Highway Traffic Advisory Com. file

CONSERVATION
of
VITAL WAR TRANSPORTATION

OUTLINE OF PROCEDURE AND METHODS
FOR THE CONSERVATION
OF EXISTING PUBLIC AND PRIVATE
TRANSPORTATION FACILITIES

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Division of Local Transport
Washington, D. C.

Mr. Donald M. Nelson says:

Everything depends upon production, and transportation is a vital factor in the war-production program. There must be no break-down in the Nation's transportation facilities.

The plan for group riding and staggered hours should have the whole-hearted cooperation of every American who uses an automobile. It is the simplest and most workable plan yet advanced for conservation of such facilities.

Mr. Leon Henderson says:

The rubber situation becomes more serious daily. Therefore, it is essential that the Nation's present supply of tires be made to last many times longer than it normally would. The plan outlined in this manual makes it easy for war production workers and other members of the civilian population to cooperate with their Government by actively promoting such conservation. I am all for it.

Commissioner Thos. H. MacDonald says:

I am deeply concerned as to the consequences of the diminishing supply of private and commercial motor-vehicle transportation. It is certain that unless stringent steps are immediately taken to conserve the life of vehicles, and particularly their tires, we will soon be faced with a tragic shortage of highway transportation essential to the war effort.

STATEMENT BY THE DIRECTOR OF THE OFFICE OF DEFENSE TRANSPORTATION

The Office of Defense Transportation was created by Executive Order to centralize the responsibility of the Government for transportation performance. In the phraseology of the order is reflected a spirit of leadership, coordination, and cooperation, but with a clear and distinct background of power and authority.

Within the Office of Defense Transportation I have established a local Transport Division to which has been assigned the duties necessary to insure the greatest possible use of existing local transportation facilities. The methods to be used include among others, (1) staggering business, school, and working hours, (2) making more efficient use of private automobiles through group riding, and (3) improving regulation of street traffic to make possible more efficient movement of passenger vehicles.

An organized plan for achieving these objectives is now a Nation-wide project. This national undertaking was assumed by the Highway Traffic Advisory Committee to the War Department at my request. I have also asked the cooperation of our country's State governors and the mayors of our cities and towns. To each of these has been sent an initial outline of the plan and its objectives.

This manual, prepared by the Office of Defense Transportation, gives, in more detail, the steps necessary in the actual accomplishment of these objectives. Their realization is vitally important to continued production in the Nation's all-out war effort.

The cooperation and assistance of every patriotic American citizen is assumed.

Joseph B. Eastman

Director.

CONSERVING VITAL WAR TRANSPORTATION

THE PROBLEM

Since enemy occupation of the countries that supplied the great bulk of this Nation's rubber requirements, our transportation problem has completely changed in both nature and scope. The rubber stock pile of today must serve the war needs of our own country as well as those of our Allies. No dependence can be placed on the chance of finding other accessible sources of either crude or synthetic rubber. To rely on chance at this time is only wishful thinking at best, and we must not stand by and permit the continued waste of precious rubber now in the tires of the country's 28,000,000 private automobiles.

A large percentage of our war workers depends on private automobiles for their transportation to and from work. Our Nation's war effort is measured by the productive effort supporting it--by the production of planes, tanks, ships, guns, ammunition, and the many other essentials of modern war. Just as important as the flow of raw materials to plants is the flow of workers. Stop either one and production stops.

THE SOLUTION

Director Eastman has suggested three important methods of insuring the continued flow of workers. The staggering of hours, coordinated as such a program *must* be with mass transportation operations, is the first step in an over-all community program. It should be followed by the development of group-riding plans in each phase of the community's life. Each of these first two steps will contribute to the third which calls for

improvement in traffic regulations and control. An effective increase in the capacity of existing mass transportation facilities is the direct aim of staggering hours, but even with this increased effectiveness the public carrier facilities still have insufficient capacity to take on the full private automobile load. It thus becomes of paramount importance and necessity to extend the life of the private automobiles for the duration at least. Many *must* continue in service to assure the flow of war workers to and from the thousands of industrial plants all over the country.

