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# Rapid Transit for Metropolitan Areas And Related Problems



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UNIVERSITY OF CALIFORNIA  
INSTITUTE OF TRANSPORTATION  
AND TRAFFIC ENGINEERING

Preliminary and Supplemental Report No. II  
of the  
**Assembly Fact-Finding Committee on  
Highways, Streets and Bridges**

ASSEMBLY, CALIFORNIA LEGISLATURE

April 29, 1949

*Honorable Sam L. Collins*

*Speaker of the Assembly*

*State Capitol, Sacramento, California*

MR. SPEAKER: Your Fact-Finding Committee on Highways, Streets and Bridges has the honor to submit herewith its second preliminary and supplementary report concerning problems pertaining to rapid transit for metropolitan areas, with particular reference to the Los Angeles area, although we are of the opinion that much of the data and criteria may be applicable in other areas.

In order to make this study as objective as possible; in order that the Legislature may make a wise determination on legislation before us or which may be brought before us, we have endeavored to present all sides of the problem together with the report of problems collateral thereto.

It is the recommendation of the committee, in this instance, and with particular reference to the Los Angeles Area, that enabling legislation be enacted before the existent conditions become intolerable and the expense and cost too great. By this we do not endorse any particular plan but make as the—

Second recommendation, that any survey authorized to be made shall report as to the feasibility and desirability of rail transportation on the surface, subways, and suspended rail transportation or monorail.

Since the original preparation of the material herein contained, members of the Legislature have received a brochure entitled, "Davino Suspended Rapid Transit System," which is referred to only and not incorporated as part of this report since each member is in possession of a copy of the original document and it was not solicited or considered by this committee.

Respectfully submitted for the Committee,

ERNEST R. GEDDES, Chairman  
Fact-Finding Committee on  
Highways, Streets & Bridges

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## INTRODUCTORY

Most of the material contained in this report has been prepared or in course of preparation for some time, but it has not been introduced and the report filed because of the fact that enabling legislation introduced at the 1949 Regular Session has not yet been set for hearing.

In fact, members of the Legislature are aware that the City Council of Los Angeles only recently refused to adopt a resolution endorsing proposed legislation sponsored by the "Rapid Transit Action Group" of the Los Angeles Chamber of Commerce.

We are well aware, who have been in touch with this problem, that this is a bitter blow to the proponents and since we have recommended that at least preliminary engineering should be undertaken, it has been decided to introduce the material gathered by this committee. Therefore, in the pages which follow, will be found the following sections;

1. Enabling legislation providing for formation of rapid transit districts.  
(Being a digest of material prepared for the 1948 Session of the Legislature.)
2. Monorails and freeways.  
(Being a statement by Lt. Colonel Geo. D. Roberts, Mechanical Engineer.)
3. An exposition of the Babcock Plan.  
(Metropolitan Mass Transport System as designed by Henry A. Babcock and sponsored by Geo. D. Rowan.)
4. A report on statistical data and trends applying to the transit industry in the United States. *pp 26-52 By Geo. D. Rowan, Father*  
(Submitted by T. L. Wagenbach.)
5. Excerpts from reporters transcripts of proceedings before the committee January 12, 1949.  
(Largely the testimony of proponents of legislation before the Legislature at this time.)

## SECTION I

# ENABLING LEGISLATION PROVIDING FOR FORMATION OF RAPID TRANSIT DISTRICTS

### 1. BACKGROUND

There was prepared at the time of convening the 1948 Regular Session a preprint of a bill proposed to be introduced to provide enabling legislation for the formation of metropolitan transportation districts.

It was generally conceded that such legislation would probably not qualify as properly coming before a budget session, and it was proposed that the Governor call a special session to run concurrently with the regular session.

Regardless of any obligation which the Governor may have owed the Rapid Transit Action Group, sub-committee of the Metropolitan Traffic and Transit Committee of the Los Angeles Chamber of Commerce, for their support of his "Highway Program" legislation at the 1947 Session, the Governor side-stepped the issue and said that if a sufficient number of the "Los Angeles Delegation" petitioned him in favor of the legislation he would issue such a "Call for a Special Session."

Those favorably disposed did not number a majority of the delegation and the matter did not come before the session.

There was, however, some consideration given the subject. Various members of the Assembly requested opinions from the Legislative Counsel bearing on various phases of the question.

These questions and opinions in reply thereto appear for the most part in the Journals of the session and among them were the following:

#### *Reply to Questions by Assemblyman Geddes*

1—Whether existing statutes might be amended in "Budget Session."

2—Comparison of existing statutes and proposed act. (Journal, p. 616), and the opinion given to Mr. Kilpatrick (Journal, p. 622).

It will be readily determined from the tone of these queries and the replies, as well as from a reading of the transcript of the proceedings of a hearing held in the Assembly Chambers by this committee, that the urgency of the matter lay in this—

1—Freeway construction in Los Angeles was proceeding apace.

2—The proposed mass transportation plan proposed to place rails within the freeways, and again time was of the essence.

Personal and local issues were injected into the matter and the legislation never officially saw the light of day, since it was at once apparent that there would be little disposition to take the time and effort necessary to make a proper determination in the matter, and the proponents withdrew from the immediate scene.

Meanwhile, the RTAG (The Rapid Transit Action Group) has not been idle. New legislation to provide an enabling act has been worked out. To silence local opposition, perhaps, or to encourage local support it is now insisted that the plan advanced previously is not *the plan* but only a



plan, that a proper engineering study authorized as one of the preliminary steps to formation of a district must determine the proper plan.

This is too vague to satisfy many persons and communities and, since there must be at least some basis for estimate and visualization, we submit herewith not only a plan, but probably "the plan" as first presented, and probably lingering as an afterglow at least in the minds of Neil Petree and his associates.

Let the reader draw his own conclusions—at least the material submitted is pertinent, valid to considerable degree and a clear statement of the problem and a proposed solution and, perhaps, of sufficient substance to provide a point on which to build legislation of more than academic interest.

### 1. THE R. T. A. G. PROPOSAL

It is hard to credit the assertion that the Rapid Transit Action Group of the Los Angeles Chamber of Commerce had no specific plan in mind when pressuring the Governor and the Los Angeles Contingent of the State Legislature to adopt enabling legislation for the creation of a Metropolitan Transportation District. Especially is this true when reviewing the printed brochure "Rail Rapid Transit Now!" released by the above organization in February, 1948 and filed with this committee by Neil Petree at the San Fernando hearings. We refer specifically to pages 2 and 3, where it is set forth—

#### THE PROPOSED NEW SYSTEM

**Financing**—The most economical construction for a rail rapid transit system in the metropolitan area is in the center strip of the planned freeways. Some of the highway main lines will be used to pay for any of the cost of the system.

**Design**—Each dual-purpose freeway with facilities for autos and rails will be designed to specifications approved by the State Division of Highways. All safety features in the most modern freeway will be incorporated into these highways. The wider center strip for rail operation will, in fact, be an added safety feature and the rails will not interfere in any way with automobile traffic.

**Routes**—Rail lines are recommended where ultimate patronage will justify the cost of installation. This system can be expanded, if necessary. Bus lines will operate on the outer reaches of freeways, connecting to the terminals of the rail lines as finally determined.

Bus lines may operate from intervening areas and supplement rail service to major centers. They may also operate on other radial and cross-town freeways where they can provide service more effectively or where patronage does not warrant rail service.

Rail operation is recommended on the following freeways:

1. Santa Monica Parkway.

2. Olympic Parkway—While this operation is shown as a rail line, future conditions will determine whether it should be developed as a rail or bus rapid transit route.

3. Inglewood Parkway.

4. Harbor Parkway.

5. Ramona Parkway.

6. East 10th-Pas.

7. In portions of the Hollywood Parkway as follows:

The ideal route to Hollywood and to the San Fernando Valley is from the Hill Street Terminal in a subway to a point about one thousand feet west of Glendale Boulevard on the Hollywood Parkway, thence along the Parkway to about Harold Way, thence off the Parkway in private right of way and cut-and-cover subway along Selma Street to the site of the proposed Crenshaw Parkway, thence north to Chatsworth Pass in private right of way, or in the Crenshaw Parkway, if available.

If present construction precludes use of the Hollywood Parkway east of Vermont Avenue, the rail line should run in a subway from the Hill Street Terminal to the intersection of the Santa Monica and Hollywood Parkways, where they can be placed in the Santa Monica Parkway without delaying completion of the rail route.

Alternate routes are either more expensive, offer less service to the public, or would delay rail construction.

The following routes will be operated in private right of way:

1. To Long Beach and San Pedro. This route will initially connect with the East 10th-Pas. and may ultimately connect with the Harbor Parkway at Imperial Boulevard.

2. To Bellflower, via the Santa Ana line connecting into the East 10th-Pas.

3. To Pasadena and Monrovia. This route will connect to the East 10th-Pas. and may ultimately run into the Hill Street Subway.

4. To Burbank and Glendale, operating into the Hill Street Subway.

The routes operated in private right of way will be immeasurably improved by grade separations and train-controlled traffic signals.

**Stations**—Los Angeles—With the above facilities in the freeways and in private right of way it will be necessary to provide adequate terminal and distribution facilities in the downtown area. The minimum should be substantially as recommended in 1945 by Charles E. DeLoew, employed as a consultant by the City of Los Angeles to study the transportation requirements of the Los Angeles Metropolitan Area. This includes:

1. A rail line in the East 10th-Pas. to the 10th and Main Streets Terminal from Aliso Street on the north to Washington Boulevard on the south.

2. A subway in Broadway from the vicinity of 6th Street to the vicinity of 10th Street with connections into East First Street, into Main Street via Broadway Place to the Harbor and Inglewood Parkways and possibly to the Olympic Parkway.

3. Expansion of the Hill Street Subway Terminal to provide additional capacity.

4. Pedestrian subways connecting the Broadway Subway to Hill and Spring Streets at each station.

Increased flexibility of operation and improved distribution of passengers would result from an additional subway under Hill Street which would have connections to the Hill Street Terminal and might be converted to either, or possibly both, the freeways at the southerly side of the business district and the rapid transit routes to the north and east.

The estimated cost of such facilities has been included in the accounts which it is believed should be covered by overall financing powers of the district. They should be included in thorough studies to be made by independent engineers before the final construction plan is determined upon.

Either a change of policy or a change of strategy is to be noted in the weekly publication of the Los Angeles Chamber of Commerce—"Southern California Business."

In the issue of December 8, 1948, we read:

#### MAYOR WILL HEAD LEGISLATIVE PLAN ON FORM RAPID TRANSIT DISTRICT

A digest of enabling legislation for formation of a Metropolitan Rapid Transit District will be presented December 12th before members and guests of the Metropolitan Traffic and Transit Committee, according to Chairman Neil Petree.

The group, at a dinner meeting in the Biltmore Hotel Main Room, will hear the legislation as revised and developed by the committee's legal and finance sub-committees, Petree said.

State legislators from the Los Angeles area, the county board of supervisors, and the city council have been invited to attend the meeting.

In developing the legislation it is recognized that a comprehensive transportation system is needed for the entire community, not just for one city or section, Petree said.

He emphasized the need for enabling legislation to form a transit district as the first step toward obtaining any rail, rapid transportation.

"The proposed legislation is planned only to permit establishment of a transit district. It does not contemplate any particular plan—the district's dimensions will be empowered to employ engineers for that purpose," the committee chairman pointed out.

"We are anxious that the district be formed so that studies necessary to recommend a transit system can be made," he said.

The following is to be found in the issue bearing the date line of a week later, as follows:

#### TRANSIT ACT PROPOSAL OF FOR ENTRY

A version of a Rapid Transit District Act, prepared by the legal and finance subcommittee of the Metropolitan Traffic and Transit Committee, will be offered for committee approval tonight at the Elks Club Hotel, according to Chairman Neil Peters.

"We hope it is clearly understood," Peters said, "that this is simply a proposal for an enactment by the State Legislature to place a law on the books to permit formation of a rapid transit district which would be empowered—after approval of the voters—to bring about installation of mass rapid transportation facilities."

"This preliminary draft, prepared by legal and finance groups under the chairmanship of James L. Burke, represents the combined thinking of the best brains we could find. It was drawn after consultation with our state legislators, city attorneys, and other officials of cities in Los Angeles County to make sure that all previous causes of disagreement would be ironed out."

"It is possible that before this suggestion is offered to the Legislature it will have been amended many times. This committee is prepared to consider further suggestions brought to its attention by any group in the county—or elsewhere, for that matter."

"I cannot emphasize too strongly that we consider this proposal to be feasible. We are particularly anxious that it be acceptable to every community interested in obtaining mass rapid transportation facilities."

"If that is not the case now, we want to hear about it so we can make the necessary amendments and, finally, as before the Legislature with a measure which the Los Angeles County delegation can support unanimously," Peters said.

Again we refer to the Brochure "Rail Rapid Transit Now!" particularly pages 12 and 13, where it states:

#### THIS IS ACCOMPLISHED BY THE

**First**—The need for rail rapid transit has been clearly demonstrated to the satisfaction of all who have studied it throughout the years. The latest statement is that of the California State Public Utilities Commission in a report dated June 18, 1947. The report said, in part:

"The most important conclusion one can draw is that, unless provision is made for rail rapid transit lines in these freeways, where they are needed today, Los Angeles will, in all probability never have a rapid transit system."

"It is estimated that rail rapid transit in a freeway can be provided at approximately 12 percent to 20 percent additional to the cost of the freeway, alone, while separate rapid transit systems, whether on private right-of-way, elevated structures, or in a subway under city streets, would cost several times this amount."

"In other words, Los Angeles can today obtain a rapid transit system for a fractional part of what one will cost in the future. Any delay or procrastination will be fatal and plans must be made now to build the rapid transit system simultaneously with the freeway system."

**Second**—A rail rapid transit system is recommended and agreed to by the Rapid Transit Action Group. This system includes rail lines in the Santa Monica, Olympic, Inglewood and Harbor and Pomona Parkways, and the East Bu-Pas, although it was agreed that future conditions would determine whether the Olympic line would be operated as a rail or bus rapid transit route. It includes rail operation in portions of the Hollywood Parkway for an ideal route in Hollywood and the San Fernando Valley. It also includes operation on existing private right-of-way from Glendale, Burbank, Long Beach, San Pedro, Redondo, Baldwin Park, Pasadena and Monrovia. All of these lines would lead into a downtown distribution system.

It is recommended that financing be planned so as to provide sufficient capital for the construction of the entire system.

This recommendation assumes the operation of bus routes on radial and cross-town freeways serving areas between the rail lines. It also assumes operation of buses connecting to the terminals of rail lines on some freeways, the operation of buses on the same freeways with rail operation, where desirable, and the development of surface feeder services to the rail rapid transit operation.

**Benefits**—The benefits to the people of the community will be general—to those who will be able to walk to stations on the rail lines, to those who will ride in the rail lines by surface transit vehicle or by automobile, to those who will continue to use surface transportation, and to those who will continue to use their cars.

Riding time will be materially cut. The cost will be far less than the cost of driving and parking a car. Rail rapid transit is the one big improvement that can be made that will attract thousands of automobile riders to mass transportation. This will reduce congestion and will enable thousands to reach their destinations quickly, comfortably and economically.

**Costs**—The investment cost of the entire system is estimated at \$710,000,000. This includes the cost of additional right of way, additional construction cost in freeways, improvements to private right of way, cost of subways, track and roadway, stations, and terminals and signal equipment. Annual costs will be about \$11,450,000.

**Revenues**—The annual operating revenues are based on an estimated fare of 12 cents a mile, collected by zones. The boundaries of the zones beyond the inner zone are about four miles apart. These fares would meet the estimated operating costs.

**Financing**—A plan for necessary legislation has been proposed. All the additional costs of providing rail rapid transit in freeways would be borne by other than highway-user taxes. A district, called the Metropolitan Rapid Transit District, should be formed to carry out the rapid transit needs of the community.

#### BUT THIS IS NOT TO BE DONE

**Legislative Action**—It is imperative that legislation be prepared for and passed by the 1948 State Legislature that will permit the formation of a financing district for rail rapid transit service in the Los Angeles metropolitan area. This legislation must be passed this year to permit the district to acquire right of way within the freeways where construction is now imminent. This is particularly true of the Hollywood Parkway. Through the commendable cooperation of the State Division of Highways, the letting of certain key contracts has been delayed to permit rapid transit installation. This delay cannot extend beyond May, 1949. This makes it imperative that the district be formed and funds laid prior to that time so that funds can be available for the purchase of the right of way and the additional construction costs.

**Additional Studies**—This agreement on routes, costs, revenues and financing by the RTAD is the result of many months' work and detailed study. It is, however, only the first step in obtaining rail rapid transit. This work should be checked by other competent engineering authorities before bonds are issued by a district.

**District Organization**—As soon as the Legislature authorizes its organization a Metropolitan Rapid Transit District should be formed. Further studies should be carried on at the organizing stage to determine exactly how this additional right of way and the distribution system here proposed can be operated.

All of these negotiations and further work should be the responsibility of the district. The people of the community should demand that this district be formed as soon as possible and should agree to the adequate financing and the conferring of powers on the district so that it can treat with operating companies that could give an adequate rail rapid transit service to the community.

**Sale of Bonds**—As soon as firm agreements are reached with operating companies, after costs, routes and revenues are further studied and approved, bonds could be issued. The district then can commence the acquisition of right of way, and enter into the necessary contracts for the building of the system.

#### Then We Can Have Rail Rapid Transit Now

Even questions of the saving of time in traveling to Los Angeles, fares, patronage and revenues as well as the cost of the proposed system have been worked out. This is clear from a reading of pages 8-9-10 and 11 of this brochure.

