

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Policies to Combat Depression

Volume Author/Editor: Universities-National Bureau Committee for Economic Research

Volume Publisher: NBER

Volume ISBN: 0-87014-198-8

Volume URL: <http://www.nber.org/books/univ56-1>

Publication Date: 1956

Chapter Title: Self-Liquidating Public Works to Combat Depression

Chapter Author: Wilfred Owen

Chapter URL: <http://www.nber.org/chapters/c2807>

Chapter pages in book: (p. 257 - 294)

SELF-LIQUIDATING PUBLIC WORKS TO COMBAT DEPRESSION

WILFRED OWEN, THE BROOKINGS INSTITUTION

This report deals with the volume of certain types of self-liquidating public works that might be undertaken as part of a program to combat depression, the obstacles that stand in the way of undertaking such a program, and the actions that need to be initiated now to minimize these obstacles.

In the strictest sense the term "self-liquidating" might be interpreted as meaning those facilities that are financed through revenue bonds secured by the earnings of the project. But departures from this strict interpretation will develop as certain variations of the revenue bond and toll-financing approach enter into the discussion; and consideration of earmarked tax revenues for highway purposes will add to the scope of projects that may be considered self-supporting.

The discussion will be focused on the toll road as an example of self-liquidating public works, both because of the magnitude of recent developments in this area and because of the experience in self-liquidating public works that such undertakings have provided. Consideration will also be given to certain nontoll highway projects, and to a growing area of self-supporting facilities that includes truck and bus terminals, parking facilities, airports, and urban transit. The report omits many other possible self-liquidating projects, such as water and sewer facilities, river valley development, power, and irrigation.

In general this report discusses the following:

1. The scope of certain public works activities and self-liquidating projects that appear desirable in and adaptable to a program designed to combat depression.
2. Specific features peculiar to self-liquidating projects that might prove to be obstacles in a program designed to combat depression.
3. Steps that might be taken now to improve the potential contribution of self-liquidating public works to an antidepression program.

The paper does not presume to resolve questions of countercyclical

Prepared with the assistance of Priscilla St. Denis, research assistant, the Brookings Institution.

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effects that might be expected to follow from this particular anti-depression tool, or to judge what timing and magnitude of public works activities would be desirable under the peculiar circumstances that might accompany various types and degrees of economic depression.

1. Possibilities of Self-Liquidating Public Works

To provide some perspective, it may be noted that during 1953 the total value of new construction in the United States, including public and private activities, was \$35.3 billion (Table 1). Public

TABLE 1
Value of New Public and Private Construction, 1953

	1953 (millions of dollars)	Per Cent Distribution
Total new construction	\$35,256	100.0%
Private construction	23,877	67.7
Residential	11,930	33.8
Nonresidential	5,680	16.1
Industrial	2,229	6.3
Commercial	1,791	5.1
Other	1,660	4.7
Farm	1,731	4.9
Public utility	4,416	12.5
All other private	120	.3
Public construction	11,379	32.3
Residential	556	1.6
Nonresidential	4,352	12.3
Industrial	1,771	5.0
Educational	1,728	5.0
Hospital and institutional	353	1.0
Other	500	1.4
Military and naval	1,307	3.7
Highway	3,165	9.0
Sewer and water	861	2.4
Miscellaneous public service enterprises	201	.6
Conservation and development	830	2.4
All other public	107	.3

Source: *Construction and Building Materials*, Dept. of Commerce, June 1954, p. 17.

works were over \$11 billion, or about one-third of the total. Self-liquidating public works, under any reasonable definition, were a fairly small part of the public construction total. There were, of

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course, substantial volumes of private construction that might in depression periods provide opportunities for self-liquidating public works or for publicly aided private undertakings.

Relating public works to the gross national product (and omitting military expenditures), expenditures have been approximately 2.5 to 3.5 per cent of the total national product in most years since 1930. A high of 4 per cent was reached in 1936, 1938, and 1939; during the war the figure was naturally below the long-run average (see Table 2).

A number of recent estimates have been made of the magnitude of the state and local public works backlog. A figure frequently cited is \$100 billion. Although the accuracy of this figure will not be defended, its magnitude does reflect both the inability to provide needed facilities during the war and the rapid expansion of requirements after the war. Population growth and shifts and expanding industrial plant have created vast new community requirements; and an extended period of prosperity has made the ability to pay for such facilities an added factor in the size of the backlog.

Table 3 presents a conservative estimate of state and local construction projects in need of immediate attention. The fact that the estimate either is conservative or is intended to cover only high-priority or immediate needs is evident from the fact that highway construction requirements alone over the next decade and a half have been estimated by highway agencies at \$40 to 55 billion. Here they total only \$10.4 billion. The tabulation does indicate, however, that public works projects could provide a large volume of needed construction activity as a means of counteracting a decline in economic activity.

The question, then, is what part of the public works requirements of the United States can be considered self-liquidating, either in whole or to any substantial degree; and what specifically are these projects that might serve as a means of stimulating the construction industry in time of depression.

Although the most prominent example of self-liquidating public works is the toll road, there are a number of other kinds of public construction that have self-supporting potentials. Some of these are relatively new postwar developments: union truck terminals, bus depots, parking garages, airports, and other terminal facilities. An example of longer standing is the highway financed through limited-obligation bonds secured by anticipated gasoline tax reve-

TABLE 2

Public Construction as Related to Gross National Product, 1921-1954

	<i>Public Construction^a (millions of current dollars)</i>	<i>Highway and Street Construction as Per Cent of Total Public Construction</i>	<i>Public Construction as Per Cent of GNP</i>
1921	\$1,515	56.3%	2.2%
1922	1,659	52.8	2.4
1923	1,606	50.1	2.0
1924	1,892	52.2	2.3
1925	2,130	50.8	2.4
1926	2,133	50.0	2.3
1927	2,397	51.0	2.6
1928	2,470	52.2	2.7
1929	2,467	49.7	2.4
1930	2,829	53.6	3.1
1931	2,619	51.7	3.4
1932	1,828	52.4	3.1
1933	1,612	52.5	2.9
1934	2,264	44.2	3.5
1935	2,196	38.5	3.0
1936	3,487	39.1	4.2
1937	3,059	40.1	3.4
1938	3,358	42.3	4.0
1939	3,684	37.5	4.1
1940	3,243	40.1	3.2
1941	4,131	25.8	3.2
1942	5,644	13.0	3.5
1943	3,772	11.8	2.0
1944	2,236	16.2	1.0
1945	1,708	23.3	.8
1946	2,174	41.2	1.0
1947	3,229	44.9	1.4
1948	4,667	38.0	1.8
1949	6,268	34.0	2.4
1950	6,823	33.3	2.4
1951	8,444	29.8	2.6
1952	9,438	30.3	2.7
1953	10,072	31.4	2.7
1954	10,779	34.8	3.0

^a Includes residential and nonresidential building, sewer and water, highway, miscellaneous public service enterprises, conservation and development, and other (parks and playgrounds, memorials, etc.). Excludes military construction.

Source: *Construction and Building Materials*, Dept. of Commerce, Statistical Summary, May 1953; June 1954; June 1955.

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nues allocated to that specific purpose. Still other examples of self-liquidating public works are found in water supply systems, sewage facilities, and irrigation plants. A few of the newer developments in self-liquidating public works will be discussed and the needs and possibilities described before turning to the problems that a self-liquidating construction program might be expected to encounter in any large-scale compensatory spending effort.

TABLE 3

Immediate Construction Backlog, State and Local
Government, May 31, 1954

<i>Class of Work</i>	<i>Backlog (millions of dollars)</i>	<i>Per Cent</i>
Waterworks	\$ 1,571	2%
Sewerage	2,881	4
Bridges	2,401	3
Earthworks-drainage	8,758	12
Streets and roads	8,026	11
Public buildings	14,801	19
Industrial buildings	10,868	14
Commercial buildings	11,745	16
Unclassified	14,661	19
All classes	\$75,712	100%

Source: *Construction and Building Materials*, Dept. of Commerce, July 1954.

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Unfortunately for policies to combat depression, the urgency of programs to reduce postwar congestion have made it impossible to postpone traffic relief, and as a result the extraordinary highway construction work of recent years has coincided with the highest levels of economic activity.

Highway expenditures in 1954 reached a total of approximately \$6 billion, of which about \$3.7 billion was new construction. Table 2 shows the trend in highway construction outlays in relation to total civil public works expenditures, in current dollars. About 31 per cent of the total civil public works outlays in 1953 were for highways, but in the depression period the proportion was as high as 50 to 54 per cent.