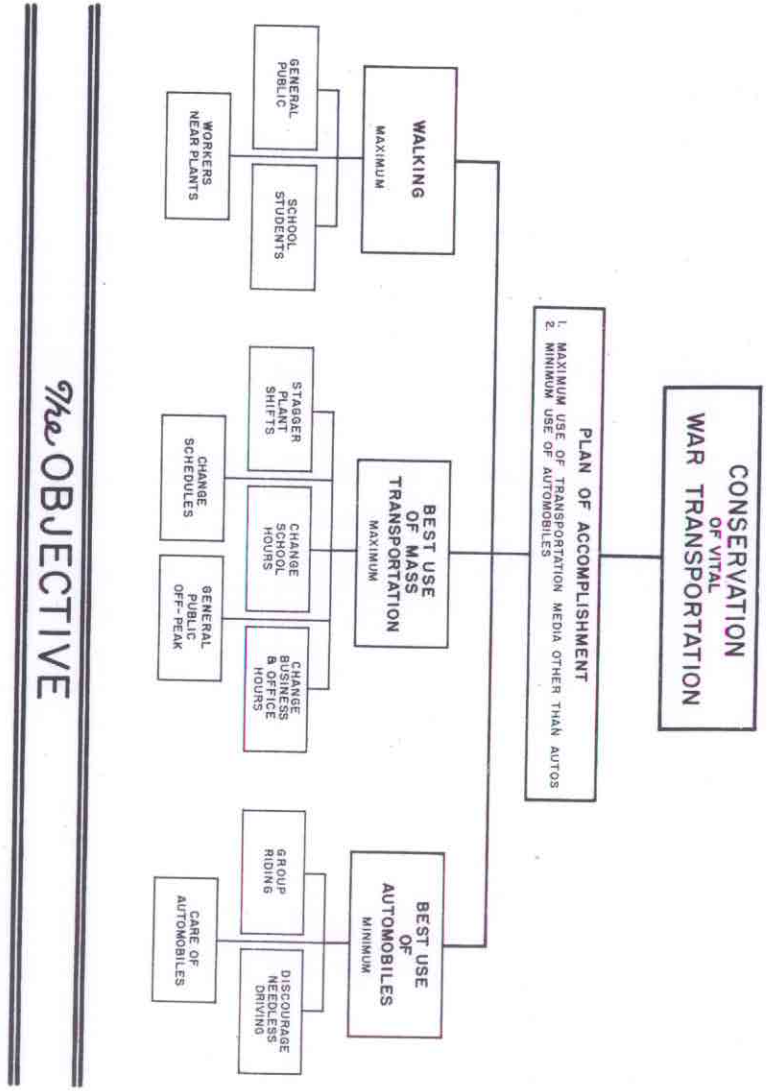
Group riding is the simplest and most direct approach to this problem. The average number of passengers per automobile now in use is less than 2, including the driver. This means that where one automobile and its tires could serve 5 persons, it is actually serving less than 40 percent of its capacity. Increasing the average load to full capacity would extend the life of the average automobile tires almost threefold. Failure to participate in group-riding plans is to waste rubber, and wasting rubber in the light of today's conditions is nothing short of disloyalty to the war effort.

THE MANUAL APPROACH

The material in this manual has been prepared after careful study of existing tire conservation and staggered-hour programs. No one plan can supply the answer to the problems of all locations, but here outlined is a basic plan which can be enlarged or changed to suit any particular situation.

To simplify it, the manual has been divided into three main sections. The first describes the proposed organization set-up to put into effect a comprehensive

community plan. The second deals with staggered hours, while the third is devoted to group riding. Study those sections that deal with your problem and initiate action at once. Cooperate fully with your community program. All efforts in support of the conservation plan are important contributions to the Nation's war program.



The OBJECTIVE

SECTION I

THE ORGANIZATION SET-UP

NATIONAL

At the request of Director Eastman, the Highway Traffic Advisory Committee to the War Department under the chairmanship of the Commissioner of Public Roads, Thomas H. MacDonald, has accepted the Nation-wide responsibility for the execution of this conservation plan. A full-time staff has been assembled in Washington, and this staff, reinforced by experienced personnel in the several States, including those from the Highway Planning Survey, are available to assist the State and local administrators.

STATE

Each Governor has been requested to enlist the services of the State Highway Traffic Advisory Committee whose chairman will act as the liaison between Commissioner MacDonald's committee and the State committee. It will be necessary in most instances for this State Highway Traffic Advisory Committee to appoint a full-time State Administrator to advise and assist the many local units.

LOCAL

Each local area has its own problem and while coordination and cooperation with the State-wide plan are necessary for full success, most of the local problems must be solved locally. To a *Local Administrator*, appointed by the Mayor, should go full responsibility for guiding the following local organization.

A War Transportation Committee made up of representatives of Industry, Labor, Local Business, the local Defense Council, Transportation, City Police and Traffic Departments, Schools, Civic and Improvement Groups, and publicity men should provide him with all necessary contacts and support.

With the advice of his War Transportation Committee, the Local Administrator should select co-administrators who will be responsible for the successful prosecution of the program in such fields as Industry, Labor, Transportation, Local Business, Schools, Publicity, and others. These co-administrators will be collectively responsible for the work necessary to organize, initiate, and supervise a community-wide staggered-hour program. In addition, they should give full support to improvement in the regulation of street traffic to make possible more efficient movement of passenger vehicles. Co-administrators will be individually responsible for creating group riding within their respective phases of the community's activities. The Co-administrator for Publicity should work with each of the others and assist wherever publicity can be used to arouse interest, support, and enthusiasm.

Each co-administrator will need assistance from representatives within his own division. In large industrial areas, for example, the Co-administrator for Industry will require the assistance of someone in each of the leading plants or industries. Possibly he can get sufficient coverage by having an assistant in each industrial section of the area. The organization set-up below the co-administrators is dependent almost entirely on the nature of the particular community's activities and their magnitude. Below the co-administrators the organization can be expanded as far as necessary but caution here is appropriate. If the organization is too large, close contact between

the co-administrators and their workers will not be possible and the plan will not have the "push" and momentum needed to insure success.

Publicity is a very important factor in the community-wide program. The co-administrator should map out a publicity campaign carefully timed and coordinated with the progress of the conservation program and its various phases. It should also be consistent with the national publicity campaign and should act to supplement it. Local advertising clubs or groups should be asked to contribute their efforts in the creation of plant posters, hand bills, display cards, streamers, windshield stickers, lapel buttons, and other material which will help enlist public support and build up enthusiasm. Radio stations should be urged to use spot announcements. Movie theaters should be furnished with ideas for screen shots and the newspapers should be given appropriate releases, photographs, and ideas for stories.

