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ELDERLY AND HANDICAPPED TRANSPORTATION SERVICES
IN REGION IV

**Planning
and
Coordination
Manual**

January 1979

Prepared for
U.S. Department of Health, Education, and Welfare
Office of the Principal Regional Official
Region IV - Atlanta, Georgia
and
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Urban Mass Transportation Administration
Region IV - Atlanta, Georgia

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JOINT HEW-UMTA EVALUATION OF ELDERLY AND
HANDICAPPED TRANSPORTATION SERVICES IN
REGION IV

VOLUME I

Planning

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**U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE PRINCIPAL REGIONAL OFFICIAL
REGION IV - ATLANTA, GEORGIA**

and

**U.S. DEPARTMENT OF TRANSPORTATION
URBAN MASS TRANSPORTATION ADMINISTRATION
REGION IV - ATLANTA, GEORGIA**

by
**CARTER·GOBLE·ROBERTS, INC.
 JANUARY, 1979**

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This manual, as the title implies, deals with "specialized" transportation systems and the "coordination" of transportation services. It is a "how to" manual that is intended for use by persons responsible for planning and/or operating specialized transportation systems. The focus on specialized transportation means that this is not a manual for a traditional city bus system but, rather, is aimed at transportation which was probably started to serve the clients of human resource agencies and private non-profit service organizations. Paratransit, elderly, and handicapped transportation; social services transportation; and rural transportation are the kinds of services that fall under specialized transportation addressed by this manual. Some of these systems may also be rural or small urban public transit systems. Or they may have the ability or intention of expanding to become a public fare-paying system, which this manual would help them do. Either way, it is a manual that can be used in whole or in part, depending upon the needs of the particular user, organization or area.

The preparation of this manual was brought about by the initiatives of the Region IV Offices of HEW and UMTA. Those Offices were interested in looking at the present situation in special transportation systems in federal Region IV, and in helping existing and emerging providers or operators to find ways to improve the coordination of transportation services. In addition to the preparation of this manual, case studies of six different systems using UMTA 16(b)(2) vehicles were undertaken concurrently in Georgia, Kentucky and North Carolina. The case studies are contained in a separate document available through the Region IV Offices of HEW and UMTA in Atlanta. Examples, findings and approaches found to be useful in these case studies have been used throughout this manual, especially in the Technical Supplements. In some instances, it may be worthwhile for users of this manual to contact the directors of these systems to find out about their experience with certain practices or procedures.

While the manual is lengthy, hopefully, it is a useful one that draws upon the experience of numerous systems and their directors as well as the planning and implementation experience of the consultant. This manual is an attempt to explain in writing how to start, plan, operate and manage a specialized transportation system and how to coordinate the services of one agency with that of others. Such an attempt requires a lot of words, charts, and graphics, which will never be a full substitute for the verbal advice and firsthand experience of those who have been there before. While jargon has hopefully been minimized, the reader may find the Glossary of Terms useful, since this field has been developing some new terminology. Where the written word does not seem adequate, the best thing the reader can do is pick up the telephone and discuss his particular problem with another system manager. The authors have found special transportation system managers to be quite open and ready to provide advice. Such communication, in conjunction with the aid of this manual, is probably better than either one alone.

How to Use the Manual

The problem of improving transportation services has been approached in the preparation of this manual from the perspective that coordinated systems should, ideally, include aspects of or at least be coordinated with local public transportation. Whether or not the full range of services, from specialized to public, should be consolidated under the same operating entity is a local decision that has been left optional here. In cases where public and specialized transportation services are left in the hands of two or more separate operators, creation of cross-coordination responsibilities are recommended, which should be assigned to an existing entity or a newly established one. The word entity is used throughout to refer generally to any public agency or private organization operating and/or coordinating the delivery of transportation services.

The manual is designed to be usable, in part, by all such entities and others participating in the development of their services. No one entity or agency is likely to be able to apply the complete manual directly to its individual role in the total process addressed herein. The document is designed to deal comprehensively with the politics, preplanning, and management of developing a system.

A specialized transportation provider may not only seek out and authorize clients for services, but it may also operate vehicles to transport the clients to those services. If such a provider intends to develop its own transportation program, but has no authority to expand operations to benefit the general public, its interest in all three parts of the manual would not include the applications to public transportation. The important matter not to be neglected, however, is that such independent development should be undertaken in cooperation with local planning and coordinating agencies or organizations. In this way, the formerly independent transportation provider would become a party to the development of comprehensive transportation services for which the complete manual could apply.

The manual, from beginning to end, comprises the coordination process for complete transportation development. The full development program may coincide with a five-year plan or be as short as three years. The manual is divided into five Phases that are designed to describe distinct elements of the full process. In areas where one or more of the Phases have already been completed, the remaining Phases should still apply. Each Phase is divided into sequential steps and tasks. Some steps and tasks naturally involve greater detail than others. They are supported by descriptions of methodology in the Technical Supplements, which are at the back of the manual.

How to Start

It is widely acknowledged that transportation services are vital to social services. It is somewhat less recognized, however, that coordination of existing transportation services is in the best interests of the subject agencies; the social service programs; the clients; and, ultimately, the taxpayer. Recognizing and confirming the extent to which transportation problems exist in a local area and making a decision to act toward coordinating or consolidating services is the intent of these first four steps.

Steps in How to Start

- Step 1 Recognizing the Problems
- Step 2 General Background Analysis
- Step 3 Establish Planning Goals
- Step 4 Framework for Action

Purpose: Recognizing the problems of duplicated transportation services and unmet need for transportation is the first step. Recognition includes an awareness that the problems exist: namely, that many social service agencies are providing transportation to their clients, but that the level of transportation provided and/or the manner in which it is provided are too inefficient in light of the needs that exist. Recognition of these problems is usually followed by the exploration of ways to improve the situation, and finally, adoption of some changes that will bring about the desired improvements. Those who recognize that problems exist must somehow identify them to officials who are in a position to act upon them.

Participation: Awareness of the problem usually occurs in many different places within the same time period. For example, people working for social service agencies at the local, state, and federal levels have generally come to recognize that a problem of duplicated transportation services exists. Their clients, whether they be senior citizens or parents of handicapped children, may also have expressed their desire for more service. In addition to recognition by social service workers, it can be assumed that elected officials at all levels of government and the general public have become at least partially aware of the situation.

The awareness or recognition may not be the same among the different groups of people, but it can be assumed that they share a common concern for social service programs, including transportation, that do not waste money and that, at the same time, fulfill their objectives. When someone effectively conveys the problems to local governing bodies (e.g., county councils) or planning boards, the road to improvement can begin.

This first step is more of a public relations or publicity effort than anything else. It requires some group with influence or authority to convince others that coordinated and improved transportation is needed. Once this is done, planning and evaluation can start. The kinds of issues and concerns that need to be used to "sell" the idea to others are discussed under two general topics: "Duplication of Transportation Services" and "Need for Accessibility and Mobility." Hopefully, some or all of these ideas will be useful in your area to get things started.

DUPLICATION OF TRANSPORTATION SERVICES*

Even though transportation services are limited, there is frequently a duplication of services between specific programs and between specialized agencies. The duplication is evidenced by the following:

- . Many agencies operate overlapping transportation programs
- . Many agencies have their own fleet of vehicles
- . Many agencies operate within the same geographic boundaries
- . Most agencies provide services to essentially the same clientele, that is, people with low incomes
- . Most agencies operate within similar time schedules
- . Very few agencies encourage or subsidize their clients' use of public transportation serving the same area.

The duplication of transportation services is a result of funding for transportation being a part of separate social service programs. Each program has specific objectives, and each depends upon transportation services to make the primary objectives possible. More specifically:

- . Most programs have their own unique funding sources, each with special restrictions, reporting requirements, eligibility standards, etc. Together they require considerable bookkeeping effort and "red tape" to coordinate.
- . Even though several social service programs may be administered by a single agency, the transportation components of those programs often remain separate because they are easier to manage that way, since funding requirements discourage consolidation of bookkeeping.
- . There is a common misunderstanding about what the respective federal regulations either permit or forbid with respect to transportation. In fact, none of the social service programs prohibits the coordination of transportation services intentionally.
- . Each agency maintains independence with regard to delivery of services, client files, etc. There is little communication between social service agencies and, consequently, there is limited knowledge within each agency as to what the others are providing, and awareness of opportunities for cooperation is lacking.

- . Until recently, there has been little incentive to coordinate transportation programs and reduce or eliminate duplication because budgets, in general, were not as limited, as they are now.

Because of the absence of coordination, agencies each spend substantial amounts of money to provide transportation services, amounts which are not even fully known because no one has ever looked before. Transportation is not cheap, and no matter who provides it, someone, somehow, somewhere, at a minimum, pays for vehicles; oil; gas; drivers; maintenance; licenses; tires; insurance; record keeping; and administrative time costs associated with arranging and managing the service. In many cases where systems involving several vehicles have evolved, other costs may also be involved, such as radios and storage facilities. In the six case studies undertaken along with this manual, in Georgia, Kentucky, and North Carolina, the vast majority of the 96 agencies interviewed that either used or provided transportation were unable to provide total cost accountings or estimates of their expenditures for transportation. The notable exceptions were five out of six organizations that were attempting to provide coordinated service.

*Also see Technical Supplement, page 119.

NEED FOR ACCESSIBILITY AND MOBILITY

It is generally accepted that there is a critical problem with duplication, yet there are no transportation services for many of the people who need them the most. People with low incomes, who are thereby transportation disadvantaged, and people who are elderly and/or handicapped represent the primary "target populations" for subsidized transportation services. These people need access to transportation services in order to participate in the following activities, which are essential to their well-being

- . Work and job placement for those who are able
- . Health care
- . Day care for many
- . Vocational training and other educational training
- . Recreation and social functions
- . Nutrition, i.e., congregate meal programs
- . Income assistance programs
- . Shopping and personal business

In most rural areas, affordable transportation, which would allow the target populations to make trips for many of the necessary purposes listed above, is virtually non-existent. Social service transportation programs are generally limited as to whom they serve and/or what trip purposes they are designed to serve. Existing transportation services tend to be concentrated in and near urban areas. Traditional transit systems operating on fixed routes and fixed schedules, if they still exist in small urban areas, are growing less and less able to provide central circulation throughout the sprawling communities. Inter-city bus schedules are not designed to serve relatively short distance trips within a county or between neighboring counties.

Just the need for access to some form of transportation tends to be the problem in rural areas. The need to coordinate existing services and make them accessible to more of the people who would use them seems to increase with the size of the urban areas. While some rural areas may have no transportation, as opposed to too much, the mere scarcity and difficulty of getting funding should signal the need to coordinate and cooperate among agencies from the start.

TASKS

Somebody has to take a stand. It may be a housewife, a staff person, or a politician. Regardless of who, how many, or what type, if you are reading this section and recognize the need but nothing has been done yet, then you may be the one to start the ball rolling. This is not a technical effort but, rather, a political one. The preceding sections can arm you with the issues and concerns if you did not know them already, but the strategy for getting support and action cannot come from a book.

You will have to decide the most politically feasible way for your area to be sold on the need for coordinating transportation. It will not be easy because you may be stepping on toes when you start to talk about agencies giving up vehicles and/or power they have now. You will have to decide on the most effective and diplomatic means to overcome or perhaps overpower those who may not like the idea.

It may not be all that hard. In the six case studies undertaken in Georgia, Kentucky, and North Carolina during the preparation of this manual, a surprising amount of support (verbal and real) was found for the concept of coordination. This finding is contrary to agencies' "empire building" attitude prevalent up to the mid-1970's when every agency seemed to want its own transportation system regardless of how frequently it was used. Now it appears that many agencies, whether they be senior citizens councils, handicapped schools, or community action agencies, have realized that transportation is an expensive and complex support service that they would rather purchase for their clients instead of operating an entire system themselves. Also, remember that you are not necessarily talking about taking away someone's vehicles or employees. There are many variations of coordination that will work and do not necessarily have to include total central control of equipment and personnel. The key at the beginning is to be as diplomatic as possible so as to gain as much support as possible. What you are after for everyone is better, efficient, and more transportation.

"How to Start" has been done effectively in different ways in the six regional case studies (Hopkinsville and Covington, Kentucky; Augusta and Jasper, Georgia; and Boonesville and Greensboro, North Carolina). In Jasper, Georgia, the Executive Director of the North Georgia Community Action Program realized that his agency's mission was social services and not transportation. He felt that he should ultimately be able to buy service for his clients from a multi-county coordinated system. Through his agency and the County Supervisors of one county, he decided to start a fare-paying and contract service system that, by proving itself there, would "sell itself" to neighboring counties. MATS, the Mountain Area transportation System, was thus born in Canton, Georgia in October 1977. One year later, MATS is now starting service in two neighboring counties. Eventually, MATS will not be under the CAP agency but, instead, will be a free-standing organization.

In Greensboro, North Carolina, two women saw a need for transportation for the elderly and handicapped. They started a volunteer system which endeared itself to many citizens. Once success was evident, GATE (Greensboro Area Transportation Express) was formalized as a private non-profit corporation, and politicians were eager to help support the system by providing office and ground storage space.

In Covington, Kentucky, the executive director of the Northern Kentucky Area Development District saw a need for coordinated service throughout his eight-county region. When two local schools for the handicapped were confronted with losing transportation through a supporting agency, the Development District checked with a few other agency heads and some key politicians to find that they would support the designation or development of a coordinating entity. He then established a regionwide task force that brought together any organizations interested in transportation. A consultant was hired to do the evaluation and planning in April 1978, and by September 1978, a private non-profit transportation coordinating organization (Northern Kentucky Transit, Inc.) was established and operating service in three counties.

The way in which you get started will depend upon who you are and what area you work or act in; how effective you can be in communicating your idea to others; and simply how much support you can get. Whether or not you have the power to start a system, as an agency director might, your first task should be to talk to others and be sure that support is there. That first act is the very basis of coordination. From that point, your strategy can vary, as it did for those above, depending upon your local situation and the way things get done.

Purpose: Once a group, organization or political entity has decided that a coordinated transportation system should be developed, a series of careful investigations must next be made to decide how the system should be developed. The first step in these investigations is to undertake a "General Background Analysis" to begin to focus in on what is possible or impossible and desirable or undesirable in the proposed area. The result of this step should be a thorough understanding of what can be done and what seem to be the most promising organizational options.

The "General Background Analysis" should result in a basic understanding about the status of and need for coordinated service. It should also question the appropriateness of a public versus a human services transportation system at the outset, and what it should develop into. Related goals will be established in the next step.

Participation: After a policy, political, or legislative decision has been made to develop a coordinated system, subsequent decision-making will require an analysis or investigation beyond policy levels into administrative and technical matters. This does not mean that highly skilled technicians have to be involved now. It does mean that an individual or group of persons who have knowledge of public and human service transportation should help analyze:

1. Conditions of existing services
2. The level of need or demand for service
3. Financing and support potentials available to achieve a coordinated system

Tasks in "General Background Analysis"

- A - Secure Planning Assistance
- B - Initial Reconnaissance
- C - Identify Major Demand Locations
- D - Effectiveness of Existing Transportation
- E - Assistance Programs Available

TASK A - SECURE PLANNING ASSISTANCE

Someone or a group of persons having the time, interest and ability to undertake the planning effort will be needed. Such persons could be local volunteers; staff of a local, regional, or state agency; or a consultant. What is possible in one area may not be in another. In Greensboro, North Carolina, two local active citizens started GATE (Greensboro Area Transportation Express). In Covington, Kentucky, the regional planning agency (Area Development District) established a task force and hired a consultant to do the planning. In Hopkinsville, Kentucky the staff of the regional planning agency performed the analysis. The States of Michigan and North Carolina have planning staffs in their State DOT's who are available to assist local areas in planning and developing special transportation systems.

Regardless of who does the work, the sponsoring group or organization will most likely need to execute a contract for services with whoever performs the work. In addition to using local or state monies, there is usually a good chance to obtain a grant from federal agencies such as U.S. DOT or the Economic Development Administration to pay for the planning effort, either in whole or in part.

If volunteers or agency staff are not utilized, then a consultant should probably be hired to perform the technical work. Consulting assistance should be obtained by a competitive bidding process whereby several consultants are asked to submit written work proposals or specifications and prices. This will enable the client to review the proposals and select the consultant whose combination of qualifications, proposed scope of services, and price is the most attractive. Also, prior to selecting a consultant, it is a good idea to interview the top two or three firms, especially if the client is unfamiliar with them.

Whatever the source, staff assistance is needed to complete this step. This work requires a great deal of interviewing and records review. The person(s) performing the work should have a clear sanction and mandate to obtain all information necessary from all sources on behalf of the organization authorizing the work. The types of information collected should include:

- . Review of existing reports, plans and documents
- . Research, estimates and information on local transportation demand and supply
- . Funding resources available
- . Agency positions and attitudes toward coordinated service
- . General support for coordinated service
- . Legal or regulatory barriers to coordination

TASK B - INITIAL RECONNAISSANCE*

The planning staff's first effort should be to gain a good overview of the status of transportation in the area. This means having discussions with the clients and representatives of various agencies and organizations that have some interest in transportation and reviewing any reports, plans, or other pertinent documents. The following list suggests who the staff should interview at the outset of the project:

- . Client groups
- . State Department of Transportation
- . State Department of Human Resources/Social Services
- . Interagency Councils for transportation coordination
- . Local and regional planning agencies
- . Community Action Agencies or Organizations
- . All private non-profit organizations that may use or need transportation services for their clients, such as:
 - Special schools for the handicapped or disabled (e.g., Cerebral Palsy, Easter Seals, sheltered workshops, schools for the mentally retarded)
 - Hospitals
 - Red Cross
 - YMCA/YWCA
 - Senior Citizens organizations or agencies
 - Community Centers or Opportunities Industrialization Centers (OIC)
 - Nursing homes
- . Politicians and bureaucrats
- . Community Leaders
- . Government or public agencies that may use or need transportation such as:
 - Local and county government administrators
 - Public school districts
 - Local Department of Human Resources/Social Services
 - Hospitals
 - Manpower training programs or sponsors (CETA)
- . Transportation Operators (public and private)

These interviews will be a main source of information and data needed for initial planning purposes and will identify potential participants in a coordinated system. It should be determined who the potential participants are in time to conduct the more structured and systematic collection of data during Step 4 - Task B.

*Also see Technical Supplement, page 120.

TASK C - IDENTIFY MAJOR DEMAND LOCATIONS*

Based on information collected from the "Initial Reconnaissance" (Task B), describe the location of residential areas and complexes that are expected to be major origins of demand for transportation services. Also locate the existing services which riders will travel to and from (destinations). It helps to map the information unless the needed service is limited to a few locations. The scale of mapping will depend on the size of service coordination and expansion (i.e., within one county or multi-county coordination). Maps should show the highway network and political boundaries. They should be available with census enumeration districts shown, if possible. (The census boundaries will be useful later for detailed planning in Phase II, but they will clutter the maps now).

The maps showing locations of major demand, therefore, would indicate both the origin points of demand and the desired trip destinations. The kinds of origins or destinations may include such facilities as:

- . Public schools or job training sites
- . Shopping centers
- . Major medical complexes
- . Social service facilities
- . Senior citizens centers and residences
- . Elderly and low-income neighborhoods
- . Apartment or multi-family residential complexes
- . Major employment centers

This display will help both staff and client see the relationship of origin/destination points that will be major factors in designing a coordinated system. These are the locations most likely served by existing transportation services. They are not as likely to indicate general areas or districts where service is lacking, but needed. There may be a need for a fixed-route, scheduled service carrying handicapped children between home and school daily. It could be a need for demand/responsive, door-to-door service, such as elderly persons riding from an apartment building to doctors' offices. The next step begins to indicate the extent to which the needs are being served.

*Also see Technical Supplement, page 121.

TASK D - EFFECTIVENESS OF EXISTING TRANSPORTATION*

Both the interview findings and the review of plans and reports should enable the staff to make preliminary determinations about the effectiveness of existing service. Conclusions could be drawn from Task B about how many and what type of people are receiving service and how well the service is working. The existing services should be compared to the mapped demand locations identified in Task C. This should give the staff and client some notion of how much or how little of the need at these locations is being served and by whom.

Subjects Covered in Report on Service Effectiveness

- . Existing services and resources in use (specifying level of ridership, areas of service, and population served)
 - Local transit
 - Taxis
 - Intercity/interstate bus
 - Human service agency transportation
 - Specialized operators
 - Voluntary services
- . Existing coordination efforts, if any
- . Level of service versus areas and magnitude of potential demand (including any estimates available on unmet need)
- . Agency/operator attitudes toward existing service and the need for coordination of resources and services

*Also see Technical Supplement, page 121.

TASK E - ASSISTANCE PROGRAMS AVAILABLE*

If either expanded transportation service or a newly coordinated or consolidated system is sought, which is to pay for itself and cover all true costs, then as many local, state, federal, and private funding sources as possible ought to be considered. Unless a coordinated or consolidated system exists, it is likely that numerous agencies or organizations have control over the use of funds for transportation which come from different federal programs.

All funding sources either currently in use locally or available to the area should be identified, including amounts or estimated dollars. Typically, there will be agency-operated transportation services similar to these:

- . A community action commission or corporation using, among others, funds from the Community Services Administration
- . A senior citizens council or agency using Older American Act funds from HEW
- . Private non-profit schools for the handicapped using UMTA 16(b)(2)-funded vehicles to transport handicapped children to their centers
- . Public school districts operating a fleet with state and local funds
- . Perhaps, a public transit system operating in an urbanized area with UMTA and local funds supplementing the fare box revenues

It is important for the staff to be aware that there are numerous sources of transportation funding and there are likely to be as many or more providers using these funds at the local and regional levels. For other transportation funding sources, refer to Hindrances to Coordinating Transportation of People Participating in Federally Funded Grant Programs, Report of the Comptroller General of the United States, October 17, 1977 (available from U.S. General Accounting Office).

All forms of support for transportation need to be considered, including manpower programs and volunteer assistance. The summation of all resources available will provide an initial grasp of what level of operation might be possible and where there appear to be opportunities for coordination in the use of financial assistance.

Also see Technical Supplement, page 127.

Purpose: Once the decision-making body has developed an understanding of existing services, the resources available, problems with the existing transportation, and the potential demand for service, it should next establish goals and priorities for the type of coordinated system to be developed. The setting of policies, goals, and priorities at this stage will serve as a guide for "Advance Planning" in Phase II.

Participation: Setting policies, goals, and priorities requires a strong collaborative effort between the planning staff or consultant and the decision-making body. The staff should prepare drafts of different, viable goals and priorities and policy recommendations for the decision-makers to review and on which the group may vote in making its decision.

This step is important because its results will give definition and limitation to the scope and level of coordinated transportation that is planned. From this point onward, the direction of the planning work for authorized development of service should be determined by the policies, goals, and priorities of the body acting to adopt them during this step.

The staff should prepare recommendations in the form of a draft goals statement for approval by the group. The recommendations should be based on findings from Steps 1 and 2. The following examples are offered as the kind of policy, goal, and priority decisions that might be made for a coordinated transportation services development program.

Sample Policies

1. Where existing private for-profit operators can provide the needed level of service at a favorable cost, they should be given the opportunity to operate a route or service without direct public or subsidized non-profit competition.
2. The coordinated system should meet all fixed route or scheduled service needs before any demand responsive service needs are met.
3. All demand responsive service should give first preference to carrying passengers with mobility impairments.

Sample Goals

1. Develop and implement within a given period a coordinated transportation system that can provide all human service agency transportation in the area.
2. Obtain the participation of all public and private human service agencies and organizations in the area in purchasing transportation from the coordinated system within a given period after start-up of the system.
3. Coordinate the provision of demand responsive service for the transportation disadvantaged by all operators throughout the area within a given period after start-up of the system.
4. Develop a system that is reliant upon a combination of local, state and federal financial support and fare box receipts, but is not totally dependent upon any one source alone.

Sample Priorities

The coordinated system could develop service priorities in the following order:

1. Provide all contractual service for regularly scheduled needs of private non-profit agencies serving the elderly, handicapped, and low income groups.
2. Provide contractual service for all other private non-profit agencies besides those in 1 above.
3. Provide contractual service with public agencies.
4. Provide publicly accessible transportation services that charge fares.

As can be seen by the above examples, the staff and sponsors will need to know enough about the status of existing service and needs to be able to make decisions about what is desired for the future. They will need to make decisions about the geographic and political boundaries of service that are desired; the possible participants in a coordinated system; and likely sources of funding, to name a few. Also, they will need to make policy and priority decisions about the service desired, such as what the involvement of private non-profit operators will be and what priorities should be for meeting needs.

It should be noted that the sample goals given above tend to be specific with regard to what is desired or sought. Because of this, and since time limits or some other measurable elements are included in the goals, some people would call these objectives instead of goals. Regardless of what they are labeled, the important point is that being specific in goal setting is much more useful and meaningful than being general or non-controversial. Most people would tend to subscribe to a general goal that calls for more and better transportation. It is the method or policies and priorities for achieving more and better transportation over which there is likely to be dissension. This is what needs attention and time. There is no need to waste time preparing broad goals to which everyone already subscribes.

Purpose: This step considers alternative organizational strategies that could be used to achieve coordinated service and culminates in the selection of the optimum choice. This will result in recommendations for the administrative structure and the implementing actions to be followed.

Participation: This step, similar to the previous one, requires a great deal of interaction between the staff or consultant and decision makers. Once the staff has determined the options and the pros and cons of each, the decision makers should be presented with the information along with the staff recommendations to use in making a decision on the implementing actions it will adopt.

Before technical planning begins, the sponsor of this coordination project should know what kind of organization will be best to implement the new system. At the same time, the sequence of actions to be followed in working toward full implementation should be decided upon. All this can be done by following the sequence of tasks in this step.

Tasks in "Framework for Action"

- A - Identify Organizational Options
- B - Evaluate Alternatives
- C - Recommendations for Action

TASK A - IDENTIFY ORGANIZATIONAL OPTIONS*

At this point, the staff and sponsors will have undoubtedly already considered the pros and cons of the choices available for implementing a coordinated system. The options, ranging from working with existing organizations to the creation of a new entity, should now be thoroughly evaluated in a systematic and objective fashion. The interviews completed in Step 2 will provide the basis for identifying the organizational choices which appear to have some potential. The staff should present those choices with written narrative summaries and organizational charts that explain:

1. who should be involved
2. in what capacity they would be involved
3. how coordination or consolidation would be achieved

Options That May be Considered

- . Public transportation operator
- . Private non-profit transportation coordinating corporation
- . Lead human service agency
- . Brokering/coordinating entity (no operations; just coordination)
- . Public planning agency

Organizational charts and written descriptions would be useful tools to present the options for review and decision making.

*Also see Technical Supplement, page 133.

TASK B - EVALUATE ALTERNATIVES*

The staff should obtain the approval of the decision makers or their representatives to pursue or stop further evaluation of each alternative reviewed. Together, they should be able to select a few top choices that are the most viable alternatives before detailed comparisons are made.

At this point, the judgemental findings of the earlier interviews conducted during Step 2 should be considered along with the results of more quantitative assessments. Two methods have proven to be useful and relatively easy to apply - the use of a "ranker/rater matrix," which is judgemental, could be used first. This will yield scores for each option considered, with the most promising one having the highest point score and the least promising one having the lowest score.

Secondly, cost-effectiveness measures of "cost per vehicle mile" or "cost per passenger mile" (or equivalent) can be compared to the matrix score for each option to see if cost factors tend to change the outcome. This final ranking, which considers the comparative cost of each system, will provide the staff and sponsors with either support or denial of their other judgements.

Care should be taken to reflect the earlier qualitative or attitudinal findings from the interviews in the results of these quantitative analyses. The results will always include some judgement of what is best, but will, hopefully, also be as informed as possible and consider all possibilities. Whether or not the matrix technique is used, there are certain factors which should be considered in any method of evaluation, including:

- . Regulatory or legal limitations
- . Political feasibility/credibility
- . Incentives to coordinate
- . Transportation expertise available
- . Capital availability
- . Ease and cost of start-up
- . Cost of service
- . Capability to coordinate
- . Organizational stability
- . Strength or lack of support
- . Availability of sustained operating funds

The staff and sponsors should consider the results of the evaluation in a working session. It should end with a vote by the decision-making body to decide which organizational structure should be implemented.

*Also see Technical Supplement, page 134.

TASK C - RECOMMENDATIONS FOR ACTION

Once the choices for organization are selected, the staff should prepare recommendations for action by the sponsors. A statement of recommendations suitable for endorsement should describe the organizational framework for achieving coordinated service and what the rationale is for the selection. It should, for example, specify the relationship of planning, administrative, operational, and monitoring responsibilities, and who would have these duties. This could range, for example, from a strongly centralized and coordinated system whereby all four responsibilities are handled by a single organization to the other extreme whereby each of the four is handled by different organizations, including several operators.

In addition to explaining the organizational concept, policy declarations and the recommended implementing actions to be followed also need to be included. Such actions and declarations might include the following:

- . Legal implementing actions needed - what legal steps must be taken to implement the coordinated system (e.g., charter a new corporation; interagency agreements; service contracts; government ordinance or law)?
- . Declaration of the purpose of the coordinating entity
- . Policies, goals, and priorities for service (taken from Step 3)
- . Vesting of authority for administration, operations, planning, monitoring, and coordination (e.g., public commission, board of directors, interagency council, private corporation, etc.)
- . Obtaining written statements of support from all operators and potential user agencies
- . Obtaining commitments from sources of capitalization
- . Designating and/or hiring any coordination committee, staff, or outside technical/consulting assistance (and locate office if needed)
- . Undertake "Advance Planning" (Phase II)

The sponsors should review a draft of actions and declarations developed by the staff and collectively prepare a final report of recommendations to whatever other authority they may be accountable. The organization having final authority should take official action to cause the recommendations to be carried out. It should include directives

for the staff to proceed with "Advance Planning" (Phase II) for the organizational concept that was selected.

Responsibility should also be taken at this time to ensure that any organizational or administrative actions needed prior to or along with advance planning are initiated. While some of the actions may need to wait until system planning is complete, there may still be, depending upon the organizational concept selected, certain actions which must proceed. The groundwork for interagency agreements, establishing a new entity, or securing support from various operators and potential funding sources should not be delayed. As long as goals have been established, the Phase II efforts should proceed, to the extent possible, while official action on organizational authority is finalized.

Advance Planning



This phase will provide the users with a plan for a coordinated system. In doing so, various tests and analyses need to be made to arrive at a plan that can be implemented. "Advance Planning" should provide for a three- to five-year period of transportation services. Technical support for the preceding Phase I may have been available from in-house staff of a local or regional planning agency and paid for out of general budget accounts. Phase II, on the other hand, is likely to represent a full technical study, requiring full-time staff, intergovernmental assistance, and/or consultants. The level of effort would depend on the size, complexity, and population density of the study area. Goals formulated during the previous phase will be confirmed and clarified in this phase.

Steps in Advance Planning

- Step 5 Detailed Investigation
- Step 6 Refine Objectives and Priorities
- Step 7 Pre-Operations Planning
- Step 8 Feasibility Analysis and Report

Purpose: This step is one of "Detailed Investigation" of the information and data needed to plan for system development. First, the data sources are identified and gathered. Then preliminary analysis is conducted to prepare a basis for feedback in the form of policy direction for this phase of in-depth planning. The results of the analysis are alternative service and pricing estimates.

Participation: The participants in this step, for the most part, need to be such persons as transportation operators, planners, engineers, or analysts. They may be from local/regional governments, state planning assistance staff, a consultant, and/or the newly created transportation entity. The new entity's planner would only be available if such staffing were a priority action of the implementation policy adopted in Step 4. The work for this step should be reviewed by a technical advisory group in the next step.

Tasks in "Detailed Investigation"

- A - Identify Service Target Group
- B - Gather Useful Data
- C - Preliminary Needs Assessment
- D - Alternative Levels of Service

TASK A - IDENTIFY SERVICE TARGET GROUP

At this point, the only direction for the planner in regard to official policy for meeting the transportation needs of a specific target group would be any limitations imposed in Phase I. For planning purposes, it is best to begin the investigation by including the entire population potentially qualifying as transportation disadvantaged. Priorities should be set later as a guide to allocating limited resources for operations. This is done in Phase III.

Potential Transportation Disadvantaged Subgroups

- . Handicapped persons (unable to drive)
- . Elderly population (i.e., over age 55, 60 or 65)
- . Members of low-income households
- . Youth (i.e., deprived, pre-school, too-young-to-drive, and/or students)
- . Other dependent persons without convenient access to the use of a private automobile

Once the subgroups are identified, there remains the problem of how to specifically define each one. Obtainable data format should be a factor. Eligibility criteria of client programs will also help determine subgroup definitions, such as low-income or elderly. The primary purpose of the definitions, however, is to differentiate transportation needs and travel patterns among the subgroups. Generalized or tentative definitions developed now can be refined in the next step to reflect objectives set by the planning advisory group.

TASK B - GATHER USEFUL DATA*

Data collection for determining need and demand for areawide transportation services remains perplexing. It presents a dual problem of insufficient historical data and the economies necessary to planning for the development of services that have a low capital intensity.

The problem with historical data is the short history of comparable existing transportation services which are not urban mass transit or taxi services. Specialized transportation services that exist are generally fragmented, with various or loose requirements for record keeping that is of little use to detailed transportation planning.

Small planning budgets make in-depth market surveys impractical. Survey reliability is not dependable because potential users may not be prepared to estimate their own use of a proposed service that is hard for them to visualize. This is a problem especially when the target group includes a high percentage of isolated and even illiterate persons.

As a result of these data problems, the best sources for developing a quantitative base will probably cover a wide range. National indices and general census data for theoretical estimation are practical, and so are small-scale surveys of select market segments. Existing services data should also be used, of course.

Data Sources for Estimating Need and Demand

1. Existing ridership data and survey results (other study results adjusted to agree with available local conditions and indicators).
2. U.S Census Public Use Sample (aggregated rural counties and SMSA census files including auto ownership).
3. Other U.S. Census data (Enumeration District files - first, fourth, and fifth counts).
4. Handicapped population and welfare recipient statistics (National Health Survey; needs analyses by local institutes and service agencies).
5. Local transportation planning surveys (e.g., highway planning surveys); agency survey results of this study and others.
6. Updates to existing surveys and new select-market surveys (oriented to service agencies and major trip attractions or "generators").

*Also see Technical Supplement, page 143.

TASK C - PRELIMINARY NEEDS ASSESSMENT*

A "needs assessment" is a method of estimating the total number of persons who need some form of transportation assistance. It can range from a very simple count of the total elderly and handicapped clients of participating agencies wishing to develop coordinated service, to a more sophisticated technical estimation of all disadvantaged persons in an area who would be expected to use a full public system. Which level or type of assessment is used will, of course, depend upon the purpose of the project. The figures developed from the needs assessment can serve as an aid in decision-making by the project sponsors as to how many and who should be considered for service. If, for example, a public system is being planned, then the severity of need can be shown by sub-county levels. Also, the estimates will serve as the basis for operations planning and ridership demand estimates (if undertaken).

Many techniques have been used for needs assessments. The procedure outlined below is a general one that can be used when the total population is being considered as the basis of service rather than just the clients of certain agencies. The Technical Supplement gives examples of two different approaches to needs assessment: one used by the Northern Kentucky Area Development District for a five-county rural area and the other used in the Central Midlands Region of South Carolina.

Procedures for Distributing Need

1. Select needs assessment method(s).
2. Disaggregate needy population to county or sub-county level, as the case may be.
3. Select available sub-county data of population characteristics most closely related to categories of predominant need.
4. Based on relationships of sub-county data to respective county totals, calculate weighted distribution of need.
5. Using square miles of sub-county areas, calculate density of distributed need.
6. Map density concentrations among sub-county areas.
7. Plot any known route patterns and service utilization.

*Also see Technical Supplement, page 162.

TASK D - ALTERNATIVE LEVELS OF SERVICE*

The planner should now have a basic understanding of who makes up the population in need of transportation services and how they are served by existing agencies and distributed geographically. The layout of existing transportation and its utilization has also been recommended as part of the input into assessing need at this point (procedure directive number 7 in Task C above). With this understanding, it is time to proceed with developing the assumptions for service upon which demand estimates will be based.

Developing planning assumptions for transportation services is done by defining the variables that establish what level of service will be available to potential users. The variables used should be the ones that determine demand, or how much people will use the services offered. Different levels of service should be defined by different combinations of the variables.

The variables used will also depend on availability of results from demand studies in similar operating environments. By weighing the needs for transportation against the existence of service and the feasibility of improving or extending service (based on travel distances and density of potential riders), the staff should develop alternative assumptions to span a range of solutions. Designation for fixed routes versus other types of service should be made clear. The Technical Supplement gives an example of a level of service and how it can be altered.

Variables for Defining Levels of Service

- . Service Area - described by geographical sub-areas that are consistent with data sources.
- . Fare or Reimbursement Level - how much does the rider or agency pay and how are rates determined?
- . Service Hours - what hours of each day is transportation available?
- . Wait Time (Maximum) - what is the frequency (headway) between vehicles on fixed routes; what is the lead time from request for service to pickup for demand response service?
- . Access to Vehicles - is there special equipment, design, or assistance to facilitate boarding by all elderly and/or handicapped?

*Also see Technical Supplement, page 171.

Purpose: It is the time for advisory level input upon reaching milestones in the advanced planning process to provide feedback as more is learned about the transportation problem and needs of the area. Expanded priorities may be set during this step to establish general operating guidelines and direct the planning effort as it progresses, and to confirm the priorities established in Phase I.

Participation: The key participants in this step are the sponsors or members of an advisory group. In most cases, they will be those who acted in Step 4 to implement recommendations for accomplishing the goals established in Step 3. By this time, at least, the group should consist of transportation providers and operators in the area and representatives of needy groups. If a permanent coordinating entity has already been established as a result of implementing action, however, that would be the logical body to review this early planning work. Whatever the form of the advisory group, it should work closely with the planning staff or assistance team.

Tasks in "Refine Objectives and Priorities"

- A - Set Service Priorities
- B - Operational Guidelines

TASK A - SET SERVICE PRIORITIES

With the detailed investigation conducted under Step 5, the sponsor can now make judgements based on a growing amount of information. Collecting and reporting available data on general target groups and needs assessment and distribution helps the sponsor to zero in on the persons and places of greatest need. In fact, the full planning process may be streamlined to complete plans to serve the greatest need as soon as possible.

Target Groups

Unless goals from Step 3 have limited the scope of potential users, and if other precedents do not prevent it, the target group for immediate study should not be constricted at this point. From the preliminary presentation on the size of the local population by broad categories of need, it may now be clear that it is not feasible to talk about trying to meet all of that need in the short term.

On the other hand, much can be said for completing more comprehensive planning the first time. With that approach, data may be developed in such a way as to allow selecting priorities later from the universe of need. Some of that selection may come as soon as Task B below. If that is the case, and a large amount of data must be interpreted for later use, the advisory group can be helpful at this point to direct what specific target group definitions will be acceptable for making refinements to the needs assessment. For example, the following are problems the planner faces in developing quantifiable definitions of the subgroups:

- . Should all elderly persons be included as needy, or is income and auto ownership a factor?
- . How should the handicapped population be defined or divided for transportation purposes; how does ability to drive and to board standard vehicles relate to the definitions?
- . What should the low-income level be; should auto ownership and household size be considered along with it?
- . What are the most realistic age breakdowns for travel behavior and human services client eligibility?

Target Areas

In a manner similar to setting target group priorities, target areas may also need to be emphasized. This geographic approach may, in fact, be coincident with the population targeting. It is likely, for example, that remote rural areas are the most poorly served by existing transportation, if served at all. Vehicles that do not operate to remote rural areas are least likely to be equipped for boarding by the

severely handicapped. These persons in remote areas may become either the first priority or a much lower one. Widespread need by many other persons would make it infeasible to devote inordinate resources to a limited few.

Feasibility analysis will be completed by the planning staff in Step 8 on the basis of priorities and cost. The decisions at this point should depend on mapping of the distributed need prepared in Step 5, along with the layout of existing service and its utilization. Although mapping may initially be done on the basis of preliminary needs assessment, it offers a much better starting point than has normally been achieved in this type work before the full analysis takes place (the next step). If targeting of population groups and geographical areas is scheduled to be accomplished at different times, however, mapping may be more detailed for this purpose.

Latent Demand

As used here, the latent demand group is considered to be one that may transcend the population included in the needs assessment. Unless a liberal universe of need is used, riders who have other transportation alternatives, but would have good reason to choose public transportation instead, are probably not a part of the needs assessment at this point. If not, consideration should be given to their potential use of services and the reasons they may also be a priority group in the development of areawide transportation services.

Reasons for Attracting Latent Demand Riders

- . Revenue from cash fares can offset per passenger subsidy level and reduce public cost
- . Complementary schedules between work trips and client trips to services can improve utilization of resources
- . Other transportation services may have deteriorated
- . Public benefits such as: the reduction of fuel consumption, congestion, and pollution may also result.

TASK B - OPERATIONAL GUIDELINES

Objectives along operational lines help determine the means by which priorities will be served. They are the first attempt to set policies for service design and operations. This task may involve approving, refining, or adding to the alternative levels of service developed in Step 5. The decisions are important now because they will affect demand estimation in the next step. Later, it will serve as a guide for operations design in Step 11, including reliance on private operators.

Minimal Levels of Service

The advisory group should determine acceptable minimum levels of service as objectives to be met. The acceptable minimums may vary according to the target groups and areas prioritized in Tasks A and B. On the average, for example, service equivalent to one round trip per day to a major destination zone serving multiple trip purposes may be the acceptable minimum. However, in order to get any service at all to the isolated handicapped person, it may be acceptable to set a feasible minimum of one or two round trips per week.

Fares, Subsidies, Reimbursements

Is the objective to include any fare-paying (latent demand) riders, or will transportation services in the area remain an extension of social services programs only?