On page 8 we find:

#### HERE ARE THE TIME SAVINGS

These schedules are based on peak running times from the Los Angeles downtown area for purposes of comparison. Time savings between intermediate points are in proportion.



	Present rail	Present bus	Proposed rail	Rail savings
Hollywood (local).....	40	—	15	25
Hollywood (express).....	36	—	10	26
N. Hollywood (local).....	66	—	30	36
N. Hollywood (express).....	50	30	18	40
Van Nuys (local).....	91	—	45	46
Van Nuys (express).....	80	71	34	54
Beverly Hills.....	50	39	17	42
Santa Monica.....	79	72	30	49
Culver City.....	42	39	18	25
Venice.....	58	—	28	30
Manhattan and Market (Inglewood).....	57	—	18	39
Imperial and Figueroa.....	—	50	17	33
Watts.....	34	—	14	20
San Pedro.....	67	—	42	25
Long Beach.....	62	—	40	22
Redondo.....	54	—	30	24
Elmhurst Park.....	67	—	33	34
Oceanside Junction.....	75	—	15	18
Pasadena.....	51	—	27	24
Monrovia.....	58	—	30	28
Glen Dale.....	52	30	22	30
Barham.....	58	47	38	20

#### On page 3 we find:

##### HERE'S WHAT THE SYSTEM WILL COST

The following costs were determined after detailed study of the RTAG and its engineers. The cost breakdown is based on right of way, construction other than track, including sidings and stations; and track, roadway and signals. It is difficult to allocate costs of any single part of the whole system, since each portion of the system depends on the other parts of the system for its efficiency and benefit to the community. These estimates are based on present-day costs, with the usual allowance for engineering. Cost of 500 two-car articulated units has not been included since the Metropolitan Rapid Transit District paid not finance this equipment, although the charges for financing the equipment are included on page 30—The Balance Sheet. The number of cars was based on a cost per passenger during the peak hours of travel.

It will possibly be necessary to make adjustments in existing operations to cover capital losses caused by installation of rail rapid transit service. This adjustment is shown as a separate item.

Right of way.....	\$49,379,000
Construction, other than track, including stations.....	227,454,000
Track, roadway and signals.....	27,892,000
Capital adjustment.....	50,000,000
<b>Total.....</b>	<b>\$254,725,000</b>

##### PATRONAGE AND REVENUE

Figures for patronage are based on ultimate desirable population in the metropolitan area as shown by the latest studies of the County Regional Planning Commission. These studies showed, not only the amount of population, but its ultimate distribution. The estimated patronage was the basis for the ultimate rail rapid transit system, as recommended.

Rail lines were laid out on a map in the various freeways proposed to be built in the area, and in private right of way. Agreement was reached as to the amount of patronage each line would serve. This agreement was based on experience, past traffic checks and future service on the basis of a cost per passenger. Final decision as to the lines to be recommended was based on whether the patronage thus determined would justify the installation of rails.

It was determined that a fare equivalent to about 2½ cents a mile was reasonable and would meet the financial requirements of the system. This was applied as a 10-cent fare in the inner zone with free transfers, and with a 20-cent additional fare for each additional zone of about four miles.

The estimated patronage and revenues for each line are shown in the table below. Lines with long portions of identical track are grouped.

Route	Annual patronage	Annual revenue
Hollywood-San Fernando Valley.....	30,700,000	\$11,310,000
Santa Monica.....	20,100,000	7,200,000
Olympic.....	25,000,000	4,800,000
Harbor-Inglewood.....	30,100,000	10,020,000
Long Beach-San Pedro-Santa Ana.....	25,800,000	8,300,000
Barham.....	17,500,000	5,140,000
Pasadena-Monrovia.....	25,000,000	7,400,000
Glen Dale-Barham.....	17,000,000	4,250,000
<b>Annual Totals.....</b>	<b>226,500,000</b>	<b>\$79,150,000</b>

#### On page 10 is given:

##### THE BALANCE SHEET

The annual operating statement (at the right) shows that the rail rapid transit system as planned, and based on the ultimate patronage, would be economically feasible. The annual revenues have been broken down in the section, Patronage and Revenue.

##### THIS IS WHAT COMES IN:

Gross passenger revenue.....	\$79,150,000
Less revenue collected for other operations supplying connecting service.....	7,700,000
<b>Total.....</b>	<b>\$71,450,000</b>

##### THIS IS WHAT GOES OUT:

Track maintenance.....	\$2,150,000
Equipment maintenance.....	7,700,000
Power.....	1,750,000
Traffic.....	191,000
Transportation.....	8,430,000
Administration and insurance.....	3,252,000
Depreciation and amortization.....	11,092,000
Taxes.....	12,140,000
Operating costs (net).....	2,000,000
Interest.....	5,670,000
<b>Total Costs.....</b>	<b>\$71,450,000</b>

#### On page 11 are recommendations for:

##### THE FINANCING

Recommendations for financing a proposed rail rapid transit system were made by a finance committee composed of City, County and State representatives, private investment men, and lawyers. These recommendations are the basis for the drafting of legislation.

The Money—Funds for a rail rapid transit line must come from some source other than highway-user taxes, even though the lines are placed within the roadways of a freeway. For a system of this magnitude, bonds must be issued. The issuing authority should be a metropolitan rapid transit district patterned somewhat after the Metropolitan Water District.

Organization—The first step in organizing a district would be a petition of a small number of signers or it could be initiated by the board of supervisors. Notices should be posted and full hearings given. Approval would be by a majority of the votes cast, plus a majority of the units in the proposed district, counting each city as a unit, and the unincorporated territory as a unit. The district would be administered by an appointed board of directors.



**Powers.**—The district would be empowered to acquire property by lease, purchase or condemnation; to construct improvements; and to levy a limited tax for administrative expense, the maximum not to exceed 2 cents on each \$100 of assessed value. It would have the power to take over rights of way purchased by the city, county or State and pay for such rights of way.

**Taxes.**—It is believed that the district should have the power to recommend a tax levy only to pay any portion of principal or interest which is not paid from revenues. Taxes could, therefore, not be levied for the purpose of making up any operating deficits of the companies which would operate the lines. Taxes would be levied similar to a school district. The budget would be set by the board of directors. The amount of any levy would be collected by the county authorities and deposited in the county treasury.

**Indebtedness.**—The district should have the power to issue bonds and incur indebtedness only upon approval by a vote of the people.

**Leases.**—There should run a sufficient time for the operating company to amortize its selling stock but the term should be as short as is consistent with that purpose.

The leases must contain provisions which would insure rapid transit. The board of directors should have the power to approve operating regulations or schedules and to approve all equipment used by the operating company or companies in order to prevent the use of obsolete equipment or the purchase of equipment of a type which will not carry out rapid, speedy and safe transit.

The leases should be drawn on such a basis that the principal and interest of the bonds issued by the district will be paid from revenues.

## SECTION II

### MONORAILS IN FREEWAYS

Perhaps the most concise description of the Suspended Monorail as a possible solution to mass transportation problems is to be gained from the article submitted to the chairman by Lt. Col. George D. Roberts. The item appearing at pages 12 and 13 in the December, 1948 issue of the California Monthly (Journal of the University of California Alumni Association) is quoted below.



SUSPENDED MONORAIL

A Practical Solution to the Big City's Transit Problem

By GEORGE D. ROBERTS '17

During and since the war, many American metropolitan communities have been strangled with traffic almost to the point of the passenger's inability to travel to and from downtown areas and suburbs.

In some cities there is a near breakdown of mass transportation facilities and in others the over-use of the private automobile has resulted in stagnant street congestion, critical parking problems and a rising accident rate.

In California, the East Bay region, the San Mateo Peninsula and the San Fernando Valley have been particularly aggressive in attempting to solve their problems. The City of Oakland and its civic groups have made diligent progress in determining the best methods of transportation for particular conditions. The combination of overhead, surface and subway is probably the formula suitable to the general situa-

tion—the subway confined to the limits of a city's downtown area for passenger dispersal, the overhead for the long interurban hauls and buses on the surface as cross-town feeder lines.

Pacific Monorail System, Inc., was organized in 1946 to explore the big-city transportation problem and to prepare the basic engineering design for an overhead monorail system, consisting of lightweight cars, resembling an airplane fuselage, suspended from a single rail with individual electric drives from a power line. This engineering work has now been completed. The consultant in charge is Allen E. Packett (Harvard '40), of the California Institute of Technology, and the report was prepared by J. M. Montgomery & Co. of Los Angeles.

Mr. Packett visited Germany last year and inspected the Wupper Valley line. He reported:

On my visit to that area in the fall of 1947, I was greatly impressed by the almost complete lack of destruction of most of the buildings and industrial establishments in that district. It was, therefore, a considerable surprise to come upon the Wupper Valley monorail line in full operation, with all essential equipment required, in the midst of ruined buildings and bombed streets. Cars operated on a frequent schedule and were filled nearly to capacity.

After talking to the engineers in charge of the installation, I learned that the monorail was still an essential link in the transportation system for the Wupper Valley, and was, therefore, one of the first things to be restored to the area to be completely repaired. From the standpoint of its service to the local population, it still seems to be dependable, safe, and very efficient.

It certainly performs admirably its function of providing rapid transportation, separated from other traffic, in a region which is otherwise extremely crowded, congested by old, winding streets, and generally unsuitable for other means of rapid transit.

The German system, therefore, is the parent of monorail. Its record over the past 40 years surpasses all other transportation facilities; lowest construction cost, lowest operating charges, freedom from major replacements, accident-proof, speed, comfort and dependability.

Our engineering data proves that the monorail structure, switching devices, stations, shops and equipment can be produced for less than one-tenth of subway cost per mile and for less than one-half of surface lines cost. Rights-of-way present no problem because the upright standards to which the rails are attached demand ground space of only six to eight feet in width.

The freeway center strip as designed is adequate without the purchase of property for additional width which surface lines would require. The fast operation from terminus to terminus would necessitate fewer cars and substantially less labor than surface lines. Grade crossings with the high accident rate and heavy insurance reserves would be a problem of the past. Stops for pick-up and dispersal should be four to five miles apart, and the average speed including stops can be safely achieved at 60 miles per hour.

Overhead transportation in cars suspended from a rigid single rail has been proposed time and again during the past 25 years, but usually by visionaries unsupported by scientific research, or capital. As a result so-called "monorail" has been branded by some people as fantastic and impractical.

Our studies during the past two years have convinced us that the real reason why suspended transportation systems had not been built generally in Germany, despite the successful operation of the Wupper

Valley line, was that ever since 1909 Germany has been either getting ready for war or recovering from the effects of war—with steel always critically short for civilian needs.

Why haven't suspended systems come into popular use outside of Germany? The answer to this is that traffic conditions in and around our big cities did not assume the desperate proportions presently prevailing until the recent war years, and we managed to get along somehow with the established facilities of street cars, buses and interurban trains. The hazard of grade crossings has become a major factor only in the last five years. The concentration of population around many of our big cities developed during the war, forcing residential building miles distant from working centers and making transit speed and comfort a "must" as never before.

In February of this year, the Rapid Transit Action Group of Los Angeles presented publicly their plan for surface lines on the freeways and at the same time proposed a financial plan based on a revenue bond issue of \$150,000,000, contingent on the creation of a metropolitan transit district. When this plan for such a district was presented at Sacramento to the caucus of Southern California assemblymen, their support was not obtained. The legislators did not like the transportation plan for which the district was to be created and, as a result, there was an enabling legislation at that time.

Now, the various needy sections of the state, the East Bay, the Peninsula and the Los Angeles area are coordinating their plans to seek from the Legislature at its regular session in January a uniform enabling act creating the respective transportation districts. The plan now is not to write into the legislation any specific transportation method but to grant to the districts broad general powers, leaving to districts and their engineers the study and decision as to the sole or combined use of overhead, surface and subway facilities.

Every modern technique applicable to the monorail project that was developed in the seven years of war preparation and production should be drafted into the structural and operating elements of the engineering design to prove monorail's desirability and practicability to civic groups, the engineers of city, county and state; councilmen, supervisors and legislators, many of whom stand first for the protection of all established forms of transportation; and the intelligent, unprejudiced engineers who can only be impressed by design and plan, backed by engineering which follows to the letter all best modern practices.

In other words, the story of monorail must prove a thoroughly modernized design, must utilize all engineering and material developments which bring beauty, strength, durability, safety and speed into the final result. There must be no blanks where essential data will be glaringly lacking.

Switching, braking, stopping, starting, propulsion and providing for all emergency incidents, etc., are illustrative of the "running" elements that must be adequately supported by engineering.



All of this our engineering covers.

The U. S. Department of Commerce reported in a letter dated April 2, 1947: "The German Henschel system is mechanically satisfactory as a public utility in respect to service, tariffs and profits. For service and income, the line holds the best record of any transportation system in existence."

In fairness to all parties who appeared before this committee with constructive suggestions this report should include a description of the "Habscock Plan". We submit herewith a presentation filed with the chairman by Henry A. Habscock.

### SECTION III

## METROPOLITAN MASS TRANSPORT SYSTEM

Proposed for the Los Angeles Area  
Designed by Henry A. Habscock, Consulting Engineer  
and Sponsored by George D. Rowan

### DESIGN OF PLAN

The proposed Metropolitan Mass Transport System for the Los Angeles area is designed to eliminate the deficiencies and inadequacies of existing types of mass transportation.

The new system has been designed to:

1. Cover the more densely populated areas in such a way that all of the people can make use of the facilities.
2. Provide travel from any point to any point with especial emphasis on cross town travel. (The demand for travel other than into and out of the central business district constitutes eighty percent (80%) of the total demand.)
3. Have sufficient passenger-carrying capacity to meet not only present but future requirements.
4. Permit future extensions into new areas without slowing up or altering the service originally provided.
5. Carry passengers faster, more conveniently, more comfortably and with greater safety than is possible with the private automobile.
6. Be self-supporting and self-liquidating.
7. Enhance property values generally, without favoring any particular areas.

### TYPE OF SYSTEM

The new system, designed to meet the above stated objectives comprises two parts:

1. A network of single-track, underground tubes, carrying high-speed, semi-automatic electric trains, specially designed, serving the central, more densely populated, 175-square mile area which, at the present time, has a population of 2,000,000.
2. A system of surface feeder-lines, carrying motor buses, inter-urban cars, trolley coaches and streetcars, serving the outer, less densely populated areas and transferring passengers to the underground tube system.

### FEATURES OF THE UNDERGROUND SYSTEM WHICH AFFECT THE INDIVIDUAL PASSENGER

1. Stations are located in staggered diamond pattern in such a way that the maximum walking distance is one-half mile (four long blocks). The average walking distance is considerably less.
2. Entrances to tube stations are reached from the sidewalk without crossing street traffic.
3. Fares are inserted in coin-operated turnstiles, at street level. (A 10-cent universal, or flat, fare is contemplated.)
4. Station platforms are 12 feet below the sidewalk and are flush with the car floor.



5. Three wide, automatic, safety doors are provided on each side of the car.

6. Each car is equipped with sixty (60) comfortable seats.

7. Warning is automatically given before starting for the benefit of passengers not yet seated.

8. Acceleration and deceleration are at predetermined, comfortable rates and are automatically controlled.

9. All transfers are synchronized. At each transfer station, trains arrive at approximately the same time. Transfers are made by walking across a 12-foot platform directly into a waiting train. Trains at a transfer station are connected by an electric circuit which causes them to depart simultaneously.

10. Minimum frequency of synchronized service, throughout the system, is one train every five and one-third ( $5\frac{1}{3}$ ) minutes. During peak rush hours, the frequency can be increased to one train every forty (40) seconds.

11. The average speed of the trains, which is the same throughout the system, is forty-five (45) miles per hour, inclusive of stops for loading, unloading and transferring. Any station can be reached from the Central Business District in less than twenty-five (25) minutes. Typical trips range from five and one-third ( $5\frac{1}{3}$ ) minutes to twenty (20) minutes.

12. Maps of the metropolitan area are provided at each station together with a device which issues, to a passenger desiring it, a printed slip of paper with simple directions as to how to make the particular trip he is contemplating.

13. Each car is provided with a route map and a moving light indicator, in full view of the passengers, to indicate the locations of the train at any moment.

14. There is no skip-stop, local or express service, and, therefore, no waiting on the platform for a particular train. Each train, as it stops at the platform, loads all passengers accumulated since the previous train left.

#### PASSENGER-CARRYING CAPACITY OF THE SYSTEM

The "bottleneck" of mass transportation systems is in the central business district. Only 20 percent (approximately) of the total travel in a metropolitan area is into and out of the central business district but, because this travel comes from all directions, it is necessary to move it at high speed to avoid congestion with its attendant "backing up" and delay of the other travel.

In the proposed Metropolitan Mass Transport System, there are 12 radial loops, all of which enter and leave the central business district. The trains on each of these loops traverse the central business district in  $5\frac{1}{3}$  minutes. With 10-car trains at 40 seconds headways, the system is capable of handling 648,000 seated passenger per hour. The present demand is approximately 210,000 per hour. With the new system, an ultimate metropolitan population of 10 to 12 million can be served.

The passenger-carrying capacity of the loops outside of the central business district is sufficient to meet any foreseeable need.

#### DESCRIPTION OF THE STATION AND TRACK PATTERN

The stations on the underground tube system are arranged in a staggered diamond pattern in such a way that there is no double coverage and the minimum number of required stations for 100 percent coverage is provided. These stations are connected by one-way, single tracks, in the form of "radial", "crosstown", and "circular transfer shuttle" loops. For any one loop, the stops are one-mile apart and yet the maximum walking distance to any station is one-half mile. This station and track pattern is shown on the accompanying map.