The local Civilian Defense Council offers a very important medium for accomplishing the objectives outlined in section III. The Council should be represented in the administrative organization, and its facilities utilized to the fullest extent in effecting the group-riding program.

Figure I shows this organization set-up in ready reference form, while figure II is a suggested schedule of the various steps necessary to put the community-wide plan into effect.

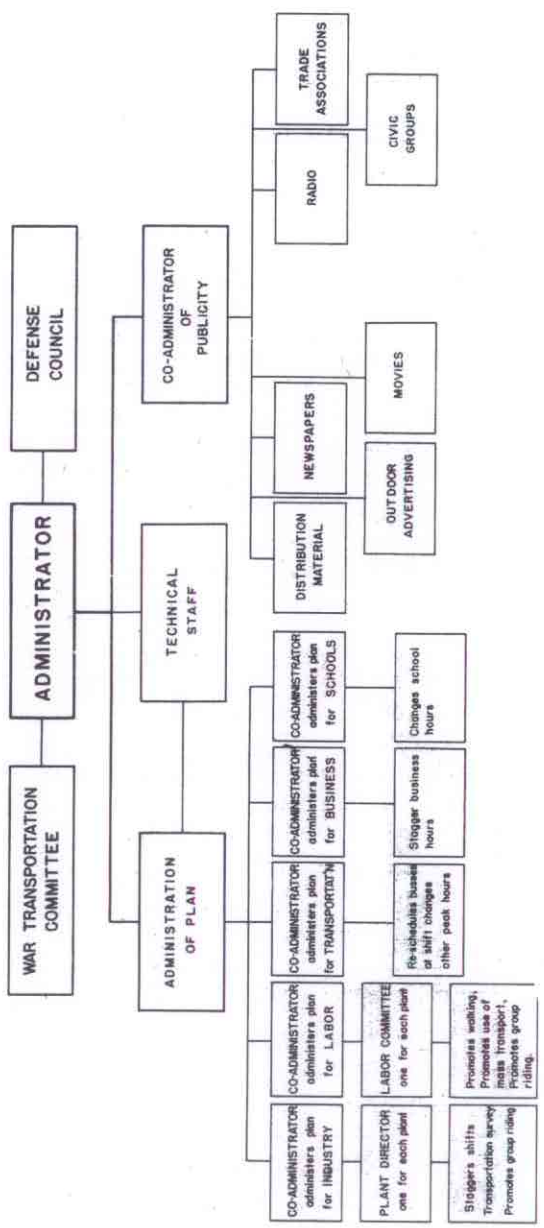


FIGURE I

The METHOD

GOVERNMENTAL AUTHORITY	CO-ADMINISTRATIVE GROUP	ADMINISTRATOR	INDUSTRY	LABOR	SCHOOLS	PUBLIC OFFICES	TRANSPORTAT'N COMPANY	OTHER COOPERATING GROUPS
1. Appoints Administrator								
	2. Develops plan of Program							
		3. Meets with: Labor Industry Transportation Co. Editors Radio Men School Supts. Business Reps Automobile Club						
		4. Contacts other Cooperating Groups						
			5. Approves Plan	5. Approves Plan	5. Approve Plan	5. Approve Plan	5. Approves Plan	5. Approve Plan
	6. Releases Publicity							
		7. Staggers Shifts			7. Change Hours	7. Change Hours	7. Revises Schedules	7. Change Hours as Necessary
		8. Organizes Group Riding Plan for Workers in the Plants	8. Organizes Group Riding Plan for Workers in the Plants					8. Organizes Group Riding Plans

The SCHEDULE

FIGURE II

SECTION II

WHY AND HOW TO STAGGER HOURS

PURPOSE

The purpose of staggering hours is to reduce the high morning and afternoon traffic and transit peaks, and to use more efficiently our streets and transportation facilities in the now slack periods. In the past, staggered hours have been used mainly to reduce street congestion in rush periods. This has been done in some cases by changing working hours in an area by as little as 15 minutes with excellent results. Staggered hours are needed now, however, primarily because of the greatly increased travel on streetcars and busses, due to rubber and gasoline shortages, and the consequent necessity for more efficient utilization of these vehicles.

The following outline of a staggered-hours survey relates solely to transit operations. It has been found that transit and traffic peaks occur in cities in approximately the same places and at the same times, and that staggering hours to reduce transit peaks will automatically have the same effect on general traffic flow.

In some localities and under certain conditions, staggering of hours to overcome a limited peak condition may involve a very simple shift in the hours of one group of workers. In general, however, the problem is more involved and it must be remembered that ill-advised staggering of hours may create more severe peaks than now exist. Extreme caution is necessary and expert guidance should be sought before any attempt is made to shift hours. The necessary changes in hours must be determined by a comprehensive survey of employment and school schedules

and an analysis of the mass transportation operations as related to the existing schedule of hours. *Do not attempt to stagger any hours until the following steps have been taken.*

WHAT INFORMATION IS NECESSARY, AND HOW IT IS COLLECTED

1. Obtain the number of employees and their times of starting and leaving work for the offices, stores, and factories under consideration. Office and store employment and hours of work will usually be available from the local Chamber of Commerce or Retail Merchants Association. This information need not be collected on an individual store or office basis; an over-all figure for each business and retail area will usually be satisfactory. Similar information should be secured from the local school authorities for each school.

In the case of industries, individual plant data will be necessary because of the wide variation in starting and stopping times. These should be obtained through the local Manufacturers' Association or from employers by telephone or personal canvass, using the form in figure III. This form is to be filled out by the employer or by the canvasser.