Specific subgroups of the target population should be reviewed to determine what portion of costs should be paid by them according to the level-of-service definitions. (Determining the cost to operate, and, thereby, amount of fares and subsidies, would be left to the planners). Each group of riders may realize a portion of full fares based on their fair share of costs for each trip. The portion may vary according to the eligibility of each trip according to the purpose for making it. What that portion of full fare becomes falls within this range of possibilities:

- . Fully subsidized fares (e.g., all costs borne or reimbursed by social service agencies)
- . Partially subsidized fares (e.g., direct subsidy paid to operator for deficits on fare-charging routes)
- . Full-fare riders (e.g., fares designed to pay full cost of serving each passenger - applicable to certain subscription routes)

Private Participation

The degree to which any developing system of transportation services depends upon private operators will impact the total supply of vehicles and, therefore, service. It cannot, however, be separated from issues of potential public-private competition and public subsidization of private operators. Ignoring the role of the private sector is likely to create publicly financed competition with it. Reliance on these operators as an integrated part of the system may result in subsidizing them to provide affordable transportation services in non-profitable areas where the public operating entity cannot afford to expend limited resources. On the other hand, a "brokerage" type system, in which a coordinator simply purchases trips from private operators to meet agency needs, is not a subsidy for the operator, but just the purchase of service, as an agency might make for any other service or goods it needs.

The initial solution may seem to be this: simply avoid duplicating privately operated services. As soon as a public operator enters an area privately served, however, it begins to compete on some level. To achieve the best areawide system, on the other hand, probably means utilizing all available resources, at least in the short run, and, therefore, perhaps relying on a combination of public and private operations.

Potential Roles for Private Operators

- . Fixed linehaul routes in heavily traveled corridors
- . Feeder services in areas of low demand density
- . Extension of service beyond popular hours for traveling (late nights, holidays)
- . Supplementing capacity during peak travel hours
- . Demand response service by taxi companies (using either cars or buses)

Purpose: "Pre-Operations Planning" continues to apply the data gathered in Step 5, but in greater detail. It will finalize the needs assessment and analyze demand, then estimate future ridership on routes and services being proposed. It concludes by estimating the number of vehicles needed to operate at the levels of service decided on in the last step. Since the estimates must be based on some definition of, and assumptions about, future service, the route planning included in this step will be a guide to final operations planning in Phase III. (Changes from routes planned here will also change the estimated ridership and associated revenues).

Participation: This step includes, perhaps, the most specialized technical work of any covered in this manual. As a result, if this step is to be fully and properly executed, a trained transportation planner, engineer, or analyst, experienced in transportation services work, is an essential member of the planning assistance staff. Computer capability would be helpful for any area, but should be considered necessary if the proposed service area includes one or more major urban centers. The expert involved should be able to select the planning methods best suited to the local area. This manual provides a summary of methodology options to familiarize readers with the developing state-of-the-art as it existed at this writing.

Tasks in "Pre-Operations Planning"

- A - Assess Projected Need
- B - Routes, Services and Accessibility
- C - Demand Estimation
- D - Vehicles Required to Operate

TASK A - ASSESS PROJECTED NEED*

This task continues where the preliminary needs assessment in Step 5 finished, if, in fact, a full needs assessment is locally needed. Certain small and sparsely populated rural areas may decide to proceed with the "ball park" assessment already completed, finding the technical demands of detailed refinements out of balance with the size of the local development program. Objectives refined in Step 6 should determine the need to improve the assessment, if it was not decided in advance at the outset of this stage.

The level of detail locally required for demand predictions will partially dictate the extent of refinements to this work. Also, the service priorities by target groups and areas, and with respect to latent demand, will indicate whether definitions and distributions of need from Step 5 are acceptable or if they require adjustments. Finally, quantified measures of need can be a good basis for later evaluations of service effectiveness, and should be developed with that purpose in mind.

Meanwhile, since data gathering was undertaken in Step 5, new local survey responses should be available by now, and the more in-depth data searches should be completed. While data are processed, projections based on the best available local population studies should be built into the estimates of needy population. Projections should be made five years into the future, with comparable current figures or population growth rates indicated, whether for all needy groups, by age group, or by other category of need.

*Also see Technical Supplement, page 173.

TASK B - ROUTES, SERVICES AND ACCESSIBILITY

This task is essentially the application of a level-of-service consistent with objectives refined in Step 6. Descriptions should already have been developed for the level-of-service alternatives prepared in Step 5. At this point, the variables defining each alternative for demand estimation can be individually mapped and, if applicable, organized for computer analysis. Because of the complexity possible with multiple service areas having different types and levels of service, each should be isolated and individually analyzed. Only by individual analysis can the planners obtain clear indications of the change in demand due to changes in level of service.

This task can be relatively simple, however, if only limited routes, uniform types of service, and restrictive accessibility (rider eligibility) are included in the system. The purpose, however, is to develop a clear picture of the system characteristics to be used for demand estimation in the next step. Stratification of system characteristics need not be more detailed than required for that purpose, however. For ease of measuring and using demand variables, describe in detail each alternative by the following levels of service and other guidelines being used:

- . Type of Service - prepare (computer) data files separately for fixed routes and demand response or other distinct types of service.
- . Service Area - map separately where overlaps occur for measuring target populations individually.
- . Fare Level/Wait Time - list as independent or qualifying variables for each type and area of service.
- . Service Hours - use to distinguish trip purposes actually served versus those eligible for each service area and type.
- . Access to Vehicles - use to define populations actually served and each of the other variables affected (is full access offered every service day?).
- . Other demand model variables: average vehicle operating speed, trip distance, etc. for each area and type of service, as required by model used.

TASK C - DEMAND ESTIMATION*

Consistent with the range of needs assessment methodologies covered in Task A of this step, demand can be estimated at various levels of detail. The three basic techniques may be described as follows:

1. Average trip rate approximation - aggregate annual transit use per capita.
2. Trip generation rate model - aggregate transit use which may be stratified by level of service.
3. Fixed-route/demand response models - aggregate or route ridership using level-of-service variables.

Since any feasibility analysis (next step) requires some degree of demand estimation, the appropriate level of sophistication should be selected according to the level of interest (funding) for this planning at the time. A small or simplistic system, however, should not be an excuse for simple approximations of demand. Aggregate demand forecasts may lose validity when applied to limited services that are not publicly accessible. At the same time, small and simplistic systems decrease the level-of-service variations possible, making the use of fixed route/demand response models relatively straightforward.

The demand estimates can determine the number of vehicles required and revenues as related to cost of operations for analyzing feasibility. As a result, this task is crucial to informed decision-making. Making careful estimates can help to avoid costly over-investments starting out. The results can also be useful to evaluation programs later.

*Also see Technical Supplement, page 176.

TASK D - VEHICLES REQUIRED TO OPERATE*

A critical factor of the feasibility in serving liberally defined needs is the number and type of vehicles required to operate the proposed system. Vehicles are generally purchased outright with grant assistance. Even though capital costs do not represent a large portion of total operating costs, the need to make a major initial investment places most new operators in an equipment constraint situation, rather than one of deciding how many vehicles can be used. Coordination that results in better utilization of existing resources could alter that, however, if coordination of all services could occur at the same time.

Estimated fleet requirements can indicate benefits to be derived from coordination. At any rate, the projected need for vehicles is important to the next step, Step 8, and summarizes in a comprehensible way the results of the need and demand analysis.

Estimating Fleet Needs

- . Fixed Routes - determine capacity demanded by route for schedules previously planned and evaluated.
- . Demand Response - develop or obtain demand-supply relationships by level of service from first "cut" estimates; improve from final demand estimates.
- . Add 10 percent to required fleet for spare vehicles.

*Also see Technical Supplement, page 184.

Purpose: This step, "Feasibility Analysis," is the culmination of the advance planning stage. By using the results of Step 7 and information gathered during Step 5, the costs and benefits of system development and operation are approximated at this point. The final purpose is to provide decision-making bodies with findings from the technical studies as to the tradeoffs between cost to the public and overall benefits to the community, impacts on the labor market and private operators are included in the analysis.

Participation: The planning assistance staff is responsible for analyzing and reporting feasibility of system development and operations to the sponsoring decision-makers or client group. Eventually, the reported findings and recommendations can be expected to reach other decision-makers, planners, and administrators in the area and at the state level. The feasibility report should also serve as documentation for pending or subsequent grant applications, and help generate local financial support.

Tasks in "Feasibility Analysis"

- A - Labor Conditions and Needs
- B - Cost and Revenue Estimates
- C - Benefit Analysis
- D - Report Findings and Recommendations

TASK A - LABOR CONDITIONS AND NEEDS*

In this task, transportation labor conditions for the local area should be studied to gain an understanding of the prevailing wage rates and potential impacts of new or improved operations. Additionally, the system's labor needs should be predicted. Ordinarily, many current drivers and direct support personnel should be absorbed by operators of future consolidated services. This may be merely for the benefit of all parties or required by federal funding laws.

Transportation improvements may bring about demands from local unions that should be anticipated. If funding from the Urban Mass Transportation Administration is used, Section 13(c) of the enabling legislation sets "Labor Standards" that apply when using UMTA funds. The effects are most likely to be felt in urban areas with unionized transit workers. The 1978 Surface Transportation Act, however, amended the UMTA Act to make Section 13(c) applicable to rural areas as well. The requirements can be waived by the Secretary of Labor.

Planning to Meet Labor Needs

1. Predict hours and personnel required to drive, maintain, and supervise proposed operations.
2. From surveyed agencies interested in coordination, analyze wage rates and the potential to transfer personnel to the coordinating entity.
3. After considering the part existing public transportation operators will play in improved operations, analyze possible negative impacts on their labor force.
4. Consider interests of local transit workers' unions, prevailing wage rates and employee benefits, potentially legitimate union demands, and re-employment opportunities.
5. Determine the potential roles for volunteer and/or subsidized manpower and the overall effect on labor costs.

*Also see Technical Supplement, page 187.

TASK B - COST AND REVENUE ESTIMATES*

Having surveyed the local labor situation and prevailing wage rates, etc., the planner should have the background to predict labor costs, the single largest component of operating costs. Furthermore, Step 7 included estimates of vehicle requirements and ridership demand. With these pieces of information, combined with responses to the survey conducted among local human service agencies during this Phase and funding information gathered for Step 1, there should be a sufficient base from which to approximate full operating costs and revenues.

It is likely that more than one of the alternatives that were developed in Step 7 still appear to be feasible after the foregoing analysis. In that case, even though one option may generate more demand, compare potential costs and revenues of the alternatives that cannot be judged by comparing vehicle requirements. The final comparison of feasibility will be the net public cost picture together with the benefit analysis that follows.

Components of Preliminary Cost Calculations

1. Initial Capital Costs:

- vehicles and associated equipment (fare boxes, seats, special equipment)
- office furniture, etc.
- bus stops and shelters
- maintenance and garage facilities
- radio equipment and facilities
- highway-related improvements

2. Direct Operating Costs:

- hourly wages for operations personnel
- depreciation on rolling stock
- insurance, fuel and other variables
- fringe benefits

3. Fixed Costs of Operation:

- supervision
- general and administrative overhead, etc.
- debt service and building fund

Sources of Revenue or Equivalents

1. Contracts for Service:

- human service agencies or organizations
- industries, businesses, stores
- local transit operations (public and/or private)

2. Direct Grants and Subsidies:

- demonstrations
- capital purchases
- operating deficits
- technical studies
- manpower support (e.g., CETA, volunteers)
- transfer or use of existing vehicles

3. Fares and Charters (fares based on demand estimates may be best method for long-range revenue projections)

4. In-kind Services and Volunteers:

- technical assistance
- attendant services
- physical facility, supplies, donated services (e.g., telephone, copying, financial, advertising)

*Also see Technical Supplement, page 188.

TASK C - BENEFIT ANALYSIS

The analysis of benefits to be gained from improving transportation services specifies what will be gained for the net costs approximated in Task B. In the short term, benefits may best be defined in terms of cost savings realized from the coordination of existing services. To compare projected costs with those currently experienced by existing transportation providers, however, be careful to include the full cost to those agencies. Too often, the full cost of transportation programs is partially hidden in administrative costs, donations, one-time federal grants, or CETA or other subsidized manpower, which are not reported as properly allocated costs.

Savings, in comparison to the full costs of current operations, should be calculated on a comparable basis. If the current cost to providers can be broken down into component costs, general percentage factors may be added in to account for real costs not reported. It is likely, however, if individual agency transportation programs are not widespread and/or development goals are ambitious, that costs for the planned system will exceed current costs. In this case, and for longer range developments that may include more capital improvements, it will be necessary to judge other public and personal benefits. Whether this is a qualitative analysis or one that attempts to quantify such benefits depends on the intensity of this planning effort.

Potential Benefits of System Development (Examples)

- . Savings to provider agencies for the same level of transportation delivered
- . Opportunity of increased personal mobility for disadvantaged populations (quantified by comparing the cost of enjoying equal mobility by using existing transportation alternatives)
- . Better utilization of local human resources potential otherwise lost or duplicated
- . Avoidance of case workers having to transport clients
- . Increased availability of non-emergency medical transportation, thus averting more costly emergency service for health care needs
- . Broad socio-economic and environmental benefits of improving areawide mobility on expanded public transportation systems by improving their feasibility.

TASK D - REPORT FINDINGS AND RECOMMENDATIONS

The final report on advance system planning must serve more than one purpose and, therefore, can be difficult to prepare. It is an important document because it will probably be the primary means of communicating development plans in detail beyond the staff and advisory or decision-making groups directly involved in conducting the study. As such, it should be concise and easy to understand, yet effectively convey the in-depth, long-range scope of the study and summarize results leading up to the specific recommendations included. There should be enough style and background information to make it an instrument that can help gain support for the plan. A brief descriptive pamphlet may be useful for wide distribution and media reporting.

On the other hand, the final report is a technical document that must stand up to scrutiny of the qualitative and quantitative analyses. For this reason, such reports are often divided into two volumes, one to report background, findings and recommendations, and the other to describe the technical studies and their results. One purpose of the technical report is for use as justification when applying for development funding. If the study has been conducted wholly as an in-house project, however, and outside sources helping to fund it require no technical results, the two-fold report may be unnecessary. Working references and figures should, at least, be recorded and retained in a form appropriate for later review and use. Nothing is more frustrating when conducting technical work than to not have sufficient information available to begin again where previous work concluded or not to be able to rely on earlier results for subsequent planning.

Possible Scope of Recommendations

1. May be administrative in nature if final implementation models were not developed and approved in Phase I.
2. Specify the option judged superior as a result of this step.
3. Match potential funding sources to specific improvements.
4. Emphasize operational programs that should be developed to facilitate implementation (i.e., financial or coordination programs presented in Phase III.)

Operations Planning and Programming



Upon completion of Phase II, "Advance Planning," local policy makers have the information necessary to decide whether or not, and on what level, to pursue coordination of transportation services. If, in fact, there has not yet been a decision to proceed further than feasibility studies, one must be made now. This would authorize the development of coordinated operations and management described in the following phases. If an organization has been implemented already, decision-making now may be limited to securing additional funding. Operations planning and programming should not be done without definite support for a coordinated system.

"Operations Planning and Programming" entails planning on a level different from Phases I and II. This phase involves direct management-level planning and other preparations or programming to start operating vehicles. In this phase, management decisions are made by a board of directors, commissioners, or council members to determine operating practices.

Steps in Operations Planning and Programming

- Step 9 Planning for Operations Development
- Step 10 Operations Design and Scheduling
- Step 11 Capital Purchases
- Step 12 Financial Programs

Purpose: "Planning for Operations Development" is a step that applies previous results to management decisions. The preparation consists of developing recommendations and alternatives that define and convey the ultimate scope of operations. This step programs the progressive development of the full operation and begins it by designing an appropriate image for marketing.

Participation: Who should perform planning at this level? It depends on local circumstances. Local or regional planners may be best equipped to undertake the responsibility if they have performed the advance planning leading up to it. However, since the work directly supports management policy, this is an appropriate point to bring in the staff of the transportation entity if it is already in place and sufficiently qualified. If neither option is appropriate, a consultant could be considered. Each task includes participation or final endorsement by the transportation entity's directors, but relies on technical advice from the staff or planning assistance team.

Tasks in "Planning for Operations Development"

- A - Scope of Operations
- B - Incremental Phasing Plan
- C - Design Marketing Scheme

TASK A - SCOPE OF OPERATIONS*

The ultimate ridership mix, total service area, and, to some extent, class of operation have been planned and endorsed in Phases I and II. They need to be reviewed at this point, however. For existing transportation entities embarking on an expansion program, this may be the first analysis of their proposal. For all transportation entities, this is the time to confirm legal and realistic bounds of service authority.

The purpose of this task is to establish a progression of specific priorities for reaching adopted objectives. The process should bridge the gap between advance planning and current reality. Existing limitations on rider eligibility, governmental participation, and regulatory certification should not prevent development but, rather, present challenges to be managed.

The board may still need to decide if the transportation system will be public or limited, and approximately how it should operate in each area. An understanding of the potential ridership groups and established operators must guide these decisions:

1. If ridership is limited, what riders will be eligible/ineligible?
2. Will it differ by geographic subarea?
3. Should certain classes of operations be excluded?
4. Should class exclusions be determined geographically?

Ridership Mix

A thorough background of data and planning direction has been developed during the needs assessment and related technical advisement in Phase II. Established transportation entities may have limited capability to perform that planning themselves. If it has not been performed previously, transportation needs should be assessed at this point with outside planning assistance as needed.

The data developed to assess need are in complex form, not easy to understand if applied directly to decision making. However, they provide the information necessary to develop measurable goals and priorities. Step 7 explains how to update the data, which should be summarized at this point for use in Step 10, Operations Design and Scheduling.

Example of Ridership Priorities

1. Transit Handicapped (require special assistance to board vehicles)
2. Elderly and Handicapped (who are defined as transportation disadvantaged)
3. Low-Income Population (with or without autos)
4. Other Transportation Disadvantaged (youth and adults)
5. Industrial Workers (defined by industry or place of employment)
6. Students (possibly defined by age or educational level)

Ridership can be defined in greater detail by cross-classifying eligible trip purposes. Priorities should be established according to the same trip purposes used for demand estimates in Step 7 if cross-classification is used.

Service Area and Class

Once ridership goals have been confirmed, it will be clear if the ultimate scope of operations should be public or limited. Limited operations have generally remained exempt from regulation as public services. Regional Transportation Authorities (RTAs) established in accordance with State law may have the autonomy to operate public transportation without being subject to State or municipal control. Otherwise, public transportation systems are usually subject to regulation for reasons of safety and controlling public/private competition.

State public service or transportation-for-hire certification is usually awarded on the basis of territory and routes by the class of operation. Cause must be demonstrated to justify issuing new certificates, especially where licensed operators already hold certificates of the same class as new ones requested in an application to the particular State's certifying agency. In Kentucky, the State DOT is responsible for certification. In Georgia and South Carolina, on the other hand, there is a State Public Service Commission which regulates carriers for hire. Usually, private systems that serve only an agency's clients are not affected by such regulatory requirements. If such a system were modified, however, to carry the fare-paying public, it would then become subject to the State's regulatory authority.

*Also see Technical Supplement, page 195.

TASK B - INCREMENTAL PHASING PLAN*

A phasing plan should be developed as part of the transition from advanced planning to operations planning. It will serve as a tentative implementation schedule that programs specific milestones in the development of the system. As such, it will fit the steps and tasks that follow in this manual to the goals, objectives, and recommendations of Phases I and II.

Each local phasing plan will be unique. It should plot each step as realistically as possible for the expected duration of the development program. Long-range goals may be broken down into objectives for each year over a three- to five-year period.

Most or all of the remaining steps in this manual could be programmed for the first two years of development. Major milestones in the system's development should be used as measures of progress. They should be appropriate as evaluation targets after the system is operative.

A quarterly schedule should suffice at this time. Later in the operations planning or start-up phases, it may be updated and refined to a monthly schedule for a year in advance. Before the beginning of each new quarter or month, a final update of the period ahead is recommended.

Milestones Included in Phasing Plan

- . Addition of key personnel
- . Operational surveys and trials
- . Start of new services, routes and coordinated operations
- . Contract and other cooperative negotiations
- . Agreements and contract signing
- . Equipment transfers and purchases
- . Periodic reporting, evaluation, and planning updates
- . Public relations development plan
- . Grant applications
- . Service consolidation goals
- . Regulatory certification
- . Other intermediate steps to development

*Also see Technical Supplement, page 198.

TASK C - DESIGN MARKETING SCHEME*

This is the first attempt to plan and develop the identification by which the areawide transportation entity will become known. Unlike earlier action to name it, however, the tasks that follow propose the foundations of a public image to be approved by the directors themselves. A marketing scheme may not seem crucial to system development at this early point. It is, however, important to plan the scheme internally so that when the time is right, promotional activities can begin.

Supplemental professional services may be necessary to perform this work. It will depend on the technical capabilities of the staff participating in this phase. Consultants with marketing and graphics design qualifications would offer the talent required. The work should be carried out in close cooperation with the governing board of the transportation entity.

The purpose of having the board participate in the early steps of the marketing program may be more than to simply approve themes and designs. The directors themselves may wish to declare public service intentions as they should be portrayed for public relations. The purpose should not be self-serving, of course, but reflect the long-range goals of the transportation entity. Marketing objectives should communicate:

1. The proper image, as defined by ridership goals and ultimate scope of operations;
2. How the marketing program will reflect changes over the period of development; and
3. The extent it is to be focused at latent user groups.

These objectives may need to be stated prior to design work, especially if the planners are not to be closely associated with the designers. The opportunity for board participation prior to design approval should also be offered in the event members wish to participate in suggesting catch-phrase identifiers. The more input into developing alternative names to select from, the better. The final job of the board in this step is to accept or reject the proposed logo design and to choose among alternative color schemes.

Catch-Phrase Identifier

The official name of the transportation entity may or may not lend itself to common use. Whether the existing name or a catch-phrase is proposed for this purpose, it should have certain characteristics to make it acceptable in a variety of applications. One alternative, however, would be to retain a formal name for official use, while adopting a simpler identifier to be used by riders. That alternative

may permit postponing this task to Phase IV if logo and vehicle graphics design can proceed without it.

Catch-word identifiers should not be confused with individual route identification, where particular routes comprise an operational component of the system. For example, the same entity may operate both rural and urban service components, but choose to select names that identify one from the other. Each one of these service components may have several distinct routes. The commonly used name should be both simple and flexible in its application. More specifically, it should include as many of the following characteristics as practical:

1. Easy to say (i.e., five syllables or less);
2. Representative of the complete system program, or a distinct service area or component (e.g., dedicated handicapped service);
3. Attractive in image to the full user group;
4. Convey a message of purpose; and
5. Adaptable to a highly visible graphic design.

It is recommended that alternative names developed now be proposed to the board of directors in Step 10. Importance is placed on the careful selection of this identifier because it should be recognized as the permanent and foremost communication of the service mission. A name, however, cannot be all things - a complete marketing program by itself. At best, it may be central to the theme, making it easier and cheaper to portray public transportation positively. This is particularly important in the areas most dependent on the automobile or where transit has been equated with welfare and the poor residents only. Public transportation needs to be sold in such places to attract a broad base of patronage in the future.

System Logo and Colors

Logo design often means adapting the identifier phrase to graphic presentation for public display. However, the logo could be any symbolic representation of the system associated with distinct service components. Color schemes may be developed in conjunction with each logo, whether one or more, or created independently for general application. The primary requirements for colors are that they be highly visible and locally distinctive to provide easy recognition and contribute to safety on the road.

Applications of Logo and Color Scheme

- . General public relations and marketing
- . Letterheads
- . Vehicle exteriors and interiors
- . Marking bus stops/pick-up points and routes
- . Ride tickets or identification passes
- . Structural markings
- . Uniforms of operations personnel
- . Schedules and other publications

*Also see Technical Supplement, page 201.

Purpose: "Operations Design and Scheduling" starts at the beginning or with existing transportation services in the local area to plan for the first steps of improvement through coordination in the short range. Availability of existing equipment and personnel is compared to present need for additional resources and labor. The step requires detailed scheduling to coordinate participating services.

Participation: Again, it depends on local circumstances. Even if transportation management staff is not yet in place, this step involves local transportation personnel employed by the existing operators. The effort should be led and coordinated by whatever staff or technical assistance has been working with the transportation entity for planning work done previously.

Tasks in "Operations Design and Scheduling"

- A - Plan Routes and Services Coordination
- B - Compare Resource Availability
- C - Coordinate Client Services

TASK A - PLAN ROUTES AND SERVICES COORDINATION

Following basic directional guidance based on decisions from the board of the transportation entity in Step 9, the planning staff should begin coordinated route planning and scheduling. This includes a detailed follow-up to general investigations in Phases I and II, the disaggregate version of "Advance Planning". This task has been delayed to be performed with an operational picture as current as possible for final preparation of systems start up. The reason for this approach is the rapidly changing character of the typical existing transportation services.

The investigation should be limited at first, but this task may be repeated later in the development process. It begins with those agencies providing client transportation that, according to earlier surveys, support coordination. An incremental approach by potential to coordinate is expected to be the most workable for developing sizable operations, unless extensive cooperation is taking place and computer analysis is feasible. Computer analysis may be advisable for applications in major urban areas.

Detailed Investigation of Operations

- . Isolate vehicle trips (regular and on demand) and related carrying capacity
- . Identify trip origins and number of passengers by residential areas
- . Identify trip destinations and number of discharged passengers by zones
- . Determine arrival, enroute, touring, and departure times
- . Identify unmet demand origins, destinations, and times

Results of the above investigation may be diagrammed and tabulated for manual analysis. The objective is to reasonably maximize vehicle utilization. It can be achieved both by combining routes and by complementing service schedules during times when vehicles have been out of operation (down time). Limited service expansion can be achieved simultaneously to satisfy unmet demand reported by participating agencies, including agencies without transportation service previously. Greater vehicle utilization includes scheduling to take advantage of idle capacity.

*Also see Technical Supplement, page 204.

TASK B - COMPARE RESOURCE AVAILABILITY*

Estimates of the fleet required to serve future demand and the transportation-related staff needed to implement long-range plans were prepared in Steps 7 and 8 to analyze system feasibility. Comparisons are made in the following steps to program for future resource needs. Equipment and personnel availability by program or agency, as they join in to cooperate with the system, will be compared to the overall needs. Then, to close the gap, the input of additional resources should be scheduled, as necessary, to reach the scope of operations programmed in Step 9.

This process refines the tentative implementation schedule prepared in Step 9 (Task A) by determining realistic willingness and ability of existing operators to comply. It also begins to involve the local staff of existing operators who must contribute detailed information for the coordinated services scheduling that follows. Their participation is also intended to help identify the individuals available and appropriate for transition to the new entity. For existing operators coordinating internal transportation programs, this process will clarify transfers of equipment and personnel to be made within the agency.

Equipment

Identification of vehicles available for coordination coincides with the investigation of agencies supporting coordination, which was the beginning of Task A. It is expected that all surveyed agencies indicating some interest in coordination would be approached again to determine their ability to take part immediately, or exactly when it would be realistic. Other, disinterested agencies might be approached again, depending on the length of time since the original survey, changing conditions, or knowledge of related funding programs that eliminate barriers indicated by the local agency. To that extent, this investigation would go beyond the one in Task A, although the detailed operational data is not required for this task. The results of this investigation into coordination includes the information needed to make the following comparison and plans:

1. Compare the number of usable local vehicles (and the dates they are available for coordination) to fleet needs estimated in Step 7;
2. Schedule acquisition of additional vehicles, as needed, to reach operational goals in each service area; and
3. Match scheduled equipment purchases to expected funding source and schedule preparation of applications.

Personnel and Supportive Services

Specific personnel needs for the initial period of operations (e.g., first year) should be planned and scheduled. Although staff and labor needs were generally determined for purposes of the feasibility analysis in Step 8, the timing and candidates for each new position can now be investigated. At the same time, expectations for shared, in-kind, and hired professional services may be formulated as alternatives to employing all needed talent in-house. The initial search is proposed now, at a time of cooperating to achieve coordination, when contact is being made with the personnel working with the transportation programs of existing operations.

The purpose of preliminary search among locally experienced personnel is not to lure talent away from potential competitors. It should be recognized that established operators, who may already be suspicious about the intentions of a new transportation entity, will probably feel there is competition for talent. Therefore, the search should be undertaken carefully, with tact and good faith. Any covert recruiting would involve the risk of undermining the entity's efforts to establish a positive image of a public-service organization.

Even for those agencies inclined to support coordination, discussion of the potential to transfer personnel should probably begin with superiors of the individuals involved to establish cooperation toward smooth transition. The same approach might be taken toward trying to soften uncooperative operators. Assurance of an attempt to re-employ their personnel may go a long way toward securing cooperation. Continued resistance could jeopardize employment of transportation personnel with existing operators in the future, if public funding for transportation services is later transferred to the transportation entity and its personnel needs have been met already.

Issues in Personnel Planning

- . Job descriptions to meet full operational employment needs
- . Position priorities and scheduling to fill them
- . Multiple roles for initial employees and part-time employment potentials
- . Direct in-kind support and other external assistance available
- . Funding assistance for specific duties and public employment/training programs

*Also see Technical Supplement, page 207.

TASK C - COORDINATE CLIENT SERVICES*

The coordination of services scheduling for clients who use coordinated transportation services is an attempt to alter, where possible, demand at destinations to timing compatible with efficient routing. It is essentially rescheduling of demand within limits. Its application is restricted because rescheduling of many services may not be feasible. However, the concept is the same as "flex time", or staggered reporting to work by employees, which has been successful in many places to create flexible or spread-out work hours and reduce peak-hour travel demand. If the system later expands to include public routes and services, this step may be repeated on a larger scale.

Scheduling at this level is closely linked to the planning of coordinated routes and transportation services, Task A. It has been separated to follow the investigations into resource availability for two reasons. First, convincing administrators of the need to reschedule their service programs may require the new entity to demonstrate its ability to deliver transportation which is probably being provided currently by another agency. Cooperation gained in Task B may include the providers or funders of these same client services. Secondly, this work should benefit from the cooperation generally achieved among staff people who have experience working together in Task B. Cooperation may be dictated from above, but the most helpful workers should be those who know their personal futures are not threatened by coordination.

Much of this process, therefore, depends on policy direction from above and/or personal cooperation among staff workers. As such, it is non-technical in nature. The technical work to advance coordination is the purpose of Task A.

Interrelationship With Task A

- . Route coordination schedule from Task A determines optimum client services scheduling
- . Task A also determines priorities for rescheduling client services
- . Inability to reschedule client services, or complications resulting from this task, may require reiteration of Task A

*Also see Technical Supplement, page 212.

Purpose: This step carries out the detailed work that needs to be done before entering into major commitments that must follow. Contracts to deliver services and lease or make capital investments will be signed later. The preparations at this point deal primarily with a study of new equipment options to meet the needs programmed in Step 10. It also includes planning to enable the transfer of available vehicles to operation under control of the new transportation entity or coordination program, and an analysis of facilities options.

Participation: Since the work is primarily short-range management planning, this step could be properly carried out by either the transportation planning or management staff, as was the previous step. Again, it depends on the state of development locally. If both are available, it would be best to have their mutual cooperation. Outside design assistance may be necessary to carry on the initial marketing design work of Step 9. This is a technical support responsibility relying on earlier direction from the board. Direct input from the board during this step would be whatever interest it takes in developing procedures for the bidding process and basic capital investment strategies.

Tasks in "Capital Purchases"

- A - Specifications for Rolling Stock
- B - Request and Compare Bids
- C - Vehicle Graphics
- D - Fixed Facilities

TASK A - SPECIFICATIONS FOR ROLLING STOCK*

Vehicle capacities were considered during "Routes and Services Coordination" in Step 10. One pre-determined factor in the analysis was the capacity of available vehicles. Planning for expansion beyond that capacity, and replacement of vehicles previously in service, raises the question of what size vehicles to obtain and the best equipment design. If route planning has been computerized, vehicle capacity should be requested as a specific output. For manual planning, the answer may still remain unresolved if distinct service areas and appropriate schedule frequencies are not obvious.

Design of additional vehicles is an interrelated issue that requires extensive detail if written specifications are required. The funding source selected for vehicle acquisition may guide the degree of detail for specifications. In general, vehicle specifications should be developed primarily to meet operational objectives and secondarily to fit the choice for available equipment. The reputations associated with brand names can become confusing after thorough investigation unless specific measures are used to compare their suitability for a given operation. Requirements for written specifications will probably discourage the use of brand name descriptions without including the phraseology "...or its equivalent" (e.g., UMTA, External Operating Manual, Section III-C - Equipment Purchasing Guidelines).

Considerations in Preparing Specifications

- . Capacity requirements for efficient operations
- . Passenger comfort and image afforded
- . Accessibility to target ridership
- . Economies of fleet standardization
- . Service operating characteristics and flexibility desired
- . Physical operating environment
- . Range of cost for new and used equipment options
- . Accessories needed (fareboxes, radios, ramps or lifts)

*Also see Technical Supplement, page 213.

TASK B - REQUEST AND COMPARE BIDS*

This task develops and carries out procedures for obtaining bids and then compares the cost of alternatives for obtaining additional equipment. It begins with seeking experienced and cost-saving assistance with purchasing and concludes with an internal study to determine which alternative will be the best selection. Because of the likelihood that technical assistance is available from local, State, and/or federal government agencies, it may not be necessary, for this purpose, to hire the transportation management staff prior to actual equipment selection. The board of directors should be asked to approve procedures and be kept up to date on progress.

Currently, Kentucky and Georgia DOTs both determine specifications and purchase vehicles for 16(b)(2) applicants, whereas North Carolina uses the specifications from applicants to purchase the vehicles.

Bid Procedures

There is a variety of assistance available to local entities interested in acquiring transportation equipment. The range of alternative supply channels will vary with the purchasing entity's eligibility for government assistance. Therefore, the options open to each entity at the time should be investigated to find the best deals. The benefits of certain channels will depend on the type of equipment involved - standard or special order. Generally, anything larger than a high-top van involves a special order.

The alternative purchase channels range from the operator dealing directly with equipment sales representatives to third party arrangements. The middle man may be a dealer, a commercial leasor, a funding contributor, or simply a facilitator who purchases in quantity, such as a State DOT. Each is likely to offer extensive assistance to the inexperienced buyer. Nevertheless, the need to do comparative shopping should not be neglected. Even if the total value of a purchase does not justify dealing directly with several manufacturers, a comparison of the advantages to requesting bids through various indirect channels may lead to unexpected savings or short-term benefits.

The board should be responsible for deciding which option(s) will be followed. Comparative bidding will place a greater burden on the local staff, which should evaluate and present the expected benefits of each supply channel to members of the board.

Possible Equipment Supply Options

- . Deal directly with manufacturers' sales representatives
- . Shop for appropriate used equipment

- . Negotiate prices through local dealers (to buy or lease)
- . Bids requested by local government (which may retain title)
- . State purchasing through State DOT
- . Purchase through the Federal General Services Administration under UMTA grant assistance

Vehicle Costs

Once bids are received for specific vehicles, cost comparisons can be made to evaluate equipment alternatives relative to local operations. In general, there tends to be a tradeoff between initial purchase price and operating costs, even for vehicles of similar size. Diesel engines and other heavy duty equipment raise the purchase price but may deliver fuel and maintenance economy and/or a longer useful service life. For comparison purposes, the purchase price should be spread over the life of the vehicle on the same basis as operating costs. Lease arrangements bid should be included just as other operating costs are used for comparisons.

Manufacturer claims of operational economy may not be accurate. Inquiries into up-to-date experience of operators who have recently purchased each model will usually be helpful. Objective comparisons of brand name equipment are also published periodically. Such figures may be localized to evaluate performance in a specific operation. In the end, however, a good deal of judgement as to reliability, public acceptance, and future economic trends affecting costs will enter into the selection. If timing allows, the manager who will be responsible for equipment operation should participate in the final selection. Placing of the order is delayed until Step 14 of this manual.

*Also see Technical Supplement, page 218.

TASK C - VEHICLE GRAPHICS*

Specific application of the logo designed in Step 9 for display on vehicles is called for at this time. Although final selection of additional equipment may be delayed, the vehicle types are well enough known to proceed with graphics designs to enhance the appearance of available vehicles. Existing services may be transferred and continue to operate as they have been, only under the control of the new entity or coordination program. If it is important that these vehicles be recognized as part of the new system, a consistent design is needed now. The limited useful life of older vehicles may make complete repainting impractical, however. For that reason, the logo might be produced as a decal that would cover any existing logo display. The same design can then be applied with the full color scheme on vehicles painted later. Continuing to use the decal may save money.

In the case of deteriorated vehicles continuing in service temporarily, it may be desirable to simply maintain the existing appearance of vehicles, if possible. The alternative would probably be an expensive refurbishing to improve the appearance. An attempt to apply the new logo to a deteriorated or clashing finish could be damaging to the image of the new system. It would be better to present new designs at the same time as new equipment (and improved service) is introduced.

*Also see Technical Supplement, page 222.

TASK D - FIXED FACILITIES*

More specific planning of fixed facilities is appropriate now, since they will largely determine the capability to meet operational goals. The level of planning and design required at this point depends upon the future size of the system and its rate of growth. It is necessary now to at least plan sufficiently for financial programming in the next step. The safe storage of and ability to maintain a fleet is just as important as getting started.

Types of Facilities to Consider

- . Garage and maintenance facilities with associated equipment
- . Access facilities and installed devices for handicapped users
- . Bus stops, passenger shelters, and other user access provisions
- . Traffic controls, lanes, and turnouts
- . Garage and maintenance facilities with associated equipment
- . Radio facilities and installations
- . Office building and equipment

The requirement to design for accessibility of the handicapped will be affected by regulations issued under the authority of the Rehabilitation Act of 1973, Section 504, for systems receiving federal financial assistance. The impact of the "504" regulations is, in fact, likely to increase urban transit operators' interest in paratransit systems intended for the elderly and handicapped. Many urban bus systems may find it more advantageous to contract for service with paratransit systems in order to help satisfy their accessibility requirements. All systems, regardless of type or intent, will be required to provide for some degree of handicapped accessibility by the "504" regulations.

In general, fixed user and traffic facilities will be limited to urban areas or other locations of high vehicle or passenger traffic. Vehicle parking, service, and maintenance facilities can usually be colocated with offices, on either a centralized or decentralized basis. Central radio units and substations may also be installed at these sites. Capital funding from UMTA is probably the largest source for fixed facilities, especially those for storage and maintenance. It is extremely

important to plan and budget for these facilities for any system that will have more than a few vehicles.

Dispenser and processing equipment associated with the fare payment system may need to be included with office and passenger facilities, or require new installations and sharing of facilities. Fare payment systems may not be finalized until the next step, but research into, and pricing of, equipment on the market can take place now.

Purpose: All transportation systems must maintain a set of financial records that accounts for the services provided at a degree of detail which at least matches the grant requirements supporting the program. Due to the number of disparate reporting requirements and to the many different forms that accounting systems can take, it is important to develop a uniform approach to recording financial data in order to support cost-sharing and reporting schemes. This step presents an accounting system designed for generic application. It also discusses related financial responsibilities for which compatible systems should be designed.

Participation: The degree of detail in accounting will vary depending upon the size and number of reimbursable programs that a coordinator or operator handles. All of the financial programs discussed are crucial to the local operator, but may also be used by other entities in the channel of funds. The value of using the proposed chart of accounts increases with the number of related participants that can adopt it. Obviously, new and/or small systems serving only a few programs will not require all the detailed classifications proposed.

Tasks in "Financial Programs"

- A - Uniform Chart of Accounts
- B - Fare Calculations
- C - Cost Reimbursement of Shared Vehicles
- D - Handling Fare Revenues
- E - Budgeting and Insurance

TASK A - UNIFORM CHART OF ACCOUNTS*

A method for providing complete financial accounting is through the use of a coding scheme that captures the source and type of each financial transaction at the time of its occurrence. Frequently, the coding takes place prior to the actual transaction (as in the case of purchases awaiting payment), although final recording does not take place until the transaction is completed. In some cases, complete coding does not occur until after the transaction (e.g., physical asset inventorying may require location, specification and tagging after delivery). In all instances, however, each financial transaction must be accompanied by some type of coding.

All financial transactions must be described in such a way that, at a minimum, they identify revenues and expenditures by source of funds and by expenditure type. The easiest way to describe them is through the assignment of numerical codes to each occurrence. The number code is usually entered on the financial transaction document, recorded in (manual and/or automated) accounts, and reported according to the code structure chosen.

A necessary requirement for a proper code structure is that the number representation must be unique for each disaggregated component against which recording and reporting must be made. The need to have an efficient code, however, places additional requirements on the structure. For efficiency, the code structure should:

- . easily allow for successive levels of aggregation
- . not be overly cumbersome in length or structure
- . allow for easy error detection and correction

Additionally, the coding scheme should be flexible enough to handle financially oriented transactions that may not necessarily be represented by a cash flow. Examples of these types of transactions would be those involving the following:

- . Donations of services, facilities, equipment, materials, and supplies
- . Depreciations and amortizations
- . Allocations from cost pools
- . Transfers
- . Accrual accounting

Further flexibility must be provided for certain cash flow items that might have to be coded against organizational pools because of:

- . Lack of specificity as to which unit incurred the expense (such as insurance, fringe benefits, etc.)
- . Inventory control, bulk purchasing, etc. of purchased supplies

These and other coding requirements may need to be specified for a particular transaction. The following sequence demonstrates a general coding form for expenses/cash disbursements recording:

<u>Program/Fund Control Code</u>	<u>Functional Area Control Code</u>	<u>Facility/Vehicle Control Code</u>	<u>Expenditure Control Code</u>
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Each one of the control codes has been expanded in detail by a sample Chart of Accounts. The structure is the same for revenues/cash receipts recording except that the "Expenditure Control Code" is replaced by a "Revenue Control Code." The coding scheme adopted by a given transportation entity may be on any one of many levels of detail offered. The level of detail selected would depend upon the complexity of the local coordination program and operations.

*Also see Technical Supplement, page 225.

