9. Preliminary Official Statement. Utah State Bonding Commission, Federal Highway Reimbursement Anticipation Notes, Series 1983. Salt Lake City, March 15, 1983.
10. Official Statement. Alabama Federal Aid Highway Finance Authority, Federal Reimbursement Anticipation Bonds, Montgomery, July 7, 1981.
11. The Federal Budget and the Cities. United States Conference of Mayors, Washington, D.C., Feb. 1983.

The views, opinions, and recommendations in this paper are those of the author and should not be construed as representing the views or policies of the Rice Center, Houston, Texas, or the U.S. Department of Transportation.

Publication of this paper sponsored by Committee on Local Transportation Finance.

Alternative Public Financing for Improvement of the Industrial Canal Lock in New Orleans

WALTER C. CARLSON

ABSTRACT

Continued federal leadership in financing the development of the nation's public waterway system is uncertain. If proposed federal cutbacks are approved, and federal cost-recovery and cost-sharing programs are implemented, additional pressure will be placed on state and local governments when selecting a financing structure to provide required front-end funds for public waterway improvements. A method of evaluating available local financing alternatives--to predict expected performance and select best possible options--is necessary if state and local governments are to successfully fulfill their financial obligations with opportunistic financial planning. Such fundamental changes may require unique and innovative organizational arrangements. In any instance, the initiative and organization for such changes should occur at the federal level.

In competing for business, a public waterway improvement project must finance facilities, services, or both, to attract and maintain business. The success of a specific capital improvement program depends on its ability to anticipate and respond to change in the economic cycle and to adapt to the needs of industry and rapidly changing technology in a manner that will meet the demands of potential users at competitive rates.

Current federal cost-recovery and cost-sharing proposals on public waterway development require a unique combination of local public service utility and private enterprise to achieve this goal. State and local governments will have to overcome many obstacles. Many of these obstacles historically have been avoided because of the inherent advantages of traditional funding arrangements based on a system of federal allocation. These issues will assume new meaning when presented to state and local governments, and they can be expected to influence the direction and success of actions to accommodate future growth of this nation's public waterway system.

Proposed capital improvement of the industrial canal lock in New Orleans offers an excellent opportunity to examine an existing situation in which the issues and concerns regarding these non-federal cost-sharing programs are currently being addressed. Because these programs are expected to typically influence similar public waterway improvement projects, it appeared advantageous to incorporate the Industrial Canal Lock project as the focal point of this research on alternative methods of funding local public waterway improvement projects.

THE INDUSTRIAL CANAL LOCK: A NEED FOR CAPITAL IMPROVEMENTS

The existing industrial canal lock facility, which serves the Port of New Orleans Industrial Canal, Tidewater Port Area, the Mississippi River-Gulf Outlet, and the Gulf Intracoastal Waterway, is in urgent need of capital improvement. The Industrial Canal Lock is the only locking facility connecting the lower Mississippi River with these navigable waterways to the east. It is the only existing locally owned and financed facility of its kind on a federally owned and maintained navigable waterway. Capital improvement of this facility is of national importance--it is ranked as the second most important navigation project by the U.S. Army Corps of Engineers' priority listing of required national waterway improvement works as established by the National Waterways Study.

Completed in 1923, this lock is presently overused, too small, and has limited life remaining without considerable renovation or replacement. It is also the critical link between the Port of New

Orleans' traditional riverfront facilities and modern, deep-draft terminal development taking place in the Tidewater port area. Capital improvements are needed before waterborne traffic relying on this locking facility is forced to travel greater distances on alternative routes, or cargo is diverted to different modes of transportation. In either case, the cost of moving commerce will increase, and the overall efficiency of the present system will decrease.

The economic justification for a new lock has been thoroughly documented and generally accepted. Since 1970 approximately 64,000 vessels pass through the lock annually carrying an average of 25 million tons of cargo--2 million tons more than the facility's designed capacity. Actual tonnage has decreased from a high of 29,469,277 tons in 1977 to 21,743,392 tons in 1981 because of the economic recession and because of costly delays experienced at the lock. The U.S. Army Corps of Engineers projects tonnage to increase to 29 million tons by 1995, to 30 million tons by the year 2000, and to 32 million tons by 2010. The majority of traffic carries bulk commodities of low value such as grain, coal, marine shell, petroleum products, and industrial chemicals. Eighty percent of all traffic moving through the lock neither originates nor terminates in Louisiana. An estimated annual economic impact of $500 million is realized from public and private industries directly served, which supports approximately 11,000 jobs. Excessive demand has resulted in an average of more than 14,000 lockages a year--causing costly delays, restricted movement of marginally profitable and low-value commodities, and has brought to question, in light of future uncertainties, both local and regionally related industrial growth that requires this facility's services.

