.2 million of bonds, the proceeds being used for approximately 300 loans to homeowners located in 10 cities and towns. Community Development Block Grant funds were used to subsidize some of the mortgages which made it possible to make loans with interest rates ranging from one percent to 11.9 percent at a time when conventional home improvement loans ranged from 16 to 18 percent. Revenue bonds for other programs of the Housing Finance Agency totaling \$21.3 million were sold during the year.

Registered Municipal Obligations: As a result of the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), North Carolina and its political subdivisions will be required to issue debt obligations in registered form after July 1, 1983. In preparation for this day, new statutory provisions were enacted in G.S. 159E to authorize systems of registration for the State and its cities and counties. The Local Government Commission must approve all systems of registration. Because in a registered environment it will be important that municipal bond ownership be transferred rapidly and freely, the Division also issued a Request For Proposal (RFP) for a Registrar and Transfer Agent for the State. Following the competitive bid process, Chase Manhattan Bank was selected as the State's Registrar. Chase has also agreed to offer market competitive Registrar, Transfer Agent and Paying Agent services to local units of government according to fees determined in their contracts with the State.

Debt Management Procedures for Industrial Revenue Bonds: The staff upgraded the procedures used to obtain current information on the outstanding balances of each industrial revenue bond issued since

1976. As a result, the Division will have a record of the outstanding balances of each bond issue and a monitoring system for notification of delinquent payments.

Industrial Revenue Bond Program: Since 1976, industrial expansion in the State has been aided by County Industrial Facilities and Pollution Control Financing Authorities which issue bonds on behalf of private industry. These bonds continue to be attractive to industry because of lower interest rates. In 1982-83 forty-three counties issued industrial revenue bonds totaling \$300.2 million, creating 8,960 jobs and saving 4,399 jobs. Issuance of these bonds enables the State to maintain a competitive balance with other states in attracting new jobs and increasing property valuations.

Municipal Power Agencies: The division marketed revenue bonds amounting to \$1.1 billion for the two Municipal Power Agencies to finance a portion of the ownership costs of power-generating facilities. North Carolina Eastern Municipal Power Agency became operational on January 1, and became the wholesale power supplier for its 32 member cities. The savings in power costs allowed some cities to reduce power costs to households by more than 10%. North Carolina Municipal Power Agency #1, through the Power Sales Agreement in its contract with Duke Power Company, made plans to begin distributing power to its 19 member cities on July 1, 1983.

Bond Ratings: While bond ratings are being downgraded for many governmental units across the country, North Carolina governmental units have maintained their ratings and in many instances upgraded them. Durham and Wake Counties were upgraded to Triple A by Standard and Poor's Corporation. As previously mentioned, Triple A ratings were assigned by both Moody's Investors Services and Standard and Poor's to the Special Airport District of Durham and Wake Counties. A Triple A rating was also maintained with both agencies for the State of North Carolina, the City of Charlotte, Mecklenburg County and the City of Raleigh. The Division constantly monitors the bond ratings of North Carolina governmental units and plays an important role in assisting units in making presentation to the rating agencies.

Fiscal Management

Audit/Budget Reviews: Extensive financial analyses were made and documented on all audit reports to assess both the financial condition of the unit and its budgetary compliance with North Carolina general statutes. Letters were written to 172 units either not in compliance with general statutes or experiencing financial difficulties. This was the first year all audit reports were reviewed.

Official Statement Format Revision: The format of the financial section of the official statement was revised. The financial data in the circular are the ex-

hibits lifted from the General Purpose Financial Statements of the unit and the notes thereto, presented in accordance with generally accepted accounting principles. Supplementary compiled information for three years is supplied for comparative purposes.

Investment Earnings: A comparative analysis of investment earnings within population groups was made for the fiscal year ended June 30, 1982. Letters were sent to those cities and counties which had relatively low interest income. These letters emphasized both management and investment practices which could be improved by the unit.

Mutual Fund for Local Government Investment: The North Carolina Cash Management Trust, a mutual fund specifically designed for North Carolina units of government and public authorities, became operational in September, 1982. This vehicle offers local governmental units a safe, very liquid and relatively high yielding short term investment for their idle funds. In the first five months of operating, the assets of the Trust exceeded one hundred million dollars (\$100,000,000.00). By the end of the year there were 282 participants with more than five hundred (500) accounts. In addition, many other financial providers (commercial banks and savings and loans associations) have been more competitive for public funds as a result of the existence of the Trust.

Governmental Moneys Transfer System (GMTS): A pilot program was begun with five cities and five counties to establish a more efficient method to handle transfers of money between State and local governments. Once the pilot phase is completed and the program is fully implemented, any unit of government will have the option of transferring and receiving moneys between itself and the State by wire, on established dates. These moneys will remain invested, since transfers will be through the North Carolina Cash Management Trust (NCCMT). Float losses will be reduced and the uncertainty of when moneys will be received will be removed.

Reporting Entity - NCGA Statement 3: An analysis of NCGA Statement 3 was completed. This statement establishes criteria for defining the governmental reporting entity, to specify the organizations which should be included in the general purpose financial statements. For consistent application in North Carolina, the Fiscal Management staff organized a task force of representatives from organizations in North Carolina interested in, or affected by, this Statement, and applied the criteria in Statement 3 to certain North Carolina entities. The joint study identified several organizations as separate entities for reporting purposes and others for inclusion in another reporting entity's financial statements. The findings of this joint study were distributed in a memo to all finance officers and their independent auditors.

Schools: The Division participated as program speakers in the first annual School Business Officials'

Conference and several regional meetings for school business officials. At the Division's suggestion, a technical review committee was established for reviewing the illustrative financial statements for schools, and other technical publications having an impact on the schools. The Division also worked closely with the Controller's office and the State Auditor's office in implementing the single audit concept and full disclosure of the public school system in North Carolina.

Projects in Progress

Budgeting for Local Governments: The Budget Preparation Procedure in the UAS Manual has been updated and will be distributed during the year with a sample budget for a county and a municipality. We plan to conduct regional budgeting workshops throughout North Carolina at community colleges or Council of Governments.

Illustrative Financial Statements: The illustrative financial statements for a city and county are in the process of being updated and revised, incorporating the effects of NCGA Statement 3 and the Single Audit Concept. The illustrative financial statements for schools will also reflect the single audit.

Governmental Accounting Bulletin: The Division plans to prepare and distribute to local units and independent auditors current information on developments in governmental accounting such as summaries of new NCGA statements.

Improvements in Internal Control and Accounting Systems: The staff is in the process of writing a publication on ways to improve internal controls in small units of government. In conjunction with this, a simplified accounting system for small units is also being developed.

School Procedures Manual: The School Procedures Manual is being updated to include a new procedure relating to the individual schools.

Accounting Programs: The Division is planning, with the Institute of Government and Public Finance Officers Association, a series of accounting programs for finance officers of local governments. The program plan is to upgrade the technical competence of finance officers and upon successful completion of the curriculum, to issue a certificate to the participants. The program will also establish a continuing education requirement to keep the certificate.

North Carolina Energy Development Authority: The North Carolina Energy Development Authority was created during the 1983 Legislative Session to encourage good management of solid waste and conservation of natural resources. The Authority may sell revenue bonds, with the approval of the Local Government Commission. At the present time, the Authority is beginning to plan its future needs and goals and the Local Government Commission staff is

preparing to ensure the proper placement of these bonds.

Expansion of Computer Program for Debt Service Requirements: Current marketing and financing innovations and a need for expanded services have necessitated revisions and expansions of the debt service computer program. New programs are planned to accommodate principal payments other than on the traditional annual basis; to accommodate variable interest rates; and to prepare debt service maturity schedules.

Committee on Lease-Purchasing: As a result of a Lease-Purchase Conference held by the Local Government Commission staff, a committee was formed by the Institute of Government to study leasing alternatives. Representatives of the Institute, Local Government Commission staff and local governments are developing a model lease purchase agreement that conforms to North Carolina law and practice. This committee also intends to consider possible law changes to improve the proper utilization of leasing techniques.

Exhibit H and supporting schedules are integral parts of this report concerning the State and Local Government Finance Division.

**U.S. Army Corps of Engineers
Water Resources Financing Seminar**

Fort Belvoir, Virginia

**STRATEGIC FINANCIAL PLANNING
FOR MUNICIPAL UTILITIES**

**Robert B. Nolan, Jr.
Senior Vice President
Manager, Public Utilities Finance Group
Blyth Eastman Paine Webber Inc.**

May 17, 1984

**PREVIOUS PAGE
IS BLANK**

STRATEGIC FINANCIAL PLANNING

It is a pleasure to speak this morning at the U.S. Army Corps of Engineers Water Resources Financing Seminar on the ever-intriguing topic of Strategic Financial Planning for municipal utilities.

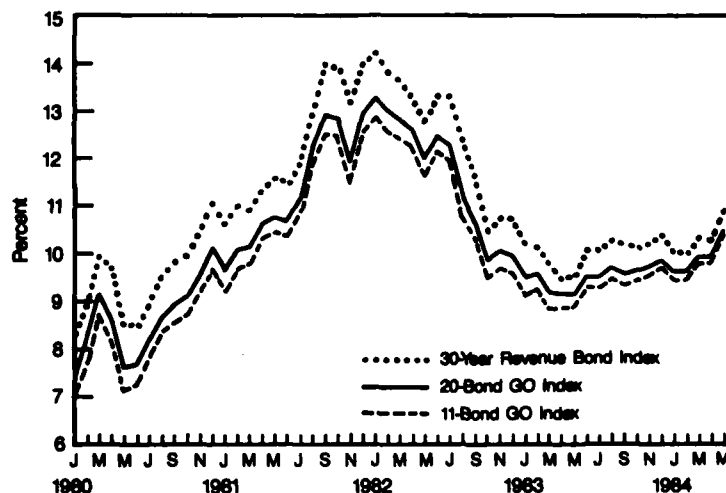
Strategic Financial Planning ("SFP") is a dynamic decision-making process designed to (i) optimize and allocate capital resources available to and controlled by municipal utilities and (ii) establish a device for contingency planning for utilities.

In order to properly investigate the application of Strategic Financial Planning for municipal utilities, it is first important to understand the environment within which they presently operate: the Municipal Bond Marketplace.

Financial Market Environment

The Municipal Bond Market has undergone extremely volatile movements in Interest Rates during the past four years. As the graph below indicates,

**Bond Buyer Indices
1980 to Present**

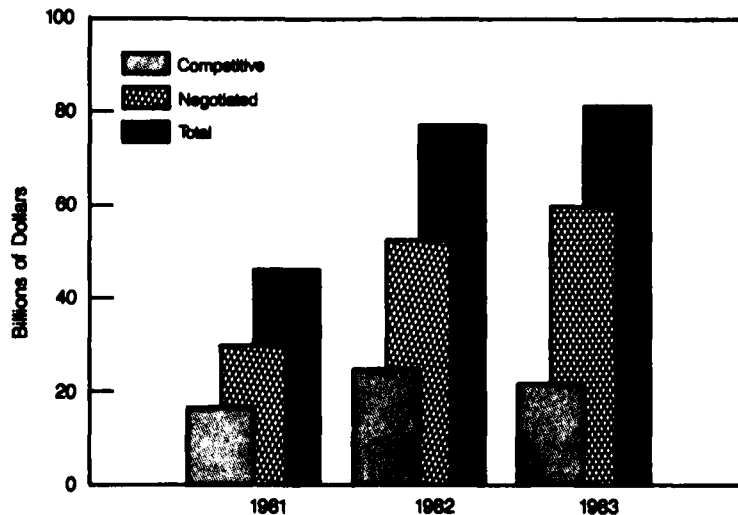


the Revenue Bond Index escalated more than 500 basis points from early January 1980 to early January 1982. This volatility of interest rates has contributed to the need of municipal utilities to plan more carefully its entries into the municipal bond market.

In the past, municipal water utilities raised capital in the marketplace by scheduling periodic visits to the marketplace at different stages of their capital improvement program. The volatility of the marketplace has forced municipal utilities to design a financing plan which incorporates flexibility as to timing for its bond offerings.

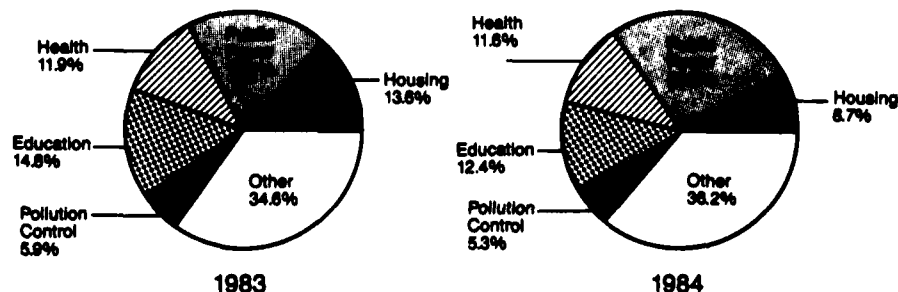
In addition to the volatile marketplace, municipal utilities face greater competition in their attempt to raise capital in the marketplace. The volume of issues in the long term municipal market has grown tremendously during the past three years and in fact municipal utilities have become the leading issuer segment of the municipal market during the first quarter of 1984 (See graphs below).

Municipal Market



This newest development, of course, owes in no small measure to the pending Federal tax legislation which is prohibiting the issuance of many Industrial Development Bond issues and Single Family Housing bond issues. As a function of the increased supply of municipal utility issues - the investment community is subjecting individual issuers to harsher and more intense scrutiny of their financial positions.

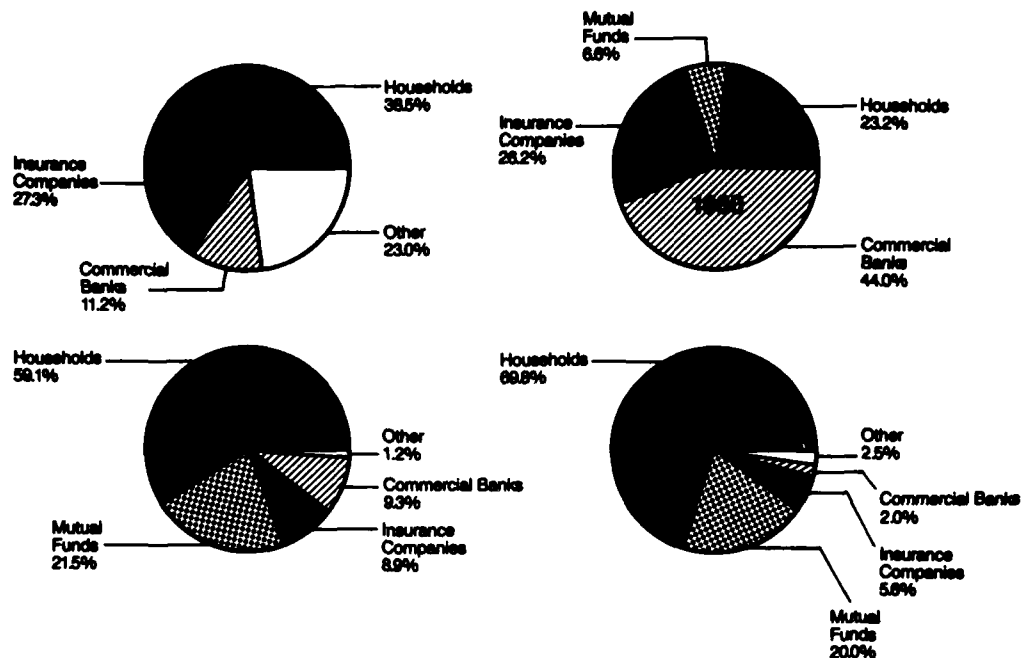
Public Finance Bond Market by Industry Group Jan. - March 1983 vs. Jan. - March 1984



Data Source: The Bond Buyer

In addition to municipal utilities assuming a larger share of the municipal market, the make-up of the purchasers of the municipal bond market has changed from predominantly institutional to predominantly retail oriented buyers (See graph below).

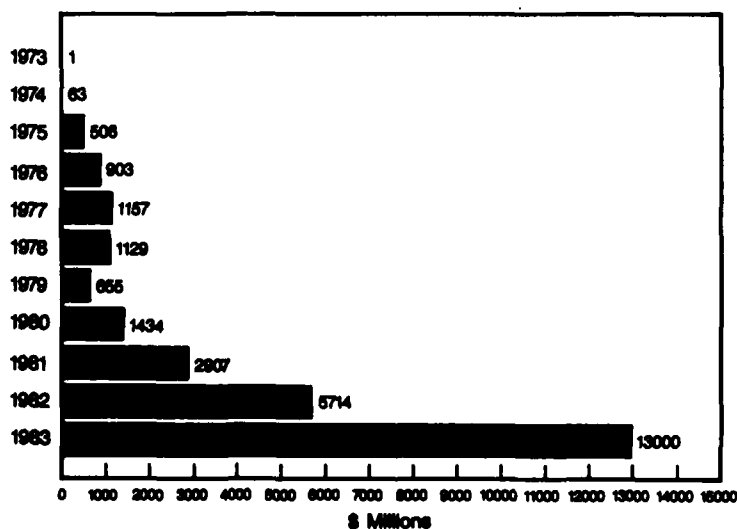
Analysis of Municipal Securities Holders



Data Source: Federal Reserve, Flow of Funds Section

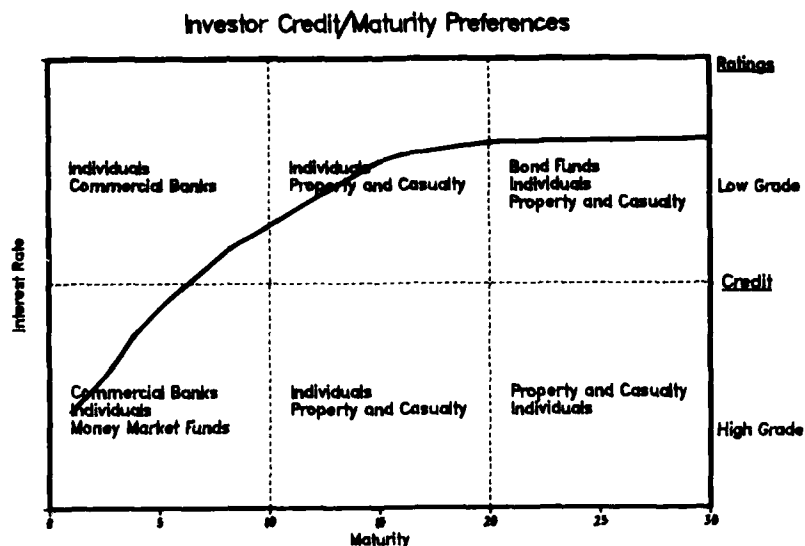
The change in the make-up of the buyers of tax-exempt paper has resulted in issuers considering credit supports such as municipal bond insurance which has more than doubled in volume in the past year (See graph below).

New Issue Insurance Par Value Long-Term Municipal Bonds



Source: MBA and AMBAC

The change in investor preferences as to maturity range and yield is best demonstrated by the following chart which manifests that retail buyers are long-term buyers predominantly (although their presence is noted in all maturity ranges as evidence of their overall strength in the municipal market)



and they historically have favored the high yield end of the market although sometimes at the expense of security. But the default by the Washington Public Power Supply System on the debt supporting its Nuclear Projects Nos. 4 and 5 has caused more and more retail purchasers to seek refuge in credit supported bond issues.

Thus, the volatility of the municipal marketplace, the increasing presence of the municipal utility sector and the changing face of the tax-exempt bond buyer has created a need greater than ever for contingency financial planning. Therefore, we urge municipal utilities to adopt Strategic Financial Planning as a method by which to establish a decision-making framework for financial activities.

Strategic Financial Planning As A Concept

Strategic Financial Planning is a dynamic process designed to optimize a utility's capital resources and to properly allocate those resources in a meaningful manner.

The key concepts of Strategic Financial Planning are (i) capital scarcity, (ii) risk adjusted return on investment and (iii) financial flexibility.

Municipal utilities are capital intensive enterprises that require complete access to external capital sources. Thus, a utility must carefully

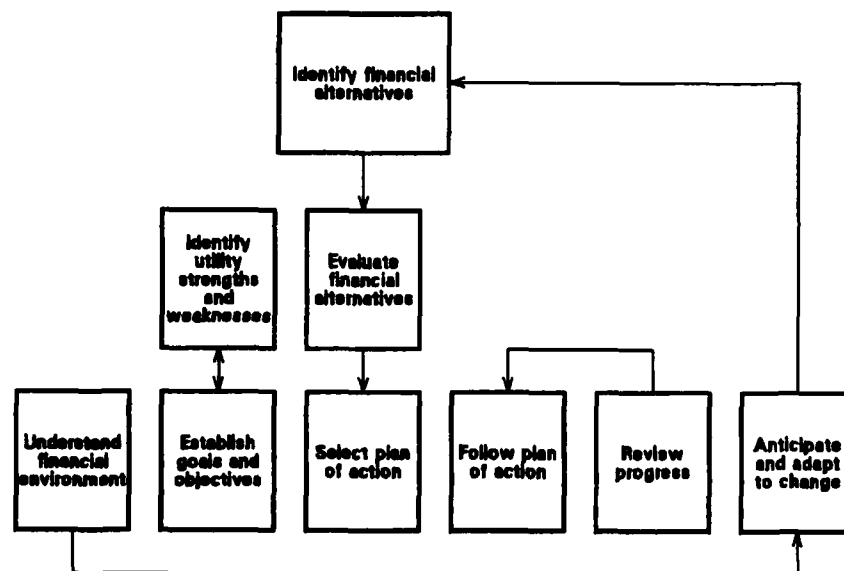
manage its visits to the credit markets in order to optimize a utility's capital structure with the lowest cost financing alternatives.

Risk adjusted return on an investment is a method by which a utility can quantify the return of various investments offset by risks involved in each investment.

The third concept is financial flexibility which will revise the capital resource mix and the allocation of their resources. One example is the ability to handle a sudden cost increase or revenue shortfall from a source of capital other than a time-consuming rate increase. This type of flexibility can be afforded as a natural outgrowth of proper contingency planning.

The Strategic Financial Planning Process

At this point let's investigate the dynamic process of Strategic Financial Planning. The chart below depicts the sequential flow of events that occur during the stages of Strategic Financial Planning.



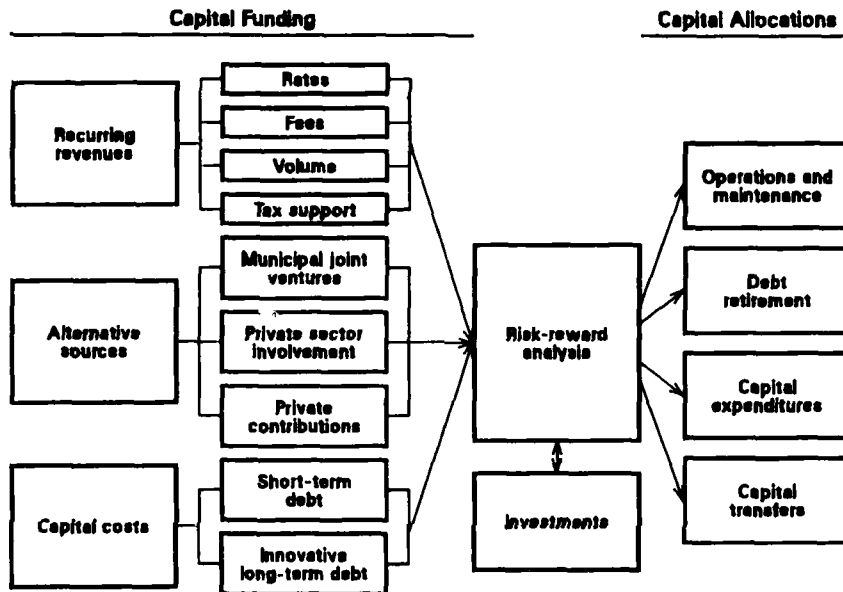
The dynamic process of strategic financial planning

The first element of Strategic Financial Planning is understanding the current financial environment. I have already touched upon the conditions of the municipal bond marketplace and the conditions confronting a municipal utility's attempt to issue debt in such a market.

The second element is the establishment of goals and objectives by a municipal utility. This activity is critical to the success of Strategic Financial Planning. Such activity should be performed among the policy board of a utility, its staff and its hired consultants and it must be done at the outset for this plan to achieve any measure of success.

The third element is identifying the individual strengths and weaknesses of the municipal utility. In other words, the parties mentioned above should perform a realistic appraisal of the individual utility's strengths and weaknesses and establish their goals in light of such characteristics.

The fourth and fifth items are identifying and evaluating the alternatives for capital funding and capital allocation. These stages are essential for a utility to arrive at a position of better capital funding utilization and better capital allocation.



Strategic financial alternatives

The above chart sets forth the strategic financial planning alternatives divided into the capital funding options and the capital allocation alternatives. As the diagram clearly depicts, capital funding for a municipal utility includes its equity source, namely the revenue flow and its capital markets source, the municipal debt markets and alternative sources which include equity contributions by a third party.

Capital Funding Alternatives

All of these funding options must be carefully evaluated and compared with each other. For instance, in the consideration of revenues as the primary source of capital a utility must carefully weigh the various political influences which dictate whether the source be user fees or tax support. Also, the raising of additional revenues to meet additional capital expenditure needs can be managed in a number of fashions. One such method is the institution of a rate stabilization technique designed to increase revenue collections in the immediate years for the benefit of future capital requirements. A number of municipal utilities have adopted this technique in the recent past and have used this "rainy day" method to better meet the projected rate increases resulting from a capital expansion program.

Other methods used to mitigate against "rate shock" are stepped rate covenants which allow for a gradual phasing in of rate increases rather than a single dramatic increase, and the use of standby fee revenues resulting from the billing for a utility's excess or peak capacity.

Municipal utilities can also consider as another source for increasing revenues additional connections to adjacent municipal and private systems; as well as the use of tax increment or local improvement district financing done with limited taxation.

The use of equity supplied by third party sources has become an attractive source of capital for municipal utilities during this period of reduced federal spending. The private sector is offering its services to municipalities through a myriad of structures including financing leases, sale-leaseback arrangements, or operations and services contracts. The involvement of the private sector in a certain form permits such equity participants to reap tax benefits from such an ownership position. Presently, there is pending federal legislation which would severely hamper the widespread involvement of the private sector in ventures with municipal utilities. This legislation is not in final form as of the moment and thus casts an ominous cloud over this type of financial arrangement. It is important to remember that equity from any source significantly reduces overall borrowing requirements for a project, as there is no capitalized interest cost, reserve requirement, or issuance cost associated with an equity contribution as occurs with a debt issuance. Such equity contribution possesses a positive multiplier effect towards the reduction of overall project costs.

Also available to a municipal utility as a non-traditional source of capital is the pooling arrangement existing in a municipal joint venture. The financial participation of adjacent municipal utilities can vary according to the financial characteristics of each municipality and the benefits derived from the joint project accruing to each municipality.

Finally, the municipal utility can issue debt in the municipal marketplace with a maturity ranging from one day to 30 years. There are many new instruments in the municipal market and utilities are investigating all of them at the moment. Such techniques include short-term alternatives such as: tax-exempt commercial paper and variable rate demand notes. A municipal utility must carefully design its rate structure in order to accommodate the floating rate nature of this type of debt instrument. Of course, the risk of the periodic floating rate is combined with the reward of an attractive interest cost in a market with a positively sloped yield curve. The municipal market has long enjoyed such characteristics.

The long term end of the municipal market includes such new alternatives as zero coupon bonds, stepped coupon bonds, tax-exempt capital accumulator bonds, put bonds, bonds with warrants and bonds with credit enhancement through bank guarantee or bond insurance. These alternatives are designed to enhance security and marketability, to provide investors with market price protection, to shorten the average life of the debt, and in some cases to transfer the risk of volatile interest rates from the lender to the borrower.

Each of these capital funding techniques need to undergo a thorough risk versus reward analysis as to the merit of utilizing such device. This analysis should determine the appropriate source of capital funding and enable a municipal utility to evaluate the proper allocation of such capital.

Capital Allocation Alternatives

The allocation of capital includes such choices as payment of: (i) operations and maintenance expenses, (ii) the retirement of outstanding debt, done to enhance the debt capacity for the utility in the future and strengthen the utility's equity base, (iii) capital expenditures which are necessary to enhance the level of service furnished by the utility, (iv) capital transfers, the practice of transferring utility revenues to other municipal programs or to the municipality's general fund in the form of an annual subsidy. Another type of transfer is a rate reduction for consumers of the utility.

These four options for the allocation of capital always need to be compared with the opportunity cost of the utility which is direct investment of such capital for later expenditure by the utility. The allocation of capital resources is vital since misallocation can result in the loss of benefits stemming from Strategic Financial Planning. It is critical for a utility to implement a systematic risk/reward analysis under which a utility can meet its goals and objectives.

Strategic Financial Planning Process

The sixth stage includes the selection by the utility of a plan of action together with the seventh and eighth stages which require a following of that plan of action combined with an active review process which is implemented periodically. Contingency planning requires the iterative process of constant review of selected plans in light of the changing financial environment as well as the individual utility's changing position.

Conclusion

Thus, Strategic Financial Planning is designed to permit a municipal utility to anticipate and adapt to changing market environments. Careful contingency planning and constant analysis of alternative financing plans should optimize a municipal utility's flexibility during any period of uncertainty.

We all recognize that the uncertainty caused by external forces beyond our control will hinder even the most far-sighted approach known to man. Strategic Financial Planning, however, is designed to establish a framework which will enable a municipal utility to analyze constructively its various financial options during any period of uncertainty.

QUESTIONS AND ANSWERS

FINANCIAL FEASIBILITY OF WATER PROJECTS

Q: Do the two speakers have some understanding of what the Corps is faced with as an agency? Are we on a realistic time line, measured from today, to put things in place reasonably in the next fiscal year? So much of this seems so new to an agency that didn't have to be concerned about it in the past. How do we get smart quickly and how do we get an effective relationship with an otherwise willing non-Federal sponsor?

MOD: Let's focus on Randleman Lake, a reservoir project in North Carolina that's in the present Corps budget. It involves recreation, water supply and flood control and there is a substantial non-Federal share. If funds were appropriated by Congress, how long would it take to get the financing?

Mr. Foust: I think Randleman is a good example. Randleman is one of three projects in the Cape Fear Basin. We already have B. Everett Jordan dam there. The third is still in planning, but I don't know the status of financing plans. The Cape Fear Basin is probably in the worst shape of any part of North Carolina with respect to water supply. We have Greensboro, Burlington, and several other communities that are of fairly good size and that have a potential for tremendous water shortage. There are other river basins to the east and west, the Neuse River Basin and the Yadkin River Basin. Everybody has been hollering about riparian rights and all the things those who have want to keep and those who don't have want to share. I think it would be a big political fight to start pulling water out of the Yadkin Basin over into the Cape Fear Basin. So I would say you are in a better position to get state and local participation on the Randleman project because the need is so drastic. Greensboro and Burlington and others are going to have a terrible water problem if that dam isn't built. They will have to restrict growth. I think a big part of getting participation is going to be how badly the project is needed. We had the luxury of the Corps coming in and building nice flood control projects, and giving us good recreation and sometimes even water. Falls of the Neuse is providing water for the City of Raleigh and all over the county. Raleigh did contribute to that project. They added some capacity so that they could have a better supply.

MOD: Suppose that Congress appropriates funds for Randleman Lake in Fiscal Year 1985. How quickly could the State respond to develop the up-front financing?

Mr. Foust: We have a legislative session in about two or three weeks which is a short budget session. We have a biennial session in January. If it takes a state appropriation by next July, we could respond. In the case of cities like Greensboro, they have the financing capacity and could have an initiative to the voters within 90 to 180 days.

MOD: This is why, according to the policy that's been in effect for the past three years, Mr. Gianelli was willing to spot the state one or two years to catch up, recognizing that it has to go to the voters or otherwise get certain approvals.

Mr. Foust: At the state level, chances are good that funds would come from direct appropriations. If a bond issue were involved, the legislature would have to approve it, then a referendum would be required. Next year we would not have a state-wide election, but could have a special election for the referendum. We would rather hold it with the state-wide election to avoid the expense of a special election.

Q: It's been easy to talk about this in terms of fully vendible outputs like water supply, but what has the State done for low-vendible outputs such as flood control, which is very hard to deal with? The benefits could be widespread. Has the State indicated how it's going to address low-vendible outputs in terms of working with locals?

Mr. Foust: I'm not sure that North Carolina or any other state has really had to address this because the Corps and the Soil Conservation Service have done a good job. When you start addressing problems, you first look at the sources that are easily accessible to you. We've been pretty successful in convincing the Corps and Soil Conservation Service to provide flood control, so that it hasn't become a crisis for the State.

MOD: I believe that it takes an act of the legislature to approve financing for flood control.

Mr. Foust: That's probably right. It's never been a problem to us, and we probably just haven't addressed it.

Q: What problems do you envision in setting up a special assessment district? What would be the options that you would pursue if you wanted to try to float G.O. bonds?

Mr. Foust: Our statutes authorize drainage districts that have issued bonds and that have done drainage projects at the local level. Our office doesn't get involved with the drainage districts other than a few that right now are about to default on some bonds. We had no authority or responsibility in issuing the bonds and we have no responsibility for seeing that they are paid off, but we think that it is a blight on that county to have any subdivision, including the drainage district, with debt that is not being paid off. We want to see everybody pay their debt, so we've gotten involved. The courts have the responsibility now, but we are going to the legislature with a bill next January to transfer that responsibility over to us so we can have some oversight, such as providing an annual audit. I think something like a river basin district could be set up for the Cape Fear River Basin to create some type of financing organization. The other problem with the drainage districts is that contractors convince the landowners to set up a district so that they can do the work. The group that does the initial work would abandon the

project, leaving no mechanism for maintenance. We wanted to obtain jurisdiction so that we can make sure up front that for whatever mechanism they set up there's an ongoing way to maintain it.

Q: Mr. Nolan, it seems to me that the use of insurance simply pits one group of people against another in evaluating the risk. We've talked about doing a BC ratio on the insurance, and the fact that if the people buying the bonds and the insurance company had the same advisor on the risk they would come out even. I can see how insurance might be important if you can't sell the bonds without it, but in terms of just reducing the interest rate, it would seem to me that if the insurance company and the bond buying people have the same perspective on risk there won't be any advantage or disadvantage.

Mr. Nolan: That would be fine in a perfect market, but we really don't deal in one, and, as a result credit decisions facing individual utilities are often made in the context of a lot of events that are affecting the credit market as a whole. What I am saying is that a good credit can suffer because of Federal budget deficits, which can make insurance costs effective, whereas in a low inflation, non-deficit market place insurance might not be cost effective. It may have nothing to do with the strength of the actual credit of the given utility. The second point is the growth of the retail sector buying municipal instruments. More of these individuals are interested in insured paper, so there is a different pool of investment capital we need to tap.

Q: You made a presentation from the perspective of the people who are financing the projects. Could you make a few comments on turning that perspective around? From our agency's standpoint, we might be interested in evaluating the capability of that non-Federal utility to actually follow through and make a project become a reality. In other words, in the planning stage we really need to make some sort of broad evaluation as to whether or not an entity has the financial potential to make the implementation process work. In some instances we're wasting resources by proceeding down this road in fond hope and expectation, because we are not people who are professional in evaluating financing capability.

Mr. Nolan: The analysis needs to be done earlier on, not necessarily by the Corps but in the stage in which you are analyzing projects. The analysis in terms of what is the most appropriate, cost-effective source of capital should be done at the same time you weigh project feasibility. There should be someone weighing the economic feasibility of sources of capital so that a project can be marketed. The analyses should be done hand in glove. It would seem to me that now the financial planning is not taking place at an early enough stage. As to how one goes about actually analyzing the project, many factors are involved including analysis of the sources of capital. If it's a revenue-generating project to be supported by user fees, then obviously some analysis has to be done of the service area and whether or not the strength is inherent in that service area to support the amount of debt that one projects will be necessary to finance the project. While that type of analysis should be performed at the same time you are looking at a project, I can understand the frustration of going down the road with the project and not having the results of that analysis known in advance.

Q: The ports hire financial advisors and financial planners whenever they have a bond issue come up. They go through a planning process or evaluation process and then they finally go to the banks. The advisors and the bank are not necessarily the same people. They do a complete evaluation. If an evaluation is done by the sponsor, is there some way that the Corps can get access to it at some time?

Mr. Nolan: I would hope so. I think that these types of analyses should be done simultaneously, and since you are both in effect servicing the same need or providing the same good, it would seem to me that you should have access to it.

Q: My personal opinion is that the Corps should not be going through this financial process. There should be some kind of a checkpoint list with which we can determine what the sponsors' rating is and whether they have good advisors and good financial health, but somebody who is a professional in doing this work really should do this analysis, not the Corps. We should recognize someone else's integrity and understand what they are doing. Each utility or government is going to eventually do this analysis its own way anyway. They have a dynamic system, going to the bond market repeatedly. It's pretty difficult for planners to specify the financing so many months in advance and say what the financing is going to be like when we decide to sign the paper. How dynamic is this financial planning process, and are there sources available to the Corps other than doing it ourselves?

Mr. Nolan: Assuming that there is a sponsor of this project, an advisor who may well be representing the sponsor should be acting in that capacity at that moment, analyzing the economic feasibility and the worthwhileness of the particular source of capital that they intend to use for the purpose of the project.

MOD: It's something new for the Corps because for projects with vendibles we have by and large required payback over 50 years rather than up-front financing. There are going to be new job descriptions written, and there is going to be a whole new range of consultants to call on. We are going to change the way we are doing business. It is not going to be a nice neat check list.

Mr. Nolan: One quick analogy with municipal electric utilities. Often, whether or not those projects make sense is determined early on by preliminary feasibility studies, done by consulting engineers, which take into account advice rendered by the financial advisor or the investment banker. The feasibility study contemplates the economics (financing feasibility) involved. And that is apparently different from your situation.

PANEL IV
CREATIVE FINANCING TECHNIQUES

Water Project Financing Seminar

U.S. Army Corps of Engineers
May 17, 1984

Creative Debt Financing Techniques

Wesley C. Hough, Manager
Government Finance Research Center
Government Finance Officers Association

When discussing financial matters, and particularly public finance, the word "creative" has bad connotations to certain people. Visions of the New York City financial crisis in the mid 1970s, and the fiscal gimmicks employed by the City to balance its books may come to mind. However, the "innovative" use of accounting treatments and imprudent reliance on short-term financing to balance current operating budgets are not the types of financing techniques I refer to when using the word "creative". Creative capital financing techniques are not meant to cover up poor financial management or to create "free" money for public services. Rather, the term creative refers to a break from the traditional methods of financing capital investments used by state and local governments.

As you all know, and I imagine John Petersen reminded you yesterday, state and local governments throughout the past 50 years have relied on the tax-exempt municipal bond market as an important source of financing for improvements and additions to public infrastructure. And its importance is growing; the share of public capital expenditures that is financed through the issuance of long-term bonds has increased from 30 percent in 1980 to nearly 50 percent today.

The traditional method of structuring a bond issue has been for the borrower to promise regular payment of fixed interest and return of principal over a fixed period of time while relying on the creditworthiness of the borrower -- its ability to raise and levy taxes and other revenues -- for security of repayment. Under such an arrangement, the lender, or investor, is compensated through interest payments not only for the use of its money, but also for absorbing two types of risk: (1) market risk and (2) credit risk. Market risk refers to the risk that interest rate changes over the course of the investment may reduce the market value of the investment before it is repaid. Credit risk refers to the possibility that debt service payments may not be made on time or that principal will not be paid back in full.

PREVIOUS PAGE
IS BLANK

The creative financing techniques I will describe this morning were designed to alter these traditional risk relationships. They have rearranged the standard borrowing transaction in two important ways. Through the use of variable rate bonds and original issue discount bonds (zero coupon bonds) the market or interest rate risk has been shifted from lender to borrower. Issuers who decide to bear the market risk through the use of variable rate bonds no longer have the comfort of a fixed rate of interest to be paid over the life of the bonds. Through the use of external credit supports, such as bond insurance or bank letters of credit, the creditworthiness of borrowers has been enhanced through shifting the credit risk from the investor to a third party.

These innovative developments in bond structure have aided borrowers both by reducing the cost of long-term debt and by permitting access to the bond market to issuers who without creative financing techniques would be shut out because of poor creditworthiness. Of course, with these benefits come certain risks and costs that must be weighed by any entity before implementing a creative bond structuring technique. In the next few minutes, I will attempt to address the risks, costs, and rewards of some of the most frequently used creative financing techniques and those that I believe have the widest applicability to this audience.

Third-Party Credit Enhancement

The credit quality of municipal bond investments has received a good deal of bad press over the last decade. Beginning with the well-publicized fiscal crises of major cities in the 1970s such as New York, Cleveland, Detroit, Chicago, and shared to a lesser extent by communities accross the country, the ability of governments to pay their financial obligations in a timely manner was called into question. This problem was exacerbated by the implementaion of citizen-initiated tax limitation legislation in certain states and localities. Such legislation may restrict a government's ability to levy taxes or other charges and therefore impinge on the general obligation or revenue raising pledge used so frequently to borrow funds for capital investment. These fiscal and legislative pressures, combined with the ability of governmental units in the Northwest to escape from contractual arrangements made in a bond indenture -- in the Washington Public Power Supply System debacle -- have caused investors to become very conscious of the credit quality of their investments. The bond market is not meant to attract risk takers. Investors in municipal bonds want to sleep soundly with the knowledge that their investment will be repaid in full and on time.

There are both publically sponsored programs and private arrangements available to bolster the

creditworthiness of municipal bonds and partially alleviate credit-conscious investor's fears. These structuring techniques all have in common the use of a third-party to absorb credit risk -- by guaranteeing the payment of debt service. By so doing, the credit quality of the guarantor is generally substituted for that of the borrower in assigning a credit rating to the investment. If the guarantor has a credit rating that is higher than that of the issuer, significant interest savings may be achieved because the credit risk premium on the investment is reduced. An example of the credit risk premium investors place on borrowers is provided in Table I. The average borrowing cost for a 20-year bond ranges from 9.40 percent for AAA rated bonds to 10.75 percent for the lowest investment grade rating of Baa. This spread of 1.75 percent translates into a potential annual savings of \$135,000 on a \$10 million borrowing, or \$2.7 million over the 20 years, if a Baa rated borrower is able to obtain a guarantee from a party that is rated AAA.

Although there are certain federal bond guarantee programs on the books -- administered by the Federal Financing Board -- they generally are for limited purposes and at higher than market rates of interest. Most other public credit enhancement programs are administered at the state level by departments of community or local affairs, environmental quality, or the state treasury. These programs may consist of a state supervised fund that is available as a pledge to guarantee bonds issued locally for a specific purpose or municipal bond banks that issue state bonds on behalf of localities. The credit rating carried by state-sponsored credit enhancement programs would rarely be greater than that of the state itself, therefore, such programs only benefit borrowers who are rated lower than the state.

Private guarantees in the form of municipal bond insurance or bank letters of credit are available to most all issuers regardless of state. Bond insurance is purchased from a company or consortium of companies for a one-time fee paid at the issuance of the bonds that is based on total principal and interest guaranteed. This can range from 1 to 2 percent depending on the credit quality of the issuer. Bonds insured by one of the major insurers automatically carry a AAA rating from S&P. Moody's, for institutional reasons, does not upgrade their credit rating to recognize the existence of bond insurance.