In the central business district there are 15 stations. The 12 radial loops enter this district and each of them stops at four of the stations. The track and route pattern is such that a passenger can make a synchronized, across-the-platform transfer from any line to any other line; can enter via any line and get off at any station; and can get on at any station and depart via any line. This central business district station and track pattern is shown on the accompanying map. A drawing showing the four-track, three-platform stations used in the central business district is also attached hereto.\*

#### TYPE OF CONSTRUCTION USED IN THE UNDERGROUND SYSTEM

With the exception of the central business district, the underground system is made up of square, reinforced concrete tubes, 12 feet x 12 feet inside dimensions, located immediately under the street pavement. The circular transfer shuttles are of the same construction but are tunneled under private property at the corners.

The tubes are built in two parts. The invert slab is placed at the bottom of an open ditch. This slab carries the ties and rails and supports the entire weight of the train. The cover is a precast reinforced concrete horseshoe section, 6 feet 4 inches long, and weighing 33,000 pounds which is placed over the slab and then grouted and waterproofed. These sections overlap to form a tight joint. The construction is completed by back-filling and then repaving the street. The tube is designed to withstand earthquakes.

The central business district construction is of conventional design. At no point, does it encroach upon private property.

The stations are reinforced concrete platforms, 12 feet wide, so designed that each can ultimately be extended to a length of 600 feet to accommodate a 10-car train. All transfer-station platforms are located between the tracks.

There are no switches or grade crossings in the system except those used to get trains onto the loops from the storage yards and shops. All crossings are grade separated.

Power distribution is high voltage, alternating current, to transformers and rectifiers located throughout the system. Direct current is supplied to car motors by a third rail.

An automatic, moving-block system is provided to prevent rear-end collisions.

\* Not reproduced herein. E24

### RELOCATION OF UNDER-STREET UTILITIES

At the present time, in the streets under which it is proposed to construct the mass transport tubes, there are sewers, storm drains, water pipes, gas pipes, electric cables, etc. In order to construct the tubes it will be necessary to relocate these. The new water and gas pipes and the electric cables can be incorporated in the tube itself. In many instances, sewers can be left in place by locating the mass transport tube to one side, but the laterals will have to be redesigned and rebuilt. Except in the central business district and at some outside corners, the storm drains will not have to be relocated. An estimate of the cost of relocation of the under-street utilities has been included in the total cost estimate. It is not intended to require the privately-owned public utility companies to relocate their lines at their own expense.

### CONSTRUCTION PROGRAM AND FUTURE EXPANSION

On the accompanying map is shown a complete network of underground tubes designed to meet the current needs of the metropolitan area. However, it is not necessary to construct this entire system before any of it can be put into operation. There are two types of construction programs which will permit the system to be built section-by-section and allow the part constructed to be put into operation as soon as it is constructed. One of these programs would entail the construction of all or part of the central business district system and the loops adjacent to this central district. These loops could then be extended, segment by segment, in all directions. The other program would proceed along the lines of first constructing the most-needed radial loop and then following this with the other radial loops and their accompanying crosstown loops and transfer shuttles. In this connection, it should be noted that any crosstown loop or any circular transfer shuttle can be omitted entirely or added at a later date. The omission of one or more of these loops does not affect the coverage (except at the end of the loop) or the possibility of traveling from any station to any other station. It does, however, increase the time required to make certain trips.

Future expansion of the system into areas not now sufficiently populated to warrant the expense of construction can be accomplished by simply extending the radial and crosstown loops shown on the accompanying map. Such future expansion requires additional cars but does not slow down or alter the service previously established.

### ECONOMICS OF THE PROPOSED SYSTEM

The two major transit companies now operating in the Los Angeles area are carrying 491,000,000 riders per year, local traffic only. In addition, the interurban traffic is 48,000,000 riders per year.

In the year 1947, the gasoline tax paid in Los Angeles County was \$30,700,000. This tax was at 3 cents per gallon which shows over one billion gallons consumed. Even at 12 miles per gallon, this consumption indicates two billion six-mile automobile trips per year.

The primary function of the proposed Metropolitan Mass Transport System is to divert as much as possible of this automobile load onto the





UNDERGROUND TUBE SYSTEM

With Motor Bus and Interurban Feeder Lines Metropolitan Mass-Transport System





UNDERGROUND TUBE SYSTEM

With Motor Bus and Interurban Feeder lines. Metropolitan Mass-Transport System

Henry A. Belzack, Consulting Engineer

rail and surface systems. It is estimated that the new system (if it were all in operation) would attract at least five hundred million riders per year who now use private automobiles. On this basis, the immediate potential of the new system would be approximately one billion riders per year. The revenue estimates given herein are based, however, on 900,000,000 riders per year.

With a 10-cent flat fare, this patronage would produce \$90,000,000 per year gross revenue.

The operating expenses of the new system are relatively low, on a percentage basis. The low operating ratio is the result of the high average speed which reduces the labor cost per passenger-mile; the power saving which results from the use of regenerative braking in conjunction with synchronized-staggered train operation; the reduction in taxes, because the system is publicly owned; the reduction in administrative and operating expense by the elimination of zone fares, paper transfers, weekly passes, dispatchers, conductors, etc.; and the reduction in accident claims brought about by off-surface safety operation.

It is estimated that the total operating expense, inclusive of maintenance and replacement of cars, will be approximately 50 percent of the gross revenue, or \$45,000,000 per year.

The estimated required investment for the entire underground system, including cost of new cars, alteration of existing systems, interest during construction, bond discount, and relocation of under-street utilities, is \$1,000,000,000.

With an average annual interest charge of 3 percent and a 60-year bond retirement, the average annual debt service will amount to \$36,100,000. With an estimated net income of \$45,000,000 available to meet this charge, there is a balance of \$8,900,000 per year for contingencies, profit to the operating company, and to cover errors in these estimates.

The above figures do not take into account future increases in revenue from future increases of population.

#### FINANCING PLAN

It is proposed to create a Metropolitan Mass Transport District by act of the State Legislature. This district will employ engineers to prepare final plans for the system and make conclusive estimates as to costs and net returns. Guaranteed revenue bonds, legal for trust funds, will be issued during the construction period and the proceeds used to build the underground system, purchase the cars and equipment and pay the alteration and relocation costs. The system will remain the property of the district in perpetuity. An operating company (a privately owned public utility) will be formed by merger of existing franchise holders, or otherwise, and this operating company will operate the entire system under lease from the district at a rental equal to the annual debt service of the bonds plus the administrative expenses of the district. The taxpayers of the district will guarantee the payment of the rental that is, if in any year the operating company should default in the payment of rent, then a tax would be levied to make up the deficit.

The preliminary estimates of revenue, expense, and cost of the system, indicate that the net income derivable from passenger fares will be amply sufficient to cover the required rental.

NOTE: All figures given herein are based on preliminary estimates and are subject to revision after detailed plans and analyses are completed.

(Signed)

HENRY A. BARCOCK  
Consulting Engineer

#### SECTION IV

### DATA AND TRENDS APPLYING TO THE TRAFFIC INDUSTRY

PACIFIC ELECTRIC RAILWAY COMPANY  
Los Angeles 14, California, March 3, 1949

Mr. Ernest R. Giddens

*Chairman Committee on Highways, Streets and Bridges  
State Capitol Building, Sacramento, California*

MY DEAR MR. GIDDENS: Recalling the dinner at Story House, Claremont Men's College, last June 24th, and the discussion following with reference to interurban transportation in this area:

I felt you would be interested in the enclosed report on "Statistical Data and Trends Applying to the Transit Industry of the United States" as submitted to our President, Mr. O. A. Smith, by Mr. Arthur C. Jenkins, Consulting Engineer, who was engaged specifically for the purpose of aiding the Pacific Electric Railway in finding a solution to the problem of a modernized interurban transportation for the people it serves in this area.

Yours truly,

T. L. WASHBURN

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*Before The*  
PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA  
Applications Nos. 23053 and 27400, and  
Case No. 4843

### A REPORT ON STATISTICAL DATA AND TRENDS APPLYING TO THE TRANSIT INDUSTRY OF THE UNITED STATES

PACIFIC ELECTRIC RAILWAY COMPANY  
Los Angeles, California  
October 13, 1948

Submitted by:  
Arthur C. Jenkins  
Consulting Engineer

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# STATISTICAL TRENDS APPLYING TO THE TRANSIT INDUSTRY OF THE UNITED STATES

## A—DISCUSSION

### Introduction

Although there has been much information written in the various trade journals applying to the transit industry, relative to the history of mass passenger transportation operations, their present status and the probable outlook for the future, the material is ordinarily included as a part of many other items and not assembled in a complete fashion.

In an attempt to bring together a few of the related features that will explain the transformation taking place in the industry and give some clue as to the possible future, there have been assembled certain historical data and factual information of a statistical nature. The first section of the report provides a general discussion of the background of the transit industry and the second section treats more specifically the factual data and statistics upon which the discussion is based. The principal theme of this document is to indicate the existence of a natural trend of surface passenger transit service away from operations by electrified rails and toward use of rubber tired vehicles, as a means of meeting the increased adversity of financial deficits that over the past years have become an inherent part of rail operations. This has been due in large part to the inability of fixed rail facilities to meet the fluid character of modern day living as introduced by the flexibility of travel afforded the general public through the private automobile.

The second element of primary control is the relatively high cost of operations of rail service and the very great magnitude of original investment with uncertainties as to the possibility of amortization over the relatively long period of years normally used in setting up amortization schedules for rail facilities.

### Rail Facilities Displaced by Modern Development

In this country and abroad the rapid rise and fall of industries of various natures is not at all uncommon. Every year this sequence is followed by many characteristic American industrial developments. Ordinarily the Public Utilities field is considered by the general public to be more or less exempt from the risks involved in other lines of industry and considered to be more or less comfortably protected by various utility regulatory agencies of the various states and the Federal Government.

This cyclic rise and fall in industry is a demonstration generally of the developments in human progress and scientific application of natural resources in new fields and for new purposes. The business and industrial world generally accept these radical changes as an inherent part of the field of endeavor they have selected. In most cases it is the public demand that forces the changes in an effort to bring into practice application on a commercial basis the various discoveries and inventions produced by the army of scientists in this country.

During the past 50 years particularly, there should be hardly a person of mature age who cannot look back over his lifetime and recall a multitude of changes in the technical applications of the many mechanical, electrical and chemical processes upon which his daily life is largely dependent. In our most basic utility fields this march of progress has been highly manifested. To compare the present day telephone with that of 25 or 50 years ago brings out the tremendous changes that have taken place in its application for greater speed, greater reliability and longer distances, with development of mechanical and electrical exchange mechanisms to replace the less positive and far less competent handling of such routine duties by human hands.

A most typical example of the changes that have taken place in the utility field and the effects of competition between them, can be seen by comparing the electrical utilities with the gas utilities. The electrical industry is relatively a new one and less than fifty years ago the use of illuminating gas was a common method of lighting. Gas was used for heating, power and many other purposes that have subsequently been taken over by electrical energy. We need only look at some of the large manufactured gas installations in California, and huge plants in other parts of the country that have been relegated into the field of obsolescence and in some cases maintained only for standby purposes as a result of new discoveries in the field of scientific developments.

Even with all of these changes and the tremendous investments that were rendered useless and a loss to their owners, there has been a continuing upward trend in those phases of progress that meet to the benefit of the general public.

In the fields of urban passenger transportation utilities, the forces of obsolescence have been disastrous. There was a day when the horse car was considered to be the latest and most modern development in mass transit facilities. That vehicle was rendered antiquated when the electric street railway came into being in 1858, only 70 years ago. The horse car, the cable car and the steam powered dummies were cast aside in favor of the new electrically propelled vehicle. With twenty-five years after introduction of the electric street railway, it began to feel the effects of competitive attack, and before its fiftieth anniversary in many locations it had succumbed to its competitors.

The secret of the electric railway was the combination of central power supply, overhead wires for power distribution and the electric motor directly geared to the wheels of the cars. In 1890 there were 789 companies operating 8,123 miles of single track, of which 1,261 were powered by electricity. By 1902 there were 987 companies operating 22,576 miles of single track almost exclusively powered by electricity. In the peak years of 1922 single track mileage according to the census of electrical industries stood at 43,341. It has been estimated that hardly any American town of over ten thousand population was without at least one railway promotion scheme before 1910 and in most cases actually were built.

Along with this development of electricity for operation of urban transit vehicles, there followed further development and expansion into the field of rapid transit in the metropolitan areas. In 1922 there were

601 miles of elevated railway with subway mileage of 225. Along with these developments, came the expansion into the fields of suburban and interurban transportation.

In the 1920's the devastating effect of the privately operated motor vehicle began to be felt and from that time to this, its inroads upon urban, suburban and interurban transit operations have been continuous and more greatly accentuated. The automobile industry is almost as old as the electric railway but its development was slower and it did not actually become competitive in an effective fashion until after the first world war. Whereas prior to the advent of the automobile on a material scale, transit operators enjoyed a relative monopoly in the transportation of persons to and from their work during the week and to and from points of recreational activity on week ends, the increasing use of the automobile progressively cut into both of these fields.

#### *Change in Scope of Importance*

It is not beyond the memory of most of us to recall the days when large real estate subdivisions were brought into being and developed largely, if not wholly, through the effects of the electric transit lines. These rail lines were extended in the early days from the central business districts of cities through the residential areas and into the thinly settled territory beyond. As a result there was a growth of populated areas along the rail lines with numerous new communities developing and growing. Except for the very few paved roads and unpaved county roads in the early days, the railway provided about the only means of transit.

From the period of approximately 1917 to 1927, although in some of the larger cities the annual number of revenue passengers remained more or less constant, there was a significant change in the character of riding. In the first place, pleasure riding on transit lines practically ceased. The number of Sunday and holiday passengers declined about 20 percent as a result largely of the automobile and the increasing recognition of summer vacations. During that same period on the other hand, the use of transit facilities on business days increased slightly, especially during the winter months together with an accentuation of travel during peak hours of the day.

#### *Introduction of the Motor Bus*

Automotive competition with rail lines came primarily from the motor coach and secondarily from the taxi cab. In the early 1920's, there was a short period of time during which almost every type of automobile, dilapidated and otherwise, was running competition to the street railway. The name "jitney bus" was given to these competitive vehicles which established the practice of charging a flat 5-cent fare. In most cases neither the cars nor the operators were licensed, and in many instances the vehicles were unsafe. Their practice was largely to concentrate upon the more lucrative territories of the street railway system, running along the same streets picking up passengers ahead of the cars. Despite the harmful effect of the jitneys, they were the forerunner of the legitimate motor coach operator.

The Bureau of Census reported 301 motor coach lines for 1927 and 496 in 1932. Of these lines, 208 were operated by electric companies and 230 were operated as successors to electric companies. As a result of this



trend of competitive advantage on behalf of the motor coach, the revolution in the industry can easily be demonstrated throughout the entire country. This situation is not one that is peculiar to the State of California. As an example, in the State of Iowa in 1922, there were 22 electric railway companies operating 975 miles of track. In 1923 there were but three city electric railways and not more than three interurban railways in operation. Similarly, in Georgia, there were 11 railway companies operating 458 miles of electrified track. By 1933 there were only two electric street railways remaining, one in Savannah and the other in Atlanta, neither of which were conducted at a profit. Their continued operation was possible only through support of the electric power companies of which they were a part.

#### Change in Traffic Pattern

Even in the early days of transit development, its success was largely dependent upon the fact that its traffic load was somewhat evenly spread throughout the hours of the day and throughout the days of the week. It was the primary mode of transportation. That traffic pattern, however, was changed radically as the automobile has grown in its magnitude of use. The condition existing today is one wherein it can almost be said without question that the traffic carried by transit operators consists of necessity riders. The automobile, almost without exception, has taken over the pleasure and recreational riding and in a large measure, the taxicabs have provided a means of travel for those persons who to a large extent would fall in the fringe of the off-peak traffic.

Together with this positive trend of reduction in traffic on transit lines to those of the essential category, there have come other elements that accentuate the adverse problem and confront the carriers with continuous financial deficit. The span of peak hour travel, both morning and evening, has gradually been reduced to where a large percentage of the total day's traffic is concentrated within a period of two hours in the morning and two hours in the evening. This condition has been further aggravated by the continual upward trend in labor costs and the progressively more restrictive provisions in operating labor agreements. The average patron of the transit line commences his day's work between 8 and 9 o'clock in the morning and finishes between 4 and 5 in the evening. The time it takes for him to get to his work and to get from it is a problem he must solve and one which ordinarily his employer is not concerned with. This person, however, must be brought to his place of employment in the morning and taken to his home at night, both travel intervals being beyond his normal eight hours of work. It is obvious that for a transportation operation to accommodate this large volume of traffic, its equipment and employees must work hours that cover a wider span than that of the mass of employees being carried. Despite this fact, there has been a continuing movement toward reducing the hours of spread of operations and trainmen to more nearly conform with those of the average office and business worker. This condition has thrown an added cost burden upon the carriers, particularly in view of the fact that a large number of employees are used only for a short period of time in the morning and a short period in the evening, being non-productive throughout the major part of their work shift.

#### History of Financial Adversity

Looking back over the past years of transit industry, we see a continuous procession of bankruptcies and receiverships. Whereas the traction haven of the 1900's was the symbol of swollen profit in street railways, the question now appears to be whether to do without service or to subsidize some agency, in order to insure its survival. The fundamental cause of this crisis has been the unique character of the service provided. Transit operators stand ready with equipment and facilities to deliver people from one point to another. Such service requires minimum schedules and a correspondingly fixed amount of equipment, no matter how slack its use may be. The commodity sold, namely, service, has but one use and is highly perishable. A partially filled vehicle passing along its route has a potential service to sell. Once it has passed by, that potentiality perishes yet its costs are nevertheless incurred. Whereas, gas, when threatened in its early days by electric competition for the lighting business, could and did develop new loads, the street railway is being attacked by competition of the automobile has no measurable alternate service to develop. It must stand or fall solely on its ability to meet the competition.