Local public meetings to determine a new lock site and to develop facility objectives began in 1960 and continued unsuccessfully until 1975 when the U.S. Army Corps of Engineers completed a detailed site-plan selection study. This analysis, which evaluated 28 major points of socioeconomic-environmental concerns, concluded on the superiority of a site-plan downriver of the existing facility in adjacent St. Bernard Parish. Opposition expressed by local residents and various interest groups curtailed implementation of the project.

In 1977 the Carter Administration conducted a review of all water resource-related projects. As a result of that review, President Carter requested the elimination of the U.S. Army Corps of Engineers, site plan proposal for environmental reasons. He further requested that the U.S. Army Corps of Engineers' study the possibility of construction occurring at the existing lock site--with a specific mandate to avoid "severe residential and industrial dislocations in the area."

That study was completed by the U.S. Army Corps of Engineers in 1982 and is currently undergoing review. The cost of the resulting 6-year delay is astronomical, and it increases each year. The project's estimated cost of more than $600 million concluded in the current Corps proposal, of which more than $200 million has been projected by using traditional cost-sharing policies to become a local responsibility, has approximately doubled 1975 estimates. Such delays are not only costly but have also jeopardized the current economic feasibility of the project.

Under the current Administration's proposed cost-sharing policies for shallow- and deep-draft navigation projects, all costs would be borne by non-federal interests and recovered through the application of user fees. According to this proposed arrangement, the annual payments of $60.5 million that result from amortizing the total estimated project cost of $600 million at 10 percent annual interest over a 50-year period (approximate designed life expectancy of the new lock) would ultimately be passed on to the users of the improved locking facility. Dividing the annual cost of improvements ($60.5 million) by the average annual tonnage using the existing facility (25 million tons) indicates that a user fee of approximately $2.40 per ton would be required. This additional transportation cost could divert marginally profitable bulk commodities, which encompass a majority of traffic currently using the lock, from the waterway system.

Furthermore, if such cost-sharing policies were to be enacted, a non-federal interest capable of funding a capital-intensive improvement project of this type would have to be located. In 1983 the Port of New Orleans invested $28,845,747 of its working capital into the construction of facilities, the retirement of long-term debts, and the purchase of land, equipment, and improvements necessary to support the Port's 10-year, $360 million capital improvement program. Total working capital available in 1983 was $29,544,919, of which the state of Louisiana was the primary source providing $18,827,572. The net increase in working capital available to undertake the proposed new lock project in 1983 after existing obligations have been met was $699,192--far below the estimated annual amortized cost of the project (60.5 million) if all costs were to be borne by non-federal interests. The Port of New Orleans' limited operating margin, and the project's inability to cover its total costs through the use of project-operated revenues demonstrates a need for a creative local financing package and a high level of funding participation from outside sources--most likely from the state and federal levels.

EVALUATING A LOCALLY FINANCED PUBLIC WATERWAY CAPITAL IMPROVEMENT PROGRAM

Determining the expected performance of locally financed public waterway improvement programs depends on the ability of the local agency to analyze and implement the most desirable program for its specific situation. Careful and opportunistic local financial planning within individual public agencies will be essential to meet the future needs of the nation's demand for waterborne transportation.

The ability of state and local governments to provide the front-end funds required by proposed federal cost-recovery and cost-sharing programs will ultimately depend on (a) the availability of adequate funding; (b) the cost of borrowed capital; and (c) the discounting element, or lead-time required before project revenues can begin to cover costs. The degree of freedom a state or local government experiences in financing required capital improvements will also depend largely on the specific agencies' (a) political make-up and structure, (b) degree of freedom allowed in raising and using capital, (c) financial position in terms of assets and investments, and (d) support from the local community.

When assessing a locally financed public waterway project, four steps should be incorporated into the evaluative process.

Step 1: Develop a working knowledge of current proposals for federal cost-recovery and cost-sharing--explore their theory and application.

Step 2: Identify methods of generating local front-end resources--analyze the requirements and implications.

Step 3: Establish an historical perspective of related public waterway improvements--determine the specific parameters and constraints of the proposed project.

Step 4: Determine the expected performance of a locally financed public waterway project--in the light of results concluded in steps 1, 2, and 3.