2. Information on the transit system's passenger and vehicle flow should be obtained from the local transit company and should include:

(a) Number of transit vehicles in scheduled service in each ten-minute or fifteen-minute period of the day.

(b) Number of passengers on each route at heavy load points by fifteen-minute periods from 5:00 a. m. to 8:00 p. m.

WAR TRANSPORTATION CONSERVATION COMMITTEE

STAGGERED HOURS SURVEY

Name of firm_____

Address of firm_____

Type of business_____

Shift	Number of employees	Starting time	Quitting time
Office			
No. 1			
No. 2			
No. 3			
Total			

*Signed*_____

*Title*_____

Use reverse side or additional sheet for comments or further information.

FIGURE III

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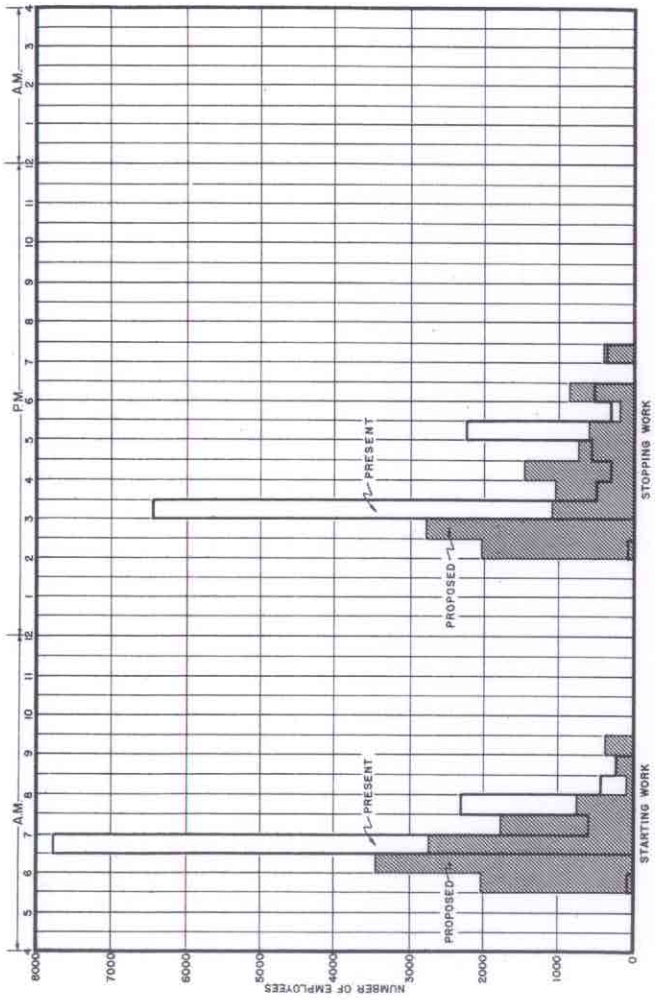


ACTUAL NUMBER OF EMPLOYEES ARRIVING AT AND LEAVING FACTORIES
DAY SHIFT BY THIRTY MINUTE INTERVALS

FIGURE IV

HOW THE DATA ARE ANALYZED AND INTERPRETED

1. The number of employees on each shift should be tabulated by starting and leaving times in each area. These areas should be held to the minimum practicable size, selected with proper regard to the transit routes, so that it is possible to segregate reasonably well the routes used in traveling to and from each district. Similar tabulations should be set up for the schools.

Thus, in each area, the total volume of employees and school children going to work and school at 7:00 a. m., 7:30 a. m., 8:00 a. m., etc., will be known, as well as the number leaving at each time in the afternoon.

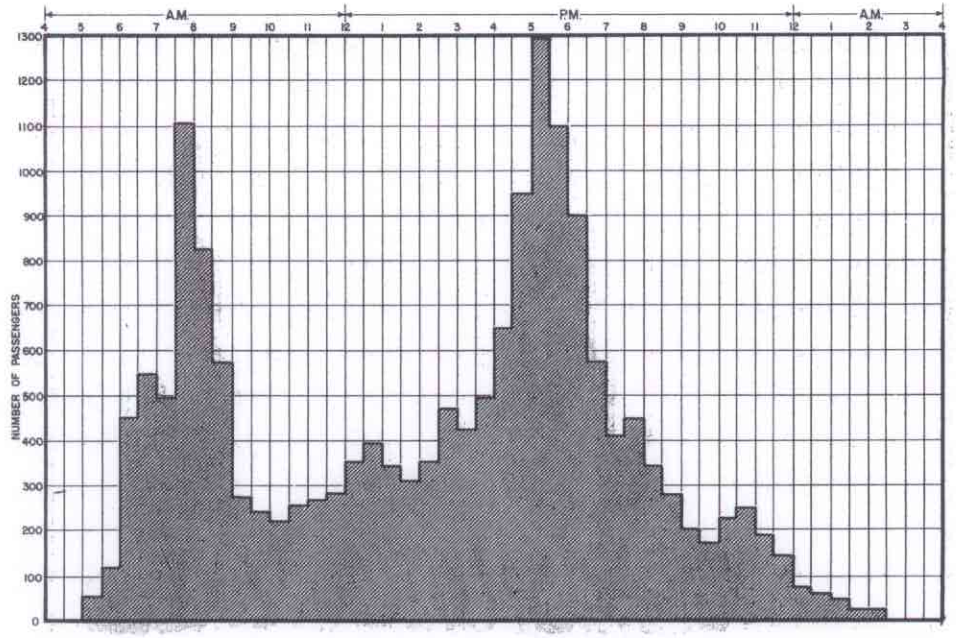
The summary figures for each area should be plotted in graph form to enable visual determination of the time and relative importance of the present peaks. (Figure IV is the type of graph frequently used to show the condition before and after the proposed changes in working hours.)