Highways are financed largely by road-user payments, which now amount to about \$3.2 billion per year (Table 4). Although user payments cover somewhat less than 60 per cent of the total sum spent for highway (maintenance and new construction) in the United States each year, they constitute the only important source

TABLE 4
Revenues Collected for Highway and Street Purposes, 1945-1954

	1945	1946	1947	1948	1949	1950	1951	1952	1953 a	1954 b
						Millions of Dollars				
Federal funds	\$ 78	\$ 168	\$ 323	\$ 402	\$ 486	\$ 465	\$ 459	\$ 526	\$ 613	\$ 648
State highway-user imposts	1,086	1,450	1,594	1,808	2,075	2,270	2,483	2,724	2,998	3,196
Toll receipts	59	81	87	97	108	115	140	181	200	211
Property tax and miscellaneous	640	783	805	972	1,049	1,108	1,179	1,208	1,237	1,273
Total	\$1,863	\$2,482	\$2,809	\$3,279	\$3,718	\$3,958	\$4,261	\$4,639	\$5,048	\$5,328
						Per Cent Distribution				
Federal funds	4.2%	6.8%	11.5%	12.2%	13.1%	11.7%	10.8%	11.3%	12.1%	12.2%
State highway-user imposts	58.3	58.4	56.7	55.1	55.8	57.4	58.2	58.7	59.4	59.9
Toll receipts	3.1	3.3	3.1	3.0	2.9	2.9	3.3	3.9	4.0	4.0
Property tax and miscellaneous	34.4	31.5	28.7	29.7	28.2	28.0	27.7	26.1	24.5	23.9
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

a Preliminary estimate.

b Forecast.

Source: Bureau of Public Roads, Tables HIF-1.

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of current revenue outside of federal aid for main state highway work.¹

Although most of the borrowing for nontoll highway construction has in the past been through general-obligation bonds, any program of self-liquidating public works could take advantage of the peculiar nature of highway revenues and their ability to finance revenue bonds or limited-obligation bonds. In most states motor vehicle registration fees and gasoline taxes are considered user charges rather than general taxes and are allocated specifically to highway purposes. In half the states the application of such funds for highway purposes is guaranteed by amendments to state constitutions prohibiting any other use. These revenues proved to be highly stable even during the last depression, when, for example, a reduction in automobile production to 25 per cent of the 1929 level was accompanied by a slight increase in automobile use and therefore in the productivity of gasoline taxes and other user charges. In a future depression this source of revenue for highways could be expected to remain at fairly high levels, but total funds available for road work would be reduced by property tax delinquencies.

Borrowing for highways by the states and by toll road authorities has in recent years been primarily in the form of limited-obligation bonds, secured by highway-user taxes, and in the form of toll-secured revenue bonds. Bonds outstanding at the end of 1951 totaled \$2.4 billion, which compares with \$1.6 billion in 1945 (see Table 5). The general-obligation bonds will also, for the most part, be paid out of highway "earnings" in the form of user tax revenues.

TABLE 5
State Highway Obligations Outstanding,
December 31, 1951

General-obligation bonds	\$1,202,743
Limited-obligation bonds	319,696
Toll revenue bonds	871,885
Reimbursement obligations	51,939
Total	\$2,446,263

Source: Hugo C. Duzan, William R. McCallum, and Thomas R. Todd, "Highway Bond Financing," *Public Roads*, October 1952, p. 73.

An example of the type of bond financing on recent expressway projects, combining methods of self-support with general tax sup-

¹ Local roads and streets, on the other hand, derive principal support from property taxes and general tax revenues.

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port, is provided by a recent Michigan financing plan. Detroit's \$180 million Edsel Ford and John Lodge expressway program is being financed jointly by the state, county, city, and federal governments. A law passed by the 1950 special session of the state legislature permitted financing through revenue bonds which will be retired by the weight and gasoline tax collections. A state-county-city agreement was signed for sharing the cost of the debt and to take advantage of the amendment to the Federal Aid Highway Act which provides that federal aid appropriations can be used to help retire bonds for toll-free urban highway projects on the primary system. The agreement pledges \$1,125,000 annually from both the city and county, and \$2,500,000 from the state highway department. A total of \$80 million in twenty-five-year bonds were sold at an average of 2.12 per cent interest rate.

In Florida a \$224 million Miami expressway program will make use of a variety of financial devices, including a combination of tolls and taxes. The financing plan includes a 10 cent bridge toll, a special downtown district benefit tax, the county's share of the state 7 cent gasoline tax, a special 1 cent county gasoline tax, and a special motor vehicle license fee for the county.

A relatively new example of a self-supporting road and bridge program which makes use of the limited obligation bond is to be found in Pennsylvania. In 1949 the General Assembly passed the State Highway and Bridge Authority Act, which provides for the issuance of revenue bonds secured by highway-user revenues. Under the terms of this law, the Authority may issue thirty-year bonds at interest rates not exceeding 4 per cent and use the proceeds to build highways which when completed are leased to the state. The bonds are paid with the proceeds of the rental. This arrangement is based on cooperation between the State Highway Department and the Authority. All plans and specifications must be approved by the Department of Highways, and the Authority is empowered to lease property to the State Highway Department for a ninety-nine-year period. Interchangeability of employees, equipment, and services is provided for. The borrowing power of the Pennsylvania Authority, however, is limited to \$40 million.

Although this special authority affords a means of circumventing constitutional debt limits, it is limited as a means of overcoming restrictions on large-scale borrowing, because it does not remove the problem of obtaining sufficient current revenues to service the debt. As demonstrated by the experience in New Jersey, Maine,

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and other states that have adopted toll-road financing, available funds from current taxes are not sufficient to pay the service charges on any substantial amounts of new debt because tax rates have not kept pace with construction costs and existing laws governing the distribution of user revenues do not permit concentration of available revenues on major arteries. Consequently the type of special public works authority operating in Pennsylvania does not appear to offer a real alternative to the toll road.

TOLL HIGHWAYS

Increasing acceptance is now indicated for toll finance as a means of raising the necessary capital for high-cost highways and avoiding the obstacles of debt limits, inadequate current revenues, and other legal obstacles to highway modernization. The facts, as of late 1953, were as follows:

1. A total of 734 miles of toll roads had been constructed in 9 states at a cost of approximately \$651 million.
2. Another 1,102 miles of toll roads were under construction in 8 states involving an estimated cost of \$1.4 billion.
3. A further 1,716 miles had been authorized involving an estimated expenditure of \$2.2 billion.
4. Some 706 miles involving an estimated cost of \$674 million were in the planning stage (Table 6).

TABLE 6
Mileage and Cost of Toll Roads Completed, under Construction,
Authorized, or Proposed, as of September 1, 1953

	Miles	Cost ^a (thousands of dollars)
<i>Completed and in operation</i>		
Colorado: Denver Boulder Turnpike	17.3	\$ 6,366
Connecticut: Merritt and Wilbur Cross Parkways ^b	67.0	38,092
Florida: Buccaneer Trail	15.0	4,600
Maine: Turnpike	47.2	20,600
New Hampshire: Turnpike	14.7	6,770
New Jersey: Turnpike	117.6	280,000
New York: Hutchinson River and Saw Mill River Parkways ^b	39.5	14,000
Oklahoma: Turnpike	88.0	38,793
Pennsylvania: Turnpike System	327.2	241,664
Total	733.5	\$650,885

(continued on next page)

TABLE 6 (continued)

	Miles	Cost ^a (thousands of dollars)
<i>Under construction</i>		
Florida: Jacksonville, expressway system ^c	41.0	\$ 69,000
Maine: Turnpike extensions	60.0	55,000
New Hampshire: Turnpike extensions	40.0	36,500
New Jersey: Garden State Parkway ^d	165.0	285,000
New York: Thruway	427.0	500,000
Captree Parkway	7.0	7,300
Ohio: Turnpike	241.4	326,000
Pennsylvania: Turnpike extensions	33.0	65,000
West Virginia: Turnpike	87.6	96,000
Total	1,102.0	\$1,439,800
<i>Projects authorized but not financed</i>		
Connecticut: New York line to Rhode Island line	125.0	\$ 213,000
Florida: Stuart to Miami Turnpike	110.0	96,000
Indiana: Turnpike	150.0	193,000
Massachusetts: Cross-State Turnpike	130.0	200,000
New Jersey: Turnpike extensions	92.0	483,000
New York: Thruway extensions	108.0	150,000
North Carolina: Gastonia-Mt. Airy Turnpike	125.0	200,000
Pennsylvania: Turnpike extensions	280.0	240,000
Texas: Dallas to Fort Worth	33.0	31,000
Dallas-Fort Worth area to San Antonio	276.0	150,000
Wisconsin: Cross-state toll road	287.0	200,000
Total	1,716.0	\$2,156,000
<i>Proposed ^e</i>		
Georgia: Florida line to St. Marys and beyond	50.0	\$ 20,000
Kansas: Kansas City to Wichita via Topeka	210.0	105,000
Kentucky: Louisville to Elizabethtown	40.0	22,000
Ohio: Cincinnati to N.E. border of state	300.0	400,000
Virginia: Richmond to Petersburg	36.0	57,000
Washington: Tacoma to Everett	70.0	70,000
Total	706.0	\$ 674,000
<i>Grand Total</i>	4,257.5	\$4,920,685

^a Where actual costs are not yet available, bond sales or estimated costs are shown.

^b Built as free roads.

^c Although tolls will be collected only on two bridges, the project is classified as a toll road because of the co-mingling of toll and other revenues for debt service, operation, and maintenance of the entire system.