TASK B - FARE CALCULATIONS*

Most existing systems for reimbursement of operating costs to transportation providers by social service programs are basic barriers to coordination and development. Some alternative methods for equivalent but more flexible distribution of costs and payment of fares have been developed for this study. Beginning with the existing measurement base for reimbursements, and progressing to the fairest and most flexible measuring system, these alternatives are based on the following units of transportation service:

- . Cost per passenger mile (figured from odometer readings for each passenger's trip from point of pickup until disembarkment)
- . Cost per passenger trip mile (figured from straight-line distance on a map between the trip origin and destination for each passenger)
- . Cost per passenger zone (figured automatically by the number of established zones traveled or crossed; designed to fairly approximate mileage of each passenger's trip)
- . Cost per passenger zone mile and other possible variables for fares (average miles of travel predetermined between each zone pair and used as units of service for each passenger trip)

A new requirement of the two more advanced fare calculation methods is the need to design zones. An arbitrary zone concept could be imposed. At least some degree of unique local design is preferable. Zone designs should be based on concentric circles, a grid system, geographic characteristics, landmarks, local jurisdictions or some combination. Planning assistance or consultant services may be needed to design zones locally.

The same benefits can be derived from a flat or uniform fare system, but equity is sacrificed, especially in a large service area. Large zones, likewise, sacrifice equity. Some compromise between oversimplification and excessive complexity, relative to the local operating environment is recommended.

*Also see Technical Supplement, page 232.

TASK C - COST REIMBURSEMENT OF SHARED VEHICLES*

The purpose of this task is to provide a means for consolidating transportation services and an equitable and efficient method of capturing pro rata reimbursements for the shared use of vehicles in service. All agencies that wish to consolidate transportation services with other entities so as to maximize the number of passengers served by their vehicles and minimize the duplication of vehicle trips over common routes when fewer vehicles should suffice, can benefit from this task.

Federally authorized concepts and procedures for reimbursements are currently available through U.S. Office of Management and Budget (OMB) Circular A-87 and Federal Management Circular (FMC) 74-7, which permit common administrative costs to be shared among programs. Transportation costs may be viewed as nothing more than common support services necessary to fulfill the stated purpose of primary programs. Shared transportation costs, therefore, should be charged and reimbursed in the same fashion as overhead.

Allocating Shared Costs

1. Identify the programs that will share services and appropriate bases for the sharing. Shared costs should be only those incurred by serving client demands for transportation that are reasonably compatible in time and place, associated with shared vehicle trips. The basis(es) for the sharing will involve some form of a passenger trip mile, passenger zone mile, or similar form for the cost splitting, as discussed in Task B. Some form of passenger identification and origin/destination will be needed for cost accounting purposes when federally funded social services programs are involved. The actual data for prorating would be generated by one of the fare systems described in the next task and/or the Route Dispatch/Check List which has been designed for this purpose. The latter documentation is described in Step 19.
2. Obtain approval from the cognizant federal agency for the shared transportation service and allocation scheme.
3. Accumulate all reimbursible costs against the shared service within a defined time period. The eligibility of reimbursible costs comes directly from established federal program guidelines. The accumulation is accomplished through the assignment of the proper accounting codes that identify the programs for each shared expenditure and by summing of all such coded expenditures.
4. Take the results of numbers 1 and 3 in this procedure and split the costs of 3 by the pro rata share reflected by the respective units of service documented in 1 for each program sharing the combined service.

*Also see Technical Supplement, page 236.

TASK D - HANDLING FARE REVENUES*

A number of workable systems and processing instruments for handling fare revenues have been proposed and tested around the country. Some include automatic billing and data collection. This manual has not developed a final recommendation for a fare system, but has concentrated on improving the cost reimbursement system as a beginning step. Once that is accomplished and implemented, other simplified and more advanced fare processing and collection systems will be acceptable in combination with reimbursements, or as a natural replacement for it.

The documentation for reimbursement would be the reporting forms proposed in Step 19. The fare calculation scheme would also be the measurement base for sharing cost reimbursements, which could also be described as fare reimbursement. Transportation entities that can have these accounting and fare systems approved as the basis of cost reimbursements, could integrate other types of fare payment or ticketing with them for public accessibility to the transportation services. The result could be reduced cost shares to participants as a result of better utilization through broader sharing of the same services, or simply a multi-purpose transportation system using uniform cost accounting and service pricing.

Alternative Fare Systems

- . Reimbursements incorporating recommended cost allocation (Task C) and improved fare calculation
- . Cash and tokens for direct payment
- . Bulk rate tickets and passes for advanced purchase or reimbursement
- . Credit card-type fare system with full automatic capability and flexibility

*Also see Technical Supplement, page 241.

TASK E - BUDGETING AND INSURANCE*

Once the accounting system has been established, the budget format will be derived directly from it. Consistent with the chart of accounts recommended in this step, a budget using aggregate expenditure items is suggested. Certain items may be further aggregated if they are minor, while others may be disaggregated to achieve greater detail for items of specific interest.

Example of Expenditure Accounts Used for Budgeting

<u>Code</u>	<u>Item</u>
000	Salaries and Wages
010	Fringe Benefits
020	Contractual Services
030	Materials and Supplies
031	Fuel
032-034	Vehicle Parts
035-038	Supplies
040	Utilities
050	Insurance
060	Leases and Rentals
070	Taxes, Fees, and Assessments
080	Interest
090	Depreciation and Amortization
100-190	Miscellaneous Items

Insurance (Expenditure Control Code 050) includes vehicle insurance. This could be a difficult budget item which is not addressed elsewhere in the Manual. Prior to finalizing the budget would be a good time to shop for the best insurance buy. Rates are currently high; there is little standardization among the types of transportation insurance that may apply and State government is not, at this writing, offering acceptable coverage to public operators. New entities are subject to high rates, especially for public passenger operations. Shopping for the best deal may include these sources:

- . Local insurance agents
- . Companies specializing in transportation insurance
- . More than one company for layered coverage
- . Self-insurance pool
- . State DOT or motor pool participation

In Georgia, in 1978, the problem of insurance for special transit systems caused the State DOT to convene meetings and conduct an assessment of the problems and potential solutions to this problem.

*Also see Technical Supplement, page 246.

Implementation and Development

IV

With the conclusion of Phase III, the transportation entity is now prepared to enter into operations and put vehicles on the road. If it is already running vehicles, this is the time to initiate the changes for a coordinated system. Considerable planning and preparation have led up to this start-up phase, and development is expected to continue beyond the date of starting new service.

Phase IV, "Implementation and Development," begins with final preparations to start operating vehicles. The preparatory elements include hiring staff and operations personnel, contract signing, entering commitments for capital purchases or leases, training, developing a maintenance program, and new service promotions. As stated in the beginning, users of the manual will have to pick and choose what portions of the manual are needed for their particular kind of service.

Steps in Implementation and Development

- Step 13 Staffing and Contracting
- Step 14 Acquiring Equipment and Facilities
- Step 15 Starting Operations
- Step 16 Promoting System Development
- Step 17 Services Expansion and Integration.

Purpose: "Staffing and Contracting is the first step in this stage of implementation. It clarifies initial personnel needs unmet through coordination planning during Step 11 and acts to fill and direct the positions required to begin operations. This step may overlap Phase III if the board needs to employ a director early enough to assist in equipment and financial preparations. In that case, the first parts of this step should be used to search for a new director following Step 11. At any rate, the search for a director should precede the date of initial operations (Step 15) by at least three months, if the director will be needed then, to allow time to advertise, review responses, interview and relocate a director, if necessary.

Participation: The tasks in this step are the responsibility of the transportation entity's board of directors. Direct technical support would involve whatever staff assistance is available to the board. If the director has been hired prior to its completion, that person would help with the balance of staffing and contracting.

Tasks in "Staffing and Contracting"

- A - Key Staff Positions
- B - Personnel Needs and Policies
- C - Finalize Coordination Agreements

TASK A - KEY STAFF POSITIONS*

Personnel needs were identified in Step 11 as an aid to locating experienced staff and labor available in the local area for re-employment with or transfer to the new transportation entity or program. That was done by technical staff as part of short-range planning. The results of that effort support the official action to be taken now by the board of directors. The key positions are considered the central management, supervisory and head administrative staff members. This concept of key staff, however, should not diminish the important role of drivers and other employees in positions of constant and close public contact. The distinction is primarily one of managerial versus operational responsibility. Operations personnel are discussed in Step 15.

Organizational Structure

This task represents action by the board to establish the relationships of key staff positions to one another and the board itself. Positions of primary managerial responsibility, the first two or three in line of reporting directly to the board, may be specifically named in the by-laws of the entity to establish the official hierarchy in the absence of the director. Other positions may be set forth in a personnel policies manual, which should be adopted in Task B of this step.

An organizational chart should be developed and adopted by the board to clarify the relationships among the central or executive staff members. For a fully developed operational entity that has independent administrative authority, the chart may include up to six distinct functions to be performed by the executive staff. Small or newly established entities may require employees to take on several responsibilities. Some of the functions may be more appropriate for contract services, other agencies, or consultants to perform.

Key Staff Functions or Positions

1. Executive Director or Coordinator
2. Operations Management
3. Financial Affairs
4. Operations Planning
5. Public Relations
6. Administrative Assistant

With adequate administrative assistance from board members and external planners or professional services, filling the top position could conceivably be delayed. Hiring an operations manager first to gain firm control of extensive, early operational responsibilities may be important when coordination is expected to follow soon, along with transfer of extensive existing services. Operations director should be clearly portrayed as a secondary executive slot that will come under the

supervision of the director. This approach may provide the opportunity for an operations oriented manager to prove himself, expand his horizons, and eventually compete for the director's job.

The next most urgent central staff need is usually for a secretary to assist the director and board. This employee should have a wide range of skills to perform bookkeeping and clerical duties initially. As the entity grows, the position could be supplemented with additional secretaries and clerks. The primary slot would then become that of executive secretary or administrative assistant.

The other key staff functions listed above would be performed by the director and external assistance in the early development period. Priorities and qualification will become apparent enough to be locally determined before the positions need to be filled individually.

*Also see Technical Supplement, page 253.

TASK B - PERSONNEL NEEDS AND POLICIES*

There is a good probability that most employees can be found in the local area. The transportation planner and the director, however, are the two positions least likely to have local applicants who are fully qualified. The planner's qualifications would be the most specialized, but that position would probably be one of the last filled, if it ever is. A good selection of candidates with the appropriate combination of skills to qualify as director is not likely to be found outside the larger urban areas. Advertising the opening for a director, therefore, should reach beyond the circulation of local newspapers. If the search is initiated at this point, early announcement of the opening through effective channels will be necessary to receive responses in a timely manner.

Recommended Channels to Announce Management Openings

- . Local, statewide, and regional newspapers
- . Selected periodicals listing job opportunities in public transportation or administration
- . Seminars, conferences, etc. relevant to the local program
- . Educational institutions offering transportation programs

Another matter to be resolved at this point is the adoption and communication of personnel policies and procedures. An expedient approach to the problem is to obtain and compare personnel policy manuals from other organizations of similar authority. After making revisions to suit the local entity, a finalized manual should be adopted by the board. Cooperating local jurisdictions or participating agencies are logical sources, as are other transportation entities in the state. The manual should be adopted in time to answer questions that will be asked by job applicants. In the case of applicants for director, the manual will help describe responsibilities of the job. Of course, the manual should be subject to subsequent change by action of the board, with the advice of the director in charge.

Administrative policies and requirements for public entities and private non-profits are likely to differ from state to state and, in fact, contain provisions for specific items applicable to the particular State only.

*Also see Technical Supplement, page 257.

TASK C - FINALIZE COORDINATION AGREEMENTS*

A variety of contract arrangements is basic to the coordination of existing transportation services and the expansion of operations area-wide. Other agreements to coordinate related client services may be less formal, but they should also be officially confirmed at this time. Without scheduling commitments, the cost of fulfilling contract obligations may exceed the allowable rate as planned. Extensive programming and coordination have preceded this implementation stage. Those studies have been carried out in preparation for the official commitments into which the board of directors must now enter.

Contracts may take the form of direct transportation or management services supplied by the entity, transportation or professional services supplied to the entity by an independent operator or firm, or financial, technical, or manpower assistance from external sources. The last type can be expected to have dictated provisions. Professional and limited transportation services provided to the entity would tend to be specific to a variety of purposes, but relatively common and standardized over time. Broader transportation or management contracts for services supplied either to the entity or by it to other government agencies and service organizations become more specialized and complex. Since they will basically define the manner in which the entity will operate and finance operations, provisions should be carefully negotiated in accordance with board policies.

Operational Contract Provisions

- . Service areas, frequencies and coverage or routing
- . Special services to users
- . Grants, loans and general subsidy shares and conditions
- . Planning and management responsibilities
- . Ownership and selection of equipment and facilities
- . Employment and supervision of wage earners
- . Employee time sharing and payment of benefits
- . Credit or omitted cost items on service charges
- . Rent on equipment or facilities
- . Liability assignments
- . Supply channels and payment
- . Maintenance responsibilities (equipment and facilities)
- . User eligibility and identification
- . User subsidy share and payment
- . Direct service charges and method of calculation
- . Flat fares versus cost reimbursement
- . Depreciation allowance and sinking funds
- . Handling of excess revenues
- . Equipment salvage revenue distribution
- . Sub-contracting provisions
- . Accounting procedures and record keeping
- . Other standard contract provisions

*Also see Technical Supplement, page 259.

Purpose: "Acquiring Equipment and Facilities" is the step during which the transportation entity orders new rolling stock or takes over used vehicles. It combines capital purchasing with facilities funding and design, which may or may not fall at the same time as initial equipping. As an alternative or interim step to facilities acquisition, the obtaining of temporary office and operational quarters is also included.

Participation: The board and director or manager of the entity, working together, make up the team locally responsible for executing these tasks. It is not expected that they will be acting independently, however. An external funding source for capital assistance will probably be needed to make it all possible. Whatever the source, procedures may be dictated or guided by it, and technical assistance may also be available from it. Equipment acquisition may include a purchasing agent or leasor at any level of government or from commercial institutions to deal directly with the manufacturer or other supplier. Facilities design and related preparations may involve local or state engineering departments and/or hired professional assistance.

Tasks in "Acquiring Equipment and Facilities"

- A - Select Rolling Stock
- B - Finance and Order Capital Improvements
- C - Acquire Headquarters and/or Design Facilities

TASK A - SELECT ROLLING STOCK

This process introduces no new technical responsibilities but, rather, completes the tasks in Step 11 that lead up to this point of decision. By delaying final selection of equipment to meet additional fleet needs, management staff participation should now be possible. Using the comparative evaluations prepared by the system planners, the director or manager will be in a position to help make a final decision based on up-to-date findings about specific available equipment, accessories, and prices. As the manager of vehicle operations and, perhaps, financial affairs, this person ought to be satisfied with the capabilities and reliability of the equipment, which should be the start of a standardized fleet.

The comparison of vehicle costs on the basis of bids received, as recommended in Step 11, could result in an evaluation of more than one equipment option with cost advantages that are essentially equal to one another. In that case, judgement will now have to guide the appropriate choice. It is assumed that the planners' evaluation includes projected future economic conditions to judge the relative advantages of a capital intensive purchase, versus a choice to defer some of the costs (trading a lower purchase price for higher operating costs). The final decision may, thus, hinge on the availability of capital purchase funds versus operating funds.

Judgement Factors in Final Selection of Rolling Stock

- . Eligibility for capital assistance programs
- . Adequate local funding match
- . Director's or manager's judgement of reliability, durability, and manufacturers' reputations
- . Joint judgement of public acceptability
- . Parts standardization and configuration options to meet future needs

TASK B - FINANCE AND ORDER CAPITAL IMPROVEMENTS

This work involves applying for a capital assistance grant to help finance acquisition of the rolling stock selected in this step and the facilities planned in Step 12. Financing is already arranged, of course, if a block grant or sufficient general program funds are already available and capital purchases are eligible expenditures. Placing orders for equipment with specifications that do not depend on facilities design, which follows, is also recommended at this point.

Delay in ordering may result if orders cannot be placed with a contingency clause for subsequent grant approval. If excessive delay in funding is anticipated, this step may be moved up to follow Step 12. That would also require an earlier search for a director or manager than permitted by its sequence in Step 13 if that person's participation is needed in this step.

Several months' delay in delivery of vehicles can be anticipated unless standard or second-hand equipment is purchased or leased. The actual delay, of course, will depend on the manufacturer and its backlog of orders at the time. The delay time for minor modifications to standard equipment may be less, but special orders can be expected to take at least 90 days.

Another reason for moving this task ahead to overlap with Phase III would be the need to have the additional equipment on hand in time to begin initial operations in Step 15. The sequence used here assumes that service can be initiated with existing local fleets transferred to the operational control of the transportation entity prior to delivery of new equipment.

TASK C - ACQUIRE HEADQUARTERS AND/OR DESIGN FACILITIES

At this point, the transportation entity must obtain office facilities at least adequate to serve as temporary operations headquarters. If suitable permanent facilities are not already available for a vehicle maintenance shop, design and engineering work should begin now. Even if facilities exist which the entity can occupy on a long-term basis, consolidation and expansion objectives of the development program would probably necessitate capital improvements to them.

The best obtainable quarters available in the short term may be facilities rented from an existing operator that is transferring other resources (equipment and personnel) to control by the new entity. Initiation of design work may need to wait until grant approval is obtained if the capital assistance program is subject to a prolonged application stage and the request has just been submitted. Advance project costs may be refundable or applicable to the local share, however. In that case, it may be expedient to initiate architectural and engineering work by committing local funds to pay fees due prior to other project funding. On the other hand, if any of the following assumptions is invalid for the local entity, facilities acquisition may need to be scheduled earlier in the development program.

Assumptions Relevant to Sequence of Facilities Acquisition

- . Minor staff, if any, has been directly employed by the entity prior to initial operations in Step 15 such that regular office space has not been necessary until now.
- . Maintenance facilities are unnecessary to begin operating unless existing operations that are transferred include a garage.
- . Offices for operational headquarters alone will be adequate quarters until the fleet expands beyond at least 20 vehicles or includes diesel buses.
- . Design and construction of maintenance facilities can be completed by the time the fleet size and makeup require a sophisticated transit garage.

Purpose: This step, "Starting Operations," marks the point in the development program when prior planning and preparations culminate in the tangible results of vehicles being on the road, controlled by the entity and providing transportation services. It is doubtful, however, that all the operational plans can be implemented in one sweeping changeover. More likely, this step will find the transportation entity merely replacing the role of a few former operators who have cooperated with it from the start. It would assume operational control of their vehicles and coordinate direct services that comply with contract requirements.

Participation: To begin with, the staff of the transportation entity must be brought up to a level of full operational capability. This step relies on the creation and functioning of a basic managerial, clerical, and driver staff. Management's decisions will take the leading role, while the transportation board will give advice on policy matters and officially endorse specific key decisions. Planning assistance used previously should remain accessible to ease transition of responsibility to the director or manager, by offering technical advice and information, or by filling would-be staff roles as needed.

Tasks in "Starting Operations"

- A - Develop Operational Staff
- B - Preventive Maintenance Program
- C - Initiate and Coordinate Operations

TASK A - DEVELOP OPERATIONAL STAFF*

The first tasks in initiating operations are to hire and train a work force capable of effectively carrying out the planned operational objectives. It should not be a last minute detail. Administrators and managers appreciate the importance of a sound personnel system. Planners must be careful to schedule sufficient time for its development. These are not preparatory tasks, but a continuing part of operations that adapt to the changing needs.

Hiring Personnel

Step 11 describes duties of the various staff positions that the transportation entity may eventually fill. The qualifications for each should reflect those responsibilities or the combination of duties that are assigned to early employees who must serve in multiple roles. Because of the extra demands placed on the first employees, they should be carefully selected. In many cases, the procedures they establish will be adopted as operational standards. They are also likely to be candidates for later promotion to supervisory positions.

Personnel transferred from former operators will probably be the most experienced and readily available to fill positions. An attempt should be made to employ as many such displaced workers as feasible. If UMTA funding is involved, investigate provisions of Section 13(c), Urban Mass Transportation Act of 1964, as amended. Step 8 should have determined if and how it affects local re-employment and training of displaced transit labor.

General principles for hiring, which can be obtained from any source on personnel management/administration, should apply here. The specific qualifications will differ for each position being filled and will probably change continually. The staff person responsible for hiring is expected to have some experience and creativity in this area. A system should be developed, however, for reasons of efficiency, fairness, and clear communication. Driver qualifications will probably be the first and most troublesome hiring problem faced by the director who is given this responsibility but is inexperienced in transportation operations. This manual provides general guidance. Specific technical assistance and candidate referrals should be sought from any of the following sources appropriate to local needs:

1. Professional training programs
2. State and federal transportation agencies
3. National operators' associations
4. State employment agency and CETA sponsors
5. Experienced operators with similar services

Operations Training

Developing a training program for operations personnel should be considered one of the basic initial tasks of supervisory staff members. The transportation entity must be run like a business. The success of the operation will depend upon the discipline and professionalism of its personnel. The development program must leave time for key staff members to get together and develop a program of training for their subordinates.

Time must also be allotted to conduct essential training prior to initiating operations. The program should be recognized as one that will affect the costs and overall operational effectiveness by contributing to the morale and efficiency of employees.

Technical training for operational personnel will be difficult to set up at first. Because of that problem, the entity should attempt to establish a base of experienced workers initially. Even they and employees with non-technical responsibilities should receive some basic training relative to the objectives of the entity.

General Training Categories

- . Policies and organization
- . Relationship with supervisor and job responsibilities
- . Use of adopted reporting systems (see Step 19)
- . Specific technical skills
- . On-the-job training programs
- . Special needs of handicapped and elderly and driver attitudes

A few states, most notably, Michigan (DOT) have established sound procedures and programs for driver training. The director may wish to communicate with such places to see how they do it.

*Also see Technical Supplement, page 264.

TASK B - PREVENTIVE MAINTENANCE PROGRAM*

Inadequate maintenance programs have frequently been a major downfall of many specialized transportation operators. Systematic preventive maintenance is essential to safe, dependable operations and to the responsible care of capital resources. Establishing the specifics of the entity's maintenance program has been delayed in this manual to immediately precede initial operations so that the assistance of mechanically experienced staff members will be available. Also, it may now be designed with knowledge of the specific vehicles to be operated initially and the types of vehicles that the developing system is likely to include in the future.

A general maintenance policy should be established to include all vehicles in the fleet so that standardized reporting and account charging procedures may be set up. The fleet referred to includes staff cars and utility or maintenance vehicles. The same policy and reporting procedures should apply for maintenance performed by the entity itself and mechanical work performed under contract at other maintenance facilities. Procedures should include logging or other communication internal to the maintenance program. Other reporting requirements are necessitated by the accounting and general operations reporting systems. Only maintenance procedures are described here. Reporting requirements are also included in the parts of the manual dealing with the accounting system, Step 12, and with the reporting system, Step 19.

Maintenance Policies and Procedures

- . Daily service and inspection - scheduling, logging checklists
- . Periodic inspection and maintenance - scheduling, checklists, work and purchase orders
- . Backup vehicles - scheduling for regular service and breakdowns of primary vehicles

For systems using UMTA 16(b)(2) purchased vehicles, it should be clear from the State administering agency that UMTA regulations require the adherence to manufacturers' recommended maintenance program and schedule at a minimum.

*Also see Technical Supplement, page 274.

TASK C - INITIATE AND COORDINATE OPERATIONS

The new entity should now be at full operational capacity. The final part of this step involves implementation of technical tasks that precede it. As a part of driver training, it is wise to schedule a transition period of about one week's time at the outset of operations. The transition period would serve to familiarize new drivers with their specific route assignments, as a trial period for new vehicles, and/or as an opportunity to overhaul and refurbish older vehicles.

Transition to operations with a new fleet of vehicles presents the least difficulty with service interruption. The unpredictability of delivery dates, however, may complicate scheduling. Transferred vehicles already in service offer little opportunity for transition periods unless they can coincide with natural breaks in service. To avoid service interruptions, on-the-job training for new drivers while vehicles are still controlled by the original operators may be wise.

Transition may be achieved by simply continuing former services temporarily (or by coordinating similar routes as they are when coordination has been planned for services being initiated at the same time). In that case, route coordination will take place incrementally as new contracts go into effect on later dates. At this point, it is also anticipated that selected routes formerly operated by contracting agencies may be turned over to subcontractors to perform the service where it has been demonstrated to be more cost effective.

Components of Initiating and Coordinating Operations

- . Transition trial and route familiarization
- . Take delivery/transfer of vehicles
- . Insure vehicles (as recommended during Step 12)
- . Begin new routes and continue or coordinate former services (as appropriate)
- . Incremental coordination of subsequent service contracts
- . Subcontract services when cost effective (according to Step 8)

Purpose: The new entity is by now operating transportation services. By its mere existence, it should experience some natural growth due to the economies of fleet consolidation if it is successful in its effort to coordinate services. The purpose of "Promoting System Development" is to dedicate a step to the development of markets for the routes and services planned in Phase II. Rather than an isolated step in the development program, however, promotions should become an ongoing program including public relations and responsiveness to public needs. It will be a major part of the general marketing effort for developing systems.

Participation: Responsibility for promoting the system will initially fall on the director. If a director was not needed earlier to help initiate operations, the position should be filled before the entity can expect to actively pursue further development. At some later point, it will probably be necessary to hire a full-time public relations director to be in charge of ongoing promotional programs. In the meantime, it may be necessary for the director to hire professional assistance from transportation consultants or a public relations firm. More specialized assistance in survey work may include participation of local planners or consultants unless the entity employs a planner. The board of directors should continue to participate in promotional programs.

Tasks in "Promoting System Development"

- A - Coordinated Contract Operations
- B - Survey and Promote Public Ridership
- C - Public Relations Program
- D - Promotion of New Services
- E - Promotions and Public Relations Budget

TASK A - COORDINATED CONTRACT OPERATIONS*

In order to continue incremental coordination begun with services under the initial contracts, new contracts for services should be actively sought by continuing negotiations with non-participating providers or potential providers of client transportation. As a rule, when attracting new contracts, provisions for full reimbursement of costs are more desirable if the new services represent an expansion of operations. Contracts authorizing charges on a flat-fare basis, on the other hand, will generally be more advantageous to the entity when they are awarded for services with good potential for immediate coordination. In other words, when payment for services is not restricted to reimbursement of costs only, and they apply to efficient operations, the operator is in a position, perhaps, to profit from such contracts in the short term. Even if a profit margin on a limited number of contracts cannot be maintained, (also is likely to be prohibited if public subsidies are used) the risks of expansion should be minimized and related cost shares could eventually be reduced.

Benefits of Additional Service Contracts

- . Reimbursable contracts:
 - expansion of fleet
 - expansion of service areas

- . Flat-fare contracts:
 - sell empty-seat capacity
 - vehicle utilization during down time
 - lower fares or cost shares through improved coordination of routes

Attracting new contract service is the responsibility of the director. Caution must be exercised not to commit the entity to provide new service that would be a deficit operation. When reimbursement of costs is not guaranteed, revenues from the new service should be compared to its marginal cost and any lost revenue incurred in the operation as a result of it. The director should also be aware of and prepared to deal with long lag times in obtaining reimbursements from agencies. Promotions associated with contract operations include attempting to attract more riders from participating agencies by means of campaigns directed at the final consumer.

*Also see Technical Supplement, page 281.

TASK B - SURVEY AND PROMOTE PUBLIC RIDERSHIP*

True public transportation services as part of areawide operations may include various degrees of general public accessibility. If existing urban fixed routes are transferred to the new entity for operations, recent surveys of current and potential user attitudes and their changing service needs should have been conducted during Step 5. New public routes developed independent of former route structures, however, may be achieved most effectively on an incremental basis.

Selective surveys directed at ridership markets concentrated at major trip destination points also afford the opportunity to selectively promote newly planned routes. A strategy of timing ridership surveys closely with implementation of specific service is cost effective and responsive to current needs. Major trip destinations identified in Step 7 as offering potential demand for incremental route development may include the following:

- . large industrial employers, districts, or parks
- . regional campuses
- . popular shopping centers
- . high-density residential complexes or neighborhoods

Selective Marketing Process

- 1) Survey ridership potential or interest and specific trip demand
- 2) Promote service as part of survey instrument
- 3) Promote service with vehicle displays, demonstrations, and trials

*Also see Technical Supplement, page 283.

TASK C - PUBLIC RELATIONS PROGRAM*

During the formative period, the entity will not be able to devote much of its limited funds to marketing and promotional programs. Public relations can be achieved through contacts by the director, board members, and staff. Purchased public relations campaigns will be limited by financial ability and, therefore, a substantial amount of imagination must be exercised to maximize limited funds.

Before or shortly after initiating operations, the entity should begin an ongoing program of two-way communication with the public. It should convey the general message of the entity's purpose, provide a forum for reporting current topics relevant to local transportation, and encompass feedback to the entity on public needs and complaints regarding service. It is important that the public relations program establishes the proper image for the entity from the start. A positive image established early in the entity's operations will help counteract public confusion and criticism over differences between initial services and the future objectives of the system. Short-term promotional campaigns for the initiation of new services is included in the next step.

The public relations program should avoid raising false expectations on the part of the public. Part of its very purpose, in fact, is to prevent disillusionment from growing out of expectations for brand new transportation systems as soon as the entity appears. It is about this same time that the public will begin to see the entity's logo displayed on vehicles in operation and its other marketing applications.

Public Relations Program Elements

- 1) Public appearances by director and board members
- 2) Open board meetings
- 3) Regular media releases to announce progress
- 4) Public hearings and route planning sessions
- 5) Rider suggestion forms
- 6) Convenient telephone number and address for complaints and requests for service

*Also see Technical Supplement, page 289.

TASK D - PROMOTION OF NEW SERVICES*

Probably the most visible image of any transportation system is its vehicles. Hence, the emphasis on the appearance of the buses in the preceding steps was for marketing purposes. If vehicle graphics have not already appeared, their introduction should not be delayed past the time when service improvements are implemented. For improved service to become more successful than the service that existed previously, the operator cannot rely on the existing transit dependent population as its only patrons. Rather, it must actively promote the newness and appeal of improvements in order to attract latent demand groups back to the buses, or onto them for the first time.

The logo and colors selected should reappear throughout the marketing effort. Early public recognition of new services can go a long way toward attracting the demand and fare revenues needed to offset the immediate costs of operations as soon as possible. A slow-starting campaign could jeopardize the financial footing of an operation from the start. Instead, a short-term intensive campaign should lead the initiation of improved service by about two weeks. The campaign blitz should include:

- . media advertising
- . route markings
- . flyers
- . tickets and schedules
- . new equipment

*Also see Technical Supplement, page 291.

TASK E - PROMOTIONS AND PUBLIC RELATIONS BUDGET*

The whole public relations program will probably be conducted on a limited budget. It must somehow help achieve a balance between the appearance of an extravagant transportation system and a fly-by-night service or welfare program. Budgeting for public relations and promotions should become a built-in cost of operations to insure continuity through a steady level of funding. The success of fare-charging public transportation will depend largely upon the marketing effort as a whole.

Marketing also means promoting service reliability, vehicle cleanliness, and the attitude of drivers. Built-in costs already support these tangible, but hard-to-cost, attributes. Without continuous funding for marketing on all levels (ranging from graphics and vehicle care, to press releases and information meetings with human service agencies) transportation will remain a support function of human services rather than a free-standing or primary public service. The public relations effort and the concomitant image of operations is the basic link between the potential user and the system.

Developing the budget for specific promotions would actually take place when contracts are written or renewed, when fares are set, or when subsidies are programmed. It may take place now or later for all services other than those initially contracted. A single, permanent account for all promotions should be funded from contributions based on appropriate rates for each of these categories:

- . Contract operations
- . Selected public ridership
- . General public relations

*Also see Technical Supplement, page 292.

Purpose: New services initiated are the result of promotions carried out in Step 16. They may involve both new contract operations and public routes. The actual process of initiating new services repeats Step 15. Technical procedures for service initiation are not repeated in this step. The new tasks below relate to integration of services and expansion needs created by the net result of new and integrated services.

Participation: Since this step is ongoing for the rest of the development program, nearly all parties involved previously will also participate here. The step relies, primarily, on the management and operations staffs, however. Support can also be expected from the board of directors, planners, contracting agencies, external services for planning and/or legal work, and sources of financial assistance.

Tasks in "Services Expansion and Integration"

- A - Integrating Operations
- B - Renew Existing Contracts
- C - Replace and Expand Fleet

TASK A - INTEGRATING OPERATIONS*

At first, this process involves an operational analysis only. It is set apart from the removal of institutional barriers to integration, which follows this task. The analysis is essentially a repetition of coordinated route planning in Step 10. The primary difference this time is that it involves an internal study of demand on routes already controlled by the entity.

This task may be repeated periodically to appropriately shift routes in accordance with changing demand over the long term. For example, demand may have grown so heavy in an area that regular fixed routes may become more effective where more limited or specialized services have been offered in the past. Growing demand may result more from the success of transportation services and changing economic conditions than to shifts in the population. This analysis provides the capability to maintain flexibility in the design of transportation services. Operationally, it will involve changing levels of service from one part of the area to another as well as liberalizing restrictions on mixing riders.

Summary of Integration Analysis

- 1) Identify popular service areas
- 2) Compare with planned public routes
- 3) Obtain technical assistance for computer analysis (if needed)
- 4) Survey attitudes toward change
- 5) Consider need for supplemental service

*Also see Technical Supplement, page 294.

TASK B - RENEW EXISTING CONTRACTS

At various points during the development program, initial contracts will come up for renewal. The original contracts were executed in Steps 13 and 16. Renewed contracts should be written with improvements over the original versions to deal with past problems and improved procedures more recently adopted.

One of the overriding purposes for improving contract provisions is to remove legal barriers to implementing integration plans. With the improvement and standardization of procedures being used, and with consolidated funding a growing possibility, many changes to contract provisions may be mandated from the State level in the future.

Contract Provisions Subject to Improvement

- . New levels of service
- . New cost allocation as proposed in Step 12
- . New vehicle supply provisions
- . Revised definition of eligible costs
- . Revised reporting requirements
- . Revised unit-of-service charge rates
- . New assistance contribution agreements
- . Altered fare assistance channels
- . More flexibility in documenting fares for reimbursement
- . New ticketing and advanced fare payment programs
- . Greater public accessibility to services

TASK C - REPLACE AND EXPAND FLEET

Equipment transferred to the entity from former operators is likely to have high mileage and be overdue for, or lacking in, regular maintenance from the start. Before long, the entity will find itself with a fleet at the end of its useful life. Most vehicles are sure to need replacement before an adequate depreciation fund can be accumulated to cover the cost of replacement. In establishing a replacement or depreciation fund where federal monies are involved, the director should check with the particular funding source to determine whether depreciation is an allowable use of those monies.

Greater vehicle utilization as a result of coordination and integration should free some of the fleet for expansion of service. If new vehicles are purchased with grants available at the outset of the development program, they may actually be needed to replace some of the older vehicles obtained by transfer. At any rate, it is likely that the new entity will face a major need for new equipment early in its development.

An objective should be to obtain newly purchased vehicles, with the entity selecting the model and retaining ownership. Without a depreciation fund, it will need an outside source of direct capital assistance. Step 7, in the Advance Planning phase, should have predicted a need for enough vehicles and provide the necessary support for a grant application to replace vehicles as needed. If the entity can establish a replacement fund to at least cover the local share of capital costs, future budgets for replacement of capital equipment will be funded by it. With sound management of capital resources, the replacement fund will grow by recovering excess salvage value from depreciated vehicles, and by retaining others as spares.

Some Objectives in Building a New Fleet

- 1) Seek vehicles with a longer expected life span (higher initial costs compensated by lower operating costs)
- 2) Standardize the models in each size category of the fleet
- 3) Establish in-house maintenance capability
- 4) Maximize handicapped riders' access to all vehicles
- 5) Improve passenger comfort and fleet image (clean appearance and durability)
- 6) Document rising maintenance costs with vehicle mileage for comparison of depreciation and lease costs (permits optimal timing of vehicle replacements)
- 7) Replace vehicles before breakdowns become a problem (to maintain on-time performance and passenger confidence)

Auditing, Reporting and Evaluation

V

Phase V includes the three management/administrative monitoring programs indicated, which do, in fact, become necessary following operational start-up. The process of designing these programs, however, is closely tied to earlier planning work and management preparation. It is not meant to be a detached afterthought.

Internal auditing may be thought of as logically following data collection and reporting. It precedes it here because it is important to understand auditing standards before initiating the supportive information system. Evaluation is inseparable from the purpose of the data systems. It concludes this manual as a method for judging the coordination program's success and to serve a supportive role for ongoing development planning and updating of existing plans.

Steps in Auditing, Reporting and Evaluation

- Step 18 Internal Audit
- Step 19 Data Collection and Reporting
- Step 20 Evaluation and Planning

Purpose: Internal Audit is a means through which the entity can monitor its own progress in the attainment of its stated aims, goals, and plans. Additionally, internal audit is used as a basis for determining the effectiveness of operational activities and the entity's compliance with governing laws, regulations, and professional principles of accounting and financial management. It can be used to set some of the standards for reporting and evaluation.

Participation: All coordinators and operators, whether large or small, should perform the basic steps in the internal audit program. It is expected that just the largest, more developed entities (usually large urban systems) would have a formalized internal audit staff, whereas the smaller, less developed ones would have internal audit as a part-time or contract function.

Tasks in "Internal Audit"

- A - Organizational Control Standards
- B - Mechanics of Control

TASK A - ORGANIZATIONAL CONTROL STANDARDS*

The first major standard for internal auditing is to ensure that the full scope of control in either a governmental program, function, activity, or organization encompasses:

- . An examination of financial transactions, accounts, and reports, including an evaluation of compliance with applicable laws and regulations.
- . A review of efficiency and economy in the use of resources.
- . A review to determine whether desired results are effectively achieved, which supports data requirements of evaluation in Step 20.

The second major standard for internal auditing is that the agency should have a strong internal control mechanism. Consequently, when auditing, an evaluation should be made of the system of internal control, assessing the extent to which it can be relied upon to ensure accurate information, to ensure compliance with laws and regulations, and to provide for efficient and effective operations.

This standard places upon the examiner the responsibility to determine how much he can rely on the entity's internal controls to ensure accurate information, ensure compliance with applicable laws and regulations, promote efficiency and economy, and produce effective results. The findings will help the examiner determine how much detailed work he must perform during the examination itself to achieve the objectives of full internal audit.

*Also see Technical Supplement, page 299.

TASK B - MECHANICS OF CONTROL*

Internal control includes the plan of organization and all financial coordinating methods. Measures adopted should safeguard assets, check the accuracy and reliability of accounting data, promote operational efficiency, and encourage adherence to prescribed managerial policies.

Control does not function in a vacuum. The methods of control should be designed to see that certain purposes and aims are achieved. The internal audit is conducted to monitor whether or not the control mechanism is working to bring the organization to the aims and purposes desired. Thus, control comprises all the means devised in an enterprise to direct, restrain, govern, and check upon its various activities to see that objectives are met.

The mechanics of control include but are not limited to: forms of organization, policies, systems, procedures, instructions, standards, committees, charts of account, forecasts, budgets, schedules, reports, records, check lists, and internal auditing. Whether a control is described as "executive," "internal," "operational," or "financial" depends upon the objective sought.

Examples of Control Activities

- . Executive controls are directed toward the achievement of an area's broad objectives. The mechanics used include: long-range plans; formulation of detailed objectives; form of organization, budgets and forecasts; broad policy statements; statements of functions and responsibilities; and internal auditing.
- . Internal controls are directed toward the achievement of detailed objectives. Internal control comprises both operational and financial controls.
- . Operational controls include: directives; departmental budgets and forecasts; job assignment sheets; operating reports and schedules; performance standards; logs; registers; charts; forms; records; and check lists.
- . Financial controls include: procedures for authorization and approval; separation of duties concerned with record keeping and accounting reports from those concerned with operations or the custody of assets; and physical controls over assets. The use of purchase order approval and invoicing are examples of financial control methods.

*Also see Technical Supplement, page 301.

Purpose: A major objective of this study has been to improve coordination of existing transportation services through reducing artificial barriers. Development of a complete system for data collection and reporting helps serve that purpose. Side benefits designed into the system proposed here are standardization of data and the reduction of paperwork.

Participation: Beneficiaries and users of standardized data and the reporting system include funding and coordinating agencies at the State and local levels. Data collection responsibilities and, therefore, the benefits of reduced paperwork, fall on the local operations personnel and administrative staff. Summarization and extraction of data may be facilitated through computerization wherever the capability exists. The benefits will be maximized by computerizing data as close to the level of the operator as possible.

Tasks in "Data Collection and Reporting"

- A - Standardized Reporting
- B - Training for Reporting

TASK A - STANDARDIZED REPORTING*

The basic data collection and reporting instruments for a standardized information system have been designed for this manual and are recommended for implementation. They include the following forms:

- Transportation Authorization/Request (passenger information record)
- Route Dispatch/Check List (daily operational planning and log sheet)
- Operator's Financial Status Report (periodic summary of expenditures by budget fund)
- Vehicle Report (periodic summary of each unit's operating cost and use)

The first two forms are complete collection instruments by themselves. The others depend largely on the chart of accounts (although they could be used independent of the accounting system recommended in this manual) and vehicle logs or daily vehicle reports (see "Preventive Maintenance", Step 15). Prior to implementation of the proposed reporting system, State and federal funding sources will have to agree to their use, which includes a decision to accept the related fare calculation and cost allocation methods (Step 12).

This reporting system is designed for less than a 100 percent data collection effort in order to save manhours, reduce red tape and paperwork, and to maximize the performance capability of drivers and vehicles. What is lacking from continuous data collection, but needed for subsequent planning and evaluation in the next step, is expected to be obtainable from surveyed samples, as needed. One additional, ongoing collection effort that is recommended is recording of complaints received about operations and services. Forms may be locally designed and used to record called-in complaints, as well as onboard complaint/suggestion forms. Other attitude surveys may be periodically conducted through mail-outs (or sponsoring agency-administered questionnaires) to past, present, and new service subscribers and other periodic riders. These instruments would supplement surveys conducted according to Step 5.

*Also see Technical Supplement, page 305.