The tremendous conversion in transit operations from electrified rail service to rubber tired vehicles comprises one of the many efforts exerted on behalf of transit operators to obtain relief from the financial squeeze that is becoming more drastic with the passing of years, and to perpetuate its existence, there has been a continuous struggle for survival in the industry over the period since inception of the automobile on a large scale. In the early days of development of the electric railway system, huge investments were required for the acquisition of property and construction of fixed facilities, including track and roadway, electrical distribution and transmission as well as power conversion facilities. Although such projects were launched upon what appeared to be a financially sound basis, if there had been no competitive element involved, the amortization period due to the nature of the facilities was over a long period of years and the financial bind that ultimately developed for many of the properties resulted from their inability to meet their financial obligations under the reduced volume of traffic and the increased costs of doing business.

Under such circumstances it is no wonder that the transit operators have chosen to take advantage of the shorter amortization periods that are possible when providing service by rubber tired vehicles, where the heavy first investment in fixed facilities is not required. They have seen and studied the history of the transit industry and as any good business man should, they have profited by those experiences and taken steps to protect their investments by avoiding the pitfalls of their predecessors.

Therefore, in analyzing the transformation that has taken place in the transit industry, further recognition should be given to the basic causes of that transformation and not too much weight thrown upon what may appear to be from outward indications the manifestation of financial benefit to other industrial agencies. The condition in which the transit industry finds itself today is one that has come about through natural causes and is typically an example of the workings of nature in many other enterprises. Any private industry developed upon private capital



must operate in accordance with a simple financial formula. Its income must be greater than its outgo or it ceases to exist.

#### Survival Through Rubber Tires

Transformation from rail to rubber tired vehicles has been a means to the end, and without question has been the only means by which many cities and communities have not been entirely deprived of passenger transportation service. In evaluating this problem of mass passenger transportation in the transit field, the conclusion is evident that weighing all elements, the interests of the public from the point of its ultimate comfort and convenience is in conflict with the inscapable elements of the financial interests of private carriers. All will no doubt concede that in a thickly populated metropolitan area where traffic concentrations are at extremely high density, the individual person would be accorded a much more comfortable and convenient mode of transportation by a sparsely arranged, large capacity rail car with a seat per passenger and equipped with all modern conveniences of ventilation, air conditioning, temperature control and such, than he enjoys in riding on rubber tired vehicles under present operating conditions.

It is furthermore obvious to anyone acquainted with the practical aspects of the problem and the financial reactions involved, that such commodities and deluxe service by electric rail facilities cannot possibly be provided to the public by private capital. This situation has been demonstrated over and over again and the soundness of the theory is justified by experience in the past. It might be said, and probably will, by some that the downfall of the transit industry should be largely attributed to failures of management to fulfill its mission.

In certain isolated cases, this theory may be possible of proof. However, it does not follow a logical process of reasoning to contend that such is the case when the entire industry throughout the country embracing all major cities and practically all of the smaller cities have experienced the same conditions. There is just no other answer than that mass transit operations by rail have been passing through a natural period of decline that has been in general entirely beyond the control of management and owner.

#### Exhausting Sources of Relief

In its fight for survival, the industry has fairly well exhausted all sources of financial relief as of the present time. When the change in economic conditions began to take on harmful proportions as indicated above, the heavy investments in fixed facilities and property threw a burden upon the companies that in many instances could not be supported out of earnings. As a result there was a long series of bankruptcies and receiverships. The first major effort of the surviving companies to combat the problems confronting them was to resort to financial reorganization in an effort to reduce the burden of fixed charges.

The next major step was to take advantage of the economies available through operation of one-man street cars and the conversion of electrical substations and other facilities to automatic control to the fullest extent possible.

As the financial deficits continued to creep upward, the industry was forced with the necessity of abandoning rail facilities in favor of rubber

tired vehicles as a means of not only affecting economies in transport requirements, but also to obtain relief from the heavy costs of maintaining track and roadways, the high cost of taxes on extensive land holdings required by rail operations and to obtain relief from the drastic and often times unreasonable burdens of franchise requirements imposed upon them for use of public streets, by municipalities and other political subdivisions.

In marching through this procession of economic measures, there has also been an attendant upward trend in passenger fares. Both conditions have tended to drive away patronage. The only reason that in some large metropolitan areas there appears to have been a continuing upward trend in total traffic is the fact that the rate of increase of population has more than offset the rate of decrease in riders per capita.

#### Private Capital Cannot Subsidize the Public

There is one school of thought that deplores the idea of abandoning and removing railway tracks, primarily based upon the possible use of such facilities in case of national emergency such as confronted the country during the last war. It is true that great benefit was derived by the war effort through existence of the remaining tracks that could be used for transporting passengers to and from the war industry in lieu of using smaller capacity motor coaches requiring rubber tires that were extremely scarce and consuming gasoline that was needed for other phases of the war effort.

In no less degree such rail facilities would be of immeasurable value in the event of another conflict, however, the tolls of war and the cost of waging it are recognized as being properly levied against the peoples of a nation as a whole and it is entirely beyond any concept of reasonable application of economic theories in a domestic country such as this, that private industry should maintain and perpetuate facilities that might be necessary in national defense when they cannot be maintained excepting at a very heavy financial loss to their owner.

#### Simple Survival Formula

The one simple rule of economics must always be kept in mind whether it applies to transit operation or any type of business or industry, and that is that all commercial enterprises are entitled inherently to a reasonable return upon their investment in the way of a profit as a reward for their efforts. For any other concept to be enforced by governmental authority would be tantamount to confiscation of property without due process of law. There is nothing mysterious about the situation in which the transit industry now finds itself. To the contrary, the picture is very clear. The operators must take in more money than they spend, be subsidized or go out of business.

Unfortunately the gloomy financial atmosphere of the transit industry has created in the minds of many people, including to a large extent the operators themselves, the thought that to conduct a property on the basis of just breaking even is a demonstration of unusual managerial ability and too many operators are satisfied with such a condition.

#### Mass Transit and the Automobile Closely Related

There is one very important element that is almost completely overlooked in the efforts of the various agencies under present day conditions

to cope with the mass transit and the municipal congestion problems. The agencies concerned with the problems of mass transit facilities, operations, traffic and fares are almost entirely disassociated from the agencies concerned with providing the facilities, conveniences and comforts for the private automobile despite the fact that the two are inherently related. Transportation means the hauling of a person between two points regardless of whether the act is accomplished by use of a mass transportation vehicle or a private automobile. The only differences are the economies involved and the convenience to the person traveling.

We are all well aware of the tremendous sums of money that are spent annually, particularly in California, for the construction and expansion of a myriad of highways, roads, freeways, bridges, grade separations and such, designed primarily for convenience of the private automobile. All of such facilities are constructed and administered by governmental agencies and the motorist makes use of them freely and without direct charge.

Placing people on a basis of equality and considering two persons, one traveling by automobile between his home and place of business and the other traveling by mass transit facility, the objective of each is the same. The means of accomplishment differ only to the extent of the type of vehicle used. Each must pay for his transportation. One person owns the vehicle in which he travels and the other person travels on a vehicle owned by a transportation company. One pays a fare and the other pays for the cost of fuel, upkeep and depreciation on his vehicle. Out of the fare paid by the one person on the mass transportation vehicle, a proportionate amount of the cost of fuel, maintenance, upkeep and depreciation of that vehicle is paid. The person traveling on the transit vehicle should certainly be entitled to just as much consideration as a person traveling in the private automobile as to the use of streets and public facilities.

On the one hand, large sums of public money are spent to accommodate the automobile and consequently to increase the volume of its use, thereby taking passengers away from mass transit facilities. At the same time the public demands that the transit operators continue to provide a high standard of service to meet obligations of taxation and franchise requirements.

On the one hand, in the interest of the motorist there appears to be an unlimited reservoir of money for expansion and development of roadways and freeways which further aggravate the traffic and transit congestion problem. On the other hand, the financial resources of the transit operators become worse as time goes on.

#### Transit Lines Lose Grip on Urban and Suburban Developments

The day when passenger rail lines constituted the basis for urban development has passed. Actually in many cases the area adjacent to electric passenger lines has become blighted in character. New growth of population has followed the route of the new high speed automobile highways, and in many cases the electric rail lines have been left to feed a wilting population, despite the fact that the cost of providing service has been continuously upward.

In this modern age, community development follows the course of the automobile and not mass transportation. The usual sequence is for

residential areas to develop at locations entirely remote from mass transit facilities. In those instances the population is content and actually prefers to be served only by their private automobiles. Then, as happened during the last war when restrictions upon use of private automobiles develop, there is great clamor for extension of mass transit facilities to serve those areas, which in most cases do not possess the potentialities sufficient to support transportation lines.

Throughout the country generally, there has been a continuous decline in the number of miles of electrified interurban passenger lines. As the mode of life of the population has changed to meet the conveniences of the automobile, the relatively long rail lines operating in a suburban, interurban or intercity category have dropped out of the picture.

#### Effect of Joint Freight Operations

In some instances certain of the lines when their passenger traffic began to decline, seized upon the possibilities of cultivating freight business. Many lines with profitable freight business were able to survive while other equally good lines with nothing but passenger traffic, were forced to abandon service.

It became a part of the law that electric railways interchanging freight railroads with steam roads would be classified officially as short line steam railroads, even though electrically operated and for many years in the past had been considered as typical interurban lines. They are obliged to pay the same payroll taxes for pension and unemployment and to meet the requirements of the Railway Labor Act upon the same basis as the large steam roads. During the past few years fact finding boards have awarded employees continuous pay increases and have ruled that the short lines, including the former interurbans, must meet the same wage increases.

Those lines that are fortunate enough to derive a fairly large percentage of their revenue from freight business have been able to offset the increase in costs by increased freight rates. However, those less fortunate lines whose preponderance of business is passenger service have not been so successful in passing increased operating costs on to their consumers and have been as a consequence, thrown closer to or deeper in a deficit.

### 8-TRENDS AND STATISTICS

#### 1947 in the Transit Industry

In retrospect the year 1947 was one of conflicting experiences for the transit companies. While industry-wide levels of traffic and revenues held up remarkably well on the average, postwar adjustment produced a wide range in the trends represented by individual properties. In some of the smaller cities where war-born industries converted to peacetime production, transit traffic continued to increase. For the industry as the whole, the peak in traffic was reached in 1946.

Data available on automobile registration for a number of cities and for the overall United States total seems to imply that the competition factor in the mass transportation field as represented by the passenger automobile has returned in almost full force, and this undoubtedly accounts in substantial measure for losses of traffic by some local transit



### Financial Results 1932 to 1947

Chart No. 6 and Table No. 2 to which it corresponds, shows the results of financial operations for the transit industry from 1932 to 1947 inclusive, over a 16-year period and emphasizes the tremendous impact of rising costs on the economy of the transit industry. While total operating revenues were higher in 1947 than in any preceding year with the exception of the peak year of 1946, nevertheless the operating ratio of expenses to revenues, which has been increasing steadily for the past four years reached the point in 1947 where 89.67 cents of each dollar of revenue was needed for operating expenses with taxes taking in 7.54 cents, operating income out of which the return on investment must be met was left with an inadequate 2.39 cents—the smallest amount in any year covered by the table. This condition as applying to the national picture, of course, is even at its worst a material improvement over the varying condition of Pacific Electric. The chart also shows the rapid rate at which labor costs have been increasing as percentage of total operating expenses.

### Trend in Between Different Types of Vehicles

Chart No. 7 in combination with Table No. 3 indicates the trend from 1922 to 1947 of total transit passengers in the United States by types of service. This data has been segregated between the various modes of transportation and it will be noted that whereas in 1927 73 percent of the total was carried on surface railway cars with only 13 percent on rubber-tired vehicles, the ratio has changed until in 1947 only 36 percent were carried on surface rail cars and 52 percent on rubber-tired vehicles.

Chart No. 8 and Table No. 8 show for the period 1922 to 1948 the trend in city transit operations on properties of various types. Eight hundred eighty-five American cities formerly served by street cars now rely exclusively on motor coaches for their public transportation. From December, 1944, to December, 1947, the number of surface street cars decreased by 5,573 vehicles. During that same three-year period, 30,560 rubber-tired vehicles were put into service. In 1948 the number of cities in the United States with populations in excess of 10,000 was 1,078. It is significant to note that between 1922 and 1948, the number of cities served exclusively by bus operations increased from 18 to 885, and those with a combination of rail and bus service decreased from 197 to 117. Whereas in 1922 there were 560 cities served by rail exclusively, in 1948 there were only five.

### General Comparison

Table No. 1 attached to this exhibit provides comparable data relating to the transit industry throughout the country. It is significant to note that out of a total investment in transit facilities of about \$4,000,000,000, \$3,230,000,000 represents investment in rail facilities or approximately 82 percent and rubber-tired vehicles represent only 18 percent of total investment. As to total passengers carried, rail facilities only handled about 48 percent and rubber-tired vehicles 52 percent. This contrast is striking when it is considered that only 18 percent of the total investment in transit facilities handle 52 percent of the traffic.

### Trend of Vehicles by Types and Miles of Route

Table No. 5 shows for the year 1947 the number of new transit vehicles delivered during that year by different types and by different

population groups. For the group of cities with population in excess of one million, out of 3,095 vehicles delivered, 2,692 were rubber-tired vehicles and only 401 were street cars. Taking all cities, out of a total of 12,612 new vehicles, 12,594 were rubber-tired and only 626 were street cars. Rubber-tired vehicles represented approximately 85 percent of the total.

The bottom portion of the tables shows a comparative trend of equipment by types delivered by years since 1936 to 1947.

On the second page of Table No. 5 is shown the total number of transit vehicles in 1947 segregated by population groups and types of vehicles. On the basis of this total approximately 67 percent were rubber-tired vehicles. To give an indication of the area coverage by the different types of transit vehicles, the bottom portion of the second page of Table No. 5 shows that 88,167 miles of rubber-tired groups were operated as compared with 15,002 miles of rails, both on a round-trip basis.

Table No. 7 shows the trend of single track miles and round trip routing of transit operations in United States from 1926 to 1947. It will be noted from this chart that surface railway miles dropped from 50 percent of the total in 1927 to only 12 percent in 1947, with no measurable change in subway and elevated railroads, whereas rubber-tired vehicles increased from 49 percent in 1927 to 86 percent in 1947.



CHART 1

## RESULTS OF 1947 TRANSIT OPERATIONS

ITEM	1947	1946	%	1947	1946	%
OPERATING REVENUE	\$1,081	\$1,081	1.00			
OPERATING EXPENSES	955	1,025	1.00			
NET REVENUE	126	56	110.18			
FARES	125	125	115.56			
OPERATING REVENUE	97	100	100.00			
OPERATING EXPENSES	801%	8.00%	110.17			
NET REVENUE	104%	8.00%	110.17			
OPERATING REVENUE	8.00%	8.00%	100.00			

CHART 2

## PERCENTAGE CHANGE IN 1947 TRANSIT TRAFFIC BY POPULATION GROUP

TRANSIT GROUP	PERCENTAGE CHANGE 1946 TO 1947
SUBWAY & ELIMATED	+1.74
SURFACE LINES:	
POPULATION GROUP	
LESS THAN 10,000	-1.25
10,000-20,000	-1.85
20,000-30,000	-1.85
30,000-40,000	-1.85
40,000-50,000	-1.85
50,000-60,000	-1.85
60,000-70,000	-1.85
70,000-80,000	-1.85
80,000-90,000	-1.85
90,000-100,000	-1.85
100,000-110,000	-1.85
110,000-120,000	-1.85
120,000-130,000	-1.85
130,000-140,000	-1.85
140,000-150,000	-1.85
150,000-160,000	-1.85
160,000-170,000	-1.85
170,000-180,000	-1.85
180,000-190,000	-1.85
190,000-200,000	-1.85
200,000-210,000	-1.85
210,000-220,000	-1.85
220,000-230,000	-1.85
230,000-240,000	-1.85
240,000-250,000	-1.85
250,000-260,000	-1.85
260,000-270,000	-1.85
270,000-280,000	-1.85
280,000-290,000	-1.85
290,000-300,000	-1.85
300,000-310,000	-1.85
310,000-320,000	-1.85
320,000-330,000	-1.85
330,000-340,000	-1.85
340,000-350,000	-1.85
350,000-360,000	-1.85
360,000-370,000	-1.85
370,000-380,000	-1.85
380,000-390,000	-1.85
390,000-400,000	-1.85
400,000-410,000	-1.85
410,000-420,000	-1.85
420,000-430,000	-1.85
430,000-440,000	-1.85
440,000-450,000	-1.85
450,000-460,000	-1.85
460,000-470,000	-1.85
470,000-480,000	-1.85
480,000-490,000	-1.85
490,000-500,000	-1.85
500,000-510,000	-1.85
510,000-520,000	-1.85
520,000-530,000	-1.85
530,000-540,000	-1.85
540,000-550,000	-1.85
550,000-560,000	-1.85
560,000-570,000	-1.85
570,000-580,000	-1.85
580,000-590,000	-1.85
590,000-600,000	-1.85
600,000-610,000	-1.85
610,000-620,000	-1.85
620,000-630,000	-1.85
630,000-640,000	-1.85
640,000-650,000	-1.85
650,000-660,000	-1.85
660,000-670,000	-1.85
670,000-680,000	-1.85
680,000-690,000	-1.85
690,000-700,000	-1.85
700,000-710,000	-1.85
710,000-720,000	-1.85
720,000-730,000	-1.85
730,000-740,000	-1.85
740,000-750,000	-1.85
750,000-760,000	-1.85
760,000-770,000	-1.85
770,000-780,000	-1.85
780,000-790,000	-1.85
790,000-800,000	-1.85
800,000-810,000	-1.85
810,000-820,000	-1.85
820,000-830,000	-1.85
830,000-840,000	-1.85
840,000-850,000	-1.85
850,000-860,000	-1.85
860,000-870,000	-1.85
870,000-880,000	-1.85
880,000-890,000	-1.85
890,000-900,000	-1.85
900,000-910,000	-1.85
910,000-920,000	-1.85
920,000-930,000	-1.85
930,000-940,000	-1.85
940,000-950,000	-1.85
950,000-960,000	-1.85
960,000-970,000	-1.85
970,000-980,000	-1.85
980,000-990,000	-1.85
990,000-1,000,000	-1.85