2. The transit passenger counts and vehicle flow are plotted on graph paper, as in figures V and VI, disclosing the peaks and valleys of the curves.

Since the purpose of staggered hours is to level the peaks and fill the valleys so as to obtain more uniform passenger flow throughout the day, the consequent adjustment of working and school hours should have as its objective spreading the peaks to the maximum feasible extent, so as to obtain the greatest benefit from the plan.

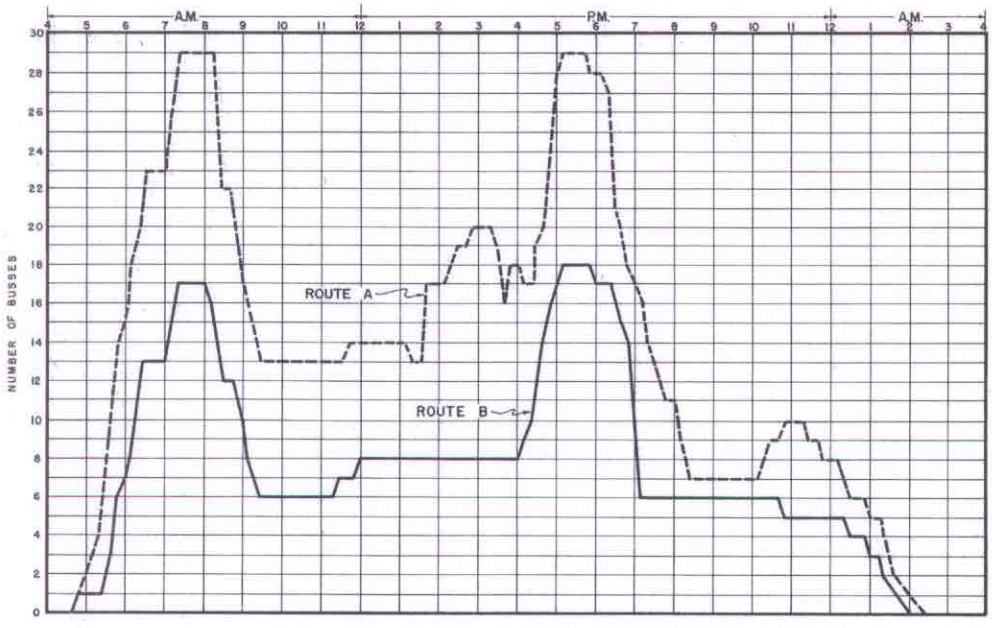
CORRELATION OF DATA ON WORKING HOURS AND PASSENGER MOVEMENTS

1. If the district being studied is a single concentrated area well isolated from other similar areas, the



NUMBER OF PASSENGERS CARRIED ON A TYPICAL WEEK DAY
BY THIRTY MINUTE INTERVALS

FIGURE V



NUMBER OF BUSSES IN ACTUAL OPERATION ON A TYPICAL WEEK DAY
BY TEN MINUTE INTERVALS

FIGURE VI

relation between the number of employees starting and stopping work at any time and the number of transit vehicles and passengers will be clearly evident. In such cases, it is usually sufficient merely to level off the number of workers starting and stopping at any one time into approximately equal groups, with about the same number starting and stopping work on the hour and half hour. The desirable length of the spread, or staggering, will depend upon the extent to which it seems desirable to utilize now unused transit facilities and decrease street traffic. In making these adjustments, care must be taken that changes to reduce the afternoon peak, for example, do not at the same time increase the morning peak. Thus, some plants will be required to start the day shift earlier than has been customary, while others must start later.

2. When, as is most usually the case, the staggered program in contemplation is city-wide covering factories, offices, stores, and schools, it is necessary to consider the effect of potential changes in one area upon the traffic and transit loads at points remote from that area. These points are ascertained from the transit counts at heavy-load points referred to above.

3. Obtain from the transit company the required time of travel between the points of employee concentration and these critical load points, making allowance for the time required to leave the bus or streetcar and report for work in the morning, and also the time that elapses on the average after the whistle blows and before passengers board the transit lines. Get this for each mass transit route.

ADJUSTMENT OF WORKING HOURS

With these data it is now possible to estimate very closely the effect of a change in working hours at any point upon the traffic and transit loads at nearby critical points. In this way can be determined the desirable changes which must be made in working hours in order to spread the peaks and fill the valleys. If consideration is not given to the time required to travel between the place of employment and the critical points, it is possible to create worse situations than previously existed.

An example such as the following will illustrate this point. Assume two plants about a mile apart, each discharging 1,000 persons, one plant stopping at 4:30 and the other at 4:45. While this appears to represent a balanced load, it actually does not. Suppose the travel time from the first plant to the critical point is 20 minutes. The passengers will arrive there approximately at 4:50 p. m. Assume the travel time from the other plant, located closer to the critical point is only five minutes. They would then reach the same point at the same time, producing a very undesirable overloading. By advancing the hours of work in the first plant so that employees stop at either 4:00 p. m. or 4:15 p. m., this peak can be eliminated. A later closing at the second plant would have the same effect.