TASK B - TRAINING FOR REPORTING

For purposes of accurate, dependable and standardized data collection, there will be a need for personnel training that is more detailed than elaborated by the scope of training outlined in Step 15. Each individual responsible for completion of forms listed in Task A, recording entries into the chart of accounts proposed in Step 13 and reporting maintenance services and information suggested in Step 15, requires a thorough familiarity with the requirements and capability of his or her own particular part of the data system. While reporting forms may seem complex and time consuming, a much higher level of useful information is generated with less effort and greater reliability by adopting the recommended standard information formats.

Expectations of reporting capability could still make the local burden unmanageable if individual contractors are able to demand that the operating entity summarize routinely collected data in a fashion designed to meet their own needs. The proposed reporting system is designed to be submitted in the form that it is collected. If contractors are asked to summarize their own data, or accept a uniform summary from the areawide coordinator, training of operations level personnel, as well as confusion over the data results produced by the system, can be reduced significantly.

Training for the proper collection and recording of routine information should be systemized either by the staff of large operators themselves, by local or State coordinating entities, or by consultant instructors. The recipients of the instruction would be the personnel with routine data collection and recording responsibilities. They are expected to include:

1. Drivers and attendants - daily enumerations, adjustments, and totals on Route Dispatch/Check List; daily vehicle use and defect reports or logs; accident reports.
2. Bookkeeper - daily accounting of revenues and expenditures by control codes; daily route summations; monthly adjustments and charges on Transportation Authorization/Request; monthly invoices; Operator's Financial Status Reports; quarterly Vehicle Reports.
3. Maintenance Crew - work and purchase orders; vehicle service reports or log entries; vehicle inspection check lists; maintenance summaries by accounting control codes.
4. Supervisor/Dispatcher - daily use of Transportation Authorization/Request; daily sequential entries on Route

Dispatch/Check List; daily complaint reports or log; summaries or logs of unmet requests and other dispatch activities.

In addition to the above regular reporting duties, all employees must be trained in how to complete time sheets according to the accounting control codes applicable to their work. Non-routine data summaries for internal management and planning purposes would be the responsibility of management staff members.

Purpose: Evaluation and planning should be viewed as an ongoing process designed to assess the success of the transportation services being provided. Evaluation should serve two basic purposes. First, to assess in an objective manner whether the transportation system is meeting the needs of the target group (elderly, handicapped, students, etc.) and the planned objectives of the system. Second, evaluation can be used as a management and planning tool to determine the relative efficiency and effectiveness of the provided service. By determining, in an objective fashion, the success or failure of the transportation system, a provider can plan for future operations in a more realistic and cost-conscious fashion.

Participation: While it is reasonable to assume that an outside consulting firm can offer a transportation provider the kind of rigorous and objective program planning and evaluation that are desirable, it is equally reasonable to assume that dollars for these activities will often not be available. The most feasible evaluation procedure for transportation providers would be an internal, self-administered process evaluation. The process evaluation could be designed to mesh with the ongoing reporting operations of the service and could be used by the managers of the agency as an efficiency and effectiveness measure for future planning purposes. Evaluation can only prove to be worthwhile if the manager and policy makers are willing to make the necessary commitment to needed revisions. If not, evaluation becomes a useless process.

Tasks in "Evaluation and Planning"

- A - Goals Achievement Analysis
- B - Methods of Evaluation
- C - Ongoing Planning

TASK A - GOALS ACHIEVEMENT ANALYSIS

Policy makers should keep in mind that innumerable problems will appear during the first year's operation. This is inevitable as schedules are worked out, routes systematized, personnel trained, and the general process of delivering transportation services is routinized. This should not be interpreted, however, as an excuse for not defining the goals and objectives of the services from the start. Rather, lofty expectations of the success of the operation should not be used as realistic yardsticks of measurement. In short, expect instant success, but do not be disappointed when your expectations are not met.

There are four particular areas in which policy makers should set goals and/or objectives:

1. Percent of Target Group Served - After the initial needs assessment of the community is completed, and the potential client group is defined, a realistic objective should be set for the number of clients to be served. This number should take into account such variables as available spending money, distances traveled, and present services available.
2. System Utilization Trends - Once the system is established and the public has had enough time to react to (use) the new system, it will be important to assess what patterns of use are emerging and how the system might be reformed to meet additional or altered needs. Policy makers should set utilization objectives for the program at the outset and assess whether these objectives are realistic at evaluation time in light of client usage.
3. Public Benefit - Although somewhat more difficult to assess, the overall public benefit is the provision of transportation services that had been previously non-existent or uncoordinated. Each time an individual is enabled to remain self sufficient or avoid institutionalization, each time an elderly person is able to travel to visit friends or to volunteer time, and each time an agency coordinates the delivery of client services, the general well-being of society is enhanced.
4. Coordination - It has been stated and restated that in most instances a coordinated, interagency approach to transportation services is less costly and more effective than the normal agency-to-agency piecemeal approach. Objectives for this interagency coordination should be established at the outset. It may prove to be desirable for the transportation provider to limit the coordination aspect to a few agencies at first. As the service operation improves and becomes more established, additional agencies may be added to the coordination effort.

TASK B - METHODS OF EVALUATION*

A common mistake that all transportation providers should try to avoid is implementing an evaluation system that is inappropriate for the services being provided. Policy makers should not only decide what type of evaluation is desirable, but also, what type is feasible. For most providers of transportation services, a simplistic and easily administered evaluation system would prove to be the most beneficial. The following two-pronged approach to evaluation should help establish for transportation providers a reasonable evaluation system to implement. The purposes of the evaluation system are:

- . To define the objectives of the system in such a manner that they are measurable either qualitatively or quantitatively.
- . To refine the established basis of charges for services.
- . To establish a resource base for internal management review and public information.
- . To determine at what level the needs of the identified target groups are being met through the service delivery system.

Data collection methods can be tailored to meet particular data needs. In most cases involving performance evaluation, data from trip logs and financial reports will be adequate. During route or service planning stages, or for follow-up purposes, the sample or onboard surveys should be conducted. Technically, these methods are termed "Process Evaluation" and "Impact Evaluation," respectively. Measures of efficiency and effectiveness should be considered to be able to show changes over time. Such unit measures as cost per vehicle mile, cost per passenger mile, average cost per passenger, and others may prove useful to chart the system's progress.

*Also see Technical Supplement, page 323.

TASK C - ONGOING PLANNING

As stated earlier, evaluation and planning should be viewed as an ongoing process designed to assess the relative effectiveness of the services being provided and, when necessary, make needed revisions in service delivery. Evaluation of the type outlined above will give the provider the opportunity to see where actual operations parallel planned system objectives. It will also give the provider the ability to see whether the service is meeting the needs of the individuals being provided transportation.

Evaluation can be considered a continuous activity of monitoring operations for the purpose of regular assessments of efficiency and effectiveness. Periodic assessments should be performed at least annually, using the internal audit as a supportive component. Although the process is ongoing beyond the development program period, the first year's evaluations are an essential part of system development in that they assess the success of the program and serve as annual planning elements. The benefit of evaluation in the long range, however, is that it, in turn, supports the update of planning activities that can be considered the starting point for a subsequent phase of development or improvement to operations already developed.

Planning, therefore, also becomes an ongoing process of updating development plans and embarking on new phases or programs of development. It marks the conclusion of this manual, however, because subsequent planning cycles should cover more extended periods. Major update planning may follow within two or three years after the completion of the original work described in this manual. Longer range planning to embark on new development programs would follow in three- to five-year increments.

Direct management planning steps which are part of this manual, especially Steps 16 and 17, should continue to be used, as needed, apart from the broader planning projects characterized by Phases II and III. Subsequent development programs that undertake full system and operations planning will be undertaken with a much improved basis of information and understanding than is achievable upon first following this manual. Growing experience in what has been a relatively untested area of services and coordination will be richly enhanced by the data retained as a result of conscientious reporting and evaluation.



How to Start

Technical Supplement



DUPLICATION OF TRANSPORTATION SERVICES

It is useful, right from the start, to recognize what duplication means to the cost of operations for providing client transportation, compared to the potential savings available through coordination. There will be a lengthy planning process to go through before local cost figures and realistic expectations for savings can be reported. The findings from the Central Midlands Region, South Carolina in A Transportation Services Study (Stephen Carter & Associates, April 1978) are cited below as an example for early reference.

Duplicated Services

- . 50¢ per vehicle mile (observed cost to operate with 23% idle driver time)
- . 36,000 miles annually per vehicle (assumed)
- . \$18,000 annual operating cost per vehicle

Coordinated Service

- . 43¢ per vehicle mile (expected cost to operate with national average of 4% of drivers' time spent on non-driving duties)
- . 44,280 annual vehicle miles (potential)
- . \$19,065 annual operating cost per vehicle

TASK B - INITIAL RECONNAISSANCE

Agency Survey - At this point, information obtained from potential participants should include:

- . Agency's mission
- . Clients served
- . Relationship to elderly and handicapped and other transportation disadvantaged persons
- . Programs or services provided
- . Funding sources
- . Degree of need for transportation in order to meet agency's mission
- . Recipients of transportation
- . General system characteristics (jurisdiction or service area, levels and types of service, fleet characteristics, etc.)
- . Transportation staff
- . Methods of financing both capital and operating needs
- . Agency position toward the need for coordinated service
- . Knowledge of any barriers to coordinated service
- . Attitudes toward method and control of coordination

The objective at this early stage is to determine what type and level of transportation exists, and whether or not there appears to be sufficient support for coordinating service. Simple questions covering the above items can be prepared for use in interviews conducted by the staff.

Many of the interviewed agencies will not be able to accurately report information that is requested. For others, many of the questions will not be relevant. What should be sought, however, is the policy position and attitudes that such authorities may have regarding the need for coordination, plus suggestions they may have for the development of a coordinated system. Non-quantifiable information, such as total lack of faith or trust for a particular service provider or transportation operator, can be determined only by open and frank dialogue. For this reason, it is important that whoever is doing the interviewing must be a person of maturity and objectivity and have the ability to gain the interviewee's confidence. Obviously, that person should not be identified with, or perceived as being aligned with, any single-purpose social service agency or transportation operator. Such an identity may both appear to bias the study and be viewed with distrust by other agencies.

TASK C - IDENTIFY MAJOR DEMAND LOCATIONS

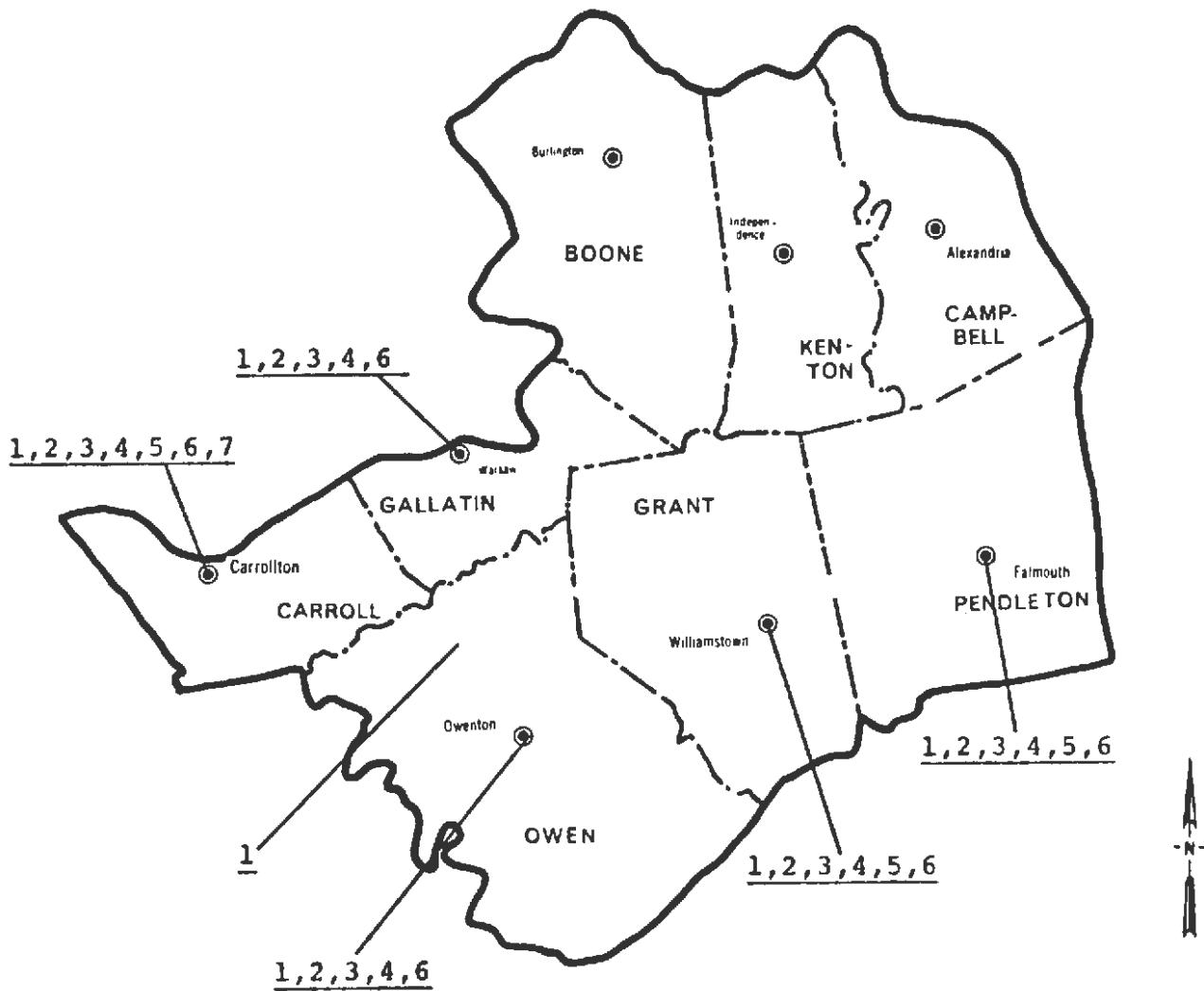
Using local area land use maps and others, plot specific "generators" or trip origins and destinations of the type of "traffic", or users, that are the subject of the immediate analysis. Figure 1.1 is a map of major demand locations for Social Services Facilities in Northern Kentucky. Figure 1.2 is another example of similar mapping, except for an urban area.

TASK D - EFFECTIVENESS OF EXISTING TRANSPORTATION

When mapped for comparison with the major demand locations, the effectiveness of existing transportation services is demonstrated for general background analysis. To complete the effectiveness analysis, generally describe ridership and schedules. Figure 1.3 illustrates the intercity, fixed route bus operations. Exhibit 1.1 summarizes the scheduling for the same system and Figure 1.4 gives the information for urban operations service in the central city of the same area.

Of all the existing public transportation services operating on fixed routes in that area, only nine transportation provider agencies out of the 45 studied regionwide reimbursed their clients for the fares paid or charged the cost for them to travel on these routes.

NON-METROPOLITAN SOCIAL SERVICE FACILITIES



LEGEND

- 1 Senior Meal Site
- 2 Senior Citizen Club
- 3 Social Security Office
- 4 Bureau of Social Insurance
- 5 Comprehensive Care
- 6 Bureau for Manpower Services
- 7 Vocational Education Center

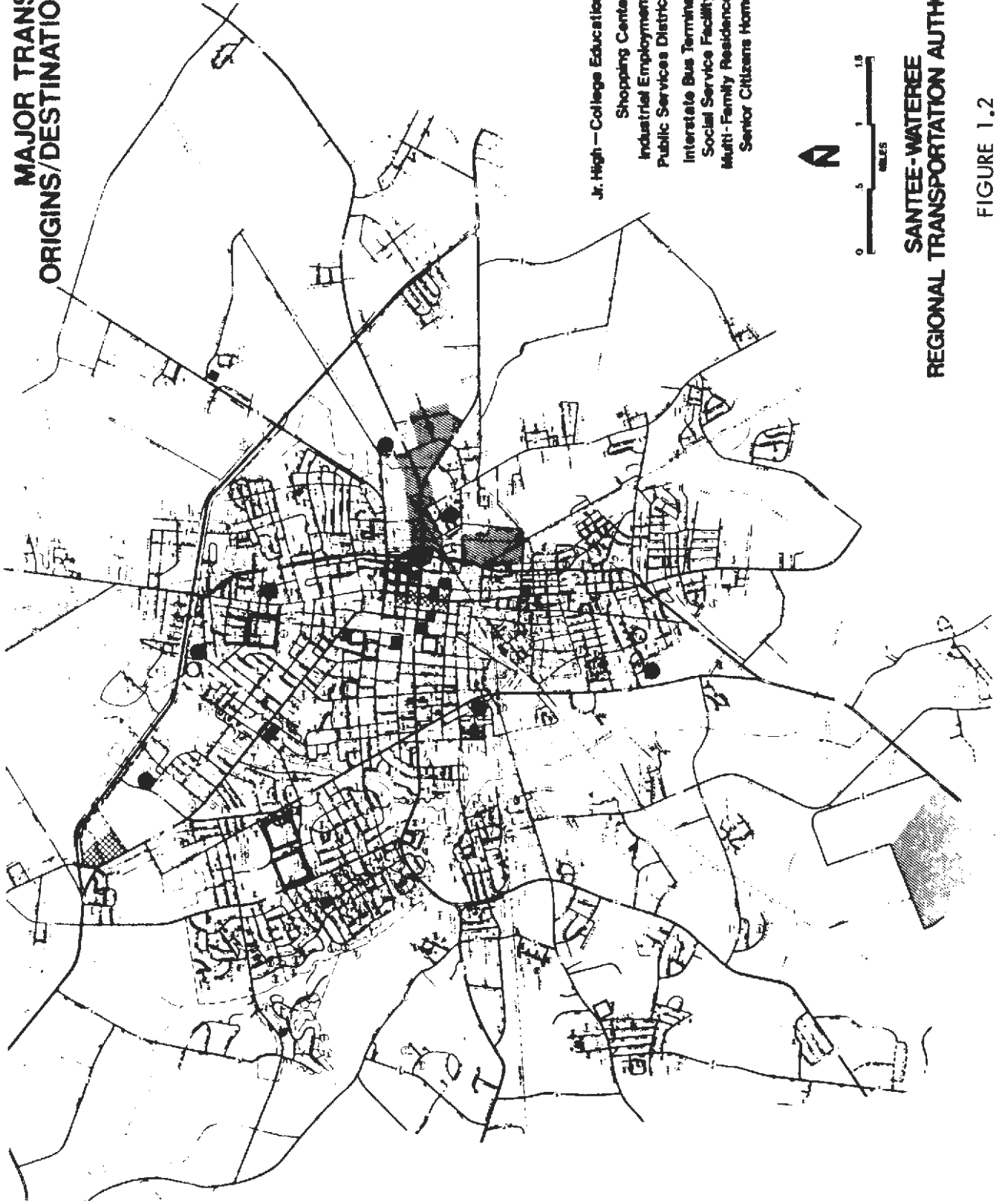


Graphic scale, in miles

NORTHERN KY.
AREA DEVELOPMENT DISTRICT

FIGURE 1.1

**MAJOR TRANSIT
ORIGINS/DESTINATIONS**

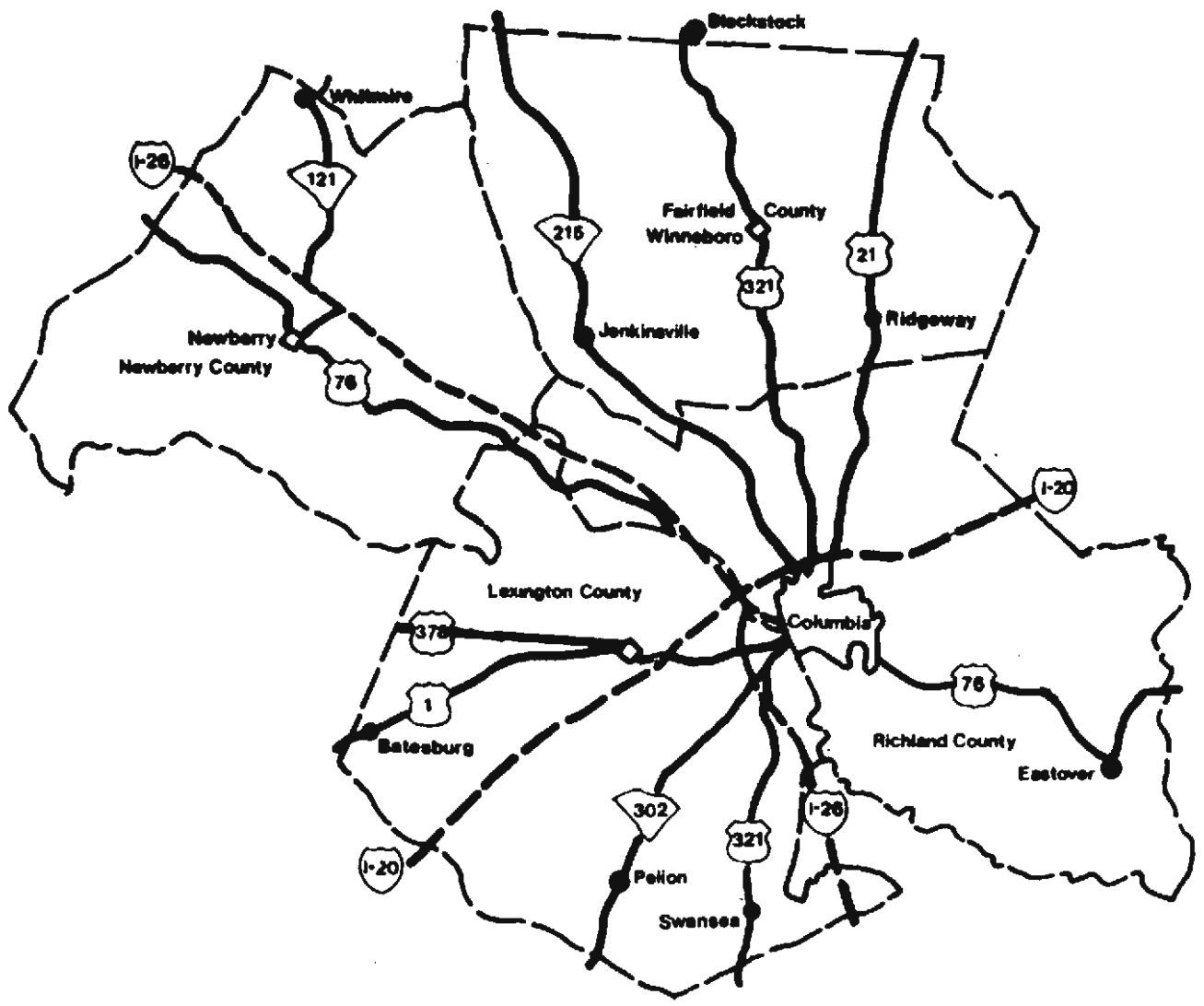


- Jr. High - College Education
- ⊗ Shopping Center
- ▨ Industrial Employment
- ⋯ Public Services District
- ⊕ Interstate Bus Terminal
- Social Service Facility
- Multi-Family Residence
- Senior Citizens Home



**SANTEE-WATERLOO
REGIONAL
TRANSPORTATION AUTHORITY**

FIGURE 1.2



--- County Boundary
 ◆ County Seat

COMMERCIAL/INTERCITY BUS ROUTES
 Central Midlands Planning Region

FIGURE 1.3

INTERCITY BUS SCHEDULES FOR DAILY ROUND TRIP TO COLUMBIA

<u>Origin Community and One-Way Fare to Columbia (Inbound)</u>	<u>Carrier and Departure Times</u>	<u>Intermediate Stops</u>	<u>Arrives Columbia</u>
Batesburg - \$2.65	T 8:40 a.m.	Lexington	9:30 a.m.
	T 12:40 p.m.	Leesville, Lexington	1:30 p.m.
Newberry - \$3.35	G 11:42 a.m.	Prosperity, Little Mountain, Chapin, Ballentine	12:40 p.m.
Ridgeway - \$2.15	G (flag stop)		2:15 p.m.
Swansea - \$2.00	G (station stop)	Gaston	10:10 a.m.
Whitmire - \$4.35	T 2:35 p.m.	(part interstate)	3:45 p.m.
Winnsboro - \$2.75	T 10:45 a.m.		11:30 a.m.
	T 1:00 p.m.	(comes from Blackstock)	1:50 p.m.

<u>Destination Community (Outbound)</u>	<u>Carrier and Arrival Times</u>	<u>Intermediate Stops</u>	<u>Departs Columbia</u>
Batesburg	T 12:30 p.m.	Lexington, Leesville	11:45 a.m.
	T 2:05 p.m.	Lexington, Leesville	1:15 p.m.
	G 6:05 p.m.	W.Cola., Lex., Leesville	5:00 p.m.
	T 8:00 p.m.	Lexington, Leesville	7:15 p.m.
	G 10:00 p.m.	Lexington, Leesville	9:15 p.m.
Newberry	G 4:10 p.m.	(all interstate)	3:20 p.m.
	G 6:33 p.m.	Ballentine, Chapin, Little Mountain, Prosperity	5:30 p.m.
Ridgeway	G (flag stop)		5:00 p.m.
Swansea	G (station stop)	Cayce, Gaston	3:00 p.m.
	G 6:20 p.m.	Cayce	5:55 p.m.
Whitmire	T (flag stop)	(part interstate)	7:30 p.m.
Winnsboro	T 3:00 p.m.	(goes to Blackstock)	2:15 p.m.
	T 6:15 p.m.	(goes to Blackstock)	5:30 p.m.

G = Greyhound
T = Trailways

SOURCE: Greyhound Timetables 74 and 77, April 24, 1977, and 64, June 22, 1977; Trailways Schedule, May 25, 1977, Continental Southeastern Lines, Inc.

EXHIBIT 1.1

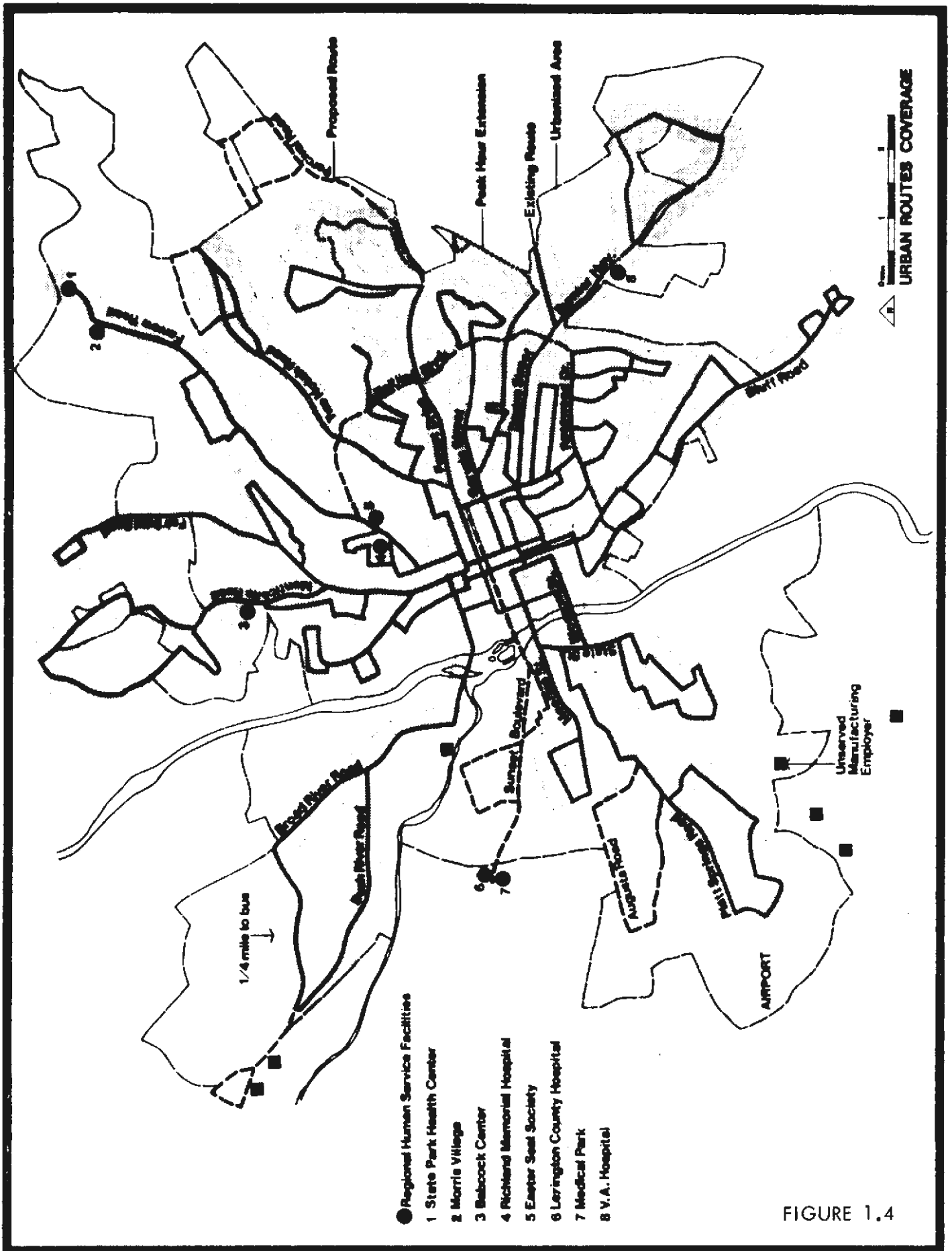


FIGURE 1.4

TASK E - ASSISTANCE PROGRAMS AVAILABLE

Table 1.1 lists the primary federal transportation funding sources as reported by the General Accounting Office Report, Hindrances to Coordinating Transportation of People Participating in Federally Funded Grant Programs: Volume I. Exhibit 1.2 is a summary of those programs and some others available to help fund transportation services. It compiles summary information from the HEW publication, Transportation Authorities in Federal Human Service Programs.

In addition to direct grant programs, the staff should also be aware of federal manpower and local volunteer assistance that may be available. The CETA program (Comprehensive Employment and Training Act), has been widely used to fund public service employment. (It has also been used extensively for trainee and employee transportation.) Many rural and urban transit operations, particularly those run by private non-profit organizations, have become heavily reliant on CETA-funded positions. Without them, especially starting out, the full costs of operations may be very difficult to offset, unless there is strong local support for the system or a demonstration grant is awarded.

Volunteerism may also be a viable form of support, especially in rural areas. It is not uncommon to find a Red Cross organization providing demand-responsive service to doctors on a daily basis with volunteer drivers and a donated vehicle. Volunteerism should not be overlooked, since there are often cases where it is simply not financially feasible to operate otherwise. The Older Adults Transportation Service (OATS) in Missouri relies heavily on volunteers to perform community outreach and schedule transportation for individual trips.¹

¹Peter Schauer, General Manager, OATS, interviewed in Columbia, Missouri, (August 9, 1978).

Table 1.1 PRIMARY FEDERAL TRANSPORTATION FUNDING SOURCES		
Catalog of Federal Domestic Assistance Number	Program Title	Common Name
13.600	Child Development—Head Start	Head Start
13.624	Rehabilitation Services and Facilities— Basic Support	Vocational Rehabilitation
13.633	State Agencies' Activities and Area Planning and Social Service Program	Title III
13.635	Nutrition Program for the Elderly	Title VII
13.714	Medical Assistance Program	Medicaid or Title XIX
13.771	Social Services for Low-Income and Public Assistance Recipients	Title XX
14.218	Community Development Block Grants/ Entitlement Grants	Community Development Block Grants
17.232	Comprehensive Employment and Training Program	CETA
20.500	Urban Mass Transportation Capital Improvement Grants	Section 3
49.002	Community Action	Community Action Program or CSA Funds
72.001	Foster Grandparents Program	Foster Grandparents Program
72.002	Retired Senior Volunteer Program	RSVP
Not Assigned	Rural Highway Public Transportation Demonstration Program	Section 147
Not Assigned	Capital Assistance to Private Non- profit Organizations	Section 16(b)(2)

SOURCE: General Accounting Office, October 17, 1977.

MAJOR SOURCES OF FEDERAL FUNDS FOR PUBLIC TRANSPORTATION

Program and Administering Federal Department	Population Served	Transportation Authorities
Department of Health, Education and Welfare		
1. Older American Act of 1965 as amended A. Title III B. Title VII	Elderly 60+ Elderly 60+	Purchase of vehicles and special equipment, client and staff reimbursement, and purchase of services allowed. (Title VII is for nutrition sites only).
2. Title XX - Social Security Act "Public Services"	Elderly, Blind, Disabled; income eligibility required (SSI)	Purchase of vehicles and special equipment, client and staff reimbursement allowed. Transportation must be in State Plan.
3. Medicaid - Title XIX - Social Security Act	Income eligibility required- SSI eligibles; no age specified; transport for medical purposes.	Purchase of vehicles discouraged; purchase of services, staff and client reimbursement allowed as part of "medical services" in State plans.
4. Rehabilitation Services Program	Employable disabled; no age requirements.	Purchase of vehicles not encouraged but allowed; purchase of special equipment allowed; purchase of services allowed; staff and client reimbursement allowed.
5. Vocational Rehabilitation Act of 1973	Employable handicapped of any age.	Purchase of service for clients of vocational rehabilitation agencies.

MAJOR SOURCES OF FUNDS FOR PUBLIC TRANSPORTATION

Program and Administering Federal Department	Population Served	Transportation Authorities
6. Developmental Disabilities Program	Disabled, under age 18.	Purchase of vehicles and special equipment allowed, staff and client reimbursement allowed.
7. Public Health Services Programs	General population with health needs-includes elderly and handicapped.	Vary from program to program.
Veterans' Administration		
8. Veterans Programs	Veterans-elderly and handicapped.	Stipends to individuals for transportation services and special automobiles.
Federal Highway Administration		
9. Section "147" Program, Rural Highway Public Transportation Demonstration Program	Elderly and Handicapped in rural areas, as well as general population.	Purchase of vehicles allowable. Operating costs may not exceed 1/3 of total grant for new projects.
Urban Mass Transportation Administration		
10. Section 3 Capital Grant Program through UMTA Act of 1964 and as amended 1974.	General population, elderly and handicapped served.	Purchase of capital equipment only for urban areas.
11. Section 16(b)(1) Elderly and Handicapped Transportation Services for State and local public bodies.	Elderly and Handicapped	Grants and loans to purchase vehicles primarily for urban areas.

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EXHIBIT 1.2
(Continued)

MAJOR SOURCES OF FUNDS FOR PUBLIC TRANSPORTATION

Program and Administering Federal Department	Population Served	Transportation Authorities
12. Section 16(b)(2) Elderly Handicapped Transportation Services for private non-profit corporations and associations.	Elderly and Handicapped primarily (others on space-available basis)	Grants and loans to purchase vehicles (not restricted to urban areas)
13. Section 5	General Public	Capital and operating assistance grants for urban places of over 50,000 population.
Department of Labor		
14. Comprehensive Employment and Training Act of 1973 (CETA) - Title I	Unemployed and Employment Training enrollees.	Purchase of vehicles, operating expenses and purchase of service or reimbursement.
15. Comprehensive Employment and Training Act of 1973 (CETA) - Title III	Elderly 55 and over for work duties.	Purchase of service or reimbursement.
Action		
16. Retired Senior Volunteer Program (RSVP)	Elderly 60 and over.	Purchase of vehicles allowed; Purchase of services allowed (vehicles rarely used for clients).
Community Services Administration		
17. Community Services Act of 1974 as amended - Title II Section 212 and 221.	CAP agency clients.	Capital purchases with approval of operating and purchase of service.

MAJOR SOURCES OF FUNDS FOR PUBLIC TRANSPORTATION

Program and Administering Federal Department	Population Served	Transportation Authorities
18. Title II Section 222 - Senior Opportunities and Services.	Elderly 55 and over. CAP agency clients.	Purchase of services and vehicles allowed at the discretion of grantee.
Department of the Treasury		
19. Federal Revenue Sharing	General public.	Discretionary use by local governments for any purpose.

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SOURCE: HEW Region IV, Office of Planning and Evaluation, Transportation Authorities in Federal Human Service Programs (March 1, 1976); U.S. DOT and Institute of Public Administration, Planning Handbook: Transportation Services for the Elderly (November 1975); and Carter-Goble-Roberts, Inc. (September 1978).

EXHIBIT 1.2
(Continued)

TASK A - IDENTIFY ORGANIZATIONAL OPTIONS

In the Central Midlands study, administrative options were discussed, ranging from doing nothing to one of the three following directions for implementation:

- 1) a transportation coordinating committee;
- 2) transportation service cooperatives;
- 3) a full-scale regional transportation authority (RTA), which could encompass a variable range of statutory functions.

The RTA option was described as including several alternatives as feasible means of fulfilling operations management functions, either on a centralized (regional) or decentralized (subregional) basis. These alternatives were:

- . Regional
 - RTA
 - Contract Management (administered by RTA)
 - a) CAP agency
 - b) private management services
- . Subregional (under RTA administration)
 - current operators
 - local taxi companies
 - electric cooperatives
 - local variations in operations management contracts

These types of options would be most clearly described and distinguished by using organizational charts. Organizational charts of that type would provide the decision-making models recommended under this task in the manual.

TASK B - EVALUATE ALTERNATIVES

This was a two-step process in the Central Midlands study. First, the advantages and disadvantages associated with each of the three administrative options presented in Task A were enumerated. The analysis, which was also reported in narrative form, is summarized below:

Transportation Coordinating Committee

- Advantages:
 - a) easy to implement
 - b) low initial cost
 - c) existing capability and commitment
- Disadvantages:
 - a) large decision-making body
 - b) high hidden costs
 - c) lack of authority

Transportation Service Cooperative

- Advantages:
 - a) cooperative support
 - b) pooled resources
 - c) single service responsibility
- Disadvantages:
 - a) voluntary participation
 - b) coordination difficulties
 - c) lack of authority

Regional Transportation Authority

- Advantages:
 - a) centralized control
 - b) economies of scale
 - c) comprehensive legal authority
 - d) regional coordination
- Disadvantages:
 - a) high initial cost
 - b) initial delay
 - c) forcing cooperation

The deciding factor among the options, as reported by the consultants, was that the advantages of the RTA option were long-term and the disadvantages short-term, compared to the other options evaluated.

Finally, the operations management alternatives under the RTA option were compared using a matrix evaluation format. The evaluation matrix used is included here as Exhibit 1.3, which is a variation on the ranker/rater matrix recommended in this task of the manual.

Exhibit 1.4 is the matrix that was used in Northern Kentucky to compare options. That matrix was used with the accompanying alternative organizational options and explanations. These are the kinds of discussion tools that are useful in the planning process to come to a conclusion about the alternative to use.

COMPARISON OF OPERATIONS MANAGEMENT (OM) ALTERNATIVES

(Central Administration is assumed)

Performance Criteria		REGIONAL OM			SUBREGIONAL OM			
		RTA	Contract Management Services	CAP	Current Operators	Taxicab Operators	Electric Co-operatives	Local Variation
Implementation Concerns	Initial Barriers	▲	▲	■	▲	■	■	●
	Start-up Costs	■	●	■	▲	▲	▲	▲
	Experience Available	●	▲	▲	▲	▲	■	▲
Long-Range Results	Services Coordination	▲	●	▲	■	●	●	■
	Public/Private Coordination	▲	▲	●	■	▲	●	▲
	Personalized Service	▲	■	▲	▲	●	●	▲
	Operational Flexibility	▲	▲	▲	■	●	●	▲
	Economies of Scale	▲	▲	▲	■	●	▲	■
	Labor Costs	●	■	▲	▲	■	●	●
	Hidden Costs	▲	▲	●	■	▲	▲	■

- ▲ Advantage
- Disadvantage
- Neutral

SOURCE: Central Midlands Regional Planning Council, S.C., A Transportation Services Study: Central Midlands Planning Region, by Stephen Carter & Associates, (April 1978), Figures 2, 4, and Table 2.