CHART 3

## DISTRIBUTION OF TRANSIT REVENUE BY TYPE OF SERVICE

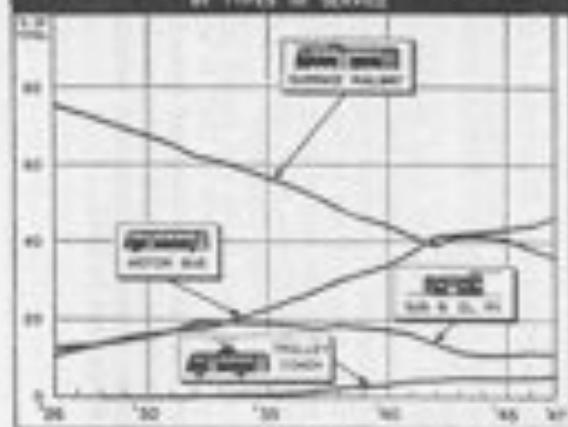


CHART 4

## EMPLOYMENT AND EMPLOYEE EARNINGS

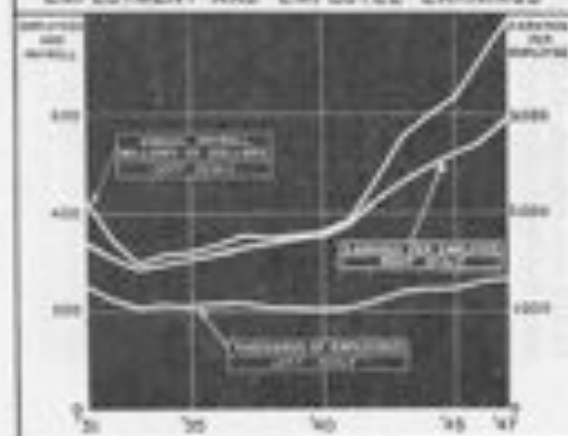


CHART 5

## TREND OF TRANSIT PASSENGER VEHICLES OWNED

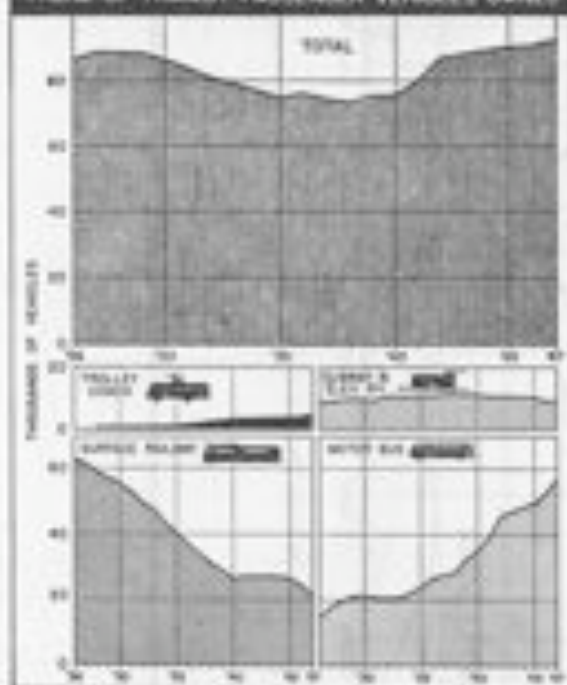


CHART 6

## 16 YEARS OF TRANSIT OPERATIONS

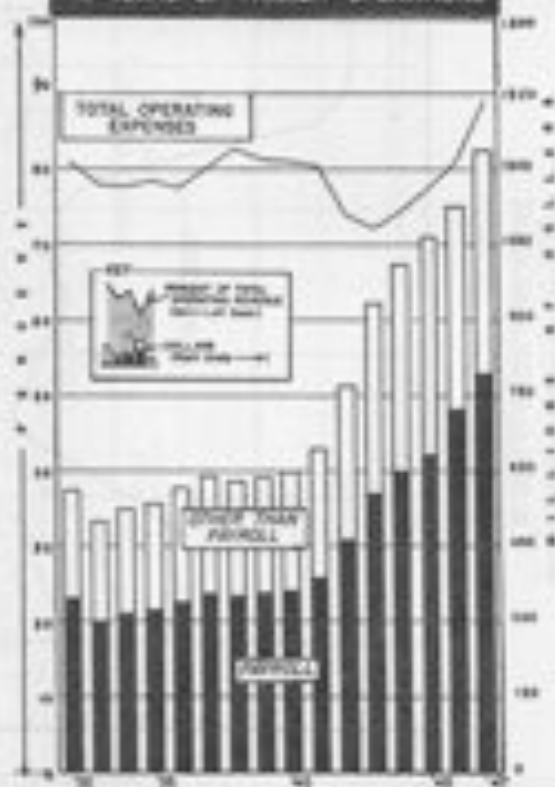


CHART 1.  
 RAIL TRANSIT PASSENGERS IN THE UNITED STATES  
 IN THOUSANDS OF PASSENGERS - 1900 to 1967

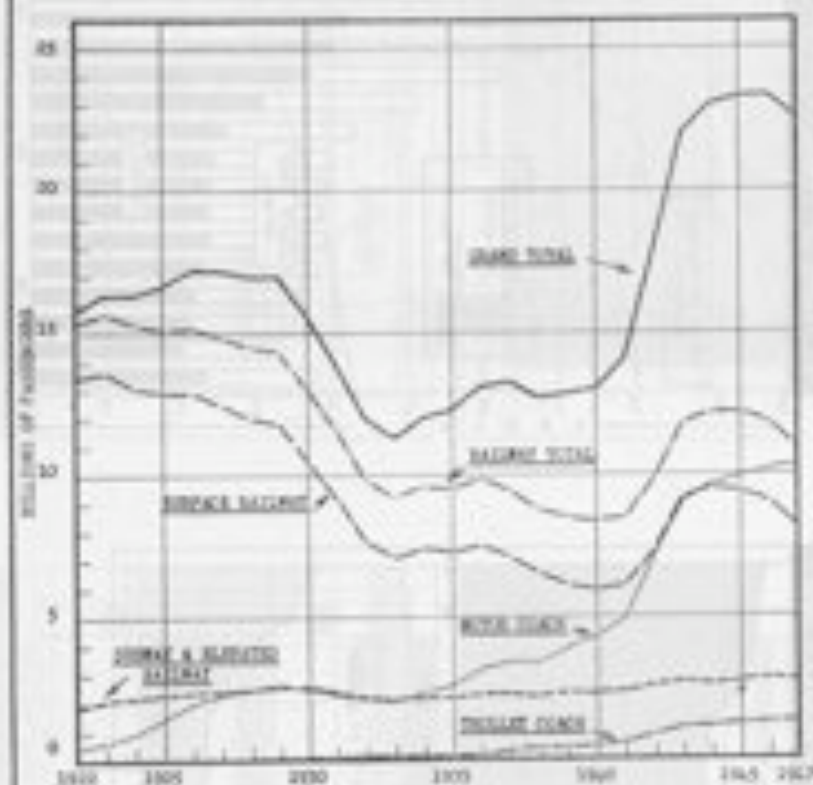


CHART 2.  
 TRENDS IN CITY TRANSIT OPERATIONS  
 (CITIES WITH POPULATION OVER 10,000)  
 (THOUSANDS OF PASSENGERS)

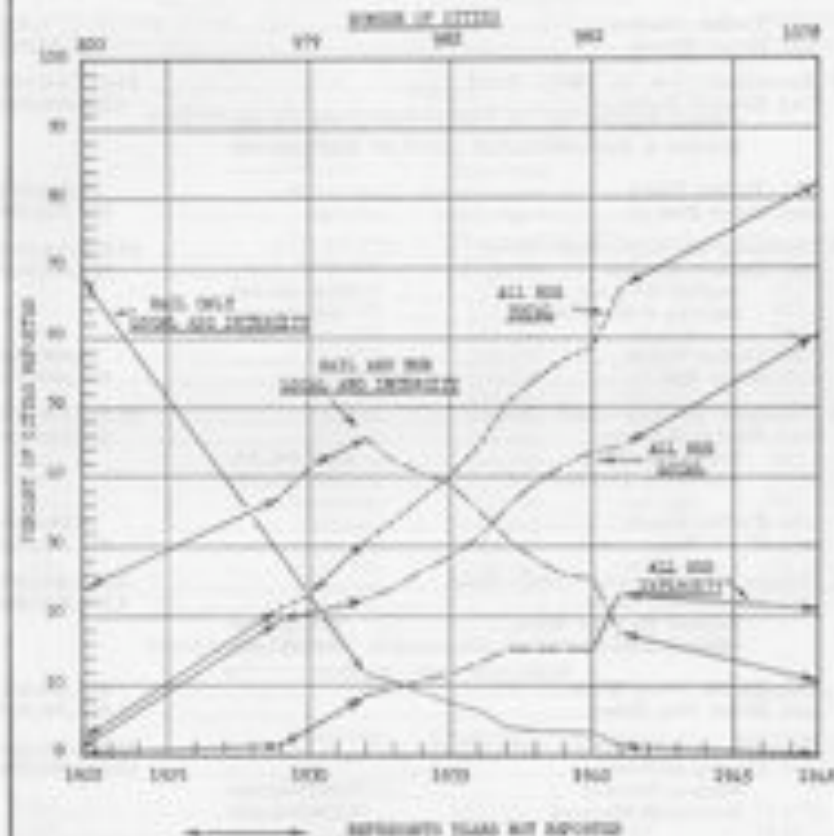


TABLE 1  
STATISTICAL DATA RELATING TO THE TRANSIT INDUSTRY IN THE UNITED STATES  
AS OF DECEMBER 31, 1947

1. Passenger Vehicles Owned (Dec. 31, 1947): Total	92,330
(a) Electric Railway Cars	30,731
Surface Railway Cars	21,907
Subway and Elevated Cars	8,824
(b) Trolley Coaches	4,032
(c) Motor Buses	56,567
2. Investment (Dec. 31, 1947): Total	\$1,077,300,000
(a) Electric Railway	3,220,000,000
Surface Railway	\$1,275,100,000
Subway & Elevated	2,000,000,000
(b) Trolley Coach	35,000,000
(c) Motor Bus	621,700,000
3. Operating Revenue—1947—Total	\$1,300,800,000
(a) Electric Railway	607,000,000
Surface Railway	\$508,300,000
Subway & Elevated	128,700,000
(b) Trolley Coach	76,500,000
(c) Motor Bus	617,300,000
4. Passenger Revenue—1947—Total	\$1,318,700,000
(a) Electric Railway	615,700,000
Surface Railway	\$512,400,000
Subway & Elevated	128,300,000
(b) Trolley Coach	76,500,000
(c) Motor Bus	626,500,000
5. Vehicle Miles Operated—1947—Total	3,342,000,000
(a) Electric Car Miles	1,201,000,000
Surface Ry. Car Miles	803,300,000
Subw. & Elev. Car Miles	397,700,000
(b) Trolley Coach Miles	155,100,000
(c) Motor Bus Miles	1,985,900,000
6. Total Passengers Carried—1947—Total	22,540,000,000
(a) Electric Railway	10,552,000,000
Surface Railway	8,000,000,000
Subway & Elevated	2,750,000,000
(b) Trolley Coach	1,356,000,000
(c) Motor Bus	10,632,000,000
7. Revenue Passengers Carried—1947—Total	18,287,000,000
(a) Electric Railway	8,545,000,000
Surface Railway	5,500,000,000
Subway & Elevated	2,000,000,000
(b) Trolley Coach	1,073,000,000
(c) Motor Bus	8,669,000,000
8. Number of Employees (Average 1947) Total	208,000
(a) Electric Railway	125,000
Surface Railway	81,000
Subway & Elevated	40,000
(b) Trolley Coach	11,000
(c) Motor Bus	154,000

TABLE 1—Continued  
STATISTICAL DATA RELATING TO THE TRANSIT INDUSTRY IN  
THE UNITED STATES AS OF DECEMBER 31, 1947

9. Pay Roll—1947—Total	\$750,000,000
(a) Electric Railway	377,000,000
Surface Railway	\$257,000,000
Subway & Elevated	120,000,000
(b) Trolley Coach	31,000,000
(c) Motor Bus	342,000,000

TABLE 2  
RESULTS OF TRANSIT OPERATIONS IN THE UNITED STATES  
1932 TO 1947, INCLUSIVE

Year	Operating revenue (Thousands)	Operating expenses (incl. deprec.) (Thousands)	Net income (Thousands)	Taxes (Thousands)
1932	\$506,498	\$502,800	\$123,040	\$51,621
1933	542,430	502,420	139,990	47,276
1934	674,308	525,490	148,818	49,133
1935	801,806	534,000	146,870	50,458
1936	722,300	565,140	162,730	56,309
1937	733,500	588,040	144,820	63,504
1938	700,800	579,680	121,116	65,723
1939	739,700	586,000	134,300	67,490
1940	737,000	598,000	139,370	62,698
1941	800,200	644,200	156,000	68,060
1942	1,040,000	598,200	270,418	128,650
1943	1,284,000	802,379	361,620	188,540
1944	1,282,300	1,012,079	350,220	190,220
1945	1,380,400	1,067,140	313,260	164,020
1946	1,307,100	1,128,430	267,670	129,020
1947	1,300,800	1,238,740	352,060	194,940

RESULTS OF TRANSIT OPERATIONS IN THE UNITED STATES  
1932 TO 1947, INCLUSIVE

Year	Operating income (Thousands)	Operating ratio	Taxes as percent of revenue	Operating income as percent of revenue
1932	\$92,618	80.81%	7.22%	11.80%
1933	92,610	78.25	7.37	14.47
1934	106,227	77.86	7.29	14.85
1935	98,012	78.20	7.81	14.09
1936	165,800	77.65	7.92	14.53
1937	91,514	80.28	8.08	11.09
1938	55,587	82.72	9.38	7.86
1939	68,001	81.39	9.27	9.24
1940	78,382	81.34	9.25	10.20
1941	89,237	80.50	8.55	11.15
1942	141,500	73.96	12.37	12.65
1943	174,000	72.50	14.40	12.50
1944	180,580	74.20	13.50	11.92
1945	149,730	77.31	11.89	10.77
1946	138,650	80.85	9.25	9.82
1947	47,320	89.07	1.54	3.59



TABLE 3  
TOTAL TRANSIT PASSENGERS IN THE UNITED STATES BY  
TYPE OF SERVICE—1922 TO 1947

Calendar year	Railway			Trolley coach (millions)	Motor coach (millions)	Grand total (millions)
	Surface (millions)	Subway and elevated (millions)	Total (millions)			
1922	13,388	1,942	15,330	—	484	15,814
1923	13,360	2,093	15,453	—	861	16,314
1924	13,305	2,207	15,512	—	989	16,501
1925	13,805	2,264	16,069	—	1,484	17,553
1926	12,875	2,336	15,211	—	2,000	17,211
1927	12,430	2,451	14,881	—	2,300	17,181
Percent	53	14	67	—	13	100
1928	12,000	2,490	14,490	5	2,408	16,903
1929	11,787	2,571	14,358	5	2,622	16,985
1930	10,503	2,559	13,062	16	2,479	15,557
1931	9,155	2,408	11,563	28	2,323	13,914
1932	7,848	2,304	10,152	37	2,136	12,325
1933	7,074	2,153	9,227	45	2,075	11,347
1934	7,304	2,096	9,400	48	2,579	11,927
1935	7,278	2,236	9,514	36	2,618	12,128
1936	7,260	2,323	9,583	143	3,179	12,745
1937	7,301	2,365	9,666	260	3,490	13,246
Percent	54	17	71	2	37	100
1938	6,545	2,236	8,781	369	2,475	11,625
1939	6,173	2,369	8,542	445	2,853	11,845
1940	5,843	2,392	8,235	554	4,220	13,009
1941	5,081	2,421	7,502	652	4,921	13,075
1942	7,290	2,366	9,656	680	7,245	17,581
1943	9,130	2,656	11,786	1,172	9,659	22,617
1944	9,535	2,621	12,156	1,294	9,896	23,344
1945	9,426	2,608	12,034	1,244	10,190	23,472
1946	9,027	2,655	11,682	1,251	10,332	23,265
1947	8,606	2,756	11,362	1,256	10,332	23,265
Percent	56	22	78	6	46	100

Source: Bureau of Public Roads, Department of Commerce, Bureau of Transportation Statistics, Washington, D.C., 1948.