Based on the spread between BAA and AAA rated bonds, it is obvious that it would be in a BAA-rated issuer's financial interest to secure bond insurance if the cost of insurance was less than the anticipated annual savings of \$135,000. When evaluating the benefit of external credit supports, the expected savings over time should be analyzed using Net Present Value techniques. In this case the Net

Present Value of saving \$135,000 in each of the following 20 years should be greater than the insurance premium which, because it is paid up-front in present day dollars, would not be discounted.

The bond insurance business is not new, in fact it has been around the longest of any creative financing technique, but its use has expanded tremendously over the past few years as the credit condition of certain issuers has deteriorated. The business is attracting many new companies and is creating new products - such as non appropriation insurance for lease obligations - that I imagine Jack Vogt will discuss later on this morning. Other types of insurance such as project performance insurance or efficacy insurance also have implications for a project's credit rating and its borrowing cost. If such insurance is acquired in an amount sufficient to pay off bondholders - which may be a larger amount than the actual construction cost of the facility - the security for the borrowing is enhanced.

Letters of credit (LOCs) enhance an issuer's liquidity in addition to credit quality. LOCs were developed to work in conjunction with certain other creative bond structuring techniques that rely on rapid liquidity to gain investor's confidence. For an annual fee, a bank, generally rated AAA or AA, will guarantee that sufficient funds will be made available to investors by the issuer when needed. If an issuer is unable to meet demand, the issuer draws on the LOC and a loan with the bank is created. LOCs generally represent an irrevocable pledge on the part of the bank. Because they represent a rather unusual liability of the bank, the maximum term available appears to be 10 years. For a 20 year bond issue, an issuer would have to extend the LOC annually by one year so that the next 10 years were always covered. There may come a point in the future, however, when the cost of extending the LOC becomes prohibitive or is simply unavailable due to conditions in the credit markets. Because of this risk, and the limited term of LOCs, they are not frequently used to enhance the creditworthiness of long-term - say 20 or 30 year - bonds. LOCs are used in conjunction with short-term borrowing techniques such as variable rate bonds or tax-exempt commercial paper, and actually are a condition for their use, as will be discussed momentarily.

There are two costs associated with LOCs. One is the annual commitment fee, based on the amount of principal outstanding that is covered by the LOC. Fees are generally less than for bond insurance and lately have been in the .25 to .75 percent range depending on the term and credit quality of the bank. Competition to provide LOCs is extreme and it pays to shop around especially because of the interest of European and Japanese financial institutions in the market.

The second cost is the interest rate charged for funds borrowed under terms of the LOC. If it becomes necessary to call upon the LOC because of insufficient cash flow, a loan is created. The rate on the loan is generally a percent of Prime, because the interest paid will be tax-exempt, but it will be higher than normal tax-exempt borrowing rates.

Lines of credit are similar to LOCs in that they provide liquidity to an issuer. However, they are not irrevocable. Availability of the Line is dependent on the issuer having the resources available to pay off the loan. In other words, the bank lends at its option. The cost is less than the LOC, but it doesn't enhance credit rating. Many creative bond structuring techniques require the higher rating of AAA in addition to proof of liquidity so the line of credit is generally not appropriate.

Variations in Bond Structure

A phenomenon common to most periods of high interest rates is an increased reliance on short-term debt, generally meaning debt with a maturity of less than one year. Figure I is an example of the tax-exempt yield curve and shows the relationship of time to interest rate for a AAA rated borrower. The rise in interest rates is sharp between six months and five years, begins to flatten between five and 15 years, and is virtually level after 15 out past 30 years. This means that a borrower with a bond maturing in one year can expect to pay approximately 6 percent, while that same issuer's bond maturing in 30 years would pay approximately 10 percent. Therefore, by using securities with short maturities to finance capital projects, issuers can save substantial amounts of interest payments, in this case more than 4 percentage points.

In order to capitalize on the savings potential of an upward sloping yield curve, and to attract investors reluctant to lock into a fixed rate investment during rising or volatile interest rate periods, general governmental and project-specific issuers have made increasing use of variable or floating rate securities. An issuer of variable rate securities absorbs the investor's market risk by adjusting the interest rate payable on the bonds at regular intervals to keep the security's rate in line with other tax-exempt rates of similar short-term maturity.

The stated maturity of variable rate bonds is the same as that of fixed rate obligations, 20 years for example. So, to the issuer, the obligation looks like a long-term bond. However, because the interest rate varies over time, generally in weekly, monthly or annual intervals, it looks like short-term debt to the investor and consequently the interest rates payable are of the short-term level.

Long-term money at short-term rates: it sounds too good to be true.

Well, there are certain risks associated with the use of variable rate bonds. In order to attract their interest, investors must be given the opportunity to "put" their bonds back to the issuer for redemption whenever the interest rate is adjusted. Likewise, the issuer can call in any outstanding bonds for early redemption on interest rate adjustment dates. In fact, each year the issuer will call in a certain amount of bonds just as it would if traditional bonds were maturing. Any bonds "put" back to the issuer are delivered to the issuer's remarketing agent, or underwriter, whose responsibility it is to sell the bonds to another investor at the newly adjusted interest rate. If the remarketing agent is unable to resell the bonds, he calls on the LOC that was prearranged with a bank for this purpose. Therefore, the risk borne by the issuer that it will not have sufficient liquidity to redeem a large number of bonds put back for redemption at one point in time is transferred to the bank providing the LOC.

The variable interest rate is generally pegged to a widely accepted market interest rate barometer such as Treasury Bill rates or an index of tax-exempt rates specifically designed for the purpose. The importance of choosing an index rate that closely tracks the market cannot be overstressed. To the extent that investors are pleased with the rate on the bonds, they are not likely to exercise the put option. This minimizes the potential for a call on the LOC and the need to pay the remarketing agent's fee. The remarketing fee will be approximately 1/8 of one percent of bonds put. Of course, a certain percentage of bonds will be put back for redemption. This will vary depending on the type of investor and the period between interest rate adjustments.

After accounting for the approximately one percent annual cost of administering the variable rate program, the interest rate savings over fixed rate long-term bonds is still significant at nearly three percent. In exchange for this savings, the issuer bears the market risk that short-term interest rates will rise over time and cause the net cost of the variable rate financing to be more than long-term financing would have been at the inception of the program. This is very unlikely, especially when evaluated on a present value basis because of the substantial savings achieved in the early years of the program.

For example, Table II is a sample projection of the annual costs of issuing a variable rate bond. It shows that the total cost, assuming that one-year interest rates follow the same cycle over the next 20 years as they have in the past 20 (only in reverse order) the total cost would be \$10

million for a \$5.6 million borrowing. If the issuer had financed this project at long-term rates, it would have paid approximately 10 percent or \$13.2 million over 20 years. Therefore, variable rate bonds would produce a savings of \$3.2 million. Of course, the assumption regarding future rates is crucial and any savings are dependent on having short-term rates continue to be lower than long-term rates were at the time of issuance.

However, our analysis shows that in today's market, short-term rates would have to rise over the next three years to a steady 13 percent in order for variable rate bonds to be more costly on a present value basis. As indicated on Figure II, the highest short-term tax-exempt rates have been historically is 10.50 percent for one month in 1981. Furthermore, issuers always have the option to turn the short-term bonds into long-term debt. If an issuer did this after 10 years, long-term rates would have to exceed 17 percent for the savings to be eroded. The graph shows that long-term tax-exempt have barely exceed 12 percent historically.

Perhaps the greatest risk with variable rate bonds is a budgetary one. Budgeting for debt service becomes very difficult when next year's interest rates are a moving target. Depending on the amount of variable rate bonds outstanding, debt service could differ by millions of dollars between fiscal years. Related to this risk is the difficulty of capitalizing interest in a variable rate bond issue in order to cover interest payments over a three-year construction period on a revenue bond. One solution to this problem is to have the initial term of the financing be three years, and have the bonds begin to float after the project is operational and generating revenues in the forth year. Finally, insurance is available to minimize an issuer's interest rate risk exposure, but it is very expensive and generally doesn't cover catastrophically high interest rate periods. An issuer might be better off by self-insuring against higher rates in the form of a reserve account.

In closing, I would like to leave you with some comments from an article John Petersen and I wrote on creative financing for water related infrastructure that is available in the back of the room. In order to keep from falling farther behind in meeting the nation's infrastructure needs, states and localities are faced with substantial financial requirements. Creative solutions are at hand, although their suitability will depend on a variety of institutional and economic factors. Creative financing is not for every issuer or useful in every situation. Generally it requires that governments absorb more risk than they have with traditional financing, and it puts a premium on speed and sophistication on the part of the issuer. Nonetheless,

the financing arrangements I have touched on today, and others being developed by the marketplace, can provide special solutions that are beneficial to both lender and borrower. However, if used simply as an expedient, to make an otherwise unaffordable project affordable, they can be a prescription for trouble, especially in times of economic and financial contraction.

TABLE I
MUNICIPAL CREDIT RISK PREMIUM

<u>General Obligation Rating</u>	<u>20-Year Avg. Reoffering Yield</u>	<u>20-Year Credit Risk Premium</u>
AAA	9.40%	\$ -
AA	9.60%	\$ 400,000
A	9.80%	\$ 800,000
BAA	10.75%	\$ 2,700,000

TABLE II

Annual Costs of Annual Floating Rate Bond

Government Finance Research Center

Year	Fiscal Year	Principal Outstanding	Annual Rate	Debt Service	Interest Paid	Principal Retired	1.00% LOC Fee	40.00% To Be Remarketed	0.750% Remarket Fee	Total Cost
1	1985	5,630,000	6.00%	490,849	337,800	153,049	56,300	0	0	547,149
2	1986	5,476,951	5.88%	486,254	322,045	164,210	54,770	2,252,000	16,890	557,914
3	1987	5,312,741	7.88%	562,170	418,644	143,526	53,127	2,190,780	16,431	631,728
4	1988	5,169,215	8.48%	584,967	438,349	146,618	51,692	2,125,096	15,938	652,598
5	1989	5,022,597	6.64%	519,068	333,500	185,568	50,226	2,067,686	15,508	584,802
6	1990	4,837,030	5.50%	481,892	266,037	215,855	48,370	2,009,039	15,068	545,330
7	1991	4,621,174	4.42%	449,698	204,256	245,442	46,212	1,934,812	14,511	510,421
8	1992	4,375,732	3.22%	417,258	140,899	276,360	43,757	1,848,470	13,864	474,879
9	1993	4,099,372	3.62%	427,221	148,397	278,823	40,994	1,750,293	13,127	481,342
10	1994	3,820,549	4.50%	447,952	171,925	276,028	38,205	1,639,749	12,298	498,456
11	1995	3,544,321	5.00%	459,032	177,226	281,806	35,445	1,528,219	11,462	505,939
12	1996	3,262,715	3.05%	420,021	99,513	320,508	32,627	1,417,808	10,634	463,281
13	1997	2,942,207	3.25%	423,568	95,622	327,946	29,422	1,305,086	9,788	462,778
14	1998	2,614,261	4.80%	448,527	125,485	323,042	26,143	1,176,883	8,827	483,496
15	1999	2,291,219	4.95%	450,689	113,415	337,273	22,912	1,045,704	7,843	481,444
16	2000	1,953,945	3.50%	432,763	68,388	364,374	19,539	916,487	6,874	459,176
17	2001	1,589,571	3.30%	430,710	52,456	378,254	15,896	781,578	5,862	452,467
18	2002	1,211,317	3.65%	433,600	44,213	389,387	12,113	635,828	4,769	450,482
19	2003	821,930	3.65%	433,600	30,000	403,599	8,219	484,527	3,634	445,453
20	2004	418,331	3.65%	433,600	15,269	418,331	4,183	328,772	2,466	440,249
Total				9,233,439	3,603,439	5,630,000	690,154		205,791	10,129,384

M.P.V. @

10.00%

Annual Cost of Fixed-Rate Bond @ 10.00% \$ 661,297

20-year Cost

13,225,954

Present Value @ 10.00%

5,630,000

FIGURE I
Municipal AAA Yield Curve 5/10/84

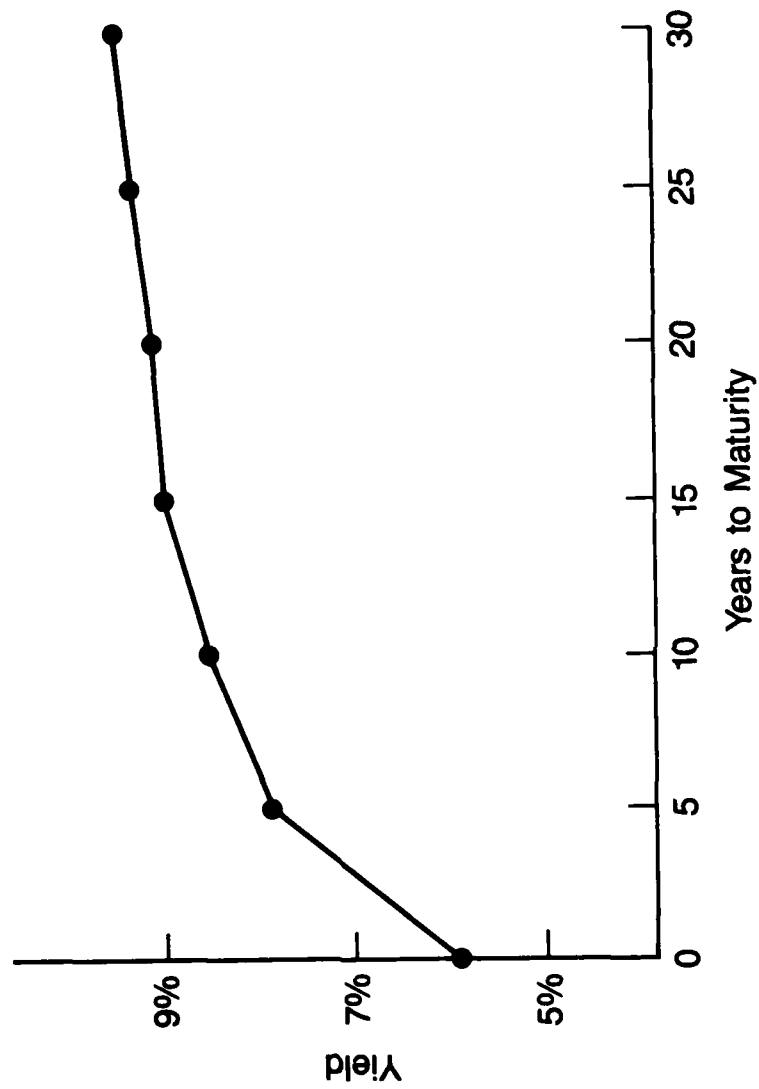
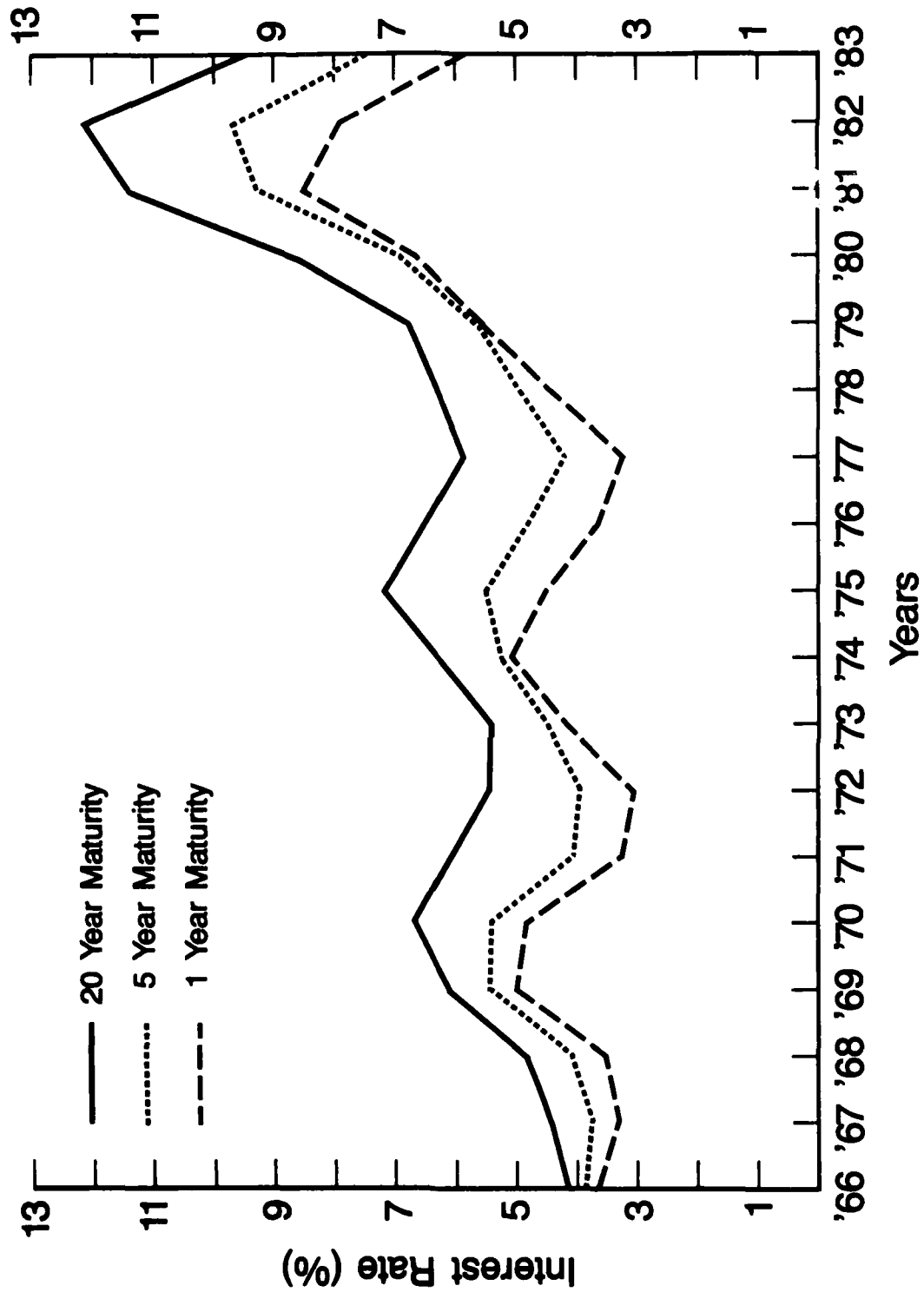


FIGURE II

Short-Term Tax-Exempt Interest Rates Annual Average: 1966-1983



Creative Capital Finance and Water-Related Infrastructure

By John E. Petersen and Wesley C. Hough

Government Finance Research Center
Municipal Finance Officers Association

Introduction

The nation's public works investment—or infrastructure as it has come to be known—has undergone considerable scrutiny as of late and been found wanting and wasting.¹ While definitions differ, public infrastructure in the United States is generally considered to be that stock of structures and heavy equipment that constitutes the nation's basic transportation net and provides for the control, protection, and use of water resources. In the public sector, this relates to such things as highways, airports, dams, waterworks, wastewater treatment and conveyance systems, and the like.

How Big A Problem?

How one defines infrastructure, determines the needed quantity, and when it is needed, will, of course, influence the magnitude of the financing chore that is faced by the public in restoring and enhancing its capital plant. But under almost any definition of need and schedule for meeting it, there are billions and billions of dollars of spending that need to be done, and done soon if the problem is not to deteriorate—literally—to intractable depths.

A relatively conservative formulation of needs by the Congressional Budget Office placed the total needed public capital spending for the remainder of the decade (1983 through 1990) at \$427 billion in 1982 dollars.² This would indicate a total annual spending of \$53.4 billion a year to meet the needs, which would be a considerable jump over the \$36 billion in spending done in 1982 on public infrastructure improvements.

Of the \$36 billion currently being spent on infrastructure, approximately \$24 billion is financed (either by direct expenditure or by grants) by the Federal government, and the remaining \$12 billion is financed by state

Reprinted from Water Journal with permission from Rockwell International, Municipal & Utility Division

and local governments from their own revenue sources. When one examines the above gap of \$17 billion between current and needed annual spending in the harsh light of the current and projected Federal budget deficit, it is clear that the extent to which the gap will be closed will depend on increased state and local capital spending. How that money is to be raised poses a major policy (and economic) dilemma for the decade.

As regards water-related infrastructure needs, the above-cited CBO study has estimated that annual capital spending of \$14.3 billion is needed to meet infrastructure needs in the areas of municipal wastewater treatment and water supply, the two most significant water-related areas when it comes to state and local government.³

Figure One illustrates a summary of these two water-related activities and their financing, showing total capital outlays needed according to the CBO study, the level of Federal aid under existing Federal program plans, and the residual that will need to be financed by state and local governments if the needs are to be met. The last column provides a rough estimate of current infrastructure spending by states and localities from their own sources as measured by construction put in place in 1982. As may be seen in the bottom line of the figure, state and local capital spending would have to double to get infrastructure spending on track in the two major water-related areas.

How will state and local governments, fiscally hard-pressed at present, be able to maintain—much less double—their infrastructure spending in these areas? There is not a ready answer to that question. But as the needs make themselves felt through breakdowns, shortages, and health hazards, one response will be to stretch the imagination and creativity of those charged with coming up with the cash. Moreover, since the sums needed are large and the projects to be financed are long-lived, the sources of funds more likely than not will involve trips to the capital markets using a variety of financing vehicles, each designed to tap into particular pools of cash as circumstances permit.

In the remainder of this article, we address a variety of financing mechanisms that have been or may be used by states and localities to mobilize capital for their infrastructure needs. The reader is cautioned that these range from the tried-and-true to the truly exotic. As is discussed below, the use of many financing techniques is predicated on there being suitable institutional arrangements and requires a willingness on the part of governments to absorb risks and costs that they formerly did not encounter.

Traditional Financing Arrangements

In most cases, water supply and wastewater treatment systems have been a local government responsibility. The long-term debt obligations of local governments

issued to finance water and sewer supply typically have been secured either of two ways: (1) by a pledge of the full faith and credit and taxing power of the jurisdiction, or (2) by a limited obligation to which is pledged only the revenues of the project being financed.

The institutional organization of water and sewer services often delimits which financing alternatives are available. Many communities include these services within their general fund, regardless of whether a service charge is levied on users in addition to local property (or other) taxes. If the revenues and expenses of a municipal water utility are accounted for in the general fund, it is likely that the community would use tax-supported bonds to finance further capital needs. Alternatively, if water services are accounted for in an enterprise fund manner (the intent of the governing body being that the costs of providing the service be recovered primarily through user charges) and any operating subsidy from the general fund is clearly visible, it is likely that revenue-supported bonds would be used.⁴

Tax-supported—or general obligation, as they are known in the financial markets—bonds were traditionally recognized as the lowest cost debt financing arrangement available because of their strong security. The ability to levy taxes was seen as the ultimate form of protection by investors. Investors generally require a higher return from revenue-supported debt.

Although tax-supported debt is less expensive than revenue-supported debt, there are practical limitations to its use. The credit of a municipality is only as strong as its ability to levy and raise taxes in order to pay debt service and provide required services. But, the power to raise taxes has both political and economic limits. Certain observers of the bond market

FIGURE ONE: Water-Related Infrastructure Spending Needs:
Annual Spending by Source of Funds (Billions of 1982 Dollars)

	"Needed" Capital Spending	Federal Spending (Present Policy)	Indicated State & Local Spending	Current State & Local Spending
Wastewater Management	6.6	3.2	3.4	2.2
Municipal Water Supply	7.7	.9	6.8	2.9
Totals	14.3	4.1	10.2	5.1

SOURCE: Congressional Budget Office

have expressed concerns that many local governments' needs for capital investment exceed their financial capabilities. According to Moody's Investors Service, a firm that rates the credit quality of public and private debt issues:

The outlook for cities, as a class of credits, is guarded. Many more city governments found themselves in the red during fiscal 1982, and a larger number than before have had to appropriate fund balances and reserves to fill revenue/expenditure gaps projected for 1983... Based on numerous recent studies of the magnitude of capital required for infrastructure rebuilding and expansion, it is clear that fiscal capacity will be a crucial limiting factor in a determination of borrowing volume.⁵

Despite their higher costs, revenue bonds have a definite appeal for the financing services that have identifiable users, and that lend themselves to the collection of fees based on usage. Where the charges paid by users are sufficient to cover operating expenses and debt service on debt obligations, debt is considered to be self-supporting because it does not rely on the general tax base for repayment. In most states, self-supporting debt is not subject to referendum requirements nor does it count against legal debt limitations. This frees up a community's limited general obligation bond capacity to finance other capital needs that cannot be expected to generate revenue in amounts sufficient to make the debt self-supporting. Other municipal activities that are often operated on an enterprise or self-supporting basis are parking garages, electric utilities, airports, and transit systems.

Self-supporting municipal enterprise funds or special water and sewer authorities can offer other financial and managerial benefits to communities. Valuable information on the costs of the services can be readily available, depreciation of the assets are expensed, and revenues of the

enterprise may be available for capital maintenance. In order to sell water or sewer system self-supporting bonds, a series of covenants with bondholders are entered into that typically prescribe a formula according to which annual water and sewer rates must be established. The formula is intended to ensure that annual revenues are sufficient to cover operating, maintenance, and debt service expenses. These covenants assure that the service is operated on a financially secure basis, and may make local officials less vulnerable to political pressures surrounding necessary rate increases. However, overly restrictive bond covenants may restrict financial flexibility.

Alternative Financial Arrangements

Municipalities traditionally have financed the construction of public infrastructure through a combination of three sources of revenue: Federal grants, current tax revenues, and long-term debt. None of these sources is as buoyant or as plentiful as it once was.⁶ Federal grant authorizations for wastewater construction, for example, have been scaled back from \$4.2 billion to \$2.4 billion and are currently scheduled to disappear completely in 1985. Economic pressures and citizen-imposed tax limitations have caused cutback-management policies to supplant expansionist policies in many regions—leaving few current funds available for capital projects.

Finally, the tax-exempt bond market, in which municipalities borrow long-term funds, has shared the problems of high interest rates with other financial markets. But it has also faced special problems lately. Changes in the federal tax code enacted in 1981 and 1982 created alternative tax-shelter opportunities that compete with tax-exempt income from municipal bonds for investors' dollars. Each of these factors has led localities to search for less costly or more efficient alternatives in financing capital

investment.

We have coined the term "creative capital financing," to describe these alternatives and to emphasize their innovative character.⁷ The traditional method of obtaining capital funds has been to sell a straight debt obligation promising regular payment of fixed interest for a fixed period of time and relying upon the creditworthiness of the issuer for security of repayment. Under such an arrangement, the lender is compensated through interest payments not only for the use of money, but also for absorbing two types of risk: market risk (generally, that interest rate changes may reduce the market value of a lender's investment before it is repaid) and credit risk (the possibility that the principal of the obligation or interest on it may not be honored in full or on time). The governmental borrower, on the other hand, under traditional debt-financing techniques has been faced with fixed commitments entered into at the time of sale. Thus, the debtor has had certainty as to the size and timing of payments on its obligations, a benefit it contracted for in the issuance of the debt. In this sense, the borrower has purchased liquidity in that its future debt-related outflows are fixed and certain at the time it borrows, and it can manage its financial activities accordingly.

Creative financing techniques have altered the traditional risk/reward relationships between borrowers and lenders. They have dealt with rearranging the standard borrowing transaction in one or more of the following four ways:

- shifting the interest-rate risk from lender to borrower,
- enhancing the creditworthiness of borrowers by shifting credit-related risks to third parties,
- increasing the types of returns available to investors beyond those available from the regular receipt of interest income payments, and
- designing instruments so that they appeal to the specialized

need and requirements of certain investor groups.

Another related aspect of creative financing has been to devise ways by which governments themselves can take maximum advantage of financial investment opportunities through the temporary use of borrowed funds as a means of lowering costs. Such opportunities are particularly attractive because of governments' ability to lend at taxable rates of interest while borrowing at tax-exempt rates, a process that comes under the general heading of arbitrage.

Elsewhere, we explore the various options in detail, but here we provide some brief descriptions of debt securities and financing arrangements that fall within the rubric of creative capital financing.⁸

Interim Financing. This arrangement involves the issuance of short-term bond anticipation notes to finance construction. Once the project is completed, long-term financing is secured, usually at higher rates of interest. (For structural reasons, short-term rates are generally much lower than long-term rates in the tax-exempt market.) This approach places the municipality at risk that long-term rates may rise dramatically while construction is proceeding. However, if interest rates remain stable, there is the potential for saving five to ten percent of the long-term bond's amount because construction-period interest is paid at lower short-term rates. Moreover, there is the possibility that long-term rates will drop during the interim and the savings may be even greater.

External Credit Supports. In order to attract hesitant investors concerned about the credit quality of a municipality or the project being financed, issuers can use a variety of techniques that shift the credit risk to a third party that possess greater creditworthiness than the borrower. This can be accomplished through the purchase of a bank letter of credit or municipal bond insurance. In both cases,

highly rated financial institutions for a fee will guarantee the payment of debt service. Under these arrangements, investors are, in effect, purchasing financial obligations of those providing the external credit support, and their higher credit quality generally results in lower interest rates.

Variable Rate Securities. Variable- or floating-rate obligations differ from traditional fixed-rate notes and bonds because their interest rates are not fixed at the time of issuance. These securities attract investors who believe that market rates will rise (or, at least, remain stable) and who are interested in maintaining the capital value of their investment. The issuer of floating-rate securities is able to take advantage of lower financing costs (at least in the short run) because of the premium investor's place on a flexible interest rate.

State Programs to Lower the Cost of Borrowing

The limited ability of municipalities to finance water-supply needs suggests that states may be able to provide assistance to localities in financing the local share. State grants have been used through the years, but the pressure on current revenues at the state level are such as to preclude much more help from this quarter, it would appear. But, state credit assistance remains a possibility.

Because the credit quality of a state is generally higher than that of its constituent municipalities, states can normally borrow at lower interest rates. This fact opens the door to a variety of state financial intermediary activities. Among the state-sponsored programs in existence are loans of state general obligation bond proceeds to municipalities for specific capital purposes, bond banks, state guarantees of local government debt, and revolving loans. Each of these programs is designed to lower the cost of borrowing and improve the bond

market access of smaller jurisdictions. However, to be of maximum effectiveness in saving money, these programs require some form of state-backing of the security. This, in turn, can diminish the state's own credit standing and, hence, its ability to borrow for other purposes.

Tax-Exempt Municipal Leasing

Not all public capital investments require the issuance of long-term bonds. The leading "non-debt" financing arrangement is the tax-exempt municipal lease.⁹ Local governments have greatly increased their reliance on leasing as a means of acquiring the assets necessary to provide public services. In the past, lease agreements have been used by governmental units primarily to contract with a second party for the use of property (e.g. office space) in exchange for the payment of rent. Lease contracts, in the form of lease-purchase agreements, are now being used as a means of purchasing equipment and facilities over time as in an installment sale. Tax-exempt municipal leases have financed the acquisition of such equipment as telephone systems, fire trucks, water meters, and even jail facilities.

Under a municipal lease-purchase agreement, financing is provided by the manufacturer or vendor of the leased property or by third-party investors.¹⁰ The periodic lease payments of the municipality are divided into principal and interest components, and the interest section is considered tax-exempt income by the party providing the financing. But, to generate tax-exempt interest, a lease-purchase contract must meet the requirements of what constitutes a governmental obligation according to the Internal Revenue Code. At the same time, the lease typically includes what is called a non-appropriation clause designed to avoid having the agreement classified as long-term debt under state or local laws. (Such a clause allows a government lessee to ter-

minate, without penalty except for loss of the leased property, a lease for which funds are not appropriated beyond the current fiscal year.) Ownership of the asset transfers to the municipality upon successful completion of the lease.

Because of the federal tax exemption on the interest component of the lease payment, lessors are able to charge lower interest rates on tax-exempt municipal leases than on other conditional sales of comparable characteristics. But, as a result of the higher risk investors face with the non-appropriations clause, interest rates are higher on these leases than on general obligation debt financing.

The growth in leasing at the municipal level are the result of several economic and legal factors:

- In most cases, a lease obligation is not included as long-term debt in calculation of a debt limitation, nor is it generally subject to voter approval. These characteristics may be attractive to jurisdictions faced with federal or court-mandated capital investment requirements and voters reluctant to approve a new bond issue.
- But, there are several positive reasons for the use of leasing. Certain issuance costs of a bond sale, including legal fees, preparation of the official statement, and bond referendum, may be avoided through tax-exempt leasing, and this may compensate for the higher interest rates it causes.
- Leasing often is a suitable method for financing capital assets that are too expensive to fund from one period, but that have useful lives too short to justify the issuance of long-term bonds.
- Finally, certain types of equipment and facilities lend themselves to leasing because rapid changes in technology make ownership impractical, or the equipment's sophistication requires an on-going relationship with the vendor.

Privatization and Leveraged Leasing

A second non-debt financing alternative is to get the private sector directly involved in financing, building, and perhaps operating the water or sewer municipal service. The Internal Revenue Service's tax code contains substantial incentives for investment in capital facilities and equipment by tax-paying entities. Because municipalities are not taxpayers, they can not directly take advantage of income tax depreciation deductions and investment credits generated by the ownership of equipment. However, through a lease agreement or a service contract with a private investor, a local government may be able to benefit indirectly from federal investment tax incentives."

Using this financing alternative, the private party would build the water supply or wastewater treatment facility to the municipality's specifications. Ownership of the facility must remain with the private investors in order to take advantage of investment tax incentives. The facility would then be *leased* to the municipality, which would operate the facility, or the municipality might *contract* with the private party to provide complete water or wastewater treatment services. In either event, the cost to the municipality of the facility could well be less than if it had financed the facilities with its own general obligation bonds because a portion of the investors' return on investment comes in the form of tax benefits such as depreciation and any available tax credits.

The service contract approach would appear to be the lowest cost leveraged lease financing alternative. This is because the investment tax credit (ITC), a one-time tax credit equal to 10 percent of the value of eligible equipment, is only available to a taxpayer when a property is used in the provision of services to a government or a tax-exempt entity. (Property rented or leased to a government or tax-exempt entity—

with the exception of substantially rehabilitated older or historic structures—is not eligible for the ITC.) Both arrangements, however, currently enable the owners to depreciate the property for tax purposes on an accelerated basis.

In order to demonstrate the financial attractiveness of the service contract approach, *Figure Two* summarizes the first and second year results of such an arrangement used to finance a \$10 million facility. Investor equity equal to 20 percent of the \$10 million capital cost (\$2 million) is contributed to the project, giving investors ownership rights. This contribution lowers the size of the long-term industrial revenue bond (IRB) issue to \$8 million. The annual service contract fee (net of operation and maintenance expenses) is set approximately equal to the debt service on the IRB. The investors' return on investment comes almost entirely from tax benefits they are entitled to as owners of the facility.

The service contract financing approach results in an annual savings of nearly \$89,000 over the annual debt service required on a \$10 million general obligation bond (See *Figure Three*). Over the 20 years that the bonds are outstanding, the service contract would save over \$1.7 million or 17 percent of the project's initial capital cost. Discounted to present value at a rate of 9 percent, the total savings are still substantial, amounting to over \$800,000 or 8 percent of capital cost.

The potentials of leasing in the area of tax-exempt financing had finally begun to be explored when the Congress threw a massive roadblock in the way of future creative "deals." On May 24 of this year, Congressman Pickle of Texas introduced legislation that would effectively preclude the use of government leases as a means of transferring tax benefits to private sector investors. At this writing, the future of tax-exempt sale-leasebacks and service contracts remains in doubt.

This episode—and uncertainty—demonstrates one of the key features of creative financing: much of its appeal is dependent on the treatment of government obligations in the Federal tax code.¹²

Conclusion

In order to keep from falling farther behind in meeting the nation's infrastructure needs, states and localities are faced with substantial financial requirements. In the case of the two most important categories of water-related infrastructure, municipal water supply and wastewater treatment, there should be a doubling of capital spending over the remainder of the decade if the needs gap is to begin to be closed. These capital intensive, long-lived assets will largely have to be financed by increased borrowing or through the use of other capital-raising

mechanisms. Creative solutions are at hand, although their suitability will depend on a variety of institutional and economic factors.

Creative financing is not for every issuer or useful in every market. Generally, it requires that governments absorb more risk than they have with traditional financing; and, it puts a premium on speed and sophistication on the part of the issuer. It also involves financing arrangements that are at the frontier of what is permissible at the fringe of the Tax Code. Nonetheless, in turbulent markets, the financing arrangements discussed above can provide special situations that are beneficial to both lender and borrower; however, if used simply as an expedient, to make otherwise unaffordable projects affordable, they can be a prescription for trouble, especially in times of economic and financial contraction. ■

NOTES

¹ For a comprehensive summary of public infrastructure needs and their financing, see Government Finance Research Center, "Building Prosperity: Financing Public Infrastructure for Economic Development," Chicago: Municipal Finance Officers Association (forthcoming, 1983).

² Congressional Budget Office, *Public Works Infrastructure: Policy Considerations for the 1980s*, Washington, D.C. (April, 1983).

³ *Ibid.*, p.2. The other major category of water-related infrastructure, water resources (dams, flood control, regional water supply) is primarily a Federal and state responsibility for which the Federal government has taken primary financing responsibility. See *Ibid.*, p. 19.

⁴ For a discussion of alternative debt financing arrangements and their institutional settings, see Robert Foran and Ronald Forbes, "Some New Approaches to Financing Water Systems," *The Bond Buyer* (June 13, 1983).

⁵ *Moody's Bond Survey*, New York: Moody's Investors Service (December 13, 1982) p. 1.

⁶ See U.S. General Accounting Office, *Trends and Changes in the Municipal Bond Market As They Relate to Financing State and Local Public Infrastructure*, Washington, D.C. (September 12, 1983).

⁷ For a comprehensive discussion of alternatives, see John E. Petersen and Wesley C. Hough, *Creative Capital Financing for State and Local Governments*, Chicago: Municipal Finance Officers Association (1983).

⁸ *Ibid.* Chapters 4 through 12.

⁹ A detailed discussion of the municipal lease in its many permutations is found in A. J. Vogt and Lisa A. Cole, eds., *A Guide to Municipal Leasing*, Chicago: Municipal Finance Officers Association (1983).

¹⁰ The outlook for the lease financing alternative is uncertain due to legislation pending (the "Pickle Bill") before Congress that would drastically change the availability of tax-incentives as they relate to public facility financing. See introduction of H. R. #3110, *Congressional Record*, May 24, 1983, pp E-2512 through E-2514.

¹¹ The leasing legislation presently before Congress would restrict the uses for which service contract financing can be used. See *Ibid.*

¹² See *Creative Capital Finance* Chapter 12.

FIGURE TWO: An Illustration of Service Contract Financing

Service Contract Approach			
Total Capital Cost	\$10,000,000		
Source of Funds:			
Industrial Revenue Bond ¹	8,000,000		
Investor Equity	2,000,000		
	Year 1	Year 2	Total (000's)
Service Contract Revenue ²	\$998,000	\$998,000	\$19,960
Debt Service Expense	997,125	997,125	19,942
Before Tax Income	775	775	18
Tax Benefits ³			
Depreciation	\$562,500	\$825,000	\$ 5,000
ITC	750,000	-0-	750
After-Tax Return	\$1,313,275	\$825,775	\$ 5,768

¹ 20-year bond at 11 percent.

² Exclusive of operation and maintenance.

³ Benefit to individual investor in 50 percent tax bracket of 5-year ACRS depreciation and 10 percent first-year ITC on 75 percent of total capital cost plus straight-line depreciation on 25 percent of capital cost. Does not include deductions from income for interest portion of debt service payment.

FIGURE THREE: Cost of Service Contract Compared to General Obligation Bond Financing

	Annual	Total
20-year General Obligation Bond	\$1,086,863	\$21,737,260
Service Contract Fee	998,000	19,960,000
Service Contract Savings	\$ 88,863	\$ 1,772,260

SEMINAR ON WATER PROJECT FINANCING
U.S. Army Corps of Engineers

Fort Belvoir, Virginia 22060
May 17, 1984

PANEL IV
Creative Financing Techniques

Internal Financing
of
Water Resources Projects

Ronald M. North
Institute of Natural Resources
University of Georgia
Athens, Georgia 30602

University of Georgia
Bicentennial
1785-1985

INTERNAL FINANCING
OF
WATER RESOURCES PROJECTS

Ronald M. North¹⁾
Institute of Natural Resources
University of Georgia
Athens, GA 30602

"In technology (and water resources financing) ... we are entering a period of turbulence, a period of rapid innovation. ... but a time of turbulence is also one of great opportunity for those who can understand, accept, and exploit the new realities. It is above all a time of opportunity for leadership." Peter Drucker

The Corps is to be congratulated on accepting leadership for the discussion of this currently critical issue of discovering alternatives for financing the Nation's water resources business. Internal, or pay-as-you-go, financing of water resources projects and programs is a method of generating investment and working capital from the vendible services of existing or proposed projects. The concept implies that one has in place a stock of operating projects that have been financed by other means somewhere back in history. Although 'bootstrap' operations exist in a few small enterprises with minimum to no capital requirements, it is not likely that any water project can be initiated in a self-supporting mode. It would be possible to finance such a project through prepayment plans and contracts with users in which services expected are either prepaid or capital is provided in anticipation of such services. This type financing can be done by a public or private enterprise but it is most frequently accomplished in the form of joint ventures of users or as cooperatives.

Given the current stock of water projects in Federal, state and local governments, special districts and the private sector, we are in great position to embark on internal financing from current and potential revenues -- if we are willing to make rather substantial changes in the way we price water project services, allocate the revenues and construct our institutions and organizations. The limiting factor in this approach is not technical but philosophical! Are we willing to admit that most water projects, and the system as a whole enterprise, were a good investment by the taxpayers and that they should now benefit from this foresight. This does not mean that we taxpayers expect to receive under-priced services forever. The infant water industry is now mature -- it can stand alone with good management. We are willing, as users, to pay a reasonable fee for services in order to convert the system from tax supported to enterprise supported! It is time we began allocating our water project services efficiently and equitably! The question before us is that of whether or not we can resolve to allocate the vendible services from water projects in an economically

efficient and fair or equitable manner -- to ourselves and posterity. We will discuss, in this paper, the technical aspects of how this efficiency can be achieved, given the pricing and transfer precedents already established in the industry and the available institutions to effect internal financing. Let us look briefly at why we are now so concerned about innovative financing of water resources.