^d Total parkway length is 180 miles; 15 miles of free-road links built by Highway Department.

^e Includes only projects currently under consideration for which mileage and costs have been estimated by state officials or in published releases. Projects for which mileage and costs are not known have been authorized or are being studied in Illinois, Michigan, Nebraska, North Carolina, and Pennsylvania, among others.

Source: Bureau of Public Roads.

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There is the possibility, therefore, that 4,258 miles of toll roads at a cost of \$4,920.7 million may be operating in the United States on principal intercity routes within the next few years. Additional toll-road construction might be undertaken in states which have general authorization to provide toll roads but have taken no steps to designate specific routes. Altogether, 34 states have given consideration to toll-road legislation and 23 have enacted legislation of some type.

At the present time, therefore, about 2,500 miles of toll highways involving close to \$3 billion of construction are in the stage of being authorized or proposed. How many more miles of these self-liquidating facilities might be built in the United States as part of a self-liquidating public works program? Some indication of an answer can be obtained from a report made by the federal government some fifteen years ago and submitted to Congress in 1939 by the President.² This report was prepared by the Bureau of Public Roads under provisions of the Federal-Aid Highway Act of 1938. The purpose of this investigation was to determine the possibility of financing such a system of transcontinental routes through tolls.

Even at that early date the report provided substantial evidence of the feasibility of financing highways through tolls. Conditions since then have provided much greater support for toll finance, because motor vehicle registrations have doubled and the problem of traffic congestion has made the motorist much more willing to pay the high cost of the roads that are needed.

The conclusions reached by this report must be modified by the events which have occurred since the study was made. Estimates of the volume of traffic that would be willing to pay the toll, for example, were based on conditions existing in the middle 1930's, when neither consumer incomes, nor volume of traffic, nor the cost of express highways were as high as they are today. Fifteen years ago the degree of traffic congestion and highway inadequacy had not reached the point where the possibility of paying a toll to avoid the inadequacies of the "free road" system offered any widespread appeal. Thus the estimates of possible toll-road patronage presented in the report were low. Average daily traffic estimated for the Pennsylvania Turnpike route was 715 vehicles per day compared with 11,000 vehicles per day actually using the Turnpike by 1952; toll-paying traffic between Portland, Maine and the New Hampshire border was estimated at 1,348 per day, while traffic now using the Maine Turnpike averages in excess of 5,300 vehicles per day.

² *Toll Roads and Free Roads*, H. Doc. 272, 76th Cong., 1st sess.

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Table 7 shows that many sections of road that in 1939 seemed to offer only a moderate possibility of self-support are now accommodating successful toll facilities. Much of the mileage indicated as being unable to pay its way could do so now. Although costs have risen far above the 1939 estimates as a result of both postwar in-

TABLE 7
Self-Liquidation Possibilities for Toll Roads, 1945-1960
(as Estimated in 1939)

From:	DESCRIPTION To:	LENGTH (miles)	CUMULATED	REVENUE AS
			LENGTH (miles)	PER CENT OF COST
Jersey City, N.J.	New Haven, Conn.	65.6	65.6	93.8%
Junction Route 4, Pa.	Jersey City, N.J.	106.8	172.4	91.1
Route 5, Calif.	Whitewater, Calif.	91.0	263.4	89.2
Washington, D.C.	Baltimore, Md.	39.3	302.7	88.1
Route 2 Mass.	Portland, Maine	133.9	436.6	85.1
Miami, Fla.	Jacksonville, Fla.	326.5	763.1	83.2
Baltimore, Md.	Route 4, Pa.	76.2	839.3	81.8
Richmond, Va.	Washington, D.C.	108.3	947.6	80.5
San Ysidro, Calif.	Route 6, Calif.	124.4	1,072.0	78.9
Whitewater, Calif.	Indio, Calif.	32.7	1,104.7	78.7
Route 3, Ill.	Route 3, Mich., Ind.	156.9	1,261.6	76.8
Brigham, Utah	Salt Lake City, Utah	52.3	1,313.9	76.5
Odessa, Texas	Route 3, Texas	337.9	1,651.8	74.6
Route 6, Calif.	San Fernando, Calif.	44.8	1,696.6	73.5
Buffalo, N.Y.	Albany, N.Y.	287.6	1,984.2	70.2
Route 6, Calif.	Ludlow, Calif.	69.1	2,053.3	70.0
San Fernando, Calif.	Tracy, Calif.	291.7	2,345.0	68.5
Minneapolis, Minn.	Route 3, Ill.	392.6	2,737.6	66.5
Route 4, Calif.	Redding, Calif.	153.7	2,891.3	66.1
San Antonio, Texas	Route 6, Texas	250.7	2,142.0	65.1
Portland, Maine	Bangor, Maine	121.3	3,263.3	74.6
St. Joseph, Mo.	Route 3, Ill.	275.7	3,539.0	63.6
Route 3, Ill.	Indianapolis, Ind.	203.7	3,742.7	62.9
Carlisle, Pa.	Route 1, Pa.	94.8	3,837.5	62.3
Route 2, Ind.	Detroit, Mich.	102.2	3,939.7	61.6
Tracy, Calif.	Route 4, Calif.	69.1	4,008.8	61.3
Route 3, Texas	Shreveport, La.	190.4	4,199.2	60.4
Ludlow, Calif.	Las Vegas, Nev.	117.0	4,316.2	60.2
Fargo, N.D.	Minneapolis, Minn.	219.1	4,535.3	59.7
New Haven, Conn.	Route 2, Mass.	99.8	4,635.1	59.0
Greeley, Colo.	St. Joseph, Mo.	529.7	5,164.8	58.0
Indianapolis, Ind.	Columbus, Ohio	156.6	5,321.4	57.4
Phoenix, Ariz.	El Paso, Texas	391.1	5,712.5	56.9
Cleveland, Ohio	Buffalo, N.Y.	220.7	5,933.2	55.8
Oakland, Calif.	Auburn, Calif.	110.0	6,043.2	55.3
Boise, Idaho	Rupert, Idaho	182.2	6,225.4	55.0
Shreveport, La.	Vicksburg, Miss.	168.8	6,394.2	54.7

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flation and expanding highway design requirements, the tremendous expansion of postwar traffic, the mounting congestion on existing free roads, and the ability and willingness of consumers to pay the bill for good roads more than offset the higher cost. It is quite possible that those routes indicated in 1939 to be 50 per cent self-

TABLE 7 (continued)

DESCRIPTION		LENGTH (miles)	CUMULATED LENGTH (miles)	REVENUE AS PER CENT OF COST
From:	To:			
Salem, Ore.	Portland, Ore.	56.9	6,451.1	54.3%
Route 4, Ill.	Route 2, Ill.	155.5	6,606.6	53.9
Perrysburg, Ohio	Cleveland, Ohio	79.3	6,685.9	53.5
Route 6, S.C.	Richmond, Va.	362.6	7,048.5	52.9
St. Louis, Mo.	Route 4, Ill.	88.8	7,137.3	52.7
Albany, N.Y.	Route 1, Mass.	147.2	7,284.5	52.0
Pittsburgh, Pa.	Carlisle, Pa.	166.6	7,451.1	51.4
Tulsa, Okla.	Springfield, Mo.	171.3	7,622.4	51.1
Route 3, Mich., Ind.	Perrysburg, Ohio	69.9	7,692.3	51.0
Jacksonville, Fla.	Route 6, S.C.	219.3	7,911.6	50.6
Detroit, Mich.	Port Huron, Mich.	72.5	7,984.1	50.4
Springfield, Mo.	St. Louis, Mo.	165.2	8,149.3	50.1
Route 4, Pa.	Route 1, Mo.	88.5	9,237.8	50.0
Roseburg, Ore.	Salem, Ore.	133.3	8,371.1	49.7
El Paso, Texas	Odessa, Texas	245.2	8,616.3	49.3
Indio, Calif.	Phoenix, Ariz.	254.0	8,870.3	49.0
Columbus, Ohio	Pittsburgh, Pa.	195.0	9,065.3	48.5
Portland, Ore.	Route 2, Wash.	146.7	9,212.0	47.8
Route 2, Wash.	Canadian boundary	124.7	9,336.7	47.3
Route 6, Texas	Tulsa, Okla.	270.5	9,607.2	46.9
Auburn, Calif.	Reno, Nev.	106.5	9,713.7	46.6
Ashland, Ore.	Roseburg, Ore.	122.9	9,836.6	46.3
Las Vegas, Nev.	Salt Lake City, Utah	407.5	10,244.1	45.7
Birmingham, Ala.	Atlanta, Ga.	141.2	10,385.3	45.5
Boardman, Ore.	Boise, Idaho	253.1	10,638.4	45.0
Salt Lake City, Utah	Greeley, Colo.	463.3	11,101.7	44.2
Rupert, Idaho	Brigham, Utah	119.7	11,221.4	44.1
Redding, Calif.	Ashland, Ore.	138.2	11,359.6	43.7
Seattle, Wash.	Ellensburg, Wash.	90.0	11,449.6	43.4
Vicksburg, Miss.	Birmingham, Ala.	270.5	11,720.1	42.9
Bangor, Maine	Canadian boundary	196.6	11,916.7	42.6
Portland, Ore.	Boardman, Ore.	163.4	12,080.1	42.2
Mexican boundary	San Antonio, Texas	156.2	12,236.3	42.0
Augusta, Ga.	Charleston, S.C.	116.3	12,352.6	41.8
Reno, Nev.	Salt Lake City, Utah	514.9	12,867.5	41.3
Spokane, Wash.	Fargo, N.D.	1,169.6	14,037.1	39.8
Ellensburg, Wash.	Spokane, Wash.	145.9	14,183.0	39.5
Atlanta, Ga.	Augusta, Ga.	153.2	14,336.2	39.2

Source: *Toll Roads and Free Roads*, H. Doc. 272, 76th Cong., 1st sess.