TABLE 4  
REVENUE VEHICLE MILES OPERATED IN THE UNITED STATES BY EACH TYPE  
OF TRANSIT VEHICLE—1926-1947

Calendar year	Railway			Trolley coach (millions)	Motor coach (millions)	Grand total (millions)
	Surface (millions)	Subway and elevated (millions)	Total (millions)			
1926	1,821.9	206.1	2,028.0	—	49.7	2,077.7
1927	1,750.8	439.2	2,190.0	—	50.2	2,240.2
Percent	84	15	99	—	21	100
1928	1,679.1	434.5	2,113.6	1.2	633.4	2,748.2
1929	1,619.3	430.5	2,049.8	2.0	680.8	2,732.6
1930	1,549.4	424.8	1,974.2	3.0	765.8	2,743.0
1931	1,417.9	440.7	1,858.6	7.8	892.5	2,759.0
1932	1,296.7	423.5	1,720.2	9.5	960.5	2,790.2
1933	1,160.7	427.7	1,588.4	20.5	1,055.1	2,764.0
1934	1,142.7	428.8	1,571.5	34.6	1,111.1	2,717.2
1935	1,098.0	417.4	1,515.4	59.0	1,164.0	2,738.4
1936	1,090.9	461.6	1,552.5	29.5	1,244.2	2,826.2
1937	1,029.2	460.1	1,489.3	49.7	1,371.9	2,970.9
Percent	41	31	72	2	28	100
1938	922.3	421.4	1,343.7	67.9	1,494.4	2,646.0
1939	879.3	409.4	1,288.7	74.0	1,647.4	2,739.5
1940	844.7	420.8	1,265.5	80.0	1,784.5	2,850.0
1941	792.3	422.8	1,215.1	98.4	1,813.0	2,921.5
1942	829.4	400.0	1,229.4	125.7	1,812.0	2,967.1
1943	979.0	461.7	1,440.7	129.7	1,890.0	3,290.4
1944	977.9	461.0	1,438.9	152.3	1,713.5	3,244.7
1945	929.4	458.4	1,387.8	155.3	1,722.5	3,265.6
1946	891.5	458.9	1,350.4	145.7	1,807.2	3,303.3
1947	826.3	462.5	1,288.8	157.1	1,860.7	3,345.6
Percent	25	34	59	5	36	100

TABLE 5  
NEW TRANSIT EQUIPMENT DELIVERED IN 1947 CLASSIFIED ACCORDING TO  
POPULATION GROUP AND SEATING CAPACITY OF BUSES

Population group	Subway and elevated		Rider Base (Tolpact Only)						Grand total all vehicles
	seats	40-49 seats	Trolley coach seats	20 seats or less		40 seats or more		Total	
				seats	40-49 seats	seats	40 seats or more		
Over 1,000,000	2	401	88	189	342	2,076	3,604	3,694	
500,000-1,000,000	—	—	257	55	188	1,220	1,663	1,663	
250,000-500,000	—	288	576	367	430	1,493	3,288	3,288	
100,000-250,000	—	—	82	49	715	579	1,341	1,341	
50,000-100,000	—	17	52	306	917	297	1,434	1,434	
Less than 50,000	—	—	—	506	695	85	1,286	1,286	
Suburban and other	—	—	—	423	455	410	1,287	1,287	
Total	2	626	953	1,031	3,717	6,301	12,629	12,629	

New Passenger Equipment Delivered to Transit Companies in the United States—1936 to 1947

Calendar year	Railway cars			Trolley coaches	Motor buses	Grand total
	Surface	Subway and elevated	Total			
1936	573	—	573	528	4,572	5,673
1937	342	306	648	492	3,908	5,012
1938	345	32	377	534	2,888	3,738
1939	371	336	707	547	3,919	5,033
1940	468	15	483	319	3,984	4,772
1941	493	—	493	413	3,600	4,516
1942	284	—	284	338	2,200	2,822
1943	32	—	32	112	1,233	1,377
1944	284	—	284	55	3,807	4,146
1945	332	—	332	193	4,441	4,966
1946	421	—	421	298	8,893	9,612
1947	628	7	635	955	12,029	13,619

Transit Passenger Equipment in 1947 Showing Types of Vehicles and Their Distribution by Population Groups

	Railway cars	Trolley coaches	Motor bus	Grand total
Subway and elevated	9,174	—	—	9,174
Surface lines:				
(Population groups)				
Over 1,000,000	6,778	332	14,572	21,682
500,000-1,000,000	3,908	994	6,547	11,451
250,000-500,000	2,251	2,292	8,159	12,702
100,000-250,000	472	190	10,206	10,868
50,000-100,000	934	347	7,917	9,200
Less than 50,000	524	289	7,723	8,536
Suburban and other	1,379	—	5,642	7,021
Total	30,741	4,052	56,917	91,710

Total Miles of Electric Railway Track, Motor Bus Route and Trolley Coach Route of the Transit Industry in the United States, 1947, Distributed by Population Groups

	Railway	Trolley coach	Motor bus
Subway and elevated	1,352	—	—
Surface lines:			
(Population groups)			
Over 1,000,000	2,828	126	8,548
500,000-1,000,000	2,100	219	3,890
250,000-500,000	1,800	1,874	8,890
100,000-250,000	430	417	11,700
50,000-100,000	719	317	8,400
Less than 50,000	390	153	5,880
Suburban and other	5,379	—	40,800
Total	10,892	2,795	90,508

TABLE 2  
TRENDS OF PASSENGER EQUIPMENT IN THE UNITED STATES—1936-1947

Calendar year	Railway cars			Trolley coaches	Motor buses	Grand total
	Surface	Subway and elevated	Total			
1936	62,887	8,808	71,695	—	14,800	86,495
1937	65,319	8,551	73,870	—	14,000	87,870
Percent	60	38	79	—	21	100
1938	58,940	8,611	67,551	41	19,700	87,292
1939	56,080	8,993	65,073	37	21,800	86,910
1940	55,150	8,649	63,799	173	21,500	85,492
1941	53,120	9,028	62,148	320	20,700	83,168
1942	49,500	10,414	59,914	280	20,300	80,494
1943	47,306	10,424	57,730	319	20,200	78,259
1944	45,790	10,416	56,206	443	22,200	78,759
1945	49,000	10,416	59,416	578	22,500	82,504
1946	51,180	10,023	61,203	1,136	26,000	88,369
1947	54,190	11,022	65,212	1,655	27,500	94,387
Percent	48	15	63	2	30	100
1936	51,800	11,305	63,105	2,022	26,500	91,527
1937	50,328	11,022	61,350	2,184	22,000	85,554
1938	48,000	11,022	59,022	2,800	21,000	82,822
1939	47,000	10,318	57,318	3,029	20,500	80,847
1940	47,200	10,216	57,416	3,293	20,000	80,909
1941	47,200	10,216	57,416	3,293	20,000	80,909
1942	47,200	10,216	57,416	3,293	20,000	80,909
1943	47,200	10,216	57,416	3,293	20,000	80,909
1944	47,200	10,216	57,416	3,293	20,000	80,909
1945	47,200	10,216	57,416	3,293	20,000	80,909
1946	47,200	10,216	57,416	3,293	20,000	80,909
1947	47,200	10,216	57,416	3,293	20,000	80,909
Percent	55	15	70	4	16	100



TABLE 7  
ELECTRIC RAILWAY TRACK, MOTOR BUS ROUTE AND TROLLEY COACH ROUTE OF  
THE TRANSIT INDUSTRY IN THE UNITED STATES—1916-1947

As of December 31st	Total miles of railway track		Trolley coach miles of exclusive overhead wire	Motor bus miles of route owned	Grand total
	Surface and elevated	Total			
1916	80,770	1,000	41,000	—	121,770
1917	80,992	1,040	40,722	—	122,754
Percent	80	1	33	—	100
1928	84,255	1,065	39,300	30	124,650
1929	84,520	1,090	37,000	30	122,640
1930	84,520	1,090	35,400	140	121,150
1931	82,120	1,090	32,200	154	115,564
1932	80,416	1,130	31,549	251	113,346
1933	79,730	1,170	30,000	281	111,181
1934	77,270	1,150	28,300	422	107,142
1935	75,470	1,230	26,790	545	103,935
1936	74,600	1,200	25,300	630	101,730
1937	72,490	1,210	23,750	1,100	97,550
Percent	74	1	25	1	100
1938	70,700	1,300	21,900	1,200	93,100
1939	70,300	1,300	20,000	1,545	93,145
1940	70,300	1,280	19,000	1,925	92,505
1941	71,300	1,250	18,500	2,000	93,050
1942	70,550	1,250	18,300	2,230	92,330
1943	70,550	1,200	18,200	2,300	92,250
1944	70,600	1,252	18,122	2,302	92,274
1945	70,490	1,252	17,752	2,570	91,064
1946	70,490	1,252	16,742	2,411	89,895
1947	70,750	1,252	15,002	2,797	89,741
Percent	72	1	17	3	100

TABLE 8  
TEND IN CITY TRANSIT OPERATIONS

Eight hundred eighty-five American cities formerly served by street cars now rely exclusively on motor buses and public transportation. Between December 1944 and December 1947 the number of street cars in service has dropped from 27,140 to 21,607, a reduction of 5,533 rail vehicles. During this same three-year period 29,304 motor buses and 1,200 trolley coaches were produced and put into local service on the streets of American cities and towns. In addition, many small cities and towns in the 10,000 to 35,000 population group, and which are too small to warrant local bus service, rely exclusively on through buses for local transportation.

Calendar Year	Number of cities with pop.		All Bus Local	All Bus PT only	All Bus Total	By and local and PT	By only, local and PT
	over 10,000	10,000 and pop.					
1922.....	829	34	4	18	192	200	
1928.....	—	—	—	108	349	—	
1929.....	903	140	13	300	313	—	
1930.....	979	—	—	224	404	—	
1931.....	—	—	—	303	—	—	
1932.....	992	217	82	300	447	112	
1933.....	992	232	94	320	416	102	
1934.....	992	258	140	303	399	85	
1935.....	992	279	134	303	377	74	
1936.....	992	290	129	434	343	62	
1937.....	992	349	147	496	300	39	
1938.....	992	392	147	520	276	36	
1939.....	992	406	147	552	250	34	
1940.....	992	426	147	515	250	32	
1941.....	1,072	474	249	522	291	17	

## SECTION V EXCERPTS OF PROCEEDINGS

### ASSEMBLY INTERIM COMMITTEE ON HIGHWAYS, STREETS AND BRIDGES

THE CAPITOL, SACRAMENTO, CALIFORNIA  
WEDNESDAY, JANUARY 12, 1949

### REPORTER'S TRANSCRIPT OF PROCEEDINGS

(Los Angeles Transit Authority Plan)

### ASSEMBLY FACT-FINDING COMMITTEE ON HIGHWAYS, STREETS AND BRIDGES

The Committee met at 3:15 p.m. on Wednesday, January 12, 1949, in the Assembly Chamber, State Capitol, Sacramento, California. Present: Ernest R. Giddes (Chairman); Mr. Weber, Mr. Morris and Mr. Stanley. Other members of the Senate and Assembly were in attendance. There were the following proceedings:

THE CHAIRMAN: The Committee will be in order. Will those in attendance please be seated. It is perfectly O.K. for you folks to sit at the desks of a member of the Assembly who is away just so you don't read his mail or remove his papers.

Ladies and gentlemen, this meeting has been called pursuant to a promise made previously to proponents of rail rapid transit for the Los Angeles Metropolitan area. Study has been given to the subject for considerable time. In order that it may be officially presented to the Legislature, we made a promise at the Van Noy hearing of the Assembly Fact-Finding Committee on Highways, Streets and Bridges that proponents of the plan would be afforded an opportunity to present it so that it might be incorporated in a preliminary report of the committee and be placed in the hands of the Legislature; therefore, we have been in communication with the Traffic and Transit Committee of the Los Angeles Chamber of Commerce, and it has sent representatives to be with us today.

Mr. Purcell and his staff from the State Division of Highways and Department of Public Works have also been invited to attend, and they are with us. I believe that every matter almost in controversy has been ironed out, or can be ironed out when the bill is finally heard, but we appreciate their courtesy in being here this afternoon.

There is someone here representing Neil Petree, who was invited to be present but could not attend. Mr. Howard Morrison, do you wish to say a word for Mr. Petree?

MR. MORRISON: Mr. Petree asked me to expressly state that he regretted he could not be here today because of business commitments outside the City of Los Angeles, and he felt that Mr. Beebe, as draftsman of, and chairman of the Legal and Finance Subcommittee, could present the proposed legislation before this Committee.

THE CHAIRMAN: Thank you very much. Now, Mr. Beebe, without further ado, we will ask you to come up here. We have a microphone. We won't make this too formal. We all know who you are but for the pur-



poses of the record, identify yourself and proceed any way you wish in presenting your material. We will appropriate copies of anything in mimeograph form which you may have.

Mr. Buzar: Thank you, Mr. Chairman. My name is James L. Booke; I am chairman of the Legal and Finance Subcommittee of the Metropolitan Traffic and Transit Committee of the Los Angeles Chamber of Commerce. The particular job given to those subcommittees was to develop a means of financing rail rapid transit facilities and to develop the law which would authorize the creation of a district which would issue bonds and provide for the financing of facilities which could be operated either by private operators or, under certain conditions, by the District itself.

The members of the Finance Committee included R. L. Moulton of R. L. Moulton & Company; S. Davis Leason, Manager-Municipalities Department, Blythe & Co.; Mr. Jack Fishburn of the Bank of America; Mr. Harold Cutler of the Security First National Bank of Los Angeles—all of them thoroughly familiar with public finance and with the operations of districts, cities and counties.

The members of the Legal Committee which was directed to draft this legislation consisted of Mr. Harold Kennedy, County Counsel for Los Angeles County; Mr. A. Choshes, City Attorney of Los Angeles; I. Smith, City Attorney of Long Beach; Barton Noble, City Attorney of Pasadena, and James K. Howard, General Counsel for the Metropolitan Water District of Southern California—all men thoroughly familiar with the operation of districts, cities, counties and public bodies.

Now, Mr. Chairman, the draft which is now before me, and which I will discuss, is revision No. 4, and copies of it will be furnished to each member of your committee, and as many more copies as you desire.

I think that most of the members of this Committee at least are familiar generally with this proposed legislation. The plan, in brief outline, is the formation of a district. The District would issue bonds which would be payable primarily from ticket charges or ticket rates paid by passengers, but in the event that those charges or rates didn't produce sufficient funds, any deficit would be made up by general tax upon all taxable property in the district.

The amount of bonded indebtedness is limited to 15% of the assessed valuation of the taxable property in the district.

It is proposed, and it is believed by the proponents of the legislation, and by the committee as well, I think, that if possible these facilities should be operated by private operators. The general plan calls for private operation but in the event that no private operator can be obtained upon terms satisfactory to the Board of Directors of the District, then public operation is authorized, or in the event that private operator should default in the operation, a public operation is contemplated. The public operation entails greater financial responsibility, which I will discuss in more detail in a moment.

Now, to go back for just a minute and review this method of organization. The Board of Supervisors of the District, which must be composed of two or more cities, and it may include, in addition to two or more cities, parts of cities and any unincorporated territory.

The Board of Supervisors in which the whole District would be start the proceeding by adopting a resolution of intention, which sets

out, in addition to a statement of intention to form a district, the boundaries of the district. It is highly desirable that the people who are to be served should be heard; highly desirable that every community included within the proposed district should have an opportunity to appear before the Board of Supervisors and present any objections it may have. After that hearing is completed, the Board of Supervisors then fixes the boundaries, and the boundaries should include, and I think will, only those territories which will be benefitted by the operation of the facilities which are proposed. That is the real purpose of the hearing—to determine what is proposed to be done; what territory is to be served and which, therefore, should be included within the district.

At the conclusion of the hearing, the Board of Supervisors finally defines and determines the boundaries; states the name of the proposed district, and calls an election at which there is submitted to the qualified electors within the district the question of organization.

Now, in most districts of this type—and there are many districts of different kinds in California—a simple majority vote of voters voting at the election is sufficient to authorize the creation of a district. In this act, however, there is provision for two majorities. There must be first a majority of all votes cast at the election in favor of the organization of the District; and (2) a majority in number of all cities in the proposed district must likewise have voted in favor of this organization. The unincorporated territory for that purpose is treated as a single city.

Now, the only reason for this second provision is that in Los Angeles County, we have one very large city, which would comprise perhaps two-thirds or three-fourths of the voting population of the entire district and furnish a like amount of assessed valuation of taxable property, and there has been some fear that that single large city might through its voting strength bring in these outside cities, consequently, this provision requiring a majority in number of the various cities in the proposed district to vote in favor of the organization so that the outside cities can and undoubtedly will completely control the situation. No matter how Los Angeles may vote, or by how big a majority Los Angeles might vote in favor of this plan, if a majority in number of the outside cities—which will comprise roughly 40%—should say "We don't want this district", there will be none, so protection to the outside cities is assured. That Board of Supervisors fixes the boundaries after a full hearing, and at that hearing—if you gentlemen are familiar with the composition of the Board of Supervisors in Los Angeles, you know generally there are three representatives from outside and two from the City of Los Angeles, so I think it may fairly be said if there is a leaning in any direction on that Board, it is likely to be in favor of the outside territory.

Now, I would expect that Board, from my knowledge of it, to pass upon this on its merits.

The second protection is that a majority in number of the outside cities can absolutely control the organization.

Now, after the District is organized, a Board of Directors is appointed by each of the several cities in the District—again counting the unincorporated territory as a separate city. That organization is patterned after the Metropolitan Water District organization which has been functioning for many years in Southern California.

When we drafted this bill originally, we provided for, as I remember it at this time, a Board of nine directors to be appointed by the Board of Supervisors. That, however, wasn't satisfactory to the Mayors and city officials, apparently, in Los Angeles County. There was a meeting of the Mayors held in the Jonathan Club, I believe, at the time our group was up here last year, and at that time I am told it was decided by unanimous vote of all mayors that the organization should follow the Metropolitan Water District. I frankly think it is clumsy and if I had a free hand, wouldn't draft the act that way, but I am bound by those people who will have a lot to say about the organization of this District, and it is my business to do the best I can as a lawyer with the material I have; and we have, I think, as a traffic committee drafted a workable act considering the limitations imposed upon us.