In step 4 of this proposed evaluative model, determination of expected project performance, administrative resources, and implementation procedures; selection of appropriate local front-end financing techniques; and the projection of expected financial performance must be examined in detail.

A standardized method of evaluating potential public waterway capital improvement programs such as presented here must be relatively simple to apply. This is necessary to accommodate a wide variety of political and institutional structures, data availability, and specific policies and external conditions. The evaluative process must be objective and flexible for use by responsible state and local planners and officials when comparing alternative strategies. For this reason the following concerns, or design specifications, should be considered by such an evaluative model: direct useability, flexibility, sensitivity to judgment, data requirements, staff requirements, and computational requirements.

RESULTS OF INDUSTRIAL CANAL LOCK IMPROVEMENT EVALUATION

Evaluation of the industrial canal lock case study yielded important and conclusive results. Although a relatively basic application of the proposed model was conducted to facilitate the academic nature of the research, specific issues and concerns were identified that can be expected to influence the future actions and directions of this project.

To assist in the evaluative process and to simplify the complex relationships involved, a number of assumptions had to be made. Critical problems were avoided through the formulization of these assumptions. The realization that these variables or assumptions exist, and the potential impact each represents, is an important by-product of such an evaluation.

For the Industrial Canal Lock proposal, it was assumed that 100 percent of local front-end financing, or the worse case, would be required and that a $320 million capital improvement program with a 10-year construction-lead time would accomplish necessary improvements. This was based on the U.S. Army Corps of Engineers' original 1975 proposals, which have since increased to about $600 million according to the Corps' 1982 study. It was also assumed that the Board of Commissioners of the Port of New Orleans must initiate, administer, and fund proposed works--assuming that the complex political, environmental, and socioeconomic issues surrounding this situation have been resolved and an actual plan finalized. Using these tentative assumptions the evaluative process produced the following results.

First, the Board of Commissioners of the Port of New Orleans possesses the administrative structure, available financing resources, and technical capabilities to facilitate the complex tasks of planning, programming, and controlling a major public waterway capital improvement project of this nature; however, the Port has only limited resources for funding capital improvement projects.

Second, future capital improvement projects could feasibly be based on traditional local financing arrangements--if the issues of long-term financial security, recent national trends away from traditional local front-end financing arrangements, and the Port's continued bonding capacity are satisfactorily addressed. If these issues cannot be resolved, alternative financing options must be examined.

Third, modifications to the Port's current 10-year, $360 million capital improvement program, which is required to include the Industrial Canal Lock capital improvement project, would jeopardize the Port of New Orleans' expected long-term financial performance and severely compromise future capital improvement projects recommended for development according to the Port's comprehensive master plan. Without increased funding, new capital improvement priorities would have to be established and reevaluation of investment timing and sensitivity analysis should occur.

Because of this final point, as well as uncertainties regarding basic assumptions made, the outcome of cost-recovery and cost-sharing legislation, and expected long-term performance of creative financing alternatives, it must be concluded that this capital-intensive project should not be initiated at the local level because it is beyond the Port's financial capabilities. It is recommended that the state review and consider the project's possible implementation. Because the proposed improvements are of national importance, serving mainly waterborne traffic passing through the state, improvements could be justifiably questioned. Although the capital improvement of this facility is urgently needed, such a decision would have to be based on the state's economic priorities. It must therefore be recommended, because of the national importance of this lock facility, that a special governors task force or legislative task force be established to further investigate this topic and recommend appropriate action.

CONCLUSIONS AND RECOMMENDATIONS

The evaluative approach taken here attempts to provide a general tool for the evaluation and analysis of alternative methods of locally financing public waterway improvements in the United States. These findings will be of value if existing federally based financing arrangements are modified according to currently proposed federal cost-recovery and cost-sharing legislation. The broad scope of subjects critical to determining future non-federal funding arrangements for the operation, capital investment, and rehabilitation of this nation's public waterway system have been only briefly identified in this paper.

The subject discussed here has provided new insights into alternative financing of public waterway improvement projects. This discussion has been presented from a planner's point of view--it was intended to identify problem areas and should not be considered a final statement. The complex problems that would result from this conceptually unique reorganization of financial responsibilities has received little attention, and where attention has been given, it has been given in a fragmented manner. After having extensively researched available information on alternative financing methods capable of satisfying proposed local front-end obligations, much remains to be done.