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liquidating might now prove fully self-supporting. This would mean a potential toll-road system of 9,238 miles.³

Intercity routes, however, do not provide the only potential for the toll highway. To the extent that roads financed by tolls can be adapted to the local short-haul requirements of urban areas there is a substantial additional mileage of routes that might be financed with revenue bonds and tolls. In recent years there have been a number of demonstrations of how controlled access roads in urban areas have been able to afford relief for downtown commuter traffic. Thus far most of these expressways have been nontoll facilities, although several have introduced toll collection at key points such as bridges or tunnels. With the possible exception of Los Angeles, however, there has been little in the way of a system approach to urban expressway development.

Thus far the high cost of achieving solutions to urban transport problems on a broad scale has postponed many highly desirable undertakings. Costs ranging from \$5 million to \$10 million a mile are common for urban expressways, and financing methods to achieve anything worthwhile in the way of expressway systems have not been devised. The feasibility of the toll-secured revenue bond for urban projects has been questioned on the grounds that toll collection from large volumes of short-run rush hour traffic would impede rather than facilitate traffic movement.

It is now apparent that one stop to pay the toll on an urban expressway interferes far less with traffic than a dozen or more stops at traffic lights and other traffic interferences. Hollywood Boulevard, for example, by eliminating traffic lights and cross streets is reputedly saving Los Angeles motorists 120 million stops a year. In any event, there are mechanics other than cash toll collection that can eliminate this objection to the toll road in urban areas. One is the commuter ticket which can be purchased and displayed by regular users of a toll system to gain entrance and exit without stopping to pay toll. Variations of this method have been used for some time both by the Port of New York Authority at its bridge and tunnel entrances and on the Merritt Parkway.

A second possibility might be to issue revenue bonds for both expressway and adjacent downtown parking areas, with facilities so designed that all traffic destined for the downtown area would terminate in the parking areas and pay a fee at the parking lot or

³ Note that Pittsburgh to Carlisle, now the successful western extension of the Pennsylvania Turnpike, is indicated in the table to be able to cover only 51 per cent of costs.

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garage that would include both the cost of parking and the cost of using the expressway. The revenue bonds could also include funds for the modernization of mass transportation. Rapid transit, for example could be provided on the same rights of way used by motor vehicle traffic.

Along with toll highways there continue to be a large number of expensive bridge and tunnel projects that can be self-supporting through the charging of tolls. Some of the problems associated with toll projects as a possible means of combating depression will be discussed in a later section.

PARKING FACILITIES

Multi-million-dollar parking structures being constructed or planned in most cities throughout the country provide a new category of private and public construction that could be promoted on a large-scale in depression periods. Parking accommodations are being financed by both government and private enterprise, separately and cooperatively. In most states a municipality may participate in providing parking garages either by providing facilities itself, by delegating the work to an authority or agency of the government, by furnishing financial aid to private construction, or by leasing to private operators. This whole area of public interest and participation has developed since the war, when previous indifference to the problem of automobile parking became intolerable in the face of automobile ownership trends that have doubled the number of cars since 1935.

There are at least 33 states that permit cities or other units of local government to borrow to finance parking. In some states the county, metropolitan district, or a state agency is authorized to issue the bonds. These must be revenue bonds in 13 states and general-obligation bonds in 4 states, and may be either type in 16 states.

Legislative provisions with respect to the ownership or operation of parking facilities by local units of government sometimes stipulate the maximum amount that may be borrowed, fix the maximum interest rate and maturity period, and designate the kinds of revenues that may be used. Life of the bonds varies from 20 to 50 years, amounts specified may be as high as \$100 million, and revenues to be used may include general taxes, fees charged against users of the facility, parking meter revenues, and special assessments.

Although most government action in this field is provided through the regular channels of municipal government, there are at least

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54 parking authorities, commissions, or boards in the United States with varying degrees of power to provide off-street parking accommodations. As yet only a few have specific authority to plan comprehensive systems of parking facilities, as is the case, for example, in Wisconsin. About half the parking authorities have the power of condemnation to permit the necessary land to be assembled, and half the authorities may issue revenue bonds, which are, however, frequently contingent on approval of the electorate.⁴

In addition to parking agencies, there are approximately 16 public authorities that are authorized to provide for parking among other responsibilities for public works. For example, in Massachusetts the Metropolitan Transit Authority may provide parking accommodations in conjunction with transit operations. Market authorities in Maryland and Virginia are in a similar category; and the Triborough Bridge and Tunnel Authority in New York City may provide parking and other terminal accommodations in connection with other transportation facilities.

TERMINALS

In recent years the problems of interchange in the terminal area, and the large number of transportation companies involved in terminal operations, have given impetus to the provision of self-liquidating union bus and truck terminals and terminals that combine rail, highway, and water facilities. This in turn has led to a wider participation in financing arrangements, and to mixed public and private undertakings often administered by a quasi-governmental body such as a port authority. This type of construction activity is rapidly growing in importance both in the category of public works and as private undertakings that might be aided by government.

An illustration of the magnitude of truck terminal needs is provided by measures being taken in Chicago. Seven or eight large truck terminal areas adjacent to the expressway system have been planned to house all trucking companies in the city. Necessary ordinances were passed by the city and a new zoning classification was created known as Truck Terminal Districts. It is anticipated that the present program will require a total investment of \$100 million.

The \$24 million Port of New York Authority Bus Terminal, joined with the Lincoln Tunnel, is a good example of a self-supporting

⁴ Data on parking from David R. Levin, *The Effectiveness of Parking Agencies*, Highway Research Board, 1952.

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project that is needed in many urban areas of the United States. About 90 per cent of intercity buses and bus passengers traveling to and from mid-Manhattan use the Terminal. Financing was through terminal bonds secured by the earnings of the structure and by the Port Authority general reserve fund. The project was designed to be fully self-supporting over the long run. The Terminal includes a shopping center of over seventy consumer services. Concession rentals provide about 60 per cent of the Bus Terminal's total income, and the percentage is expected to increase to 70 per cent in the near future.

In some cities bus terminals are being constructed by individual bus companies or jointly by several companies, while in other locations municipal revenue bonds are providing the capital for such facilities. In all cases the support for such undertakings is largely in ancillary revenue producers that shift the financial burden from direct users of the terminal to related business activity.

The number of extensive terminal plans, many of them being undertaken with private capital, with or without public assistance, indicates the potential for government stimulation of such works if business conditions make it necessary for private industry to postpone such undertakings.

In many cities the relocation of railroad terminals and yards has provided valuable properties for the development of more appropriate land uses. In Philadelphia the new Penn Center made possible by abandonment of the Pennsylvania Railroad's Broad Street Station will provide hotel and office accommodations, parking, and civic buildings. In Cleveland the Pennsylvania Railroad has sold an 11-acre terminal site in the heart of the city to make way for a \$200 million development that may ultimately cover 60 acres. The land will be used to provide a hotel, office buildings, government buildings, underground parking for 25,000 cars, freight sidings, and a 3-story warehouse beneath hotel and apartment buildings. In Boston, removal from the Back Bay of yards occupied by the Boston & Albany Railroad has paved the way for comparable development of a Boston Civic Center.

A new deep-water terminal is under construction in Boston as part of the Boston Port Authority's master plan of port terminal development, and in Houston the Port Commission is preparing a master plan for port development to be carried out during the next twenty years. In San Francisco the first financing of harbor bonds entirely on a revenue bond basis has been accomplished by issuance

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of \$6 million of thirty-year obligations to construct a world trade center and to finance pier improvements at the California-owned port of San Francisco. Bonds will be serviced from the port's operating income.

These developments, involving very heavy capital requirements, could be undertaken in nearly every large city. The possibilities of government incentives to help finance such undertakings in times of business depression may be a significant part of a so-called public works program. Urban redevelopment planning indicates not only that extensive self-liquidating facilities are feasible but that any plans for public works to combat depression will need to promote private and municipal undertakings already conceived if there is to be not merely a shift from private to public investment and from local to federal financing. The need appears to be one of encouraging similar large-scale plans in other cities now, and of assuring the desired stimulation of these activities later through appropriate financial aid and incentive.