Now, in the actual voting, no city within the District can have more than fifty per cent of the votes. The voting is cumulative, as in the Metropolitan Water District, and based on the assessed valuation of taxable property, so—although the City of Los Angeles will have close to two-thirds of the taxable property in the proposed District, and one would naturally expect it would be entitled to that representation on the Board of Directors, it will under this bill be limited to fifty per cent. It can't cast a vote more than fifty per cent on that Board.

Now, recognizing that this large Board, because there will be 40 cities in the District, is not a functioning body to carry out the detail of public activities, such as carried out by a City Council or Board of Supervisors, there is provision that after the bonds are voted and financing is available, that the letting of contracts and all additional matters relating to the carrying out of the enterprise shall be in the hands of a Board of Management. That is a Board of seven appointed by the Board of Directors of the District, and from among their own number. Not more than three of those members, again, may be representatives of any one city. Consequently there will be at all times under this proposed plan of organization, four votes from cities outside Los Angeles City, and not more than three for Los Angeles City.

Now, the financing—and after all in this type of act the financing plan of operation is the important matter—the financing has been gone over with investment bankers and persons familiar with these operations in Los Angeles, Chicago and New York, and we believe that this plan of financing is sound. It doesn't contemplate the issuance of revenue bonds to provide the facilities for rail rapid transit. It is the unanimous opinion, and I think without doubt correctly, that revenue bonds wouldn't be salable; that the project could never be financed upon any such basis; consequently, the bonds would be general obligation of the District. They would be payable first from ticket rates or charges I mentioned a few minutes ago, but if those were insufficient, then a general tax could be levied upon all taxable property in the District.

The amount of bonds which may be voted is limited to fifteen per cent of the assessed valuation. There are those who proposed schemes which would involve a higher bonded indebtedness than we contemplate. We can not take any chance on affecting the credit of our city school districts or other public districts by issuing more bonds than the community can safely carry. Hence, after a great deal of discussion on this

point, the limit was fixed at fifteen percent of the assessed valuation of taxable property.

Now, what is the procedure for issuing these bonds? Well, before any bond issue is voted upon, the Directors of the District must employ competent engineers and get a plan of what is proposed to be done. They must get estimates of cost and must get estimates of prospective revenues; also they must attempt to get a lease from a private operator, and that lease must be obtained before any bond issue is submitted. Now, that seems like to some people a peculiar time to call for a lease of these facilities, and certainly, I may say frankly, it is a peculiar time, but there are only three times at which it could be done,—one, it could be done at a time fixed in this act; that is, shortly before the proposal for any bond issue is submitted to the people for vote; second, it could be submitted after the bonds are authorized and before sold; and, third, it could be done after a line or lines are constructed. Now, these lines will be constructed over a period of a substantial period—ten, twelve, fifteen years. That is a question for the engineers, but certainly we, as responsible citizens in a community interested in its credit, want to know at the time we vote a big bonded debt—because if we voted, say, ten per cent on an assessed valuation of three and a half billion dollars, we would be voting three hundred and fifty millions of bonds. We want to know when voting what type of operation is proposed. We have a right to know. We don't want to vote a block of bonds and later try and find out what kind of operation we are going to have, and if we don't have a private operation—a lease that is offered with satisfactory terms at the time of voting these bonds, and we turn to a public operation, we have to raise a substantially larger sum of money. We should know that when we vote upon any bond issue.

Now, of course, it would be folly,—None of us could recommend that we vote a large amount of bonds; that we sell those bonds and after the lines are constructed, we attempt to get a lease. That would put the District in a bargaining position, which would be impossible, and we just couldn't start out and run into a blind alley of that type. That would in no sense be a satisfactory plan, so that assuming we get a good lease, assuming that this is a private operation, the Board of Management then goes ahead and constructs the lines and the operation is then on the basis I mentioned. The operator charges his own fares, fixed by the Utility Commission of the State of California, for the service which he renders. The District has a separate ticket rate or charge from which is paid the principal and interest on the bonds issued. Assuming, however, we don't have a private operation satisfactorily proposed, and a public, a District operation is the form which has to be taken, then the Board of Directors before any bond issue is voted upon, must employ additional engineers, or the same engineers, and get estimates of the cost of the rolling stock, because the private operator is required to provide the rolling stock and its funds. If it is a public operation, the District must provide those.

Now, how big an operating fund would be required, I don't know, and I have heard no satisfactory estimates,—it might be ten millions, might be fifteen millions. However, in an enterprise of this sort, it would be a very substantial sum of money, and should be. I believe the estimated cost of the rolling stock is some sixty-five millions—an estimate made about fifteen or eighteen months ago. You can readily see, therefore, that your bond issue would be increased if this is a District operation by a



sum of between seventy-five million to a hundred million dollars. Engineers can give those figures much better than I can. These are merely approximations, and the people are entitled to know at the time they vote on a bond issue whether the whole project is financed, and what the cost is going to be, or whether it is only partially financed, and whether they are going to be called on for additional funds.

Now, there is another very important difference between a public and private operation. If this should be a public operation, that is, if the District should operate these lines, then any deficit in the maintenance, operation or costs must be made up by an annual tax, and the experience through out the United States in operating rail rapid transit has not been good. There have been deficits. New York is an outstanding example; and it is certainly desirable that the people who are voting bonds and getting themselves deeply into debt should know in the beginning exactly what type of operation they are taking on; and that is the reason why these various determinations are to be made before any bond issue is submitted to vote, so that the electors who are called upon to express themselves know what they are voting upon.

Now, in the event this is a public operation, there is a provision for additional financing by what is called revenue bonds,—that is, money can be borrowed, short term money, not to exceed a period of ten years on notes or bonds payable solely from revenues of the District, to be a first charge upon those revenues—but let's not kid ourselves about those bonds simply because they are called revenue bonds, because although the money to pay these bonds will come out of the pocket in which the revenues go, if there is a deficit, no matter for what reason, a general tax would be levied upon all taxable property in the District. So, in essence, all obligations of the District of every sort, if they are not paid from revenue, are paid from general taxation. That is the situation in the event of a public operation.

The District, also in the event it operates these lines, has an additional power not necessary if there is a private operation, and that is if the feeder service at any station is unsatisfactory, or if feeder service is not provided, the District may provide a feeder service. If there is private operation, the private operator will provide that directly or through others, but if it is a District operation, then the District must provide this service—may provide this service in the event it is not offered privately, and, of course, will be required to finance the cost of the vehicles for this service, and cost of maintenance and operation.

Now, the act provides in the event this is private operation that ticket rates and ticket charges shall be sufficient to pay the principal and interest on the bonded debt as nearly as they can be so fixed. I say "as nearly as they can be" because it may be that, under some circumstances, it would be inadvisable to increase the rate to pay that principal and interest, and, therefore, there is some discretion in the Board of Directors in the event of a public operation. The rates and charges are supposed to be sufficient to pay all costs of maintenance and operation and to retire all indebtedness of the District but, again, there is that discretion which must be, I think, imposed in the Board, because it would be possible to get fixed rates which will bring in that amount of income and it might be that an increase in rates would result in less income than greater;

therefore, there is in each case that discretion left in the Board of Directors.

The principal financial features of this act are all under the control of the Board of Directors and not under the control of the Board of Management. The latter, as the term denotes, is a Management body. The Board of Directors alone has power to call elections; alone has power to issue bonds; alone has the power to make and fix rates and charges. The main powers, I say, are vested in the Board of Directors.

Now, Mr. Chairman, it is quite probable that in hastily sketching through this act I have overlooked some matters in which you and other members of the Committee have an interest, and if such occur to you, I would like to have you question me about them and I will try to respond.

THE CHAIRMAN: I first will call on the members of the Committee, if you have any question, and then any member of the Los Angeles delegation, and then any member of the Assembly or Senate who happens to be present, or if there is anything of interest to you and your staff, you, Mr. Percell, may ask questions.

MR. WATSON: Mr. Beebe, one of the things that occurs to me is the matter of choice of type of transportation to be afforded. In your bill, does it limit in any way the power of the Board of Directors to accept or reject any particular type of transportation facility? For example, a private operator might design one system and offer that as a solution to your problem. Others may offer another type. Have you the power to direct a quasi-private corporation to build and operate a certain type only?

MR. BEEBE: The entire plan of the system would be laid out by the Board of Directors upon receiving this engineering report. It is rail rapid transit for the carriage of passengers only, and it is rails only. There is no power under this act to carry freight. There is power, incidentally, to carry express and mail because those are incidental to the carriage of passengers.

Now, we expressly limited this to passengers and incidentally mail and express service because there are a large number of freight carriers, truck lines and rail, and we see no reason for the expenditure of any large sum of money, which this would entail, for any service we already have; but the facilities would be declined by the Board of Directors, and it would then attempt to get a private operator to lease those facilities and operate those facilities. The private operator would pay the cost of maintenance and operation and would be required to operate to standards fixed in the lease by the Board of Directors.

Does that answer your question?

Oh, one other thing: in the event of public operation, the District could operate feeder lines, whether buses or rails, but that is the only power given the District to operate bus lines—as a feeder service only.

MR. WATSON: Now, I imagine the bill is flexible enough so that temporary facilities might be established by the operating company, which would later on, as conditions change, probably be modified to other types.

MR. BEEBE: There are no limitations upon the facilities in this bill. That would be in the discretion of the Board of Directors.

Mr. MORRIS: I would like to ask Mr. Beebe who is to determine whether the leased feeder service is adequate?

Mr. BIRNEY: The Board of Directors of the District would determine whether the feeder service is or is not adequate. In just a minute, I will find that. On page 34 of this bill is the provision that in the event the District shall operate the rail rapid transit system, if in the opinion of the Board of Directors thereof the feeder line service at any station of the District is insufficient or unsatisfactory, or if no feeder line service is provided thereat, the District may operate such feeder bus lines as are necessary or convenient therefor, that is to carry passengers; provided, however, that if the Board determines such feeder line service at any station is insufficient or unsatisfactory, it shall demand of the operator of such service that such service be improved and shall state what changes are necessary therefor, and fix a reasonable time within which such changes shall be made, and, if such service is not so corrected and improved within the time fixed, the District may operate feeder bus line service to and from said station.

Mr. MORRIS: That means there is no Court of Appeals from the decision of the Board as to the adequacy, which might conceivably result in a confiscation of those feeder lines?

Mr. BIRNEY: No, there is no court of appeal, and I think in reflecting on that you would reach the conclusion there should not be. This Board of Directors, under those conditions, is responsible for a satisfactory service, and I am talking about rapid transit. It must give that service to a community and it must have the power to determine in itself whether a feeder service is, or is not, satisfactory. I take it this gives the private operator every protection he can expect.

I might say on that that I am not personally in any way committed to a private operation of this system. Whether or not I would ever support it, I haven't determined. It has been my business as a lawyer and my duty as a lawyer to permit, but whether I would ever support it, I haven't determined.

Mr. MORRIS: Well, doesn't that provision in your plan empower your Board of Directors to take away the business from a private operator of feeder lines by paralleling them?

Mr. BIRNEY: I think not. We have a very large number of private operations at the present time in which the public may parallel private lines if so desired. It can be done with your water system and under certain circumstances I think it can. You know I don't believe in confiscation—

Mr. MORRIS: (Interposing) Now, in the event that the District is municipally operated for any reason whatsoever, what effect will that have on the privately owned and operated surface transit systems in Los Angeles, namely, the Los Angeles transit lines and the Pacific Electric Company? Will not a municipally owned transit system competing with a private system drive the latter out of business?

Mr. BIRNEY: First, when this rail rapid transit is constructed, if it is ever constructed, in my opinion there will be no actually competing lines. These other lines which are in business will not offer and do not today offer rapid transit service; they offer a different kind of service, and I would expect them to continue so doing. I would expect them also to be in stronger position than they are today. This rapid transit is the most

expensive type of service. It is only designed to take people from and to their work; isn't required for ordinary shopping conditions at all. That means there must be a very large amount of equipment available for the morning peak and ready for the evening peak and not used generally throughout the day, and for that reason most companies aren't in position to finance generally rail rapid transit with all the huge expenses involved in it; and I would expect that the lines which operate and provide the local service would be better and could provide their functions better and more profitably if this more expensive function were taken away from them and handled by a District or private operator which does nothing but this type of work.

Mr. MORRIS: In effect, Mr. Beebe, these operating lines already existing will become feeder lines to the rapid transit system and in that case if the Board of Directors decided they didn't afford adequate service, you could put them out of business.

Mr. BIRNEY: In the outer territory, they would be largely feeder lines. In the inside territory where you get your big short haul traffic, within five miles of the city, these surface lines would continue to operate, and I think more profitably than where they have to furnish that long haul service.

Now, may I just say that I don't pose as any expert in this field, however, and I have given Mr. Morris my own conclusions as a layman. I am no traffic expert in rail rapid transit at all, and if the answers are satisfactory, I am glad; if not, we will get somebody who is an expert who can do much better than I.

THE CHAIRMAN: We will stipulate to that. In other words, since we will have this transcript before us with these questions and the discussion brought out, we will certainly report that to the committee, but you are serving so that we can get those answers because while our report may be public, still the legislation will be before a standing committee where those matters may be cleared up.

Now, the question I would like to ask—I would like to repeat the question asked by Mr. Vince Thomas at the luncheon: that was, whether a city originally voting against being included in the District, if the District was nevertheless set up, might thereafter be included within it?

A. It would be if a majority of the voters wanted it.

THE CHAIRMAN: I think that is in the minds of a number of us because two or three of the cities in my district have written about that same thing—that is why I brought it on.

Now, are there any members of the Los Angeles delegation who have any questions?

Mr. BIRNEY: Before that: I think the real protection of a city which might not come in is at this hearing before the Board of Supervisors where those objections will be heard. It is inconceivable that the Board will include any substantial city unless the lines have to go through that city and unless it would be directly benefited, and under those circumstances I think it should be.

THE CHAIRMAN: That, I think, is one of the purposes we are all working toward, and while I say we haven't the plan we have a plan. We are nevertheless thinking seriously of the plan because certainly people in those districts are going to ask some specific questions, and I think if the



act provides for adequate hearing, and we insist on them as legislators, it will have a great deal to do with the future successful operation.

MR. BEER: Oh, yes, that is in the act.

THE CHAIRMAN: Thank you. Any member from the Los Angeles delegation who would like to ask Mr. Beebe a question?

(No response.)

THE CHAIRMAN: Any member of the legislature outside of Los Angeles?

(No response.)

THE CHAIRMAN: Mr. Parrell, do you or any of your staff wish to bring out anything that is not clear pertaining to cooperation between such a district and the Division of Highways?

MR. PARRELL: We have discussed this previously. Mr. Montgomery and Mr. Grimes have gone over the matter and as a result of that general discussion there is no question.

THE CHAIRMAN: In other words, a year ago, and (also) following the Van Nuys meeting Mr. Grimes made a complete report on the points that had been discussed with the initial committee as to where state interest in such a district might be involved. That might as well remain in the record. We don't wish to rehash it again at this time.

MR. COLLIER: I would like to ask Mr. Beebe a question:

If this rapid transit plan is voted and private interests can not be secured to operate it, and in case there are insufficient revenues to meet the obligation of the bonds I notice resort may be had to taxing personal property in the district to take care of the deficit. Why is that?

MR. BEER: Because no rapid transit system can be financed without that backing of the general property tax in this country.

Q. Why couldn't we use some other kind of tax rather than imposing that additional burden on property owners as of today?

A. The other taxes which might be considered are taxes which are not generally known in the bond field; they are not known generally as the basis of credit, and those which produce a substantial sum of money, such as the sales tax, are already preempted.—I am as little in favor of additional property taxation as any one. There just isn't any other way.

Q. As to this limitation that no district shall be assessed more than 15% of the assessed value of all taxable property in the district—I believe under present statutes there is a limitation of 25% as to that which might be taxed or assessed personal property. Now, what portion is this 15% of the total revenue we are getting today from that property? In other words, if this 15% is added how near is that 25% limitation of the total revenues of the State would we get?

A. Well, Mr. Collier, the tax which you are speaking about is a tax which may be levied annually and this 15% is a limitation on bonded indebtedness—it is not the amount of tax which may be levied. The amount of tax which may be levied at the present time, as I recall the figures—and I may be wrong—there is generally in the cities about a dollar limitation on the tax rate for general purposes—some more. There are school district taxes authorized—I forget the ceiling at the present time—but it is something like \$1.75 or \$2.00. That is irrespective of the formula used. Now, generally at the present time in the incorporated areas the tax rate is running somewhere around \$6.00, \$6.50. Again I don't have the precise figures before me. Now this 15% limitation has

nothing whatsoever to do with this particular thing. It is a bond ceiling just like the ceiling on school district bonds. Does that answer it?

Q. It does in a way but not exactly because if the revenues from the rapid transit are sufficient to pay the bond obligations then there is a tax imposed upon personal property.

A. And real property.

Q. Now if that tax to be imposed on personal property were to be added to the present tax on personal property, I believe it is safe to say that personal property can not be taxed over 25%—

A. (Interposing): That is only for the State. That has no application to a district or county; it is only for the general obligations of the state.

Q. I am just asking those questions for the record.

A. You have brought up a very important point, and that is the method of financing, and the imposition of the tax on real and personal property. New York for years has paid principal and interest on all its rapid transit bonds from a general tax on property. Of maintenance and operation costs it has paid a very large part from a general tax on property. As I recall the figures, there was a deficit approximately a year ago of something like fifty millions annually. Now, the theory they have used there is that the property has been benefited, and property should carry the cost. We haven't accepted that theory in this draft. It is our belief that the riders should pay the costs, and the original plan which may or may not be followed indicates that the revenues will be sufficient to pay the principal and interest—the ad valorem is only to make up any possible deficit—quite different from the situation in New York.