TRENDS IN FEDERAL FINANCING

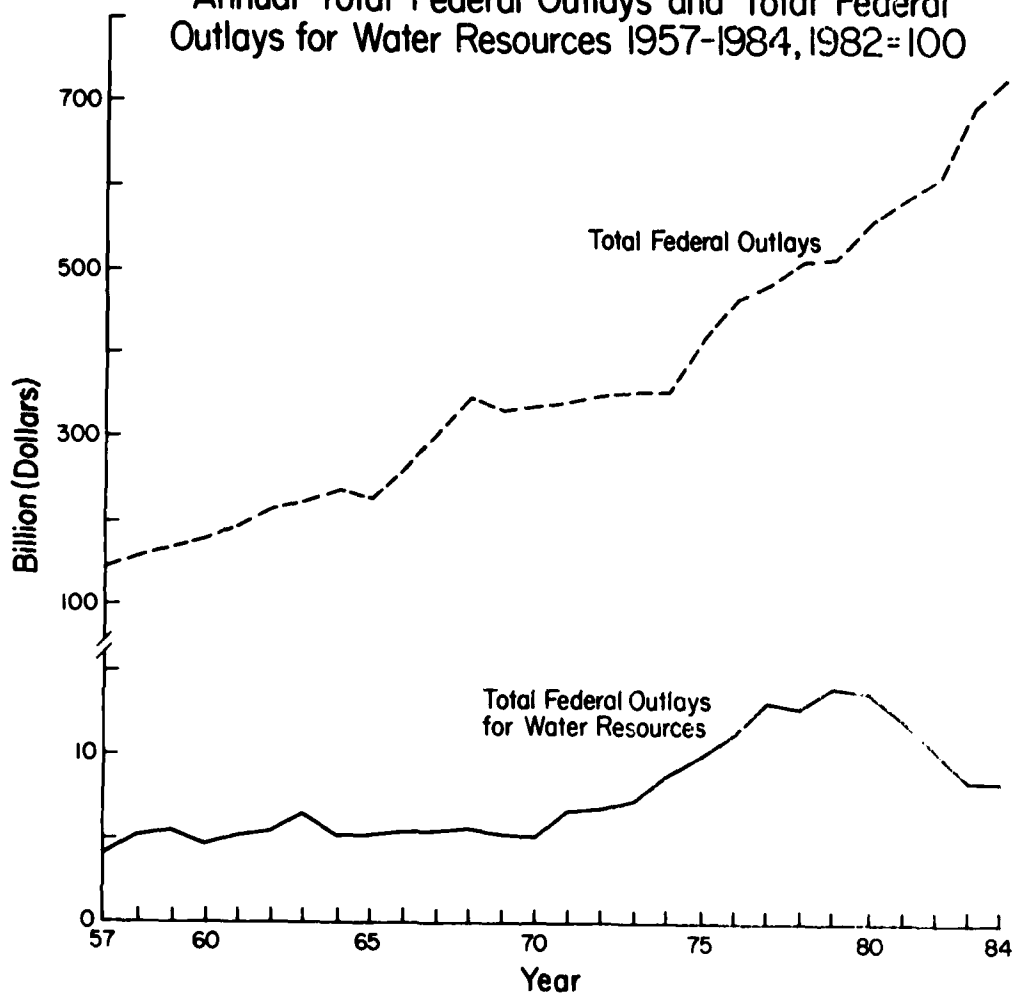
Federal outlays for water resources reached a peak in constant dollars in 1979-80 (Figure 1). While total Federal outlays increased substantially after 1975, the outlays for water resources grew more slowly until 1977 when they began to level off and decline in 1980. Federal outlays for 1984 will be about the same as they were in 1974. For the traditional purposes and sources, Federal funding is declining in absolute nominal and constant dollars and relative to both GNP and the Federal budget. An historical view of funding by activity (planning, construction, O & M) for the three major construction agencies combined (COE, SCS, BuRec.) is given in Figure 2. Construction outlays began declining in 1977 while O & M continues to rise. These changes should be red flags to the Nation -- warning about imminent changes in the water business.

Additional data are given for Environmental Protection Agency (EPA) outlays and Tennessee Valley Authority (TVA) obligations. Outlays for construction grants by EPA reached a peak also in 1977, with a precipitous decline since. The only agency to maintain a high level of expenditures is the one that generates its own funding from revenues and potential revenue, the TVA. However, these TVA outlays include substantial steam generation funds.

The nominal (current) dollars of outlays for all natural resources and environmental programs, including water supply and water quality, have been summarized by the Office of Management and Budget (Table 1). These data show the receipts from water and natural resource sales and user fees -- a growth of 371 percent over the 10 years 1974-84. Stated another way, receipts were only 11 percent of gross outlays in 1974 but they will rise to 29 percent in 1986 (21% in 1984).

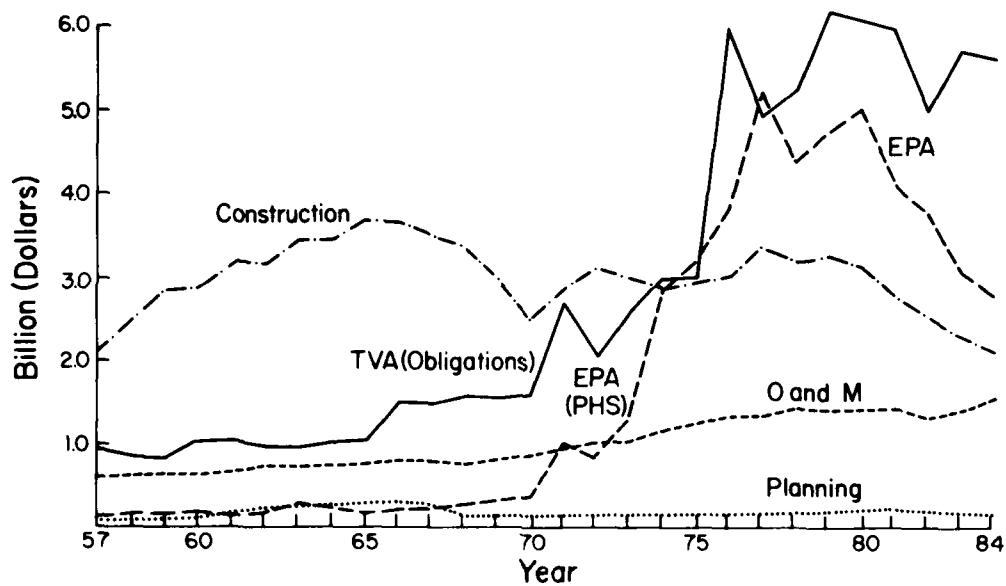
Three critical points are observable from these data. First, the declining funding is occurring in all categories of natural resources. Second the additional data (by the author) on water transportation reflect the critically increasing need to devote more resources to project and program O&M. None of the O&M has been set aside or projected as an obligatory entitlement for traditional water resources projects. These O&M cost estimates are included in the project benefit cost estimates but the outlays are not provided for except through annual appropriations or by retaining revenues for O & M expenses. This is especially critical for navigation and most non-power producing projects. The third point is the rapidly increasing receipts collected from these projects (most of which comes from power revenues). These receipts offset net outlays so that the real declines (especially for the Corps projects that do not enjoy basin fund accounting) are more serious than a cursory examination reveals. As the revenues from all the power projects built in the 1950's and 1960's begin to balloon with price

Figure 1
Annual Total Federal Outlays and Total Federal
Outlays for Water Resources 1957-1984, 1982=100



Source: United States Federal Budgets

Figure 2
Consolidated Annual Federal Outlays for Construction Agencies,
by Activity, and for TVA and EPA.
1957 - 1984, 1982 = 100



Source: United States Federal Budgets

Table 1. Federal Budget Outlays for Natural Resources and Environment.

Function	1974	1975	1976	TQ ¹	1977	1978	1979	1980	1981	1982	1983*	1984*	1985*	1986*
Water resources	2.2	2.6	2.8	0.8	3.2	3.5	3.9	4.3	4.2	4.0	4.0	3.3	3.5	3.6
Conservation & land management	0.7	1.3	1.2	0.5	1.3	2.0	1.9	2.3	2.6	2.7	2.7	2.2	2.1	2.1
Recreational resources	0.7	0.8	0.9	0.3	1.0	1.4	1.5	1.7	1.6	1.5	1.7	1.5	1.4	1.3
Pollution control & abatement	2.0	2.5	3.1	1.1	4.3	4.0	4.7	5.5	5.2	5.0	4.3	4.1	4.0	3.8
Other natural resources	0.7	0.8	0.9	0.2	1.0	1.2	1.3	1.4	1.5	1.5	1.6	1.4	1.4	1.4
Gross outlays	6.3	8.0	8.9	2.9	10.8	12.1	13.3	15.2	15.1	14.7	14.3	12.5	12.4	12.2
Less receipts	-0.7	-0.7	-0.8	-0.3	-0.8	-1.1	-1.2	-1.4	-1.6	-1.9	-2.1	-2.6	-3.1	-3.5
Net outlays	5.6	7.3	8.1	2.6	10.0	11.0	12.1	13.8	13.5	12.8	12.2	9.9	9.3	8.7
Water transportation [#]	1.4	1.5	1.6	0.4	1.7	1.9	2.0	2.2	2.4	2.7	3.1	3.0	3.1	3.2

*Estimate. [#]Included in Transportation Budget.

Source: The U.S. Budget in Brief Fiscal Year 1984. Office of Management and Budget. Washington, 1983. p. 73.

adjustments, we should consider dedicating these revenues to the water industry to meet new needs for construction, rehabilitation and O&M. The vendible services of hydropower, M & J water supply and agricultural water supply are the most obvious sources of internal financing. Navigation has been a substantial source of potential self-financing since 1978 through the fuel tax trust account. We will concentrate our discussion in this paper on hydropower potential.

HYDROPOWER POTENTIAL

The most lucrative source of internal financing for multiple purpose water projects is the generation of hydropower. Its advantages as a source of funding stem from its high level of vendibility and its suitability for peaking purposes where premium prices can be charged. It is timely because of the sudden increases in fossil energy costs that have changed our situation and our attitudes about energy consumption. One needs only a little imagination to infer that most Federally financed water projects since 1902 were, in fact, hydropower projects, rather than "Reclamation" or "Rivers, Harbors and Flood Control Projects."

The idea of using hydropower as a vehicle to insure the economic feasibility of water projects had its Genesis in the Bureau of Reclamation. Hydropower was first included as a project purpose to provide power for irrigation pumping and associated project purposes. Later, the sale of "surplus power" for non-project purposes, rather than waste such potential energy, made good sense. Golze' (1961, p. vii) states the case succinctly: "The definition of reclamation ... is the process of reclaiming desert lands of the western United States through irrigated agriculture, supported by the coordinated development of hydroelectric power:" Although the "public vs. private power" controversy was joined by the Federal Power Act of 1920 and was effectively settled with the creation of TVA in 1933, there remains a reluctance to authorize or fund water projects strictly for power. They always contain a less pecuniary purpose such as economic development, flood control, navigation or reclamation. I think that one could substitute the term "hydropower" for "multiple purpose" in most such projects built or authorized since 1920 and have an accurate description of this class of projects.

Another important aspect of using hydropower as a source of revenue for water projects and programs stems from the methods by which benefits are estimated, costs are allocated and recovered and transfers are effected. The source of benefits claimed for the hydropower component of a project is the "least cost alternative" concept. It is obvious that large financial and social costs are involved in providing peaking power through standby steam generation, through gas turbine generation or even through the regional grid systems. It is also apparent that rising costs of fossil and nuclear fuels have made the "least alternative cost," for both capacity and energy, increase rapidly in the last decade. In fact, if the rate of exhaustion of fossil fuels had been discounted into the market price (thereby providing a more accurate social cost) fossil fuel prices would not have been so understated before 1974. If the prices of hydro generated power were set closer to the current least cost alternative rate (with or without adjustment for peaking values) the revenues generated from Federal hydropower projects would be substantial indeed. I propose that hydro power energy is underpriced; that the costs allocated to hydropower could be increased and that,

even given both these conditions, large transfers are effected from hydropower users to other classes of project output users.

A look at some rough comparisons from sales of hydropower through the Southeast Power Administration (SEPA) will provide a clue about the magnitude of potential revenues from hydropower (Table 2). The SEPA system generated an average of \$46 million over the 8 year period 1975-82 at a blended average price (capacity plus energy) of 7.5 mills per kwh. If one assumes that 80 percent of this power was used for peaking (and that the alternative method for peak power generation was a gas turbine), there was a potential revenue of about \$315 million per year. The revenue could be increased by a factor of 6.7, on average. One should note the rather constant level of output in gwh, the rising prices of both hydro and turbine generated power and the consequent increase in revenues. One should note also the sensitivity of hydro to technical limitations (the drought in 1981) and market conditions that result from rising O & M costs included in the price.

Similar data for hydropower generation in the Bonneville Power Administration (BPA) System, but calculated at the firm power rate, indicate that the potential revenue could be as much as \$1.6 billion for a six year average versus \$410 million at the rates charged (Table 3). In the BPA system potential revenues could be increased by a factor of 3.9, on average. Prices in the BPA system were doubled in the two years, 1980-82 while revenues trebled. Production of energy in the BPA system area increased substantially from 1977-82.

Additional data, over a 12 year period, for the Southwest Power Administration (SWPA) system indicate the increases in potential revenue for both firm power (1.55 times) and peak power (2.3 times) by pricing at full alternative costs. However, on a firm power to peak power change (comparable to data for SEPA and BPA) the potential increase could be as much as 3.1 times on average over the 12 year period (Table 4). Rates for firm power in SWPA area more than doubled from 1978-81 but production and revenues were erratic. However, rates for peaking power were traditionally about twice those for firm power through 1978 with steady production and revenues. In recent years (1979-81) firm power prices were only slightly less than those for peaking.

The data for the Western Power Administration (WPA) system indicate large potential increases in revenues, about 6.8 times, over the 5 year average (Table 5). Production and prices in the WPA area were relatively constant from 1978-82, with little growth in revenues.

It is not our purpose to dwell on the possible causes of variations in outputs but to demonstrate that prices for hydropower from Federal projects has been priced too low when compared to either market prices or alternative costs, for both firm and peak energy. This appears to be the case for all of the Federal power marketing agencies and their producers (Corps and BuRec). The data for TVA, as a producer have not been studied by the author but it appears to be similar to the other agencies. The relationships of prices, revenues and costs that result in repayments of project costs to the U.S. Treasury and "profits" are now considered for the SEPA area in order to understand the potential.

Table 2. Hydropower Generation and Sales through Southeast Power Administration; Revenues Generated at Actual kwh Charges and Potential Revenues from Alternative Cost Rates, 1975-1982.

Year	Total gwh Generated	Average mills per kwh	Revenue Received			Alternative Cost [#]	
			4 systems	Cumberland	Total	mills/kwh	Revenue
			- - - - - Mil. \$ - - - - -			Mil. \$	
1975	7,559	5.84	21.675	15.788	37.463	31.09	235.015
1976	8,038	6.16	28.111	15.512	43.623	35.40	284.551
1976T	1,423	7.72	6.858	3.878	10.736	35.40	61.107
1977	6,453	7.65	28.694	10.420	39.114	37.38	241.222
1978	8,323	7.31	33.202	17.184	50.386	32.54	270.841
1979	8,402	7.66	33.976	21.351	55.327	38.00*	319.285
1980	8,722	8.00	40.120	20.012	60.132	44.00	383.783
1981	4,342	8.67	21.376	15.654	37.031	78.10	339.107
1982	<u>6,534</u>	<u>8.88</u>	<u>28.053</u>	<u>18.657</u>	<u>46.709</u>	<u>103.55</u>	<u>676.577</u>
Total	59,796	--	242.065	138.456	380.521	--	2,811.488
Mean	7,248	7.54	29.341	16.783	46.124	47.02	340.786

Notes: * = Estimated. # = If only 80 percent of power was for peaking then the blended mean revenue would be \$315.111 million. The mills per kwh are average and include the energy charge and the capacity charge. The Four (4) systems include the Kerr-Philpott system, in Virginia/North Carolina; the Georgia/Alabama System (Allatoona, Buford, Clarks Hill, Hartwell, Walter F. George, Miller's Ferry, West Point, Jones' Bluff and Carters); The Laurel System and the Jim Woodruff System. The Cumberland System power is sold to TVA for a lump sum annual charge. The Cumberland System includes Carter Hill, Dale Hollow, Wolf Creek, Old Hickory, Cheatham, Barkley, J. Percy Priest and Cordele Hull.

Sources: Southeast Power Administration Annual Reports; Chief of Engineer's Annual Reports and Department of Energy Documents on "Thermal-Electric Plant Construction Cost and Annual Production Expenses" and on "Gas Turbine Plant Construction Cost and Annual Production Expenses."

Table 3. Hydropower Generation and Sales through Bonneville Power Administration; Revenues Generated at Actual kwh Charges and Potential Revenues from Firm Power Alternative Cost Rates, 1977-1982.

Year	Total gwh Generated	Average mills per kwh	Revenue Received	Alternative Cost	
				mills/kwh	Revenue
			Mil. \$		Mil. \$
1977	61,746	3.24	194.605	15.16	936.069
1978	79,366	3.27	259.527	16.23	1,288.110
1979	75,406	3.39	255.626	19.50	1,470.417
1980	74,207	5.74	425.148	23.53	1,746.091
1981	84,187	7.16	602.779	23.50	1,978.395
1982	<u>88,743</u>	<u>11.56</u>	<u>1,025.869</u>	<u>24.00*</u>	<u>2,129.832</u>
Total	463,655	--	2,463.554	--	9,548.914
Mean	77,276	5.31	410.592	20.59	1,591.486

Notes: * = Estimated. Alternative cost is for firm power since the hydro system is primarily base load producing in the Bonneville area.

Source: Annual Reports, USDOE, Bonneville Power Administration.

Table 4. Hydropower Generation and Sales through Southwest Power Administration; Revenues Generated at Actual kwh Charges and Potential Revenues from Alternative Cost Rates, 1970-1981, for Firm and Peak Power.

Year	Total gwh Generated Firm Power	Firm Power		Potential Revenue	Total gwh Generated Peak Power	Peak Power		Potential Revenue
		Mills/ kwh	Actual Revenue	Firm Power Alternative		Mills/ kwh	Actual Revenue	Peak Power Alternative
				- - - - Mil. \$ - - -				
1970	1,288	6.4	8.243	5.152	1,874	11.0	20.601	NA
1971	1,594	6.5	10.361	7.508	2,010	10.3	21.803	NA
1972	916	6.4	5.862	4.626	2,043	11.4	23.355	NA
1973	3,967	6.5	25.786	23.445	2,137	11.6	24.716	31.278
1974	5,375	6.5	34.938	32.250	2,283	11.5	26.282	57.896
1975	6,138	6.6	40.511	76.050	2,438	11.4	27.703	75.797
1976	1,461	6.7	9.789	19.344	2,427	11.7	28.524	85.916
TQ	633	6.3	3.988	8.381	630	11.7	3.124	22.302
1977	882	6.6	5.821	13.371	2,345	11.3	26.503	87.656
1978	2,930	6.2	18.166	47.554	2,027	11.7	23.688	65.959
1979	3,409	11.1	37.849	66.476	1,856	13.6	25.310	70.528
1980	1,876	13.0	24.388	44.142	2,078	13.8	28.711	91.432
1981	<u>323</u>	<u>14.0</u>	<u>4.522</u>	<u>7.591</u>	<u>1,529</u>	<u>17.6</u>	<u>26.888</u>	<u>119.415</u>
Total	30,792	--	230.224	355.890	25,677	--	307.208	708.179
Mean	2,514	7.5	18.794	29.052	2,096	12.0	25.078	54.475

Sources: Annual Reports Southwest Power Administration

Table 5. Hydropower Generation and Sales through Western Power Administration; Revenues Generated at Actual kwh Charges and Potential Revenues from Alternative Peaking Power Cost Rates, 1978-1982.

Year	Total gwh Generated	Average mills per kwh	Revenue Received	Potential Revenues Alternative Cost of Gas Turbine
- - - - - Mil. \$ - - - - -				
1978	29,792	7.67	228.505	969.432
1979	33,620	8.47	284.761	1,277.560
1980	35,837	8.89	318.591	1,576.828
1981	32,401	9.14	296.145	2,530.518
1982	<u>35,974</u>	<u>9.86</u>	<u>354.704</u>	<u>3,725.108</u>
Total	167,624	--	1,482.706	10,079.446
Mean	33,525	8.85	296.541	2,015.889

Sources: Annual Reports from Western Power Administration.

FINANCING WATER PROJECTS THROUGH HYDROPOWER IN SEPA AREA

A closer look at the five SEPA distribution systems will add some insight into the revenue generation, costs and repayments for these projects (Table 6). The oldest system is the Cumberland (on line with first unit in 1949) with an allocated cost to hydropower of \$320 mil. This power is sold on an annual lump sum basis to TVA. About \$82 million of the allocated costs have been repaid -- roughly one-fourth in 35 years, net of O & M and interest. However, the Kerr-Philpott System and the Jim Woodruff Project have repaid nearly one-half of the allocated hydropower costs in less time. The Georgia-Alabama System is less than one-fourth repaid but it contains several recent projects. A very small increase in hydropower rates would accelerate these payoffs of hydropower costs and recover other (non-reimbursible) project costs in much less than the 50 year payoff period. Alternatively, slightly higher rates, even at alternative costs for firm power, could be used for financing new projects with the appropriate changes in handling of funds, i.e., by operating on a trust fund basis.

A detailed look at 10 year data from SEPA provides insights into the net revenues available for repayment of capital and for internal capital generation (Table 7). For the 1973-82 period SEPA gross revenues (five systems and 21 projects) grew from \$40.2 mil. per year to \$65.6 mil., a 62% increase. However, Corps O & M charges grew from \$7.2 mil. annually to \$22.7 mil., a 214 percent increase. Another comparison is that Corps O & M was 18% of gross revenues in 1973 and 35% of gross revenues in 1982. This increase in O & M expense plus increases in interest charges resulted in a steady decline in net revenues from about \$12 mil. average in 1973-75 to about \$8.6 mil. average in 1980-82. Using conventional accounting, the total cash available for repayment (debt service) and internal financing is the total of depreciation, interest and net revenue -- about \$33.4 mil. in FY 1982 or 51% of operating revenue. The 10 year average was \$31.1 mil. or 60% of operating revenue. This amount is only 4.5% of the unpaid investment balance of \$748 mil. at the end of FY 1982 or about 3.3% of original investment (all new work) of \$1,007 mil. From an investment point of view, the rates being charged for SEPA power are recovering costs slowly (IAW existing policy) but they are both below "market" prices and far too low to generate much new capital for investment in the conventional sense. Again, any modest increase in charges toward market values will accelerate the internal generation of capital now rather than in 2000 when many Corps projects in the SEPA service area will be paid out, even at existing rates.

FINANCING WATER PROJECTS IN THE GEORGIA-ALABAMA SYSTEM

The Federal Government, through the Corps of Engineers, has devoted substantial resources to the development of three interstate rivers in the south-east, the Savannah, the Coosa and the Chattahoochee. For power generation purposes, these projects are considered as two systems -- the Georgia-Alabama system and the Jim Woodruff project. Federal investments on the Savannah River have been made for Clark's Hill, Hartwell and the Richard B. Russell projects as well as for navigation. All of these projects were authorized and designed (or modified) to provide navigation, flood control, hydropower generation, flow regulation and recreation. The projects on the Savannah River provide navigation benefits indirectly by maintaining a navigable channel south of Augusta to

Table 6. Cumulative Investments, Expenses, Revenues and Repayments for Five Systems, Southeastern Federal Power Program through FY 1982.

System/Project	Initial Repayment	Allocated Hydropower Investment	Investment Repaid		Cumulative		Average Net Return on Investment
					Gross Revenues	Gross Expenses	
		- - - Mil. \$	- -	%	- - - Mil. \$	- - -	%
Cumberland	1949	320	82	25.6	294	212	0.8
Georgia-Alabama	1950	549	123	22.4	485	362	0.7
Kerr-Philpott	1953	82	40	48.8	152	112	1.7
Jim Woodruff	1957	27	13	48.1	46	33	1.9
Laurel	1978	<u>29</u>	<u>1</u>	<u>03.4</u>	<u>7</u>	<u>6</u>	<u>0.9</u>
Totals		1,007	259	25.7	984	725	--

Note: * Understates return since annual interest charges of about \$20 mil. and annual depreciation charges of about \$5 mil. are included in annual expenses. Percentage shown is for initial (undepreciated) plant value.

Sources: Southeast Power Administration Annual Reports and Repayment studies.

Table 7. Summary of Southeast Power Administration Financial and Operating Data, 1973-1982.

Year	No. of Projects	Operating Revenue	Corps O & M	Depre- ciation	Interest	Other Expense	Total Expense	Net # Revenue	gwh Produced
----- Mil. \$ -----									
1973	16	40.202	7.227	3.032	12.658	5.373	28.290	11.919	7.944
1974	17	42.691	8.005	3.281	13.152	4.968	29.406	13.286	7.466
1975	19	43.327	9.616	3.368	13.757	5.243	31.984	11.543	7.452
1976	20	48.093	11.731	4.037	15.694	4.850	36.312	11.781	7.809
1976T	20	10.957	3.362	1.528	4.229	1.299	10.418	0.539	1.419
1977	20	47.121	13.726	4.350	17.196	5.824	41.096	6.025	6.163
1978	21	53.926	16.780	4.563	20.224	5.633	47.200	6.726	7.378
1979	21	58.706	18.289	4.756	20.309	5.614	48.968	9.738	7.666
1980	21	64.591	20.181	5.271	20.365	5.825	51.642	12.949	8.070
1981	21	59.396	22.509	5.049	20.323	7.386	55.267	4.129	5.729
1982	<u>21</u>	<u>65.581</u>	<u>22.668</u>	<u>5.217</u>	<u>19.409</u>	<u>9.468</u>	<u>56.762</u>	<u>8.819</u>	<u>6.862</u>
Total	--	534.591	154.094	44.452	177.316	61.483	437.345	97.454	73.958
Mean		52.155	15.033	4.337	17.299	5.998	42.668	9.508	7.215
Percent	--	100.0	28.8	8.3	33.2	11.5	81.8	18.2	--

Note: # Net revenue is allocated to repayment of Corps Capital costs allocated to hydropower.

Sources: Southeast Power Administration Annual Reports and Repayment Studies.

Savannah. The Apalachicola-Chattahoochee-Flint (ACF) is well endowed with Federal multiple purpose projects with the Jim Woodruff, Andrews, Walter George, West Point and Buford Dam projects producing power and navigation (from Columbus south). The Alabama-Coosa River basin includes the Carter's, Miller's Ferry and Jones Bluff projects that provide power and navigation (south from Wetumpka).

There are eleven multiple-purpose projects in the Georgia-Alabama system; four in the Coosa basin, four in the Apalachicola-Chattahoochee-Flint basin and three in the Savannah basin. The Allatoona, and Carter's projects in the Coosa basin had reported accumulated Federal costs for flood control, power, navigation and recreation of \$337.0 mil. through FY 1983. However, these projects were reported to have generated revenues of \$82.2 mil. from hydropower sales through FY 1983. Nearly 25 percent of all project costs in the Alabama-Coosa system (61% for Allatoona) have been recovered (on a nominal, non-discounted basis) in 34 years since the first power came on-line from Allatoona.

In the Chattahoochee basin the Federal Government had invested \$409.5 mil. in four multiple purpose projects [\$116 mil. in Walter F. George, \$80 mil. in Sydney Lanier (Buford), \$76 mil. in lake Seminole (Jim Woodruff) and \$138 mil. in West Point] for flood control, navigation, hydropower and recreation. These four Federal power projects by FY 1983 had returned \$137.4 mil. to the Federal Treasury or 33 percent of the accumulated costs in less than 30 years (on a nominal, non-discounted basis).

The real "cash cows" for the Federal treasury are the three power projects in the Savannah basin that each have installed capacities for hydropower of more than 300 mil. kw. Since the Russell project was only 41 percent complete in 1980 (on line in 1984), we will look at Clark's Hill (accumulated cost of \$114 mil.) and Hartwell (accumulated cost of \$120 mil.). The combined, accumulated costs for navigation, flood control, power and recreation were \$233.3 mil. Power revenues were reported as \$147.2 mil. -- a cost recovery of 63 percent in about 30 years of project operation. Clark's Hill project had recovered 76 percent of its total costs from power revenues through FY 1983.

Through FY 1983, the total reported power revenues were \$366.8 mil. or 33% of the \$1,117.8 mil. accumulated costs of the eleven projects (including Russell at \$138 mil.).^{2]} If the projects last 100 years, as advertised, and the power is sold at today's average market rates, these projects will gross out revenues from power alone in the order of \$1.2 to \$1.5 bil. for a cost of about \$1.0 bil. These projects can be expected to yield closer to \$3.0 bil. than to \$1.5 bil. in revenues, if the most modest adjustments are made in rates. Since the cost recovery (i.e. the estimated price of power) has been based on a 50 year period for only a part of project costs (i.e., those allocated to hydropower), these revenues will easily pay allocated project costs and a generous profit to the U.S. Treasury. These actual and potential funds are available for financing new projects and expansion either within the river basin or on a larger scale. Such internal financing will require a trust fund or "basin fund" method of handling funds that will create an "enterprise basis" of operation. There should be nothing sacred about subsidized rates to preference customers in this area at this time in our development history.

FINANCING WATER PROJECTS IN THE BUREAU OF RECLAMATION

The U.S. Bureau of Reclamation (BuRec) funding, repayment and accounting practices for water project outputs is unique. The BuRec was organized for the purpose of land reclamation. It can be said, accurately, that the early proposals for BuRec funding were very much like some of those we see floating around today. That is, the program was intended to be self-supporting from a combination of land and water revenues. However, because of several disasters and the interim decades of concern with distributional and equity aspects, the program became more and more dependent on regular congressional appropriations (starting in 1945 and now one-half the accumulated expenditures).

The BuRec has an organizational structure and accounting (pricing) techniques that would serve as a model for other agencies (including the Corps) for self-supporting financing. The concept of the "basin fund" is one in which "surplus" revenues are accumulated and pooled for designated river basins for the use and allocation to either new projects or to pay the allocated costs of irrigation that is not charged to irrigators. The 1902 Act financed irrigation from the sale of public lands until 1910 when the Treasury loaned the struggling Reclamation Service \$20 mil., without interest, to be repaid in 1920 (10 years interest free). In 1906 the Reclamation Service was authorized to lease "surplus power" from Roosevelt Dam on the Salt River to preference customers with the revenues credited to power plant construction and irrigation costs. In 1920, water power was declared a "public resource" and by 1928, the Boulder Canyon project included the idea. By 1933 the TVA Act included the idea of surplus power to preference customers with others to follow rapidly -- BPA in 1937 and Corps authority to dispose of surplus power in the 1944 Flood Control Act.³]

The details of BuRec financial operations are given in Table 8 for 1981 and a cumulative 1902-1981. The ability to finance water projects from hydropower is indicated by the fact that service income is 91% from hydropower, 2% from M & I water and 7% from agricultural water. Yet, only 17% of reimbursable project costs were allocated to hydropower, 14% to M & I water and 66% to agricultural water (Table 8). These data indicate the magnitude of transfers being made from hydropower users to irrigation and M & I water users. However, the apparent subsidy to M & I water supply is partly due to allowable development periods (10 years at no repayment). In fact, several BuRec projects have repayment contracts with M & I water users that are inflated to pay part of the costs allocated to irrigation.

The ability to generate funds from internal sources can be deduced from the magnitude of revenues at prevailing prices and the potential prices from a market orientation. A ten year summary indicates both the potential net revenues and the decline of actual revenues in recent years as prices have not kept pace with increasing operating expenses (Table 9). One should note that over 90% of the gross income from BuRec projects accrued from hydropower over the 1972-81 period. About 8% of revenues were from irrigation services and less than 2% from M & I water. Conclusion, the water services from Federally financed projects must be updated to reflect current markets (costs and revenues and margins) in order to maintain the payoff schedule and provide funds for expansion and upgrading. The BuRec has a usable model structure for self-supporting financing. It needs

Table 8. Summary of Bureau of Reclamation Operations, Revenues, Costs for FY 1981 and cumulative 1902-1981.

<u>Costs and Revenues, Cash Basis (Millions)</u>	<u>FY 1981</u>	<u>Cumulative 1902-1981</u>
Total Actual Cost to date		\$9,338.000
Investment in Completed Facilities	\$ 333.000	7,274.000 (a)
kwh Sold (1981 47 bil., 91% of Revenue)	381.800	
M&I Water Sold (1981 890 bg, 2% of Revenue)	6.600 (b)	59,594.000
Agricultural Water (8,852 bg, 7% of Revenue)	29.300 (c)	
Total Service Income (100%)	\$417.700	
Less Operating Expenses (92.2%)	(385.300)	
Net Income From Operations (7.8%)	\$ 32.400	
<u>Authorized Project Cost Allocations (Billions)</u>		
Total Authorized (Estimated) Costs		\$21.442
Reimbursable Authorized Costs (82%)		17.589
Non-reimbursable Authorized Costs (18%)		3.853
Reimbursable by Functional Purpose		\$17.589
Agricultural Water Supply (66%)		11.680
M&I Water Supply (14%)		2.483
Commercial Power (17%)		2.907
State Funds, Other Purposes (3%)		0.519

Notes: (a) This is an average annual Capital expenditure of \$83 million per year for 79 years (1902-1981). The capital investment for 1981 was reported as \$333 million. (b) These sales were for 2.7 million acre feet at an average price of \$2.44/acre foot. (c) These sales were for 27.2 million acre feet at an average price of \$1.27/acre foot.

Source: Water and Power Resources Service, 1981 Annual Report. USDI. Washington. 1982.

Table 9. Summary of Bureau of Reclamation Financial Operations, 1972-1981.

	Incomes From Operations				Expense	Net
Year	Irrigation	M&I Water	Hydropower	Total	From Operations	Revenues
	----- Million \$ -----					
1972	19.635	3.052	174.548	197.235	146.488	50.747
1973	19.335	2.777	174.604	196.716	156.456	40.260
1974	23.177	2.916	181.488	207.581	168.526	39.055
1975	24.948	3.562	204.919	233.429	177.147	56.282
1976	22.964	4.738	267.302	295.004	199.121	95.883
1977	13.422	4.222	251.793	269.437	180.746	88.691
1978	13.400	4.200	251.800	269.400	180.700	88.700
1979	34.600	5.700	329.500	369.800	297.200	72.600
1980	29.200	6.000	354.400	389.600	322.000	67.600
1981	<u>29.300</u>	<u>6.600</u>	<u>381.800</u>	<u>417.700</u>	<u>385.300</u>	<u>32.400</u>
Mean	22.998	4.377	257.155	284.590	221.368	63.222
Percent	8.1	1.5	90.4	100.0	77.8	22.2

Sources: Annual Summary Reports, Federal Reclamation Projects, Bureau of Reclamation.

expanding to other basins and the recognition of its value as an internal capital generating process.

One possibility for other areas is that of setting up basin funds for all the river basins that have Federal projects. Consolidation and transfers of funds from those projects with surplus power revenues to those with larger non-financial (public goods) components could be worked out to maintain the integrity of the water industry in each river basin.

CURRENT FEDERAL INITIATIVES

The Federal establishment is actively (more or less) pursuing several lines of discussions and proposals that will affect state and local government and private interests in water resources. Some of these include:

(1) The Cabinet Council on Natural Resources (and Congressional) proposals to increase non-federal repayments on vendible water resource services (power and water supply) to 100 plus percent of cost. They also propose substantial hikes in the level of cost recovery for the less vendible services such as flood control, recreation, fish and wildlife enhancement;

(2) Administration efforts to increase front end financial contributions from local sponsors without sharing any of the revenues;

(3) Congressional efforts to change the funding system and priorities. These proposals range from; setting up block grants to states, to putting the Corps into the water supply lending business, to insuring state and local borrowings for water projects, to substantial increases in some user fees (such as navigation), to increasing Federal regulatory control over groundwater aquifers, to setting up a limited-function national water bank to finance state and local water projects. No one knows the likely outcomes of these proposals but their very existence tells us that Federal financing of water resources is in a state of turmoil sufficient to induce adverse effects on the water industry. We must take a more active role in defining needs and in setting up mechanisms to construct, operate and expand water resource facilities in a financially and environmentally sound manner.

The Federal style of laundry list (section 308 type) water resources planning has finally been abandoned in favor of such ideas as management strategies, issue planning, administrative allocation of water resources -- and even to pricing outputs at market. These approaches recognize the nature of the hydrologic conditions, the highly vendible nature of most water project outputs and the need to achieve economic efficiency in the water business -- from where we are today -- not where we were in 1902, 1920, 1933, 1936 or even 1950. If we wish to stay in the forefront, we need to consider the adoption of mechanisms to finance more of our water needs internally as Federal largesse from the Congress declines. Some ideas that should be debated include:

(1) Revolving funds to receive and disburse revenues on a market competitive basis, i.e. as a trust fund or a "basin fund".

(2) An institutional system to seek greater financial integrity of the water industry by matching revenue services (power, water supply) with public services (flood control, water quality) if not project by project, at least by river basin. A large part of this effort should be devoted to insuring that most of the revenues produced from existing Federal projects flow back to the water industry.

(3) An improved inventory of program, project and facility needs -- along with their costs and revenues. Such studies may be useful in generating more funds for both current and developing economic conditions and in facilitating more efficient allocation of resources.

Fortunately we have a great deal of momentum gathered over the past two decades toward insuring that water resources do not become a limiting factor to our Nation's economic growth and environmental well-being. We have discussed the financing and cost recovery issues through conferences, proposed legislation and in the media, at length. We have not reached any consensus on the philosophical question of whether we price water services at the market to achieve both economic efficiency and distributive efficiency or whether we continue the charade of redistribution at the expense of efficient resource allocation. The fact that this seminar on creative financing was held represents substantial progress -- a recognition by the Corps that policies are changing whether or not they are written as an ER!

Lest we be naive, there are groups like the American Public Power Association that oppose any hint of market pricing of Federal power. A recent letter in the N.Y. Times by the Executive Director of American Public Power Association stated that "Selling Federal Power at an artificial 'market' rate would place an intolerable burden on consumers." Yet, the Environmental Defense fund supports the market pricing of Federal power to encourage conservation. Are market rates based on 3.25 percent discount rates and "allocated costs" less artificial than rates set to current market prices and conditions? Are market rates set to repay irrigation costs from hydropower less artificial than those dictated by a current willingness to pay? I think the arguments of 1902, 1920, 1933, 1958 and even 1972, that expanded Federal financing of water projects, are no longer relevant nor appropriate to the industry. If we cannot rise above the prattle of vested interests about "artificial market rates" and the myth that Federal projects exist only to subsidize energy consumption, then we have little chance at internal financing of a strong water industry that is vital to a strong economy. We must adopt a stronger program of self-supporting or internal financing to maintain and expand the minimum basic water resource infrastructure. I do not believe taxpayers will object to these charges if they are explained and maintained as a public enterprise. They will not be happy with such charges if the funds become another tax to disappear in the bowels of the Treasury. It is a time honored American tradition to pay for services received -- even if we are also stockholders in the company.

Best wishes on your efforts to untangle the myths of water project financing, pricing, cost recovery and profit potentials!

REFERENCES, FOOTNOTES, ACKNOWLEDGMENTS

Alfred R. Golze'. Reclamation in the United States. Claxton Printers. Caldwell Id. 1961. HD1735/G61.

FOOTNOTES

1] Director, Institute of Natural Resources, University of Georgia, Athens, GA 30602.

2] These data are from Corps of Engineers' annual reports of costs through FY 1980 and revenues through FY 1979. As such these data are less than the accumulated costs and revenues in Table 5 that are taken from SEPA repayment studies data through FY 1982. For example accumulated power revenues from SEPA through FY 1982 were \$531 mil (Georgia-Alabama plus Jim Woodruff, Table 5) versus \$366.8 million reported through 1979 in COE reports.

3] For a more complete discussion of these possibilities see Ronald M. North and Walter P. Neely, "A Model for Achieving Consistency for Cost Sharing in Water Resource Programs." Water Resources Bulletin. Vol. 13, No. 5, pp. 995-1007. Also see Ronald M. North, "Cost Allocation and Cost Sharing Under Multiple Objective Planning" in Multiple Objective Planning Water Resources, Vol. 2. (Editor, E. L. Michalson et. al., Idaho Research Foundation, Inc., Moscow Idaho. 1975. Also, Ronald M. North and Steven H. Hanke (Editors). Financing Water Resources: Cost Allocation, Cost Sharing, Incentives. Institute of Natural Resources, University of Georgia, Athens, GA. June, 1982.

ACKNOWLEDGMENTS

The author is indebted to Mr. H. Al Pless for untiring assistance in accumulating these data; and to Mrs. Jeanette Ford and Mrs. Alisa Chandler for the typing and preparation of this manuscript.

FINANCE LEASE

A. John Vogt
Institute of Government

The University of North Carolina at Chapel Hill

- I. The lessor is generally a bank, another financial institution, or an investor or group of investors that extend credit to finance the lessee's use of property. The lessor "finances" the lessee's use of the property.
- II. A finance lease is a true or tax lease for federal income tax purposes.
 - A. The lessor continues to own the property and take the tax benefits of ownership.
 - B. One tax benefit of ownership is depreciation which can be taken on an accelerated basis and over periods very much shorter than useful life under changes made in the tax laws in recent years.
 - C. A second tax benefit of ownership is the investment tax credit (ITC) on qualifying personal property. The ITC is generally not available on property leased to governments, but has been taken for property made available for public services under service contracts between governments and the contractors providing the services. Legislation nearing passage in Congress will severely restrict the availability of the ITC under service contracts, but exemptions written into this legislation will permit the ITC on equipment used in contracts for water and sewer services.
- III. In a finance lease, the lessee selects the property to be leased or directs the property's design to meet lessee needs, but the lessor buys or builds the property and owns it.
- IV. The lessor retains ownership and title to the property throughout the lease term, and the lease term is set to end while the property still has some remaining useful life.
 - A. Conservative tax planners set the lease term to end while the property still has at least 20 per cent of its useful life remaining. This is an absolute necessity for a finance lease that is leveraged under IRS Revenue Procedure 75-21. A leveraged lease is one in which the lessor borrows a substantial amount of the money required to acquire the property.
 - B. At the end of the lease term, the lessee may acquire ownership of the property for its fair market purchase value then, or may return the property to the lessor. Under certain conditions, the lessee may release the property for an additional term.

- V. When finance leases extend at least 75 per cent of the property's useful life, they will be considered to be "capital leases" for accounting and financial reporting purposes. This will also occur if the present value of the lease payments equal or exceed 90 per cent of the fair market value of the property at the inception of the lease term.
- VI. H.R. 4170, if passed in its present form, would extend the depreciation recovery period for real property leased to a government or tax-exempt entity under a finance lease from 15 years to 40 years or 125 per cent of the term of the lease, whichever is greater, if one or more of the following conditions hold:
- A. The property is financed with tax-exempt bonds;
 - B. The lease has a fixed price purchase option;
 - C. Use occurs after sale by the government entity; or
 - D. The lease covers more than 80 per cent of the useful life of the property.

TAX-EXEMPT CERTIFICATE OF
PARTICIPATION (COP) LEASE

A. John Vogt
Institute of Government
The University of North Carolina at Chapel Hill

I. Tax-exempt nature of a COP lease.

- A. The interest component of periodic lease payments is exempt from federal, and in some states, also from state income taxes.
- B. The interest paid under such a lease is analogous to interest on municipal bonds.
- C. The interest must be clearly identified.
- D. The lease must be structured as a conditional-sale under IRS Revenue Ruling 55-540. If there is a purchase option at the end of the agreement, it should be of nominal amount.
- E. The lease is essentially an installment purchase, with payments made over time and including interest rather than in a lump sum at the outset of the agreement. The lease includes a purchase money security agreement or mortgage and deed of trust to secure the lessee's payments to the lessor.
- F. For federal income tax purposes, the lessee is considered to be the owner of the leased property from the outset of the lease.
- G. The lessor is not able to take depreciation or the investment tax credit on the leased property in a tax-exempt lease.