TRANSIT

Most cities are coming to the realization that large-scale investment in new plant and equipment may be necessary to provide additional mass transportation capacity and improved service. This is an area that is for the most part under private management, although a growing number of cities have municipal transit systems or public authorities. Whatever the present management arrangement, however, the need for bold plans is obvious in the inadequacy of commutation facilities in large cities. Cooperation between private industry and government is needed now to begin the difficult task of outlining what needs to be done, and what could be done if the means of providing the necessary capital were made available.

Recent transit plans and modernization projects in several cities indicate the nature and magnitude of the task in this area. The New York Transit Authority approved a \$1 billion improvement program and a six-year plan that would provide for construction of a new subway line, rehabilitation of existing facilities, extensions to the system, and new equipment and power plants. A charter amendment in Cleveland cleared the way for a \$22.5 million Reconstruction Finance Corporation loan for modernization of the Cleveland Transit System, to be financed from fares over a period of twenty years. A rapid transit plan for metropolitan Boston in 1947 proposed improvements which at that time called for an estimated investment of \$73 million. Expansion of the Metropolitan Transit Author-

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ity facilities will be financed by bonds of the Boston Metropolitan District.

AIRPORTS

The dimensions of airport capital requirements and the extent to which airports provide an opportunity for self-liquidating projects are questions that need to be answered in present-day planning for public works. The financing of airports has undergone substantial change in the course of the past two decades. Prior to 1933, airport capital expenditures were supplied 50 per cent from commercial and private sources and nearly 48 per cent by municipal governments. Federal financing was less than 1 per cent of the total.

The rapid development of aviation in the thirties, however, combined with the financial difficulties of local governments during the depression, changed this picture. Federal participation in airport development increased rapidly as part of the work-relief program, and from 1933 through 1940 over 70 per cent of all airport capital outlays were federal grants.⁵

After the war the Federal Airport Act of 1946 authorized expenditures of \$500 million over a seven-year period, but actual appropriations have been less than half this sum. When it came to filling the gap, city voters were reluctant to approve general-obligation bond issues for the financing of airports. As airport costs rise with increasing length of runways and greater capacity of terminal buildings, the limits to which cities are willing to go in financing airports are being rapidly approached. This reluctance has been fortified by mounting air transport business and increasingly profitable air operations.

A picture of the possibilities of airport self-support under these circumstances is provided by the Port of New York Authority's experience. City, state, and federal agencies had invested \$121 million in New York International, La Guardia, and Newark Airports before the Port Authority assumed responsibility for them in 1947. By the end of 1953 the Port Authority had spent or committed an additional \$98 million, including expenditures at Teterboro Airport, which it purchased in 1949. Except for federal grants of \$4.1 million, financing has been accomplished by the Authority through air terminal bonds.

Gross operating revenues for the four Port Authority airports in 1953 reached a high of \$9.5 million, and net operating revenues before debt service totaled \$1.5 million. After deducting interest

⁵ Through the Civil Works Administration, the Federal Emergency Relief Administration, and the Work Projects Administration.

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charges of \$2.0 million on air terminal bonds, the net deficit in 1953 was \$500,562, which was paid out of the general reserve fund.⁶ This degree of airport self-support was achieved in the heaviest air traffic center in the United States, and has been made possible by a comprehensive regional development of public works which taken as a whole is self-supporting. The problems of achieving self-supporting air terminals in other cities with less traffic and no regional plan of financing are obviously great.

There are now about 6,000 airports in the United States. Most of them are small airports for private flying, which do not offer opportunities for large-scale construction projects. But they can be made largely self-supporting through agricultural pursuits on unused airport acreage. At the other end of the scale are some 734 major civil airports designed for commercial flights that could use considerable large-scale construction but have doubtful possibilities for self-support. However, with the development of concession revenues at major airports, a very significant trend toward self-support is indicated, and with airline gross revenues already exceeding \$1.5 billion annually the outlook both for expanding facility requirements and for increasing self-support is promising.

Total expenditures for airports in recent postwar years, including capital and maintenance outlays, have averaged only about \$80 million. This sum includes private facilities, municipal airports, and airports operated by state governments and authorities. Municipal airports in the 41 largest cities of the United States accounted for \$37 million of expenditures in 1952, of which \$29.3 million was for capital outlay. Of 1,819 airports under direct control of municipal or county governments, only 614 were showing a surplus of revenues over operating expenditures (Table 8).

TABLE 8
Airports under Municipal or County Governments, 1952

<i>Financial Status</i>	<i>Number of Airports</i>
Income exceeds expenditure	614
Deficit financing required	850
Unknown	341
Break even	14
Total	<u>1,819</u>

Source: Civil Aeronautics Administration. Review includes Regions 1 to 7.

⁶ *Annual Report*, Port of New York Authority, 1953.

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With mounting air cargo carriage and continued expansion of passenger traffic, the demand for major terminals continues to mount, but rapidly changing technology makes it difficult to foresee at this time what the location, size, and design of future airports should be. The helicopter and the convertiplane, along with the advent of jet power, have the airport planners in a difficult position. In any event the future capital requirements for United States airports as estimated by the Civil Aeronautics Administration in its 1952 National Airport Plan include 2,232 new airports and improvements at 2,583 existing airports. Cost of the program was estimated at \$650 million.

Much more needs to be learned about the prospects for self-liquidating or partially self-liquidating public works in this area, looking to the probable growth of air passenger and cargo operations and changes in technology that can be anticipated in the years immediately ahead.

2. Obstacles to Self-Liquidating Public Works Program

From the standpoint of potential construction and employment, it is helpful that the principal opportunities for a program to combat depression are in the cities and their suburbs, where 100 million people live and where much of our economic activity is concentrated. These metropolitan areas present the most urgent need for public works as a result of the past two decades of their growth, and they therefore offer the greatest opportunities for new investment in community facilities.

But along with the advantages of public works activity in urbanized areas, the task of actually planning and agreeing on what is to be done is particularly formidable. The difficulties of undertaking large-scale public works arise from the inflexibility of the established urban pattern, the absence of space in which to provide new facilities of adequate capacity, and the absence of governmental machinery to plan and carry out needed solutions.

Thus far only superficial efforts have been made to solve the problems of urban blight. Much of the activity now under way treats the symptoms of urban congestion rather than its causes. Generally this activity represents far too small an effort in relation to the magnitude of the problem. A basic question, therefore, is how a public works program to combat depression should be designed so that at the same time it can combat the problems of our

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urban society, and not multiply them. In using the device of large-scale public works as a tool for economic stabilization we could be creating long-run economic problems of even greater consequence by making erroneous decisions with respect to location, type, and conception of the public works we undertake. Conversely, the opportunity for real accomplishment is equally clear.

One example of the problem of determining a desirable program of public improvements is provided by the arguments now being carried on in almost every large city over whether construction activities should be permitted to encourage more densely populated urban areas or whether they should promote a more rapid decentralization or dispersal of urban concentrations to other locations. These arguments need to be resolved in every community, and whatever agreement can be reached must take the form of an acceptable regional plan to provide the framework into which a public works program could be fitted.

Public works programs for anticyclical purposes may be vitiated by such obstacles as the absence of detailed plans and failure to acquire the necessary land in advance. In the case of self-liquidating public works these obstacles are magnified by the fact that such undertakings are generally of considerable magnitude and cost and as such involve difficult problems of land acquisition, planning, and financing. Moreover, conflicting views among city planners as to what the city of the future should be like create substantial barriers to agreement.

The additional problems of self-liquidating public works are especially striking in the case of toll highways. Among them are the absence of agreement concerning self-liquidation as an objective, the absence of techniques for achieving self-support, the problem that arises from the threat of competition from parallel "free" roads, the absence in many states of adequate enabling legislation, and the absence of federal policy that recognizes and helps to overcome some of the problems of using public works as a tool to combat depression.

DESIRABILITY OF SELF-SUPPORT

Attitudes about the question of self-liquidation vs. general-fund financing are in many respects of key importance to the development and acceptance of a program of self-liquidating public works. There is a basic conflict in the transportation field, for example, with respect to the question of how facilities should be paid for. One point of view holds that since nearly everybody uses the streets and

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highways and everyone benefits from a good transit system, the total bill should be paid through general taxes. A contrary view is that the provision of transportation services is more in the nature of a public business enterprise and as such should be considered apart from the general functions of government and paid for directly by those who use the services. Between these extremes are numerous positions that combine self-support and general tax support, and these are reflected in the situation today.

The case of the New York subway deficit provides a current illustration that the conflict at the community level between those who favor self-support and those who argue for general tax support is not academic.⁷ According to one view of the recent \$50 million annual subway operating deficit (which was in addition to general tax support of the existing subway debt structure) the desirable course would have been to maintain the fare at 10 cents, and to make up the deficit through a tax on the profits of business "which prospers because buses and subways feed commerce right to their doors." Such a plan would assure that "all who benefit from the transit system contribute to its upkeep."⁸ The opposite view, that mounting subway deficits had become an intolerable threat to the entire fiscal position of the city government, won a partial victory in that users now are required to pay more in accordance with the rising cost of providing service. But the decision to move toward a higher degree of self-support for New York's subways was not made overnight, and other communities in which self-liquidating public works might be undertaken may be equally reluctant to accept the view that self-liquidation is a desirable characteristic for a program of public works. Especially is this likely to be the case in periods of depression.