In making changes in working hours it is necessary, in all but the simplest cases, to consider each transit route as a separate study, relating the working hours in the establishments served by such routes to the transit flow curves on those same routes. Analysis by individual routes is the only practicable method of arriving at the most desirable revisions in working schedules.

Figure IV, previously referred to, is a chart showing a typical example of the changes in working hours in the plants served by a single route.

EFFECT OF ADJUSTED WORKING HOURS ON PRODUCTION SCHEDULES

When small concentrations of employees are involved, it is generally desirable to shift all to a new working time. When large numbers of employees start and stop work simultaneously in a single plant, it is frequently necessary to use intra-plant staggering. By intra-plant staggering is meant the breaking of a shift in a plant into two or more groups starting at different times instead of all starting simultaneously. Such adjustments are generally made on a departmental basis, with different starting and stopping times for the various departments. Where adjustments of this character are deemed necessary, it is essential that conferences be held with plant managers so that the resulting changes will not interfere with the production schedule of the plant. Intra-plant staggering has been used in a number of locations without such interference.

RELATION BETWEEN WORKING AND SCHOOL HOURS

In the final program, every effort must be made to avoid undesirable overlaps in the traffic of the various groups: factory, office, store, and school. At present, all usually have very similar starting and stopping times. This produces high morning and afternoon peaks. Under a staggered-hours program, these groups will be assigned starting and stopping times such that, for example, school pupils and business employees will not be traveling at the same time. Similar consideration must be given to the other groups.

MAINTAINING THE PLAN

No plan of staggered hours should be considered as final when adopted. This does not mean that the problem should be attacked piecemeal with only minor adjustments being made. The first application of staggering should spread the hours over a sufficiently broad period so as to provide a very substantial increase in the carrying capacity of the transit system and a measurable decrease in traffic congestion. But imperfections in the plan may develop which will require review and adjustment. It is important that the local administrator recognize this and be ready to take up these problems as they arise. No plant or industrial group should make any material changes in its working hours without first referring the matter to the administrator for consideration. After such review, it may be possible to suggest other changes which will be equally as acceptable to the plant as the one under contemplation, and not result in upsetting the program. Should changes in hours of work in one plant be required by production demands that cannot be avoided, it may be necessary to shift the hours of work in other nearby plants in order to maintain the proper balance to the program.

SECTION III

GROUP RIDING

The Nation's greatest stock pile of rubber is that in the tires of the millions of automobiles riding the streets and highways daily. Successful continuation of the war effort demands that this rubber be conserved.

All nonessential automobile uses should be drastically curtailed and those automobiles in essential services should be used to the maximum of their efficiency. This means that instead of the average automobile providing transportation for less than two persons (including the driver), group riding should be arranged so that this average automobile furnishes necessary transportation to its full seating capacity.

The possibilities of group riding are unlimited. Programs to promote the idea should be sponsored by industrial plants, labor groups, civic organizations, stores, offices, schools, churches, and every other patriotic group of American citizens. The following outlines of procedures should be made the basis for the programs, and they should be initiated at once. Each day's delay represents a tremendous waste of one of the most valuable resources of our Nation--a national resource which cannot be replenished during the war nor for some time after the war.

TIRES SHOULD NOT ROLL EXCEPT ON THE ROAD TO VICTORY

A PLAN FOR PROMOTING GROUP RIDING AMONG FELLOW EMPLOYEES OF INDUSTRIAL PLANTS

Transportation of employees has become a difficult and critical phase of industries' operations. Management cannot escape its share of responsibility in the solution of this all-important problem. Labor likewise has a very substantial responsibility which it cannot escape. Between these two groups lies the full responsibility for the sponsorship and control of a group-riding plan among the employees.

No one plan will produce satisfactory group riding in all plants, but the following has worked successfully in many locations of varying sizes. The principles laid down should provide the basis for formulating an appropriate plan to produce group riding in any plant. Much depends on the presentation of the program and the cooperation between management and labor.

MECHANICS OF THE PROGRAM

The first step in a program for any given plant is a check of the automobiles transporting its employees to the job. This survey should be made to determine the number of unused seats and to reveal the extent to which group riding will reduce the number of automobiles necessary. The purpose of the program is, of course, to fill as many of those empty seats as possible.

Following this check a survey of the employees and the locations of their residences is necessary for setting up a sound program. Figure VII shows a questionnaire form that has been used successfully at a number of locations and is suggested for use with this plan.

WAR TRANSPORTATION QUESTIONNAIRE

Be sure to answer all questions fully and without delay

1. Name_____
   (Name in full) Check or pay roll number
2. Address_____
   Street and number City or town
3. _____
   Give name and location of department where you are now working
4. Give time of starting to work_____ a. m. / p. m.
   Time of stopping work_____ a. m. / p. m.
5. Do you own an auto?_____ Check body style____ Sedan____ Coupe
6. Do you now usually drive to work?_____ If you do, give names of those who now ride with you:_____
7. If you still have room for additional passengers will you agree to fill those empty seats if convenient, mutual arrangements can be made?_____
8. If you do not drive to work, how do you now get there?_____
9. If you ride with someone else give his name and address if he is a fellow employee, otherwise give name of his employer
10. If you own an auto but do not now drive to work, would you be willing to drive and fill all seats with employees provided some convenient, mutual arrangements can be made between you and them?_____
11. If you own a car, whether you now drive to work or not, would you be willing to use it alternately with other auto owners in an arrangement whereby other owners in the group would alternate in the use of their cars and non-owners would be carried as passengers?_____