II. Certificates of participation

- A. Tax-exempt leasing has been used for many years by state and local governments to finance the acquisition of equipment, e.g., computers, fire trucks, etc.; and the amount of financing provided

in these leases has generally been small to modest, i.e., \$50,000 to several million dollars depending on the size of the jurisdiction. The lessors have been manufacturers or vendors or the finance subsidiaries of manufacturers or vendors, or third-party lease brokers, investment bankers, or commercial banks. In many third party leases, the initiating lessor arranges and in many cases initially finance the lease but then sells or assigns its rights under the lease to an investor. Each of these leases is small enough so that one lessor or lessor-investor can finance the transaction.

- B. Certificate of participation leases were put into use in just recent years as state and local governments sought lease financing for major equipment acquisitions, e.g., a \$25 million phone system, or the acquisitions or construction of major buildings or other real property, e.g., a sewer system. One investor or lessor could not be found to finance the entire acquisition or project. The financing sought exceeded the capacity of any one potential lessor or investor, or no one lessor or investor was willing to commit the amount of capital required to a single project.
- C. A certificate of participation (COP) lease creates fractional interests or shares in the leasing arrangement, which are assigned or marketed to investors. The fractional interests or shares entitle the investors to share in the periodic lease payments.
 - 1. In some COP leases, there are a small number of fractional interests, each one representing a substantial share of the

financing, and they are placed privately, usually to financial institutions.

2. In other COP leases, the fractional interests or shares are small in amount, e.g., \$5000 each, and they are represented by certificates of participation that are marketed to the public.

D. Putting together a large COP lease is a complex undertaking.

1. There is usually a trust agreement and a trustee. The trustee prepares certificates of participation, holds title to the leased property or a security interest in it on behalf of the certificate holders, receives payments from the lessee, and remits these to the certificate holders.
2. Often an underwriter separate from the lessor is involved. The underwriter guarantees financing to the lessee and markets the certificates of participation to potential investors.

III. Any tax-exempt lease, whether certificates of participation are involved or not, must comply with state law.

- A. A non-appropriate clause is common in tax-exempt leases. Such a clause provides that if the lessee fails to appropriate funds to make the lease payments ^{due} ~~will~~ for under the agreement for the next appropriation period, the agreement ~~the~~ terminates, without default, at the end of the current appropriation period. The clause is used to prevent the agreement from being classified as long-term debt under state law.
- B. There should be some state authorizing legislation for state and local units to enter into tax-exempt leases. It is preferable for this legislation to be specific. For example, G.S. 160A-20 of the

North Carolina General Statutes authorizes cities and counties in that state to purchase real or personal property through purchase money security agreements, i.e., tax-exempt leases.

- C. The security for the lease payments will typically have to be perfected under Article 9 of the Uniform Commercial Code for personal property and under a state's real property laws for real property. Section 9-104(e) of the UCC creates doubt about the applicability of Article 9 of the UCC to any lease in which a governmental unit is the lessee.
- D. Laws and public financing practices in some states, while permitting tax-exempt leases over relatively short terms e.g., five years or less) and in which assignment is made or is possible to only one party, preclude long-term certificate of participation leases for big ticket items. In other states, laws and practices do not differentiate between such tax-exempt leases, and publicly placed certificate of participation lease financings are authorized and used.

QUESTIONS AND ANSWERS
CREATIVE FINANCING TECHNIQUES

Q: It seems to me that we might as well budget for state and local projects rather than reducing income to the Treasury by allowing depreciation and investment tax credits for them.

Dr. Vogt: That's true overall, but some investors will find a project very attractive because of those tax advantages, and perhaps the project wouldn't go ahead without those advantages.

MOD: Other than taking revenue out of the Treasury, anything goes. Dr. North, when you were talking about internal financing, I hope that what you really had in mind was raising the rates a little rather than just taking current revenues. We tried that and that was not acceptable.

Dr. North: We definitely need to raise the rates because the projects are just barely paying off.

Q: Dr. North, your presentation clearly shows the amount of flexibility in income flow on hydropower for those major projects in the West, particularly when you compare them against the generating system. Is there not, in addition to those income flows, a stream of depreciation and faster writeoffs of replacement cost which give additional incentive and even greater leverage?

Dr. North: Yes, I think the tables show two things: the rising O&M, which you already have the authority to build into the rate; and the potential to consider the depreciation on a replacement cost basis rather than on a historical cost basis.

TEAM BUILDING
FOR
FEDERAL WATER PROJECT FINANCING

By
Daniel J. Kucera

May 17, 1984

Chapman and Cutler
111 West Monroe Street
Chicago, Illinois 60603
(312) 845-3000



TEAM BUILDING FOR
FEDERAL WATER PROJECT FINANCING

By Daniel J. Kucera
Chapman and Cutler

"Team" is a word capable of many meanings. In today's world, it brings to mind various sports: for example, football, soccer, baseball, basketball, or some other more exotic combination of flying human appendages, an elusive ball and shaving cream advertisements. It also conjures thoughts of a cooperative personality; for example, reference often is made to a person as "a team player" or "one of the team."

In a prior era, "team" had still another meaning. In 1925, the Wisconsin Supreme Court held that a "team" may mean horses, mules or oxen, and two, four, six or even more of the beasts.¹ Another early case says that a team includes whatever animals carry the load, their harness, and the load itself.² On the other hand, some courts have said that a team can also mean a single horse.³ There is divided authority, however, on whether an unbroken colt is a team.⁴

It is also interesting to note that "team work" has been defined as work done by a team as a substantial part of a man's business, such as in farming, staging, express carrying, drawing of freight, and peddling -- as distinguished from something circumstantial, such as getting from one place to another.⁵

Actually, all of these concepts of "team" may be relevant to a discussion of team building for federal water project financings. Clearly, there is a goal to reach and team members work together to



achieve it. Moreover, collectively the team may well work as hard as a group of horses, mules or oxen.

The composition of a team organized to develop and effect a federal water project financing can be expected to share general characteristics which are common to any kind of bond financing transaction. That is, the functions to be performed are comparable or identical to those in the typical financing transaction. Although a specific team may be unique, the kinds of team members and their respective roles, will not be.

There are four types of team members involved in a typical project financing involving issuance of bonds. These four types are:

1. Legal
2. Financial
3. Technical
4. Public

Team members from these four categories likely will participate in all major phases of the project financing, including:

1. Planning
2. Financing
3. Construction

In a discussion of team building, it should be kept in mind that there are two basic issues to resolve:

1. Who is responsible for assembling the team?
2. Who pays the fees of the respective team members?

First, the various types of team members must be identified. In each category, what functions do the individual team members perform?

Legal Team Members

Lawyers have a major role on the financing team, each contributing a different perspective in accordance with their objective.

1. Issuer's Counsel. The sponsor -- the issuer of the bonds, such as a local unit of government, will be represented by its general counsel. Ordinarily, the general counsel has a relationship with the issuer, such as a retainer, which extends beyond the particular transaction.

The general counsel will participate in all phases of the project. In particular, he may be responsible for making sure that the issuer takes all official actions that may be required for the transaction, such as adoption of the necessary resolutions and ordinances. He may be responsible for obtaining proper execution of the transaction documents. He may be responsible for obtaining necessary regulatory approvals for the project, such as Environmental Protection Agency permits and zoning approvals.

If land or easements must be acquired, the general counsel may be responsible to negotiate the purchase, to draft the contracts, and to initiate eminent domain proceedings when necessary. He may also be responsible for negotiating, drafting and consummating the issuer's contracts with the U.S. Corps of Engineers, the financial advisor, the underwriter, the construction contractors, and various other third parties. Finally, he may be responsible for assuring compliance with federal equal opportunity or anti-discrimination laws.

2. Bond Counsel. The role of bond counsel may go far beyond rendering the traditional opinion that the bonds are lawfully issued and are exempt from federal and/or state income taxes. Especially in the case of less conventional financings, bond counsel must become involved early in the planning phase and will be active through completion of the financing phase. The word "counsel" should be emphasized, for truly bond counsel perform a counselling and advisory role.

Customarily, bond counsel are presented with the concept of the desired construction project and are requested to analyze all the legal financing alternatives available. They review the pros and cons of the procedural requirements involved with each alternative, so that the issuer and financial team members can make the appropriate policy decisions.

For example, bond counsel will review whether the proposed bond issue is within the debt limitations imposed upon the issuer under the state constitution or by statute. Bond counsel also will examine whether the bond issue will conform with the maturity limits and interest rate limits imposed by law. They also will determine whether a public referendum or approval by an agency of the state is required prior to issuance of the bonds.

An example of the kind of question that may arise is given by the Illinois consolidated election law. In a two year period, there are only 5 days on which an election may be held. If a particular financing alternative required a referendum, this election law could well be a limiting factor.

Once a particular financing format is selected, bond counsel are available to prepare the appropriate procedures, including documentation, to enable compliance with the applicable constitutions and statutes. Ultimately, bond counsel's work results in the opinion that the issue is valid and legal and exempt from taxes. However, that opinion is the end product of bond counsel's very active work in the planning and procedural phases.

3. Underwriter's Counsel. In the case of a less conventional financing, such as a relatively exotic or rarely used approach lacking in much market experience, a negotiated financing is likely. The underwriter will employ counsel, whose role will relate to such questions as disclosure and SEC requirements.

4. Registrar's Counsel. By reason of TEFRA, it is likely that a bond registrar will be required. To be tax exempt, bonds now must be registered, unless they are of a maturity less than twelve months, or of a type not offered to the public, or are to be sold to a non-United States person. That institution may or may not also assume the role of paying agent, transfer agent, or even trustee. Of course, its exact role will be a matter of contract. Regardless, the registrar will retain counsel to represent the interests of that financial institution.

5. Trustee's Counsel. If a separate trustee account is established, which involves a fiduciary role as to bondholders, that financial institution also will employ counsel.

6. Corps of Engineers. To the extent of the Corps' involvement in a project, the participation of its counsel can be expected.

AD-A149 495

PROCEEDINGS US ARMY CORPS OF ENGINEERS SEMINAR ON WATER 3/4

PROJECT FINANCING. (U) ARMY ENGINEER INST FOR WATER

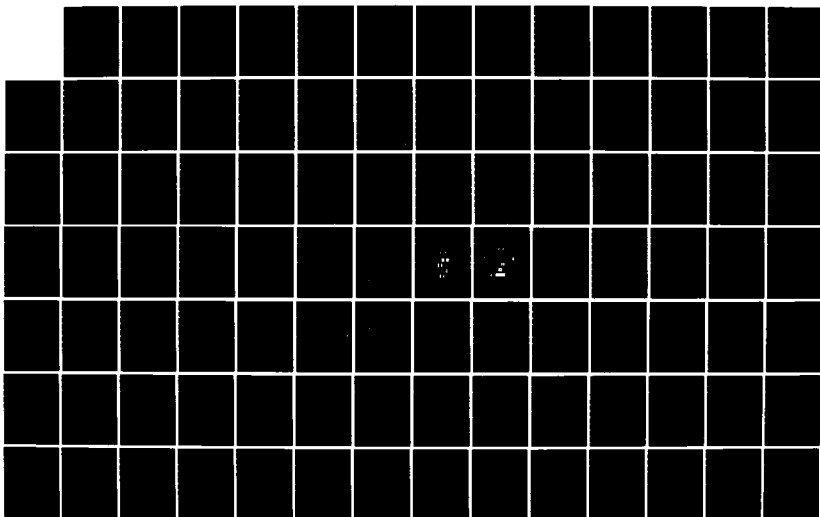
RESOURCES FORT BELVOIR VA M W HUGLER ET AL. OCT 84

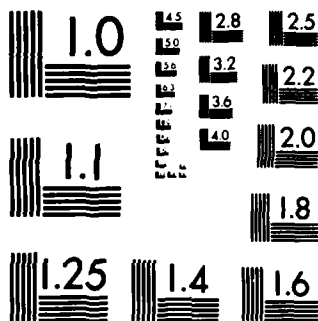
UNCLASSIFIED

INR-84-PS-5

F/G 5/1

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

7. Contractors' Counsel. In the construction phase, the participation of contractors' counsel in formation of contracts can be expected. In addition, such counsel may become involved in asserting any contractor claims for extra compensation, delay or the like that may arise under the construction contracts.

8. Other Counsel. It should be recognized that attorneys representing other interests may have an impact on the project although not necessarily as team members. They would include counsel for regulatory authorities, counsel for other federal, state or local authorities, and counsel for special interest groups, such as taxpayers or environmental organizations. If, for example, a state became involved in the project under a credit enhancement program or a third party public utility or governmental unit will participate, their respective attorneys will join the team.

Despite the myriad of attorneys that may become involved in a financing transaction, one should not conclude that each is myopic, concerned only with a small portion of the project. To the contrary, it is likely that each of these counsel will want to examine all of the documents to see if everything fits together, and that the objectives are satisfied within their perspective.

Financial Team Members

The composition of members from the financial area depend upon the local practice of the issuer's state and the nature of the transaction.

1. Financial Advisor. In some states, such as Illinois, it is customary for the issuer to hire a financial advisor. This person or firm advises the issuer as to the best available financial

arrangement under current or expected bond market conditions and interest rates. In some states, bond counsel may serve this role. In other states, the underwriter provides such services. However, in that case, the underwriter really may be wearing two hats.

2. Underwriter. If the financing is negotiated, then an underwriter -- such as a bank or investment banker -- will be involved.

3. Registrar. As already indicated, a registrar will be involved and may assume duties broader than the registration requirements, depending upon its contract with the issuer.

4. Trustee. Again, a separate trustee may be appointed, whose duties may vary but which include paying agent, disbursing agent for the bond proceeds, and paying agent for payment of principal and interest to bondholders. Essentially, the main purpose of a trustee is to give comfort to bondholders. The trustee seeks to protect the funds and to take singular action on behalf of bondholders, so as to avoid a multiplying of separate actions or claims.

Technical Team Members

The technical team members may include a wide range of interests and specialties:

1. Corps of Engineers. It is reasonable to expect the Corps to be involved actively in the team.

2. Consulting Engineer. The issuer will retain one or more consulting engineers of nationally recognized reputation, depending upon the nature of the project. Such engineers may well

be different from the local engineers regularly retained by the issuer for smaller assignments.

The consulting engineer has a particularly important role in planning, for his cost estimates which are the basis for the bond issue must be accurate and credible. His work, accordingly, must include an acceptable preliminary design as well as reliable estimates of cost to be incurred in the years of construction. Moreover, in the case of revenue bonds, the consulting engineer will prepare feasibility studies which similarly must be reliable.

The consulting engineer will provide engineering services in the design and construction of the project. The consulting engineer may be the supervising engineer for the issuer. He will inspect the work as construction progresses, and will advise the issuer as to appropriate directions to the trustee for disbursement of bond proceeds payments to the contractor.

3. Accountants. The issuer will also retain an independent certified public accounting firm in connection with the transaction. The accountants will perform an audit of the issuer and will provide financial statements and information relevant to the planning as well as financing phases. Once the bonds are issued, the issuer will have a continuing relationship with the accountant because annual audits will be required.

The financial statements it prepares will become part of the Official Statement, along with specific opinions. For example, in the case of general obligation bonds, the accountant may issue an opinion that the issuer has levied, allocated and set aside tax revenue sufficient for debt-service of all then outstanding general obligation bonds.

5. Contractor. In the construction phase, the general contractor and subcontractors will be members of the team, of course.

Public Team Members

The "public" is a broad term. Clearly, however, there are various segments from the public sector which not only must be identified, but which become members of the team.

1. Governmental Officials. Representatives of various federal, state and local government entities may become members of the team, depending on the nature of the project. For example, on the local level, in addition to the officials of the issuer, there may be representatives of regional planning or resource authorities and special districts such as park districts, sanitary districts, recreational districts, and water supply districts. If the state becomes involved under a credit enhancement program, such as a loan or bond bank program, then its representatives will participate on the team.

2. Regulators. Although it may be hard to conceive of regulatory commissions as team members, they can be if cooperation sincerely is solicited. These entities would include those federal, state and local authorities having permit or approval jurisdiction over the project.

3. Other Utilities. It may be beneficial to obtain the participation of investor-owned entities in a project. For example, a regional water supply improvement may be of benefit to investor-owned as well as governmental-owned water utilities. The investor-owned water utility may be desirous of purchasing water from the

project at a contract rate which will recover a proportionate share of the issuer's project debt service on the bonds. Or, the utility may be willing to bear part of the initial project cost, by financial contribution or by construction of a portion of the project. Obviously, such utility participation should take place beginning in the planning phase. The same observations can be made with respect to governmental-owned utilities other than the issuer which may wish to participate in the project.

4. Public Groups. It is likely that community and civic groups, taxpayer and homeowner associations, and environmental groups may become interested in the project. Some may represent limited or special interest that may be affected by the project. It would appear reasonable to attempt to make representatives of such groups members of the team whenever possible to minimize unnecessary conflict and opposition. For example, unwarranted concern over environmental or land use issues could unnecessarily delay a project, causing higher interest and construction costs.

5. Other Governmental Units. With a water project of any substantial size, it is reasonable to expect that more than one unit of government may be involved in the financing. For example, state statutes may permit several different types of combinations, ranging on the one hand, from a more formal organization such as a water commission or joint action authority, to on the other hand, contractual arrangements under an intergovernmental cooperation statute.

The involvement of more than one governmental unit obviously affects the composition of the financing team. For

example, each municipal participant may have its general counsel participate. If each governmental unit separately will issue bonds for a portion of the project, each may contribute other team members -- although it is likely that bond counsel and the contractor will be the same. Where the combination arises by contract, the respective rights of the parties, including team participation will be determined by their contract.

Assembly of the Team

Who assembles the team really depends upon who is initiating the project. If the federal government is the proponent, for example, the Corps of Engineers, then it will advise the local units of government as to various requirements. In turn, these requirements will affect the composition of the team. If the project is locally initiated, then the issuer may have greater control over requirements, and the team to be assembled.

In either event, the issuer basically is responsible for assembling the team necessary to meet all applicable requirements.

General counsel usually is the issuer's regularly retained attorney. Bond counsel is selected based upon the issuer's past use of bond counsel. Ordinarily, a nationally-recognized bond counsel will be retained, whose opinion will be acceptable to all segments of the market. The consulting engineer and the accounting firm are selected by the issuer in a similar manner.

The issuer most likely will utilize the financial advisor with whom it has had a relationship. An underwriter will be selected, depending upon the nature of the financing requirements. The

selection may be based upon proposals. The issuer also selects the registrar and trustee.

The Corps of Engineers will select its own team members. Public members generally would be determined by the interaction of the issuer and the public members.

In reality, the "team" which is assembled for a typical bond financing has much in common with the sports team as well as with the team of horses. Both require as many individuals as are necessary to do the job in the best way possible.

Who Pays

The financial advisor, bond counsel, underwriter, consulting engineer, and accountant are paid from the proceeds of the bond issue. General counsel is paid from the retainer, with possible incremental compensation from bond proceeds. Underwriter's counsel is paid from the fee received by the underwriter. The charges of the rating agency, such as Moody's, Standard and Poor, and Fitch, are paid from bond proceeds, as is the premium for any bond insurance.

The registrar and trustee have on-going charges which must be paid by the issuer from a source other than bond proceeds. The same is true in the event of fees for letters of credit, commercial paper and the like utilized as guarantee devices.

The Corps of Engineers and public team members presumably bear their own costs.

Conclusion

The team to be assembled necessarily will depend upon the particular project, and its location. Nevertheless, it is likely that the members will come from all of the above-discussed categories, although in some cases some have a dual role, depending upon local custom. The basic responsibility for assembling the team is in the issuer. The fees are borne, for the most part, by the bond proceeds. The issuer bears the cost of its representatives, including general counsel, and the public ordinarily imposes no fees.

Despite the broad range of interests represented by team members, and the possibility that the team may be rather large, all work together to achieve a singular goal. As the Wisconsin Supreme Court said, there may be "two, four, six or even more of the beasts" on the team, but they all pull to the same destination.

FOOTNOTES

1. Jones v. Holland Furnace Co., 206 N.W. 57 (Wis. 1925).
2. Woodman v. Town of Nottingham, 49 N.H. 387.
3. Knapp v. O'Neill, 46 Hun. 317, 318 (N.Y.).
4. Hogan v. Newmeister, 76 N.W. 65 (Mich. 1898); Nelson v. Fightmaster, 44 P. 213 (Okl. 1896).
5. Hickcock v. Thayer, 49 Vt. 372, 374.

QUESTIONS AND ANSWERS

TEAM BUILDING FOR PROJECT FINANCING AND IMPLEMENTATION

Q: In a bonding situation, if the Corps has a non-Federal cooperator, would the Corps somehow be insulated from all these other professionals in terms of verifications of cost estimates? Could the bonding people ask certain questions of the Corps without the Corps being obligated to have them as part of its team?

A: Basically, I'm addressing bonding from the standpoint of the issuer. All these team members help the issuer accomplish his goal of getting a bond issued. To the extent that the Corps imposes requirements on the issuer, be it for the financial participation or whatever, there would be some interplay, but in general the Corps would not have any problems.

Q: Suppose you have a large practice, say \$100 million, and a construction claim comes up along the way. In the old days the Corps could tell the sponsor that it is going to cost more, and that would be the end of it. Now that there are bonding people and outsiders involved, are they likely to put the Corps on notice that they want to take part in any discussions to adjudicate the claim? The Corp's life could get more complicated.

A: If the Corps had any role in the design it could become very complicated. Such a claim might arise after the bond issue has taken place, either during the disbursement of the bond proceeds or afterwards. If, for example, he claims that he was delayed in completion due to a design problem or if the operator or owner of the improvement claims that he can't accept it because of a design problem, then to the extent that the Corps' participation in design results in arbitration or litigation proceedings there might well be a complication of that kind.

Q: If we really thought the work would cost \$100 million and that it's the right price, is it the usual practice for somebody to build in a contingency and maybe go after bonding for \$120 million just to be on the safe side should contingencies arise?

A: Ordinarily, the engineer's cost estimate will not be limited to the cost of construction. The estimate of the bonding requirements is computed based upon construction cost contingencies, capitalized interest, etc., not just the pure cost of construction, and there are a number of contingencies and reserves costed in before you arrive at final figure for project cost.

MOD: A project is as much a local sponsor's as it is the Corps', and you want to examine financial feasibility early in the planning stage before you tie down a particular alternative. In that respect it would seem to me that the local sponsor may take a lead role in evaluating financial feasibility as part of its in-kind services.

A: I would think so. The problem you are facing is to determine exactly what the Corps' role ought to be in that area of financial feasibility. And since there is such historical experience, on part of the local issuer or sponsor, of working with financial advisors and engineers in developing feasibility, a logical beginning point would be to try to seize upon that historical experience and method of doing business and to take advantage of the resources and methodologies that are in place.

DEEPENING THE LOWER MISSISSIPPI RIVER

Presented by: Joseph Cocchiara, Executive Director
Louisiana Deep River Study

SEMINAR ON WATER PROJECT FINANCING

Humphreys Engineer Center
May 16, 1984

It has been apparent for some time that the leading bulk commodities on the Lower Mississippi River, as well as general cargo, could benefit from improvements to the river channel. Limitations in channel depth cause a substantial proportion of the bulk trade to move in light loaded vessels. Even general shipping is hindered at times because of heavy siltation of the channel reducing operational depth to less than 40 feet.

The idea of deepening the Lower Mississippi has been discussed for many years. Studies have been conducted by the U. S. Army Corps of Engineers for a decade and a half, prompted by changing technologies in maritime transportation, constantly growing volumes of international trade and the increasing use of vessels of greater than 100,000 DWT.

In mid-1981, the Corps recommended a 55-foot channel from the Gulf to Baton Rouge, at an initial cost of \$525 million and an annual maintenance expense of \$137 million per year. At about the same time, the Reagan administration made clear its policy that any new deep draft project would require substantial levels of non-federal funding.

In response to these challenges, the Governor of Louisiana in March, 1982, established the Task Force on Deep Draft Vessel Access to the Lower Mississippi River, to study the feasibility of accommodating deeper draft vessels in the lower Mississippi River. The Task Force was composed of 13 members, including representatives of the major State cabinet departments, the governor's office, business, labor, and the four deep water ports on the river.

In July, 1982, after an extensive evaluation of consultant credentials, the Task Force selected the consulting team of Tippetts-Abbett-McCarthy-Stratton (TAMS), Booz-Allen and Hamilton, and Pyburn and Odom to undertake the necessary engineering, economic, environmental and financial studies.

Their investigation began in September, 1982, required one year to complete, and cost the State \$600,000.

The studies evaluated 45 alternative projects, including different depths and reaches of channel dredging, as well as a number of projects for topping off large vessels offshore. All of the usual elements of such an analysis were addressed, including engineering feasibility, public and private project costs, cargo forecasts, transportation savings, benefit calculations, and economic and environmental impact assessment.

What set this investigation apart from other analyses of navigation projects was the overriding concern to select the optimal project which would be financially acceptable given the likely need for substantial levels of non-federal funding. An analysis of financial feasibility was conducted, addressing such issues as federal cost sharing and user charges. Much of the work of the study was driven by consideration of issues such as the ability to finance the non-federal share of project costs through local bond issues and the level of user charges which might be imposed to repay this indebtedness.

The consultants submitted their final report on August 1, 1983. Three primary recommendations were made:

First, that authorization should be sought for a long-range project to deepen the river channel to 55 feet to Baton Rouge.

Second, that implementation should begin immediately on the first stage of the project, whereby a minimum 750 foot wide, two-way channel would be deepened to 45 feet from the Gulf via

Southwest Pass to Mile 172 above head of passes, just above Burnside, Louisiana.

Third, that the private sector be encouraged to put into operation as soon as possible topping-off facilities in the Gulf in order to attract and establish patterns of trade in large bulk carriers.

The consultants estimate that a 45-foot deep channel to Mile 172 would cost \$77 million for initial dredging and related channel improvements. Annual maintenance of the channel would cost \$12 million more than maintenance expenditures for the present 40-foot channel.

A 55-foot deep channel from the Gulf to Mile 172 would cost \$169 million initially and \$22 million annually over present annual maintenance costs.

Mile 172 was chosen as the end point of the deepened channel because the consultants estimate that 95% of the benefits of a deepened river channel would be obtained below that point, while costing about half of what a deepened channel to Baton Rouge would cost.

Average annual transportation savings from these projects would amount to \$93 million per year for the 45-foot channel, \$137 million per year for the 45-foot channel plus offshore topping-off, and \$146 million per year for the 55-foot channel.

Further, the consultants found that, if the federal government pays half of the project costs, the local share can be recouped through a reasonable level of user charges. This assumes, however, tax exempt financing of local project costs and also requires public assurance of the financing instrument.

These findings and recommendations were taken under advisement at a public meeting of the Governor's Task Force held in Baton Rouge on August 23, 1983. On September 2, 1983, a second meeting was held at which public agencies

presented comments on the consultant's recommended plan. Because of concern expressed that the proposed plan disadvantaged the Port of Baton Rouge by not extending the deepened channel to Baton Rouge, the Task Force adopted a modified approach which is both economically sound and maximally beneficial to the State's economy. The recommendations adopted by the Task Force on September 2 were as follows:

1. Federal authorization should be sought for a long-range project to deepen the Mississippi River channel to a project depth of 55 feet to Mile 230 AHP.
2. Implementation should begin as soon as practicable, subject to the availability of sufficient federal and local funds, of the first stage of the project, for a 45-foot project depth from the Gulf of Mexico to Mile 182 above Head of Passes.
3. A system of waterway project funding should be established on the federal level which provides for substantial federal financial participation in deep draft waterway projects. Initial funding of any local share of project costs, if required, should be from federal loans or loan guarantees. If user fees are imposed, they should be equitable, at a reasonable level, and imposed only on users that benefit from the deep draft channel.
4. The private sector should be encouraged to put into operation as soon as practicable topping-off facilities in the Gulf of Mexico to handle dry bulk cargo.

The recommendation for federal authorization to Mile 230 AHP includes all but three miles of the present river channel, stopping short of a major pipeline cluster which crosses under the river channel at Baton Rouge and which would have to be relocated if the channel were deepened.

The project's first stage recommendation, to Mile 182 AHP, provides ten additional miles of deeper channel within the Port of Baton Rouge than recommended by the consultants, at an additional cost of \$2.4 million initially and \$2.4 million per year.

An important part of the recommendations is the call for the private sector to develop topping-off facilities in the Gulf. Such facilities are needed in the short-term to establish trading patterns using larger bulk carriers, and in the long-term to work in conjunction with a deepened channel.

The deepening of the Lower Mississippi may to be the most important and most viable deep draft project in the country. The first stage project is much less expensive than other deep draft projects, which typically range from \$300 to \$500 million.

The amount of cargo which could benefit from a deepened channel is significantly greater on the lower Mississippi than with other projects. The Lower Mississippi shipped 183 million tons of foreign trade in 1981, of which almost 90% was carried in bulk. That compares to 47 million tons shipped at Norfolk and 31 million tons at Baltimore in 1981. In fact, the Lower Mississippi shipped more foreign tonnage than at the top five East Coast ports combined.

Not only are the quantities of cargo greater on the Lower Mississippi, but the diversity of cargo is much greater. While other deep draft ports ship one or two commodities which might move in larger vessels, the Lower Mississippi carries a variety of commodities which could benefit from a deeper channel: grain, coal, crude petroleum, petroleum products, chemicals, minerals, fertilizers.

The port complex of the Lower Mississippi is the largest in the nation in total tonnage carried and serves a hinterland directly affecting from one third to one half of the nation.

Clearly the deepening of the Lower Mississippi is an extremely important project to the nation. It is also apparent that the economics of the deepening project recommended by the Governor's Task Force are, as navigation projects go, quite good, especially when compared to other deepening projects. The crucial conclusion of Louisiana's investigation is that, if the federal government participates in project funding, the project can be built and the non-federal share financed with a reasonable level of user charges. With a 50% federal share, a 55 foot channel to Mile 182 would require a user charge, imposed only on the tonage benefiting from the deepened channel, of about 35-40 cents per ton.

The arena for action now is the federal Congress. If the deepening of the Lower Mississippi or any other deep draft project is to proceed, a number of conditions must be provided in new federal legislation:

1. Substantial federal cost sharing of initial construction and annual maintenance costs
2. Financing of the non-federal cost share through a federally assured, or federally provided tax-free debt instrument, with appropriately structured repayment terms. If a taxable instrument must be used, an interest subsidy should be provided.
3. Imposition of user charges on an equitable basis and at a reasonable level, to repay the non-federal cost share. We believe that user charges imposed for a deep draft project should be collected solely from direct beneficiaries of the project, although such a requirement can be imposed as a local option.
4. Fast tracking of authorization, appropriation and permitting procedures.

The Congress is working toward these types of provisions and we are hopeful that legislation can be sent to the White House this year. The revised Roe bill in the House provides 50-50 cost sharing over 45-feet and a 90% federal guarantee of local share financing. Senator Abdnor's bill has a long way to go, but there are strong indications of a definite willingness to move in the direction of the Roe bill.

DEEP RIVER STUDY -- LOWER MISSISSIPPI RIVER

Albert T. Rosselli, Associate Partner
Tippetts-Abbett-McCarthy-Stratton

INTRODUCTION

The lower Mississippi River is the critical link between Mid-America's extensive system of inland navigable waterways and the world. Spanning some 250 miles from the Gulf of Mexico to Baton Rouge, the lower Mississippi represents the largest port complex in the country in terms of tonnage. In 1981, some 20 percent of the total U.S. foreign waterborne trade and nearly half of the nation's grain exports were handled in this port area.

As the size of bulk cargo ships have grown, producing economies of scale, it has become increasingly apparent that the lower Mississippi River region, as well as Mid-America and the nation could benefit from improving access of deep-draft vessels to the lower Mississippi River.

In July 1982, the Governor's Task Force on Deep-Draft Vessel Access to the Lower Mississippi River selected Tippetts-Abbett-McCarthy-Stratton (TAMS) in association with Booz, Allen & Hamilton, and Pyburn and Odom to undertake the necessary engineering, economic, environmental and financial studies as well as to advise the State on the most appropriate course of action.

The primary objective of the studies was to define the most cost effective project from a national, regional and local point of view. Also of importance was the need to analyze the financial feasibility of a deepening project in light of the federal administration's insistence that any new deep draft project will require a substantial level of non-federal funding.

PREVIOUS PAGE
IS BLANK

EXISTING CONDITIONS

Navigation Channel

The channel is maintained by the Corps of Engineers to a depth of 40 feet below the National Geodetic Vertical Datum (N.G.V.D.--which is equal to Mean Sea Level), from the Gulf via Southwest Pass to Mile 233 Above Head of Passes (AHP) at Baton Rouge. The width of the maintained channel varies between 800-1,000 feet in the vicinity of Southwest Pass, and averages 500 feet above Head of Passes.

Many reaches of the river are naturally deep and the aggregate length of the various reaches that would have to be dredged to provide a 55-foot channel, for example, would amount to only 78 miles of the total 250-mile distance from the Gulf to Baton Rouge. The major part of the deepening would be located at the reach from the Gulf to Milepost 5 AHP and at the crossings located upstream of Milepost 145 AHP.

Terminal Facilities

The vessel berthing facilities at all of the coal terminals and some of the grain and crude oil import terminals appear to have been designed for fully-loaded vessels that could navigate a 55-foot deep channel. The cargo handling equipment at most of the grain and some of the coal and crude oil terminals would have to be modified to load deep-draft vessel efficiently.

Pipelines, Cable Crossings and Bridges

A total of 129 pipeline and 21 power or telephone cables cross reaches of the river between the Gulf and Mile 233 AHP in which dredging would be required. A minimum of 15 feet of cover is required above existing pipeline and cable crossings, and 25 feet above proposed crossings to safeguard them against ship anchors and vessel groundings. To meet these criteria, all seven of the pipelines and the one cable crossing in Southwest Pass would have to be modified, whereas only one of the pipeline crossings and none of the cable crossings in the reach between Head of Passes and Mile 172 (above Burnside) would require alteration if the channel is dredged to 55 feet. Fifty percent of the pipelines and cable crossings, numbering approximately 60, in the reaches upstream of Mile 172 AHP would have to be altered even if the channel were deepened only to 45 feet.

Six fixed-span bridges cross the River in the study area. Two additional bridges are under construction. Horizontal clearance is adequate at all bridges, but large vessel traffic may have to be restricted to one-way movements near two of the bridges. Ships should be able to clear the underside of the bridges, loaded or in ballast, except perhaps a few of the largest ships during extreme high water.

Levees, Revetments and Training Works

With careful alignment of the widened channel no significant changes would have to be made to the levees, revetments, roads and railroads alongside the River, considering that the River is very broad along most of its length. Some of the jetties in Southwest Pass may have to be modified.

PROJECT EVALUATION AND SELECTION

Study Process

The principal elements of the study process used to evaluate alternatives and to identify the superior project are as follows:

Development of Commerce Forecasts

Forecasts were developed through the year 2035 for the principle commodities to benefit from a deepened channel--coal, grains, crude petroleum and other dry bulk commodities. The commerce forecasts address three commerce groups--baseline, redistributed and induced tonnage. Baseline tonnage is the trade which is expected to occur regardless of channel deepening. Redistributed commerce is cargo currently handled at other U.S. ports which would shift to lower Mississippi River ports if the channel were deepened in order to take advantage of lower ocean freight costs. Induced commerce is the additional U.S. exports which could occur because of the reduced freight costs and thus reduced landed cost of U.S. products overseas.

Development of Vessel Fleet Forecasts

Fleet forecasts were developed for each commodity, including a baseline fleet (the fleet that would continue to call on the region under current conditions) and fleets for the four potential channel depths--45, 50, 55 and 60 feet.

Estimates of the Transportation Cost Savings Resulting from Deep-Draft Vessel Access

The estimates of savings were based on the forecasts of waterborne commerce, the trade routes involved, the vessel fleets that would serve the area under different channel depths and the difference in unit transportation costs between the fleets that would use a deepened channel and the baseline fleet.

Estimates of Project Capital Costs and Annual Operating and Maintenance Costs

These costs include expenditures in both the public and private sectors.

The capital costs in the public sector included: dredging and disposal of soil materials; development of disposal areas on land including property acquisitions and marsh creations; modification of levees, revetments, river training works and navigation aids; measures for mitigating adverse environmental impacts including improvements to water supply systems; and removal of shipwrecks.

The capital costs in the private sector included: relocation of pipeline and cable crossings; modification and expansion of port facilities, including deepening of berths at terminals serving deep-draft vessels; provisions of topping-off systems in either mid-stream or the Gulf; expansion of barge fleeting areas; and augmenting the fleet of tug boats and other service craft for assisting deep-draft vessel navigation.

The annual costs in the public sector included maintenance dredging and maintenance of modified and expanded public facilities.

The annual costs in the private sector included: operation of cargo transfer equipment, barges, shuttle ships, tug boats and other service craft; increases in berth time of vessels entailed in the topping-off alternatives; and maintenance of modified and expanded private facilities.

Comparison of Project Savings and Costs

The present worth of capital, operating and maintenance costs and transportation cost savings were calculated and alternative plans were compared on the basis of both savings to cost ratios (S/C) and total net savings.

Analysis of Other Impacts of Deep-Draft Vessel Access

Other impacts include generation of increased export tonnages and employment.

Consideration of Environmental Factors

The opportunity to create marshlands and the possible increased durations of saline waters were weighed.

Comparison of Ranking of Alternative Deep-Draft Vessel Access Projects

The alternative development programs were ranked on the basis of savings and costs as well as other impacts and environmental considerations.

Analysis of Financial Feasibility

The financial analysis of the most promising development programs included identification and review of financing alternatives, a review of proposed user charge legislation, development of pro forma financial statements and an assessment of financial feasibility.

Alternative Plans

The alternative plans studied, more than 45 in total, include dredging and non-dredging projects. The different features of these plans include the depth, timing and location of channel deepening, shore-based terminal facility modifications, and the use of cargo topping-off systems in the Gulf or River mouth.

Comparison of the savings to cost ratios, the net savings and other impacts resulted in the recommendation of the following course of action.

RECOMMENDED PROGRAM AND PROJECT IMPLEMENTATION

The Recommended Program

The most appropriate course of action for the State was found to be the following:

- Seek federal authorization to deepen the channel in stages to 55 feet should actual increases in commerce equal the high level of commerce (Alternative 11).
- Dredge the present 40-foot deep channel to 45 feet initially from the Gulf via Southwest Pass to Mile 172 AHP to provide for two-way navigation (Alternative 9).
- Encourage private interests to put into operation, as soon as possible, facilities for loading and topping-off grain ships mid-stream and topping-off coal carriers in the Gulf in order to attract and establish patterns of trade in large ships (Alternative 9).

Configuration of Deepened Channel

At straight reaches, a 750-foot wide channel should be provided for two-way navigation of vessels ranging upward to 125,000 dwt in size (the predominant range of vessels in the prospective ship fleet). The channel width should be increased to as much as 900 feet at reaches subject to strong currents and at many of the bends in the river.

Costs of the Recommended Program

The capital costs for recommended Alternatives 9 and 11 were estimated for three stages of development: Stage I--the period to 1990; Stage II--1990 to 1995; and Stage III--1995 to 2005. Capital costs for all three stages are estimated to total \$129 and \$222 million for Alternatives 9 and 11, respectively. Costs to be borne

by the public sector for the deepened channels are \$77 million for the 45-foot channel and \$169 million for the 55-foot channel up to Mile 172 AHP.

For Alternative 9, the annual costs for maintenance and operations range from \$15.2 million in the first stage to \$17.3 million in the third stage. The annual costs for Alternative 11 range from \$24.1 million in Stage I to \$25.4 million in Stage III. The public sector component of the cost for the 45-foot channel is \$12.2 million and is \$22.3 million for the 55-foot channel.

Transportation Cost Savings

The annual savings in transportation costs for Alternative 9 are estimated at \$70.9 million in 1990, \$85.5 million in 1995, increasing to \$134.3 million in 2005. These annual savings translate into an average annual savings per ton for all commodities equal to \$2.50 over the life of the project.

The annual savings for a 45-foot channel without topping-off facilities for coal in the Gulf are \$59.2 million in 1990, \$66.7 million in 1995, and \$88.0 million in the year 2005. These savings translate into an average annual savings per ton for all commodities equal to \$2.07 over the life of the project.

Alternative 11 savings are estimated at \$80.6 million in 1990, increasing to \$95.9 million in 1995 and \$152.0 million in 2005, which translate into an average annual savings per ton for all commodities equal to \$2.68 over the life of the project.

Comparison of Costs and Savings

The present worth of all costs and transportation savings was calculated based on a 50-year project life and a 9.0 percent interest rate. The estimated public and private sector costs and savings for the selected alternatives, 9 and 11, are compared for both the most likely and high levels of forecasted commerce.

Overall, Alternative 9 is the most favorable program for near term improvements, it possesses a Savings to Cost Ratio (S/C) of 3.6. Alternative 11 would yield the highest net savings if the high level of commerce were achieved, and should be considered an appropriate goal for long range planning.

Financial Analysis

Financing of navigation projects historically has been the responsibility of the Federal Government. However, the current administration now requires increased participation of the local sponsor in project financing, with recovery of project costs through assessment of a charge on users.

A large number of proposals on this matter have been introduced in Congress but no legislation has resulted as yet. A review was made of the current status of these user charge proposals in order to anticipate the magnitude and timing of the future financial obligations for the State of Louisiana and their consequent affect on project feasibility.

The financial analysis resulted in the following conclusions:

- A comparison of project savings to project costs (coverage ratio) suggests that there is sufficient reason to proceed with the project. Alternatives 9 and 11 possess coverage ratios of 3.2 and 2.8 respectively.
- User charge legislation is expected to be passed by the end of the 98th Congress (late 1984). The split between the Federal Government and the local sponsor for both new deepening projects and maintenance may well be about 50-50 percent. There will probably be a graduated local share as water depth of new projects increases.
- Both project Alternatives 9 and 11 can produce transportation cost savings adequate to support a reasonable level of user fees.
- Based on a 50-50 share, a user charge designed to fully amortize year-to-year debt service of the initial construction bond and operating costs of the non-federal share is considered unreasonably high during the early years. Such a user charge level would be a disincentive to use the deepened channel and is considered infeasible.
- The most feasible approach to financing the project is based on debt financing with a graduated system of user charges. This debt financing approach results in user charge assessments which are reasonable and should encourage, rather than

discourage, use of the deepened channel. However, debt financing results in large annual deficits in the early years of the project.

- The debt financing approach requires covering the initial project deficits either from general revenues or the use of an assurance bond (second debt instrument). If the Federal Government provides initial project financing payback of the local share could be structural to avoid deficits in the early years of the project. However, if the State of Louisiana is required to finance the local share of the project through revenue bonds, an assumed second debt instrument would have to be used.
- In the event that the State is required to finance its share of project costs, a second debt instrument in the range of \$47 to \$125 million will be required. Because of its outstanding indebtedness, the State may have to develop a financing package that would include a low or no-interest loan from the Federal Government where initial retirement would not begin until the late 1990s.

Other Impacts of Deep-Draft Vessel Access

In addition to yielding significant savings in vessel transportation costs for the shipping of grain, coal, crude oil and other dry bulk cargoes, the provision of access to deep-draft vessels would have other beneficial impacts on the State of Louisiana, other mid-american states, and the nation.