METHODS OF PAYING THE BILL

Even where the attempt is made to provide self-supporting transportation facilities, there are sharp differences of opinion as to desirable financing methods. In New York, for example, the Port of New York Authority confines its activities to those which are self-liquidating or which have a reasonable chance of ultimate self-support. But the Port Authority concept is that transportation facilities in the New York region should be financed not as separate projects but as parts of the whole port development system, which

⁷ Another illustration may be found in the battle that still goes on between toll-road and anti-toll-road philosophers.

⁸ *New York Times*, March 27, 1953, p. 18.

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taken together must be self-supporting. Thus the Authority's six bridges and tunnels provided much of the revenue needed to support eleven other enterprises operating at a loss in 1953, including airports, grain terminals, and bus and truck terminals.

There has been widespread objection, however, to this system type of development on the grounds that it is unfair, for example, to require motor vehicle users to defray the deficit incurred at the Authority's airports. Supporters of this view argue that toll-supported facilities should be accomplished on an individual project basis rather than in accordance with a regional system of development. The same issues have arisen with respect to toll roads and are implicit in questions of extending transit operations to unprofitable suburban areas.

Perhaps one reason why self-supporting public facilities are in the minority lies in the absence of any rational plan for establishing charges to be paid by consumers. Existing charges often have little relation to the cost of providing needed services and often have no relation to possibilities of influencing the volume and character of the demand for services.

To illustrate, on most transit lines the passenger who boards at the beginning of the line and sits pays the same fare as the rider in the downtown area who travels only a few blocks and stands. And passengers in rush hours pay no more than those who ride in off-peak hours. In many cases they pay less. The gasoline tax is also a poor pricing mechanism since it is collected at a uniform rate throughout the state, regardless of the cost of providing the specific facility being used. Thus a vehicle may be traveling on an urban expressway costing 1 cent per vehicle-mile to provide, or on a less costly highway at .1 cent per vehicle-mile.

The inadequacies of transportation pricing policies raise the question whether sufficient emphasis has been given to cost considerations and the pricing mechanism as a means of accomplishing transportation objectives. Fares, tolls, fees, and other charges for public services frequently lack any rational scientific basis, unlike, for example, electric power or telephone rates, which involve many similar problems. It is likely that more attention directed to pricing in the field of potentially self-liquidating public works will reveal important possibilities for self-support.

FREE ROAD COMPETITION

The closest we have come to experiencing what might happen to toll-road patronage under depression conditions was under the

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restrictions on motor vehicle use imposed by the war. During World War II, traffic on our only important toll highway, the Pennsylvania Turnpike, dropped to 3,000 vehicles per day. Revenues during the three fiscal years 1943 to 1945 failed by \$1.4 million to cover the combined requirements for interest and maintenance. The Pennsylvania General Assembly in 1945 prepared to meet the situation by authorizing the Turnpike to issue revenue bonds for war emergency financing of interest and sinking fund requirements. However, with the end of the war, the end of gasoline rationing, and the resumption of automobile production, a rapid increase in Turnpike traffic removed any necessity for emergency measures.

The problem of building new toll roads during depression is closely related to this experience. First, it is possible that existing toll roads might suffer considerable loss of traffic during a prolonged depression wherever the use of alternate "free" roads would seem to be worth the saving of the toll. This problem, it will be noted, does not apply to most toll bridges, which generally exercise a monopoly either because there is no other nearby way across or because all local crossings are under the same management. But in the case of the New Jersey Turnpike, for example, a considerable volume of traffic might shift to toll-free U.S. Route 1 in order to avoid the extra out-of-pocket costs of as much as \$1.75 per passenger car on the toll road, despite the fact that hidden costs on the old road, in time lost and higher operating costs, might more than offset saving the toll.

The point is simply that public reaction to the building of new toll roads might be unfavorable at a time when objection to existing toll facilities was mounting. This possibility, however, depends on a number of factors, including the extent to which motorists by that time have accepted the toll as part of the cost of highway transportation. But there is the additional possibility that toll authorities in a depression might adjust rates to reduce the competitive pull of alternative "free" routes. In any event, if the depression of the 1930's is any guide, no conceivable magnitude of economic adversity will reduce motor traffic in populous areas to the point where it could be accommodated by the free road system alone (see Table 9).

STATE ENABLING LEGISLATION

To finance a highway with revenue bonds and collect tolls requires legislation. In most of the twenty-three states with this power the legislative battle has been lengthy and the resulting

TABLE 9

Effect of Economic Conditions on Motor Vehicle Registrations, Production, and Traffic, 1929-1940

(index numbers; 1929 = 100)

	<i>Motor Vehicle Registrations</i>	<i>Production of Motor Vehicles</i>	<i>Vehicle-Miles of Travel</i>	<i>Total Highway User Revenues</i>
1929	100.0	100.0	100.0	100.0
1930	100.0	64.2	104.3	124.0
1931	97.4	45.3	109.3	113.1
1932	90.9	24.5	101.4	101.6
1933	90.2	35.8	101.5	103.7
1934	94.3	50.9	109.0	102.0
1935	98.9	75.5	115.6	103.8
1936	106.4	88.7	127.5	116.7
1937	112.1	90.6	136.6	211.5
1938	110.9	47.2	137.2	208.0
1939	115.5	67.9	144.3	217.0
1940	120.8	84.9	152.8	233.7

Source: Based on *Highway Statistics Summary*, Bureau of Public Roads, to 1945, and *Automobile Facts and Figures*, 1953.

legislation has often been restricted to specific roads rather than providing broad authority (Table 10). If a program of toll highway construction were considered necessary in the near future as part of a program to combat depression, it would be found that half the states are without authority to build such roads and many of those that do have authority either have already used it to build the roads specified in the legislation or need new legislation to specify additional routes. Those that do not have authority would not be able to get it very quickly, if past experience is any guide.

Such past experience illustrates the time problem and the need for obtaining necessary enabling acts now (Table 11). The initial toll-road undertaking was inspired by the possibilities of creating employment in Pennsylvania during the depression. A resolution requesting investigation of the feasibility of such a project was introduced in the Pennsylvania Assembly in 1935, and a commission comprising members of the House and Senate was created for this purpose. Through the efforts of the Highway Department a grant was obtained from the Works Progress Administration to make a preliminary survey of the route, and on the basis of this survey the commission reported favorably on the toll-road project. Legislation was passed in 1937 establishing the Pennsylvania Turnpike Commission.⁹ Construction started in November 1938, and on October

⁹ Public Law 774, 1937.

TABLE 10

(X) States Having Authority to Construct Toll Roads

	Alabama	X	Nebraska
	Arizona		Nevada
	Arkansas	X	New Hampshire
	California	X	New Jersey
X	Colorado		New Mexico
X	Connecticut	X	New York
	Delaware	X	North Carolina
X	Florida		North Dakota
X	Georgia	X	Ohio
	Idaho	X	Oklahoma
X	Illinois		Oregon
X	Indiana	X	Pennsylvania
	Iowa		Rhode Island
	Kansas		South Carolina
X	Kentucky		South Dakota
	Louisiana		Tennessee
X	Maine	X	Texas
X	Maryland		Utah
X	Massachusetts		Vermont
X	Michigan	X	Virginia
	Minnesota		Washington
	Mississippi	X	West Virginia
	Missouri	X	Wisconsin
	Montana		Wyoming

TABLE 11

Comparative Time Schedules for Toll Roads

<i>Toll Road</i> ^a	<i>Authority Established</i>	<i>Construction Authorized</i>	<i>Construction Started</i>	<i>Road Opened</i>	<i>Construction Period (months)</i>
Colorado	April 1949	April 1949	Fall 1950	Jan. 1952	15
Maine	April 1941	April 1941	May 1946	Dec. 1947	19
New Hampshire	July 1947	July 1947	Oct. 1948	June 1950	20
New Jersey	Oct. 1948	April 1949	Feb. 1950	Nov. 1951	23
Pennsylvania	May 1937				
Original sect.		May 1937	Oct. 1938	Oct. 1940	23
Eastern ext.		May 1940	Sept. 1948	Nov. 1950	26
Western ext.		June 1941	Oct. 1949	Dec. 1951	26
33-mile ext.	Jan. 1952	Jan. 1952	Dec. 1952		
Oklahoma	July 1947	July 1947	Dec. 1950	April 1953	28
West Virginia	1947	March 1952	Aug. 1952		
Ohio	June 1949	Sept. 1949	Oct. 1952		
New York Thruway	March 1950	March 1950	Dec. 1950		
New Jersey Garden State Parkway	April 1945 April 1952	April 1952	Nov. 1946 Aug. 1952	(22 miles in 6 years)	

^a Turnpike or turnpike system unless otherwise designated.