OPTIONS EVALUATION MATRIX

Weighted Variables	Coordination Options Rankings						
	I TANK		II NEW ENTITY		III CAC		
	Rank	Weighted Score	Rank	Weighted Score	Rank	Weighted Score	
<u>Implementation Support</u>							
Incentive to serve E & H	2	4	8	5	10	4	8
Ease of implementation	3	3	9	4	12	5	15
Marketability	1	2	2	3	3	4	4
Flexibility	2	3	6	4	8	4	8
Reliability	3	4	12	3	9	3	9
<u>Effectiveness/Efficiency</u>							
Transit experience available	3	5	15	3	9	4	12
Programs coordination	2	4	8	5	10	4	8
Down fleet time/vehicle use maximization	2	5	10	4	8	3	6
Areawide service	3	3	9	4	12	5	15
Safety/liability	2	5	10	4	8	4	8
<u>Finance</u>							
Capital availability	3	4	12	3	9	4	12
Start-up cost	1	5	5	3	3	5	5
TOTALS		47	106	45	111	49	110

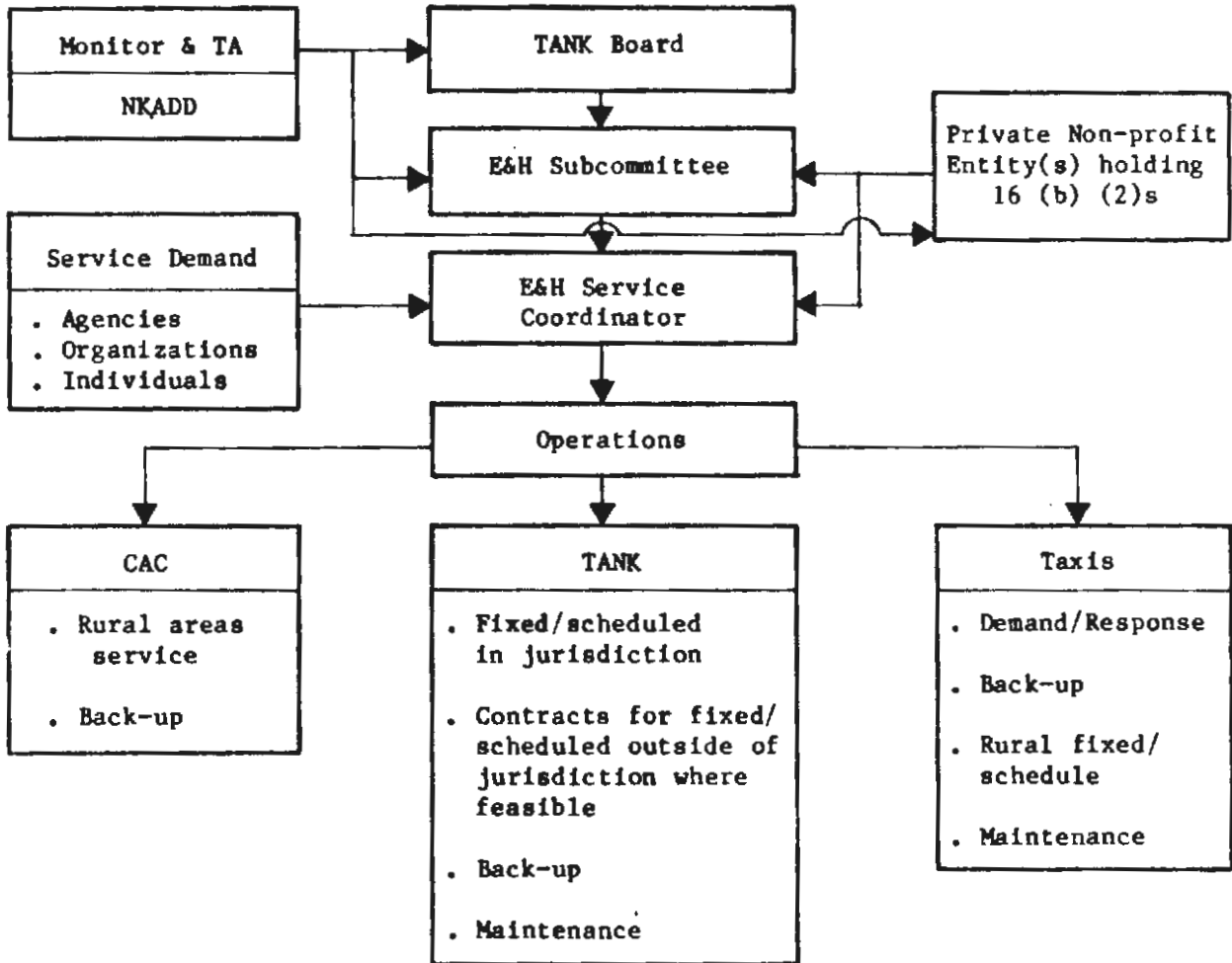
Explanation: Weight assigned to the variables in the left hand column were: 1=low; 2=moderate; and 3=high. The rankings were given for each option on a comparative basis for each option's likely achievement under each variable. The rankings used were: 1=very poor; 2=poor; 3=mediocre; 4=favorable; and 5=highly favorable. Weighted scores were obtained by multiplying each rank by the respective weights.

SOURCE: Northern Kentucky Area Development District and Carter-Goble-Roberts, Inc., Moy 1978.

Exhibit 1.4

I. TANK as Coordinator

(Transit Authority of Northern Kentucky)

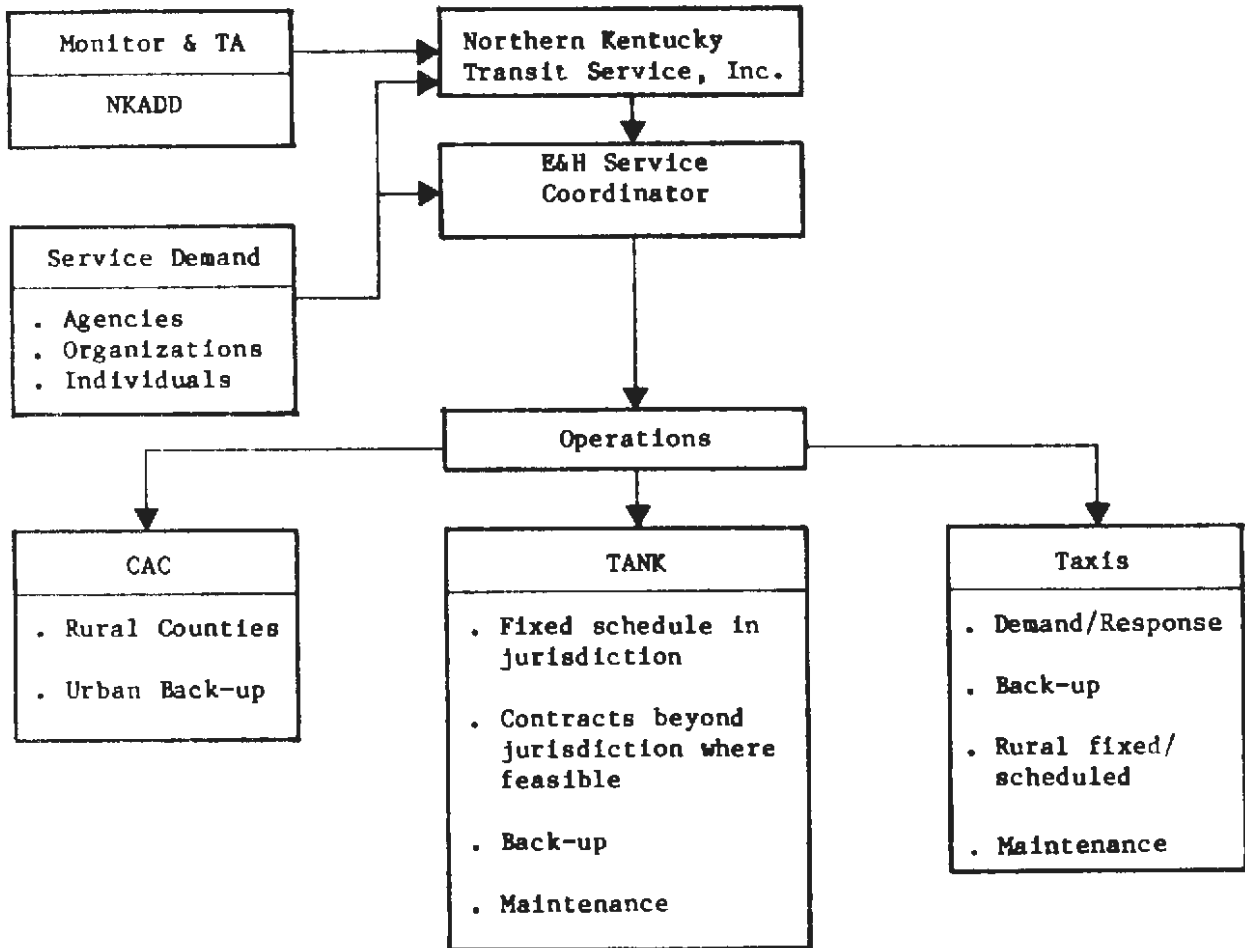


I. TANK AS COORDINATOR

NOTES:

1. Since TANK could not own the 16 (b)(2)s another private non-profit would have to be used to hold vehicle titles, either an existing or new entity. A new subcommittee of the TANK board should be established to be the accountable decision-making body for E & H service coordination. Committee make-up would be important to the various parties involved. Service accountability should be high since vehicle ownership would remain outside TANK.
2. Taxis would be contracted with by the TANK coordinator as needed for demand response as well as fixed/scheduled service. As appropriate, 16 b2 vehicles could either be operated by TANK or Taxis.
3. CAC would be used for rural area service to augment that by Taxis and vice versa.
4. Service Demand requests would be done through the coordinator but petitioners would also have the private non-profit entity holding vehicle title and the new TANK subcommittee to help ensure responsiveness.
5. NKADD would provide a watchdog role.

II. New Entity as Coordinator



II. NEW ENTITY AS COORDINATOR

NOTES:

1. The private non-profit would be necessary as in alternate I to hold title to the 16 (b)(2) vehicles. In this case, however, the private non-profit would do much more--actually serving as the coordinator for the region rather than TANK. It could actually hire the coordinator and be the organization to hold service contracts or optionally allow the service contracts to be between the three operators and the agencies. The new entity could be made up of a transit consumer and policy-maker type of board, e.g., political office holders. Minority representation for the operators could also be allowed to provide some industry input.
2. Coordinator - unless areas were served by designated companies or if competitive bidding were used, a central coordinator would probably be needed. That person could be located at one of the cab companies, TANK, an agency or NKADD. Thus, service demands could either be to a central coordinator or to the individual operators. There is obvious merit, however, to having one central coordinator to be called.
3. Operators - TANK would provide contract service for fixed/scheduled needs within its jurisdiction unless the cab companies could do it at a lower cost. TANK could be contracted with beyond its normal jurisdiction where feasible, but CAC would probably continue to be viable in the rural counties.
4. NKADD would play a watchdog role.

SOURCE: Northern Kentucky Area Development District..

Advance Planning



Technical Supplement

TASK B - GATHER USEFUL DATA

The information base which is necessary for transportation services need estimation and demand forecasting can be obtained from existing data files and by undertaking local surveys. Census data, for example, represent a readily available and inexpensive source of information. Survey methods, on the other hand, can involve substantial commitments of time and resources, depending on the survey design.

U.S. Census Data - Census Enumeration Districts (E.D.'s) in rural areas and County Census Districts in urban areas provide areas of appropriate size which can be used for planning purposes. Available in the Census First Count are population and its distribution by age. These data are fairly accurate, but may be dated, since they are collected only every 10 years. Beginning in 1980, however, population and household data will be collected every five years. Other useful Census information available in the Fourth Count are income levels, auto ownership, and employment. These are based on a 15 percent sampling rate. At the E.D. level, this can be a very small sample and may not be statistically stable. The income data only reflects income as of 1970, so that inflation must be taken into account. As a result, Fourth Count data at the E.D. level should be used with care.

Fifth Count data are listed by the following descriptions, among others:

- . Count of Families by Income
- . Sum of Families and Households of Unrelated Individuals by Income
- . Count of Families and Individuals
 - Receiving public assistance (AFDC, SSI)
 - Not receiving public assistance
- . Count of Persons
 - 65 years of age and over
 - Under 65 years of age

Using First Count and Fifth Count data, a population profile was developed in the format shown for Fairfield County, South Carolina in Exhibit 2.1.¹

Public Use Sample - This is also Census data. It is more expensive to obtain, but the Census Bureau can provide it on computer tape. In this

¹Central Midlands Regional Planning Council, S.C., A Transportation Service Study, by Stephen Carter & Associates, (April 1978).

Fairfield County

ED	Age				Income						Area
	Under 5	5-18	19-59	60 and over	Below 2,000	2-4,000	4-6,000	6-8,000	8-12,000	12,000+	Square Miles
1	228	695	877	234	102	91	103	44	147	44	82
2	34	90	116	100	12	30	17	8	9	10	36
3	94	350	434	172	89	76	47	45	24	13	83.5
4	122	365	476	164	71	112	23	23	23	15	77
5	160	529	557	150	106	77	75	42	31	5	74
6-9	305	1,091	2,041	487	259	184	122	159	199	157	1.50
10-11	203	525	1,192	329	147	82	175	102	154	197	1.75
12	66	279	412	87	43	31	26	40	70	37	29.5
13	126	543	544	145	47	72	53	50	62	38	30.75
14	112	183	500	155	67	74	59	41	24	20	59.6
15	159	547	604	147	44	60	59	80	83	52	39.5
16	44	146	198	55	3	12	53	11	28	15	.6
17	72	196	266	105	106	42	23	6	0	0	70.4
18	11	34	25	13	12	0	6	4	0	0	20.5
19	227	789	484	306	102	147	78	50	130	41	79
Total											685.6

SOURCE: 1970 U.S. Bureau of Census, First and Fifth Count files; S.C. Division of Research and Statistical Services; compilation and area estimates by Carter-Goble-Roberts, Inc.

form, the data can be extracted in a number of different formats, so that it is directly applicable to individual needs. As an example, one page of the printouts resulting from processing the 1970 Public Use Sample (PUS) tape for the Central Midlands Region of South Carolina appears in Exhibit 2.2.² The printouts were for two counties in the Columbia SMSA, and another set for eight other counties consisting of Newberry, Fairfield, Kershaw, Lee, Sumter, Calhoun, Clarendon, and Orangeburg. The PUS tape represents a random one percent sample of all Census counts from the respective areas. This table is for the elderly, ages 65 years and older. The row codes are annual income codes 1-6. Code 6, the highest, represents over \$12,000. Code 9 is for non-classified entries. The column codes are for person-autos, a synthesized code, as follows:

<u>CODE</u>	<u>HOUSEHOLD AUTOS</u>	<u>PERSONS IN HOUSEHOLD</u>
0	0	1
1	1	1
2	2+	1
3	0	2+
4	1	2+
5	2+	2+
9	unclassified	

The table has row, column and cell percentages, which exclude the code 9 entries. Similar tables were produced for these population groups:

1. All adults, ages 19-64 in households with families
2. Unattached adults - those in households that do not contain families.
3. All youth, ages 5-18.
4. All children under 5 years of age.
5. All elderly who were working the census week and used public transport (bus, taxi) to go to work.
6. Same as 5 for adults in family households
7. Same as 5 for unattached adults.
8. Same as 5 for youth. No one under 18 was included in the work force for this table.

²Ibid.

	0	1	2	3	4	5	9	TOTAL	REVISED
ROW %	14	11	1	6	1	0	0	33	33
COL %	42,4	33,3	3,0	18,2	3,0	0,0	0,0	100,0	
GRND %	17,3	13,6	1,2	7,4	1,2	0,0	0,0	40,7	
ROW %	3	4	0	0	6	1	0	14	14
COL %	21,4	28,6	0,0	0,0	42,9	7,1	0,0	100,0	
GRND %	17,6	12,5	0,0	0,0	50,0	10,0	0,0	17,3	
ROW %	0	10	1	0	0	3	0	14	14
COL %	0,0	71,4	7,1	0,0	0,0	21,4	0,0	100,0	
GRND %	0,0	31,3	50,0	0,0	0,0	30,0	0,0	17,3	
ROW %	0	4	0	1	3	1	0	9	9
COL %	0,0	44,4	0,0	11,1	33,3	11,1	0,0	100,0	
GRND %	0,0	12,5	0,0	12,5	25,0	10,0	0,0	11,1	
ROW %	0	2	0	1	0	0	0	3	3
COL %	0,0	66,7	0,0	33,3	0,0	0,0	0,0	100,0	
GRND %	0,0	6,3	0,0	12,5	0,0	0,0	0,0	3,7	
ROW %	0	1	0	0	2	5	0	8	8
COL %	0,0	12,5	0,0	0,0	25,0	62,5	0,0	100,0	
GRND %	0,0	3,1	0,0	0,0	16,7	50,0	0,0	9,9	
ROW %	3	2	0	0	0	0	47	52	0
COL %	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	
GRND %	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	

	0	1	2	3	4	5	9	TOTAL	REVISED
TOTALS	20	34	2	8	12	10	47	133	
COL %	100,0	100,0	100,0	100,0	100,0	100,0	0,0		
GRND %	21,0	39,5	2,5	9,9	14,8	12,3	0,0	100,0	
REVISED	17	32	2	8	12	10	0		81

8 Counties
 Table "ADULT U" continued

9. Other persons in the same age groups and in the work force but not taking public transport to work.

The aggregations of PUS data for South Carolina are illustrated in Figure 2.1. Tables, as described above, have also been produced for the State's Pee Dee and Waccamaw Regions for the Pee Dee RTA.³

Handicapped Population Data - The results of one study have been used in several transportation services needs assessments to help classify the local handicapped population. It will determine what part of the population could be expected to have impairments limiting their transportation options. Table 2.1 summarizes that information.

Local Transportation Planning Surveys - It is likely that some sort of transportation study has been conducted at least in part of the local area. In South Carolina, extensive surveys were conducted in the 1960's for highway planning in urban areas. These studies also included rural areas in these vicinities, as demonstrated by Figure 2.2. Results from these studies may be useful if updated.

If public transportation surveys have never been conducted locally, on-board distribution of questionnaires to riders produce inexpensive survey results. Exhibit 2.3 is the instrument that was used aboard city buses and Wateree Community Action, Inc. buses of the rural transportation program, Operation Bus Stop, during the Sumter Area Transit Development Program.⁴

Another captive survey target group should be the industrial workers at large plants in the local area. During this step, the largest employers should be located, their cooperation gained, and their employees' needs previewed. The survey can be conducted later (see Step 16). In this state, the South Carolina Industrial Directory, by the State Development Board is a good source of information on industrial employment. Exhibit 2.4 shows the preview information needed from the employer at this time.

Perhaps the most important information that could be gathered would be ridership information from transportation programs operated by local social service provider agencies. These agencies are the ones most likely to benefit first from coordinating services. Many different attitude survey instruments have been used in the past, including the one that preceded this study and became the basis of more detailed state-wide investigations. The major problem in obtaining usable planning data, however, has been non-standard record keeping. A standardized reporting form was developed for the Central Midlands Regional Planning

³Pee Dee Regional Transportation Authority, S.C., A Planning Manual by Stephen Carter & Associates (February 28, 1978) Draft.

⁴Santee-Lynches Council for Government and Sumter, S.C., Sumter Area Transit Development Program by Stephen Carter & Associates (June 1978).

SMSA Counties available as Separate Aggregation

includes 1 NC co.

includes 2 NC cos.

Census Area Designation

includes 1 GA co.

includes 11 GA cos.

*Computer Printouts on Hand

Source: US Department of Commerce Bureau of the Census

PUBLIC USE SAMPLE AGGREGATIONS

includes 19 GA cos.

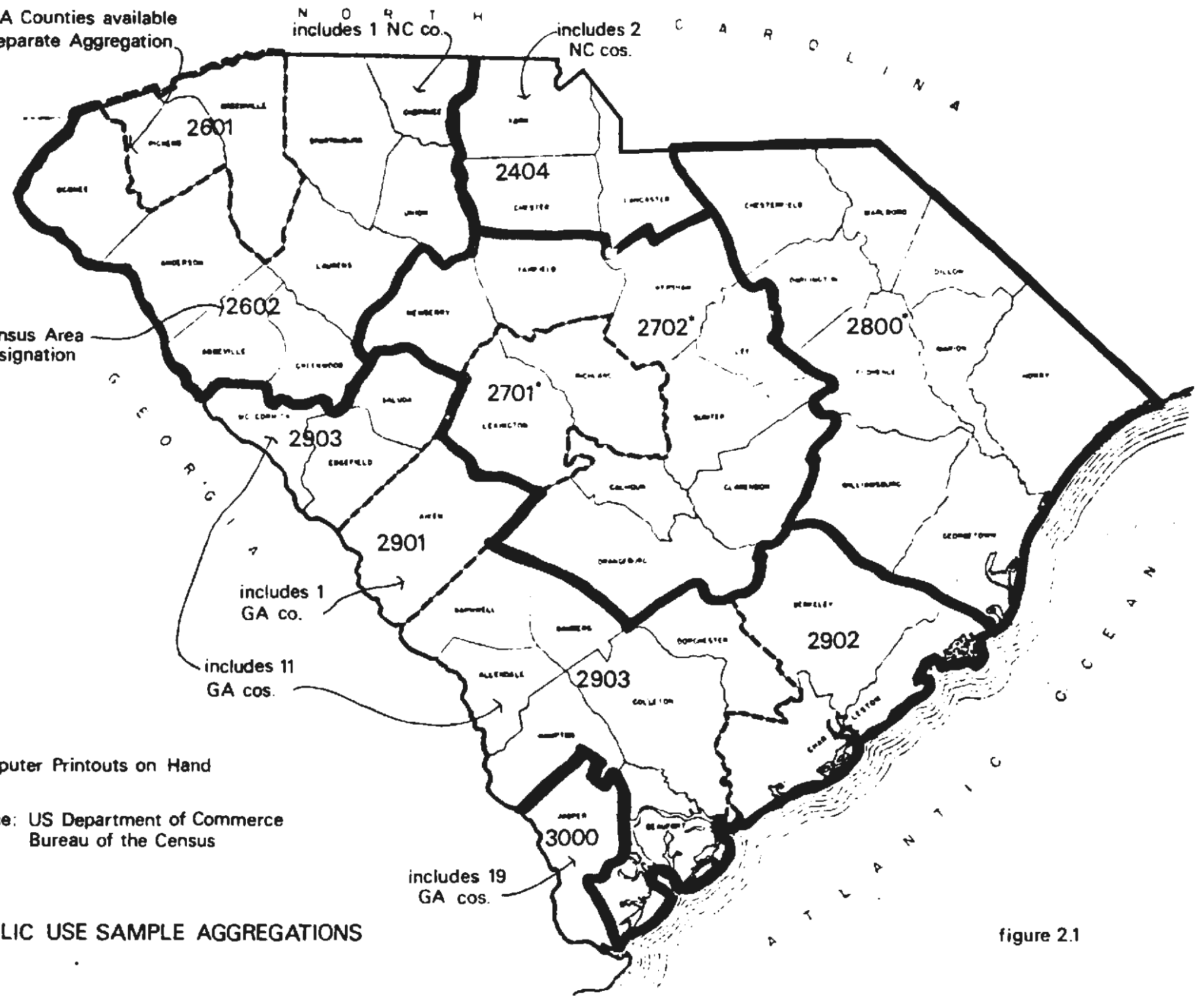


figure 2.1

TABLE 2.1

ESTIMATES OF TRANSPORTATION HANDICAPPED

A. Age Distribution

Age Group	Percent of Age Group Transportation Handicapped*
under 5	1.4%
5 - 18	6.7
19 - 64	8.6
65+	30.4

*These figures exclude the institutionalized who are assumed to be non-mobile

B. Condition Prevalence

Types of Impairments	Percent of Transportation Handicapped
1. synergisms*	1.4%
2. wheelchair users	1.7
3. ambulation impaired/aid users	18.9
4. ambulation/no aid	9.7
5. upper limb or back impaired	24.1
6. vision impaired	5.5
7. hearing/speech impaired	2.3
8. mentally impaired	9.6
9. systemic impaired	26.7
	<u>100.0</u>

* Synergisms include persons with combined sensory, mental and ambulation or other central nervous system impairments.

SOURCE: National Health Survey, 1969-1971, tabulated for Niagara Frontier Transportation Authority, "Estimation of the Transport Disabled Population: Technical Supplement", Public Transportation Mobility for Elderly and Handicapped Citizens on the Niagara Frontier, by RRC International, Inc. (July 1976).
Note: Specific age/condition prevalence was not available.



LEGEND
 ZONE BOUNDARY ———
 ZONE NUMBER 741016

FIGURE 2.2

EXTERNAL TRAFFIC ZONES

QUESTIONNAIRE
SUMTER TRANSIT DEVELOPMENT PLAN

<p>ETHNIC CODE:</p> <ol style="list-style-type: none"> 1. Black 2. Caucasian 3. Latin 4. Oriental 5. Other 	<p>SEX:</p> <ol style="list-style-type: none"> 1. Male 2. Female
<p>1. How often do you ride the Sumter bus?</p> <ol style="list-style-type: none"> 1. Daily (except Sundays) 2. More than once a week 3. More than 5 times a month 4. Approximately once a month 5. Less than 5 times a year 	<p>2. For what purpose or purposes do you ride the bus?</p> <ol style="list-style-type: none"> 1. Work 2. Shopping 3. Medical 4. Recreation/Social 5. Other (specify) _____
<p>3. When you make trips to places within one mile of your home, how do you travel most of the time?</p> <ol style="list-style-type: none"> 1. Walk or ride a bicycle 2. Drive 3. Bus 4. Taxi 5. Ride with a friend 	<p>4. How far do you have to walk to a bus stop?</p> <ol style="list-style-type: none"> 1. Less than one block 2. One block 3. More than three blocks 4. More than six blocks
<p>5. How well does the present bus system meet your transportation needs?</p> <ol style="list-style-type: none"> 1. Meets them most of the time 2. Meets them part of the time 3. Rarely meets them at all 	<p>6. What is the total time you would accept for your typical trip from home to destination?</p> <ol style="list-style-type: none"> 1. Less than 10 minutes 2. 10-20 minutes 3. More than 20 minutes
<p>7. How long will you wait for a bus?</p> <ol style="list-style-type: none"> 1. Less than 5 minutes 2. 5-10 minutes 3. 10-15 minutes 4. Indefinitely 	<p>8. What is the most you would pay for a one-way bus fare for your typical trip (work, shopping, etc.)?</p> <ol style="list-style-type: none"> 1. Less than 20¢ 2. 20¢-30¢ 3. 30¢-40¢ 4. More than 40¢
<p>9. How many persons, including yourself, live in your household?</p> <ol style="list-style-type: none"> 1. Live alone 2. Two persons 3. Three persons 4. Four or more persons 	<p>10. In what age group are you?</p> <ol style="list-style-type: none"> 1. 18 or under 2. 19-25 3. 26-44 4. 45-64 5. Over 65

<p>11. What is the level of the last school you attended?</p> <ol style="list-style-type: none"> 1. Grade school 2. High school 3. College 4. None of the above 	<p>12. In what range is your annual income?</p> <ol style="list-style-type: none"> 1. \$ 4,000 or below 2. \$ 4,001 to \$ 7,000 3. \$ 7,001 to \$10,000 4. \$10,001 to \$15,000 5. \$15,001 and above
<p>13. Is any member of your household unable to use the present bus system because of physical handicap?</p> <ol style="list-style-type: none"> 1. No 2. Yes 	<p>14. How important to you is the time it takes to get to your destination?</p> <ol style="list-style-type: none"> 1. Very important 2. Somewhat important 3. Unimportant
<p>15. How important to you is the distance that the bus stops from your destination?</p> <ol style="list-style-type: none"> 1. Very important 2. Somewhat important 3. Unimportant 	<p>16. How important to you is the number of transfers you have to make during your trip?</p> <ol style="list-style-type: none"> 1. Very important 2. Somewhat important 3. Unimportant
<p>17. How important to you are services to accommodate the elderly and handicapped on the bus?</p> <ol style="list-style-type: none"> 1. Very important 2. Somewhat important 3. Unimportant 	<p>18. How important to you is personal security, safety, and reliability of the bus?</p> <ol style="list-style-type: none"> 1. Very important 2. Somewhat important 3. Unimportant
<p>19. How important to you is the cleanliness of the vehicle?</p> <ol style="list-style-type: none"> 1. Very important 2. Somewhat important 3. Unimportant 	<p>20. How important to you is the amount of the fare?</p> <ol style="list-style-type: none"> 1. Very important 2. Somewhat important 3. Unimportant
<p>21. Would you be willing to attend a public meeting concerning improving the present bus system?</p> <p>1. Yes 2. No</p>	
<p>22. Any additional comments will be appreciated: _____</p> <p>_____</p> <p>_____</p> <p>_____</p>	

PERSONNEL INFORMATION NEEDS

1. Total number of employees: _____
 2. Average earnings of shift workers: _____
 3. Number (or percent) women: _____
 4. Days of operation and shift description: _____
 5. Shift times and employees on each shift:

 - _____
 - _____
 - _____
6. Extent of carpooling, if known: _____
 7. Distribution of employee residence (give towns where majority of employees live and the number or percent from each, as detailed as practical; if not available, provide a list of addresses and/or zip codes to show geographical concentrations, if company policy allows):

 8. Would your company allow PDRTA to conduct a selective internal survey like the one enclosed by distributing it as the workers punch out? _____
 9. Name, title, and telephone number of individual providing this information for the company, in case of the need to follow up: _____

SOURCE: Pee Dee Regional Transportation Authority, A Planning Manual, by Stephen Carter & Associates (February 28, 1978) Draft.

Council as a suggested format for obtaining comparable data from agencies with a variety of funding requirements (Exhibit 2.5).⁵ Data that can be obtained in this format is expected to be more usable than what is otherwise obtainable where permanent standardized reporting has not been implemented. An extended data collection period may be needed to gather the specific data over one month's time, if existing records cannot be transformed to this format.

An attitude survey of nonusers provides useful qualitative data. The instrument used for the Sumter Area Transit Development Program is presented in Exhibit 2.6. Target groups for circulation may include plant workers for public systems or nonriding program clients for social services transportation systems.

⁵Central Midlands, op. cit.

DRAFT
STANDARDIZED REPORTING FORM

For the Month of _____ Date Prepared _____
Reporting Agency _____

CLIENTS TRANSPORTED DURING THE MONTH:

Primary Sources of Transportation

<u>Operating Funds</u> ¹	<u>(CETA)</u>	<u>(TITLE XIX)</u>	<u>(TITLE XX)</u>
Total clients actually transported	_____	_____	_____
Means of Transportation: ²	_____	_____	_____
	(agency van)		
	(fare paying)		
Passenger classification: ³	_____	_____	_____
	(Elderly 60+)		
	(Title XX)		
Trip purposes: ⁴	_____	_____	_____
	(Health)		
	(Nutrition)		
Service areas: ⁵	_____	_____	_____
	(Richland)		
	(Lexington)		
Number no-shows:	_____	_____	_____
Number requests not met:	_____	_____	_____
Total cost for transportation:	\$ _____	\$ _____	\$ _____
Other revenue sources: ⁶	(Fares)	\$ _____	\$ _____
	_____	\$ _____	\$ _____

VEHICLES OPERATED BY THE AGENCY:

Source of Funds to Purchase

<u>Capital Equipment</u> ⁷	_____	_____	_____
Number of vehicles (type/capacity) ⁸	(van) / (12)		
	(SEB) / (23)		
Other programs clients transported ⁹	(CSA)		
	(DOL)		
Number route types: ¹⁰	(demand response)		
Total route length: ¹¹	_____	_____	_____
Total vehicle days: ¹²	_____	_____	_____
Daily vehicle hours: ¹³	_____	_____	_____
Daily vehicle miles: ¹⁴	_____	_____	_____

¹⁾ Footnotes refer to "Instructions for Reporting Form"
(Sample entries in parenthesis)

INSTRUCTIONS FOR REPORTING FORM

Forms are to be completed by the agency operating vehicles when an interagency transfer of funds is involved. To avoid duplicating data, the operating agency should coordinate reporting from the funding agency on the appropriate data items maintained by them. Funding agencies delete operations turned over to another public agency and submit in conjunction with operator's report.

- (1). List each primary source of funds for vehicle operations, transportation contracts, expense reimbursement, or ticket purchase (DOL, CSA, LEAA, Titles III, VII, XIX, XX, or identify other sources).
- (2). List each means (agency vehicle, private contractor, fare paying, volunteer auto, private staff auto) and total transported by each.
- (3). List passenger classifications (elderly, handicapped, youth, low income, unemployed, alcohol and drug abuser, patient, companion, space available) and total for each.
- (4). List trip purposes served (employment, training or education, medical, nutrition, shopping, social and recreational, personal, rehabilitation, day care) and total for each.
- (5). Divide service area by counties and/or urban area and indicate total passengers originating from each geographic area.
- (6). List any other revenue sources (fares, commingled funds) and amount used to reduce costs indicated in the preceding line for transportation reflected in the same column. If operations are integrated, but costs are separately accounted, indicate integrated sources but no amount.
- (7). Identify each source used to purchase vehicles operated by the agency (UMTA, DOL, Voc. Rehab., CSA, Titles III, VII, XX, or other sources).

Omit this section if the vehicles are operated by another agency.

Such agencies should combine reports.

- (8). List each vehicle type (sedan, station wagon, van, mini-bus, school bus, SEV for specially equipped van with lift, SEB for specially equipped bus) followed by passenger capacity excluding the driver's seat (i.e., van/12, SEB/23). Indicate how many of each type/capacity in operation.
- (9). List programs (other than funding source) which may have clients transported on vehicles purchased under each funding source and total passengers for each.
- (10). List types of routes operated (fixed, scheduled flexible route, demand responsive) and number of each type serving a different area.
- (11). Identify combined mileage or vehicle-hours as appropriate to operate once all routes listed above, and label whether in miles or hours.
- (12). Indicate total number of days all vehicles operated during the month by adding the number of days each vehicle operated. Days when each vehicle was out of operation should not be included.
- (13). Indicate vehicle-hours logged during one full service day with all routes in operation.
- (14). Same as 13 in vehicle-miles.

EXHIBIT 2.5
(Continued)

CITY OF SUMTER BUS SERVICE SURVEY

Please answer this questionnaire to help the City improve bus service. Check one or more response to each question. Make additional comments as you please. Your ideas are welcome.

1. Which statement(s) best describes your use of the Sumter City bus service (formerly B&H Bus Lines)?

I never ride the bus in Sumter.

I have only used the bus once or twice altogether.

I only use the bus a few times a year.

I rode the bus more regularly in the past than I do now.

I now use the bus regularly times a month (indicate how often).

I have ridden buses often in another city.

Comments: _____

2. If you do ride the bus, why?

Only when I cannot use the car or get a ride.

To or from work.

For shopping or appointments.

To classes or meetings.

Other: When? _____

Comments: _____

3. Why don't you use the bus (or use it) more often?

It doesn't stop close to my home.

It doesn't go where I want to go.

It doesn't run at the right time, or often enough.

It takes too long to get most places and back again.

EXHIBIT 2.6

- It is too uncomfortable, or hard to get on and off.
- It runs behind schedule or is out of service too often.
- I don't know the routes or schedules.
- I own a car and it is cheaper to drive.
- The bus is only good for poor people.
- Other reasons _____

Comments: _____

4. Where do you live?
 - City of Sumter
 - Shannontown (South Sumter)
 - Other town: Where? _____
 - Rural area: How far? _____ miles N E S W (circle one or two to show direction) from Sumter.

5. If you are employed, where do you work?
 - Downtown Sumter.
 - Other: Where? _____

6. What is your family's annual income range?
 - Below \$10,000.
 - \$10,000 - \$15,000.
 - \$15,000 - \$25,000.
 - Over \$25,000.

7. How many family members does that income support, including yourself? ____
 How many in the family are employed, including yourself? _____

8. Do you have your own car? _____ yes _____ no
 How many cars does the family have, including yours? _____

EXHIBIT 2.6
(Continued)

9. Do you have any handicaps? _____yes _____no
If yes, please describe: _____

10. What is your age range?

_____ 18 or below

_____ 19 to 64

_____ 65 or above

11. Sex: _____Male _____Female

12. Race: _____Black _____White _____Other

Additional Comments: _____

SOURCE: Stephen Carter & Associates for Santee-Lynches Council for Government and Sumter, South Carolina (1977).

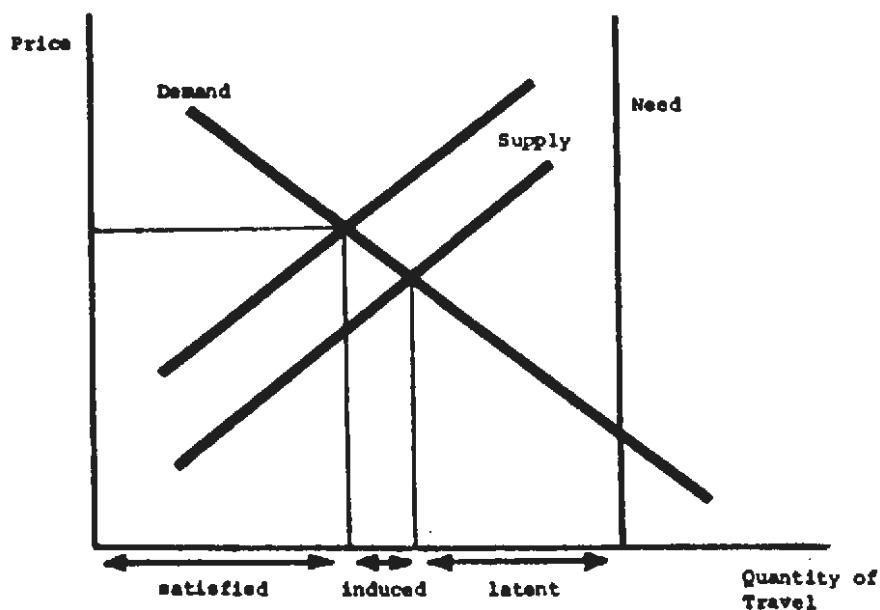
EXHIBIT 2.6
(Continued)

TASK C - PRELIMINARY NEEDS ASSESSMENT

At the outset of assessing need for transportation services it is helpful to understand its relationship to demand. The needs assessment is important to this planning process because it defines the context of demand. Transportation providers must be cognizant of the fact that improvements in the quality of the transportation services (vehicles, schedule, routes, etc.) alone cannot assure increasing demand volumes.

The relationships between travel demands and travel needs are illustrated in Figure 2.3. Satisfied demand is defined as the level at which an existing system is used. Latent demand represents the quantity of additional trips which would be taken if improvements to the transportation system were made. In economic terms, these people are not willing or are unable to pay the prevailing price of travel, even though they may be judged to need it. Induced demand represents the additional volume of travel that is generated by a specific transportation improvement. It is the component of latent demand which has been generated by the increased supply in Figure 2.3. Note that need remains a fixed quantity and is independent of price. In poor rural areas, the level of need would be expected to lie somewhere to the right of satisfied demand. For preliminary assessment purposes, the size of the needy (transportation disadvantaged) population may suffice as an indication of the actual quantity of travel.

FIGURE 2.3
CONCEPTS OF DEMAND AND NEED



SOURCE: Briggs, R., Designing Transportation Systems for Low or Low Density Rural Regions, Occasional Working Paper, University of Texas at Austin (April 1975) p. 10.

It is emphasized that both needs assessments and demand estimates are crucial to a transportation services planning effort. However, the distinction between an assessed need and a market demand should, at all times, be recognized. To maintain a realistic opportunity for a public transportation service to survive, it must address the problem of likely market demands as well as user need.⁶

Distributing Need - To distribute estimated need, follow the procedure presented under this task in the full manual. Depending on the social indicators used, or the level of local population data applied, the estimates may or may not be disaggregated below the county level (procedure number 2). If not, select data by social indicators as similar as possible to those used to estimate county level need (procedure number 3). Age and income levels may be the best sub-county indicators. They should be used merely to develop the relationship between the transportation disadvantaged population in each sub-county area to the county total (procedure number 4). For example, elderly sub-county population as a percentage of the elderly county population will indicate the percentage distribution of the county elderly transportation disadvantaged for each respective sub-county area.

Once some sub-area disaggregate of need is obtained, relative square-mile areas should also be obtained or estimated (see Exhibit 2.1). Leave out unpopulated areas (e.g., swamps, reserves) if possible. With information on land areas, density distributions of need (and demand) can be directly computed and mapped. Figure 2.4 is an example of the results for the Central Midlands Region, S.C.⁷ The mapping reveals unmet need geographically when related to known route patterns in the area or potential utilization of services across the area.

Northern Kentucky Area Development District - In 1977, the Northern Kentucky Area Development District undertook "a Special Rural Transit Study" for five contiguous rural counties. The intent of the study was to analyze the condition of transportation need in five rural counties and to recommend ways to improve the area's transportation. The method of estimating need utilized a combination of census data and agency data on clients served. Exhibit 2.7 includes excerpts from the portion of the study dealing with needs assessment.⁸ The method of trip demand estimation is included in the Technical Supplement for Step 6 - Task C.

⁶W.D. Berg, et.al., "Methods for Measuring Rural Public Transportation Needs and Demand," Transportation Engineering, Institute of Transportation Engineers (May 1978), p. 40.

⁷Central Midlands, op.cit.

⁸Northern Kentucky Area Development District, A Special Rural Transit Study, Florence, Kentucky (July 1977), pp. 15-20.