Economic Benefits

The principal economic benefits would comprise:

- Increased export tonnage, and consequent improvement of the U.S. balance of payments;
- Increases in employment in the State of Louisiana and other states from which commodities are shipped through the Lower Mississippi River.

The improvements in annual balance of payments are estimated to range from \$90 million in 1985 to as much as \$280 million in the year 2005, and represent an increase of two to three percent.

Increases in employment in Louisiana attendant to a 45-foot deep channel project are estimated at more than 1,000 jobs during the two to three year period when the channel and shipping facilities are improved, and subsequently would range annually from 750 jobs in 1995 to almost 1,000 jobs in the year 2005. Out-of-state increases in employment are estimated to range annually from about 600 jobs in the near term to as much as 1,900 jobs in the year 2005.

Environmental Considerations

The principal environmental issue that was addressed in the study was the effect of salinity intrusion upon water supply systems. In addition, the Corps of Engineers' final Environmental Impact Statement on the effects of a deepened channel was viewed and evaluated as to the adequacy of the mitigative measures recommended therein with respect to:

- dredging and disposal operations;
- sedimentation;
- marsh and habitat creation;
- potential marsh loss due to redistribution of flows and sediment;
- fisheries;
- recreational activities;
- sea-bird nesting; and,
- air emission and water quality.

Computer simulation of salinity intrusion and other analyses confirmed that the toe of the salinity wedge is not likely to extend beyond the historical upstream limit (Mile 116 AHP) with a 55-foot channel. Although analyses indicate that there would be an increase in the duration of saline waters below Mile 60, the construction of additional reservoir storage capacity, estimated to cost about \$3 million, would offer a viable solution to increased durations of excessively saline waters.

The Corps' study identified adequately the impacts and mitigative measures that would have to be taken. In certain areas further investigation is required. These include: evaluation of toxic wastes, marsh creation, impacts of proposed freshwater diversion projects, and a thorough Section 404(b)(1) Dredge and fill Evaluation and Ocean Dumping Assessment, to determine impacts of dredged material disposed in the Gulf upon fisheries resources.

In the dredging alternatives the disposal of material removed in the deepening and maintenance of Southwest Pass affords me opportunity for creation of marshlands and land reclamation of the river's delta. It is estimated that the material dredged initially

in deepening the Southwest Pass to 45 feet and in maintenance of that reach over a 25-year period would be sufficient to create about 4,200 acres of marshland and an additional 4,200 acres of land lying several feet above sea level.

Project Organization

If the State of Louisiana elects to participate with the Federal Government in a program of channel or navigation improvements, it will be desirable to establish an agency for managing the State's activities in connection with the project. The principal functions of the agency would encompass management, financing, engineering, environmental planning and public relations. The specific organizational structure of the Agency would depend upon the extent of the State's involvement in the project. Fundamental to successful operation of the Agency is the assignment of a general manager experienced in the development and operation of major projects and key staff members qualified in the aforementioned functions. A limited staff of such key personnel and appropriate clerical assistants would be effective if the State's role in the project is secondary to that of the Federal Government. In such a case, the Agency would be similar to the organization "overseeing" the State's interest in the LOOP project, and would be able to call upon other agencies of the State to furnish advice and assistance as may be required in specialized areas. If the State assumes a primary role, a large staff of personnel experienced in many disciplines--including economics, accounting, design and construction engineering, environmental controls, public relations, personnel and clerical administration--will be required to assist the General Manager.

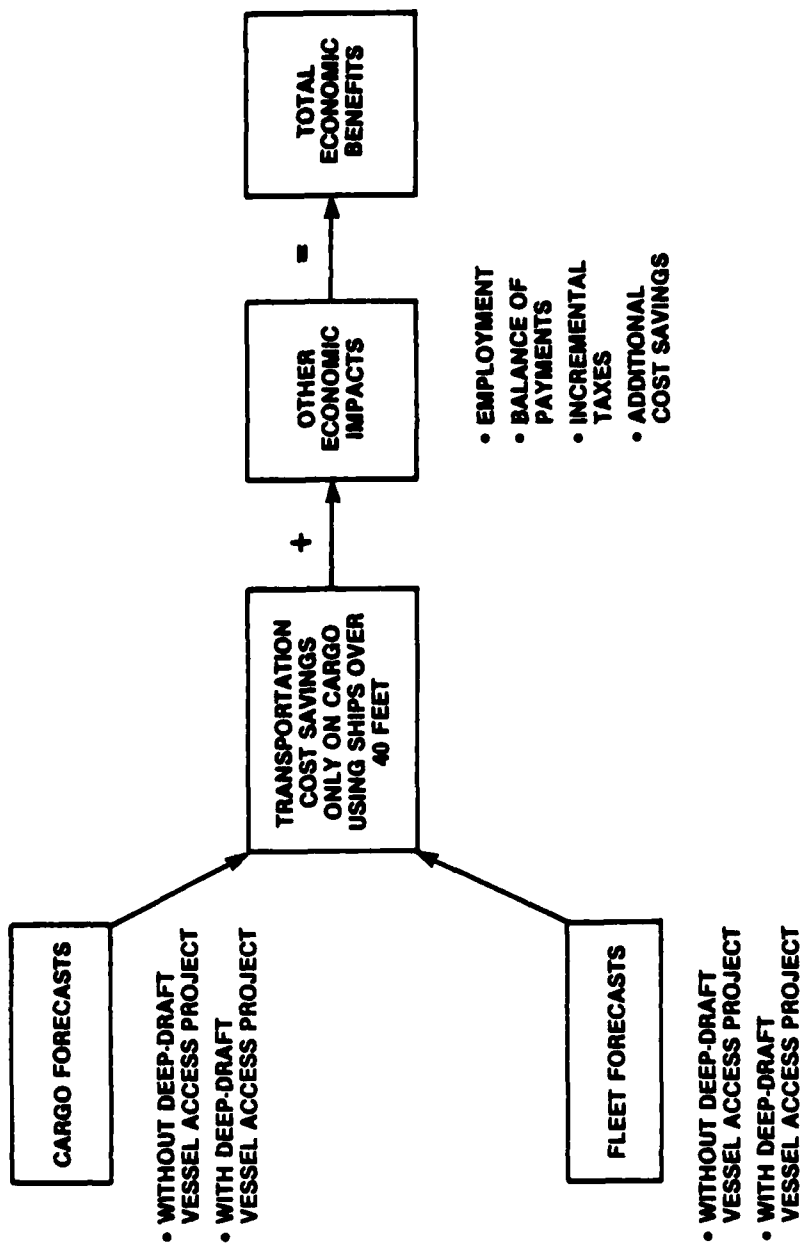
ECONOMIC AND FINANCIAL IMPLICATIONS OF THE "DEEP RIVER" STUDY

**Leo J. Donovan
Vice President
Booz, Allen and Hamilton, Inc.**

PREVIOUS PAGE
IS BLANK



THE APPROACH TO THE ECONOMIC ANALYSIS



COMMERCE FORECASTS

THE FORECASTS FOCUSED ONLY ON THOSE COMMODITIES THAT WOULD USE DEEP-DRAFT VESSEL ACCESS

COMMODITIES MOVING ON THE LOWER MISSISSIPPI RIVER	PERCENT OF TONNAGE	
	SUBJECT TO BENEFITS	NOT SUBJECT TO BENEFITS
GENERAL CARGO	0%	100%
COAL	66%	34%
GRAIN	23%	77%
CRUDE PETROLEUM	14%	86%
PETROLEUM PRODUCTS	0%	100%
OTHER DRY BULKS	11%	89%

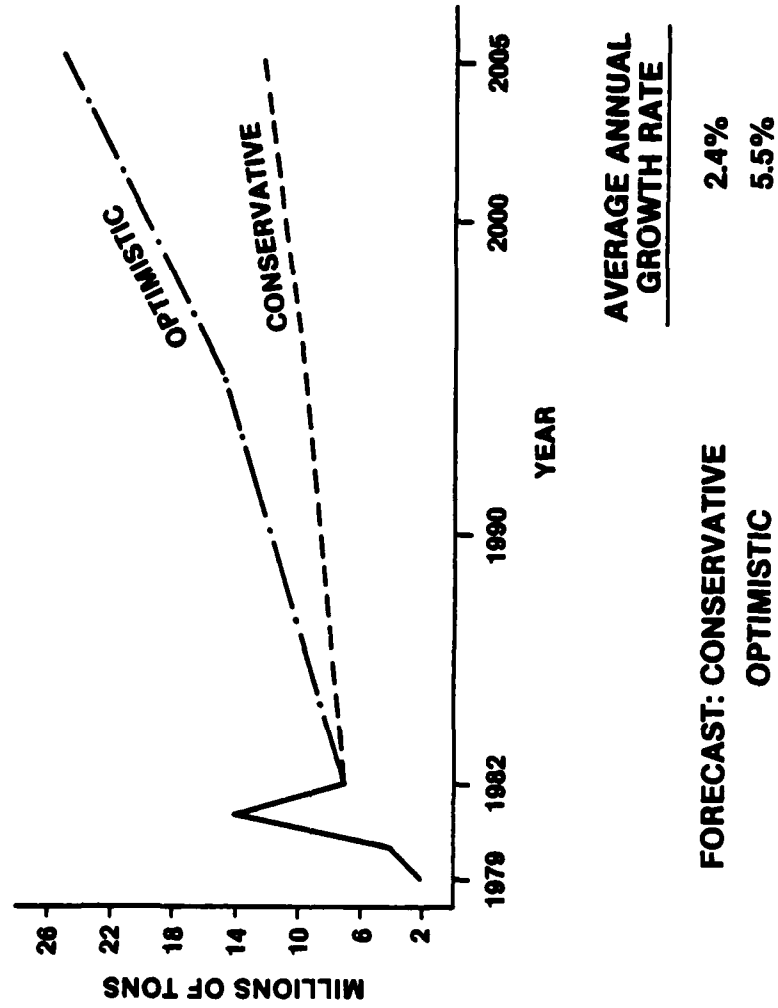
OR APPROXIMATELY 21% OF THE TOTAL TONNAGE THAT MOVES TODAY IF THE IMPROVEMENT WERE ALREADY IN PLACE

COMMERCE FORECASTS (Cont'd)

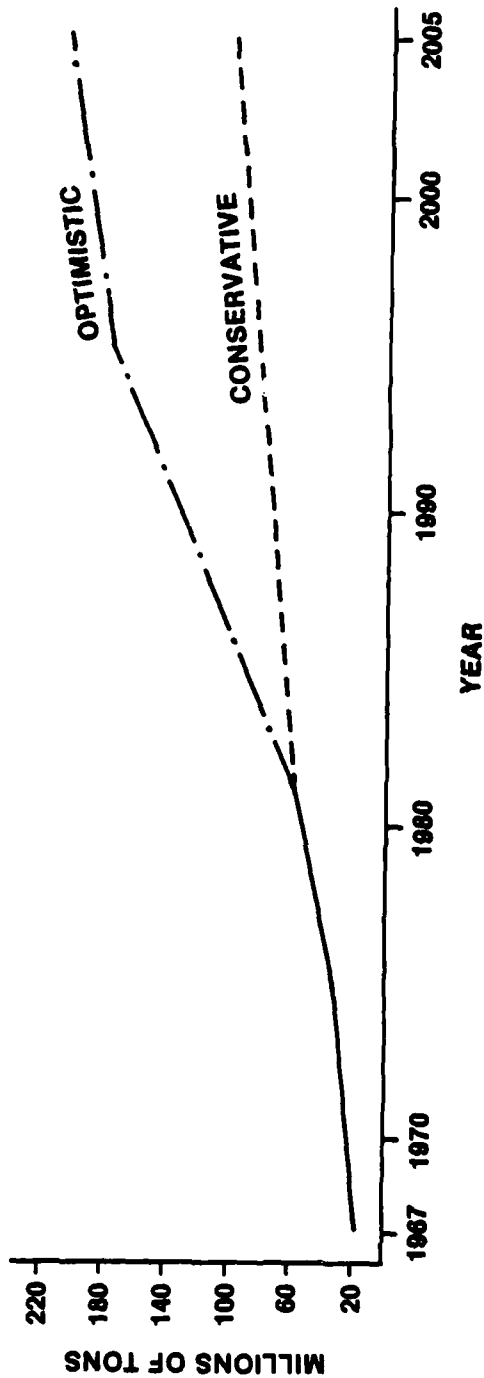
- HIGH (OPTIMISTIC) AND LOW (CONSERVATIVE) FORECASTS WERE DEVELOPED FOR THE FOLLOWING COMMERCE CATEGORIES:
 - TONNAGE THAT WILL MOVE REGARDLESS OF RIVER DEPTH (BASELINE)
 - TONNAGE THAT COULD BE DIVERTED FROM PORTS THAT ARE NOT IMPROVED (REDISTRIBUTED)
 - NEW TONNAGE THAT WOULD MOVE SOLELY BECAUSE OF DEEP DRAFT CAPACITY (INDUCED)
- THE FORECASTING METHOD USED VARIED FOR EACH COMMODITY BUT IS GENERALLY CONSERVATIVE

	FORECASTING METHOD		
	REGRESSION	OTHER REPORTS, FORECASTS	EXTRAPOLATION OF PAST TRENDS
COAL		X	
GRAIN	X		
CRUDE PETROLEUM	X	X	
OTHER DRY BULKS			X

BASELINE COAL FORECASTS



BASELINE GRAIN FORECASTS



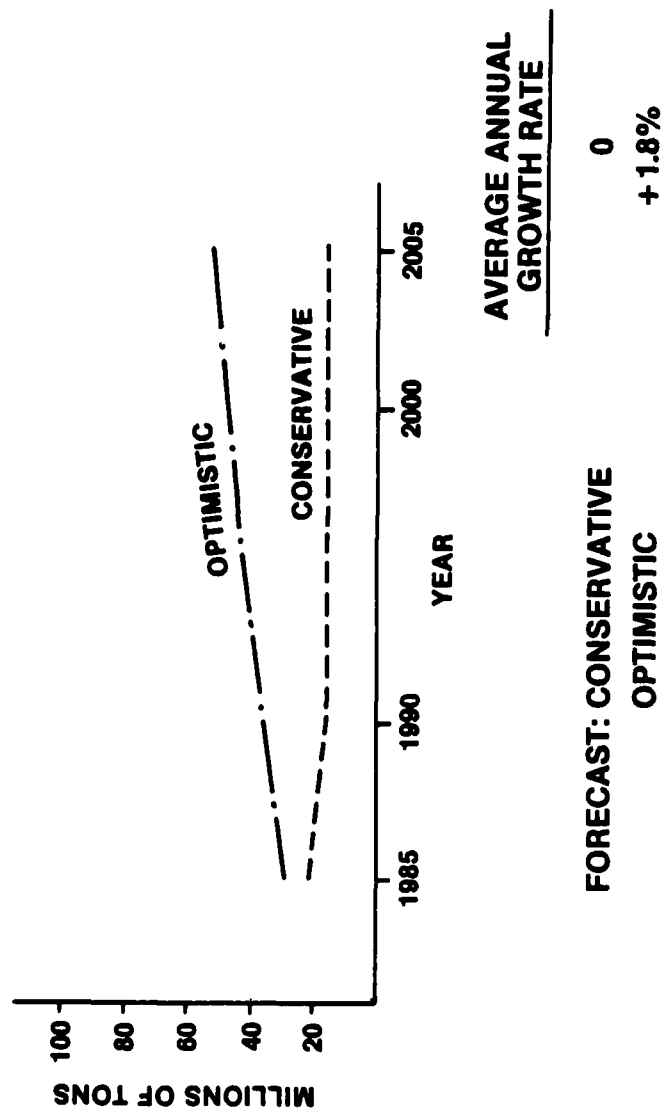
**AVERAGE ANNUAL
GROWTH RATE**

+ 8.6%
+ 2.3%
+ 5.4%

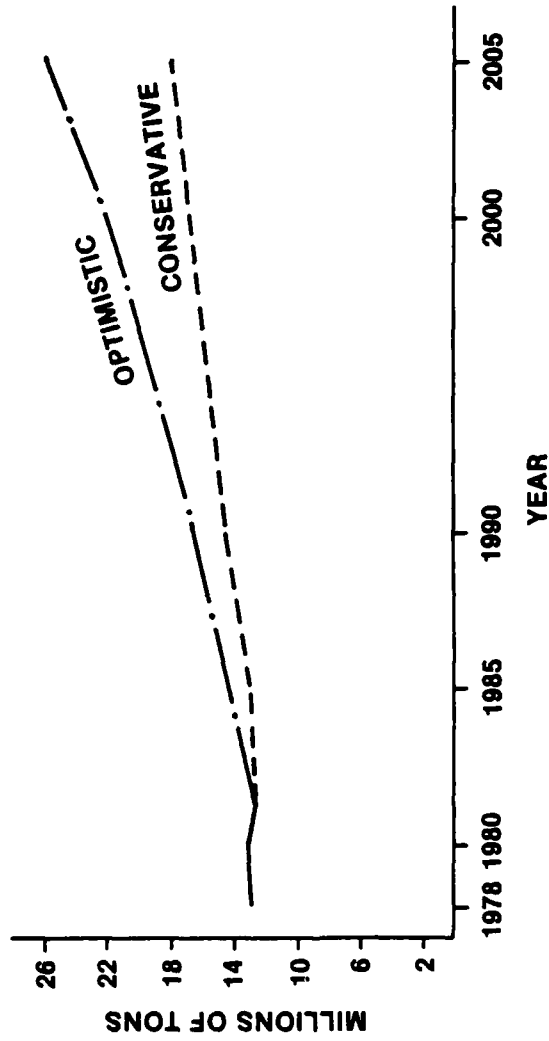
**HISTORICAL: 1967-1981
FORECAST: CONSERVATIVE
OPTIMISTIC**

BASELINE CRUDE PETROLEUM FORECASTS

- A FULL UTILIZATION OF LOOP WAS ASSUMED AND THAT TONNAGE WAS REMOVED FROM THE CRUDE PETROLEUM FORECAST TONNAGE. THE ASSUMED UTILIZATION OF LOOP WAS 1 MILLION BARRELS PER DAY OR APPROXIMATELY 50 MILLION TONS PER YEAR.
- THE REMAINING FORECASTED CRUDE PETROLEUM TONNAGE WILL COME UPRIVER.



BASELINE OTHER DRY BULKS FORECASTS



**AVERAGE ANNUAL
GROWTH RATE**

HISTORICAL: 1978-1981	0%
	1.6%
	3.0%
FORECAST: CONSERVATIVE	
	OPTIMISTIC

REDISTRIBUTED TONNAGE FORECASTS

- REDISTRIBUTION MODELS WERE DEVELOPED TO DETERMINE THE CHANGE IN LOWER MISSISSIPPI RIVER PORTS' SHARE OF U.S. EXPORTS RESULTING FROM A CHANGE IN SHIPPING COSTS RELATIVE TO SHIPPING COSTS AT OTHER U.S. PORTS
- THE RESULTS SUGGEST THAT COAL IS HIGHLY SENSITIVE TO THE CHANGE IN THE RELATIVE COST BETWEEN PORTS WHILE GRAIN IS NOT

FORECAST OF REDISTRIBUTED TONNAGE MILLIONS OF TONS 1990

COMMODITY	BASELINE	ADDITIONAL TONNAGE			
		45 FT.	50 FT.	55 FT.	60 FT.
COAL	11.0	5.0	8.6	10.7	11.4
GRAIN	73.5	2.5	2.7	2.7	2.7

INDUCED TONNAGE FORECASTS

- INDUCED TONNAGE FORECASTS WERE BASED ON THE ELASTICITY OF THE U.S. SHARE OF WORLD MARKETS BASED ON CHANGES IN THE DELIVERED PRICE OF THE COMMODITY.
- IT WAS FOUND THAT REDUCING THE OCEAN TRANSPORTATION COST OF GRAIN BY APPROXIMATELY 15 PERCENT REDUCES THE DELIVERED PRICE OF U.S. GRAIN BY ONLY ABOUT 1.3 PERCENT. THIS REDUCTION IS NOT SUFFICIENT TO INDUCE NEW U.S. GRAIN EXPORTS.
- DEEP-DRAFT VESSEL ACCESS SIGNIFICANTLY REDUCES THE DELIVERED PRICE OF U.S. COAL AND RESULTS IN INCREASED EXPORTS.


FORECAST OF INDUCED TONNAGE MILLIONS OF TONS 1990

<u>ADDITIONAL TONNAGE</u>					
	<u>BASELINE</u>	<u>45 FT.</u>	<u>50 FT.</u>	<u>55 FT.</u>	<u>60 FT.</u>
COAL	11.0	1.1	1.9	2.3	2.4

VESSEL FLEET FORECASTS

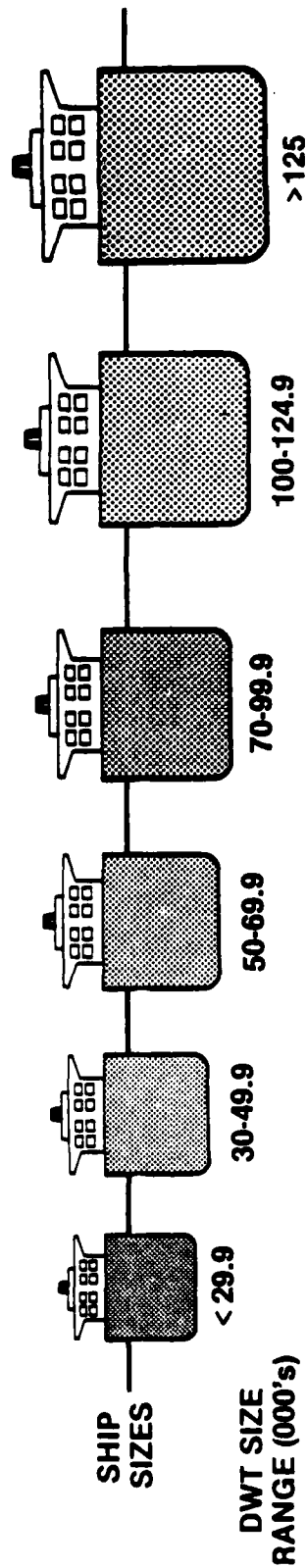
- A BASELINE FLEET WAS DEVELOPED AND FORECAST FOR ESTIMATING TRANSPORTATION COSTS UNDER A NO PROJECT CASE. THIS IS THE FLEET THAT WOULD CONTINUE TO CALL THE LOWER MISSISSIPPI RIVER WITHOUT A DEEP-DRAFT VESSEL ACCESS PROJECT.
- DEEPENED CHANNEL FLEETS WERE FORECASTED TO REPRESENT THE LARGER SHIPS THAT WOULD CALL WITH A DEEP-DRAFT VESSEL ACCESS PROJECT.
 - ARE COMMODITY SPECIFIC
 - VARY BY CHANNEL DEPTH
 - PROFILE 11 SHIP SIZES FOR DRY BULK CARRIERS AND 10 FOR TANKERS

VESSEL FLEET FORECASTS THREE DEEPEENED CHANNEL FLEETS WERE DEVELOPED

COMMODITY	SMALL	MEDIUM	LARGE
COAL	BASELINE FLEET WITH LIGHT LOADED SHIPS FULLY LOADED	CURRENT WORLD FLEET	DESIGNED FOR PLANNED DEEPEENING OF COAL PORTS WORLDWIDE
GRAIN		CURRENT WORLD FLEET UPGRADE	DESIGNED FOR RECEIVING PORTS
CRUDE PETROLEUM		CURRENT WORLD FLEET RADICALLY DOWNGRADED	CURRENT WORLD FLEET DOWNGRADED
OTHER DRY BULKS		DESIGNED FOR RECEIVING PORTS	CURRENT WORLD FLEET

THE FLEET FORECASTS IDENTIFY THE PERCENTAGE OF CARGO TONNAGE THAT WILL BE CARRIED BY EACH VESSEL SIZE RANGE

**FLEET FORECAST EXAMPLE
COAL FLEET WITH 50 FT. VESSEL ACCESS**



**PERCENTAGE OF TONNAGE
IN EACH SHIP SIZE RANGE**

BASELINE FLEET	13%	24%	26%	27%	7%	2%
DEEPEMED FLEETS						
MEDIUM	11	10	21	46	8	5
LARGE	7	7	20	51	9	6

COMPARISON OF RELATIVE SIZE OF ALTERNATIVE DEEPEMED CHANNEL FLEETS

PERCENT OF TONNAGE CARRIED IN SHIPS OF DRAFT GREATER THAN 40 FEET

COMMODITIES	SMALL FLEET		MEDIUM FLEET		LARGE FLEET	
	1995	2005	1995	2005	1995	2005
GRAIN	22%	29%	24%	30%	32%	39%
COAL	37%	44%	48%	69%	64%	77%
OTHER DRY BULKS	9%	12%	10%	12%	16%	20%
CRUDE PETROLEUM	24%	45%	38%	55%	49%	62%

TRANSPORTATION COST SAVINGS

- **A SHIPPING COST MODEL WAS DEVELOPED TO ESTIMATE AND COMPARE TRANSPORTATION COSTS UNDER A BASELINE OR NO PROJECT CASE WITH COSTS WITH A DEEP-DRAFT VESSEL ACCESS PROJECT**
- **THE COST SAVINGS ANALYSIS WAS BASED ON LONG-RUN OPERATING COSTS AND NOT CURRENT FLUCTUATING FREIGHT RATES**
- **ONLY COST SAVINGS REALIZED BY TONNAGE CARRIED IN SHIPS DRAWING MORE THAN 40 FEET WERE ATTRIBUTED TO DEEP-DRAFT VESSEL ACCESS PROJECTS**

**THERE ARE SEVERAL DIFFERENCES IN THE METHODOLOGY
USED TO ESTIMATE TRANSPORTATION COST SAVINGS
AND THE METHOD USED BY THE CORPS**

- **TRADE ROUTES**
- **PANAMA CANAL**
- **FORECASTS**
- **SAVINGS ON TONNAGE < 40 FT.**
- **BASELINE FLEET**
- **DEEPEMED CHANNEL FLEETS**
- **BACKHAUL**

TRANSPORTATION COST SAVINGS BENEFIT SCENARIOS

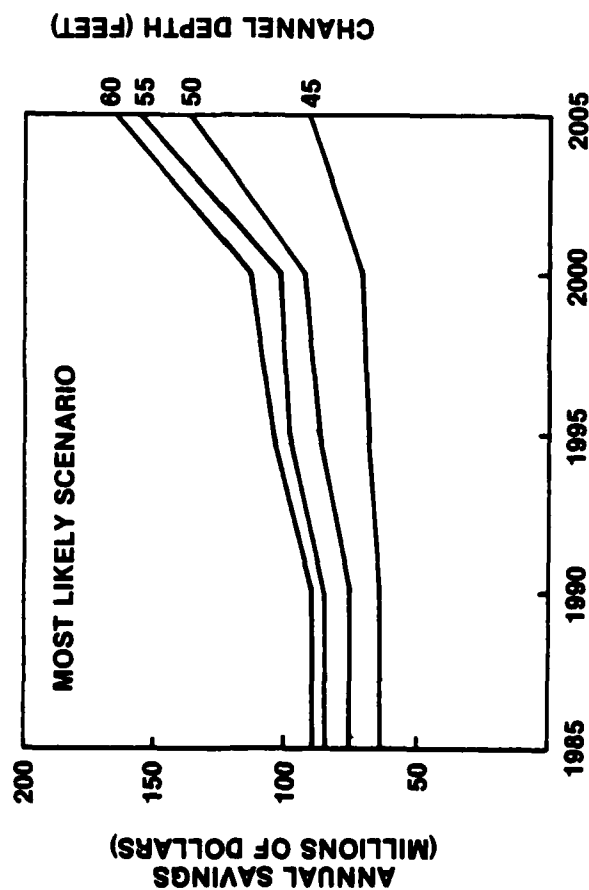
- THE THREE DEEPEMED CHANNEL FLEET FORECASTS AND TWO TO SIX COMMERCE FORECASTS RESULT IN 6 TO 18 DIFFERENT ESTIMATES OF TRANSPORTATION COST SAVINGS FOR EACH COMMODITY UNDER EACH DEEP-DRAFT VESSEL ACCESS PROJECT.
- FOR SIMPLICITY, THREE TRANSPORTATION COST SAVINGS BENEFIT SCENARIOS WERE FORMULATED FOR PRODUCT EVALUATION BASED ON A COMBINATION OF THE 18 VARIABLES.

COMBINATION OF 8000 DISCRETE BENEFIT PROJECTIONS INTO THREE BENEFIT SCENARIOS

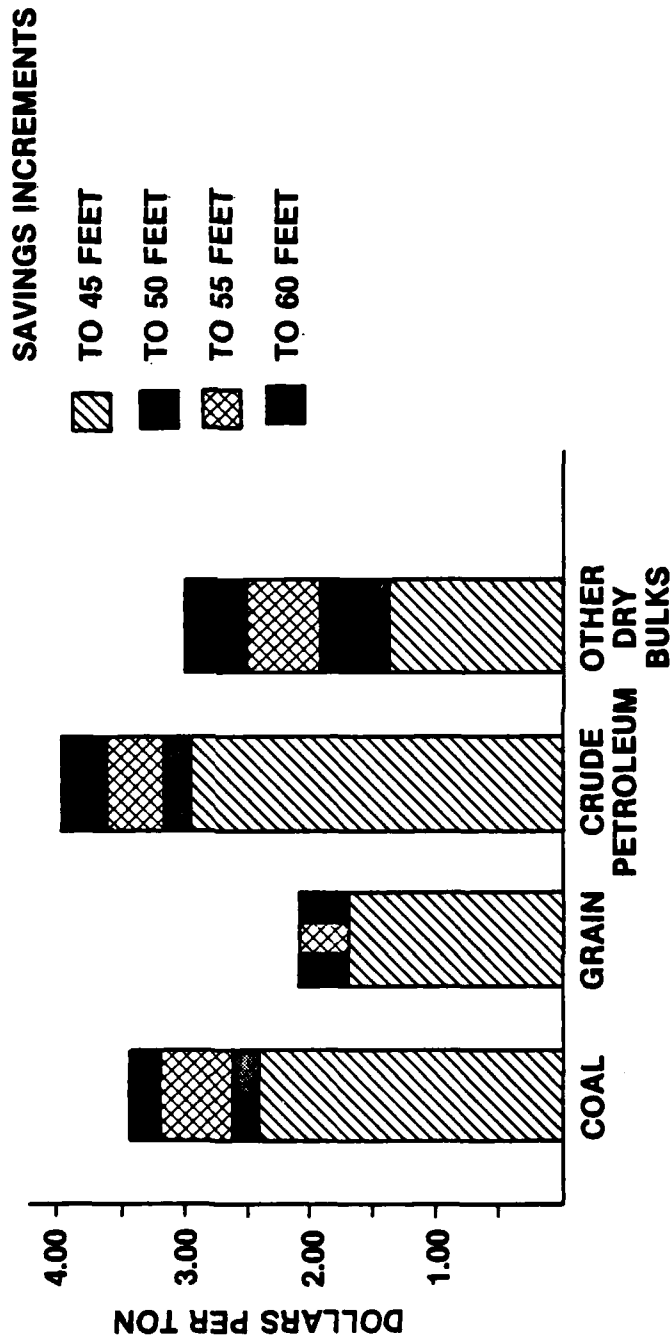
BENEFIT SCENARIOS	TONNAGE FORECAST			FLEET FORECAST			REDISTRIBUTED TONNAGE		INDUCED TONNAGE COAL
	GRAIN	COAL	OTHER DRY	CRUDE	GRAIN	COAL	OTHER DRY	CRUDE	
REASONABLY LOW	LO	LO	HI	LO	SM.	MED.	SM.	MED.	NO
MOST LIKELY	LO	HI	HI	LO	MED.	LG.	MED.	LG.	YES
REASONABLY HIGH	HI	HI	HI	LO	MED.	LG,	LG.	LG.	YES

TRANSPORTATION COST SAVINGS ARE SUBSTANTIAL AT THE 45 AND EVEN 50 FOOT DEPTHS. HOWEVER, THE INCREMENTAL SAVINGS DECREASE SUBSTANTIALLY AT THE 55 AND 60 FOOT DEPTHS

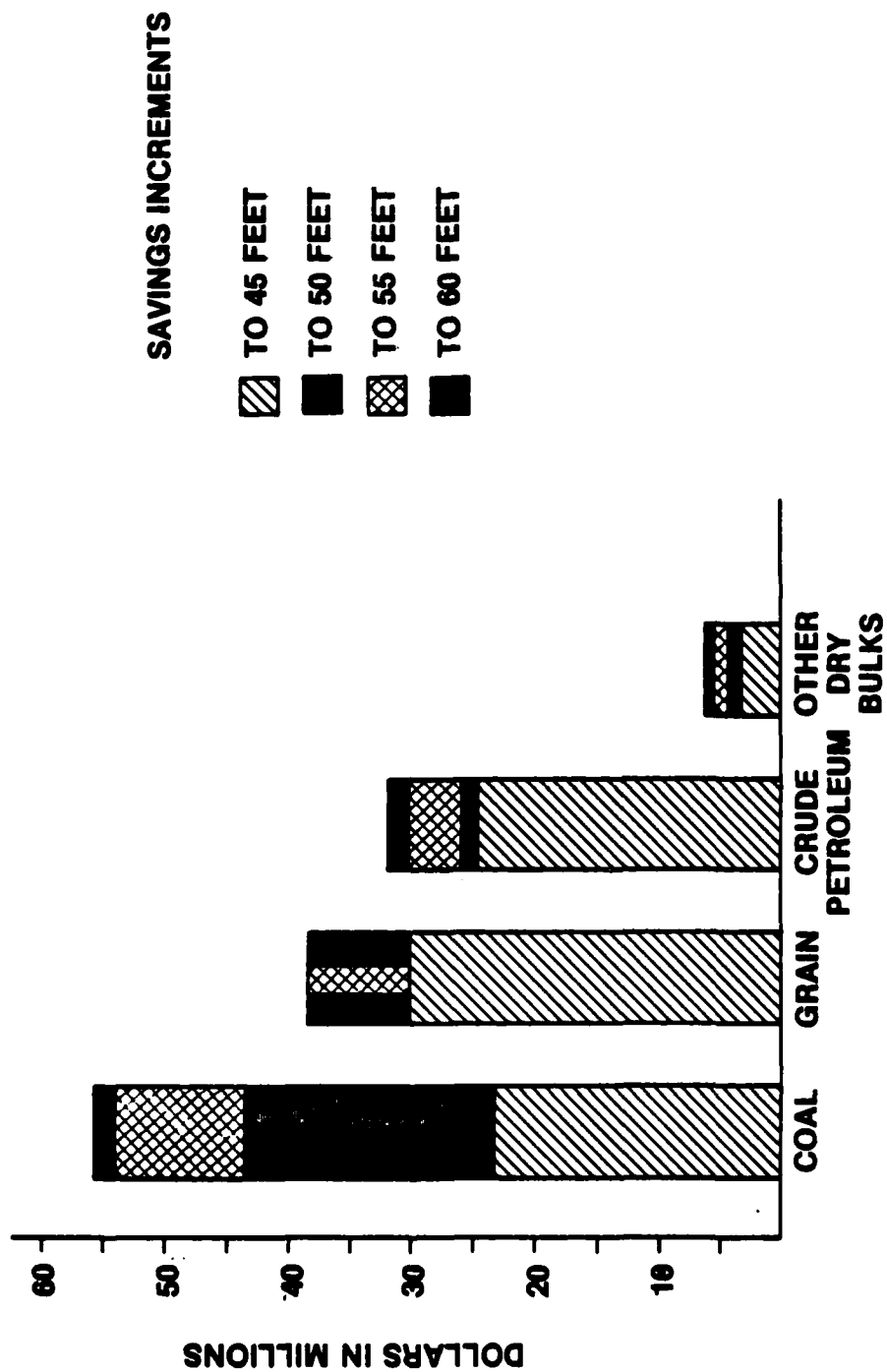
VESSEL TRANSPORTATION COST SAVINGS
(CHANNEL DEEPENING TO MILE 172 AHP)



CRUDE PETROLEUM REALIZED THE LARGEST COST SAVINGS PER TON WHILE GRAIN REALIZES THE SMALLEST PER TON SAVINGS



IN TOTAL SAVINGS, COAL REALIZES THE LARGEST TOTAL AVERAGE ANNUAL SAVINGS WHILE GRAIN REALIZES THE SECOND LARGEST TOTAL AVERAGE ANNUAL SAVINGS



OTHER BENEFITS OF A DEEP-DRAFT VESSEL ACCESS PROJECT

- ADDITIONAL BENEFITS OF A DEEP-DRAFT VESSEL ACCESS PROJECT COULD MATERIALLY IMPACT THE U.S. BALANCE OF PAYMENTS AND CREATE THOUSANDS OF JOBS.

OTHER BENEFITS OF A DEEPENED CHANNEL ANNUAL BENEFITS OVER PROJECT LIFE

<u>BENEFIT</u>	<u>PROJECT 9</u>	<u>PROJECT 11</u>
U.S. BALANCE OF PAYMENTS IMPROVEMENTS	\$90-\$280M	\$85-\$265M

EMPLOYMENT		
IN-STATE	984-1,573	1,109-2,596
OUT-OF-STATE	612-1,905	578-1,804
TOTAL	2,185-2,869	2,913-3,714

- THE STATE OF LOUISIANA SHOULD ALSO REALIZE INCREMENTAL TAX BENEFITS OF \$1 MILLION PER YEAR.

OTHER BENEFITS OF A DEEP-DRAFT VESSEL ACCESS PROJECT (Cont'd)

- ADDITIONALLY, AN INCREASED COST SAVINGS OF \$1.5 TO \$6.2 MILLION COULD BE REALIZED BY THE LESS THAN 40 FOOT DRAFT SHIPS WHICH WILL ALWAYS BE ABLE TO LOAD TO THEIR FULL DRAFT.
- FURTHER, A 45-FOOT PROJECT WOULD UNIQUELY POSITION THE LMR IN THE EVENT THAT NAVY BATTLE GROUPS OR SUPPORT FLEETS ARE HOME-PORTED IN THE GULF.

FINANCIAL FEASIBILITY

- **BACKGROUND**

- USER CHARGE LEGISLATION IS EXPECTED TO BE PASSED BY THE END OF THE 98th CONGRESS (End of 1984)
- THERE WILL BE A SPLIT BETWEEN THE FEDERAL GOVERNMENT AND THE LOCAL SPONSOR FOR BOTH NEW PROJECT COSTS AND ANNUAL O&M COSTS. THE SPLIT WILL BE NEAR 50-50 PERCENT
- THE FEDERAL GOVERNMENT MAY PROVIDE ALL INITIAL FINANCING WITH PAYBACK OF THE LOCAL SHARE OR THE LOCAL SPONSOR MAY HAVE TO FINANCE ITS SHARE OF THE INITIAL PROJECT COST

- **THE FINANCIAL FEASIBILITY ANALYSIS ADDRESSED ONLY PROJECT ALTERNATIVE 9 AND 11**

- **THE ANALYSIS ASSUMED THAT A PROJECT WOULD BEGIN IN 1987. LOCAL SHARES OF 50 AND 75 PERCENT WERE EVALUATED**

**A COMPARISON OF PROJECT SAVINGS TO PROJECT COSTS
(Coverage Ratios) SUGGESTS THAT THERE IS SUFFICIENT
REASON TO PROCEED WITH THE PROJECT**

**COVERAGE RATIO OF ALTERNATIVE
DEEPENING PROJECTS**

IN MILLIONS OF CONSTANT DOLLARS

<u>PROJECT</u>	<u>AVERAGE ANNUAL NET TRANSPORTATION COST SAVINGS</u>	<u>AVERAGE ANNUAL PUBLIC COST OF PROJECT</u>	<u>COVERAGE RATIO</u>
9	\$127.97	\$27.09	4.72
11	\$139.44	\$50.58	2.76

**AFTER PRIVATE PIER AND LOADING SYSTEM COSTS, BOTH
PROJECT ALTERNATIVES REALIZE SUFFICIENT NET TRANS-
PORTATION COST SAVINGS TO SUPPORT A REASONABLE
LEVEL OF USER CHARGES**

NET ANNUAL SAVINGS PER TON			
COMMODITY	PROJECT 9		PROJECT 11
	FOR ALL TONNAGE	FOR TONNAGE OTHER THAN TOPPING-OFF	FOR ALL TONNAGE
COAL	\$3.07	\$2.27	\$3.26
GRAIN	1.83	—	1.96
CRUDE PETROLEUM	1.94	—	2.14
OTHER DRY BULKS	1.23	—	2.42
ALL COMMODITIES	2.34	1.96	2.55

THEREFORE A SECOND DEBT INSTRUMENT WILL PROBABLY BE REQUIRED TO MEET THE LIKELY SHORTFALLS THAT WILL OCCUR. WITHOUT THIS ASSURANCE FUND, THE PROJECT MAY NOT BE FEASIBLE.

LOCAL SHARE OF PROJECT COST AND SECOND
DEBT INSTRUMENT REQUIREMENTS

PROJECT ALTERNATIVE	LOCAL SHARE	REVENUE BOND FOR LOCAL SHARE OF PROJECT CAPITAL COST		SECOND DEBT INSTRUMENT REQUIRED
9	50%	\$ 57 MILLION	\$ 47 MILLION	
	75%	\$ 85 MILLION	\$ 68 MILLION	
11	50%	\$114 MILLION	\$ 84 MILLION	
	75%	\$171 MILLION	\$125 MILLION	

CONCLUSIONS

- A COMPARISON OF PROJECT SAVINGS TO COSTS SUGGESTS THERE IS SUFFICIENT REASON TO PROCEED WITH PLANNING THE PROJECT.
- WE SHOULD ASSUME LOCAL USER CHARGES ARE INEVITABLE, AND A 50 PERCENT TARGET IS APPROPRIATE FOR PLANNING PURPOSES.
- THE SAVINGS ESTIMATED FOR PROJECTS 9 AND 11 ARE SUFFICIENT TO SUPPORT A REASONABLE LEVEL OF USER FEES.
- HOWEVER, A USER FEE DESIGNED TO AMORTIZE YEAR-TO-YEAR OBLIGATION WILL BE UNREASONABLY HIGH IN THE EARLY YEARS (Over \$1 Per Ton) AND WILL DISCOURAGE USE.
- THE MOST FEASIBLE APPROACH TO PROJECT FINANCING IS BASED ON DEBT FINANCING WITH A GRADUATED SYSTEM OF USER CHARGES. AN ACCEPTABLE LEVEL OF USER CHARGES (\$.26 / Ton) HOWEVER WOULD RESULT IN ANNUAL DEFICITS DURING THE EARLY YEARS.