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1, 1940 the original Turnpike, 160 miles in length, was opened to traffic.

Legislation that mentions specific routes or points that the authorized turnpike shall connect limits the authority of toll-road commissions in many states. In Maine, for example, the road was to be built "at such location as shall be approved by the State Highway Commission from a point at or near Kittery in York County to a point at or near Fort Kent in Aroostock County." In some states general authority to construct toll roads has to be implemented by further legislation designating specific routes. This is true, for example, of New Jersey, Massachusetts, and Pennsylvania.

In other legislation full authorization to designate turnpike routes is granted the turnpike or highway agency. The Indiana Toll Road Commission may construct toll projects at the locations it selects provided the routes are approved by the governor. The Colorado Highway Department, which is responsible for toll-road work, is authorized to adopt "a master plan for the development and improvement of the State Highway System by the construction of turnpikes. . . ." In Ohio the Turnpike Commission is empowered "to designate the locations" of the turnpike projects, but with the stipulation that the locations selected be considered necessary or desirable by the director of highways.

Financing provisions contained in toll-highway laws generally specify that revenue bonds shall be issued and secured by tolls and other revenues collected specifically from the projects constructed, without pledging the faith and credit of the state. In some states, such as New Hampshire and New York, however, the credit of the state is pledged.

In some cases toll-road legislation specifies the maximum amount that may be borrowed. Specific sums may be appropriated for advance planning, but generally it is provided that the turnpike commission may borrow from the highway department for planning and engineering services in advance of the sale of bonds. Other stipulations in toll-road legislation include permission to accept gifts of land and money, and in particular to accept aid from the federal government.

POSITION OF THE FEDERAL GOVERNMENT

The current position and past attitudes of the federal government on the question of toll roads are important in any consideration of plans for an extensive system of self-liquidating highway facilities financed with revenue bonds.

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In the Federal-Aid Road Act of 1916, the secretary of agriculture was authorized to cooperate with the states in the construction of rural post roads, provided "that all roads constructed under the provisions of this act shall be free from tolls of all kinds."¹⁰ This prohibition against the imposition of tolls on roads constructed with federal aid was restated in the Federal Highway Act of 1921, and the prohibition still stands.¹¹

Departure from this policy in the case of bridges, however, occurred in legislation passed in 1927. This law provided that the secretary of agriculture might extend federal aid to any state or its political subdivisions for the construction of any toll bridge and approaches, provided that such bridge was owned and operated by a state or its subdivision.

The works financing bill of 1939, designed to provide employment through self-liquidating improvement programs, set the stage for a program of self-liquidating public works, but it failed to pass. The self-liquidating projects proposed by this legislation were to be carried out through the Reconstruction Finance Corporation and were to include projects undertaken by the Department of Agriculture, the Bureau of Public Roads, the Public Works Administration, and the Rural Electrification Administration.¹² The bill provided that the Bureau of Public Roads should have the power, with the approval of the RFC, to fix, maintain, and collect tolls and other charges for the use of highway improvements. Revenues derived from such collections in excess of what was needed to operate and maintain the improvement could be used for further highway projects.

In addition, the works financing bill provided for the acquisition of land to be held as an investment by the government to permit the recoupment of values resulting from highway improvements. The Bureau of Public Roads was to have the power ". . . to acquire by purchase, but not by condemnation, for investment purposes, any real property in the vicinity of any highway improvements or Federal-aid construction. . . ."

In testifying in favor of this legislation, the commissioner of public roads pointed out that the bill provided for improvement in four categories: ". . . First. Bridges and tunnels and similar individual projects on direct toll basis. Second. Very limited mileage of toll roads, including excess taking of land. Third. Land acquisition for rights-of-way, particularly, at the outset in metropolitan

¹⁰ 39 Stat. 355, sec. 1.

¹¹ 42 Stat. 212, sec. 9.

¹² S. 2759, 76th Cong., 1st sess.

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areas and connecting such areas. Fourth. Express highways in metropolitan areas. These are all essential parts of an adequate and truly national master plan for highway development."¹³ The commissioner pointed out that aside from the limited possibilities of providing fully self-liquidating toll projects, financing on other routes might be accomplished through a combination of tolls, excess land takings and resale of some of those lands, and income from the gas tax and motor vehicle license fees.

In 1948 a bill was introduced in the House which would have extended provisions of the 1927 legislation to federal grants for highways.¹⁴ This bill proposed also that the federal aid apportionment to a state might be expended not only by the state or any political subdivision, but by any agency or instrumentality of the state, or any instrumentality created by an agreement between two or more states. Thus the bill would have permitted toll roads to be constructed which might not otherwise be capable of self-support, with federal aid furnishing the type of assistance rendered through the Public Works Administration for the Pennsylvania Turnpike.

For a number of years prior to the war, interest in the possibility of constructing transcontinental toll highways was indicated by the introduction of bills for this purpose in Congress. These proposals culminated in a meeting in Atlantic City during 1941, to discuss transcontinental toll superhighways, costing between \$50 and 100 billion. The chairman of the Pennsylvania Turnpike Commission was among those sponsoring the plan which was offered primarily with the idea of providing useful public works in the postwar period. It was stated that the proposed highway system could be paid for out of revenue bonds, with the federal government guaranteeing the interest.

Since the war a number of similar proposals have been submitted to Congress. In 1946 a bill was introduced to authorize a \$12 billion system of highways financed through tolls.¹⁵ In 1950 a bill was introduced for establishing the Crozet Transcontinental Superhighway Commission to construct and operate a coast-to-coast highway, using wherever practicable such free roads and toll roads as were already built or under construction.¹⁶ This bill provided that the Bureau of Public Roads should supervise the construction and

¹³ Statement of Thomas H. MacDonald, commissioner of public roads, *Works Financing Act of 1939*, Hearings before the Senate Committee on Banking and Currency, 76th Cong., 1st sess., 1939, p. 51.

¹⁴ H.R. 6527, 80th Cong., 2nd sess. ¹⁵ H.R. 50, 79th Cong., 2nd sess.

¹⁶ H.R. 7578, 81st Cong., 2nd sess.

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operation of any section of the highway "where the State . . . does not have proper toll-road laws or will not construct, maintain, and operate such a through super-highway within its borders." Wherever the Commission found it necessary to build sections of the road, it could issue revenue bonds secured by anticipated toll collections, "Without recourse against the Federal Government." No federal funds would be spent on the project "except in the form of direct grants to offset the benefit to the national defense."

3. *Concluding Views*

The foregoing discussion has indicated that, with the expansion of the American economy, a large backlog of needed public works has accumulated and that a considerable proportion of it is made up of either fully or partially self-liquidating projects. To the extent that public works are a useful tool to combat depression, a great volume of important needs could be met through a large-scale construction effort. In addition, many activities now under way or planned by private enterprise which might otherwise be postponed in a depression could be aided by government as part of the overall program to stimulate construction.

Many of the most urgent needs and most promising possibilities for self-liquidating facilities are in urban areas, where most of our population and economic activity are located. This advantage may be outweighed, however, by the intricacies of urban planning with which any public works program must cope. In the city, decisions as to location and type of facilities may have important impacts on the whole urban structure, and they must be carefully considered if public works are to contribute to the ultimate goals of the community. In many metropolitan areas the administrative machinery required to arrive at intergovernmental decisions does not exist, and communities continue to be hampered in their efforts to plan a program of public works because the problem they face goes far beyond the outmoded political boundaries of government control and taxing power. The importance of developing adequate administration, in port authorities, regional commissions, or other forms, is accordingly great; and the coordinating functions of the federal government should be recognized and developed.

When large self-liquidating public undertakings are under consideration, many of the problems associated with public works in general are compounded: the tasks of advance planning, of planning on a comprehensive scale, of developing the necessary ad-

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ministrative machinery, and of acquiring the necessary land. Further obstacles are imposed by opposition to self-liquidation as a principle and to toll collection as a method; the absence of accepted pricing policies for public service introduces added difficulty. To wait until the need for an accelerated program of public works is upon us would, under these circumstances, result in confusion and frustration and certainly find us without the plans and procedures that would make possible the kind of facilities we really need.

To avoid such a situation, intelligent mobilization of efforts is required now. Otherwise our efforts in time of need not only might fall short of combating depression but might fail at the same time to take advantage of the opportunities afforded by a full-scale public works program.

A number of public works have been singled out as offering the dual possibility of providing worthwhile construction activity and effective attack on long-range urban development problems. Some 10,000 miles of toll highways might be feasible, together with extensive systems of urban toll highways. Substantial needs are emerging for truck, bus, and rail terminals; airports; transit facilities; parking garages; and related facilities. The additional needs of water, sewerage, and other community facilities not examined in this report would provide a large reservoir of necessary undertakings. Many now being carried on or planned by private enterprise, and by private and public enterprise combined, offer a significant area of activity to be promoted by public action. What can be done now to prepare for such a program? Can we match the efforts we would make to combat a depression with preparations now to assure the accomplishment of a worthwhile public works strategy?