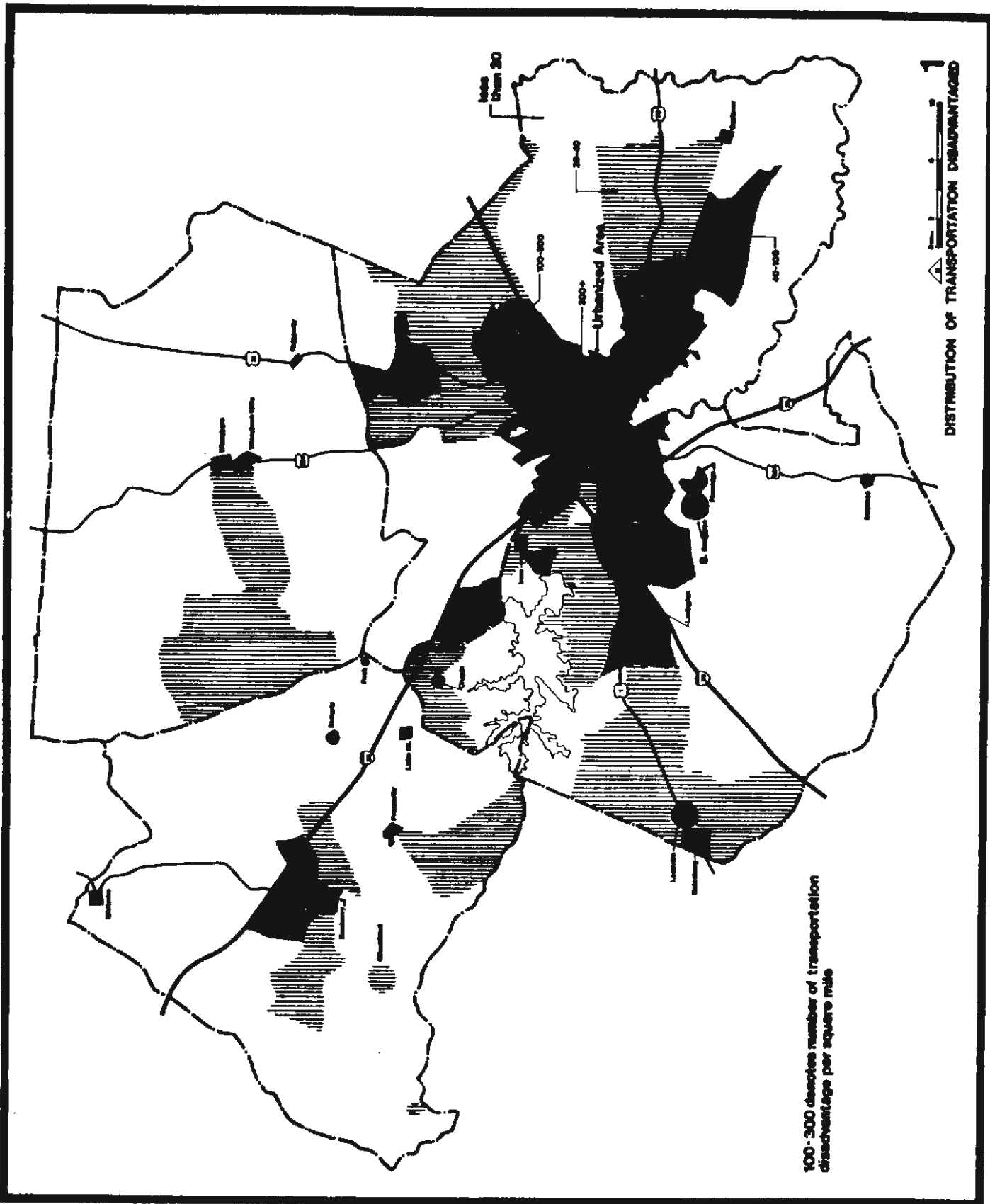


FIGURE 2.4

TABLE 7

Age Distribution in NKADD
1970-1974

County	Total 14 and Over	% Change 1970-1974	14-20	% Change 1970-1974	21-44	% Change 1970-1974	45-64	% Change 1970-1974	Total 65 and Over	% Change 1970-1974
NKADD	211,126 98,917 112,209	1.1	36,953 18,106 18,847	1.0	83,717 40,070 43,647	1.3	59,336 27,974 31,362	.01	31,120 12,767 18,353	2.35
Boone	24,892 12,191 12,701	10.3	4,560 2,294 2,266	10.3	11,849 5,742 6,107	9.3	6,152 3,079 3,073	10.3	2,331 1,076 1,255	10.3
Campbell	61,098 28,248 32,850	4.4	10,987 5,299 5,688	-4.1	23,159 11,101 12,058	-5.5	17,480 8,129 9,351	-4.17	9,472 3,719 5,753	-4.1
Carroll	6,329 3,502 3,277	.9	989 487 502	.9	2,447 1,192 1,255	.9	1,872 924 948	.91	1,021 449 572	.8
Gallatin	3,196 1,552 1,644	-6.4	485 246 239	6.4	1,267 621 646	-6.4	914 450 464	6.4	530 235 295	.4
Grant	8,278 4,019 4,259	12.0	1,246 607 639	12.0	3,096 1,486 1,610	12.0	2,404 1,189 1,215	12.0	1,532 737 795	11.9
Kenton	93,547 43,081 50,466	.7	16,518 8,056 8,462	.7	36,987 17,526 19,461	.7	26,367 12,133 14,234	.74	13,675 5,366 8,309	.74
Owen	6,088 3,062 3,026	5.7	901 497 404	5.7	2,119 1,069 1,050	3.6	1,882 942 940	5.7	1,186 554 632	5.7
Pendleton	7,698 3,712 3,986	7.5	1,267 620 647	7.6	2,793 1,333 1,460	7.5	2,265 1,128 1,137	7.5	1,373 631 742	7.5

SOURCE: 1970 U.S. Census of Population
1974 U.S. Census of Population Estimates

TABLE 8

Labor Force Trends
NKADD
1970-1976

County	Total Civilian Labor Force	1970		1976			Percent Change L.F. from 1970
		Total Unemp.	Unemp. Rate	Total Civilian Labor Force	Total Unemp.	Unemp. Rate	
NKADD	111,235	4,076	3.7	125,673	8,295	6.6	13.0
Boone	12,840	339	2.6	14,114	739	5.2	9.9
Campbell	33,472	1,289	3.9	37,234	2,816	7.6	11.2
Carroll	3,244	262	8.1	3,899	159	4.1	20.2
Gallatin	1,334	80	6.0	1,512	73	4.8	13.3
Grant	3,677	90	2.4	4,460	163	3.7	21.3
Kenton	50,635	1,848	3.6	56,196	4,037	7.2	11.0
Owen	2,635	104	3.9	3,723	139	3.7	41.3
Pendleton	3,398	64	1.9	4,535	169	3.7	33.5
Non-Metro	14,288	600	4.4	18,129	703	4.0	

SOURCE: Bureau for Manpower Services, Analysis Unit, March 1977

The total civilian labor force for the study area is 18,129 as of 1976. The civilian labor force comprises 36 percent of the total population. These statistics take into consideration the persons who are retired, under age or not in the labor force. The total unemployment was 703 for 1976 while the mean rate of unemployment for the same period was 4.0. The highest unemployment rate in the non-metro counties for 1976 was 4.8 for Gallatin County.

HANDICAPPED AND OTHER MOBILITY ACCESS LIMITED GROUPS

Handicapped individuals have been one of the more isolated segments of this country's population heretofore. Section 16a of UMTA as amended in 1976 makes the following provision for increased mobility access for elderly and handicapped:

that special efforts shall be made in planning and design of mass transportation facilities and services so that the availability to handicapped and elderly persons of mass transportation which they can effectively utilize will be assured.

This is not an enforcement measure but only a requirement that special efforts be made to provide to the elderly and physically handicapped persons mass transportation service which they can effectively use. Although the proportion of handicapped in the study area is small, nevertheless it is a significant segment of the population in need of specialized transit. Efforts are being made by social service agencies who are providing transit through Section 16 (b)(2) of UMTA to purchase vehicles equipped with hydraulic lifts for the handicapped.

Table 9 shows on a county basis the number of handicapped individuals, excluding the elderly and low income, who for reasons of using transit have limited access to public, social service and recreational facilities.

TABLE 9

Number of Handicapped
NKADD
1975

<u>County</u>	<u>Handicapped* Adults</u>	<u>Handicapped* SSI Recipients Under 18 Years</u>	<u>Statistically Blind</u>
Boone	96	6	82
Campbell	371	30	220
Carroll	93	2	20
Gallatin	44	4	9
Grant	109	7	24
Kenton	589	60	323
Owen	74	3	18
Pendleton	70	8	24
NKADD	1,446	120	720
Non-Metro Counties	390	24	95

*March 1975 figures of the number of clients served

SOURCE: Kentucky Department for Human Resources and
Kentucky Bureau of Vocational Rehabilitation

The handicapped and statistically blind represent 1.2 percent of the total population of the study area. The elderly are 20 percent of the total population and low income persons for all ages represent 6.2 percent of the total population in the study area. Table 10 shows the distribution of the elderly in the study area.

TABLE 10

Distribution of Elderly Population in Non-Metro Counties
1975

<u>County</u>	<u>Total Elderly Population</u>	<u>% of Total County Population</u>	<u>% of Total Non-Metro Population</u>
Carroll	1,500	17.0	3.7
Gallatin	700	16.7	1.7
Grant	2,000	16.9	5.0
Owen	1,600	19.8	4.0
Pendleton	1,700	16.8	4.2
NKADD Total Pop.	295,500		
Total Elderly Pop.	49,600	16.7	18.4
Non-Metro Total	40,075		

SOURCE: 1975 Estimates of 60+ Population, National Clearinghouse on Aging

The elderly are the largest sub-population in the non-metropolitan areas, Aid for Families with Dependent Children (AFDC) recipients and the handicapped rank second and third. This is in terms of total percentages. Table 11 shows the proportions of categorically needy recipients and medically needy recipients in the district.

Exhibit 2.7 (Continued)

TABLE 11

Total Public Assistance Recipients
NKADL
Fiscal Year 1975

County	Average Monthly No. of Eligible Recipients		Percent of Area Total	
	<u>Categorically Needy Recipients</u>	<u>Medically Needy Recipients</u>	<u>Categorically Needy Recipients</u>	<u>Medically Needy Recipients</u>
Boone	930	241	12.0	15.0
Campbell	4,299	876	55.5	54.7
Carroll	596	150	7.7	9.7
Gallatin	325	49	4.2	3.0
Grant	605	120	7.8	7.4
Kenton	6,175	1,254	44.4	43.9
Owen	484	85	6.3	5.2
Pendleton	504	80	6.5	5.0
Total Non-Metro	7,743	1,601	100.0	100.0
Kentucky	261,734			

SOURCE: Department for Human Resources, Public Assistance in Kentucky (PA-264) Report Series, Fiscal Year 1974-1975

The largest percentage of public assistance recipients for the study area are in Grant County while the lowest percentage are in Gallatin County. In terms of suggested priorities for clustering transit vehicles for subgroup populations the percentages would indicate that the highest concentration of both categorically needy recipients and medically needy recipients for public assistance are in Carroll County and handicapped individuals are in Grant County. Carroll County is the third largest county in terms of total population in the non-metropolitan counties. Therefore, total population does not necessarily influence the distribution of need in the four sub-population groups mentioned above.

In terms of implementing a demonstration project, this data would be useful for designating a geographic location in the non-metropolitan counties with the greatest need for categorical transit provision. Developing goals to satisfy the categorical needs in terms of specialized transit provision would be feasible using this means of targeting an area and sub-populations to receive services. In Chapter II, trip generators are identified which are relative to the movement of the population in the non-metropolitan counties.

TASK D - ALTERNATIVE LEVELS OF SERVICE

To represent the different combinations possible for defining levels of service, a large number of alternatives can be defined using five variables. The number of alternatives that can be evaluated manually may be too few unless it is for a small-scale or very simple transportation system or else a simplified definition is used to describe the services to be offered. Levels of service, therefore, should be relatively fixed except to permit testing of changes in one or two basic variables that affect demand significantly unless a computer is available.

The variables may be grouped in two categories: (1) supply (area, hours, vehicles) and (2) demand (wait and fare). If wait time and fare level are changed, they will affect demand for a given service. If service area, service hours, or access to vehicles are changed, they affect supply more directly than demand. Supply of transportation may be a clearer objective than demand for it. If policy on supply can be strictly defined, then different demand variables can be tested more freely. (This is facilitated by feedback from an advisory group in the midst of this task, making the next step interactive with this one, rather than being separate, as suggested by the sequence used in this manual). Complexity of the transportation system is built into the variables by the following considerations:

- . Service areas may be differentiated on the basis of degree of operational flexibility (fixed routes one place, subscription another, and demand response serving different areas).
- . Fare levels may differ on the basis of eligibility criteria, or by type and potential utilization of service (flat fares on fixed routes, mileage rates on non-fixed).
- . Service hours or days may differ according to density of need or other measure of feasibility to serve (more limited hours in areas of sparse need and for handicapped riders needing wheelchair lifts).
- . Wait time may differ much the same as service hours do (less frequency/longer lead time to request service in sparse areas or with special vehicles).
- . Access to vehicles may be prioritized as to rider eligibility by type of vehicle (handicapped given priority on special lift vehicles, but not when only manual boarding assistance is available).

Exhibit 2.8 outlines level of service "scenarios" used for the Central Midlands study in South Carolina.⁹

⁹Central Midlands, op.cit.

LEVEL OF SERVICE AND ALTERNATIVES

Fixed Route

Urban: existing SCE&G operations

Rural to Urban: existing intercity routes assuming one usable round trip per day at 10¢ per mile

Alternate: same as above with half fare for elderly and handicapped during non-peak hours

Demand Service

Basic: Area - all ED's not served by fixed routes with fixed route connections into urban area

Fare - free to all poor, elderly, and handicapped for essential trip purposes. \$1.00 otherwise

Hours - 8:00 a.m. to 5:00 p.m. Monday through Friday

Lead Time - one day advance notification for pick-up

Vehicles - vans with no wheelchair lifts

Alternates: 1 - same except fare to paying riders 10¢ per mile

2 - same as basic except hours extended to serve work trips and Saturday

3 - basic except lead time reduced to two hours

4 - basic except wheelchair lifts available one day a week

EXHIBIT 2.8

TASK A - ASSESS PROJECTED NEED

The first measure of need is properly expressed as quantity of travel for the needy population. Therefore, not only must the needs assessment be adjusted to reflect local policy, it also must be converted to the number of trips that need to be made on the system by the transportation disadvantaged. Latent demand by persons other than those included in the needy population may be served later, as a matter of improving resource acquisition and utilization, revenue generation, and public benefits, but it need not be a factor in advance planning.

Surveys of Potential Users - The various surveys suggested for data gathering in Step 5 serve as the means of determining tripmaking patterns and needs of the target group, while they also provide qualitative information. The Sumter, S.C. onboard survey shown in Exhibit 2.3 produced the Table 2.2 results from the city bus service. They were categorized to agree with the population data by social indicators, and cross-classified by income, age, and trip purpose in another tabulation.

TABLE 2.2
SUMTER ONBOARD SURVEY RESULTS

A. 1976 Ride Rates by Household Income

Equivalent 1970 Income	Trips Per Day (TPD)	Households in Service Area	TPD Per Household
Under \$2,000	280	1,625	.17
\$2,000-\$3,999	328	1,991	.16
\$4,000-\$5,999	154	1,699	.09
\$6,000-\$7,999	19	1,322	.01
\$8,000-\$11,999	26	1,827	.01
\$12,000 and Over	0	1,447	0
Total	807	9,911	.08

B. 1976 Ride Rates by Age

Age Group	Trips Per Day (TPD)	Persons in Service Area	TPD Per Person
18 or Under	100	13,721	.007
19-64	652	16,807	.038
65 and Over	69	2,521	.027
Total	807	33,049	.024

SOURCE: RRC International, Inc. "Transit Development Program for Sumter City and Area: Demand Analysis" (May 10, 1977).

The same type of rates should be obtained for rural services. The Sumter area study showed a heavier rural service patronage from the eldest age group with no riders over the \$8,000 income level.¹⁰ Agency surveys can be another source of ride rates if data is sufficient. Valid quantitative data for unmet local need (where service is unavailable) is much more difficult to obtain without conducting expensive home interviews. For that purpose, the average travel behavior estimation approach is the most practical.

Average Travel Behavior - This approach compares the travel characteristics of a locality with a pre-defined standard or norm. It is based on the assumption that a difference in tripmaking rates is a direct indicator of transportation need. Usually an average volume of trips generated per household per day is used for the areawide standard.

There are problems in choosing the average rate. Burkhardt, et.al. note that a national average, a statewide average, a county average, or averages of urban, rural and poor populations might be used.¹¹ The transportation analyst should make all assumptions clear to decision makers.

Tripmaking rates may be cross-classified to attain a more realistic estimate of transportation needs, depending on the detail of the data collected. One strategy is to cross-classify the travel data by target groups and by trip purpose.¹² Cross-classifications of average travel rates are shown in Tables 2.3, and 2.4. Using the trip rates of individual target groups and different trip purposes, specific need estimates can be derived by applying such findings.

Care must be taken not to count auto-driver trips, as distinguished in Table 2.4. Also notice the discrepancies between the two tables when compared equally by week or month (Table 2.4 indicates over twice the tripmaking rate for rural elderly). A real problem exists in finding full tripmaking data from another area both socio-economically similar and with a comparable level of human service programs and widely accessible transportation services. All these factors influence need for tripmaking, whether perceived or not.¹³

It should be apparent that the state-of-the-art is still hampered by insufficient data sources. To complete assessment of need for a system of comprehensive transportation services, several sources of data indicating rates of need would have to be combined. Such a mix of trip rates should improve the reliability of aggregate results in the end.

¹⁰Santee-Lynches, op.cit.

¹¹Federal Highway Administration, U.S. Department of Transportation, The Transportation Needs of the Rural Poor (Dec. 1969).

¹²Berg, et.al., op.cit.

¹³Notess, Charles B., "Rural Elderly Transit Markets," Journal of the American Institute of Planners (July 1978).

TABLE 2.3
TRIP GENERATION RATES

Trip Purpose	Rural Elderly		Rural Handicapped	
	% of Trips	Trips/Week	% of Trips	Trips/Week
Grocery Shopping	33.7	1.8	26.2	1.4
Other Shopping	15.3	0.8	8.7	0.5
Health Care	3.8	0.2	13.0	0.7
Personal Business	20.1	1.1	13.0	0.7
Socio-recreational	26.3	1.4	17.4	0.9
Other	0.8	0.1	21.7	1.2
All Trips	100.0	5.4	100.0	5.4

SOURCE: Kimley-Horn & Associates, Inc., Summary Report: Planning and Development Program for Mass Transportation Services and Facilities for the Elderly and Handicapped in the State of Georgia (April 1975), p. 54.

TABLE 2.4
TRAVEL CHARACTERISTICS OF ELDERLY PEOPLE

Trip Purpose	Urban Sample (Carp 1972)			Rural Sample (Notess 1975)		
	Average number of journeys per month					
Grocery Shopping	6.2			1.4		
Visiting Friends and Kin	11.0			6.0		
Church Services/Meetings	3.2			1.6		
Percentage of elderly who never go						
Grocery Shopping	18			22		
Visiting Friends and Kin	40			37		
Church Services/Meetings	33			49		
Percentage of trips by mode used						
	Drive		Bus/Taxi/ Ride Walk	Drive		Bus/Taxi/ Ride Walk
Grocery Shopping	31	31	38	36	60	4
Visiting Friends and Kin	28	32	40	37	55	8
Church Services/Meetings	26	32	42	35	59	6

SOURCE: U.S. Department of Health, Education and Welfare, Administration on Aging, Transportation and Aging-Selected Issues, by F.M. Carp (1972); Notess, et.al., Transportation of Elderly to Rural Social Services (1975).

TASK C - DEMAND ESTIMATION

Task C

Average Trip Rate Approximation - This is a simplified method of aggregate demand measuring. It is based on applied trip rates per capita, selected from a range according to the operating environment associated with specific rates judged to be most similar to local conditions. This method does not require a categorized estimate of needy population or level of service variables. It does, however, assume similarity between local ridership eligibility and the market served in the associated location selected, as well as comparable transportation supply, destination alternatives, and makeup of the population. All these qualifications make this method no better than a range-finder or an indication of upper limit on demand projections. Table 2.5 is an example of a range of average trip generation rates developed from national observations for approximating demand.¹⁴

TABLE 2.5
OBSERVED RATES OF TRANSIT USE

Trip Generation Rate (annual one-way trips per capita)	Location
5.00-10.00	Batavia, N.Y. (dial-a-ride)
4.00-5.00	
3.00-4.00	high estimate, small urban areas (Pa.)
2.00-3.00	high estimate, rural (Pa.)
1.50-2.00	
1.00-1.50	Mid Delta, Arkansas
0.50-1.00	Raleigh Co., West Va., low estimate, rural (Pa.)
0.25-0.50	Verango Action Corp., Pa. low estimate, rural (Pa.)
0.00-0.25	Kingsport, Tennessee, Potter Co., Pa.

SOURCE: Popper, R.J., C.B. Notess, and R.N. Zapata, "The Demand for Special Transit Systems to Serve the Rural Elderly," Prepared for the 55th Annual Meeting of the Transportation Research Board (January 1976).

The Northern Kentucky Area Development District's "Special Rural Transit Study" used a trip rate approximation approach to estimating demand. Exhibit 2.9 is an excerpt from that portion of the study.

¹⁴Berg, et.al., op.cit., p. 43.

NORTHERN KENTUCKY'S TRIP RATE APPROXIMATION APPROACH

The Need

The identification and utilization of vehicles owned by social service providers was a focus of this study. The average number of trips currently being provided per month, by provider, was calculated for Senior Citizens of Northern Kentucky Nutrition Project, Carroll County Red Cross, White Top Taxicab, Owen County Fiscal Court, Northern Kentucky Community Action Commission and Northern Kentucky Comprehensive Care. Table 25 contains a breakdown of monthly trips by provider and the number of vehicles in operation in the non-metropolitan counties.

TABLE 25
Number of Yearly, Monthly Trips
Provided by
Transit Providers in Non-Metro Counties
1977

<u>Agency</u>	<u>Average Monthly Trips</u>	<u>Number of Vehicles</u>
Sr. Citizens of No. Ky.	800	4
Carroll County Red Cross	18	1
White Top Taxicab	2,150	3
Owen County Fiscal Court	126	1
No. Ky. Community Action	1,706	13
No. Ky. Comprehensive Care	506 *	3
Total	5,360	25

*Projected from monthly trips of vehicles currently in operation

SOURCE: February 1977 Special Rural Transit Study Questionnaire

EXHIBIT 2.9

Comprehensive Care has not commenced operation of the vehicles acquired through UMTA for the non-metropolitan counties. Based upon the average volume of monthly trips, the major transit providers in the study area are White Top Taxicab and the Northern Kentucky Community Action Commission.

The information in Table 25 is significant in that it indicates the capacity of existing providers to meet the level of demand for the populations which are service priorities.

Projected demand for monthly trips was derived by computing the appropriate statistical information for the elderly, handicapped and low income into a formula derived by KYDOT. The KYDOT formula was derived from research of secondary data sources for computing the total demand for transit services to the elderly, handicapped and low income in an area. In computing the formula, the following calculations were made:

30% (Tot. Pop. x % Elderly) x 1.5 trips/week x 4
30% (40,075) x 1.5 trips/week x 4 = 72,135

(Total Population 60 x 2.7%) x 1.5 trips/week x 4 for Handicapped
390 x 2.7% x 1.5 trips/week x 4 = 63

(Tot. 50% (97.3% x Total Population 60) x % Public Assistance
Recipients in the area x 1 trip per week x 4 = 15,476

Total Trips Projected for Elderly, Handicapped and Low Income In
Non-Metro = 87,684

By comparing projected level of demand for the study area and present specialized transit service provision, the projected level of demand exceeds the present service level by 82,324 trips per month.

These calculations statistically show that the present level of service delivery is inadequate to meet the projected demand for transit in the study area. This data provides statistical information justifying the need for changes in present delivery of services to meet projected demand for transit.

The System

The present non-metropolitan specialized transportation system is composed of 3 vans, 3 taxicabs, 3 minibuses, 3 stationwagons and 1 bus all operated individually by six providers. The largest vehicle in the present system has a 20 passenger capacity. This vehicle is not yet in operation but has been applied for and approved under 16(b)(2) by Northern Kentucky Comprehensive Care. The capacity of the automobiles operated by White Top Taxicabs is five per vehicle excluding the driver.

The major problem in the existing specialized transportation system is fragmentation of service delivery. Fragmentation of service delivery has resulted in inefficient utilization of resources. At the March 7, 1977 focused group interview, transit providers expressed the desire to coordinate/consolidate transportation services in the non-metropolitan counties. Attempting to coordinate and/or consolidate transportation activities among human service program providers poses a variety of constraints. The major constraints affecting the transit providers in the non-metropolitan counties have been addressed in Chapter V. There is presently no formally structured system or agency to address the problem of coordination of transportation in the non-metropolitan counties. A single existing or newly created agency would be the most feasible implementation mode for delivery of this needed coordinated service for specialized transit. Any special transit system in the non-metropolitan area would only serve as a supplement to public transportation in this area, as this type of system does not address the public transit needs of the total population. However, coordination and consolidation of specialized transportation vehicles would not be a mechanism for addressing the problem of inadequate public mass transit.

The Future

The movement of people must be recognized as an essential goal of the transportation system. With the out-migration of urban residents into smaller rural communities, the importance of transportation in Carroll, Gallatin, Grant, Owen and Pendleton Counties will become more intensive as those counties and their regions continue to grow. Social service agencies will continue to provide service to specific sub-populations but the growth rate of this region may outgrow the ability of the social service agency to remain the major provider of specialized transit. The role of the social service agency may become even more complex with increasing demand for transit. If future demand should necessitate the need for a public mass transit system such as TANK then the social service agency will become a feeder mechanism into a larger more comprehensive transit system, the primary goal of which would be the movement of people.

The need for coordination of existing facilities does have a statistical base due to the existing fragmentation of transportation service delivery in the non-metropolitan areas. A specialized coordinated system for non-metropolitan transportation should not be looked upon only as an alternative benefit to the non-metropolitan counties but as the basis for an improved system of regional transportation for the entire NKADD.

Recommendations in Chapter VII contain the implementation strategies of the study for the improvement of transit services in the non-metropolitan counties.

Trip Generation Rate Model - This method estimates demand for target group populations and, therefore, requires some level of needs assessment and service area definition. This method also borrows transit trip rates from similar operating environments, but can select rates specific to each target group (as given in Tables 2.3 and 2.4).

The mathematical expression of the model is:¹⁵

$$D = \sum_{i=1}^n d_i \text{POP}_i$$

where

D = total demand for transit trips

d_i = annual trips per person in the i th "target group"

POP_i = population in the i th "target group," and

n = number of "target groups."

The total demand (D) is computed by adding the demand for each target group (d_i). For a target group of rural elderly, using the weekly rate for all trips from Table 2.3, d_i would be:

$$d_{\text{rural elderly}} = 5.4 (\text{POP}_{\text{rural elderly}})$$

The formula can be used to combine trip rates from different sources specifically for each target group and type and level of service. In other words, fixed route trip rates might be selected separately from demand response rates specifically for a comparable fare level and wait time experienced by riders on the systems selected.

Total demand may be factored to account for demand expected from persons outside the target groups for which comparable trip rates can be found. In Pennsylvania, senior citizens and other low-income groups were estimated to account for 80 percent of ridership.¹⁶ Hence, using subscripts 1 and 2 for these two groups, the general formula would be:

$$D = [(d_1 \text{POP}_1) + (d_2 \text{POP}_2)] / .80$$

¹⁵ Ibid.

¹⁶ Burkhardt, J. and W.W. Millar, "Estimating the Cost of Providing Rural Transportation Service," Transportation Research Record 578, Transportation Research Board (1976), pp. 8-15.

Fixed Route/Demand Response Models - Burkhardt and Lago have recently published models that include limited level-of-service variables (wait time or frequency and vehicle miles).¹⁷ Good results have been obtained from the aggregate or macro fixed route model, which is expressed mathematically as:

$$\text{RTPASS/M} = 10^{-0.353} \text{BMILES}^{0.407} \text{FREQ}^{0.533} \text{RPOP}^{0.611} \text{CBMS}^{-0.123}$$

where

RTPASS/M = the number of round-trip passengers per month for the system

BMILES = the total vehicle miles per month for all vehicles of the system

FREQ = the average monthly round-trip frequency of service along the fixed routes of the system (found by dividing the total monthly bus miles by the total round-trip route mileage)

RPOP = the number of persons (in hundreds) living along the routes who can use the system (if there are no restrictions on use, this number is the same as the total population), and

CBMS = the sum of the monthly bus miles of all other fixed route and demand responsive systems operating in the service area, which may (or may not) coincide with the county.

The macro model is recommended for systemwide or route-by-route application to fixed route operations. Since there is no fare variable, the model is only expected to be valid if one-way fares average 60 cents, the same as for the services used in calibrating the model.¹⁸

Nelson has used the following elasticity relationship that includes fare and frequency or headway changes:

¹⁷Pennsylvania Department of Transportation, Methods of Predicting Rural Transit Demand, by Burkhardt, J.E. and A.M. Lago (1976).

¹⁸Berg, et.al., op.cit., p.45.

$$R_1/R_0 = (F_1/f_0)^{-.4}(h_1/h_0)^{-.6}$$

where

R = the modified ridership (demand rate)
 R₀ = the original ridership (demand rate)
 F₁ and f₀ = modified and original fares, and
 h₁ and h₀ = modified and original headways.

The relationship is only expected to be valid for fares below 60 cents and for headways of one day or more frequent.¹⁹

Demand response models developed by Burkhardt and Lago have also been tested and found reasonable. The systemwide macro model is expressed as:

$$RTPASS/M = 10^{-1.879} BMILES^{1.099} RTIME^{-0.217} HIPOP^{0.194}$$

where

RTPASS/M = the number of round-trip passengers per month for the system

BMILES = the total vehicle miles per month for all vehicles of the system

RTIME = the average response time in days required between a call for service and the time a vehicle arrives, and

HIPOP = the number of persons in the county (in hundreds) who are high probability users of the system (usually defined as the poor plus the elderly who are not poor, except when there are restrictions on who may use the system).

A micro model is used to distribute the results of the aggregate demand response model above to individual routes. The micro model is:

$$RTPASS/M = 10^{0.840} + IN^{0.261} POTTRIPS^{0.506} D^{-0.230}$$

¹⁹RRC International, Inc. "Transit Development Program for Sumter City and Area: Demand Analysis" (May 10, 1977).

where

RTPASS/M = the number of round-trip passengers per month in that particular sector

IN = a variable which takes a value of 1 if the origin and destination are in the same county and a value of 0 if they are in different counties

POTTRIPS = the potential monthly trips in that sector which in its simplest form is the number of monthly trips estimated by the macro equation times the proportion of the high probability population which is served by that route, and

D = the round-trip distance in miles of a typical tour of the sector.

The primary constraint of these demand response models is the difficulty in estimating vehicle miles (BMILES).²⁰ That requirement may be facilitated by proceeding with Task D before trying to complete demand estimates with these models.

Another method that has been used is to assume that demand response ridership can be derived from fixed route models if level-of-service differences are taken into account. The most important variable in that application of the models would be fare,²¹ which would be much higher for demand response. The problem goes back to lack of models for areawide transportation services with fare elasticities included. Urban transit demand models are able to accommodate changes in fares. They have been used to forecast rural service demands, using level of service differences to account for large inconsistencies in demand rates. However, the wide differences between levels of service in urban versus rural areas is bound to exceed the validity range of most models.

Much more data will have to be available before the state-of-the-art in demand estimation for services outside the urban environment can advance. More sophisticated methodology may be available to users of this manual that was not yet developed at this writing.

²⁰Berg, et.al., op.cit.

²¹Central Midlands, op.cit., pp. 6-13.

TASK D - VEHICLES REQUIRED TO OPERATE

The final issue in the demand analysis is the balance of supply and demand. So far, this step has covered the demand side. Now consider supply. A demand response vehicle could be put on the road promising to serve an area with a given lead time. This promise would be meaningless if the limited ability of the vehicle to reach people were overloaded by demand. This overload will occur at rather low limits of a few persons per hour, depending on service characteristics. Reaching a supply/demand balance is, therefore, critical.

For a given number of vehicles, only a certain number of people can be served. Conversely, the number of people to be served requires a specific number of vehicles. To calculate the relationship, a demand/supply model was developed for the NFTA project.²² The model (called "WIDART"), which is, reportedly, patented by the authors is an example of procedures that may be developed or available to the planner.

The WIDART model is essentially a set of analytical relationships put into graph form. Use of the model may begin with a demand, calculated in areawide density or with a fixed supply of service (also expressed as density). Using demand, the WIDART graph is read to select the number of vehicle hours necessary to serve that demand for given level-of-service parameters and service zone configurations. For the constrained service approach, the graphs would simply be used in reverse to read the demand which can be served with a given operation. One of the graphs appears in Figure 2.4.²³

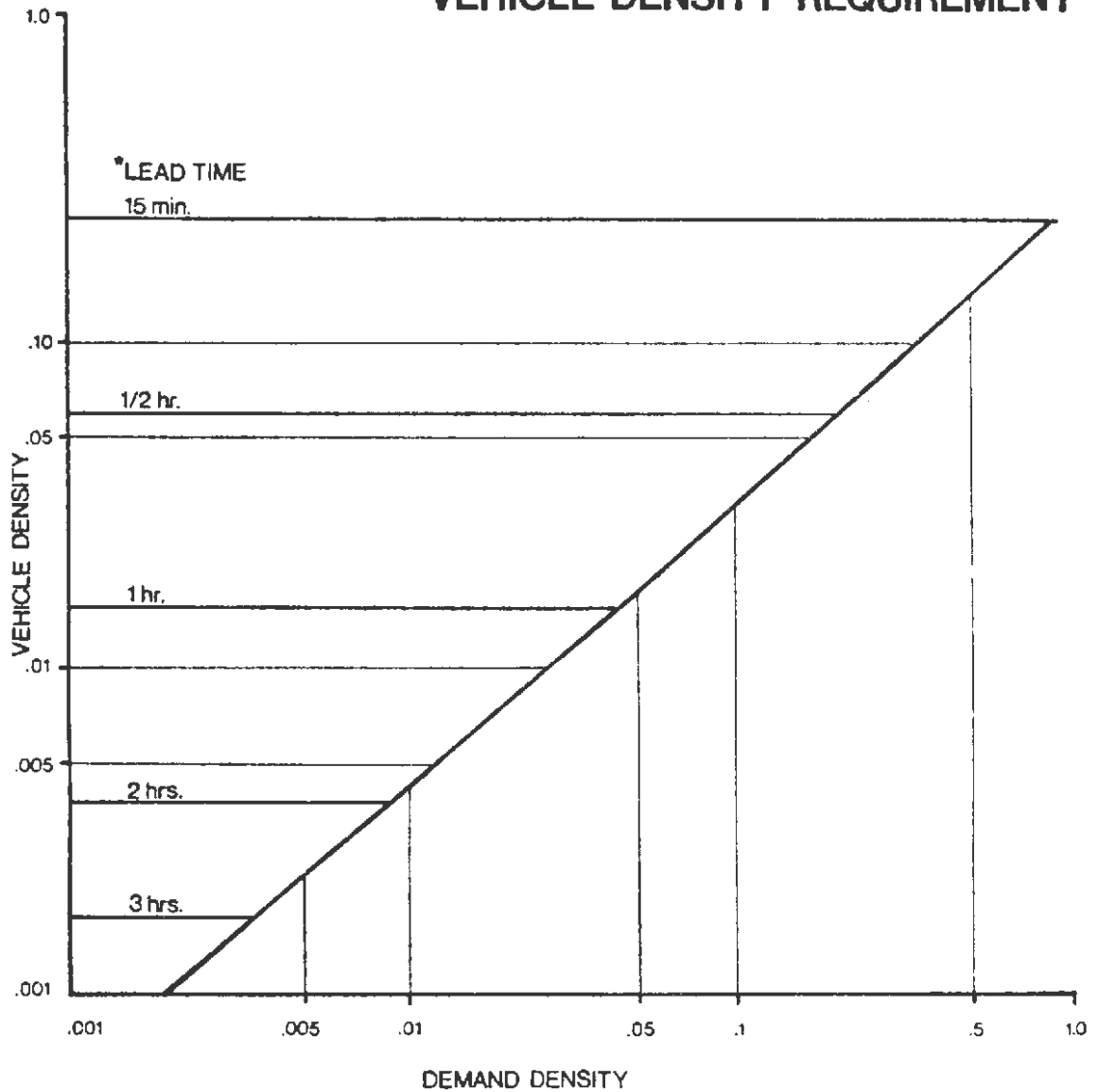
Figure 2.5 is not universally applicable to all service areas or levels of demand response. It calibrates the relationship of the taxi sub-model, which applies to sparsely populated areas where service is truly "on demand". As a result, there is little ride-sharing and small vehicles are used. It may be applicable to very specialized services or to indicate an upper fleet requirement level.

To use a relationship like the WIDART model as part of demand estimates, a first "cut" could be made using demand results from an average trip rate approximation. The vehicle density output from the model would be converted to the number of vehicles areawide. By estimating average operating speeds (approximately 10 to 30 miles per hour, depending on service area roads and congestion), vehicle miles (BMILES) can be approximated for the macro fixed route model presented in Task C. The demand result could be entered again to improve the vehicle requirement results. Conversely, the vehicle-demand relationship can also provide the approximate demand results using the constrained service approach.

²²Niagara Frontier Transportation Authority (N.Y.), An Analysis of the Mobility Needs of the Elderly and Handicapped in the Niagara Frontier Region, by RRC International, Inc. (1977).

²³Central Midlands, op.cit., pp.6-14.

DEMAND SERVICE VEHICLE DENSITY REQUIREMENT



*Lead time lines indicate minimum vehicle density at lead time indicated.

SOURCE: RRC International, Inc., "WIDART" (patent), Latham, N.Y.

Figure 2.5

Estimating vehicle requirements for fixed routes is a matter of capacity demanded for predefined routes and levels of service. If there is any question about different capacity needs among routes versus uniform demand on all routes, aggregate or micro model results should be distributed to individual routes. Then it is simply a matter of matching capacity to demand for a given level of service (capacity will affect operating costs).

Allow for variations and growth in demand during the life of the vehicle or until new vehicle purchases are expected. One source recommends seating capacity of 150 percent of demand,²⁴ although standing room may accommodate some of the demand variation on short-haul route segments. This process is also part of vehicle specifications in Step 11.

²⁴Administration on Aging, Planning Handbook: Transportation Services for the Elderly, by Institute of Public Administration (November 1976), p. IV-3.

TASK A - LABOR CONDITIONS AND NEEDS

There is frequently a fear of accepting direct federal funding for improving transportation services due to the unknown future effects of UMTA Section 13(c). That section of the legislation is printed in full below to provide a basic understanding of its purpose and provisions:

(c) It shall be a condition of any assistance under section 3 of this Act that fair and equitable arrangements are made, as determined by the Secretary of Labor, to protect the interests of employees affected by such assistance. Such protective arrangements shall include, without being limited to, such provisions as may be necessary for (1) the preservation of rights, privileges, and benefits (including continuation of pension rights and benefits) under existing collective bargaining agreements or otherwise; (2) the continuation of collective bargaining rights; (3) the protection of individual employees against [sic] a worsening of their positions with respect to their employment; (4) assurances of employment to employees of acquired mass transportation systems and priority of reemployment of employees terminated or laid off; and (5) paid training or retraining programs. Such arrangements shall include provisions protecting individual employees against a worsening of their positions with respect to their employment which shall in no event provide benefits less than those established pursuant to section 5(2) (f) of the Act of February 4, 1887 (24 Stat. 379), as amended.²⁵ The contract for the granting of any such assistance shall specify the terms and conditions of the protective arrangements.²⁶

A strict interpretation of this section would indicate that where a new transportation entity is created to replace another (or others), and UMTA funds are involved, the new entity will have to provide employees at least the same wages and benefits they had under the preceding system(s).

²⁵Refers to the Interstate Commerce Act, Title 49, U.S.C., which provides such benefits for a period of up to four years.

²⁶U.S. Congress, Section 13(c), Urban Mass Transportation Act of 1964, P.L. 88-365, 78 Stat. 302, 49 U.S.C. 1609, cited by U.S. Department of Transportation, Urban Mass Transportation Administration, Urban Mass Transportation Act of 1964 and Related Laws, as amended through February 5, 1976.

TASK B - COST AND REVENUE ESTIMATES

The following exhibits, Exhibits 2.10 and 2.11, are examples of cost and revenue estimates prepared for two different organizations: (1) the Pee Dee Regional Transportation Authority, a six-county RTA in Florence, South Carolina; and (2) Northern Kentucky Transit, Inc., an eight-county private non-profit operator in Florence, Kentucky.

**OPERATING COST GUIDELINE
26 PASSENGER BUS OPERATING A FIXED ROUTE**

<u>Variable</u>	<u>\$ per Vehicle</u>		
	<u>Mile</u>	<u>Hour</u>	<u>%</u>
Direct Labor (drivers and mechanic)	\$0.326	\$3.14	38.5
Depreciation (straight-line)	0.166	1.32	19.6
Insurance (at \$1900 each)	0.063	0.61	7.4
Fuel (gas @ 60¢/gal. with tax)	0.080	0.77	9.4
Parts (oil, tires and supplies)	0.046	0.44	5.4
Miscellaneous (.5% of total)	0.003	0.03	0.3
Total Variables	<u>\$0.684</u>	<u>\$6.31</u>	<u>80.6</u>
 <u>Fixed</u>			
Supervision (full-time with fringes)	\$0.087	\$1.25	10.3
Overhead G & A (10.3% of total)	0.053	0.76	6.3
Rent	0.006	0.09	0.7
Taxes	0.001	0.01	0.1
Miscellaneous (2.1% of total)	0.017	0.25	2.0
Total Fixed	<u>\$0.164</u>	<u>\$2.36</u>	<u>19.4</u>
TOTAL	<u>\$0.848</u>	<u>\$8.67</u>	<u>100.0%</u>

SOURCE: Carter-Goble-Roberts.

NOTES:

- . Annual mileage is 30,000 miles and 3120 operating hours
- . Drivers salary and fringe same as Table 6.4 and 6.5
- . Mechanic's cost same as Table 6.4 and 6.5
- . Fuel consumption is based upon 7.5 miles per gallon
- . Depreciation rate is based on a \$20,000 capital cost and four year vehicle life
- . Fixed route length is 107 miles per day

OPERATING COST GUIDELINE
26 PASSENGER DEMAND RESPONSE BUS

<u>Variable</u>	<u>\$ per Vehicle</u>		
	<u>Mile</u>	<u>Hour</u>	<u>%</u>
Direct Labor (drivers and mechanic)	\$0.201	\$3.30	30.4
Depreciation (straight-line)	0.143	2.40	21.5
Insurance (at \$1900 each)	0.054	0.91	8.1
Fuel (gas @ 60¢/gal. with tax)	0.080	1.35	12.1
Parts (oil, tires and supplies)	0.046	0.77	6.9
Miscellaneous (.5% of total)	0.003	0.05	0.5
Total Variables	\$0.527	\$8.86	79.5
<u>Fixed</u>			
Supervision (full-time with fringes)	\$0.074	\$ 1.25	11.1
Overhead, G & A (10.3% of total)	0.045	0.76	6.8
Rent	0.003	0.05	0.4
Taxes	0.001	0.02	0.1
Miscellaneous (2.1% of total)	0.014	0.24	2.1
Total Fixed	0.137	2.33	20.5
TOTAL	\$0.664	\$11.19	100.0%

SOURCE: Carter·Goble·Roberts.

NOTES:

- . Average vehicle is operating 35,000 miles per year.
- . Average vehicle is operating 50 hours per week less 15% down time.

EXHIBIT 2.10 (Continued)

DEMAND
(One-Way Trips/Month)

	<u>1977-78</u>		
	<u>Fixed Route Candidate</u> ⁽¹⁾	<u>Non-Fixed Routes</u> ⁽²⁾	<u>Total</u>
Metropolitan ⁽³⁾	8635	4676	
Non-Metropolitan ⁽⁴⁾	200	2837	<u>16348</u>
 <u>1978-79</u> 			
Metropolitan	8894	4897	
Non-Metropolitan	217	3076	<u>17084</u>
 <u>1983-84</u> 			
Metropolitan	10386	6165	
Non-Metropolitan	309	4374	<u>21234</u>

(1) Includes School, Elderly Nutrition Program and other special programs.