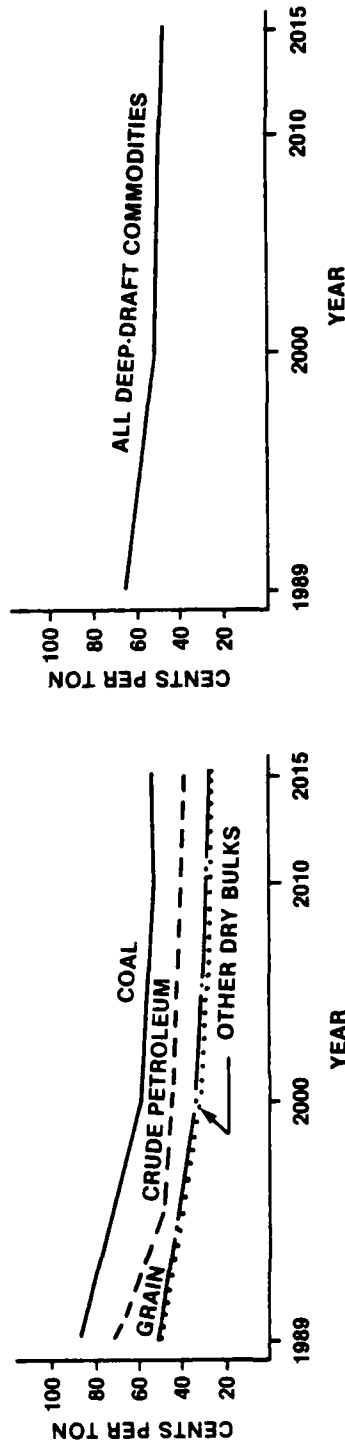
CONCLUSIONS (Cont'd)

- THE FEDERAL GOVERNMENT COULD BACK THE EARLY SHORTFALLS. FAILING THIS, AN ASSURANCE FUND (\$45-50 Million For Project 9 @ 50%) OVER THE EARLY PROJECT YEAR~~s~~ WOULD BE REQUIRED TO COVER SHORTFALLS. THIS WOULD LIKELY BE AN OBLIGATION OF THE STATE.
 - AS A FIRST-OF-A-KIND FINANCING, THE PROJECT IS CHARACTERIZED BY RISK, MUCH OF WHICH CANNOT BE ASSESSED WITH ANY DEGREE OF CONFIDENCE. THE ASSURANCE FUND WOULD PROTECT FOR TONNAGE SHORTFALLS FOR A PERIOD OF TIME. HOWEVER, OUR FORECASTS ARE CONSERVATIVE.
 - USING THE LOW FORECAST FOR 1990, USER CHARGES COULD INCREASE ONLY 2-5¢
 - USING THE HIGH FORECAST FOR 1990, USER CHARGES COULD DECREASE BY 10-12¢
- HOWEVER, THE GREATEST UNCERTAINTY EVOLVES AROUND THE DESIRE AND ABILITY OF THE WORLD FLEET TO SERVE THE LOWER MISSISSIPPI WITH SHIPS OF THE SIZE NECESSARY TO ACHIEVE THE ECONOMIES OF SCALE AND WILLINGLY PAY THE USER FEES.

ANNUAL LOCAL COSTS	÷	ANNUAL NET TRANSPORTATION COST SAVINGS	=	LOCAL COST AS A PERCENTAGE OF NET SAVINGS	X	\$/TON FOR CRUDE PETROLEUM	=	USER CHARGE PER TON FOR CRUDE PETROLEUM
					X	\$/TON FOR OTHER DRY BULKS	=	USER CHARGE PER TON FOR OTHER DRY BULKS
						\$/TON FOR ALL TONNAGE USING DEEP DRAFT	=	USER CHARGE PER TON FOR ALL TONNAGE USING DEEP DRAFT

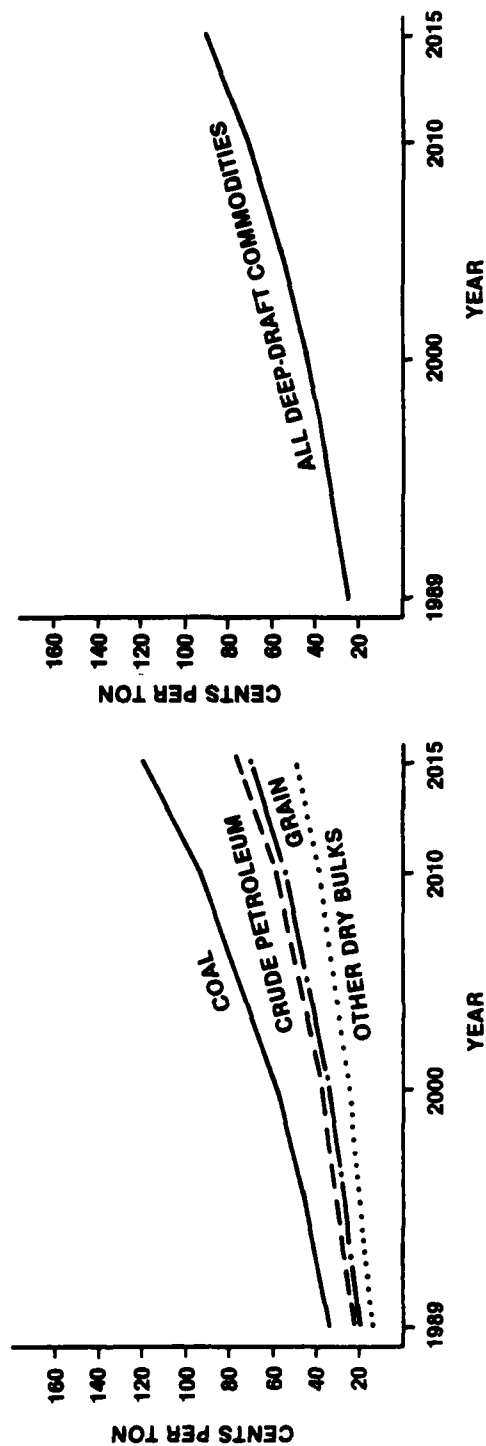
A USER CHARGE DESIGNED TO FULLY AMORTIZE YEAR-TO-YEAR DEBT SERVICE OF THE INITIAL CONSTRUCTION BOND AS WELL AS ANNUAL OPERATING COSTS IS CONSIDERED UNREASONABLY HIGH AND COULD BE A DISINCENTIVE TO USE OF THE PROJECT

USER CHARGES PER TON TO FULLY COVER YEAR-TO-YEAR
LOCAL FINANCIAL OBLIGATIONS
PROJECT 9 AT 50% LOCAL SHARE



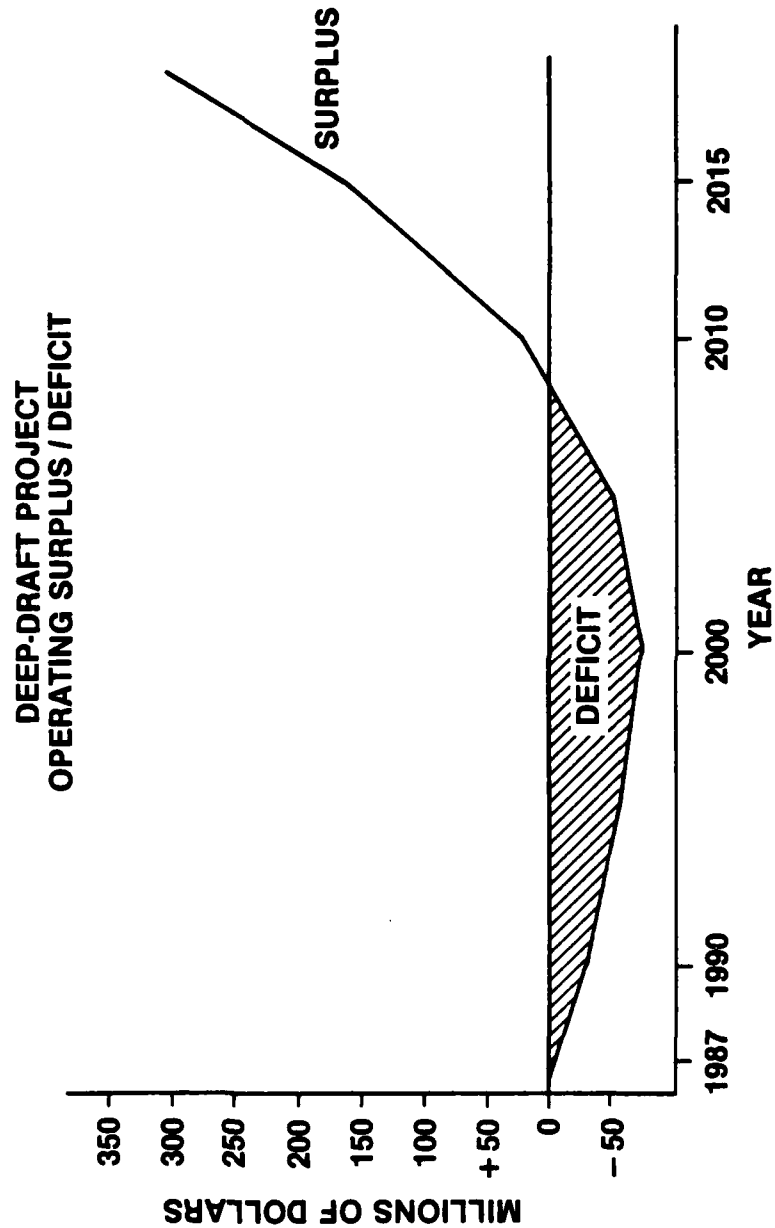
THE MOST FEASIBLE APPROACH TO FINANCING THE PROJECT IS BASED ON DEBT FINANCING WITH A GRADUATED SYSTEM OF USER CHARGES

**POTENTIAL USER CHARGES
PROJECT 9 AT 50% LOCAL SHARE**



THESE USER CHARGES RANGE FROM 11 TO 27 PERCENT OF THE NET SAVINGS PER TON.

IN THE EVENT THAT NO FEDERAL LOAN ASSISTANCE PROGRAM IS FORTHCOMING, A REASONABLE USER FEE SCHEDULE WILL BE INSUFFICIENT TO MEET PROJECT FINANCING OBLIGATIONS UNTIL 2009



QUESTIONS AND ANSWERS

MISSISSIPPI RIVER DEEPENING STUDY

Q: Was there any effort to determine what the external benefits were for the other states and compare them in some way to the total benefits?

Mr. Donovan: There was a section of the report that indicated the employment to the user industries, be it grain, coal mining, etc. We calculated the transportation savings -- improvement in the balance of payments for each project -- and the creation of jobs in the secondary industries as well. There were several thousand jobs, but they weren't separated out between Louisiana and the rest of the nation.

CMT: In other words, you didn't separate the external from the internal. If we say that the other states would benefit by the project, we are looking for a tool for the Corps to use to identify Louisiana's share, and so forth. There are some external beneficiaries that we can't identify but we can identify them as an aggregate. Maybe the Federal government can take the responsibility for that particular task.

Mr. Donovan: I have a number for in-state employment and out-of-state employment. If we look only at incremental jobs created by the inducement of traffic, and exclude the jobs created by handling the tonnage, the in-state employment would be construction people building the project, maritime people operating it, and some user industries. The out-of-state would be all user industries. There would be approximately 1500 to 2000 in-state jobs and 2000 to 2500 out-of-state jobs for the most conservative project. In essence, there were more outside jobs than in-state jobs.

Mr. Roselli: Jobs were only one measure. We had the other measures of transportation savings and balance of trade, but we didn't do that kind of a split. The data were there but we didn't develop it.

Q: Would it be possible to sell these bonds as straight revenue bonds? Do you need a credit enhancement of some form? A 90 percent Federal guarantee was mentioned. It's just too unpredictable a revenue source.

Mr. Donovan: I think that without the tax-free provisions and the mortgage guarantee of 90 percent it's a ZZZ-rated bond.

Q: Would you comment on why the users--the people using the improvements--cannot pay a user charge equal to the transportation savings?

Mr. Donovan: Over the long run we really do think they can and should, but over the short run a bulk center is incredibly unstable in terms of the supply/demand balance of ships. That instability is reflected in their freight rates which are well below marginal cost. We examined the fully allocated cost--long run average cost--of ship operations, but not freight

rates. Based on freight rates, you wouldn't realize sufficient savings. That's the short term perspective, but it's the shippers' perspective. The industry looks at a prospective charge in the context of their marginal cost of earnings that they're taking from that transaction, be it a maritime transaction or a merchandising transaction. And they're very sensitive to that \$.25 or \$.30.

Mr. Roselli: If you set the rate at a point where it's equal to the savings, then there is no incentive to use the larger ships.

Q: Is there a large disparity there? What were the savings in comparison to the \$.25 or \$.30 cent charge?

Mr. Donovan: On the order of twice the magnitude.

Mr. Cocchiara: The deepened channel is competing with topping off operations as well. The charges for topping off tend to translate into about \$1 per ton on all cargo in the ship, so about half of that represents a maximum user charge by a channel.

Mr. Donovan: A precedent for this is the longshoremen's "Job Security Program". Back in 1977, to cover the longshoremen's unemployment benefits, they imposed a \$.15 to \$.20 cent per ton assessment on all bulk carriers at every I.L.A. (International Longshoremen's Association) port, i.e., every port from Portland, Maine to Brownsville, Texas. Some of these bulk carriers, particularly the ones we're talking about here, shifted their operations to non-I.L.A. ports to avoid that charge of only \$.15 to \$.20.

O U T L I N E

TUNNEL AND RESERVOIR PLAN PROJECT: THE MUNICIPAL FISCAL STRESS STUDY

John Petersen, Government Finance Research Center

U.S. Army Corps of Engineers
Seminar on Water Project Financing
May 17, 1984, Fort Belvoir, Virginia

I. BACKGROUND AND PURPOSE OF STUDY

- a. Army Corps of Engineers (COE), Chicago District, has undertaken an evaluation of the cost-effectiveness of various alternatives to the second phase of the TARP II plan for stormwater control in Cook County, Illinois.
- b. The GFRC was commissioned to undertake an examination of the fiscal impact of the alternatives to TARP II on the city of Chicago and a large number of affected suburbs.
- c. Three component purposes in the "fiscal stress" study:
 - 1. develop a method for examining the impact of various alternatives on the finances of local jurisdictions;
 - 2. develop quantitative measures of the degrees of fiscal stress on affected jurisdictions;
 - 3. develop a methodology capable of making multiple, consistent comparisons among all the communities.

II. APPROACH AND PRODUCTS

- a. Principal method was to use an analytical model for projecting future local government fiscal flows ... revenues, outlays, borrowing ... and measuring their relationship to underlying sources of revenue and economic activity.
- b. Initially, "Base Cases" were projected, assuming there were no stormwater control improvements. These were compared to several alternative improvements, specified by the COE, where the incremental cost and its financing of each alternative were translated into measures of increases in fiscal effort. Various measures were then made to assess the degree of fiscal strain that these efforts would represent.
- c. Limitations on approach: simplifies very complex relationships, places great weight on assumptions about future trends, relies on stability of relationships observed in the past and projected into the future.

- d. Advantages of approach: captures dynamic quality of community change; permits comparisons over years and among jurisdictions; makes assumptions about behavior explicit, reproducible, and amendable.
- e. Products of the study:
 - o Resource Guide that explained the analytical framework used and provided background information about local governmental finances in Illinois.
 - o Fifty-one individual Community Reports, one for each suburban jurisdiction studied.
 - o Fiscal Stress Study for the City of Chicago.
 - o Comparative and Sensitivity Analysis, which compared and contrasted results for the 51 suburbs and their sensitivity to differing assumptions.
 - o Final Report that summarized the contents of the above documents and the overall study.

III. METHODOLOGY AND APPLICATIONS

- a. Analytical framework: a model of local government budgets and financial behavior (Figure 2.1).
- b. Relates expenditures and revenues to local economic base.
- c. Several governments overlap in their claims for revenues, and this must be taken into account in the calculation of burdens on resources.
- d. Current and capital outlays combine to support services, and other governments may also serve needs or contribute financial resources.
- e. Model employed depends on maintaining a budget constraint: the local operating budget plus debt service over time, must be balanced. Also, we assumed "constant service" levels on a per capita basis for expenditures other than for stormwater improvements.
- f. The analytical focus was on the size of the future increase in revenues necessary to support the increased annual costs associated with various alternative stormwater control improvements.
- g. Fiscal stress was defined generally as the size of the increase required in current revenues and levels of indebtedness to finance the various alternatives in relationship to potential sources of revenue and the communities' debt capacity.

h. While several measures are possible, the study devised and focused on a single summary index, the Revenue Effort Index, to measure the fiscal effort of communities and, given high levels and changes in that index, of fiscal stress caused by financing the stormwater improvements.

i. The model was empirical, based on actual behavior of communities from 1975 to 1980, the latter being the Base Year for projections work. On the bases of historical relationships and assumptions about key variables (population, prices, retail sales, real estate values, etc.), the model was used to project expenditures, revenues and borrowing behavior for fiscal years 1983 through 1987.

j. The model was run first assuming a constant services budget constraint to generate a Base Case, without the stormwater improvement. It then was iterated for each of the alternative stormwater control improvements, where the added costs had to be financed, typically by increased borrowing.

k. Major variables used in the model are listed in Table 2.1, broken down by major groupings. Because assumptions regarding future growth are so important, two scenarios relating to overall regional growth were tested. The first set of assumptions set out in late 1981 embodied high inflation in prices and property values (Original Scenario). The second scenario (Most Likely), produced in the summer of 1982, assumed less inflation and slower growth in property values.

IV. ANALYSIS OF SUBURBAN COMMUNITIES

a. Local government in Cook County is fragmented: There are over 500 taxing jurisdictions and 120 separate municipalities. The study focused on 51 communities that were generally older and had combined sanitary and stormwater sewers. These ranged greatly in size, wealth, and revenue-raising activities. (Table 3.1)

b. A Revenue Effort Index was calculated for each for 1980 and projected forward to 1983 and 1987, to form a profile of effort before the making of alternative improvements. Figure 3.1 presents the Base Case fluctuations for the communities for 1980 (actual) and 1983 and 1987 (projected).

c. The stormwater control alternatives (four in the case of each community) were costed out on the basis of needed annual expenditures to finance construction and commence operations (Table 3.2), and the resulting increases in current revenue

effort were calculated on the index. (Table 3.3).

d. In assessing how much revenue effort was acceptable, specific community circumstances had to be considered. Generally, increases that involved more than a 10 percent increase in effort over that calculated in the Base Case (no stormwater improvement), or that required a level of effort in excess of the average for communities in 1980 (where the community had previously been below the average) were seen to be stressful. The use of utility financing through added water and sewer charges was also examined, as were limitations on borrowing capacity.

e. Using the Most Likely scenario for the growth in key variables, of the 51 communities, seven were estimated as incapable of undertaking any of the alternative projects. On the other hand, 11 were estimated as being fiscally capable of undertaking any of the four alternatives.

f. The alternative economic scenarios had a substantial impact of the fiscal feasibility of projects. Generally, the Original Scenario, which had higher inflation rates and growth in property values, led to projections of declining fiscal effort and less stress in financing projects. The Most Likely Scenario, as reported above, foresaw less financing capacity and greater stress. However, given the interaction of economic and fiscal variables, individual communities reacted differently to changes in assumptions.

V. CITY OF CHICAGO

a. Using essentially the same methodology as that employed for the suburban communities, five alternatives for stormwater control were examined for the City of Chicago.

b. Recognizing the size and national significance of the City, and its different revenue structure when compared to the suburbs, special pains were taken to measure its fiscal effort and the degree of stress it might experience in financing improvements.

c. The City was found to exert a much greater level of effort when compared to the suburbs, but that effort was estimated to be only moderate when compared to 29 other large cities. However, comparisons among cities are inherently difficult because revenue structures and service responsibilities vary greatly.

d. Generally, the study found that the City was in a declining fiscal condition and foresaw substantial increases

in fiscal effort simply to keep current service levels in place. Figure 3.2 presents a graphic of the City's effort as projected for the Base Case and with the five alternative improvements. Thus, while the stormwater control alternatives themselves did not represent much incremental spending (\$4 to \$20 per capita in added annual revenues needed), the overall projected increase in fiscal effort and resulting level of stress might mean such projects would have to be substituted for other planned outlays. However, it appeared the City might find enterprise financing (as opposed to use of general revenues) a possible alternative.

VI. CONCLUSIONS

- a. Although economic conditions have improved since the study was in the field, its finding was that most suburban communities will need to "run faster to stay in place" fiscally in the intermediate future. Of the 51 examined, 11 could afford any of the stormwater control improvements without fiscal stress, seven appear unable to finance on their own any of the improvements, and 33 hold a middle ground where they could afford one or more of the alternatives without undue fiscal stress. However, it is important to bear in mind that the study did not examine cost-benefits nor the problem of the alignment of benefits and costs within jurisdictions.
- b. The City of Chicago was found to have the fiscal capacity to undertake any of the projects, none of which would lead to more than a marginal change in its revenue effort. But its revenue effort is already very high compared to the suburban jurisdictions. Moreover, the study correctly projected the deepening financial problems of the City and questioned its willingness to assume any new burdens in the face of increasing fiscal stress.
- c. The study consistently applied a general method for depicting and projecting fiscal behavior. The methods employed are general, reproducible, and capable of supporting projections and comparisons among communities and over time. Assumptions must be made, as in any projections, but they are explicit and, through the workings of the model, produce quantitative results that permit the examination of trade-offs in revenues, expenditures, and borrowing decisions. Furthermore, assumptions can be amended over time as conditions and attitudes change, and the results recalculated and reconsidered.
- d. Analytical models, such as employed in the fiscal stress study, are only guides to setting forth and exploring the

complicated and ever-changing "what if's" of the real world. But when used in conjunction with knowledgeable qualitative judgments, they are invaluable tools in determining and arraying possible consequences tomorrow of decisions being made today among alternative courses of action.

QUESTIONS AND ANSWERS

TUNNEL AND RESERVOIR PLAN PROJECT: THE MUNICIPAL FISCAL STRESS STUDY

Q: How long did the Fiscal Stress Study take and how much did it cost?

A: It took about 2 1/2 years and it cost about \$200,000 to \$250,000. It was an extremely detailed study, and I think it is important to realize that whereas one can do studies by getting a set of secondary-source numbers for a city's finances, this kind of study, given the magnitude of the questions being asked, requires getting out to the individual jurisdictions. We went to every single jurisdiction, we collected five years of financial statements, and we compared those to state reports (in many cases we let the State know where it had dropped zero's and made some mistakes picking up numbers.) We really tailored those studies so that, when we went back to the jurisdictions with the results, there would be no disagreement as to our starting point. They might disagree with our assumptions, but they knew that we had examined their books and examined their operations, and there has not been any criticism per se of the approach and of the numbers used. I think that it was well worth the effort, because obviously some of these questions and answers had political sensitivity. We were very, very careful.

Q: I would think that many of the benefits from TARP would be capitalized into the property values, and I am wondering if there was any investigation of the feasibility of the jurisdictions changing the mix of their revenue sources in order to reduce fiscal stress and to obtain revenues more quickly.

A: No. It is important to bear in mind that we did not do a cost benefit analysis. In terms of the capitalization of enhanced property values, we took a great deal of time and effort to talk to local economists and real estate people, and we got to the point we were hand-tailoring a lot of our assumptions to the point of actually forecasting where the property values of not only residential but also commercial and industrial uses were heading. I think your question is particularly appropriate to the extent that one can identify those areas that would be most affected by the improvements, but it is that kind of micro-level within jurisdictions that we didn't get into. Our question was really one of looking at the overall level of effort in revenues raised by the governments and asking the question in terms of increased governmental resources to pay for TARP, setting aside the question of capitalization of benefits or the ability to monetize those benefits. It's the old question of finance versus economics in terms of feasibility. What would be the fiscal strain to make these improvements? I think that the question you've raised is one that would be specifically appropriate looking at each jurisdiction's improvements and what might happen to certain properties that would be affected. But we couldn't answer all the questions; we had to stick to our assignment to examine fiscal capacity.

Department of the Army, Corps of Engineers
Water Project Financing Seminar
May 16 & 17, 1984

PRIVATE SECTOR INVOLVEMENT IN RECREATION DEVELOPMENT

William L. Harvey, Head, Contract Services
Los Angeles County Department of Parks and Recreation

For over twenty years the Los Angeles County Department of Parks and Recreation and the U.S. Army Corps of Engineers have shared some truly unique experiences pertaining to development of recreation facilities by the private sector. The County currently holds fifty-year leases from the Corps for two separate areas totaling over 3,000 acres of flood basin property. Under each agreement, the County has full responsibility for maintenance and operation of the leased area.

The primary factor enabling development of a significant portion of this acreage has been the availability during the last ten years of Code 710 matching funds. Through this program, facility enhancement has centered around construction of passive recreation areas including picnic grounds, nature areas, multiple use hand-courts and field game areas, landscaping and parking lots, all designed to complement the water basin area.

The County's commitment to maintain and operate the developed facilities became extremely difficult after the tax revolt of 1978. In fact, just getting the matching funds to meet the Code 710 program was troublesome. Consequently, attention was directed to developing a public sector/private sector partnership.

The goal of these endeavors was twofold: to enhance existing services and to create new service delivery systems. The three benefits that come into play under this goal are: (1) development of new facilities; (2) creation of new revenue sources to assist in offsetting operation and maintenance costs; and (3) reallocation of County staff and resources to other parts of the facility as portions of property are leased out and maintained by the concessionaire.

For example, we are currently in final negotiations for the development of 80 acres of parkland into a 15 - diamond softball complex with an administration building/sports center. The estimated construction costs of \$5.6 million will be financed wholly by the private sector. The process leading up to this stage entailed a public solicitation to interested developers. We developed a standard solicitation package and advertised a Request for Proposals.

Two proposals were received; both of the proposers were interviewed and a recommendation was submitted to and subsequently approved by the Director. We anticipate that by the end of June the Director's recommendation will be submitted to the Board of Supervisors for approval.

PREVIOUS PAGE
IS BLANK



What this agreement will mean is that the public service will be enhanced by construction of much needed softball fields; 80 acres of parkland maintenance services will be taken off the line and transferred to other areas of the park; in terms of revenue, minimum guarantee for the first year is \$15,000 per month, for the second year \$24,000 per month, and for the third year \$30,000 per month, with potential rent based on percentage of gross receipts being higher. If the lessee realizes his gross revenue projections, the rent could easily exceed \$400,000 per year.

Another example involves a lease agreement with a private developer for construction of a 350 to 400 unit recreational vehicle campground on Corps property leased to the County. This also involved a public solicitation process and a request for proposals. Unlike the example of the softball complex, however, the developer/operator will be building on undeveloped property. Construction costs of \$1 million will be the responsibility of the developer. The service level of the park will be expanded with the new facility and the minimum rent guarantee will be \$48,000 per year, with potential rent based upon percentages exceeding \$80,000 per year.

Other examples of new revenue generating facilities, not on Corps property, but wholly financed by the private sector, include Raging Waters (\$4.5 million investment; approximately \$3 million first year gross; over \$300,000 rent to the County first year); conversion of an existing swim park (County losing money; our attendance 120,000 and decreasing; their first year attendance 400,000); and Pan Pacific Auditorium (adaptive re-use of State historical building; \$20 million hotel complex with restaurant, shops, theater complex; minimum \$250,000 per year guarantee).

How did we get involved in some of these projects? It wasn't easy, but it did involve some planning and purpose. Our first step was to have a brainstorming session. We looked at all of the undeveloped property under our jurisdiction, on County property and Corps property and came up with a list of potential projects that the private sector might be interested in developing. These included everything from arcades to gift shops to equestrian tack shops. We evaluated factors such as demographic data, site access, competing facilities, and conditions of the property. Then we selected those projects which appeared to have the best factors for potential development and prepared solicitation packages and RFP's. A thumbnail sketch of the solicitation process is as follows: the Board approves the solicitation; the RFP is advertised; proposals are submitted over 30 to 90 days; and on-site conference is held; a review committee is assembled; proposers are interviewed. Rating factors include business experience, optional services, financial resources, equipage of facility, and ability to accomplish the desired program.

The selection process entails rating the proposers, making a recommendation to the Director, obtaining approval of the Supervisorial District, submitting proposals to the Board for approval and initiating the agreement. Inspection of development during construction is handled by Department planning staff and other County departments. Upon completion a dedication/grand opening is conducted. After opening P&L statements are required to help monitor activities and financial records.

How do you generate public sector interest and involvement? One method we have used is to create a 501(c)(3) Public Benefit Foundation. The Board of Directors consists of representatives of major corporations in the Los Angeles area. The foundation supports the activities of the Department; it has helped generate media support through donations and fund raising activities. It serves as an excellent resource for establishing contacts with the corporate world. Other contacts include existing lessees interested in expanding their services or taking on new service areas.

In some cases people have merely come in "off the street" with ideas for facility development which we have been able to turn into new or expanded services as well as used to generate revenue. An example is a disc golf course we recently developed.

The most important thing to remember is to be receptive. Create an open atmosphere and be willing to listen to what may seem, at first blush, to be a harebrained idea.

In some situations, when we are not sure of how to develop a facility or what to do with it, we have sought the assistance of the private sector for direction. In one project nearing completion, we expended \$112,000 of vehicle entrance fee monies to hire a consultant to develop a Master Plan of Development. The site in question is 8,500 acres, 6,500 of which are water surface and are a part of the State aqueduct system. We developed a solicitation package, went through the process and selected a partnership of Gruen and Associates and Economic Research Associates. They will identify the recreation facilities suitable for the site and develop market analysis information relevant to potential private sector investment.

As an example of another approach, we are making direct contact with various lessees regarding use of a 306-acre developed park site which is minimally used. In this situation we are going directly to private interests to let them tell us how best to enhance the facility.

To repeat, the objective is to use the expertise of the private sector for the benefit of the public and to generate new revenue sources. It is equally important to utilize various approaches with the private sector when opportunities present themselves, and to create your own opportunities for private sector involvement which use private creativity for facility enhancement.

Growing Trend

Parks That Pay Their Own Way

By KEVIN RODERICK,
Times Staff Writer

WHEELING, W.Va.—If Ralph Cryder and his colleagues have their way, Los Angeles and most other urban areas will follow the lesson of Wheeling's rural Oglebay Park, located in rolling hills above the Ohio River.

Oglebay may be the finest city park in the country; it is certainly one of the best designed. Its true distinction, however, is that virtually no tax money is taken from Wheeling's financially pressed residents to run it.

Instead, income from a popular restaurant and lodge, decorated in Appalachian hardwoods and housing large, comfortable public lobbies, provides half the money needed to maintain the zoo, swimming pools, historic buildings, play areas and 1,400 acres of woods. Most of the rest comes from fees and donations sent in by satisfied visitors.

Political Orphans

Without powerful supporters for protection, parks have long been the political orphans of local government. But following Oglebay's lead, some park directors across the

country have sought escape from the anguish of unending budget battles with mayors and other politicians by opening hotels, amusement parks and cocktail lounges—with profit the driving motive—on lands once reserved for more traditional recreation uses.

"You're finding that more and more because we've been picked on over the years," said Cryder, the director of the Los Angeles County Parks and Recreation Department. Cryder was an early advocate of the innovative entrepreneurial strategy and has made the county a leader in the movement.

Los Angeles County's massive park system, the largest in the country with 72,000 acres of land and 126 parks and lakes, has no chance of becoming self-sustaining. But under Cryder, the county has opened an amusement park, planned a hotel and signed contracts for other commercial activities in its parks. He has emerged as a prime example of the aggressive, cunning public parks manager, and his approach had been adopted by increasing numbers of park executives.

Jobs More Complicated

Once thought of as meek bureaucrats who drew back from the give and take of local politics, park directors have seen their jobs grow more complicated in the past two decades.

Parks have had less money for their programs at the same time that the role local parks play in American life has changed. In Los Angeles, for example, city Recreation and Parks Director James Hadaway said half the city's parks are located within the turfs of various street gangs. This has taken a toll in

public support; a study done for his department last year found that half the city's residents avoid parks out of fear.

Local parks, especially in Los Angeles and other Southwestern cities, have also had to cope financially and creatively with new immigrants whose recreation needs often differ from the typical family 20 years ago. Softball fields in a

Please see PARKS, Page 3

PARKS: *Lean Times Trigger New Approach*

Continued from Page 1

Samoan neighborhood in Carson, for example, were recently converted into Los Angeles County's only cricket greens, and some parks serve visitors who speak only Spanish or Korean.

A park director's most valuable skills no longer involve organizing class schedules and softball leagues, but they may include hardball negotiating and persuading wealthy residents to remember the parks in their wills. The St. Petersburg (Fla.) parks director, figuring he should go to the source, recently arranged workshops to show estate attorneys and accountants how their clients could bequeath gifts more easily.

Many of this new wave of parks executives received their indoctrination at a yearly "revenue school" held here at Oglebay. The school, taught by Cryder and colleagues who have long believed that parks can largely pay their own way, is run under the auspices of North Carolina State University. Hundreds of local park executives have graduated from the school in 20 years.

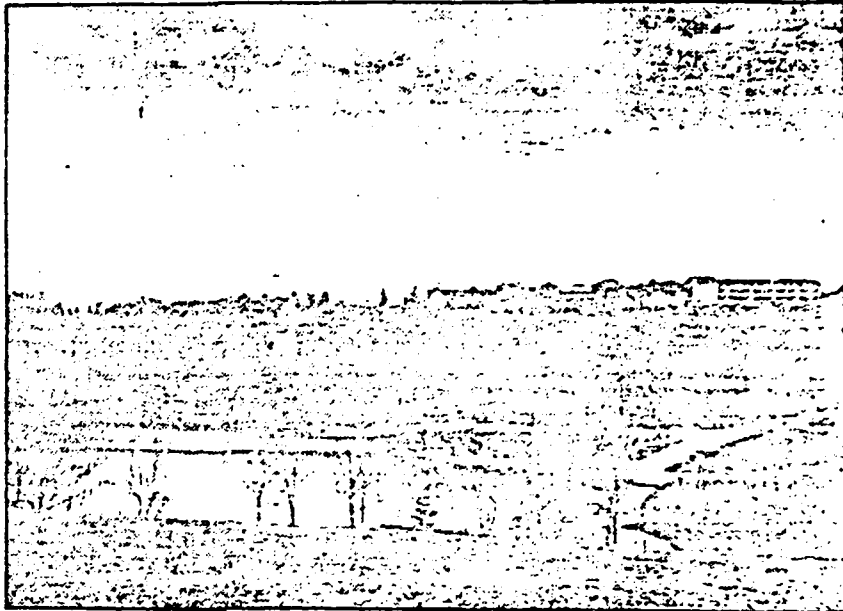
"That one school has more changed the operation of parks and recreation departments than anything I can think of," said Rick Dodge, director of St. Petersburg's Leisure Services Department. His department makes a profit on golf courses, a 161-room waterfront motel and restaurant, and a pleasure boat marina on Tampa Bay. It also operates at little cost a civic arena, museum of artworks by Salvador Dali, minor-league baseball stadium and spring training facilities for two major league baseball teams.

At a recent session at Oglebay, more than 100 parks systems employees from across the country gazed over the snow-covered hills and listened to lectures on insider techniques for negotiating prices and contracts.

Avoid Calling It Profit

It is at such sessions that the guiding principles of the Oglebay method are ingrained. Students are told to avoid using the word profit, which rattles politicians and riles golfers who complain their fees should be lowered. And they're told to view the parks as a business, not a free service.

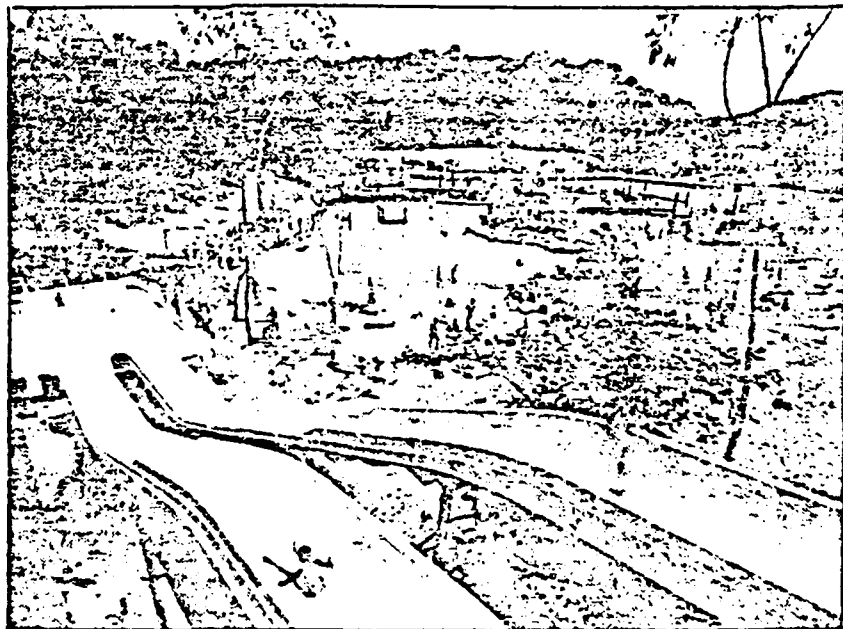
Profit-Minded Parks



Associated Press

Oglebay Park

Income from restaurant and lodge helps maintain the zoo, swimming pools, historic buildings and play areas for Wheeling, W. Va., park goers.



Raging Waters

Aquatic amusement park at Bonelli Regional Park is privately run by operators who will pay L.A. County an estimated \$300,000 this year.

"We are in competition with private industry, don't you forget that," Bill Bird, a former land developer who runs the Dade County (Fla.) parks system, told a graduate seminar on the politics of parks.

Using park land for profit-making businesses is antithetical to many in the recreation field. Though many park systems have begun charging fees to play softball or tennis, a rare practice a decade ago, most have eschewed the opening of hotel rooms and lounges serving alcoholic beverages.

The city of Los Angeles has dabbled in such businesses, running the Sunspot motel and restaurant on Pacific Coast Highway in Pacific Palisades and opening an equestrian center, with banquet facilities, in a corner of mountainous Griffith Park. But Recreation Department Director Hadaway said he sees no need for further commercialization.

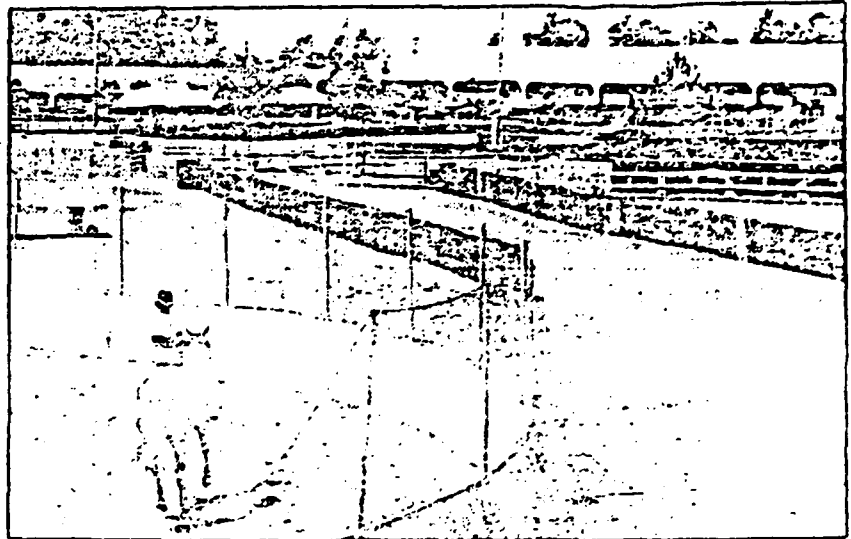
"I just don't think the public would go for it," said Hadaway, who oversees 150 Los Angeles city parks. Unless financial demands become much greater, he said, "I don't really believe the citizens nor the political leaders of this city are interested in us becoming self-sufficient."

Under Cryder in Los Angeles County, however, more than a third of the \$36 million used to operate the department—which maintains 212,000 county-owned trees as well as parks—is now raised through entrepreneurial activities and fees charged to users. The county's 18 golf courses take in more than \$6 million, enough to pay for themselves and contribute to other recreation programs as well.

An aquatic amusement park, Raging Waters, opened last year at the county's Bonelli Regional Park near Puddingstone Reservoir in San Dimas, one of nine large regional parks that cater to all-day visitors, mostly on weekends. The amusement park, featuring several water rides and a dirt-bottom pool with artificially-generated waves, is privately run by operators who will pay the county an estimated \$300,000 this year.

Other Fees Charged

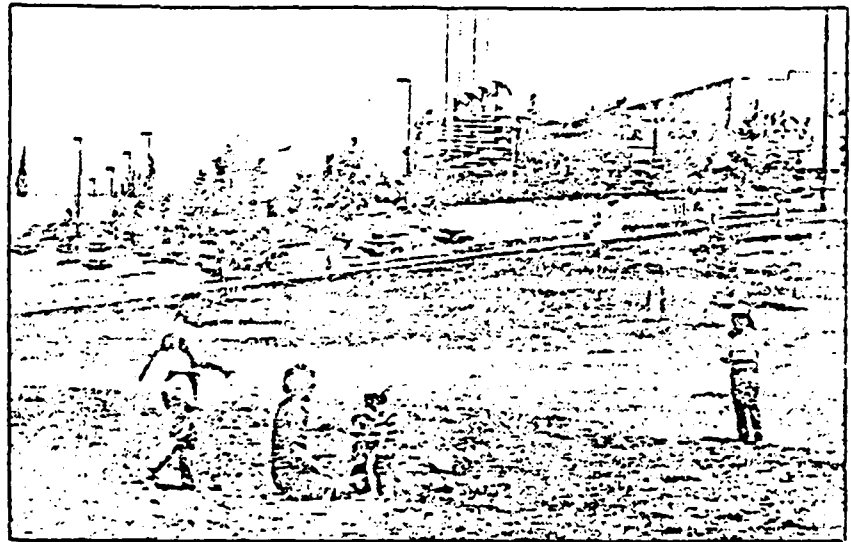
The water park, which charged patrons \$8 a day last summer, replaced a regular pool where swimmers had been charged only 50 cents. The Raging Waters developers put in a new pavilion and snack bar and built attractive rides that drew more than 400,000 visitors last year. Attendance at the old swimming pool had been dropping and was only 165,000 in its last year of operation.



LARRY DAVIS / Los Angeles Times

Griffith Park Equestrian Center

Complex, with banquet facilities, is located in a corner of the L.A. park.



LARRY DAVIS / Los Angeles Times

Pan Pacific Park

Pan-Pacific Auditorium site would be turned into a hotel and office complex with two theaters under proposal. If approved, the complex would pay Los Angeles County at least \$250,000 a year to maintain park.

Income from Raging Waters is combined with a \$2 fee for entrance to Bonelli and fees on boat and camper spaces to provide a substantial share of the \$1.3 million needed to run Bonelli park for a year, Cryder said.

Pan-Pacific Auditorium, a decrepit though architecturally distinctive arena and concert hall near Farmer's Market in an unincorporated county island within Los Angeles city, is one of Cryder's most unusual new income projects. The building is scheduled to be gutted and turned into a 142-room hotel and office complex with two theaters.

If approved by the state Legislature, which retains some control because the state is a partner, the complex would pay the county at least \$250,000 a year to maintain Pan Pacific Park, a new greenbelt area adjacent to the auditorium. Preservation of the 1930s streamline-style facade would be ensured by the project.

Cryder, 48, came to Los Angeles in 1978 as a longtime believer in parks making money. He arrived the same year that Proposition 13 was approved by California voters, reducing local tax collections for parks and other services. In 1980, a conservative majority that favors business-like approaches to running government operations took over the county Board of

Supervisors, and Cryder was encouraged to put his ideas into practice over the opposition of supporters of more traditional park uses.