MR. STANLEY: Along the same line, I was just wondering whether this possible taxing of personal property will involve the amount of inventory, certain companies sharing it at some particular time of the year? Wouldn't it be better to use the assessed valuation of real property?

A. Well, that would change the secondary obligation from an assessing operation to a taxing operation. We believe it is better to use the ordinary assessment roll and place the tax on property just the same as is customarily done for other purposes. There may be on that point a difference of opinion as to policy. The conclusion of this Finance Committee was that the general tax to which we are all accustomed should be as we have it here.

MR. MORRIS: Isn't it the fact that you couldn't market any of these bonds unless they were general obligation bonds?

A. They couldn't be sold at all otherwise, in the opinion of the Finance Committee.

Q. In the issuance of these bonds have you contemplated the probable rate of interest these bonds will bear?

A. Of course interest rates change as the bond market changes. It has gone up about 25 points in the last year. I suppose with a district of this type these bonds over a forty year period could be financed in the present market at a rate not exceeding 2½%. It might be less than that.

THE CHAIRMAN: Do you believe it should be discussed now, or better when the bill is before the committee—that is the change of the number of votes which any one city would have to something less than 50%. I know that is a rather sore spot in my district after what happened on

the water deal, and there are some other cities, and it might be one of the stumbling blocks.

A. Well, Mr. Geddes, so that I am under orders—I have drafted this bill exactly as I was directed on that point. Now, I may say, from my own personal point of view, it seems to me that any territory which has two-thirds of the assessed valuation and two-thirds of the voters is entitled to have at least 50% of the representation. It seems to me that is fair. I don't believe you can expect the majority to be lagged by the minority in financial operations, or by the minority in number. While I know it is a sore point, I am giving you my personal opinion, not binding on any member of my committee.

THE CHAIRMAN: No, but that is one of the practical things which will come up before this legislation passes.

A. Yes.

MR. WINTER: It was decided by your committee to limit the powers and duties of the proposed district to simply rail rapid transit—it could never perform any other function?

A. That is right. This is a rail rapid transit district solely except for the feeder service I mentioned.

THE CHAIRMAN: Thank you for being here, and I will tell the members of the Committee that if any questions are directed to the Chairman by members of the legislature we will immediately transmit them for attention and reply.

We now have a voluntary witness here, Mr. Wendell A. Van Hook, who would like to present a statement.

MR. VAN HOOK: I am a consulting engineer residing at 1850 Oxley Street, South Pasadena.

(Mr. Van Hook's statement follows hereinafter.)

*Statement by Wendell A. Van Hook Before Assembly Committee on  
Highways of Sacramento, January 12, 1949*

*Gentlemen of This Committee on Highways:*

Inasmuch as I consider the problem before this committee to be highly technical, and for purposes of clarity and brevity, I have prepared the following written statement of my views and comments on the proposed "Act To Provide For The Incorporation and Government of Metropolitan Rapid Transit Districts."

My name is Wendell A. Van Hook. I am an American citizen. I reside at 1850 Oxley Street, South Pasadena. I am a consulting engineer by training and profession, and have specialized for over 20 years on problems relating to rail, bus and other forms of transportation in many areas of the United States. For over 20 years I was connected with the nationally-known engineering firm of Ford, Bacon and Davis, who are one of the few engineering firms in this country specializing in this type of work.

Included among the tasks I have performed in the interest of improved transportation, on a national basis, are the following:

(1) A study of the effect of passenger rates on passenger traffic of railroads and the effect of changing economic conditions on such traffic.

(2) A study of prospective rail freight traffic as affected by future economic conditions.

(3) A study of the economy of light weight buses in operation in both city and inter-city service.

(4) A study covering merger of bus lines, including the effect of varying rate levels on traffic.

(5) A study covering future requirements for modern lightweight rail passenger equipment to replace outmoded passenger train cars, and to meet increasing demand for fast rail passenger service.

(6) A study covering future rail traffic in line with prospective changes in economic conditions, pending retirement of old freight cars, and types of new freight cars required for replacements and the number so required for traffic requirements.

(7) My work has included local transportation studies in New York City, Buffalo, Pittsburgh, Detroit, Cleveland and Chicago.

If the Committee so desires, I shall be happy to provide it with a more detailed resume of my experience in transportation studies and recommendations made for the desired improvements in any one or more of these professional engagements.

I wish to make it quite clear, here and now, that I am appearing before this committee upon my own initiative; that I come here representing no group or interests; that I am appearing here voluntarily because of my professional interest in the problems of transportation confronting the Los Angeles Metropolitan Area and other populous areas of the State, and because I believe that my technical knowledge of these problems may be of some assistance to members of this Committee, and through the prospective subsequent decisions by Members of this Committee, may render some benefits to the area in which I reside. I am not employed to come here, by any person, group of persons, corporation or company. I am not seeking employment. I am paying my own expenses and contributing my time to the volunteer task of appearing before this committee as a public service to my fellow Citizens of California.

I have some criticism to make concerning the language contained in the copy which I have of the proposed bill now under consideration by Members of this Committee. There may have been some revisions since the copy which I have was released. My criticisms are based upon that copy. They are:

(1) The short title says this is an act to provide for the incorporation and government of metropolitan transit districts. The title uses the plural form of "district." However, the proposed bill itself definitely limits the possible application of this proposed enabling legislation to Los Angeles County. It states that such a district shall be confined to a single county, and must include at least two incorporated cities. That limitation literally makes Los Angeles County the only one which could qualify for utilization of this proposed legislation, and the limitation here cited would make it impossible to construct and operate a transportation system under the authority envisaged in this bill which would serve adequately all the populous areas, even of Greater Los Angeles Metropolitan District.

Since this proposed legislation is being considered on a State level, and by a State body, why incorporate these limitations? San Francisco and the other Bay Area cities have transportation problems, too. San



San Francisco has just expended some \$200,000 to obtain an engineering analysis of her transportation problems. Why compel San Francisco and other Bay Area cities to seek duplicate enabling legislation in event they desire to form one or more rapid transit or mass transportation districts in their areas? San Diego has transportation problems, also. Must she seek special legislation to enable her to form a rapid transit or mass transportation district if her citizens desire such?

Since the proposed legislation is merely permissive in character, to enable each County, City or Area to work out the transportation difficulties peculiar to its own area, why not make the legislation broad enough to cover any one or all of the areas?

I respectfully suggest that Section 2, second sentence, of the proposed Act, should read somewhat as follows:

"Any such district may lie within the boundaries of any one county, or may be extended to territory lying within the boundaries of any two or more than two counties; may lie wholly within the boundaries of any one city, or may include areas within any two or more than two incorporated cities, and may include unincorporated territory or territories in any one or more than one counties."

This language is broad enough to cover all of our principal cities. Los Angeles has no monopoly on transportation problems. A casual perusal of San Francisco newspapers during the past few weeks should convince any reader that the transportation problem there has reached the acute stage. Why should the State Legislature be required to enact separate enabling legislation for each area? To do so is a needless duplication of effort.

(2) It appears to me that in Section 3 of the proposed Act, the people who drafted this text put the cart away out in front of the horse. This text states that a Board of Supervisors desiring to form a Metropolitan Rapid Transit District shall adopt a resolution of its intention to do so. So far, so good. But the text then states that this resolution shall contain the following: "(1) A Statement of the intention to form a district, (2) The boundaries of the proposed district or some other designation of its territorial extent."

Right here, I object—strongly object. Upon what technical information are the members of the Board of Supervisors to base their designation of the boundaries or the territorial extent of a rapid transit or mass transportation district? Boards of Supervisors, generally speaking, are not composed of engineers or technical men. And, in the fixing of the territorial extent or the boundaries of a rapid transit or mass transportation district there are involved a number of highly technical transportation problems and questions.

Whether such a district is later to function efficiently or is destined to be a failure and involve losses of money depends to a large extent or degree upon the determination of the areas to be served by the said district, and their boundaries.

This Bill proposes to saddle the Boards of Supervisors with the responsibility of deciding in advance of detailed, technical information on which such a decision should be based, the areas for which local transportation systems are functionally adequate and financially sound.

There should be pre-determination of the transportation necessities of the areas to be served, including not only travel into and out of the

Central Business District, but also between residential areas and between residential areas and other areas. Los Angeles County, with an estimated population of 4,000,000, occupies an area of some 4,000 square miles. The problem of serving such a large population in such a large area is an intricate one.

The problem should have full analysis before the boundaries are defined, and the area should be such as can be provided with an economically sound plan.

In this matter San Francisco has courageously shown the way in acquiring technical knowledge of the engineering problems involved and at least tentative estimates of the probable cost of overcoming these engineering problems. Some of the outlying cities of the Los Angeles area—Burbank, Glendale, Eagle Rock, Pasadena, San Marino, San Gabriel and others are considering possible joint action to determine their common problem in transportation, and to seek a common answer to these problems. The Westchester District of Los Angeles is taking independent action to obtain technical information concerning its transportation problems and to get engineering recommendations for amelioration of these problems. This is information that should be acquired before any attempt is made to set up a Transportation District.

I now pass on to observations of other provisions of this proposed Act. Presumably, Gentlemen, we are attempting to look into the future and to provide broad permissive powers to individual populous areas of our State whereby those areas, through their individual elected governing bodies, and on specific authority voted by the qualified voters of each individual area, may solve their present and possibly foreseeable future transportation problems. After making this definition I read the text of the proposed Act and I find it filled with specific limiting clauses which, in my opinion, tend to render the functions of this Act obsolete before it can be put into effect, or at least, before the transportation facilities which it might provide could be put into operation.

In contrast I would call your attention to the text of the legislation passed by the 64th General Assembly of Illinois in 1945, creating the Chicago Transit Authority. This Committee undoubtedly has access to copies of this legislation. If not, and if the Committee so desires, I shall undertake to obtain copies for its reference and use. It is my considered opinion that we in California could do worse than to follow, in general, the procedures laid down in this Illinois legislation. I believe that the legislation contemplated by this Committee should provide the broad, general conditions upon which California counties and/or cities, individually or acting jointly when their boundaries are contiguous so that their transportation problems become a common matter, may create and operate bodies known as Transportation Authorities. The Los Angeles Port Authority is an example in point.

In the text of the Proposed Act now under consideration I certainly would eliminate the second sentence of Paragraph 3, Section 12, which states: "Said district shall have no power to purchase or own rolling stock and shall not have power to operate any rapid transit lines except in the event of the default of the operating company," etc. This language attempts to answer here and now, and without benefit of technical knowledge, broad, general public questions and principles involving political themes, technical matters and financial problems yet unsolved.

Who shall say to the sovereign voters of California that they may elect to pledge their credit to purchase rail lines, and construct facilities for operation of these lines, but that they may not purchase, own or operate the rolling stock that makes these lines function? I believe the public which is to be asked to finance the building of these transportation lines must be given the right to own the rolling stock operating on these lines, if the public so desires, I believe and respectfully submit that the legislation should provide for either private or public operation. The restriction contained in Paragraph 3, Section 12, might well preclude the possibility of financing the proposed transportation facilities.

I might well state here that I am neither a proponent nor an opponent of public operation, or private operation, per se of public utilities. I am an engineer and I am analyzing engineering problems contained in this proposed legislation.

Financial authorities undoubtedly will have objections to enter against some of the other restrictive clauses in the proposed Act. I will not undertake here to analyze these, except to say, as an experienced constructing engineer that I have done considerable construction, both privately and publicly financed.

The provisions of the bill should not preclude satisfactory financing of the construction and/or operation here envisaged.

In closing, I wish to re-emphasize my belief that the legislation under consideration by this Committee should attempt to look into the future, and to provide the populous Cities and Counties of California, individually or two or more such civic entities acting jointly, with broad enabling powers to permit them to create transportation facilities which will serve a Growing California, an increasingly industrial California. This legislation should embody powers which will enable densely populated areas to provide transportation facilities in keeping with future growth, rather than facilities which may soon become inadequate and outmoded.

The legislation now under contemplation, judging from a study of the proposed text I have seen, is aimed principally to permit rails on certain Freeways entering Los Angeles. This is a stop-gap measure and will provide no permanent or lasting relief to Los Angeles for its present and growing intolerable street traffic problems.

In my opinion, what is required is a broad, over-all plan, based upon scientific study of the problems, to relieve the situation now, and to provide relief for future difficulties BEFORE THOSE DIFFICULTIES BECOME ACUTE. I believe such a plan should envisage transportation facilities and operations fitted into a new master plan creating an unified transportation system designed to relieve congested streets and thoroughfares and to provide rapid, convenient, comfortable travel for the entire area, including populous suburban communities.

I am confident that such a plan can be worked out, can be financed, and can be operated to the benefit of all the people living and working in and around Los Angeles.

Finally, permit me to say that I believe there are competent California engineers who can devise such a plan and put it into operation. I make this statement upon my long experience as an engineer—formerly an "eastern" engineer, and now a California engineer. There are many

other engineers now out here who share that status with me. And, in addition to their engineering knowledge and experience gained in the "east," they now have a personal knowledge of California's particular problems—a knowledge gained at first hand, and many of them probably have some answers to these problems, acquired the hard way through experience in San Diego, Los Angeles, or San Francisco's traffic nightmares.

I thank you Gentlemen for the opportunity to appear before this Committee.

Mr. WINTER: In other words you believe that the legislation should be broader in its application and more flexible in its functions and duties—do I get that?

A. I do, sir.

Mr. WINTER: I have attempted to introduce some legislation which would not only apply to transportation but to other great engineering structures and cities so framed it would cover all types. I have in mind the Port Authority doing more than one function in New York.

A. Yes, they are operating all the airports in New Jersey and New York.

Mr. COLLIER: Listening to your report I am sure you are very familiar with the plan that has been advanced for the Los Angeles county section of the system. How much more would it cost to incorporate a two-county or more system compared with one?

A. That I can't answer because it depends on the territory you take in. For instance, if you go into Orange County and include some of the cities close by it might involve something additional but not tremendous. The population there isn't large.

Q. In your opinion if you incorporated two counties or more is it the additional cost would be minimal as compared with the proposal for one county?

A. Yes, but I don't know how that would work out if you came to a final analysis in the San Francisco area. If you take in some of the counties on the East Bay shore, such as Oakland and Berkeley, then you have a major addition.

THE CHAIRMAN: Gentlemen, I wish to report for the record at this time receipt from Richard H. Eplar letter sent by him to the Assembly and noted in the Journal, and turned over to me. The allegations in the letter will be a matter for further investigation by the committee if voted by the membership. Also the City of El Monte has given notice to the chairman that they have filed a revised plan with the Division of Highways, copy thereof furnished us for our records. The matter will be taken up at a subsequent meeting of the committee.

As to Metropolitan transit legislation, I wish to acknowledge for the record receipt of letters from the Chamber of Commerce of Burbank; from the City Council of Monrovia; from the City Council of Pomona; from Edward Kavin, Chairman of the San Pedro Civil Council; with reference to the T Tunnel at Terminal Island; and from Gregory M. Cress representing the Southside Chamber of Commerce. Of this latter letter there are additional copies and request has been made that the Chairman furnish each member with a copy, which has been done.



Mr. MORRIS: Mr. Beebe, the language of the act makes it mandatory that only rail rapid transit facilities are permissible. Why did you not leave that out so that it might be open to some other type of facility?

Mr. DENNIS: You will find that the act read "An act to provide for the incorporation and government of Metropolitan Rapid Transit Districts"—

Mr. MORRIS: I see that but all you have talked about is rail rapid transit. Is that a misleading title?

Mr. DENNIS: No, that title was changed simply because we put in the provision for the feeders and wanted the title to be broad enough so that feeder lines would be included. But the main purpose of this is rail rapid transit. It is our opinion there are ample facilities available or which may be made available for private bus operation, and there is no necessity for bus provisions here.

Q. There may be something, neither rail or bus, come to the fore which in the opinion of others would be practicable. Would your people be opposed to that?

A. No, any system that would be practicable.

Q. Under your Act there would have to be rail connected with it somewhere.

A. We are dealing with a situation which we have at the present time and with the need which has been expressed by all the engineers for a rail rapid transit system.

In our opinion, and I am sure that is still the opinion of the committee, these other types of transportation can be financed privately.

Mr. WEAVER: Mr. Beebe, then insofar as you are concerned you limit at this time the functioning of your District very definitely. Do you feel that you could come later—suppose you found it was necessary to protect the financial strength of your District as well as the efficient functioning of it to undertake expansion and go into other forms of transportation, your bill throws you out of that field, and isn't that a weakness?

Mr. DENNIS: It would be necessary to amend the bill if that were found to be desirable but we would rather shoot with a rifle at this than a shotgun.

Mr. WEAVER: In other words, you have certain reasons for recommending this plan?

Mr. DENNIS: We feel that this would accomplish the purposes which we are after. We further our opinion we don't need more authority and should not attempt to get more authority than we need.

THE CHAIRMAN: Then may I state it this way: the purpose of this preliminary work is to provide for a competent engineering study, and we must anticipate that that study is going to take into consideration all forms of transportation which might be valid and which could be included, and which would be supported from a bonding standpoint, and if that engineering staff which makes the study comes in with recommendations, as we must assume they will, of a plan, whether it is rails, water, whether by rail or subway, or even steamboats, possibly, that recommendation will be made before the people vote on it. As I understand your presentation that is in the proposal.

Mr. DENNIS: That is right.

THE CHAIRMAN: All right if there is nothing further the committee will stand adjourned until the call of the chairman.

(At 4:30 p.m. an adjournment was taken.)