(2) Includes all other trips.

(3) Includes Campbell, Boone, and Kenton Counties.

(4) Includes Pendleton, Grant, Owen, Gallatin and Carroll Counties.

APPROXIMATE COST PER TRIP

	<u>1978-79</u>	<u>1983-84</u>
Option I - TANK	\$1.99	\$3.24
Option II - New Organization	\$2.08	\$3.20
Option IIa - New Organization without TANK	\$1.82	\$2.81
Option III - CAC	\$2.08	\$3.20
Option IIIa - CAC without TANK	\$1.82	\$2.81

COST-EFFECTIVENESS OF OPTIONS*

	<u>Weighted Effectiveness</u>	<u>Un-Weighted Effectiveness</u>
Option I	53.26	23.61
Option II	53.36	21.63
Option III	52.88	23.56

*Expressed as Unit of Effectiveness-Trip/Dollar.

EXHIBIT 2.11 (Continue "

Operations Planning and Programming



Technical Supplement

TASK A - SCOPE OF OPERATIONS

Ridership Mix - A full needs assessment, projected to 1982, was performed for the four member counties of the Central Midlands Planning Region, South Carolina in 1977.¹ The Transportation Disadvantaged Planning Advisory Committee directed development of the definitions for transportation disadvantaged (TD) groups, which were used to estimate the size of that population in the region. The results of the Central Midlands work is summarized in Figure 3.1. The graph combines age groups and TD groups in a manner that could be used to measure operational goals by types of ridership.

In addition to the transportation disadvantaged population, certain latent user groups can be clearly defined. They are also important to developing public transportation system priorities because they tend to have regular travel needs that may prove feasible to serve with public transportation. Because of similar tripmaking characteristics, each target group should be relatively easy to reach for the purpose of conducting a local survey to determine their demand for public transportation.

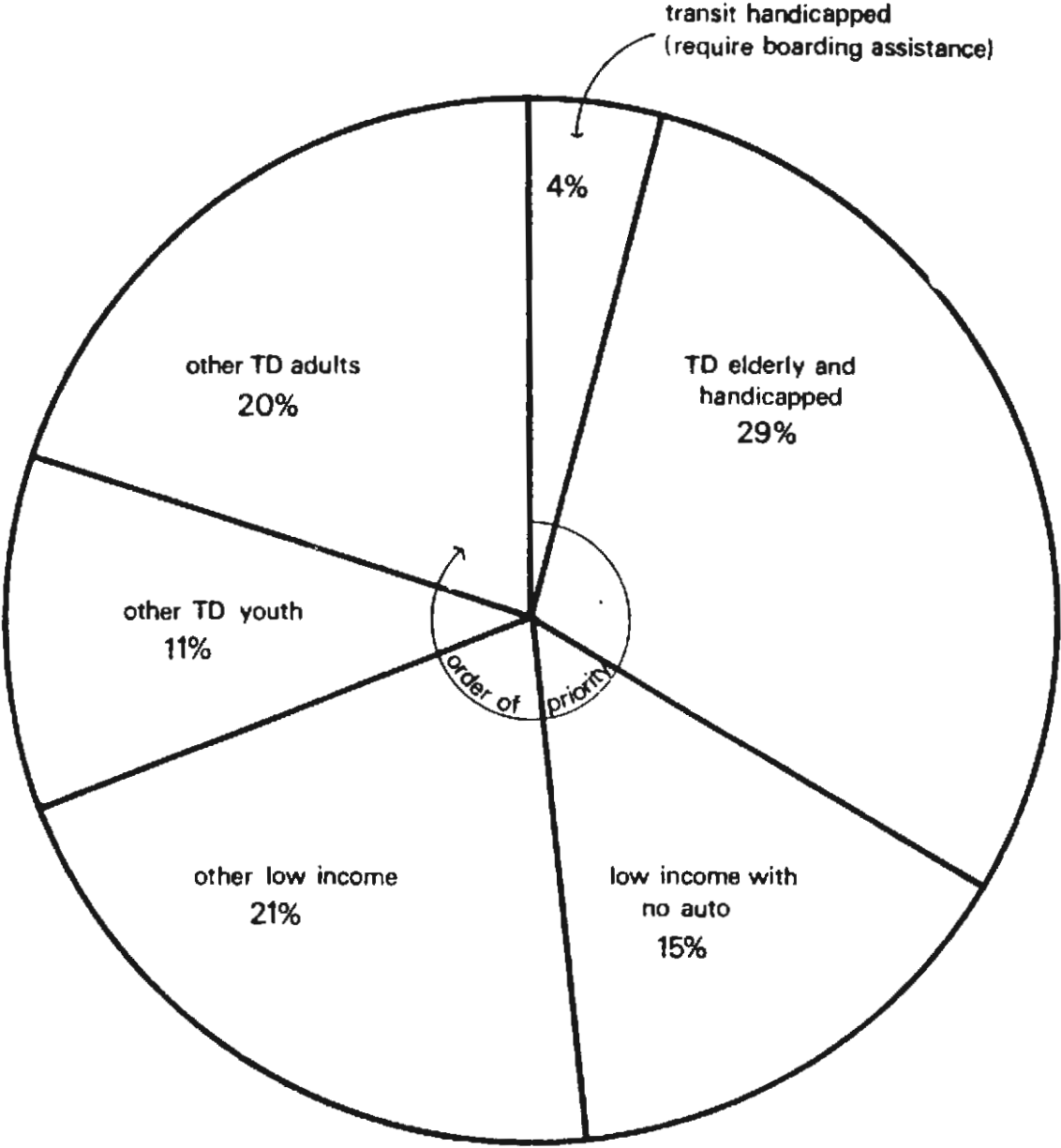
Potential/Latent User Groups for Public Transportation

- . Transportation Disadvantaged persons whose travel demand is not being met
- . Employees of major industries (especially semi- or unskilled)
- . Work force employed in central business district or other concentrated areas
- . Students attending local colleges
- . Other students without transportation by school bus
- . Housewives in lower-income neighborhoods

Priorities may be defined in greater detail by using trip purposes given in Step 7 when estimating demand. For simplicity, they may be cross-classified with user groups to clarify service priorities of devoping systems.

¹Central Midlands Regional Planning Council, S.C., A Transportation Services Study, by Stephen Carter & Associates (April 1978).

EXAMPLE OF RIDERSHIP PRIORITIES*



* % of 1982 transportation disadvantaged (TD) population (ages five and older) for Central Midlands Planning Region, South Carolina

figure 3.1

Sample of Service Priorities by Cross-Classification

<u>User Groups</u> (not using age-based definitions)	<u>Eligible Trip Purposes</u> (according to surveyed need and feasibility to serve)
Transportation Handicapped (unable to drive)	All
Low-Income Households	All except social/recreational
Other Transportation Dis- advantaged (based on auto availability)	Work
Industrial/Concentrated Workers	Work
College Students	Educational and school-based
Other Students	School-based except in peak hours
Housewives	All except peak-hour work

If temporary restrictions are placed on operations by contracts (ac-
cording to funding program regulations), eligibility standards will be
dictated. Otherwise, ridership (and trip-purpose) priorities may be
appropriate to allocate limited resources according to need, revenue
potential, and hours when the capacity is available.

Jurisdictions with extensive fixed routes operated by established car-
riers may need to stipulate geographic exclusions for most riders and
legal class of operations to avoid public-private competition or state
regulation. In the application of ridership priorities to allocation
of resources, the group definitions, eligibility standards, and the
order of priority proposed by the planners should be approved or al-
tered as deemed appropriate by the board of directors. Those decisions
will affect the incremental phasing plan and implementation objectives
that follow.

TASK B - INCREMENTAL PHASING PLAN

Exhibit 3.1 is an example of a quarterly implementation schedule that was developed for the Pee Dee Regional Transportation Authority in Florence, South Carolina. The same process is being recommended to begin at the outset of operations planning for all developing systems, with the expectation that the majority of rural routes and services will be planned in detail as the systems develop. This task is essentially the process of localizing operational stages of this manual in line with the political initiatives and advance planning that has taken place up to this point.

The type of schedule shown in Exhibit 3.1 typifies the programming process updated and refined at the completion of major operations planning elements. Monthly programming would be appropriate for quarterly to annual refinements as a development guide and management tool. Quarterly schedules similar to Exhibit 3.1 would be more useful for the immediate purpose of setting operational milestones.

1979 IMPLEMENTATION SCHEDULE

	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Operations	<ul style="list-style-type: none"> ● Negotiate Florence Bus Contract ● Set up Region IV review of ticket program ● Establish liaison with legislative Insurance Committee ● Complete UMTA application for four Florence urban buses ● Get legal opinion on Waccamaw membership in Auth. ● Develop vehicle replacement schedule ● Gain approval of modified reimbursement rate for CETA ● Make official contact with other providers on future contracts 	<ul style="list-style-type: none"> ● Take ticket program to Washington ● Request official waiver to test Flat Fare Concept ● Request Legislature to resolve insurance problem ● Take bids on UMTA City of Florence buses ● Develop FY 79 budget ● Begin discussions for Head Start contract with FCAA ● Develop radio communications plan ● Consider space needs vis a vis Intermodal Center ● Develop specific industries work trip program ● Initiate discussions with the Center for service ● Negotiate all but 15 percent of Title XIX contracts for remaining counties 	<ul style="list-style-type: none"> ● Begin Florence Bus Operations ● Purchase radios for 10 units ● Purchase or lease additional buses and 2 vans ● Begin operations in Waccamaw Region ● Purchase blanket insurance coverage ● Begin Pilot Test of Ticket Program ● Begin TEC student service on test basis ● Begin operation of Head Start Program ● Begin initial media exposure program ● Get Class C charter 	<ul style="list-style-type: none"> ● Initiate work trip program for two industries ● Begin fixed route service between Darlington and Florence ● Have under contract 75 percent of all Human Service transportation in Region ● Develop detailed implementation schedule for 1979 ● Develop In-House Maintenance Program ● Begin charter bus operations ● Conduct evaluation of year's operation
Personnel & Finance	<ul style="list-style-type: none"> ● Employ Assistant Director for Operations ● Request meeting with Budget and Control Board to present funding needs ● Employ one Assistant Clerk 	<ul style="list-style-type: none"> ● Present request for State funds to Bud. & Con. Bd. ● Achieve 50 percent of RTA operations thru non-147 funds ● Make arrangements for City of Florence bus drivers ● Review staff benefits program 	<ul style="list-style-type: none"> ● Request additional operating funds from Federal DOT ● Employ 4 new drivers ● Conduct second driver training program ● Begin reimbursement of Board members for expenses ● Begin receiving initial State funds 	<ul style="list-style-type: none"> ● Submit application to Coastal Plains for operating funds ● Achieve 75 percent of RTA operations thru non-147 funds ● Employ a mechanic ● Employ one Assistant Clerk

1979 IMPLEMENTATION SCHEDULE

	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Operations	<ul style="list-style-type: none"> ● Expand City of Florence Bus Operations to Regional System ● Apply for UMTA Operating funds for City Operations ● Expand Work Trip Program for two additional Industries ● Expand Ticket Service to City Bus Operations ● Purchase or lease one new bus ● Purchase or lease two new vans ● Purchase ten new radios 	<ul style="list-style-type: none"> ● Begin Demand Response Program in Florence and Darlington Area ● Test Extension of Fixed Route Service to Hartsville and Lake City ● Purchase or lease two new buses ● Purchase staff car ● Expand Media Program to Regionwide Coverage ● Investigate Self-insurance Program ● Make Decision on Future Office Needs 	<ul style="list-style-type: none"> ● Expand Demand Response Program to Marion and Dillon Areas ● Test Fixed Route Service between Latta, Dillon, Lake View, Mullins, and Marion ● Purchase or lease two new vans ● Purchase ten new radios ● Move office to new location 	<ul style="list-style-type: none"> ● Complete six-county Demand Response Service in Chesterfield and Marlboro Area ● Test Fixed Route Service between Pageland, Chesterfield, Cheraw, Bennettsville, and McCall ● Purchase or lease two new buses ● Develop Detailed Implementation Schedule for 1980 ● Conduct Evaluation of 1979 Accomplishments ● Have 85 percent of Human Service Contracts in Region
Personnel & Finance	<ul style="list-style-type: none"> ● Employ Assistant Director for Finance ● Employ four new drivers ● Employ Dispatcher ● Employ one Assistant Clerk ● Employ Operations Supervisor for Darlington-Florence Counties 	<ul style="list-style-type: none"> ● Employ Public Relations Director ● Request Additional State Funds from Budget and Control Board ● Achieve 90 percent of RTA Operations thru Non-147 Funds ● Review Employee Salaries and Benefits 	<ul style="list-style-type: none"> ● Employ four new drivers ● Achieve 100 percent of RTA Operations thru Non-147 Funds ● Begin Receiving Additional State Funds ● Employ Assistant Director for Administration ● Request Financial Support from Local Counties 	<ul style="list-style-type: none"> ● Employ two new drivers ● Request Additional Federal DOT Funds

TASK C - DESIGN MARKETING SCHEME

Catch-Phrase Identifier - Catchy names for transit systems have been used as marketing devices in major urban areas for some time. They first appeared just as they were dubbed by the riding public. These generally were initials or an abbreviated form of the official title used by the transit authority. "Metro" is a common example.

With the growth of areawide, rural, and specialized transportation systems, the use of popular names has become common practice. Names adopted by nonmetropolitan systems should differentiate themselves according to their operational scope. Following the example of existing systems, an identifier may take one of many forms.²

Official Name

Dial-A-Wagon (South Kennebec County, Maine)
Handy Bus (Saline County, Nebraska)
Operation Bus Stop (Wateree Community Actions, Inc., S.C.)
Whistlestop Wheels (Marion County, California)

Initials

NKT (Northern Kentucky Transit, Inc., Florence, Kentucky)
PDRTA (Pee Dee Regional Transportation Authority, S.C.)

Abbreviated Name

[DuBois] DuFast (DuBois, Pennsylvania area)
[Senior] Handi-Bus (Lincoln-Lancaster Counties, Nebraska)
Span Van [System] (Indiana County, Pennsylvania)
[Cranston] Transvan (Cranston, Rhode Island)
Valley Transit [District] (Connecticut)

Acronym

AORTA - Appalachian Ohio Regional Transit Authority
CARTA DARTA - Chattanooga Area Regional Transportation Authority (Tennessee) Dial-A-Ride
CATS - Consolidated Agencies Transportation System (Brevard County, Florida)
DAST - Delaware Authority for Specialized Transportation
GATE - Greensboro Area Transportation Express (North Carolina)
HOW - Help on Wheels (New Jersey)
KART - Klamath Area Transit (Oregon)

²Institute of Public Administration, Coordinating Transportation for the Elderly and Handicapped (November 1976); Transportation Systems Center, U.S. Department of Transportation, Rural Passenger Transportation (May 1976).

POW - Pioneer on Wheels (New Jersey)
OATS - Missouri Older Adults Transportation Service, Inc.
RADAR - Roanoke Agency Dial-A-Ride (Virginia)
SEATS - States Elderly Area 10 Transportation Service,
Inc. (Iowa)
TANK - Transit Authority of Northern Kentucky
TOTE - Transportation of the Elderly (Richmond County,
Georgia)
TRIP - Transportation Remuneration Incentive Program
(West Virginia)

Nickname

"B-Line" - Batavia Bus Service, Rochester-Genesee Regional
Transportation Authority (New York)
"Centro" - Central New York Regional Transportation Authority
"Lift Line" - Comprehensive Services Delivery System (Palm
Beach County, Florida)

Generic Term

Call-A-Bus - Central New York Regional Transportation Au-
thority handicapped service
Dial-A-Ride (Ann Arbor, Michigan)
Minnie Bus [Adaptation of Mini-bus] - Westport Transit Dis-
trict (Connecticut)

System Logo and Colors - The basic marketing objectives should be inte-
gral to logo and color design, whether it is based on the system's
catch-phrase identifier or a symbolic representation of services of-
fered. As an alternative to designing a separate logo for handicapped
service that is a component of a larger system, the international sym-
bol for wheelchair users may be used in conjunction with the systemwide
logo. The same approach is frequently used to identify general-purpose
transit vehicles also equipped for wheelchairs.

Figure 3.2 is an example of logo design and color scheme designation as
used to give to a printer. The logo indicates the board of directors'
concern to indicate the multi-county service area of the system. In
their case, this seemingly small concern was very important to portray,
since Northern Kentucky is usually perceived as the three urbanized
counties adjacent to Cincinnati. There was a high priority placed on
bringing together both the urban and rural counties of the eight-county
region.

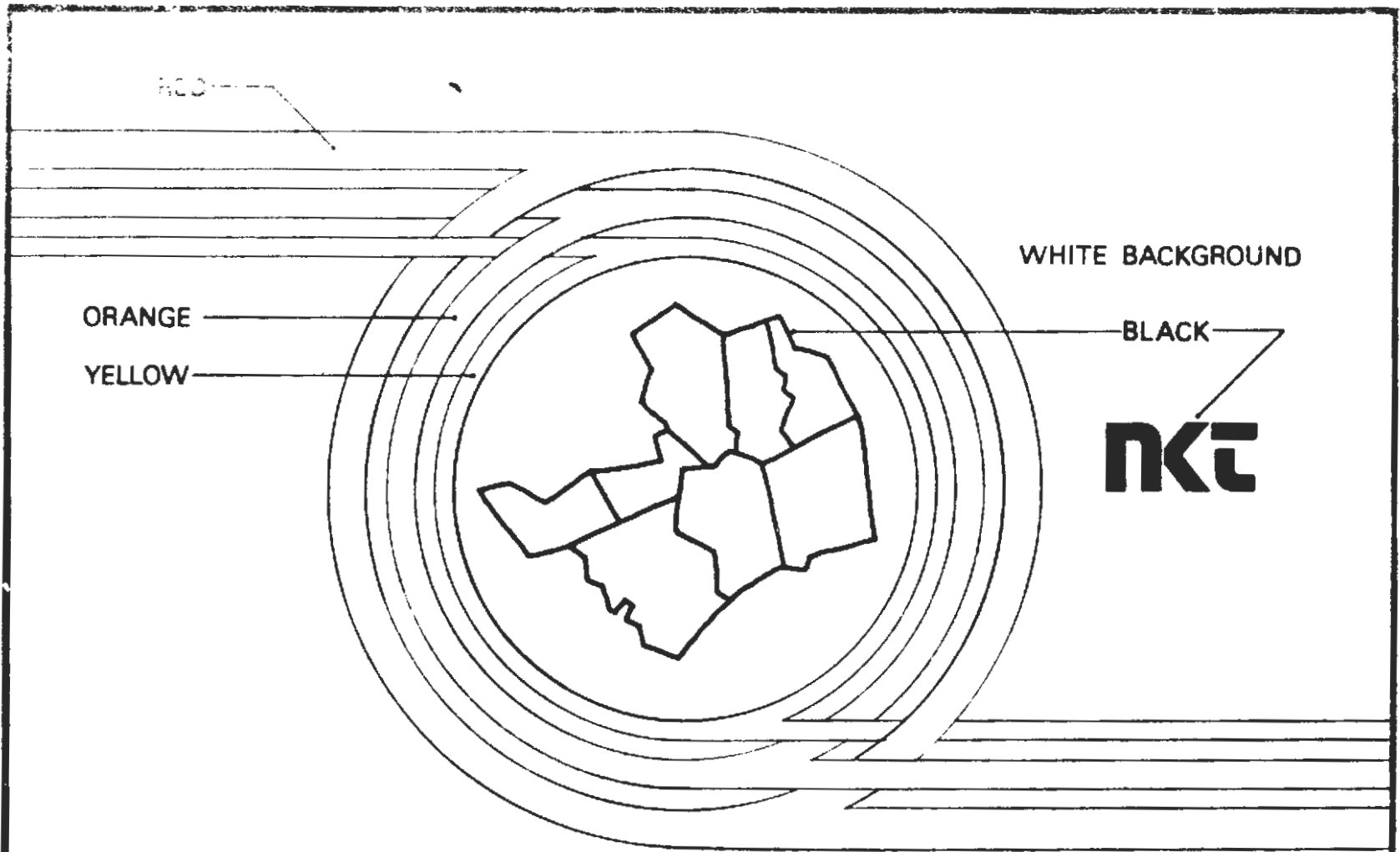


FIGURE 3.2

Northern Kentucky Transit, Inc.
Logo and Color Scheme

TASK A - PLAN ROUTES AND SERVICES COORDINATION

This process can range from a simple task, when initially conducted step by step in a rural area, to a complex analysis of transportation services throughout a major urban area. Even incremental coordination in urban areas and subsequent attempts to coordinate additional routes in rural areas may be appropriate for computer application, however.

Table 3.2 is an example of existing schedules which have been tabulated for analyzing coordination opportunities. It should be clear how the possibilities can rapidly grow complex, given the addition of many origin areas and destination zones. For ease in aggregating, the zones may be defined partially by zip codes in major urban areas. In small urban and rural areas, however, zip codes cover too large an area to be useful. Known unmet demand is also tabulated in case service expansion is possible.

Both regularly scheduled services (fixed or flexible routes) and more demand responsive services (operating on demand areawide within limited service hours to eligible destinations only) are assumed to exist in the example. Vehicles V_1 and V_2 are essentially on fixed routes and schedules (point-to-point operations in terms of zones served). V_3 represents the most flexible operation, since it serves all areas and zones except a_2 . It could be fixed, on the other hand, if it were operating to each area on a different day. Alternating daily operations are an alternative for areas with sparse demand.

Computer application could be written to analyze the following recommended objectives:

- 1) Maximize load factor (passenger miles/seat mile);
- 2) Minimize number of vehicles;
- 3) Minimize schedule changes (or wait time) greater than x hours (i.e., 2 to 3 hours may be a reasonable maximum for schedule changes);
- 4) Constrain passenger capacity and number of vehicles according to fleet available for coordination; and
- 5) Maximize service to unmet demand.

Distances to determine load factors may be obtained by sketching zones on a map and measuring the distance between the centroid of each pair. Travel and tour times will have to be estimated. Deadhead and linehaul times may be generalized by average speeds applied to the mileage of each link among the zones. On the other hand, the need for specificity may require that the time be clocked on each link during trial runs at

Table 3.2
OPERATIONAL SCHEDULES FOR COORDINATION ANALYSIS

Veh.	Cap.	Tour Starts (AM)	Riders by Origin Zone	Riders by Dest. Zone	Arrival Time (AM)	Departure Time (PM)	Tour Ends (PM)
V ₁	x	7:00	a ₁	b ₁	8:00	3:00	4:00
V ₂	x	7:15	a ₂	b ₁	8:00	3:00	3:45
V ₃	x	7:30	a ₁	b ₂	9:00	2:30	4:00
V _h	x	8:00	a ₁ a ₂	b ₁ b ₂	9-10:00	1-2:00	3:00
(Unmet Demand)			a ₃ a ₃	b ₂ b ₃	9:00 9:00	2:30 3:30	--

V_h = all other vehicles

SOURCE: Carter.Goble.Roberts, Inc.

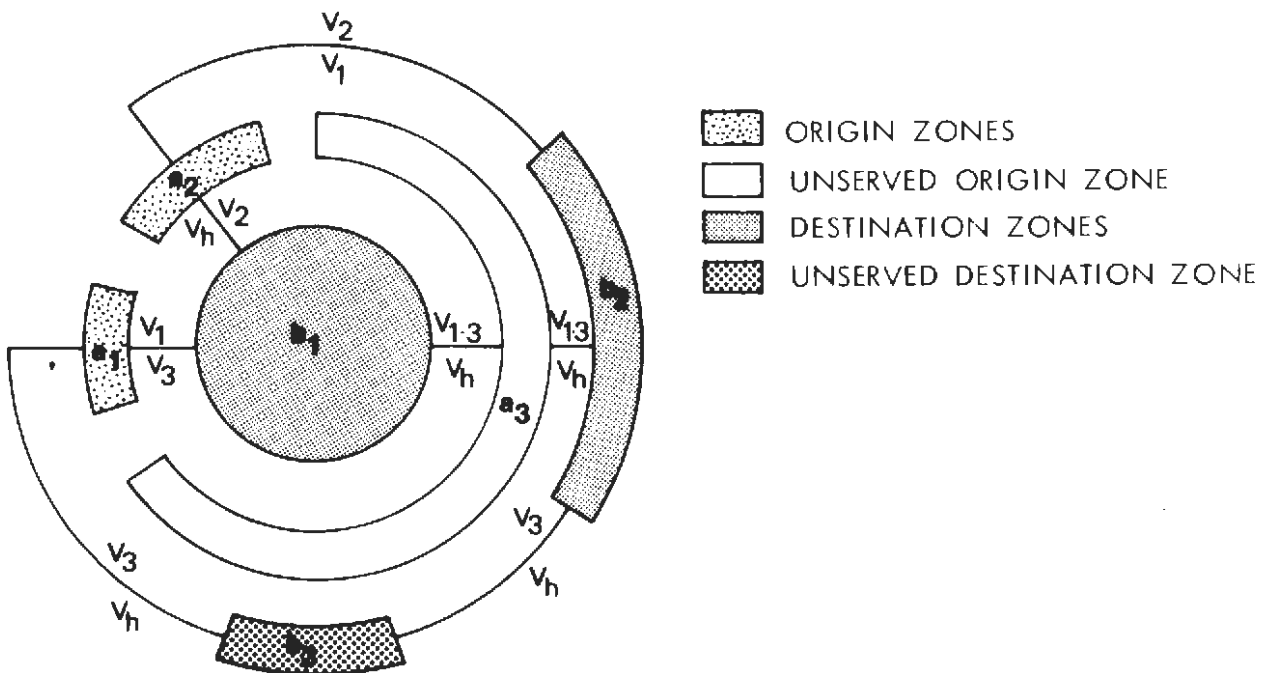


Figure 3.4 MANUAL ROUTING ANALYSIS

the appropriate time of a typical operating day. Tour times should be based on the relative size of each zone, the number of passengers picked up (discharged on return) in an origin zone, and/or the number of destinations served in a zone.

The above techniques are similar to trip-distribution and route-assignment models. They require the skills of an experienced transportation planner, engineer or analyst. This brief summary of the computer approach is intended, primarily, to specify the data needed to conduct the analysis.

TASK B - COMPARE RESOURCE AVAILABILITY

Equipment - Certain agencies will probably continue to resist efforts to coordinate, whether to protect turf, jobs, specialized service to clients, or self interests they perceive as being threatened. Without knowledge by planners of pressure on them to participate from external funding sources, they may be disregarded in scheduling coordination. If advance knowledge of funding policies permits, assumptions may be drawn about subsequent need for these hold-out agencies to coordinate at the end of current funding cycles or upon deterioration of vehicles in service. Whether or not such agencies can be expected to cooperate after that point in time, termination of their transportation services may be assumed to follow for operations planning purposes.

Vehicle Inventory - Comparison of available and needed fleet may not be as straightforward as it initially appears to be, depending on the timing of vehicle coordination and layout of service areas. For each agency operating vehicles, but not scheduled to coordinate services initially, all existing vehicles may not be usable at the time they begin to participate. The mileage of each vehicle should be obtained and the date when it will reach the end of its expected useful life should be projected (based on expected rate of use). Also, ownership and ability to transfer title or operational control should be investigated to avoid erroneous assumptions. It may prove more feasible to maintain the separate operations for the associated client group throughout the life of existing vehicles, than to plan to transfer title for a limited useful life expectancy thereafter.

Estimated fleet needs developed in accordance with Step 7 may be aggregated by region or county. It is likely, however, that service areas being planned now do not follow the same boundaries in all cases. (Urban service areas should coincide with demand and fleet estimates on purpose). An inconsistency would require a distribution of fleet needs according to service areas, which may be calculated from the disaggregate demand results. Check subtask "Fleet Needs by Sub-area" below - adjustments to disaggregate demand may need to precede this calculation.

Fleet Needs by Sub-area - Scheduling acquisition of additional vehicles may also require calculations that adjust demand estimates. They should be made while obtaining the disaggregate demand estimates used to distribute fleet needs.

- a. Refer to the needs assessment methodology to project baseline figures. Use the years that coincide with implementation objectives and the ridership priorities in effect.
- b. Refer to the demand estimation methodology to factor disaggregated demand results. They should be adjusted if service-level objectives have been refined since assumptions were made to originally define service

Levels. Now additional fleet needs can be phased to coincide with target dates of the implementation objectives, by completing the comparisons of subtask "Vehicle Inventory." Once that is accomplished, the acquisition schedule is apparent. Plan to purchase vehicles far enough in advance of target dates to allow for delivery and other preparations to initiate service. Some states, as Georgia for example, have taken as long as one year for delivery of 16(b)(2) vehicles.

Matching Funding Sources and Equipment - Matching equipment purchases to funding sources is a task that will require up-to-date knowledge of the changing federal and State capital assistance programs. Step 2 in Phase I discusses federal grant programs. Also, as of this writing, the 1978 amendments to UMTAs legislation were in the process of being implemented. The major change for coordination services is the new operating and capital subsidies for rural and small urban areas.

Local and private sources will be unique in each area. Transportation planners and managers working in each area should be familiar with local sources used in the past. In addition to federal grants, a variety of untapped local and private resources, such as the following, should be studied as potential contributors to specific development programs.

Potential Local Public Sources

- . Motor vehicle tax
- . Property tax
- . Gas sales tax
- . Transaction or sales and use tax
- . Highway fund allocation
- . Ad valorem tax
- . Business license tax
- . Income tax
- . Special transit district
- . General appropriations

Examples of Private Sources

- . United Way
- . Senior Citizens organizations
- . Easter Seals
- . Organizations for the disabled
- . Religious organizations
- . Business contributions

Although the usual response is that local funding sources are already over-taxed, it really is a matter of priorities. That is, if public transportation were a high enough priority or concern in comparison to other public services, there would be a greater tendency to use local financial resources. They should not be overlooked, especially if development goals include service to persons besides those who meet federal program eligibility requirements. Local financial commitment seems necessary to actually put the infrastructure in place for developing a coordinating channel for federally funded transportation programs.

Personnel and Supportive Services - Table 3.3 shows the positions that an areawide transportation entity would probably employ. A possible order of employment priority is used to demonstrate when each position might be created in a growing operation.

Direct employment would not be practical for lower priority positions until the operation becomes large enough to justify the cost of each, compared to the growing share or cost to use external assistance. For example, transit attendants or monitors should be employed once services to agencies with handicapped clients (mentally or physically) are integrated with other operations. Agency-provided attendants would otherwise become too numerous, or the distribution of their cost among riders benefiting from their services would grow too complex. Some programs may require handicapped riders to provide their own companions.

Funding assistance programs that can be expected to pay an employee's salary are numerous (see Phase I Technical Supplement). Except for the supervisor, positions funded directly by CETA may not be appropriate for the initial employee hired, since that person may not be closely supervised. For example, the first mechanic hired should have reliable prior experience, especially if this employee is to perform major mechanical repairs, not only routine inspections and service.

CETA includes a training program (Title I) and public service employment (PSE program - Title II). Trainees may receive on-the-job training for six months, to be followed by permanent, unsubsidized employment. Public agencies and non-profit organizations are eligible for fully subsidized positions filled from unemployment lists. Funding is also intended to help establish new positions for permanent employment, which the employer could fund once the positions are established. Inquiries should be made either to the State agency or the local or county government having responsibility for CETA in the area.

Other normal categorical grant sources are summarized in the Phase I Technical Supplement. Traditional UMTA, HEW and Community Services Administration funding sources should be given greater emphasis than the CETA program. CETA public service employment positions are tenuous in the sense that their availability is dependent upon an area's degree of unemployment and will fluctuate with changes in employment rates. CETA funded position will last anywhere from six months to two years at most.

Table 3.3 OPERATIONS-RELATED EMPLOYMENT NEEDS			
Employment Priority	Position	Description	Employed or External Source
1	Director (many roles in small operations)	Directs all operations; Reports to Board of Directors	Employed, unless operations part of centralized, multifunctional organization
2	Administrative Assistant (may include some book-keeping and dispatching)	Secretarial; clerical; Keeps minutes at Board meetings	(same as director)
3	Driver (may include attendant duties)	Operates vehicles; Records vehicle use and condition	Employed full and/or part-time, unless under contract with private operator
4	Bookkeeper	Financial and other administrative recordkeeping and filing	Employed or shared, as needed
5	Supervisor (often includes driving or dispatching)	Supervises drivers, attendants and maintenance personnel	Employed, unless under contract with private operator
6	Dispatcher (usually includes supervision)	Dispatches drivers and vehicles on call; receives requests for services; schedules non-fixed operations and maintenance	(same as supervisor)
7	Operations Manager	Manages vehicle operations and maintenance, operational reporting and personnel	(same as supervisor)
8	Mechanic	Equipment maintenance and recording (should be on staggered or swing shift)	Employed full and/or part-time with over 20 vehicles; TEC schools; contracted
9	Transit Attendant (may include some light maintenance)	Personalized service; assists drivers and handicapped passengers; records ridership data; conducts surveys; distributes information; maintains vehicle interior	Employed full and/or part-time; provided by contracting agencies

Table 3.3 (Continued)			
OPERATIONS-RELATED EMPLOYMENT NEEDS			
Employment Priority	Position	Description	Employed or External Source
10	Finance Officer	Accounting; financial planning; evaluation and reporting; grantsmanship	Employed; professional public accounting service; local COG
11	Transportation Planner (may include some public relations)	Operations and management planning; evaluation and reporting; staff assistance	Employed; local planning staff support; consultant service
12	Public Relations Director	Plans and directs public relations and marketing programs	Employed; consultant service
13	Maintenance	Cleans and maintains facilities and grounds	Employed; contracted; included in rent

SOURCE: Carter.Goble.Roberts, Inc., 1978.

TASK C - COORDINATE CLIENT SERVICES

The operational schedules from the coordination analysis (Task A) guide the work required now. The use of those results follow in this manner:

Application of Task A Results

- . Identify differing destination arrival and departure times
- . First priority - try to reschedule the early arrival and late departure demands
- . Second priority - try to reduce long wait times for late arrival and early departure demands

Reiterations of Task A Analysis

- . Rescheduling for demand when client services scheduling affects demand on other routes.
- . Rerouting, rescheduling, or additional scheduling of transportation to accommodate differing demand that cannot be coordinated by Task C.
- . Coordinating alternate destinations or enroute layovers arranged in cases of unavoidable long waits for client services or return transportation.

Care must be taken not to ignore the convenience of the rider. In general, schedule maximization for transportation, to the degree it can be accommodated by client services, will dictate the schedule riders must meet to obtain fully subsidized services. Great inconvenience, however, such as unreasonable times of the day for pickup, long waits, and poor transfer connections, could discourage riders if vehicle utilization is taken to be the only objective. The effect may be minimal on the most essential and free service programs, but the flexibility (elasticity) of rider demand will tend to increase with the degree of choice inherent in service, the percentage of cost borne by the user, and the degree of choice permitted in using subsidies for alternative means of transportation. Therefore, cross-checks of client and program flexibility for schedule adjustments may also need to be part of this analysis of client services scheduling.

TASK A - SPECIFICATIONS FOR ROLLING STOCK

Exhibit 3.3 may be helpful in forming an idea of the general vehicle size suitable for various types of service. Other considerations are important, however, which may lead the selection away from the ranges indicated. In general, a pad should be allowed for growing ridership, especially in the case of radically new services. The pad may be included in theoretical demand estimates for a future year at the end of the development program. However, if capacity decisions are based on computerized operating schedules from Step 10 or other strictly historical demand analysis, the pad should be added now. Other factors are also likely to influence the decision.

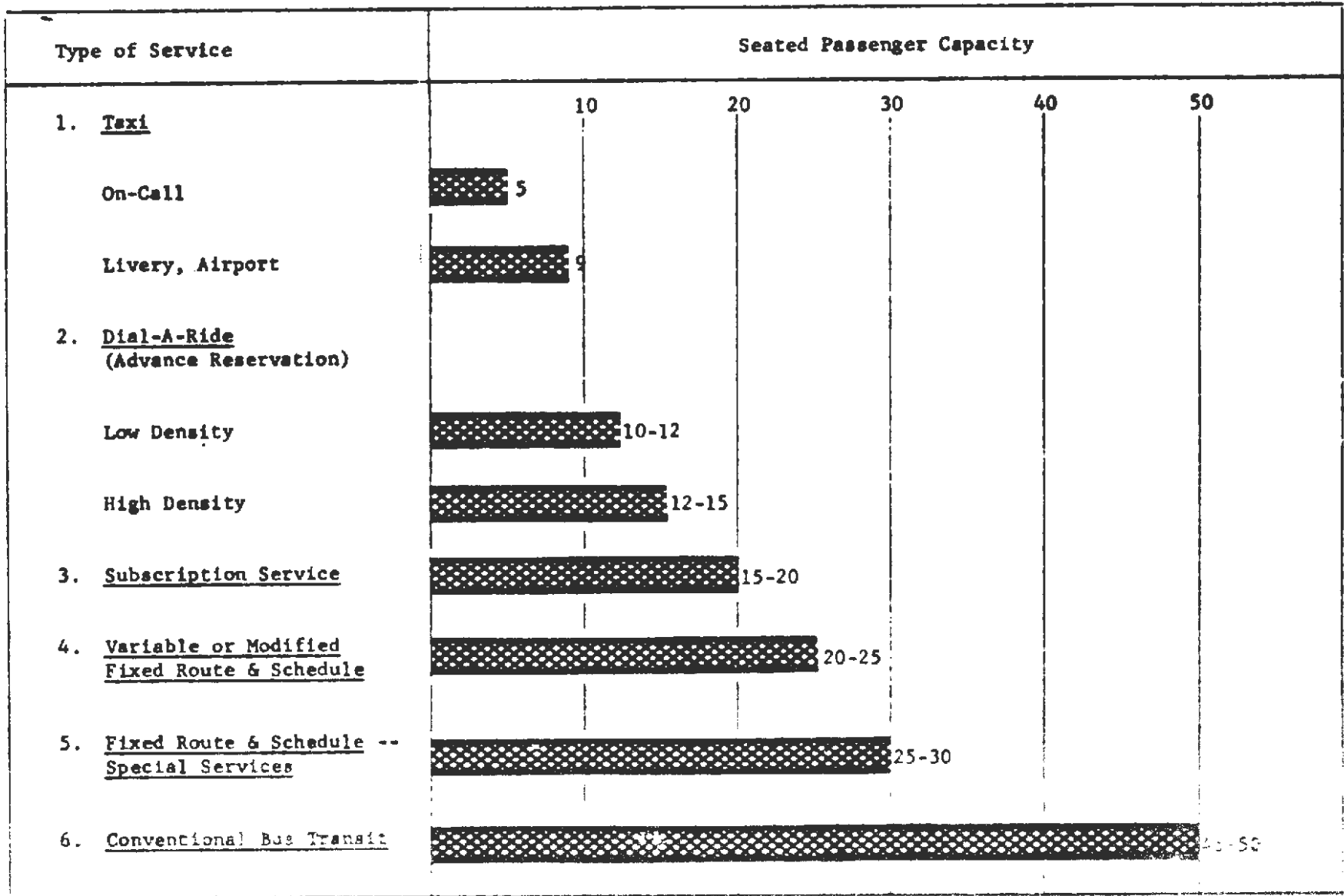
Operating economies and purchase price are ultimately important. It is important to realize, however, that there are tradeoffs involved in sacrificing needed capacity for lower purchase prices. The tradeoff is a higher cost to operate additional vehicles to meet the same demand potentially served by fewer vehicles of sufficient capacity. The final result could be to partially negate the advantages of coordination. The same net result occurs when vehicles of unnecessary excess capacity are selected. The initial cost is also likely to be higher in that case. Life-cycle costs for specific vehicles are discussed later. At this point, it is useful to understand the range of costs associated with vehicle size, as indicated in Table 3.4.

Seat-mile costs are important as a comparison to revenue potential. Capacity to generate revenue would increase with seating capacity, except for the fact that the more riders served per vehicle reduces the value of the service. In other words, by carrying a greater number of passengers, less personalized service in scheduling and routing can be accommodated with one vehicle. Therefore, the revenue producing ability per seat mile decreases in general along with the cost.

The most costly service per passenger is exclusive demand response, (taxi rides for one rider at a time). Heavily traveled fixed route corridors can usually be operated feasibly with large buses charging low fares. Most areawide public transportation services, including para-transit, fall somewhere in between. They may include a variety of service types, as a matter of fact, which seem to indicate a need for a variety of vehicle sizes. The economy sacrificed in purchasing and maintaining a diversified fleet, however, speaks for the need to standardize as much as possible. Fleets including vehicles of no more than two varieties (with equipment modifications) are flexible enough to meet all the needs for public transportation within most service regions.

While vehicle capacity is the initial guiding factor in specifying vehicle type, a great deal of detail goes into the writing of technical equipment specifications for special-order purchases. The changing nature of equipment alternatives makes it advisable for buyers to obtain examples of the latest available specifications written for similar equipment orders by other operators. Most public systems are

GENERALIZED RELATIONSHIP BETWEEN VEHICLE PASSENGER CAPACITY AND TYPE OF SERVICE



SOURCE: Administration on Aging, Planning Handbook
(June 1976), Chart IV-1.