Signature_____

Date_____

FIGURE VII

SORTING THE QUESTIONNAIRES

The questionnaires should be distributed to the employees through the medium that will produce the quickest response. This may be through the foreman, through one of the employees' representatives, or through the personnel department. A map of the territory embracing the residence locations of most of the employees should be divided into sections. Some have found that half-mile square sections provide a reasonable working basis. Others have merely used census tracts. Whatever subdivisions are chosen, they should each be assigned numbers. The questionnaires should first be grouped in accordance with these geographic subdivisions and numbered to correspond. Then within each group the questionnaires should be separated according to plant shifts, considering both starting times and stopping times. There should be a further separation within each group as between automobile owners and non-owners.

ALTERNATIVE METHOD

In some cases, it may be advantageous to provide the employee with a map of the entire residential area divided into appropriate sections. Each section should be designated by a section number. The employee, when filling out his questionnaire, will refer to a copy of this map, locate the particular section in which he resides, and indicate this section by number in a space provided for this information on the questionnaire. This simplifies the job of identifying the questionnaires by geographic subdivisions.

FORMING THE GROUPS

It now becomes necessary to assign employees to fill the empty seats. This can be done by referring to the

questionnaires of the automobile owners. The driver and his full quota of passengers should be thought of as a group. The employees assigned to a group to increase its number to the full capacity of the automobile should of necessity be working the same shift with the same starting and quitting times. All members of a group should be living fairly close together. This facilitates the assembly of the group for the trip to work and avoids waste mileage on the "pick-up." It may be that the group will agree on some assembly point or it may be that the drivers will agree to take a route that will pass by or near the homes of all members of the group.

For purposes of record and for the convenience of the automobile owners in the group, a form similar to figure VIII might well be used.

Where parking facilities are provided, the parking spaces should be marked to correspond to the geographical sections on the map. The automobiles originating in a given section should be assigned parking spaces with the corresponding number and they should be required to use that particular space. This makes it easier for members of the group to get together at the end of the shift for the ride home. See figure IX for a visual explanation of this method.

NATURAL RESISTANCE TO GROUP RIDING OVERCOME

One of the barriers to be overcome in obtaining successful operation of the plan is the lack of personal acquaintanceship between the members of a given group. The plant personnel division working with the employees' representatives should arrange all necessary introductions and should explain clearly the workings of the plan, its purposes, and its absolute necessity.

WAR TRANSPORTATION PROGRAM

Group sheet

Names and address of employees in group, section, or parking space No.

1. _____
   Name Address Phone number

2. _____
   Name Address Phone number

3. _____
   Name Address Phone number

4. _____
   Name Address Phone number

5. _____
   Name Address Phone number

Pick-up route or assembly point: _____

Return trip leaves parking space No.: _____

FIGURE VIII

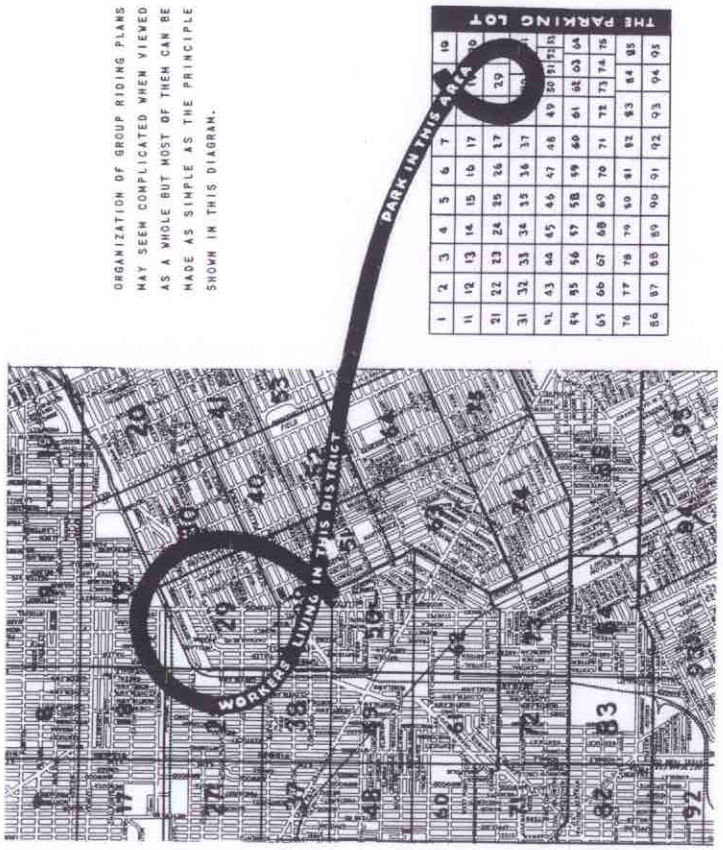


FIGURE IX

It is quite obvious that inconveniences will be experienced by participants in the plan when these are measured in terms of a peacetime economy. The alternative to these so-called inconveniences, however, may call for much more drastic changes in our habits of travel and living. Whatever the inconvenience, it should be accepted willingly as a contribution to the war effort.