The board rewarded Cryder with a raise and a \$3,500 bonus, and he is looking to expand the county's parks income further by competing more directly for the public's entertainment dollar. He is considering proposals for a major development at Castaic Lake, a large state reservoir north of Los Angeles where the county operates boating and picnic facilities, and has tried (so far unsuccessfully) to convince developers it would be profitable to build a restaurant and lodge at Bonelli park.

In hopes of raising a quick \$300,000, the county has made plans to open a temporary 3,000-space recreational vehicle campground at Whittier Narrows Regional Park near El Monte during the Olympic Games in Los Angeles.

After being graduated with a degree in recreation education from Pennsylvania State University in 1957, Cryder worked in recreation departments in New York and New Jersey. In 1966, he became director of the New Castle County (Del.) Recreation and Parks Department, where he became associated with others who believe in

aggressive fund-raising for parks.

St. Petersburg's parks system is also run by former New Castle officials. When Dodge became director of leisure services seven years ago, the parks raised only 9% of the department's budget. Now the department collects about 63% of its \$16-million budget from non-tax sources, and a strong marketing program is responsible for a large part of the gain.

Any opportunity to raise money is explored. Non-residents, who lack the political muscle to resist, must pay \$25 on top of regular tuition to enroll in classes at St. Petersburg recreation centers, and all classes and most other programs are required to pay for themselves.

Donating products and time is strongly encouraged, and the department has its own cable television program to promote itself.

Residents are given a booklet explaining how easy it is to make donations. A program that encourages people to donate money for planting of trees in honor of births, deaths and weddings has proven very popular in the community.

"It's gotten to where anytime somebody in the family dies, my wife sends off a check for the tree fund," said Jack Lake, publisher of the St. Petersburg Times.

FACILITY LIST

Rifle and Pistol
Trap and Skeet
Multiple Use Hand Court Areas
Softball Complex
Golf Course
Equestrian Area
Food and Boat Rental, Train
Audubon/Nature Area
Model Flying/Boating
RV Campground
Archery
Military Museum - nonprofit
Handicapped Trail - Miller supporting
Small Water Slide
Portable Food Truck
Olympic Village - 2,600 sites RV, tent
Cable Tow Skiing

QUESTIONS AND ANSWERS

PRIVATE SECTOR INVOLVEMENT IN RECREATION DEVELOPMENT

Q: One of the problems we have in contracting for services is the rigid rules and laws and regulations. Did you have to change your standards to contract with the private sector?

A: Part of the problem we have had with contracting for services is that we were lacking definitive standards. We had to create standards to initiate the program. For contracting out services we are required to use public solicitation and competitive bidding, whereas for the concessionaire program it is a policy decision to solicit publicly. In Los Angeles County we may negotiate directly and sign a contract for concession operations. We did not have standards and tasks for services such as collection of fees, landscape maintenance or building maintenance, so we met with the facility managers, constructed those standards and included them in the contracts. That added some time to the process. The problem that was created down the road was that we had standards for contractors but none for our employees. We had two different systems operating at the same time. As an example, contract specifications may require fertilizing twice a year. On the other hand, due to budget constraints the Director may make the decision not to buy fertilizer one year. As a result, the contracted facility is being fertilized, and the self-operated facility is not being fertilized. So there is a dichotomy in services being rendered. Arthur Young and company will be giving us a report at the end of this month on tasks and standards for grounds maintenance services.

CMT: Sometimes our administrative rules put the private sector in such a straightjacket that it's not worth fooling with us.

A: A number of contractors have told us that they're not interested because of what we had to put in the contract. For instance, our agreements are set up so that even though the term of the contract may be four years, it's really only a one year contract because we have a clause that says that the payment for these services are dependent upon the budget allocations to the Department each year. We didn't want to get ourselves locked into a situation where we had to pay a contractor when we no longer were maintaining parks under our system. We can give the contractor notice that there is no longer any funding and the contract will terminate.

Q: Do facilities that are constructed, such as a hotel, belong to the County?

A: That piece of property would belong to the concessionaire until the end of the contract; then it reverts back to the County.

Q: What kind of a contract period do you have?

A: In this particular case it's 43 years, which is a little bit longer than we normally do. But that's because we are operating state property. The agreement terminates when our agreement with the State terminates. In the case of Raging Waters water theme park, it's a 25 year agreement, at the end of which that whole facility will become County property.

One thing we have built into our major contracts of this type is a capital improvement program. In essence it's a forced savings account in which a percentage of gross receipts, over and above whatever we negotiate for rent, is set aside. For example, we might start at one-half of one percent. That money is to be used by the lessee for capital improvements on the facility, and that's all it can be used for. The money goes into a trust fund, not into the general fund. It goes into a separate trust fund and it generates interest off the fund. What we are trying to do is to force the concessionaire to keep the facility in good shape so at the end of the 25 years we will get something back that is usable.

Q: Are there equity considerations with respect to facilities that might be provided by the County, are now provided for a fee and which might exclude lower income users?

A: Yes and no. In the golf course master lease contracts where concessionaires are operating the golf courses entirely, the greens fees that are being charged are being set by the County Board of Supervisors. The concessionaires have no control over fees whatsoever. So whatever fees we're charging on the county courses that we operate are also charged at the county courses that concessionaires operate. We're just getting into contracting our recreation services for a regional park, and in that case also the fees are limited to whatever fees the County is charging. However, the reason that part of the answer is yes is because we are going to let concessionaires develop some programs that we weren't doing before and for which they may charge fees.

Q: Who provides all the basic utilities for all these developments?

A: Where the utilities are separately metered they are the responsibility of the lessee.

Q: Who actually develops all your sanitary facilities?

A: If the facilities are not there on-site the concessionaire has to develop them. If we do have facilities for tie-ins then he can use our system. What we try to do is set up separate metering of electricity, gas, etc. so that he pays for the actual cost of the utility. In some cases we bear that cost because we have no separate metering, but in doing our projections of our net on the operation, in terms of revenue and in setting our minimums, it wasn't taken into account, so it doesn't make any difference. But we do have provisions in the contract that if we ever go to a separate metering system the burden will shift to the lessee. Of course we will have to negotiate with them on what the new minimums will be.

WATER SUPPLY FINANCING ACTIVITIES
OF THE TRINITY RIVER AUTHORITY

Presented by

Danny F. Vance
General Manager
Trinity River Authority of Texas

1. The Trinity River Authority is an independent political subdivision created by the State Legislature in 1955. Capable of participating in a broad array of water oriented enterprises as specified by the Legislature, TRA completed FY 1983 with assets in excess of \$364 million. This has been accomplished without any type of tax base, state or federal appropriations or revenue sharing. On a day-to-day basis TRA operates as a governmental utility - a growing family of financially independent water related enterprises.
2. Of significance to the character of the Trinity River and the manner in which TRA has evolved is our geographic territory with the dynamic Dallas/Fort Worth metroplex in the headwaters. Demands placed on the Trinity River watershed by the Houston metropolitan area near the lower basin have also been significant and will increase in the foreseeable future. As an organization created for the sole purpose of providing service, we have been in the right place at the right time.
3. The Trinity River watershed contains 17,865 square miles extending from seven miles south of the Oklahoma Border to the Trinity Bay in the Gulf of Mexico. Our political subdivision, shown in yellow, or that area within which TRA can exercise its powers, contains all of five and parts of 12 counties. We are governed by a 24-member Board of Directors appointed by the Governor. The members represent specific geographical areas within our political subdivision.
4. When TRA was created by the Legislature we were given three principal duties. The first was to create a Master Plan for Basinwide development. In the original document adopted by TRA's Board in 1958, proposed elements of the ambitious federal Trinity River Project were the principal features of the Master Plan. After the failure of a TRA sponsored Basin-wide tax and bond election in 1973 (which would have generated the local share of funds necessary for the Trinity Project) both the Authority and the Corps of Engineers began to reassess priorities and projects.

5. One major step taken by TRA between 1975 and 1976 was to conduct comprehensive review and revision of the Master Plan. The revised plan was more conceptual in nature than the original engineering document. Insofar as TRA shares responsibility for water resource management in the Basin, the plan today reflects that not all elements of the Master Plan have to be implemented by TRA. The ten Master Plan Goals include:

- Economic and human well-being
- Public Awareness & Participation
- Water Supply and Pollution Control
- Navigation (conditionally)
- Water conservation
- Soil conservation
- Water-oriented Recreation
- Productivity of aquatic life
- Preservation of natural areas

6. For TRA's part, implementation of the Master Plan goals is realized through our second principal duty - providing local support for federal water projects, and the third duty -
7. - providing services within TRA's territory.
8. TRA does not have a source of funds such as tax revenues, to fund projects. Almost all of our enterprises are financed through the sale of tax-exempt revenue bonds, government grant programs and contributions. In all TRA projects, the users or beneficiaries pay a pro rata share of capitalized debt as well as annual Operation and Maintenance.
9. For the Authority's current fiscal year, we are operating under a budget of \$42,409,993. You will note that 47% of that budget is dedicated to wastewater systems, and 34% to various types of water systems. The balance of my presentation will be directed to the various types and mechanisms of financing used to develop TRA sponsored public facilities.
10. TRA's wastewater enterprises have taken many forms over the years. Because of rapidly growing populations within the areas we provide service, we feel that water quality will be a high priority for many years to come.
11. The Walker-Calloway System is a sewage transportation system conveying raw sewage from two cities in Northeast Tarrant County to the City of Fort Worth for further transportation and treatment. TRA contracts with the two cities to receive and transport their sewage and contracts with the City of Fort Worth for treatment. The Project was financed through:

- \$665,000 TRA Bonds
- \$ 86,000 Contributions

12. The Authority's largest operation is the Central Regional Wastewater System located between Dallas and Fort Worth. It is an advanced wastewater treatment facility, capable of tertiary treatment, serving 16 entities which cover 1/3 of the Dallas/Fort Worth metropolitan area.
13. The plant will treat the wastewater generated by approximately 1 million people. It was the first regional wastewater treatment system in the state of Texas. The customers receiving services pay a unit cost for treatment based on actual flow which is metered through a 200 mile major interceptor system. Central was financed by:

\$92,425,000 TRA Bonds
\$85,102,082 EPA Grants
\$ 1,644,841 Contributions

14. The TRA Dallas/Fort Worth Regional Airport Pre-treatment Plant collects and treats runoff from the airport through a system of drains and pipelines conveying the runoff to a pre-treatment plant. Financed under an industrial pretreatment provision of PL-92-500 the DFW system required:

\$5,425,000 TRA Bonds
\$3,124,953 EPA Grants

15. In South Dallas County, TRA also operates the Ten Mile Creek Regional Wastewater System. This system, described as the best of its type in the state, by our State Department of Water Resources and the EPA, serves six communities with a combined population of 60,000. It was financed through:

\$5,600,000 TRA Bonds
\$2,911,634 EPA Grants

16. In the Lake Livingston area, the Onalaska Wastewater System, is still in construction. Its purpose is to eliminate hundreds of septic tanks along the shores of Lake Livingston by providing a small regional system. Since Lake Livingston is a major water supply project, its water quality is paramount to our operations. Construction is being financed through the sale of TRA bonds to the Texas Water Quality Enhancement Bond Fund in the amount of \$2,700,000. These bonds were issued in 1982 at 10.95% interest. A total of \$1,797,765 is also being made available as a grant.

17. Another major challenge facing TRA is that of rapidly increasing water supply needs.

18. Among those things TRA did early on to prepare for current needs is Bardwell Lake in Ellis County. We are local sponsors of the Bardwell Reservoir which is a multiple-purpose Corps lake in which TRA owns the water supply storage space. TRA has contracted the water supply yield to the reservoir to two area cities. Currently these entities owe the federal government (via TRA) a total of \$3,851,128 payable by the year 2018.

19. Navarro Mills Reservoir is another Corps multiple-purpose lake in which our ownership of the water supply storage space has been contracted to the City of Corsicana, several small communities in Navarro County, and two industries within the area. Currently the debt on this project, which is payable by 2009, amounts to \$2,504,389.
20. Lake Joe Pool, formerly known as Lakeview, is scheduled for completion in 1988. In this project, TRA is responsible for repaying not only water supply related costs, but also one half of the costs associated with recreation development and 100% of operations and maintenance. The unique way we plan to manage our recreation responsibilities will be discussed later. Joe Pool's water supply has been contracted to four cities in the project area. It is estimated that the capital debt on water supply will be approximately \$58 million. TRA is currently developing plans for a regional treated water system for the future needs of these entities. It will be financed with tax-exempt contract revenue bonds.
21. In the southern part of the basin, the Authority owns, operates and maintains Lake Livingston which is a 90,000 surface-acre lake having a permitted yield of 1.1 billion gallons per day. TRA developed this project under contract with the City of Houston. The City has the contractual and permitted right to 70% of the water supply yield.
22. Lake Livingston was planned to operate as the bulk supplier of raw water for the Lower Trinity Water Supply System.
23. A Corps project, Wallisville, halted by an environmental injunction in 1973, is to be the second major component of this system. TRA's contractual arrangement with Houston provides for the same terms as agreed upon for Lake Livingston to extend to Wallisville. Livingston's construction was financed through TRA's sale of \$83,750,000 in revenue bonds supported by a contract with Houston. It is estimated that Wallisville will cost \$28 million to complete giving the project a total estimated cost of \$55 million as compared to \$10 million in 1973. When it is complete, Houston/TRA will be obligated for approximately 16% of Wallisville's project costs. We estimate that this will result in an estimated cost of less than 1/2 cent per 1000 gallons with a net yield of 320 MGD.
24. Other water related projects that have been financed, constructed, and operated by TRA have proliferated in recent years.
25. TRA Tarrant County Water Supply Project remains our largest water treatment and distribution system to date. This Project purchases surface water pumped 70 miles from Cedar Creek Lake in East Texas to Lake Arlington in the Metropolitan area where we then transport it an additional 8 miles to our treatment plant for ultimate distribution to five cities in North-east Tarrant County.

26. This system was originally completed as a 6 mgd plant, has been expanded to 12 mgd, will soon be expanded to 27 mgd, and ultimately will be 72 mgd. TRA has sold \$16,650,000 in bonds under contract with the five cities to finance construction and expansion. We anticipate a sale of \$15 million for expansion within six months.
27. As a separate but related matter, TRA sold \$3,875,000 in bonds to finance the City of Arlington's raw water withdrawal facility on Lake Arlington. As a result of benefits received from the raw water facility, TRA pays 24% of this debt.
28. Another water supply entity in our service areas is the Tarrant County Water Control and Improvement District. Through this District's development of water supply lakes, TRA has contracted a portion of the debt service in two major lakes in East Texas, Cedar Creek and Richland/Chambers Creek Project (now under construction). Our obligations are supported by existing contracts with our water supply customers.
29. Since Lake Livingston's completion, TRA has developed three water treatment facilities for area communities. The Livingston Water Supply System was financed in 1979 through the sale of \$3,485,000 in TRA revenue bonds to the Texas Water Development Bond Fund at an effective interest rate of 5.62%.
30. TRA's Trinity County Water Supply System supplies water to six relatively small rural entities. It employs existing sand and gravel deposits adjacent to the Lake as underground rough filters in the treatment process. Its construction was financed through the 1981 sale of \$2,178,000 in bonds to the FmHA at 5%, and a \$2,179,000 FmHA grant. This project is one of a kind in Texas.
31. The Huntsville Regional Water Supply System withdraws raw water from the headwaters of Lake Livingston, treats the water and delivers it for distribution in town. Because of the future need for supplemental water for a cooling pond for a lignite fueled generating station on nearby Nelson Creek, an electric utility, SWEPCO, contributed \$1,005,049 toward the raw water facility and a portion of the raw water line. The remainder of project construction costs were funded by \$1,326,742 in contributions by the City of Huntsville, and the 1978 sale of \$11,050,000 in TRA revenue bonds to the Texas Water Development Bond Fund at an interest rate of 4.615%.
32. At some future date TRA anticipates further development in the operation of Nelson Creek cooling pond. The Huntsville Water System/Nelson Creek Cooling Pond is a good example of a cooperative effort between governmental and private entities for the public's benefit.
33. Irrigation, with all attendant problems, has become a major challenge for management.

34. TRA's Devers Canal System provides irrigation water for as much as 26,000 acres of rice in an average year. In our effort to hold the line on costs to farmers, we have deferred maintenance and reduced personnel to the lowest possible level. This has precluded much normal maintenance and the total deferral of system improvements. TRA acquired Devers from the previous owners at a cost of \$4.5 million. Funds for the acquisition were generated through the sale of TRA Revenue Bonds which are held by the former owners.
35. Irrigation water will also play a part in management's effort to reduce costs at TRA's Central Wastewater System. Through an eight mile pipeline, highly treated effluent will be pumped to the Las Colinas business and residential area for use in maintaining lake levels and grounds irrigation in this Irving, Texas development. Income derived from the sale of effluent will reduce treatment costs for system customers.
36. Construction of this project was financed through the sale of \$4,200,000 in TRA contract revenue bonds. Project beneficiaries will repay TRA for all capital cost as well as for water purchased.
37. TRA's enabling legislation mandates that we must provide recreation facilities at any water supply lake in which TRA has an operator or ownership interest. Therefore, recreation is a major consideration in the construction of any water project.
38. When we built Lake Livingston, we had the contractual opportunity to acquire 26 sites for recreational development.
39. Six of these sites have been developed as public boat ramps to provide free public access to the Lake. Contributions from Texas Parks and Wildlife substantially assisted the development, and subsequent operations and maintenance. We have had to be very innovative in developing our sources of revenue to fund these operations since recreation user fees historically do not satisfy operating costs.
40. Wolf Creek Park was developed through TRA's 1971 sale of Recreation Revenue Bonds in the amount of \$300,000. This was a first in Texas. The pledge of support for repayment of the Bonds is user fees. The subsequent contribution of \$752,176 by the Soil Conservation Service for shoreline bulkheading will help preserve the park for generations to come.
41. The increasing need for local interests to assume larger portions of the costs of federal water projects can be clearly seen in TRA's commitment to recreation at Lake Joe Pool. In 1975, TRA was the first entity in the country to execute a recreation contract in which a local sponsor agreed

to assume responsibility for repayment of 50 percent of recreational capital costs over a 50-year period, and 100% of recreational operation and maintenance. TRA was also able to substantially reduce our long-term financial liability for recreation by inducing the Texas Parks and Wildlife Department to assume responsibility for one 2,000 acre park which will represent 80% of the initial recreational development at Lake Joe Pool. The Lakeview State Park will be a full service recreation facility and the Department's first operational "urban park."

42. The generation of hydroelectric power in the Trinity Basin has only recently become feasible as a result of increasing oil and gas prices. Seed money for initial feasibility studies in the amount of \$450,000 was provided by the City of College Station allowing the Authority's consultant to prepare a permit application for a FERC license to develop hydroelectric power at Lake Livingston Dam. Because of this commitment, College Station has the right of first refusal for power generated by the project. The City will also be the source of funds for debt service on the estimated \$159 million facility. Lake Livingston has the highest feasibility ranking for low-head hydropower generating capacity in Texas with a projected capability of 60 Megawatts.
43. A relatively small hydropower system estimated to cost \$750,000 is being developed at TRA's Central Wastewater System in the effluent discharge channel. Funds to develop this project through the sale of Revenue Bonds. We project the value of benefit derived will exceed cost in the first year of operation. The power generated represents about 8% of total system needs.
44. Flood Control has long been a priority for south Dallas County.
45. The existing floodway protecting a portion of North and Central Dallas has played a large, yet unheralded role, in the development of Dallas.
46. The Dallas Floodway Extension Project could have a similar impact on this sparsely developed, low income area of the city. It would extend the existing flood protection 9.1 miles and provide for a major greenbelt recreation area between its levees. Recent estimates place the total project cost in excess of \$100 million with the local share of costs in excess of \$50 million. TRA remains local sponsor of this Federal Corps project as one of the components of the original Federal Trinity River Project. Because of TRA's failed 1973 tax and bond election, we look to Dallas to supply the local share of costs.
47. Navigation of the Trinity River was for decades a major interest of the business community in the Trinity Basin.
48. Today the only segment of the river where improved navigation facilities are proposed is the Lower Trinity from the Gulf to the existing Port of Liberty at river mile 45.

49. The cost of developing the multiple-purpose Channel to Liberty is estimated at \$140,120,000. Of this, local interests would be responsible for \$5,425,000. Local interests are enthusiastic about the Project, but have yet to develop or demonstrate a funding mechanism.
50. Financing activities by TRA have substantially expanded in recent years. We have the ability to provide tax exempt financing for water and waste-water facilities for municipalities. We can also provide financing for industrial air and water pollution control facilities.
51. Sound management of the Trinity River watershed's soil and water resources becomes more crucially important year by year. With reductions in federal programs, financing on a local level becomes more challenging. We are proud of what we have done - and remain optimists about the future. Thank you.

QUESTIONS AND ANSWERS

WATER SUPPLY FINANCING ACTIVITIES OF THE TRINITY RIVER AUTHORITY

MOD: Could you clarify the financing of recreation on the Joe Pool project?

A: In order for the Federal government to proceed with the development of Lake Joe Pool (and of course the Corps of Engineers is financing the project) we had to execute both a water supply contract and a recreation contract. The water supply contract stipulated that we were responsible for 100 percent of costs related to water supply. We have contracted those costs to four cities in the area. For recreation, those cities decided they didn't want to be in the recreation business, so we had to assume that responsibility totally. It is not factored into the water costs at all. It stands alone. We have in turn gotten the State of Texas to participate in a state park which covers about 80% of the park land, and they are going to pay for that through general revenues of the State of Texas appropriated to the Parks and Wildlife Department. We will be responsible for developing and operating the balance of the facilities, for which we will be approaching private interests.

Q: Do you try to make every enterprise self-sufficient with a proper margin for operating expenses?

A: Yes. We are required under our operating contracts to charge just what it takes to operate the project from a revenue/cost standpoint. In addition, we operate our general government function by an administrative charge, which is distributed among the projects by a very complicated formula. But essentially we do not commingle the funds of any projects. We maintain each one as a self-sustaining enterprise, which means that we have some 36 different subsidiaries for which we provide a budget, an audit, and all of the separable operating and administrative requirements.

Q: On your water supply and recreation contracts, how are you obligated to pay the Federal government?

A: We have found a provision in Federal law that limits our liability to the user fees that are generated at those parks. Although we may not actually generate enough revenue in any given year to repay the annualized debt on the facility, that does not put us in default on our contract as long as by the end of the 50-year period we're current.

Q: If you had to provide the funds up front for the water supply portion of that project, would you be able to do that through your revenue bonds?

A: It would depend on whether or not we had a user for the water. For the Joe Poole project we had a user, but we did not have up-front financing.

Q: Do you think you could if it were being proposed today under the same circumstances?

A: I think we could. We are involved in a number of water and sewer projects that involve entirely up-front money. It would depend on the circumstances of the particular communities. The Bureau of Reclamation is investigating a project in the lower basin, and if we proceed as local sponsor on that project, some up-front in-kind services would be involved.

HYDROPOWER AT TOWN BLUFF DAM, NECHES RIVER

William R. Dawson
Chief, Program Development Branch
U.S. Army Engineer District, Fort Worth

Addition of hydropower at Town Bluff Dam (B.A. Steinhagen Lake) is one of three active AE&D projects in the Fort Worth District and is scheduled for design completion during Fiscal Year 1985. Following Fiscal Year 1985, Town Bluff hydropower will be eligible for consideration as a New Start by the Administration and the Congress.

Town Bluff Dam is located on the Angelina River in the Neches River Basin, downstream from the Sam Rayburn Dam and Reservoir, a multipurpose project with 52 megawatts of installed capacity. Rockland Dam and Lake and an associated re-regulation structure are authorized for construction nearby on the Neches River. Rockland has a healthy benefit/cost ratio and is eligible for consideration as a New Start. Authorities for these projects include Public Law 79-14-1 (Senate Document 76-98-1), Public Law 80-858-2, and Public Law 91-611.

Hydropower has been authorized at Town Bluff since it was built in the 1940's. Prior to its authorization the Board of Engineers for Rivers and Harbors had suggested that an up-front non-Federal contribution of \$5 million be made since so many of the project's outputs are vendible. The \$5 million was paid by the Lower Neches Valley Authority.

The Town Bluff project will include six megawatts of installed capacity. The project is not optimized for hydropower development, since the upstream Sam Rayburn Dam operating rule will remain in effect. Town Bluff will only be operated for hydropower when releases are made from Sam Rayburn. Given this constraint, the benefit-cost ratio is 1.4 at the current interest rate of 8-3/8 percent.

There are three potential sponsors for hydropower at Town Bluff: the Lower Neches Valley Authority, the Jasper-Newton Electric Cooperative, and Sam Rayburn Municipal Power Agency.

The Lower Neches Valley Authority has a vested interest in the project since it was the original project sponsor and paid \$5 million initial up-front financing. The authority has agreed to furnish power from this project to the City of College Station, if selected as project sponsor.

In 1975 the Jasper-Newton Co-op requested that the Corps of Engineers reinvestigate the feasibility of adding hydropower to Town Bluff Dam. The Corps initiated its investigation (Section 216) in 1979. The Jasper-Newton Co-op requested a FERC preliminary permit at the same time, but the permit was denied since hydropower was authorized for Federal development.

Sam Rayburn Municipal Power indicated its interest in the project in 1983. The agency also indicated that furnishing \$18 million up-front money would be no problem.

Critical issues relating to financing of hydropower at Town Bluff are as follows:

- A. Who will select the sponsor, the Secretary of the Army or the power marketing agency?
- B. Who will the sponsor be?
 - 1) Lower Neches Valley Authority
 - 2) Jasper-Newton Electric Co-op
 - 3) Sam Rayburn Municipal Power
- C. What cost sharing arrangements are necessary?
- D. What financing arrangements are necessary? (It is unlikely that an escrow agreement will be required in light of the short construction period).
- E. What will the sponsor get for its investment?

OPEN DISCUSSION

Moderator: Bory Steinberg

MOD: I have a comment on the transition from the reconnaissance study to the feasibility study. As you know from the small projects program, even on a small Section 14 study a piece of paper goes to the Assistant Secretary's office sometime late during preparation of plans and specifications, before you're committed to advertise for construction. There will be a memo coming from the Assistant Secretary's office describing the minimum provisions that are required to get from the reconnaissance to the feasibility study. In the event the issue is not resolved in the 98th Congress, we may have further problems. The House Committee says that we should have no cost sharing on studies until the authorizing committees have an opportunity to decide the percentages.

CMT: Since we don't know exactly what's going to happen and we don't know the exact percentages, it seems to me that it would be wise for the study managers who got those studies which may be cost-shared, of which there are over 30, to start them with the potential cost-sharing statistics in mind, and to at least lay out the range of options (obviously somewhere from twenty-five to fifty percent), so that if study cost sharing is triggered on the first of October they will not be starting from ground zero.

CMT: I don't know what is acceptable as in-kind services; certainly that needs to be qualified. If they give you some aerial photography or some survey data, how do you assign it a monetary value compared to your costs?

CMT: If it is data that is already available, you should give no credit except for any reproduction costs. Regarding how you evaluate the effort, there are two possibilities. One is that you do it on the basis of what they earn plus their overhead; the other is to assign a value equivalent to the cost for the Corps to do it.

CMT: We've gone through a little bit of this before on urban studies. The cost share was more than 25 percent and it was all in-kind work. The same kind of guideline would apply to these studies, but there would be a cash transaction involved.

CMT: I would like to raise the question of the timing of payments. What if it is very apparent that a sponsor is cooperative even if it doesn't have the money on day one? The question is whether the non-Federal share comes in one lump sum on day one, or whether it could be spread out during the fiscal year period.

MOD: I think that the general rule is that the sponsors have to pay as they go. I hope that we could allow them to make quarterly payments or monthly payments. I personally see nothing wrong with that as long as the balance has been repaid and the split stays 50-50. We've addressed that on projects, and we took a very liberal approach. For the new starts in the budgets for Fiscal Years 1983, 1984 and 1985, Mr. Gianelli was quite willing, once a contract was signed, to spot the local sponsor a year or two. On the financing of a flood control project, the Federal government would get ahead in spending in

the first and second years, allowing the non-Federal sponsor time to to raise the money through a bond issue or whatever means and to catch up by the end of construction. But we really haven't addressed that issue for studies.

CMT: How do we identify the beneficiaries of a flood control project?

MOD: Generally speaking, the people that pay for flood control are not necessarily the people that benefit (i.e. those in the floodplain). How the non-Federal share is divided has no meaning to the people in the floodplain. Some of the money may come through a Federal grant or from the State, and some may come out of the city coffers, but it got to the city coffers from sources other than the people in the floodplain. So there is not necessarily a relationship between the beneficiaries of the flood control project and those who pay for the non-Federal share.

We have received today a copy of the House Appropriations Committee report and bill (HR 5653) for FY 1985, dated May 15, 1984. From pages 3 and 4:

"The Committee on Appropriations in September 1984 may well recommend for full House consideration a new construction program for the Corps of Engineers and the Bureau of Reclamation. The Committee directs that no up-front financing or cost sharing of studies or otherwise be implemented pending enactment of the required legislation."

We're still in a holding pattern until the authorizing committees establish a formula in law. There's a 25 percent cost sharing formula in the Roe bill and a 50 percent formula in the Abdnor bill.

We will need to give a lot more thought to the cost sharing of studies, and the triggering mechanism for going from the reconnaissance phase to the feasibility phase. We have 50 percent of the requirements for the feasibility phase in the budget for those follow-on studies, and we expect some sort of cost sharing. Mr. Dawson has indicated that the Assistant Secretary's office will be putting out some guidance for FY 85 on the procedures to follow for going from the reconnaissance phase to the feasibility phase.

CMT: Are we going to change our standards or requirements as far as our studies go? I'm not sure the sponsors are going to want to get involved with us, considering our high cost and requirements.

MOD: The question becomes: who else are they going to get to do the study and do the project? We're not talking about agency shopping. Let's take an expensive port improvement or flood control project as an example. Unless they're willing to build the project themselves (and a lot depends on the formula) the cost of the study is a very small part of their total financial commitment compared to the initial investment and fifty years of O&M. Yes, we're expensive and we have high overhead, but we need to think in terms of the entire cost from study through O&M. For instance, the Section 80 study of a decade ago looked at how much the Federal government and the non-Federal interests pay in a typical project, taking it through O&M and using present worth.

CMT: Pricing the Corps out of the planning business is a very sensitive point. You can say we have to do everything in great detail, but one problem we have is that we can't be all things to all people or we'll never get through the studies. We're going to have to figure out ways to shortcut those things that aren't relevant to a decision and include those things that are relevant. Otherwise, the sponsor will say it can't afford the time or the money because the study may not result in anything. The managerial challenge in planning is to negotiate the planning cost sharing agreement with the non-Federal interests and get on with it. It's a whole new way of doing business.

CMT: Under the current program, once you have completed the study you just sit and wait. There is no guarantee you won't have to sit and wait three years, five years or ten years. The present system is going to have to be radically revised to show these people that there will be a product in place in a reasonable period of time.

MOD: Getting an authorization bill once in a decade isn't helping matters any, so we will need to think of new procedures for authorizing projects. On a modest scale, the increases in the Small Projects authority (for example, the Section 205 limit is raised to \$7.5 million in HR 3678) and resuming the use of Section 201, which resulted in eighty-four projects between 1970 and 1978 (of which we have built thirty) are two ways. But on larger projects there is no clear evidence of rapid authorization.

CMT: We're on the horns of a dilemma. We have been listening for the last two days about the amount of information that is needed to adequately deal with non-Federal financing and to give the bond underwriters information which helps them decide whether or not to underwrite something. On the other hand, we also need to get our decision process done very quickly and very cheaply. How do you reconcile those two?

CMT: With the system we've been using we've been getting too much detail in the feasibility phase in a lot of areas not required for a decision. In many cases we're getting too much environmental information, too much hydrology, too much foundations, too much design at that stage to make economic feasibility decisions. I'm suggesting that we reorient those feasibility studies to reduce the level of detail on those activities, and start doing some financial analyses in place of those activities. Deferring those other activities will go a long way toward reducing the cost and the time, and if we do experience a long wait for authorization, we'll handle that level of detail in post-authorization planning.

CMT: Whose fault is it that we're going into too much detail, and who's going to attack the problem?

CMT: In part, it's the fault of the Office of the Chief of Engineers. In part, it's the fault of the study manager in the district, his bosses, and the Board of Engineers for Rivers and Harbors.

CMT: I've furnished a lot of additional information to the Board and done additional studies after we had what we thought was a fairly decent report.

MOD: On the issue of benefit/cost ratios, we have proposed new starts with ratios as low as 1.01 or 1.02. Nobody's willing to go to less than 1.0, but if there's a willingness to pay on the part of the local sponsor it doesn't matter whether the ratio is 1.1 or 2.5.

CMT: If you've got a 1.01 benefit/cost ratio, that's the one you put all your time in.

MOD: But even a project with a 12 to 1 B/C ratio (Gallipolis) took an extra six years of planning.

CMT: When the non-Federal interests start to pay, their tolerance for delay will be diminished, and that will work its way through the executive and legislative branches of government. But let's not kid ourselves either: the non-Federal sector is not accustomed to fast-tracking either. How many of these things can be done without a permit? They have to deal with environmentalists too, and with all the bureaucracy for getting financing for their own projects. That's not a quick process, but it's not a twenty-four year process. I think that over time if expanded non-Federal financial participation works it will be because the people that are paying and are getting the services are going to demand a change in our procedures and in Congressional response. If they don't it will be because the need is not there, and the changes won't happen.

CMT: There is no reason why the Corps of Engineers needs to take on the political process. The Corps of Engineers just needs to get the proper studies done and get the reports on the street. The non-Federal people are part of the political process and they can operate any way they want.

CMT: Gallipolis has been on the street a long time. There's a demonstrated need and a demonstrated interest, but we haven't been able to solve that political problem.

MOD: I'd like to make several points. One is that if we get the authorization bill, we'll get a whole new set of formulas for cost sharing and financing. That could mean that the sponsors cannot afford what we've been giving them all these years. It's one thing to afford lands, easements and rights-of-way, and another to tack on another fifteen percent of project costs. Furthermore, the Principles and Guidelines still apply to post-authorization planning. If the NED plan is not the one authorized, we may go through another cycle clarifying which project we are designing.

I read to you part of the May 15 report of the House Appropriations Committee, and hopefully the cost sharing of studies will be resolved with the authorization bill. In the meantime we still have an open issue.

On hydropower studies, the budget for FY 85 and our guidance for FY 86 is still geared to President Carter's trip down the Mississippi in 1979, when he said it would be nice if we had hydropower at all those navigation sites. You've been studying the Upper Mississippi, the Arkansas, the Illinois and probably some other river basin systems with navigation for Federal hydropower development. Now we're emphasizing non-Federal development, and the Planning Division is conducting an inventory due in a month or so.

AD-A149 495

PROCEEDINGS US ARMY CORPS OF ENGINEERS SEMINAR ON WATER 4/4

PROJECT FINANCING..(U) ARMY ENGINEER INST FOR WATER

RESOURCES FORT BELVOIR VA M W HUGLER ET AL. OCT 84

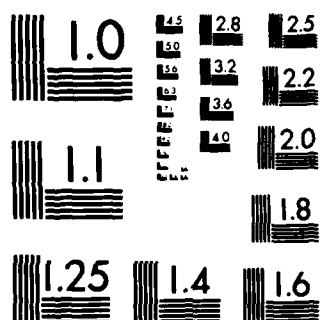
UNCLASSIFIED

IWR-84-PS-5

F/G 5/1

NL

										END			
										FILED			
										DEC			



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

On the timing of financing, in 1979 the rules were tightened up to require that the total amount needed for the year be provided at the start of the year rather than in quarterly payments during the year. This is not the total amount for the project or for the contract, but the total for ongoing work. The money is deposited in the Treasury and made available to the Corps for payments. On new starts, once we get those, I think there is a willingness to spot the sponsor a year or two while they line up their finances. As we get the formulas ironed out this flexibility is something to keep in mind.

CMT: One thing that has not been mentioned is that the financing institutions are looking for the regional benefits or the sponsor's benefits. I asked the Assistant Port Director at Oakland what he is going to need to find out in order to get his project going, and how his financing people are going to look at it. Not once did he mention NED benefits. We could provide the financial institutions some good regional economic studies which would assist the sponsors. IWR has done several already; we have models; there are some other institutions that have good models. That would be an easy, quick way to provide this information to the sponsor.

Also, I would like to see a financial advisor brought in by the sponsor once we've completed the reconnaissance study and we're ready to negotiate participation in the study planning process. The advisor would let us know what kind of shape they're in before we get involved in a \$200,000, \$300,000 or \$600,000 planning program. The advisor doesn't have to give a full-fledged review of the financial standing of the sponsor, but at least we can find out from a professional what we're getting into.

There's a question about equity. We can't just do projects for those sponsors that have AAA ratings. There are still little towns where the social values have to be considered.

The idea of cost sharing is not really new; we've been doing it for years on water supply projects and hydro projects. When hurricane studies came out we came up with a 70/30 program and didn't have too much problem. Of course, we've always had a 50/50 agreement in recreation.

In terms of the financing aspects, the best thing we can do is to write some handbooks and pass them out to make sure that nothing is overlooked, but all these entities throughout the United States, even small drainage districts, have had experience with financing and financial institutions and in collecting fees. We might point out some other ways that they can collect those fees, but I think that responsibility is still going to stay with those utility districts. They don't want Big Daddy to tell them what to do. As has been pointed out, funding for these programs is a very dynamic mechanism. They have so many options day to day, especially the variable rate bonds with which they can gain a 20 percent cost reduction over a 30 year period. I don't think we should be involved in that kind of thing. I think we used to give our sponsors more credit for their intelligence in getting those things done. Once we have specified what their contribution should be, the real burden belongs to the sponsors.

CMT: The reason for putting on the seminar was not so that you could do the non-Federals' job in arranging financing. The last time I did business with somebody and I didn't understand what their part of the deal was all about, I came up the loser. We're trying to match two very complex entities and bureaucratic processes. If you don't understand their process, you are going to end up with some stalemates down the road that you didn't anticipate. A big part of trying to understand their side is so that you can do your part in a way that doesn't complicate matters later on. As you know, you've got the greatest flexibility of any project-related process in the pre-authorization phase, and if you know that there are going to be problems down the line in the way the project is going to be implemented, you'd better address them in the feasibility report so that at implementation time your authorization isn't staring you in the face without providing you a way to get there from here.

CMT: We need to make tradeoffs to make projects affordable when you consider equity and so forth, but we have a problem of trying to keep professional design standards. In the Corps we're saying that there are some tradeoffs we cannot make. For example, there are studies going on now to determine the real criteria for design of a spillway. If we want to make projects affordable, we ought to take a broader look at what our professional standards are, across the board. Maybe some are real needs, and others are perceived needs.

CMT: That may be. We are going through an analysis right now to see what the standards should be. First of all we're doing an analysis of the status quo. (It might surprise you to know that not every agency is doing the same thing.) Then we'll approach the issue another way to find out what is an acceptable risk.

Scottsville, Virginia is an historic town at the head of navigation on the James River. We don't know whether to use Public Law 99 funds for Scottsville or whether to use Section 205 funds. It's difficult to economically justify a Section 205 project. We're going to take another look at two aspects of Scottsville's problems. One is the value of the historic buildings. Have we overlooked something? Is there a way to work on the benefits from the standpoint of historic preservation? The other is to reduce costs. The problem is that they built a 10-year flood levee with some money from HUD and realized the benefits off the top so that the next increment of investment isn't worth it. Maybe we can see if the NED plan is less than 100 year protection. We have to look at the relationships among level of protection, affordability and the acceptability of risk.

CMT: Maybe the issue of regional benefits can be attacked from the point of view of maximizing the Federal investment for NED benefits that are left over.

CMT: And maybe the non-Federal interests will pay for the regional benefits.

CMT: Not only can you divide up the costs for NED, but you can divide up the costs for regional benefits.

MOD: As you all know, Section 209 called for four accounts. We've been unable to quantify any account other than the NED account in any meaningful way. The Roe bill has a section that insists that we quantify the four accounts, not just display in a matrix or something of that nature. It will still boil down to financing the projects in communities that don't have a AAA rating as well as in those that do. When the cost sharing formulas finally come out, quantification will be something to work on.

CMT: You can't charge anybody for regional benefits. The NED benefits are the ones you can recover through user charges. Communities who are interested in growth may be willing to pay some money because they want their town to grow, but you can't have cost recovery based on regional benefits.

In the Corps studies I have read, there is virtually no connection between the benefit evaluation and the so-called regional impact analysis. For example, let's take a deep draft navigation project. Aside from whatever employment benefits there may be associated with building the project (and those are typically insignificant compared to the benefits which flow from the deepening), unless you induce traffic from the port you don't get any regional impact. Typically, a Corps of Engineers improvement study for a harbor does not show any induced traffic: the traffic is shown as the same with and without the project. Now, we know that's not true, and yesterday in the report on the Mississippi River deepening we had a good demonstration of how you can do analysis of induced traffic. The consultants looked at both traffic diversion and induced traffic as a result of changing the price of American coal relative to that of other nations. We don't do that in our reports, so any attempt to do regional benefit analysis without building a broader NED analysis just won't work. I know that there's a lot of interest in regional benefit analysis in the Corps, but you have to recognize that before you have any hope of doing a credible study in that area you have to do a more credible NED analysis. They are related analyses, and in what's been done to date there has been a total disconnect. Anyone who is being asked to put up any money will inform you of that.

CMT: The first thing that Louisiana did when we gave them the NED benefits is go out and do their own study to find out how they would be impacted.

CMT: In the interest of figuring their costs and how they were going to recover their costs, they didn't look at regional benefits. Without the induced traffic that you got in the New Orleans study, there wouldn't have been any regional impact. The way you generate jobs is to have more commercial activity. If you show the same amount of traffic, which is what we have done in the Norfolk, Baltimore and Mobile studies, you can't show that kind of regional effect that everyone is so enamored with. Unless you generate more exogenous activity, you can't have more induced activity.

CMT: The Ports of Oakland and Galveston, when they studied deepening without the Federal government, in no way ever studied NED benefits. They looked at traffic from the standpoint of where their business was and where they were going to get business. It's just a matter of perspective. To a large extent we're dealing with NED benefits, but they don't understand that. When we talk to a local sponsor who has to pay the bill, he's going to look at the regional

study to identify his benefit. Our NED study gives us a big number, but it doesn't tell who the beneficiaries are, whereas the regional economic study will tell you who the beneficiaries are.

CMT: The perspectives are different. In one you're talking about the Federal government. If the port of Oakland is going to shift cargo from Seattle to Oakland, they couldn't care less what happens in Seattle. They're going to spend money to get that cargo down to Oakland. Portland will spend money to see it stop in Portland. They couldn't care less about what the NED model might show.

CMT: One thing that's left out of all the arguments is that when you have Portland and Oakland and Long Beach, California vying for cargo, you're creating an incentive for competition, and that's what this country is based on.

CMT: There are cases like this all over the world. The Governor of Saipan wanted an airport and was told it wouldn't bring any business in. He decided to build it anyway, and a lot of tourist business came to visit battlefields and vacation spots. Now the Governor wants a port. He is told that the benefits aren't there, and he says, "Well, look at my airport!"

CMT: The problem is that there is more involved in "business" than the benefits we identify in our studies. There are so many parameters that fit into the market aspect and make up the decision of which port to go to.