Legislative obstacles to a program of self-liquidating public works at federal, state, and local levels include the following: absence of state and local enabling legislation for tax anticipation or revenue bond financing, limitations in existing toll-road laws, public opposition to tolls and self-supporting facilities, absence of detailed plans, failure to acquire land in advance, inadequacy of administrative tools, and the like.

The greatest obstacles, however, are financial, and in this area, while the limited-obligation bond, the revenue bond, and the expansion of toll facilities and self-supporting terminals provide a large potential volume of projects, there would still be a need for the federal government to assure that the capital required would be forthcoming under adverse economic conditions. This would

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have to be accomplished either through grants of federal aid to assure the financial success of partially self-liquidating facilities, or through guarantees that would induce investors to provide the necessary capital at a time when the returns from self-supporting projects would be less than usual.

Both government and private industry are spending billions of dollars annually for scientific research, but little is being directed to research to develop the administrative, legal, and financial tools that have lagged so far behind. The federal government could take the lead in supporting research of this kind. Although American universities have been called upon by the federal government to carry on scientific study in the interest of developing military power, there has been no comparable program for mobilization on the economic front.

It may be anticipated that highway construction will not fall off during a depression as rapidly as many other construction activities because of the relative stability of highway-user revenues, which provide the major part of highway support. Moreover, highway and other transportation construction has been at peak levels during the height of prosperity, so that further expansion to provide an anti-cyclical effect will be the more difficult. Since the major declines may occur in such construction activities as housing, an outlet for housing materials and labor might be found in the construction of terminals, garages, and urban redevelopment projects rather than highways.

But the most effective program to compensate for declining home construction might be found in the kinds of public works that are not self-liquidating—libraries, schools, recreation facilities, and similar public facilities—as well as in private undertakings of a comparable nature. The latter are important to the total program if an increase in government construction is not merely to provide an offset for declines in private construction.

In conclusion, if the problem of promoting a self-liquidating public works program on a large scale should arise, it is unlikely that present efforts at public works planning would find us ready with the comprehensive projects that are needed, or with the financial tools that would make them possible. If, on the other hand, it were possible to prepare now in bold terms for the kinds of facilities and financial aids that are needed, a public works program of tremendous significance could be in readiness that might have important antidepressive effects as well as extraordinary long-run economic benefits.

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COMMENT

SIDNEY G. TICKTON, The Seventh Company, Inc., New York City

Owen's paper has outlined the kinds of public works that might be undertaken to provide employment during a depression. His concentration on the construction of public roads and urban redevelopment permits me to eliminate from this discussion some types of public works that involve problems that are even more controversial in their philosophical and political background—such projects, for example, as the St. Lawrence Waterway and the Missouri River Basin Development program.

A point of considerable importance with respect to the construction of public works by state and local governments during a sharp depression concerns financing. Owen touches on this lightly. I should like to comment on the matter at a little greater length because the financing problem can make all the difference between getting a program started quickly—and thus allowing it to become useful for consideration as an antidepression project—and not getting it started at all, or doing it too slowly to be effective.

The long lapse of time since 1930–1933 and the high volume of economic activity in this country have obscured the facts with respect to the financial position of state and local governments during a sharp depression, particularly the fact that under adverse economic circumstances state and local governments are in no position to finance large-scale public works projects. Many of them, including some of the largest cities and states, were in default on their current obligations for the salaries of teachers, policemen, firemen, and other municipal employees. They were far behind in paying the bills of their trade suppliers. Some were postponing their liability on their short-term notes; others were defaulting on long-term bonds. A large proportion were running substantial deficits and were borrowing heavily in anticipation of the following year's taxes. As a result, the credit of many state and local government units was impaired and their ability to borrow for new programs of public works greatly curtailed.

This unfavorable financial position in the case of many cities and towns came about more as a result of delinquent tax collections than as a result of increased expenditures for relief. Cities and towns depended heavily then—as they do now—on the tax on real property for their current revenues. During the last depression—and the situation is not likely to change very much if there should be an-

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other—millions of property owners throughout the country failed to pay their real estate taxes on time. In many cases, collections of the real property tax at the end of the fiscal year amounted to only 50 or 60 per cent of the levy—as against a normal rate of 95 per cent. The tax sale laws in many states allow a relatively long waiting period before a city or town can offer for tax sale those properties on which taxes have not been paid. Accordingly, in the first or second year after tax default, cities and towns experiencing large delinquencies can do very little about collecting the amounts due from taxpayers.

To complicate the situation even further, the tax collection laws on the statute books are frequently relaxed in times of economic stress. The pressure comes from two sides: First, there are the small taxpayers in distress who are unemployed or only partly employed. They are politically powerful and are apt to put considerable pressure on the local administrations to prevent an aggressive tax collection policy. Second, there are the large taxpayers who own hotels, apartment houses, office buildings, etc., who frequently are the leading citizens of the state, are influential in policy determination, and account for a large part of the dollar volume of delinquent taxes outstanding. This was the case in Detroit in 1932 when I prepared a study of the subject for the Detroit Bureau of Governmental Research.¹ Forty or fifty leading taxpayers together were responsible for about 25 per cent of the aggregate tax delinquency because of the high assessed valuation, in proportion to the total, carried by the multi-story office buildings, the big hotels, and the large apartment developments, most of which were partly vacant and many of which were in receivership during this period.

In such a situation the existing units of state and local government are in no position to undertake large-scale public works. It is not a question of how desirable such works might be from an economic point of view, or how necessary to the well-being and economical future operation of the unit of government. It makes no difference either that construction costs would be relatively low. The existing units of state and local government just cannot, themselves, undertake the job financially, and their banking advisers are likely to suggest a delay in capital expenditures until the current stringency passes.

It is in such circumstances that new public bodies such as authorities which have no past history of financial difficulty and no

¹ *An Analysis of Tax Delinquency*, Detroit Bureau of Governmental Research, Report 128, June 30, 1932.

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portfolio of defaulted real estate taxes can fit into the picture. They would make it possible to finance the type of public works that Owen has in mind. It would not have been enough for a city or county, for example, to plan to build a toll road in 1932, financed from revenues gained from users of that road. The city's or county's credit might well have been too badly impaired. A brand new road authority, however, having exclusive jurisdiction over the road and complete control of its revenues would have been in a somewhat better position to undertake the project.

This was the case in 1932 in New York. Robert Moses wanted to build a toll road to Jones Beach; the project would provide employment and would be self-liquidating. But he needed a device that would make it a certainty that the tolls would not be diverted to other purposes. To meet the situation his lawyers drafted legislation for the Jones Beach State Parkway Authority, and this became the first of what was to be a series of authorities for road construction throughout the country. The Parkway Authority was patterned after the Port of New York Authority, which had been in existence as an interstate operation for ten years. But the Parkway Authority was much more restricted in its powers.

The self-financing authorities that have been set up charge fees, rentals, service charges, etc., for the use of their facilities in order to provide funds sufficient to pay for the cost of acquiring and operating properties over a period of years without levying a general assessment on the taxpayers in the vicinity of the project. In the postwar period the operation and financing of self-liquidating projects on a pay-as-you-go basis by self-financing authorities outside of the regular state and local government budgets are becoming one of the new cornerstones of state and local finance.

Few people recognize the extent and scope of self-financing authorities at the present time and the flexibility of their use under a wide variety of circumstances. Their flexibility and adaptability is what makes them useful during a depression period. They can be tied in to the federal government through contracts and guarantees, as in the case of the local public housing authorities now operating under the jurisdiction of the Federal Public Housing Authority Act. They can construct office buildings and lease them to governmental units under a wide variety of circumstances; a recent case in Detroit involving the construction of a building for the use of the city and county jointly is a good illustration. They can be used to construct school buildings, as is being done extensively in Pennsylvania and Georgia at the present time. They can be used to construct office

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buildings, parking lots, airports, markets, sewer and water systems, and other public works under circumstances in which the governmental unit itself may be relatively impotent.

I bring these matters to your attention primarily because the mechanics of "how you go about doing it" in a depression are even more important than "being a good idea." State and local public works can bog down indefinitely on the question of financing. The mechanics I have described could well be used to surmount what might otherwise become an impossible situation.

WESLEY LINDOW, Irving Trust Company

I would like to comment briefly on the problems of financing an expanded program of public works by state and local governments, particularly in view of the wide variation in the financial status of these governments. There are of course a large number of different units issuing securities, and the market ratings vary considerably. Some small issuers have trouble finding a market even though their basic financial position is satisfactory. It may be that an expanded volume of public works would require an improved method of approach to the marketing of these securities. Some pooling arrangement by which a number of small issues of a similar quality could be combined into one large offering to improve marketability might help considerably. It is hard to say exactly how this could be done but municipal bond men might be able to offer some suggestions. The pooling of local public housing issues recently into various grades may provide some ideas. Although these securities have a virtual guarantee by the federal government, the issues have been grouped into several classifications to improve marketability. It is obvious that the difficulties of pooling other types of issues would be great, but the problem of financing an expanded program of state and local public works may well be so serious that new marketing methods will be needed.