GROUP MEMBERS' RESPONSIBILITIES

The members of each group should have clearly explained to them their respective responsibilities in connection with the plan. For instance, the man who is scheduled to be the driver for a given week has the responsibility of contacting one of the other drivers in his group should illness or some other cause prevent him from keeping his schedule on any given day. Those who are riding as passengers should appreciate the importance of being on time along the pick-up route or at the assembly point. Emphasis should be placed upon the cooperative feature of the plan, and it should be pointed out that failure on the part of anyone to assume his responsibility will introduce complications that may doom the plan to failure.

THE NON-OWNER MUST BE INCLUDED

Many employees do not own automobiles, and if they are to participate in the plan, they will have to ride as passengers all the time. For those who own automobiles the plan merely resolves itself into a schedule whereby each driver furnishes the automobile for a week or some other agreed period while riding as a passenger in the automobiles of others of his group during their periods. Some mutual arrangement will have to be made between the non-owners and the owner, but that is a matter which should be left up to the employees themselves.

It is important that non-owners be included, at least to the extent of their present riding volume.

ESTABLISH A TIRE EXCHANGE

As time goes on, some employees will reach the point where they have only three usable tires left. An exchange should therefore be set up which will provide the medium for getting the tires from such automobiles into use on some other autos which have reached a similar state of tire wear. This is a very important phase of the plan and should be established at an early date so that no automobile will have to be laid up if there are tires available and not in use in the possession of any member of the group.

THE AUTOMOBILE NOT SCHEDULED FOR THE TRIP TO WORK

On those days when an employee's automobile is not in use, it is his responsibility to see that his automobile is not used by someone else for non-essential trips. If he does not take this precaution and the automobile is used, the tire wear that this plan proposes to save will still occur and the effectiveness of the plan will be reduced to that extent.

GROUP RIDING AS APPLIED TO EMPLOYEES OF STORES AND OFFICES, TO SCHOOLS AND CHURCHES, TO NEIGHBORS, AND FRIENDS

The principle of and necessity for group-riding practices are just as clear and pronounced among these groups as in the case of industrial workers. The control of a plan might not be as simple and the organization of groups cannot be approached quite so directly but conservation of their automobile tires is just as important in the over-all war effort. The automobiles may not be hauling workers directly engaged in the war program, but many

of them are serving essential civilian workers. Even those providing transportation for nonessential workers are serving to the extent that they keep their passengers off the heavily loaded mass carrier facilities which are busy serving war workers. The nonessential worker has more reason to conserve tires than anyone because when his tires are no longer serviceable and he must turn to other means of transportation, he will be served only after essential workers have been transported. The time may never arrive when local transportation has to be rationed, but if it does, the nonessential worker will have many occasions to regret his failure to follow these suggestions for conserving his car and tires.

Where friends or acquaintances live near each other and work in the same general area, they should plan a group schedule to insure the use of the fewest possible number of cars necessary for their trips. They should assume the obligation of seeing that each automobile is filled to capacity on each trip, even though persons have to be invited to participate who are not already acquainted.

Where friends have a common travel route, it is not necessary that they live close together. The one originating farther out can drive by and pick the others up. If the plan calls for alternate driving, he can drive to the home of one of the others and leave his car there for the rest of the trip.

ESTABLISH NEIGHBORHOOD RIDE EXCHANGES

In large cities where people who live next door frequently remain complete strangers, particularly in apartment districts, some clearing house should be established

where persons willing to cooperate can register their willingness, together with their time schedules and destinations. Fire stations could well be used as such an exchange and Civilian Defense Council workers could handle the registrations and grouping arrangements. The ideas suggested for industrial plants could be applied in part to the registration list at each station.

FORMATION OF GROUPS AT THE BUSINESS END

Surveys of employees of stores, of office buildings, or of any large group of workers, will reveal many possibilities of group riding that will not show up in the neighborhood plan. Each such large group should be surveyed by some one who wants to contribute to the war effort. In stores, the management should take the lead. In office buildings, the building superintendent should initiate the move, but if he does not do so, it is the responsibility of some patriotic tenant of the building to assume the lead. Here again, a Civilian Defense Council member could well take charge of the survey and follow through with the arrangement of groups.

When all practical groups have been formed, those who are registered but not placed in groups should be tied-in with the ungrouped individuals in nearby stores or buildings. This opens up possibilities of further grouping that should not be overlooked.

FOR THE TRIP TO SCHOOL

It has been common practice for mothers to alternate in driving their children to school. Under present conditions, special effort should be made to assure that each auto arriving at school has a capacity load. Where distances permit, walking should be substituted for automobile travel.

SUBURBAN GROUP RIDING

In outlying districts where it may not be reasonably convenient to start out with one automobile, the group-riding plan still offers ample opportunity for tire conservation. Some meeting place should be designated so that the several cars used to bring their owners from their respective homes can be parked, while these owners all ride for the longer distance in one auto. This practice has long been followed by suburban dwellers who ride trains into the city. The parking lot adjacent to the suburban railroad station has become a fixture.

THE AUTOMOBILE LEFT AT HOME

As was suggested in the discussion of plans for the industrial worker, nothing is gained by group-riding plans if the autos thus released and left at home are used by other members of the family on nonessential trips. Participants in group-riding plans should insist that their tires not be wasted through unnecessary driving by someone else.

This entire conservation program is closely bound to the Nation's war effort, the support of which is the patriotic duty of every American citizen. *Full* support of the war effort *demands* support of the plan herein presented. Do your part and use your influence to gain the help of others.

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