MOD: The local interests tried to do their own thing at Galveston, and it was a valiant effort, but for one reason or another it didn't materialize.

CMT: Only because of the environmental aspect. Otherwise the project would be in the ground right now.

CONCLUDING REMARKS

John F. Wall
Major General, USA
Director of Civil Works

I would like to thank IWR for doing an outstanding job on this seminar. I'd also like to commend the participants for coming from your busy districts and divisions at some sacrifice.

It's tempting to think that the cost sharing and financing issues won't stay with us, and that we will go back to "business as usual." But I want to tell you that expanded non-federal cost sharing and financing are here to stay.

This year we have an excellent chance for an omnibus water resources bill. The bill, whether it's H.R. 3678 or S. 1739 or some combination, is going to modify traditional cost sharing arrangements. Even if an omnibus bill doesn't pass, we're going to have to have innovative cost sharing and financing to provide for water needs across the nation.

There are three issues which are uppermost in my mind and which I would like you to work on.

Affordability is one issue. For example, the traditional local cost share for the Wyoming Valley project in Pennsylvania is about 2 1/2 percent because they already own the lands, easements and rights of way. Under twenty-five percent cost sharing the local share is about \$50 million. We will follow the directions of the administration and Congress for cost sharing, but we may be able to solve affordability problems such as Wyoming Valley in the formulation of plans and in the negotiation of the reasonable financing for each project.

Equity is the second issue. The Assistant Secretary of the Army for Civil Works, the Chief of Engineers and I need to be more open to dialogue with the field on the equity issue.

Hydropower finance is the particular issue we're breaking new ground on right now. If a public non-Federal sponsor obtained a FERC license at a project where Federal power is not authorized, traditionally we could design the hydropower addition on a cost-reimbursable basis as the Federal Engineer. At a project where Federal power is authorized, traditionally we would design and construct hydropower modifications without reimbursement from a particular sponsor. The Administration is supporting our offering construction services at our existing sites on a reimbursable basis, and in return giving the sponsors rights to the power.

I know that it will be difficult to adopt some of these changes, but now that we have a mandate from the administration, it's up to us to show that we can respond. We need to find ways to institutionalize new cost sharing and financing requirements into our organizations. We need to develop new ideas and to exercise leadership.

Thank you.

APPENDIX A

FINAL AGENDA

Seminar on Water Project Financing
Humphreys Engineering Center
16-17 May 1984

Wednesday, 16 May (Moderator: Mr. Bory Steinberg, Chief, Programs Division,
Civil Works Directorate)

8:00 - 9:00	Registration and Coffee	
9:00 - 9:05	Welcome	COL George Kleb, Water Resources Support Center
9:05 - 9:30	Opening Remarks	MG John Wall, Director of Civil Works
9:30 - 10:25	Overview of Non-Federal Financing Concepts, Institutions, Considerations and Methods	Mr. John E. Petersen, Municipal Finance Officers Association
10:20 - 10:40	Coffee Break	
	<u>PANEL I: Economic and Financial Basis for Water Project Development</u>	
10:45 - 11:20	1. Relationship of benefits, pricing and revenues	Dr. John Boland, Johns Hopkins University
11:20 - 11:45	2. Revenues, credit security and project financing	Ms. Mary Mudryk, Morgan Stanley & Co.
11:45 - 12:10	3. Financial versus economic analysis of projects: methods and implications	Mr. Robert A. Leone, Putnam, Hayes and Bartlett
12:10 - 12:30	4. Questions and answers	
12:30 - 1:30	Catered Lunch (Casey Building)	
1:30 - 2:20	Mississippi River Deepening Study	Mr. Joseph Cocchiara, State of Louisiana, Mr. Leo Donovan, Booz, Allen and Hamilton and Mr. Albert T. Rosselli, Tippetts, Abbott, McCarthy and Stratton
2:20 - 2:40	Coffee Break	

PREVIOUS PAGE
IS BLANK

PANEL II: Water Project Financing Institutions

- | | | |
|-------------|--|---|
| 2:40 - 3:15 | 1. Organizational alternatives for cost recovery and financing: powers and limitations | Dr. Louis F. Weschler,
Arizona State University |
| 3:15 - 3:45 | 2. A review of State water project financing | Mr. Kenneth Rubin,
U.S. Congressional
Budget Office |
| 3:45 - 4:20 | 3. Legal and institutional issues in the joint non-Federal/Federal financing of water projects | Mr. Earl H. Stockdale,
Office of the Chief of
Engineers |
| 4:20 - 4:40 | 4. Questions and answers | |
| 4:40 | (Adjourn) | |
| 5:00 | First day wrapup and open discussion (Fairfax II Room,
Springfield Inn Best Western Hotel) | |

Thursday, May 17 (Moderator: Mr. Bory Steinberg, Chief, Programs Division,
Civil Works Directorate)

- | | |
|-------------|------------------------------|
| 8:00 - 8:15 | Coffee |
| 8:15 - 8:25 | Administrative Announcements |
| 8:25 - 8:40 | Open discussion |

PANEL III: Financial Feasibility of Water Projects

- | | | |
|-------------|--|--|
| 8:40 - 9:05 | 1. Assessing the financial capability of a prospective sponsor | Mr. J. D. Foust,
State of North Carolina |
| 9:05 - 9:30 | 2. Strategic financial planning for municipal utilities | Mr. Robert B. Nolan Jr.,
Blyth Eastman Paine
Webber Inc. |
| 9:30 - 9:40 | 4. Questions and answers | |

PANEL IV: Creative Financing Techniques

- | | | |
|---------------|--|--|
| 9:40 - 10:05 | 1. Creative debt financing techniques: debt structuring and credit enhancement | Mr. Wesley Hough,
Municipal Finance
Officers Association |
| 10:05 - 10:30 | 2. Internal financing of water resources: opportunities and alternatives | Dr. Ronald North,
University of Georgia |

10:30 - 10:55	3. Leasing as a financing method for State and local government water projects	Mr. A. John Vogt, University of North Carolina
10:55 - 11:05	4. Questions and answers	
11:05 - 11:25	Coffee Break	
11:25 - 11:55	Team Building for Project Financing and Implementation	Mr. Daniel J. Kucera, Chapman and Cutler
11:55 - 12:30	Fiscal Stress Study, Tunnel and Reservoir Plan	Mr. John E. Petersen, Municipal Finance Officers Association
12:30 - 1:30	Catered Lunch (Casey Building)	
1:30 - 2:05	Private Sector Involvement in Recreation Development	Mr. William L. Harvey, County of Los Angeles
2:05 - 2:40	Water Supply Financing Activities of the Trinity River Authority	Mr. Danny F. Vance Trinity River Authority of Texas
2:40 - 3:00	Coffee Break	
3:00 - 3:20	Open Discussion	
3:20 - 3:55	Hydropower at Town Bluff Dam, Neches River	Mr. William R. Dawson, Fort Worth District
3:55 - 4:10	Concluding Remarks	MG John Wall, Director of Civil Works
4:10 - 4:30	Open Discussion	
4:20	(Adjourn)	

APPENDIX B

BIOGRAPHIES
OF
SPEAKERS AND MODERATOR

PREVIOUS PAGE
IS BLANK

John J. Boland, Ph.D., P.E.

Professor of Geography and Environmental Engineering

Johns Hopkins University

Dr. Boland is an engineer and an economist, specializing in the fields of water and energy resources, public utility management and regulation. He holds the Bachelor of Electrical Engineering, Master of Science (governmental administration) and Doctor of Philosophy (environmental economics) degrees, and is a registered professional engineer. His background includes management positions in water/wastewater utilities, consulting activities at all levels of government and in private industry, teaching and research. He is a frequent expert witness before state and Federal regulatory bodies on the subject of public utility rate design and rate-making practice. Dr. Boland is currently Professor of Geography and Environmental Engineering, the Johns Hopkins University, Baltimore, Maryland, where he teaches courses in public sector economics, environmental and resources economics, and forecasting.

PREVIOUS PAGE
IS BLANK

Joseph G. Cocchiara, Jr.

Executive Director

Deep River Study

Department of Commerce, State of Louisiana

Joe Cocchiara was appointed Executive Director of the Governor's Task Force on Deep Draft Vessel Access to the Lower Mississippi River (the Deep River Study) in September, 1982. He is continuing his activities under the Edwards Administration as a member of the State Department of Commerce.

For the past six years he has served as a private consultant and as head of his own consulting firm, Cocchiara and Associates, specializing in planning and economic studies for port and industrial projects.

During 1975-1977, Mr. Cocchiara was Associate Director of the Louisiana Offshore Terminal Authority. Mr. Cocchiara's 14 year professional background includes work with Kaiser Engineers as a project analyst and assistant project manager conducting economic/environmental studies for the Superport and other projects. He worked as a consultant to Nissho-Iwai American Corporation, and has also worked overseas with Control Data Corporation in Munich, West Germany. His first professional assignment was coordinating petroleum movements and developing pricing strategies for Esso International.

Mr. Cocchiara has an MBA and a B.S. in electrical engineering, both from Tulane University. He is currently pursuing a Masters degree in Urban and Regional Planning at the University of New Orleans.

William R. Dawson
Chief
Program Development Branch
Fort Worth District

William R. Dawson, a native of Lynchburg, Virginia, began his career with the Corps of Engineers in 1971, and is currently Chief of the Program Development Branch in the Fort Worth District. His previous positions include those of planning study manager in the Urban Studies Program of the Huntington District, study manager of the Ouachita River Basin Study, Vicksburg District, and service in the Programs Division, Office of the Chief of Engineers.

Bill holds a B.S. degree in Civil Engineering from Virginia Polytechnic Institute and an M.S. in Environmental Engineering from the University of North Carolina. He is a registered Professional Engineer in the State of West Virginia and a member of the National Society of Professional Engineers.

Dr. G. Edward Dickey
Deputy for Program Planning, Review and Evaluation
Office of the Assistant Secretary
of the Army for Civil Works

Dr. Dickey is the Deputy for Program Planning, Review and Evaluation in the Office of the Assistant Secretary of the Army for Civil Works. In that capacity, he is responsible for the formulation and interpretation of policies relating to water project planning and evaluation, as well as for financing, cost recovery, and user charge policies for the Civil Works activities of the Army Corps of Engineers.

Dr. Dickey was born in Sewickley, Pennsylvania, in 1940. After receiving his B.A. in political economy from the Johns Hopkins University in 1961, he undertook graduate studies in economics at Northwestern University and received his M.A. in 1964 and Ph.D. in 1968.

Between 1965 and 1967, Dr. Dickey served as an Army Reserve officer on active duty in the Office of the Assistant Secretary of Defense for Systems Analysis, where he specialized in the analysis of land weapons systems. He then served as a consultant to the Department of Defense, and taught at the University of Maryland and the Industrial College of the Armed Forces. In 1973, he returned to fulltime government service in the Office of the Secretary of the Army.

Dr. Dickey is the author of several papers on water resources policy.

Leo J. Donovan
Vice President
Booz, Allen and Hamilton, Inc.

Mr. Donovan is a Vice President of Booz, Allen and Hamilton, Inc. and is responsible for the Maritime and Port Programs conducted by the firm. He has 20 years of experience, the last 13 of which have been with Booz, Allen. During this 13 year span, he has conducted over 100 assignments for ocean carriers, ports, inland operators and shippers and receivers. Prior to joining Booz, Allen, he had six years of experience aboard ship as a licensed officer and with a U.S. shipyard.

He received a B. S. degree in Marine and Electronic Engineering from Massachusetts Maritime Academy and an MBA from Boston College.

J. D. Foust

**Deputy State Treasurer and Secretary of the Local Government Commission
State of North Carolina**

Mr. Foust, a native North Carolinian, has served 36 years with local and state governments in North Carolina. His experience includes:

2 years with city of Sanford

9 years with city of Thomasville

**4 years with North Carolina Recreation Commission developing
financing proposals for local governments units**

**6 years with North Carolina Department of Community Colleges
developing grant proposals**

**7 years with North Carolina Department of Administration as
director of Intergovernmental Relations**

**8 years in present job as Deputy State Treasurer and Secretary of
the Local Government Commission**

**Mr. Foust has a BA and MS in Public Administration from the University of
North Carolina at Chapel Hill.**

William L. Harvey

Head, Contracts and Concessions Division

Los Angeles County Department of Parks and Recreation

William L. Harvey is Head, Concessions and Contracts Division, Los Angeles County Department of Parks and Recreation. He is responsible for administration and management of concession lease agreements including golf course operations, recreation vehicle campgrounds, water theme park, food and beverage facilities, boat rentals, equestrian complex, trap and skeet range, tennis pro shops. Member NRPA, CPRS; past President CPRS Supervisor's Section. CPRS Certified Recreator. B.A. degree in philosophy and M.S. degree in recreation, California State University, Los Angeles, Juris Doctorate, Southwestern University School of Law, Los Angeles.

Wesley C. Hough

Manager

Government Finance Research Center

Government Finance Officers Association of the United States and Canada

Mr. Wesley C. Hough is a Manager at the Government Finance Research Center of the Municipal Finance Officers Association, where he is a consultant to state and local governments in the areas of financial management, alternative capital financing techniques, and debt issuance. Governments for whom he has worked include the States of Alaska, California, Connecticut, and New York, and localities such as Portland, Oregon, Baltimore, Miami, and Alexandria, Virginia. He is a co-author of Creative Capital Financing for State and Local Governments, and has written many other reports on public finance topics during his two year tenure with the Center. Mr. Hough began his career in public finance at the Organization for Economic Cooperation and Development (OECD) in Paris where he studied comparative international public finance. Prior to working for the OECD, he was an Economist for the Bureau of Economic Analysis, U.S. Department of Commerce.

Mr. Hough holds a masters degree in Economics from the London School of Economics and a Bachelor of Arts in Economics from the University of Michigan.

COL George R. Kleb
Commander/Director
Water Resources Support Center
U.S. Army Corps of Engineers

Colonel Kleb has served in a variety of command and staff assignments following graduation from the U.S. Military Academy in 1959. Included in these assignments are a company command in Germany, two tours in Vietnam, and Command of the 84th Engineer Battalion during the cleanup of Enewetok Atoll after the ending of nuclear tests. He has been an Assistant Professor of Mechanics at the U.S. Military Academy and served on the Department of Army General Staff. Along the way he earned a Master of Science degree at the University of Illinois and graduated from the U.S. Army Command and General Staff College, the U.S. Army War College, and the Industrial College of the Armed Forces.

Colonel Kleb's major duty assignments since 1977 include Chief, Strength Management Branch, Office Division, Office of the Deputy Chief of Staff for Personnel, U.S. Department of the Army (1977-79); Commander, 84th Engineer Battalion, Element Enewetok (1979-80); and Assistant Director of Civil Works, Atlantic, Office of the Chief of Engineers (1980-82). Colonel Kleb is a member of the Society of American Military Engineers and the Phi Kappa Phi Scholastic Honor Society.

Daniel J. Kucera
Managing Partner
Chapman and Cutler

Mr. Daniel J. Kucera is a Managing Partner with the law firm of Chapman and Cutler, having served with the firm for 20 years. In addition, he has served as a Professor at the John Marshall Law School from 1966 to 1982. Mr. Kucera specializes in public utility law and regulation, financing, rate-making, environmental law, water law, and administrative law, and has written numerous articles and reports on these topics. He has been admitted to practice before the Illinois and United States Supreme Courts and has practiced before numerous state and Federal regulatory commissions. He is a member of the American Bar Association, the American Water Works Association and the Water Pollution Control Federation, among others. Mr. Kucera received a J.D. degree from Harvard University in 1964 and an M.B.A. from DePaul University in 1966.

Dr. Robert A. Leone

Principal

Putnam, Hayes and Bartlett

Dr. Robert A. Leone is a principal in the firm of Putnam, Hayes and Bartlett and a Lecturer in Public Policy at the Kennedy School of Government, Harvard University. He serves as a consultant to public and private clients on projects and studies focused on the strategic and competitive implications of government policy for business. His current research involve the strategic and competitive implications of government policy for business strategy; capacity strategy in the private sector; and industrial policy decisions in the public sector. Dr. Leone formerly held positions with the Harvard Business School, the President's Council of Economic Advisors, the National Bureau of Economic Research and the Yale University Institute for Social and Policy studies. Dr. Leone received an M.A. and a Ph.D. in economics from Yale University, the latter in 1971.

Mary Mudryk
Vice President
Morgan Stanley & Co., Inc.

Ms. Mudryk is a cum laude graduate of Boston University, where she majored in economics and accounting, and the Graduate School of Business, New York University, where she majored in finance. Prior to joining Morgan Stanley in March 1984, Ms. Mudryk had been with Smith Barney's Public Finance Division since 1976. Ms. Mudryk has had a broad base of financing experience which has included financings for airports, student loan and health care issuers. However, her principal area of activity has been with electric power and water issuers. Ms. Mudryk coordinated all activities of the Public Finance Division at Smith Barney involving water and hydroelectric projects. She has been directly involved in over \$5 billion of tax-exempt electric revenue bond financings as well as the financial planning for a variety of clients. In addition to her direct finance experience Ms. Mudryk has participated in several municipal research oriented projects including an overview of the special report "The True Coverage Supporting Joint Agency Financings."

Robert B. Nolan, Jr.
Senior Vice President
Blyth Eastman Paine Webber Inc.

Bob Nolan has primary responsibility for his firm's investment banking commitment in municipal electric, water and sewer utility financing.

During the past seven years Mr. Nolan has had extensive experience in assisting state, regional and municipal utilities meet their capital finance needs. Mr. Nolan has served in the role of bond counsel and underwriter's counsel on all different types of municipal bond financing. In the past four years, Bob has concentrated his efforts in the municipal utility area and managed a municipal utility finance group while working at another major investment banking firm. Specifically, he has been active the creation and formation of independent electric and water utilities throughout the country.

Mr. Nolan published articles in such industry trade journals as Public Power, The Bond Buyer, and Journal AWWA, and has spoken on municipal utility finance issues before national and state utility associations. He has also assisted in the drafting of and provided expert testimony on enabling joint action legislation in various states.

Mr. Nolan holds a B.S.B.A. degree from Georgetown University and a J.D. from Fordham University Law School. He is also a member of the New York and Washington, D.C. bar associations.

Dr. Ronald M. North
Director, Institute of Natural Resources
University of Georgia

Dr. Ronald M. North is a Professor of Agricultural Economics at the University of Georgia and Director of the Institute of Natural Resources, an administrative unit of the University specializing in interdisciplinary research in natural resources.

A native of Georgia, Dr. North served in the U.S. Air Force for six years and is a licensed commercial pilot. Dr. North has held a variety of positions with the University of Georgia, the University of Arizona, the Office of the Assistant Secretary of the Army for Civil Works, Cornell University and Western Carolina University. Dr. North specializes in natural resources economics, financing, management and policy issues.

Dr. North has or has held many professional affiliations, including executive positions with the University's Council on Water Resources and the American Water Resources Association. Dr. North also consulted to the Water Resources Council on its Section 80(c) study of cost sharing and on the Second National Assessment.

Dr. John E. Petersen

Director

Government Finance Research Center

Government Finance Officers Association of the United States and Canada

Dr. John E. Petersen, Director of the Government Finance Research Center, has written extensively on matters dealing with public policy in the areas of state and local finance and financial management. Dr. Petersen formerly has served as Director, Center for Policy Research, National Governors Conference; as Washington Director of the Municipal Finance Officers Association; as Director of Finance, Securities Industry Association; and as a Research Economist for the Urban Institute and the Board of Governors, Federal Reserve System. Dr. Petersen has his BA in Economics from Northwestern University; his MBA from the Wharton School, University of Pennsylvania; and a Ph.D. in Economics from the University of Pennsylvania.

Albert T. Rosselli

Associate Partner

Tippetts-Abbett-McCarthy-Stratton (TAMS)

Mr. Albert T. Rosselli, Associate Partner of the international consulting firm of Tippetts-Abbett-McCarthy-Stratton (TAMS), is in charge of his firm's work in port and transportation planning and regional development.

Mr. Rosselli directed the award-winning Deep River Study. Port projects completed under his direction have included the Mid-America Port Study, engineering and economic studies for a coarse coal-slurrying and export system, a new port under development on Oahu, Hawaii and ports in Portugal, India, Venezuela and Honduras. Mr. Rosselli is currently directing the development of a master plan and environmental impact statement for a homeport in the northeast for the U.S. Navy Surface Action Group.

Urban development and transportation projects include a transit study of East Manhattan, a pedestrian-transit mall on Broadway, a plan for Battery Park City, an industrial plan for Mexico City and a tourism plan for Haiti.

Graduated as a civil engineer from the College of the City of New York Mr. Rosselli is a registered Professional Engineer, a Fellow of the American Society of Civil Engineers, and a member of the American Institute of Certified Planners, the Permanent International Association of Navigation Congresses and other professional groups.

Kenneth Rubin
Principal Analyst
U.S. Congressional Budget Office

Kenneth Rubin is a Principal Analyst in the Natural Resources and Commerce Division, U.S. Congressional Budget Office, where he has served since 1981. His areas of investigation have included Federal and State cost sharing and financing programs and policies for water resources. For two years prior to joining the Congressional Budget Office he was an analyst with the U.S. Water Resources Council. He received a B.S. in Civil and Environmental Engineering from Cornell, a Master of Science in Water Resources Engineering from Harvard, and he expects to receive a Ph.D. from Harvard in 1984.

Dr. Bory Steinberg
Chief, Programs Divisions
Civil Works Directorate
Office of the Chief of Engineers

Mr. Steinberg has served since 1980 as Chief of the Programs Division, Civil Works Directorate, Office, Chief of Engineers, Department of the Army. A native of New York City, Mr. Steinberg has held a variety of positions with the Corps of Engineers, including Chief, Planning and Coordination Office, Near East Project Office; Assistant Chief of the Programs Division, Civil Works Directorate, Office of the Chief of Engineers; and several assignments in the Programs Division, Civil Works Directorate and the Construction and Engineering Division, New York District. Mr. Steinberg holds a B.S. in Civil Engineering from Rutgers University, an M.S. in Public Financial Management and Budgeting from George Washington University, and a Doctorate in Public Administration from George Washington University.

Earl H. Stockdale
Assistant Counsel for General Law
Office of Chief Counsel
U.S. Army Corps of Engineers

Mr. Stockdale, a native of Pittsburgh, Pennsylvania, has been employed by the Corps of Engineers for eleven years. In 1982 Mr. Stockdale was named to serve on a four-man task force formed to deal with innovative financing issues. Since 1982, he has been the attorney in the Office of Chief Counsel designated to deal with legal/institutional issues relating to cost sharing and financing. He drafted the innovative financing agreements for the projects included in the 1983 new starts program, and in 1982 traveled across the United States with the Special Assistant to the Assistant Secretary of the Army to help explain the innovative financing program to Corps employees and affected local interests.

Mr. Stockdale's previous experience with the Corps of Engineers includes work involving real property condemnation, purchase and relocation; litigation; and legislation. He received a B.A. from Allegheny College and a Juris Doctor (J.D.) from Duquesne University School of Law. He expects to receive a Master in Law (L.L.M.) from George Washington University National Law Center in 1985.

Dan F. Vance
General Manager
Trinity River Authority of Texas

Dan F. Vance is General Manager of the Trinity River Authority of Texas, a position he has held since 1979. As General Manager he is responsible to the Authority's Board of Directors and Executive Committee for all activities of the Authority's Management Organization. Prior to his current appointment, Mr. Vance held a variety of positions with the Authority, including those of Northern Region Manager and General Services Manager.

Mr. Vance received a Bachelor of Business Administration degree in 1966 and a Master of Business Administration degree in 1968 from Sam Houston State University, Huntsville, Texas. After serving in the Army for two years, he joined the Authority in 1970. He is a member of the Board of Directors of the Texas Water Conservation Association and a member of the American Waterworks Association and the Association of Metropolitan Sewerage Agencies, among others.

A. John Vogt
Assistant Director
Institute of Government
The University of North Carolina at Chapel Hill

Dr. A. John Vogt is Assistant Director of the Institute of Government at the University of North Carolina at Chapel Hill. Dr. Vogt is a specialist in public finance and a consultant on leasing and capital finance to North Carolina local governments.

He is a contributing author, A Guide to Municipal Leasing (Chicago: Government Finance Officers Association of the U.S. and Canada, 1983) and author, Capital Improvement Programming: A Handbook for Local Government Officials (Chapel Hill, N.C.: The Institute of Government, UNC-CH, 1977).

MG John F. Wall

Assistant Commanding General, HQUSACE, and Director
of Civil Works, Office of the Chief of Engineers

Major General John F. Wall has been Director of Civil Works, Office of the Chief of Engineers since 1982. He served as the Commanding General, South Atlantic Division, HQUSACE, in 1982; Commanding General, Near East Projects Office, HQUSACE, 1980-82; Assistant Director of Military Programs, Office of the Chief of Engineers, 1979-80; and District Engineer, Fort Worth, 1976-79.

MG Wall's education includes a B.S. from the U.S. Military Academy (1956); an M.S. in Engineering from Princeton University (1961); training at the U.S. Army Command and General Staff College (1967); a Ph.D. in Civil and Environmental Engineering from Cornell University (1973); training at the Army War College (1973); and a law degree doctor from George Washington University (1980).

MG Wall is a parachutist, an aviator and a registered professional engineer. He is member of the Society of American Military Engineers and the American Society of Civil Engineers.

Dr. Louis F. Weschler

Professor of Public Administration

Center for Public Affairs, Arizona State University

Dr. Lou Weschler is Professor and Chair of the Doctor of Public Administration program at the Center for Public Affairs, Arizona State University. Before coming to Arizona in 1980, he previously was on the faculties of the University of Southern California, the University of Washington, and the University of California, Davis. At USC he served on the faculty of the School of Planning and Urban Studies as well as the School of Public Administration.

A native of San Pedro, California, Professor Weschler received his BA in Political Science from California State University, Long Beach, in 1958, and his MA and Ph.D. in Political Science from UCLA in 1960 and 1966.

His fields of specialization are urban government, intergovernmental relations, and environmental management. He has done much consultation and training with groups and agencies including the Arizona Department of Health Services, ALEOAC, FBI Academy, EPA, Corps of Engineers, Alaska, New Jersey, Idaho, and many cities. Many of his training sessions have dealt with agencies' political environment, cutback management, conflict management, and inter-group relations.

Recently his academic research has centered on the changing role of state government in local affairs with special emphasis on water and land policy.

APPENDIX C

LIST OF ATTENDEES

Seminar on Water Project Financing
Humphreys Engineer Center
Fort Belvoir, Virginia 22060
16-17 May 1984

Mr. Lauren Almonetto
Portland District

Dr. Lloyd G. Antle
Institute for Water Resources

Mr. Calvin Ashley
Vicksburg District

Mr. Richard Atwater
Bureau of Reclamation

Mr. Nicholas Avtges
New England Division

Mr. Donald Barnes
Office of Policy

Mr. Owen D. Belcher
South Atlantic Division

Mr. Warren Bennett
Nashville District

Mr. Gene Biggerstaff
Federal Energy Regulatory Commission

Ms. Linda Blake
Office of Policy

Dr. John Boland
Johns Hopkins University

Mr. Richard Bonner
Jacksonville District

Mr. Cecil Bryant
Vicksburg District

PREVIOUS PAGE
IS BLANK

Mr. John Burnes
Philadelphia District

Mr. John Burns
Planning Division

Mr. David Burrough
Little Rock District

Mr. Thomas Campbell
Vicksburg District

Mr. Ernie Carlson
Office of Management and Budget

Ms. Ruth Chase
Los Angeles District

Mr. Bob Childs
Sacramento District

Mr. George Cingle
Pittsburg District

Mr. Curtis Clark
Office of Policy

Mr. Joseph F. Coates
J.F. Coates Inc.

Mr. Joseph Cocchiara
State of Louisiana

Mr. John Cunico
Albuquerque District

Mr. Robert Daniel
Planning Division

Mr. James D. Davidson
Planning Division

Mr. William R. Dawson
Fort Worth District

Mr. Arthur Denys
Southwestern Division

Mr. Ron DeBruin
Southwestern Division

Dr. G. Edward Dickey
Office of ASA (CW)

Mr. Leo Donovan
Booz, Allen and Hamilton

Mr. Donald Duncan
Office of Policy

Mr. Phillip F. Dunn, Jr.
South Pacific Division

Mr. Michael Fisher
Chicago District

Mr. J. D. Foust
State of North Carolina

Mr. Robert Fulton
Office of Policy

Mr. David Geiger
Portland District

Mr. Jack Gordon
North Central Division

Mr. Donald A. Gund
BERH

Mr. Mark Haines
Senate Environment and Public
Works Committee

Mr. Paul Hanley
Ohio River Division

Mr. William Harvey
County of Los Angeles

Mr. Thomas Hempfling
North Central Division

Mr. Donald Herndon
Huntington District

Mr. Dwain Hogan
Seattle District

Mr. Wesley Hough
Government Finance Research Center

Mr. Roy Huffman
Hydraulics and Hydrology Division

Mr. Joseph Ignazio
New England Division

Mr. Frank G. Incaprera
Galveston District

Mr. Bernard F. Ingram
Wilmington District

Mr. Maurice Jackson
Planning Division

Mr. Dennis Janicki
Buffalo District

Mr. Neal Jenkins
Louisville District

Mr. James B. Kazel
Vicksburg District

Mr. Pat Keough
Portland District

Mr. Thomas Kinchelow
Southwestern Division

Mr. Don Kisicki
Civil Works Directorate

COL George Kleb
Water Resources Support Center

Mr. Dan Kucera
Chapman and Cutler

Mr. Ed Lawson
North Atlantic Division

Mr. Robert Leone
Putnam, Hayes & Bartlett

Mr. Louis Listerman
Ohio River Division

Mr. Jim Maas
Programs Division

Mr. Richard Manguno
New Orleans District

Mr. John Martin
Booz, Allen and Hamilton

Mr. Jerry A. McCrory
Fort Worth District

Mr. Dale Monteith
Detroit District

Mr. Sam R. Morgan
Memphis District

Dr. David Moser
Institute for Water Resources

Ms. Mary Mudryk
Morgan Stanley & Co.

Mr. Mark Mugler
Institute for Water Resources

Mr. Fred Munsell
Tulsa District

Mr. Harold Nelson
Baltimore District

Mr. Robert B. Nolan, Jr.
Blythe Eastman Paine Webber Inc.

Dr. Ronald North
University of Georgia

Mr. Edward Nutter
Planning Division

Mr. Wayne L. O'Bannon
Vicksburg District

Mr. Thomas Odle
BERH

Mr. Mason B. Oldham
Mobile District

Mr. Howard Olson
Institute for Water Resources

Mr. Ken Orth
Los Angeles District

Mr. Ted Pellicciotto
Operations and Readiness Division

Mr. John Petersen
Government Finance Research Center

Mr. Thomas Pfeifer
New York District

Mr. Bill Porter
Savannah District

Mr. Truman Price
U.S. Department of Energy

Mr. Paul Pronovost
New England Division

Mr. Seymour Reitman
South Atlantic Division

Mr. Charles Ringenberg
Southwestern Division

Mr. Ronald C. Roberts
Missouri River Division

Mr. Michael Roluti
Bureau of Reclamation

Mr. Albert T. Rosselli
Tippetts-Abbott-McCarthy-Stratton (TAMS)

Mr. Kenneth Rubin
Congressional Budget Office

Mr. Kyle Schilling
Institute for Water Resources

Mr. Terry Schlaht
Missouri River Division

Mr. James Schnerre
Rock Island District

Mr. Fowler Sims
Operations and Readiness Division

Mr. William M. Simms, Jr.
Planning Division

Ms. Shirley Smith
Bureau of Reclamation

Mr. James J. Smyth
BERH

Mr. Jack Starr
Norfolk District

Dr. Bory Steinberg
Programs Division

Mr. Earl H. Stockdale
Office of the Chief Counsel

Mr. Don Sweeney
St. Louis District

Mr. Arvid Thomsen
Omaha District

Mr. Kenneth Thornton
Kansas City District

Mr. Samuel J. Turn
New York District

Mr. Dan Vance
Trinity River Authority

Dr. A. John Vogt
University of North Carolina

Mr. H. Estus Walker
Lower Mississippi Valley Division

MG John Wall
Director of Civil Works

Mr. Dave Wallin
Chicago District

Mr. Ace Wanket
San Francisco District

Mr. Bob Warda
North Central Division

Dr. Louis F. Wechsler
Arizona State University

Mr. William T. Whitman
Planning Division

Mr. L. David Williamson
Bureau of Reclamation

Mr. Frank Wooten
Norfolk District

Mr. Charles E. Workman
St. Paul District

Mr. Hugh Wright
New Orleans District

Mr. Richard K. Yamamoto
Pacific Ocean Division

Mr. John Zorich
Buffalo District

APPENDIX D

PRE-SEMINAR QUESTIONNAIRE
AND
RESPONSES

SEMINAR ON WATER PROJECT FINANCING

16-17 May 1984
Casey Building, Humphreys Engineering Center
Ft. Belvoir, Virginia 22060

RESPONSE FORM AND QUESTIONNAIRE

Yes, I plan to attend the Seminar on Water Project Financing.

NAME: _____
TITLE: _____
AFFILIATION: _____
ADDRESS: _____

1. In my duties I have experienced or expect to experience a number of challenging problems related to non-Federal participation in project financing. I would like to learn more at the seminar about the following technical aspects of non-Federal financing of water projects:

2. I would like the speakers and moderators to address the following institutional and policy issues relating to non-Federal participation in water project financing:

3. I hope to use the information I obtain from the seminar in the following applications:

4. I recommend the following seminar outputs and follow-up activities:

Please return this form as soon as possible to: Mark Mugler, Water Resources Support Center, Institute for Water Resources, Casey Building, Fort Belvoir, Virginia 22060.

RESULTS OF PRE-SEMINAR QUESTIONNAIRE(1)

SEMINAR ON WATER PROJECT FINANCING
Humphreys Engineer Center
16-17 May 1984

QUESTION #1: TECHNICAL ASPECTS OF FINANCING WHICH ARE OF
PARTICULAR INTEREST(2)

- 14: particular financing techniques and considerations
(miscellaneous)
- 11: cost shared planning (miscellaneous)
- 11: individual project purposes or features (miscellaneous)
- 10: accounting difficulties for cost sharing
- 7: revenue raising methods in general
- 5: methods for non-Federal sponsors to transfer funds for
construction
- 4: the status of policy and guidance
- 4: the role of affordability and the financial capability of a
prospective sponsor
- 3: difficulties in budgeting and scheduling work for
cost-shared projects
- 2: financial analysis
- 2: non-Federal evaluation of whether to participate in a
project
- 5: miscellaneous

QUESTION #2: INSTITUTIONAL AND POLICY ISSUES WHICH ARE OF
PARTICULAR INTEREST(3)

- 11: need for an update on Congressional and Administrative
policies
- 7: how non-Federal financing can be accommodated in Local
Cooperation Agreements
- 6: the role of non-Federal concerns in plan development and
selection
- 5: difficulties of multiple sponsorship
- 5: particular financing techniques or applications
(miscellaneous)
- 4: allocation of O&M responsibilities and liabilities
- 4: how to assess ability to pay
- 4: the role of the Corps in developing financing arrangements
- 3: interfacing Federal and non-Federal budgets
- 3: latitude to permit variations in financing policies
- 3: need for firm policy and guidance
- 3: management of planning studies for dual participation
- 3: adapting analytic procedures to include non-Federal
concerns
- 17: miscellaneous

QUESTION #3: ANTICIPATED APPLICATIONS OF SEMINAR INFORMATION(4)

- 15: negotiating and arranging financing with sponsors
- 14: developing policy guidance and/or information for use by districts
- 8: preparing planning reports
- 7: hydroelectric power development
- 5: broad applications in Civil Works program
- 4: planning studies after preparation of feasibility reports
- 3: review of planning reports
- 2: budgeting and programming
- 2: water supply

QUESTION #4a: SUGGESTED OUTPUTS(5)

- 8: summary of proceedings and issue analysis
- 4: detailed proceedings

QUESTION #4b: SUGGESTED FOLLOWUP(6)

- 8: periodic publication on practical experiences and status of policy and guidance
- 7: comprehensive and consistent guidance and regulations
- 3: clear and understandable policy
- 2: point of contact or sources of expertise
- 2: another seminar after policies are clarified
- 2: regional workshops
- 2: none
- 7: miscellaneous

NOTES:

- (1) 39 questionnaires received
- (2) 37 questionnaires provided 78 responses
- (3) 36 questionnaires provided 78 responses
- (4) 36 questionnaires provided 60 responses
- (5) 12 questionnaires provided 12 responses
- (6) 23 questionnaires provided 33 responses

APPENDIX E

POST-SEMINAR QUESTIONNAIRE
AND
RESPONSES

PREVIOUS PAGE
IS BLANK

SEMINAR ON WATER PROJECT FINANCING
16-17 May 1984
Casey Building, Humphreys Engineering Center
Fort Belvoir, Virginia 22060

POST-SEMINAR QUESTIONNAIRE

Please complete this questionnaire prior to your departure, or mail to:
Mark Mugler, Water Resources Support Center, Institute for Water Resources,
Casey Building, Fort Belvoir, Virginia 22060.

1. Do you have a general critique of the format and content of the seminar?
If so, what?

2. What is the most important information or insight you gained from the
seminar? Why?

3. Which presentations were the most informative? The least?

4. Which topics require greater emphasis? Less emphasis? Are there any
topics which were omitted?

5. Are there issues raised in the seminar which require further discussion,
analysis, research or guidance? If so, what are the issues and what is
required?

PREVIOUS PAGE
IS BLANK

6. Is a comparable seminar required to address study cost sharing? If so, what aspects of planning cost sharing are of critical concern to you?

7. What follow-up activities related to non-Federal financing of water projects are required? Include training courses, elements of training courses, regional workshops, and other suggestions.

8. Which topics should be the focus of these follow-up activities?

_____ benefits and revenues
_____ institutions
_____ financial feasibility
_____ financing techniques
_____ case studies
_____ other: _____
_____ other: _____

9. Who should be invited to attend these follow-up activities?

_____ FOA planners and study managers
_____ FOA economists
_____ FOA program development
_____ FOA real estate
_____ Other FOA: _____
_____ Other Federal agencies
_____ States and interstate associations
_____ Substate governments and associations
_____ user and interest groups
_____ investment community
_____ other: _____
_____ other: _____

10. Other comments:

RESULTS OF POST-SEMINAR QUESTIONNAIRE (1)

SEMINAR ON WATER PROJECT FINANCING
Humphreys Engineer Center
16-17 May 1984

QUESTION #1: CRITIQUE OF FORMAT AND CONTENT (2)

- 13 - favorable comments
- 3 - too much emphasis on non-Federal, not enough on C.E. implications and action needs
- 2 - more time for question and answers needed
- 2 - redundancy among topics
- 2 - good variety of non-Corps speakers
- 4 - miscellaneous specific critiques

QUESTION #2: MAJOR INSIGHTS GAINED (3)

- 7 - need for C.E. to improve its knowledge, skills and experience with respect to financing and financial considerations
- 7 - complexities of project finance and variety of possibilities for innovation in financing techniques
- 6 - need for the Corps planner to provide financial information, analyses and/or analytic assistance to sponsors
- 5 - importance of financial considerations and issues
- 5 - current cost sharing and financing policy issues and positions (miscellaneous specific insights)

QUESTION #4: AREAS NEEDING MORE/LESS EMPHASIS (4)

- More:
- 11 - implication of increased non-Federal cost sharing and financing for C.E. missions, policies, roles, planning procedures and action needs
 - 5 - case studies
 - 3 - how to determine ability to pay and what to do about it
 - 2 - miscellaneous

Less: 3 - miscellaneous

QUESTION #5: ISSUES NEEDING FURTHER ACTION (5)

- 6 - need for better guidance on administering and implementing cost sharing and financing policies in planning, report preparation and review, budgeting and local agreements
- 6 - need for clarity, consistency, certainty and predictability in the establishment, implementation and enforcement of cost sharing and financing policies
- 5 - continued viability of Civil Works program in light of increased non-Federal financing role and the different perspectives, criteria and methods of the Corps and

- sponsors
- 3 - role of the Corps in the arrangement of project financing
- 3 - substantive impact of financial considerations on plan formulation, evaluation and selection, negotiation and report preparation and review

QUESTION #6: NEED FOR A SEMINAR ON COST SHARED STUDIES(6)

- Responses: 7 - yes
 5 - no
 4 - maybe, or not until policy is clearer

- Critical Aspects: 6 - mechanics of financial management and implementation, e.g. budget cycles, agreements, transfer of funds
 5 - need for definite policy and cost sharing rules
 5 - FOA latitude in negotiating with sponsors and making financial tradeoffs in planning
 3 - how to identify, compute and monitor in-kind services
 4 - miscellaneous

QUESTIONS #7,8,9: SUGGESTIONS FOR FOLLOWUP(7)

- 10 - regional workshops (or something similar) involving a variety of topics, disciplines and state and other interests
- 5 - guidance or training for planners or economists focusing on the financial feasibility of projects
- 3 - interaction or communication with states and limited other interests involving limited topics and disciplines
- 2 - no followup required

NOTES:

- (1) 23 questionnaires received
- (2) 22 questionnaires contained 26 responses
- (3) 21 questionnaires contained 30 responses
- (4) 15 questionnaires contained 26 responses
- (5) 20 questionnaires contained 23 responses
- (6) 16 questionnaires contained 16 responses to first part of question. 17 questionnaires contained 23 responses to second part of question.
- (7) For each questionnaire, responses to questions 7, 8 and 9 were correlated. 20 questionnaires contained 20 composite responses.

APPENDIX F

BIBLIOGRAPHY

- Baker, Janet et al., Paying the Piper: New Ways to Pay for Public Infrastructure in California, Office of Planning and Research, State of California, 1982.
- Congressional Budget Office, U.S. Congress, Current Cost-Sharing and Financing Policies for Federal and State Water Resources Development, CBO, July 1983.
- Congressional Budget Office, U.S. Congress, State and Local Use of the Tax-Exempt Bond Market for Water Supply, 1977-1983, CBO, forthcoming.
- Government Finance Research Center, Government Finance Officers Association of the United States and Canada, Building Prosperity, CFOA, 1984.
- Government Finance Research Center, Government Finance Officers Association of the United States and Canada, Municipal Fiscal Stress Study, Final Report, GFOA, 1983.
- Kneuper, Edward et al., Alternative Financing Options Seminar, U.S. Department of the Interior, Bureau of Reclamation, 1984.
- Mugler, Mark, Non-Federal Cost Recovery and Financing for Water Projects, Research Report 84-R-1, U.S. Army Engineer Institute for Water Resources, 1984.
- Petersen, John E. and Wesley C., Hough Creative Capital Financing for State and Local Governments, Government Finance Research Center, Government Finance Officers Association of the United States and Canada, 1983.
- Tippetts-Abbett-McCarthy-Stratton (TAMS), Deep River Study, Lower Mississippi River, State of Louisiana, Governor's Task Force on Deep Draft Vessel Access to the Lower Mississippi River, 1983.
- Vogt, A. John et al., A Guide to Municipal Leasing, Government Finance Research Center, Government Finance Officers Association of the United States and Canada, 1983.
- Ziglar, James W. et al., Infrastructure Financing: An Overview, Dillon, Read and Co., 1983.

END

FILMED

2-85

DTIC