The need exists for a similar level of in-depth analysis encompassing the broad spectrum of issues that such fundamental changes represent; such an analysis must become an ongoing process. Successful initiation of this requirement depends, in part, on the recognition by state and local governments that their ability to respond to future demand will de-

pend on their ability to project their future physical needs and financial capacity. It also depends on the role the federal government adopts in leading or accommodating this necessary research.

The case study examined here offers insight into the nature of the problems that must ultimately be addressed. Currently, there appears to be no clear-cut traditional financing alternative available to provide the local front-end funds necessary for the capital-intensive reconstruction of this facility without adversely affecting the Port of New Orleans' long-term financial status. Although this conclusion is based primarily on the expected financial performance of the project, uncertainties regarding the actual implementation of non-federal responsibilities must also be considered. Until such concerns as (a) the local application and collection of user fees, (b) economically feasible local financing mechanisms, and (c) administrative resources and implementation procedures are available and standardized, there will be little incentive for state and local governments to commit to a capital improvement project of this magnitude.

Although it is significant to realize the current inability of the New Orleans community to enter into this local financial obligation, a community that possesses significantly greater economic resources and related past history from which to draw on than most communities, there are other concerns that must be addressed. Although these concerns apply to the New Orleans case, they can typically exist, or reoccur, in similar future situations.

1. The question of equity, or the distribution of cost and benefits. Is it equitable to assume that only the initiating public agency should bear the economic and political cost of improvements during the construction period and thereafter until returns began to be realized? What are the boundaries of the hinterland that benefits? Can specific interest groups that benefit be defined?
2. The comprehensive nature of improvements must be addressed. How will proposed improvements affect existing and future development both regionally and nationally? Are these improvements fulfilling the goals and objectives of the nation's public waterway program?
3. What responsibility does the local public sector have to motivate such comprehensive improvements? Can the different factors that influence public development (provision of services) and private development (profit motive) be integrated or compromised? Can either interest be expected to successfully realize long-term benefits without short-term returns?
4. Finally, are state and local governments actively included in the decision making process? Can greater intergovernmental and interdisciplinary coordination be enhanced by more effective legislation and funding from the federal level? Are incentives available to all levels of government?

When approaching these questions, important problems must be reevaluated in light of past successes. Two European examples, the Compagnie Nationale Du Rhone and the Rhine-Main-Danube Commission, have each adopted comprehensive regional development of public waterway systems to meet national objectives as the ultimate goal of their programs. In the United States the Tennessee Valley Authority (TVA) was created with similar objectives, and it has been a model for comprehensive regional development of public waterway systems in other countries--but not in the United States. The foregoing examples served to enhance the multifunctional development of energy, navigation, flood control, agriculture, and socioeconomic welfare. These functions, which are typically organized and performed at the federal level, were created and administered at the regional level. This approach brought government closer to the people and their specific problems, reduced duplication of functions and facilities, and increased the opportunity to realize the comprehensive development of an entire region.

Each of these three examples have focused on the provision of inexpensive energy in the form of hydroelectric power as the basic element with which to stimulate future benefits. In each case, front-end financing of initial improvements, and continued funding to minimize the impact of related user fees, has come from the national level of government. The question should then be asked: "Can navigational improvements serve as this focal point, or as a catalyst, if hydroelectric power capabilities do not exist or are not required?" Can cheap transportation costs perform the same function as cheap energy costs have in past public waterway development schemes?

Much has yet to be learned on the subject of alternative methods of financing public waterway improvement projects before any progress can be made. It has typically been the U.S. Army Corps of Engineers' philosophy not to promote or actively pursue public waterway development projects but to respond to requests initiated at the local level or actions mandated by federal legislation. As observed with the New Orleans Industrial Canal Lock example, this may not now be an adequate approach to projects of national interest or concern. The potential long-term impacts of current federal cost-recovery and cost-sharing legislative proposals, and the degree of complexity of the problems that must still be evaluated, warrant further investigation. It is essential that the initiative and organization of relevant actions are begun at the federal level.

Continued federal funding is necessary, and the creation of a single agency, or authority, whose sole purpose is the coordination of this proposed local, state, federal, and private-interest partnership is mandatory if the benefits this nation's vast waterway system has to offer are to continue to be realized. In the case of the industrial canal lock, the New Orleans Port Commission will soon recommend that the U.S. Army Corps of Engineer examine this project in the light of the recommendations made in this paper.

Publication of this paper sponsored by Committee on State Role in Waterborne Transportation.