Exhibit 3.3

Table 3.4 TYPICAL TOTAL COSTS PER SEAT MILE IN A RURAL ENVIRONMENT [Encompasses small urban areas]						
	Car	Van	Small Transit Bus	Medium Transit Bus	Large Transit Bus	School Bus
Capacity (Seats)	5	15	25	30	50	40*
Speed (MPH)	30	25	18	15	13	20
Fuel Consump.(MPG)	17	8	7	8	5	7
Fuel Type	Gas	Gas	Gas	Diesel	Diesel	Gas
Cost**	\$.59/g	.59/g	.59/g	.49/g	.49/g	.59/g
Fuel	.035	.074	.084	.061	.098	.084
Maintenance						
Rolling Stock						
Injury & Damages	.202	.289	.400	.480	.555	.351
General & Misc. Administration						
Wage	.100	.120	.167	.233	.308	.150
Total Operating Cost	.337	.483	.651	.774	.961	.585
Capital Cost	.060	.075	.130	.145	.160	.070
Total Cost/Veh. Mile	.397	.558	.781	.919	1.121	.655
Total Cost/Seat Mile	.079	.037	.031	.031	.022	.016

SOURCE: Governor's Task Force on Rural Transportation, Rural Transportation in Pennsylvania: Problems and Prospects, Volume II (May 31, 1974), p. 127; Updated for local application by Carter.Goble. Roberts, Inc. (September 1978).

*Adult Seating Configuration.

**Bulk purchase with a 4¢ tax.

willing to share this information. Consider the comprehensive operational and service descriptions below that go into writing itemized specifications:

Operational Characteristics ³

- . Durability for continuous service
- . Stop-and-go and boarding frequencies
- . High speeds over long hauls
- . Street surface dimensions and condition
- . Grade variations in terrain
- . Climate and altitude
- . Range between fueling
- . Maintenance capabilities of decentralized services
- . Environmental intrusion on residential area
- . Driving safety
- . Emergency procedures and egress

Service Characteristics ⁴

- . Dimensional barriers to access and comfort
- . Boarding assistance
- . Heating and cooling versus natural ventilation
- . Accommodations for standees and parcels
- . Visibility for passengers
- . Conditions for operation of special equipment
- . Structural security and solid footing
- . Interior lighting and contrast
- . Quality of ride
- . Fare collection and information recording

³Administration on Aging (U.S.), Planning Handbook: Transportation Services for the Elderly, by Institute of Public Administration (reprinted June 1976); RRC International, Inc. for Stephen Carter & Associates, "Vehicle Requirements" (1977).

⁴Ibid.

Technical Specification Items ⁵

General vehicle dimensions

Mechanical:

- . Power plant, transmission and power compartment
- . Axles and suspension
- . Cooling system and lubrication
- . Fuel and exhaust systems
- . Electrical system
- . Instrument panel and controls
- . Steering and braking mechanisms

Body and Accessories:

- . Body construction and interior finishings
- . Wheelhousing and stepwell
- . Bumper and tow eyes
- . Floor and floor covering
- . Doors, windows, windshield and sun visor
- . Windshield wipers and washer
- . Heating, defrosting, air conditioning and ventilation
- . Interior and exterior lighting
- . Seats, stanchions and grab rails
- . Farebox and information recording equipment
- . Passenger signal system (pull cord)
- . Destination sign
- . Mirrors and emergency equipment
- . Wheels and tires
- . Radio communications equipment

Special equipment for wheelchairs:

- . Installation and operation of lift or ramp
- . Maintenance and reliability of lift
- . Restraint type and positioning
- . Additional passenger restraints
- . Interior seating (permanent and stowable)

Miscellaneous specifications:

- . Exterior finish and colors
- . Extra components and parts included
- . Special training for mechanic(s)
- . Workmanship and warranty
- . Compliance with motor vehicle standards
- . Rights of purchaser to inspect
- . Replacement parts availability
- . Service and operator manuals, parts catalog, and their changes

⁵Gastonia Planning Commission, N.C., "Technical Specifications for [four types of small to mid-sized] City and Handicapped-Equipped Buses" (February 1978); RRC International, Inc. for West Virginia TRIP and others, "Vehicle Specifications" and "Wheelchair Bus Specifications."

TASK B - REQUEST AND COMPARE BIDS

Bid Procedures - Inexperienced buyers of equipment for transportation services would do well to use a channel of supply that affords technical assistance. Help can be expected to accompany requirements to write detailed specifications. By following the established procedures in effect, eligible buyers may request bids on special-order equipment through purchasing channels of the local, State, or federal government. Standard purchase equipment on which annual bids have already been submitted to large purchasers is likely to be available through such channels at lower cost than it is to first-time buyers building a fleet in small increments. Local dealers offer the same advantages of buying standard equipment in bulk for buyers ineligible for public assistance, although their profit margin adds to the final cost, generally.

Recipients of UMTA grants generally are eligible to use the U.S. General Services Administration (GSA) as a supply source. Individuals and contractors of a grantee are ineligible. UMTA also will allow funds for contracts with private sources for leasing project equipment. UMTA's prior concurrence is required.⁶ Leasing, although more expensive in terms of operating cost, defers the capital investment. A distinct difference, compared to public ownership, is the built-in cost of the leasor's debt service, which for many categorical programs is not chargeable as part of reimbursements for service under federally supported contracts.

Vehicle Costs - Uniform comparison of capital cost should be made on the basis of life-cycle operating costs. They may be calculated by vehicle miles, seat miles, or in terms of time in service. Use the same units used for other operating costs which vary according to vehicles. The best available published source of specification and price comparisons of models on the market is shown in Exhibit 3.4. An updated version is forthcoming from IDOT about December 1978.

⁶U.S. Urban Mass Transportation Administration, External Operating Manual, Section III-C.

BUS SPECIFICATION & PRICE SUMMARY

NOVEMBER 1978



Public Transit Division
Joanne Short, Director
(515) 281-4265

CAUTION: DATA IS SUMMARIZED. FOR PRECISE PLANNING DATA CONTACT IOWA DEPARTMENT OF TRANSPORTATION

Small	Max Pass Cap	Overall Length (feet)	Turning Radius (feet)	Empty Weight (lbs.)	1st Step Ht. from street (inches)	Floor Ht. from street (inches)	Head room (inches)	Engine			Est. Oper. Life (mi.) +20's	Current Base Price	Extn. (Cost)			Est. Delivery Time (Days)
								Mfr-fuel	HP	MPG			Air Cond.	Wheel Chair Lifts	Deluxe Seats Carpet	
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	9	17.5	25	6,260	11	24	63	General Motors (GAS)	165	9	150,000	\$11,643	\$1,500	\$2,274	Carpet n/a S \$540	90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	9	17.5	25	6,313	11	24	63	General Motors (GAS)	165	9	150,000	\$13,427	\$1,500	\$2,274	Carpet n/a S \$540	90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	10-17	17.5	25	6,650	11.75	24	75	General Motors (GAS)	175	8	150,000	\$17,808	\$2,385	\$2,274	Carpet n/a S \$540	90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000				6,863	11.75	24	75	General Motors (GAS)	175	8	150,000	\$21,947	Incl.	\$2,274	Incl.	90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000		17.2	17.8	7,500	10	27.25	76	Ford GMC Chev. & Dodge (GAS)	226	12	175,000	\$16,700	\$2,735	\$1,250		120 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	16	17.1	26.2	6,900	14.5	26.5	74	Chev. & Dodge (GAS)	280	12	140,000	\$13,700	\$2,300	\$2,750	Incl.	90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	6	8	14	3,600	10.75	26	63	Dodge van (GAS)	360	11-13	100,000	\$10,230	\$450	\$1,875	Std	60-90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	12	10	29.1	6,400	10	n/a	74	Dodge (GAS)	170	10-12	125,000	\$13,530	\$560	n/a	Std	60-90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	12-14	10	26.1	6,900	10	28.5	74	Dodge (GAS)	170	10-12	125,000	\$15,530	\$560	Incl.	S Std	60-90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	23	19.5	26.8	7,000	11.5	28.5	74	General Motors of Canada (GAS)	350	8-12	150,000	\$16,995	\$800	\$2,800	\$800	60-90 days
1978 Dodge 3000 1978 Dodge 3000 1978 Dodge 3000	18 22 26	18.9 21.2 23.6	38.6 same same	7,400 same same	11-12 same same	30-31 same same	73 same same	Gen. Motors (GAS) same same	165 same same	10-11 same same	200,000 same same	\$13,950 \$15,400 \$16,100	\$3,100 same same	\$4,150 same same	S \$423 CA \$530 S \$528	90-120 days same same

1 - 15 - Gasoline - 0 - Diesel - Seats - C - Carpet - N/A - Not Available at this time

U.S. DOT POLICIES ON COACH DESIGN

New full-sized transit buses to be purchased with UMTA financial assistance and advertised for bid after September 30, 1979 must:

- 1) Have a wheelchair ramp at the front door.
- 2) Have front step risers which do not exceed eight inches in height.
- 3) Have effective floor height of 22 inches or less after use of a "kneeling feature" (air bag suspension) on the bus.

EXHIBIT 3.4

Mid	Max Pass Cap	Overall Length (feet)	Turning Radius (feet)	Empty Weight (lbs.)	1st Step Ht. from street (inches)	Floor Ht. from street (inches)	Head room (inches)	Engine			Est. Oper Life (mi) -20%	Current Base Price	Extra (Cost)			Est. Delivery Time (Days)	
								Min-fuel	HP	MPG			Air Cond.	Wheel Chair Lfts	Deluxe Seats Carpet		
American Inc 410 West Pike Jackson Center Ohio 513-596-6111 Argosy CB 24 Gasoline	25	24	24.10	8,370	14	28	79	One GAS		6-8	100,000	\$31,000	\$8,000	\$10,000	CA ONLY \$500	120 days	
Argosy CB 24 Diesel	25	24	29.10	80,000	14	29	79	Detrol 430 DIESEL Aniston Trans. MT 84J		10-11	100,000	\$60,000	\$8,000	\$10,000	CA ONLY \$500	210 days	
Argosy CB 26 Gasoline	29	27.34	28.3	9,480	12	28	79	GAS		6-8	100,000	\$33,000	\$8,000	\$10,000	CA ONLY \$500 CA ONLY \$500	120 days	
Argosy CB 26 Diesel	29	27.34	33	82,000	12	28	79.75	Detrol DIESEL		10-11	100,000	\$70,000 \$60,000	\$8,000	\$10,000	CA ONLY \$500 CA ONLY \$500	210 days	
Arrow Coach and Equip Co Ontario Bus Industries 312-298-6660 Del Palms Illinois Drops	37	37.4	32	18,500	13	33.5	77.5	Detrol DIESEL		19*	8	530,000	\$64,500	\$5,500	\$8,000	\$4,000	180 days
Blue Bird Body Company 912-325-2021 North Valley, Georgia City Bus	25	29.6	28.3	8,400	12.5	30	77	Detrol Diesel		19*	6.6	400,000	\$30,000	\$10	\$4,000	\$3,300	180 days
Chance Motor Equip 214-427-8877 Dallas Texas Microbus #150	25	29.4	28.6	10,200	14	32	75	DIESEL		50	8	500,000	\$74,000	N/A	\$7,000	\$10	100 days
EVA On-Line Electronics Inc 216-324-9992 Lakeland Ohio Electronics	29	27.4	28	75,000	13	22	77	EVA On-Line Electronics Batteries		N/A	12 years - 120,000	\$9,325	Other \$2,000	\$15,000 Option	\$4,000 Option	6 months	
Hiway Industries LTD 304-373-1563 Sawabour Saskatchewan Canada CC37	44	37	34	27,000	15	28.1	77	General Motors Onstar 24 GAS		22	7.7	70,000	\$1,025	\$600	\$2,800	\$900	84-100 days
Hiway Industries LTD 304-373-1563 Sawabour Saskatchewan Canada CC37	44	37	34	27,000	15	28.1	77	General Motors Onstar 24 GAS		22	7.7	70,000	\$1,025	\$600	\$2,800	\$900	84-100 days
Highway Coach 402-781-5337 Markham Ontario 212 Sebra	35	31.7	31.5	20,000	14	32	78	Detrol 430 DIESEL		27	8	\$1,000	\$1,000	\$8,800	\$3,000	100 days	
Maxim Coach 714-969-7648 Orange California Drops	35	31.7	31.5	20,000	14	32	78	DETROL 430 DIESEL		27	8	\$1,000	\$1,000	\$8,800	\$3,000	90-300 days after chassis delivery	
Maxim Coach 714-969-7648 Orange California Drops	35	31.7	31.5	20,000	14	32	78	DETROL 430 DIESEL		27	8	\$1,000	\$1,000	\$8,800	\$3,000	60 days after chassis delivery	
Maxim Coach 714-969-7648 Orange California Drops	35	31.7	31.5	20,000	14	32	78	DETROL 430 DIESEL		27	8	\$1,000	\$1,000	\$8,800	\$3,000	60 days after chassis delivery	
Maxim Coach 714-969-7648 Orange California Drops	35	31.7	31.5	20,000	14	32	78	DETROL 430 DIESEL		27	8	\$1,000	\$1,000	\$8,800	\$3,000	60 days after chassis delivery	
Maxim Coach 714-969-7648 Orange California Drops	35	31.7	31.5	20,000	14	32	78	DETROL 430 DIESEL		27	8	\$1,000	\$1,000	\$8,800	\$3,000	60 days after chassis delivery	

Large	Max Pass Cap	Overall Length (feet)	Turning Radius (feet)	Empty Weight (lbs.)	1st Step Ht. from street (inches)	Floor Ht. from street (inches)	Head room (inches)	Engine			Est. Oper Life (mi) -20%	Current Base Price	Extra (Cost)			Est. Delivery Time (Days)	
								Min-fuel	HP	MPG			Air Cond.	Wheel Chair Lfts	Deluxe Seats Carpet		
AM General Corp 1-800-422-4900 Warren Michigan Model 9635	42	41.9	37.1	23,000	14	33.4	87.8	Detrol DIESEL		27	7	500,000	\$1,000	\$5,000	\$9,000	\$6,300	240 days
Model 10235	46	44.8	44.3	27,000	13.4	33.5	81.8	DIESEL		7	6	500,000	\$11,000	\$1,000	\$9,000	\$6,000	240 days
Model 9640	50	49.4	47.8	24,500	14.6	33.6	81.6	DIESEL		7	5	450,000	\$1,000	\$8,500	\$9,000	\$7,500	240 days
Eagle International Inc 572-841-2371 4000 West Texas 36 EAGLE	33	41	41	24,800	13.5	45	75-80%	Detrol DIESEL		280	6-7	20 years - 1,000,000	\$8,000	N/A	\$10,000	\$10	90 days
General Motors Corp Durand Michigan 313-851-5000 77H203	39	37	37	25,100	17.4	32	84.20	Detrol DIESEL		27	4.5	1,000,000	\$46,000	Std	\$9,000	\$800	240 days
77H623	39	37	37	25,100	17.4	32	84.20	Detrol DIESEL		27	4.5	1,000,000	\$56,000	Std	\$9,000	\$1,000	240 days
77H203	39	37	37	25,100	17.4	32	80.20	Detrol DIESEL		27	4.5	1,000,000	\$94,000	Std	\$9,000	\$1,000	240 days
77H633	39	37	37	25,100	17.4	32	80.20	Detrol DIESEL		27	4.5	1,000,000	\$94,000	Std	\$9,000	\$1,000	240 days
79H203	41	40	39	28,100	17.4	32	80.20	Detrol DIESEL		225	4.5	1,000,000	\$97,000	Std	\$9,000	\$1,000	240 days
79H623	41	40	39	28,100	17.4	32	80.20	Detrol DIESEL		225	4.5	1,000,000	\$97,000	Std	\$9,000	\$1,000	240 days
78A291	41	40	39	28,100	17.4	32	80.20	Detrol DIESEL		225	4.5	1,000,000	\$97,000	Std	\$9,000	\$1,000	240 days
78A633	41	40	39	28,100	17.4	32	80.20	Detrol DIESEL		225	4.5	1,000,000	\$97,000	Std	\$9,000	\$1,000	240 days
Orionman Flexible Company 970 Reading Drive 419-994-4441 Delaware Ohio 43005 810 Advance Design Transit Bus	40-48	35-40	39-4	23,000 25,200	12 non- kneering 13	29-26	78	Detrol DIESEL		281-262	8	12 years	\$90,000 \$96,000	Std	\$10,000	\$10	400 days after contract
Orionman Bus Sales 2023 South Archer Chicago Illinois 60616 312-842-0800 MC40 Intercity Bus	45	35	45	22,400	15.5	44	75.5	Detrol DIESEL		285	6	500,000	\$79,000	Std	\$18,000	See*	120 days
MC8 Intercity Bus	63	40	40.7	27,000	15.5	51.4	77	Detrol DIESEL		285	6	500,000	\$93,000	Std	\$18,000	See*	120 days
Haykaye Superior Bus Sales Inc 712-469-2688 Mason Iowa Pioneer	44	29.9	38.77	9,160	12	32	78	One GAS incl - GAS		7-9	8	200,000	\$14,000	\$4,500	\$3,300	GAS \$960	60 days after chassis delivery

1 G - Gasoline D - Diesel S - Seats C - Carpet N/A - Not Available at this time

*As specified by customer

EXHIBIT 3.4
(Continued)

NOTES TO EXHIBIT 3.4

Uniform Annual Capital Recovery Costs on Investment

Methodology:

Cost Cycle Calculation Period = 12 yrs.

Interest Rate = 10%

Formula: Capital Recovery & Single Payment Compound Amount

Purchase Price: Base Price & All Options

No effort was made to "cost" aesthetics, delivery schedules, manufacturers service and customer relations, maintenance downtime, application purposes, etc.

All costs and estimated operating lives are supplied by manufacturers.

Maintenance costs were not annualized.

Assumptions:

Vehicle Costs Increase at 10% Per Year

Vehicle Mileage = 50,000 miles/year

Vehicle will be replaced at end of estimated life or 12 years, whichever occurs first.

Salvage Value = 0

NOTE:

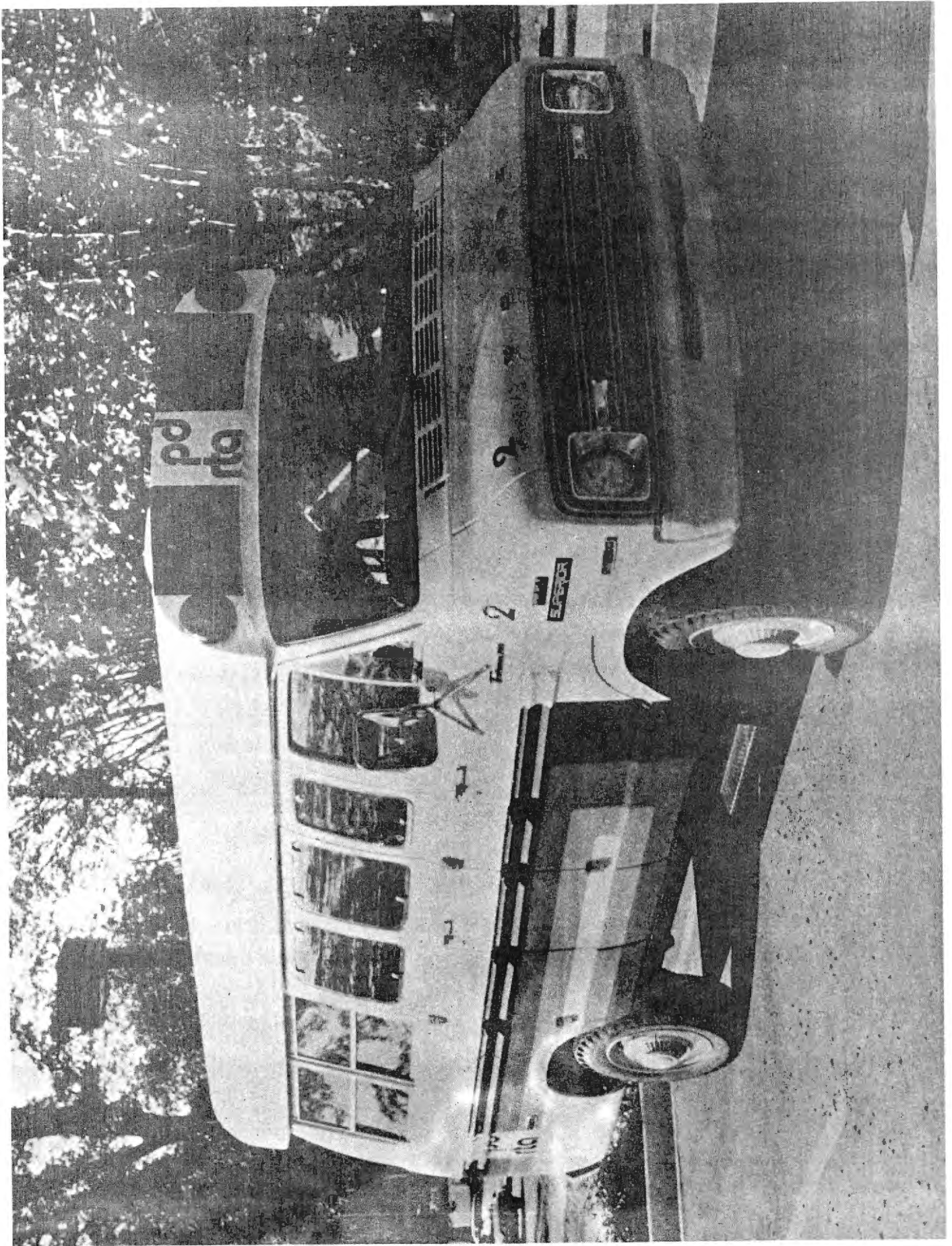
The information is for illustrative purposes only. Each property should perform its own calculations based on its individual circumstances. Maintenance costs should also be considered.

TASK C - VEHICLE GRAPHICS

A majority of the work to support this task was proposed as the conclusion to Step 9. If the color scheme design was delayed then, it should be completed now if painting is required.

The Pee Dee RTA logo is a silk screen decal of black lettering on white background, which matches the base paint of the vehicle color scheme. The logo and color design are pictured in Figure 3.5 as they appear on a wheelchair-lift van purchased new by the Authority. The stripes are yellow, orange, and red.

The Northern Kentucky Transit design in Figure 3.6 was done as a two-foot by three-foot decal to be used on vehicles that were taken over from previous operators. The use of the decal enabled the corporation to identify their vehicles without incurring the expense of repainting the vehicles during the early months of the corporation's start-up.



PEE DEE VAN

FIGURE 3.5

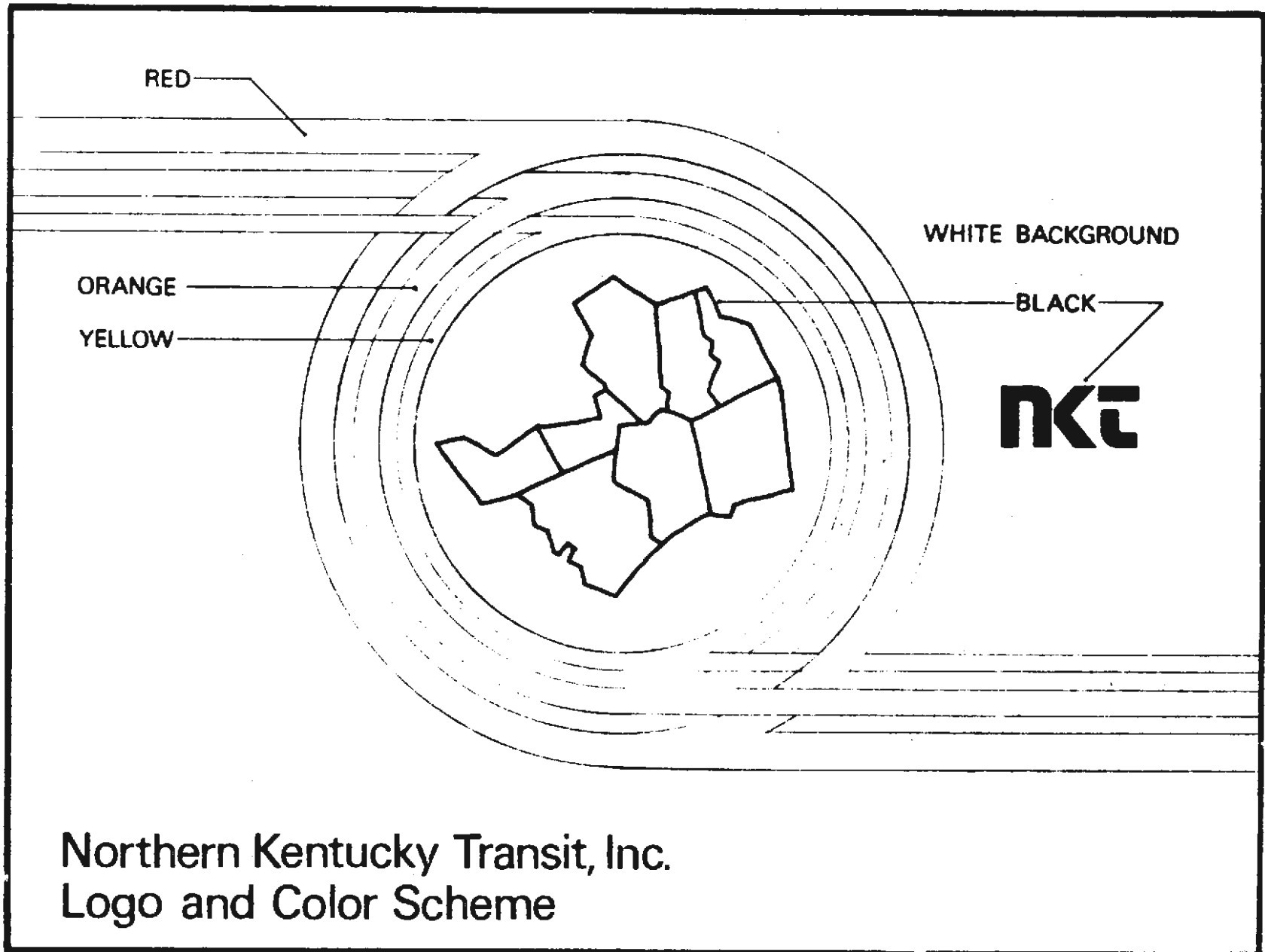


FIGURE 3.6

TASK A - UNIFORM CHART OF ACCOUNTS

Expenses/Cash Disbursement and Revenue/Cash Receipts Recording - For the general form of the coding scheme (shown below), there are 54 different levels of detail that could potentially be adopted. Exhibit 3.5 shows the full range of possible combinations. All providers should include at least three control code areas - Program, Vehicle, and Expenditure - with the Functional Area Control Code optional for expenditure recording. Based on this recommendation, the comments in Exhibit 3.5 indicate the acceptable control code combinations - only 11 out of the 54 possible.

Once the control codes are selected, the level of detail to be captured for each must be selected. Exhibit 3.6 presents the recommended chart of accounts with the various levels (aggregated or detailed) delineated. General definitions that identify each category of expenditure or receipt for each control code should be used. Allocation categories or combined programs are those that provide for a cost sharing. The following examples illustrate the use of the coding scheme and some of the definitions shown, according to the general form:

<u>Program/Fund Control Code</u>	<u>Functional Area Control Code</u>	<u>Facility/Vehicle Control Code</u>	<u>Expenditure [or Revenue] Control Code</u>	<u>Dollar Amount</u>
----------------------------------	-------------------------------------	--------------------------------------	--	----------------------

Example 1 - Fuel costs to Van #2 of \$13.50 in support of HEW Title XX, to include functional control code; all codes at detailed level.

32 HEW Title XX	11 Operation of vehicles	202 Van #2	031 Fuel	\$13.50
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Example 2 - Central office administration salaries of \$3,500 charged as a part of indirect cost plan, to include functional control code; all codes at detailed level.

61 Allocable Overhead	31 General Manage- ment and Admin- istration	010 Administration Building	001 Adminis- trative salaries	\$3,500
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POTENTIAL COMBINATIONS OF CONTROL CODES FOR
RECORDING EXPENSES/CASH DISBURSEMENTS

	<u>Program/Fund</u>	<u>Functional Area</u>	<u>Facility/Vehicle</u>	<u>Expenditure</u>	<u>Comments</u>
1	None	None	None	None	No specification
2	"	"	"	Aggregated	Not recommended
3	"	"	"	Detailed	"
4	"	"	Aggregated	None	"
5	"	"	"	Aggregated	"
6	"	"	"	Detailed	"
7	"	Aggregated	None	None	"
8	"	"	"	Aggregated	"
9	"	"	"	Detailed	"
10	"	"	Aggregated	None	"
11	"	"	"	Aggregated	"
12	"	"	"	Detailed	"
13	"	Detailed	None	None	"
14	"	"	"	Aggregated	"
15	"	"	"	Detailed	"
16	"	"	Aggregated	None	"
17	"	"	"	Aggregated	"
18	"	"	"	Detailed	"
19	Included	None	None	None	"
20	"	"	"	Aggregated	"
21	"	"	"	Detailed	"
22	"	"	Aggregated	None	"
23	"	"	"	Aggregated	Minimum detail
24	"	"	"	Detailed	Accept. Comb.
25	"	Aggregated	None	None	Not recommended
26	"	"	"	Aggregated	"
27	"	"	"	Detailed	"
28	Included	Aggregated	Aggregated	None	"
29	"	"	"	Aggregated	Fully aggregated
30	"	"	"	Detailed	Accept. Comb.
31	"	Detailed	None	None	Not recommended
32	"	"	"	Aggregated	"
33	"	"	"	Detailed	"
34	"	"	Aggregated	None	"
35	"	"	"	Aggregated	Accept. Comb.
36	"	"	"	Detailed	"
37	None	None	Detailed	None	Not recommended
38	"	"	"	Aggregated	"
39	"	"	"	Detailed	"
40	"	Aggregated	"	None	"
41	"	"	"	Aggregated	"
42	"	"	"	Detailed	"
43	"	Detailed	"	None	"
44	"	"	"	Aggregated	"
45	"	"	"	Detailed	"
46	Included	None	"	None	"
47	"	"	"	Aggregated	Accept. Comb.
48	"	"	"	Detailed	"
49	"	Aggregated	"	None	Not recommended
50	"	"	"	Aggregated	Accept. comb.
51	"	"	"	Detailed	"
52	"	Detailed	"	None	Not recommended
53	"	"	"	Aggregated	"
54	"	"	"	Detailed	Fully detailed

CHART OF ACCOUNTS

A. Program/Fund Control Code. (Only one level of detail)

00 Regular Fare (Subscription)	40 Charter Service and Other Use
01 Fixed Route	41 Group Charter
02 Demand Response	42 Freight
10 Special Assistance	50 Non Transportation Functions
11 Handicapped	
12 Elderly/Senior Citizens	
13 Student (including pre-school)	60 Allocations and Overhead
14 Other Special Assistance	61 Allocatable Overhead
	62 Combination Program 1
	63 Combination Program 2
20 Demonstration	64 Combination Program 3
21 UMTA	
22 Other	
	99 Non-Allocated Overhead
30 Special Program	
31 HEW - Title XIX (including match)	
32 HEW - Title XX	
33 DOL - CETA Training	
34 DOL - CETA PSE	
35 School	

B. Functional Area Control Codes (Aggregated form underlined, followed by detailed Accounts)

10 <u>Operations</u>	30 <u>Management and Administration</u>
11 Operation of Vehicles	31 General Management and Admin.
12 Scheduling of Veh. and Fleet Mgt.	32 Finance and Accounting
13 Dispatching	33 Marketing
	34 Planning/Research/Evaluation
	35 Customer Service
20 <u>Vehicle Maintenance</u>	36 Legal Service
21 Regular Vehicle Maintenance	37 Data Processing
22 Unscheduled Vehicle Maintenance	
23 Accident Repair of Vehicles	
24 Vandalism Repair of Vehicles	
25 Fleet Building	
26 Right-of-Way and Other Structures	
27 Other Equipment	

EXHIBIT 3.6

C. Facility/Vehicle Control Codes (Aggregated form underlined, followed by detailed Accounts)

000	<u>General Purpose Buildings</u>	400	<u>Buses</u>
010	Administration Building	401	Bus 1
020	Administration Annex	402	Bus 2
		403	Bus 3
100	<u>Fleet Buildings and Structures</u>		
110	Fleet Building	500	<u>Cars</u>
120	Other Fleet Facilities	501	Car 1
		502	Car 2
		503	Car 3
200	<u>Vans</u>		
201	Van 1		
202	Van 2		
203	Van 3		
		900	<u>General Purpose Vehicles</u>
		901	Maintenance Vehicle
		902	Staff Vehicle

D. Expenditure Control Codes (Aggregated form underlined, followed by detailed Accounts)

000	<u>Salaries and Wages</u>	020	<u>Contractual Services</u>
001	Administrative Salaries	021	Management Service Fees
002	Hourly Wages - Full Time	022	Advertising
003	Hourly Wages - Part Time	023	Prof. and Tech. Services (Legal, Accounting, etc.)
004	Participant Wages	024	Temporary Help/Manpower Service
010	<u>Fringe Benefits</u>	025	Maintenance Service
011	FICA or Railroad Retirement	026	Custodial Service
012	Pension Plan	027	Security Service
013	Medical/Dental Insurance Plans	028	Purchases of Transp. Services
014	Life Insurance		
015	Disability Insurance		
016	Unemployment Compensation Insurance	030	<u>Materials and Supplies</u>
017	Workmen's Compensation Insurance	031	Fuel
018	Uniform and Work Clothing Allowances	032	Lubricants
019	Distribution of Fringe Benefits (Allocations)	033	Tires and Tubes
		034	Vehicle Accessories
		035	Office Supplies
		036	Maintenance Supplies
		037	Data Processing Supplies
		038	Other Supplies

EXHIBIT 3.6 (Continued)

040	<u>Utilities</u>	090	<u>Depreciation and Amortization</u>
041	Gas	091	Deprec. - Vehicles
042	Electricity	092	Deprec. - Facilities and Structures
043	Telephone - Regular	093	Deprec. - Data Processing
044	Telephone - Long Distance	094	Deprec. - Office Equip.
045	Water/Sewer	095	Deprec. - Other
046	Municipal Trash Collection	096	Amort. of Automobiles
047	Postage		
048	Telegraph or Communications		
049	Other Utilities		
		100	<u>Miscellaneous Expense</u>
050	<u>Casualty and Liability Costs</u>	101	Dues and Subscriptions
051	Premiums for Physical Damage Insurance	102	Travel and Meetings
052	Premiums for Liability and Property Insurance	103	Tolls and Parking
053	Payments for Damage Settlements	104	Entertainment
054	Provision for Uninsured Damage Settlements	105	Donations
055	Premiums for Other Corporate Insurance	106	Fines and Penalties
056	Other Corporate Losses	107	Bad Debt Expenses
		108	Advertising/Promotion
		109	Other
060	<u>Leases and Rentals</u>	110	<u>Non Capitalized Vehicle/Equipment/Facility Purchases</u>
061	Passenger Stations and Transit Way Structures	111	Vehicle
062	Passenger Parking Lot Rentals	112	Facilities
063	Passenger Vehicle Rentals	113	Equipment
064	Service Vehicle Rentals		
065	Facility Rentals	180	<u>Expense Transfers/Adjustments/Capitalization</u>
066	Data Processing Equipment Rentals	181	Pay Back of Grant
067	Office Equipment Rentals	182	Pay Back of Other Revenues and Receipts
068	Other Leases and Rentals	183	Deletion for Error Adjustment
		184	Cap. of Non Operating Costs
070	<u>Taxes, Fees and Assessments</u>	185	Cap. of Vehicles
071	Federal Income Tax	186	Cap. of Facilities
072	State Income Tax	187	Cap. of Equipment
073	Property Tax	188	Sinking Fund Project
074	Vehicle Licensing and Registration Fees	189	Debt Repayment
075	Fuel and Lubricant Taxes		
076	Sales Tax	190	<u>Dividends and Rebates</u>
077	Other Taxes	191	Dividend Payment
		192	Rebate Payment
080	<u>Interest Expense</u>		
081	Interest on Long-Term Debt		
082	Interest on Short-Term Debt		

EXHIBIT 3.6 (Continued)

E. Revenue Control Codes (Aggregated form underlined, followed by detailed Accounts)

200	<u>Passenger Fares for Transit Service</u>	250	<u>Miscellaneous Income</u>
201	Coin Box	251	Sale of Vehicles
202	Ticket Sales	252	Sale of Facilities
203	Invoiced	253	Sale of Equipment
204	Special Transit Service	254	Interest and Investment Income
205	Contract Fares		
210	<u>Non Transportation Revenues</u>	260	<u>Tax Revenues</u>
211	Maintenance Service Fees		
212	Rental of Vehicles		
213	Rental of Other Assets		
214	Parking Lot Revenues	280	<u>Revenue Transfers/Adjustments</u>
215	Concessions	281	Recovery of Damage Settlements
216	Other Operational Revenues	282	Recovery of Insurance Settlements
220	<u>Government Contract Reimbursement</u>	283	Credits of Other Overpayments
221	Federal	284	Discounts on Purchases
222	State	285	Deletion for Error Adjustment
223	County	286	Other Adjustments
224	City	287	Allocation Reimbursement
225	Foundation/Other	288	Capitalization and Instatory Gains
230	<u>Grants and Donations</u>	289	Transfers from Sinking Fund
231	Federal Grants	290	<u>Capitalization and Other Financing Receipts</u>
232	State Grants	291	Sale of Stock
233	County Grants	292	Membership Fees
234	City Grants	293	Flotation Bonds
235	Foundation Donations	294	Loan Proceeds
236	Other Donations		
240	<u>Fare Supplements and Subsidies</u>		
241	Federal		
242	State		
243	County		
244	City		
245	Other		

EXHIBIT 3.6 (Continued)

<u>Program/Fund Control Code</u>	<u>Functional Area Control Code</u>	<u>Facility/Vehicle Control Code</u>	<u>Expenditure [or Revenue] Control Code</u>	<u>Dollar Amount</u>
--------------------------------------	---	--	--	--------------------------

Example 3 - Operator wages of \$785 on Bus #3, which combines HEW Title XX and CETA (the first combined program), including functional control code; all codes at detailed level.

62 Combina- tion Pro- gram 1*	11 Operation of vehicles	403 Bus #3	002 Hourly wages (Full-time)	\$ 785
--	--------------------------------	---------------	------------------------------------	--------

*Title XX and CETA would share the \$785 according to the plan for "Cost Reimbursement of Shared Vehicles" to be developed later (see Task D of this step).

Example 4 - Title XIX reimbursement of \$19,500 for all direct, single-purpose transportation service on Bus #2, including functional control code; all codes at detailed level.

31 HEW Title XIX	00 All Functions	402 Bus #2	220 State [Reimburse- ment Reve- nue]	\$19,500
------------------------	---------------------	---------------	---	----------

Notice that the last three digits in Example 4 are from the Revenue Control Code. The general coding form for revenue/cash receipts recording offers the same 54 potential combinations for levels of detail as shown for recording expenditures in Exhibit 3.5. Although revenue coding would include the same control code areas used for recording expenses, the level of detail used for revenues may be less.

Any one of the control code categories may require extensive redesigning of the examples in Exhibit 3.6 to tailor the categories locally adopted to each specific need. For example, a large number of earmarked funding programs could require an expansion of the Program/Fund Control Codes for Special Programs (30 through 35). At the same time, the number of other programs recorded may be fewer.

TASK B - FARE CALCULATIONS

This approach to pricing services starts from the notion that fares will be developed on the basis of the cost per passenger trip. Part of the reason for this approach is to develop fares that are equitable for federal cost reimbursement funding and comparable to the share of costs attributable to any fare-paying passenger who may ride. It does not assume that any riders will personally pay their full share of costs, although even that policy may not result in excessive fares for all types of service. What it does mean is that all subsidies can be allocated to pay for all or part of the fare incurred only by a specific category of passenger trips which comply with the eligibility requirements of each funding program. The purpose is to avoid funding programs for special interest groups or for transportation to select trip destinations from incurring part of the costs attributable to the operation of transportation service for the general public, as an example.

Current methods for calculating per passenger costs are generally based on a pro rata share of passenger miles. This approach has long been in use for transportation systems operating on direct fixed routes, in which case, it adequately measures the portion of actual services consumed, relative to the total amount of service delivered. Federal programs permitting ride sharing by noneligible riders on vehicles they fund typically require a pro rata distribution of operating costs to the other riders benefiting from the service. This is generally accomplished on the basis of passenger miles traveled. The method is relatively easy to implement with standard equipment by recording odometer readings at the points of origin and destination for each passenger trip. The following disadvantages make this method unsuitable for most areawide transportation systems, however:

- . inaccurately measures service to individual rider when routing is indirect
- . inequitable base for cash fare payment and public use of areawide transportation service
- . time consuming onboard recording responsibility with existing log sheets

Alternative fare calculation methods could use one of the following service measurement bases:

- . Passenger-trip miles
 - individualized measure of service for each passenger trip
 - requires no zone design
 - difficult to calculate a broad vehicle for unscheduled, irregular trips

- . Passenger zones
 - trip distance approximated by zones traveled
 - permits flat zone fares
 - difficult to design zones that approximate trip mileage fairly
- . Passenger-zone miles
 - uses trip mileage between the centroids of each zone pair
 - permits multiple variables in setting unique zone-to-zone fares
 - more accurate than zones and less recurring effort than trip miles (distances are premeasured)

Zone design concepts for the last two alternatives above could take any one of three forms or combine them. Depending upon characteristics of the local operating environment, the most appropriate zone concept could be based on:

- . Concentric circular zones
 - divided at selected radii around a central destination zone
 - closely approximates trip distance
 - unsuitable for service areas with more than one major destination zone
- . Grid system
 - uniform blocks of zones
 - permits automatic fare calculation based on straight-line, zone-to-zone distance
 - arbitrary layout
- . Geographically defined zones
 - distinctive local design based on travel patterns and road system or other fixed landmarks
 - most consistent with unique fare structure using passenger zone miles
 - more difficult to design

The sample zone and fare concept designed for the Sumter, South Carolina urban area demonstrates geographically modified (sectored) concentric circular zones (Exhibit 3.7). The associated fare calculation chart is an example of how unique zone-to-zone fares based on passenger zone miles would be published. If the service area in the example were expanded, the outer zones could be extended to define larger areas. Large zones could be divided by adding zones to outline major outlying destinations. Radial divisions could also be extended to follow rail lines until reaching the larger boundary, and other radial sector lines could be added. The more changes made to the zone design presented in Exhibit 3.7, however, the closer it will come to the concept of geographically defined zones.

Area Zone Map [sample]

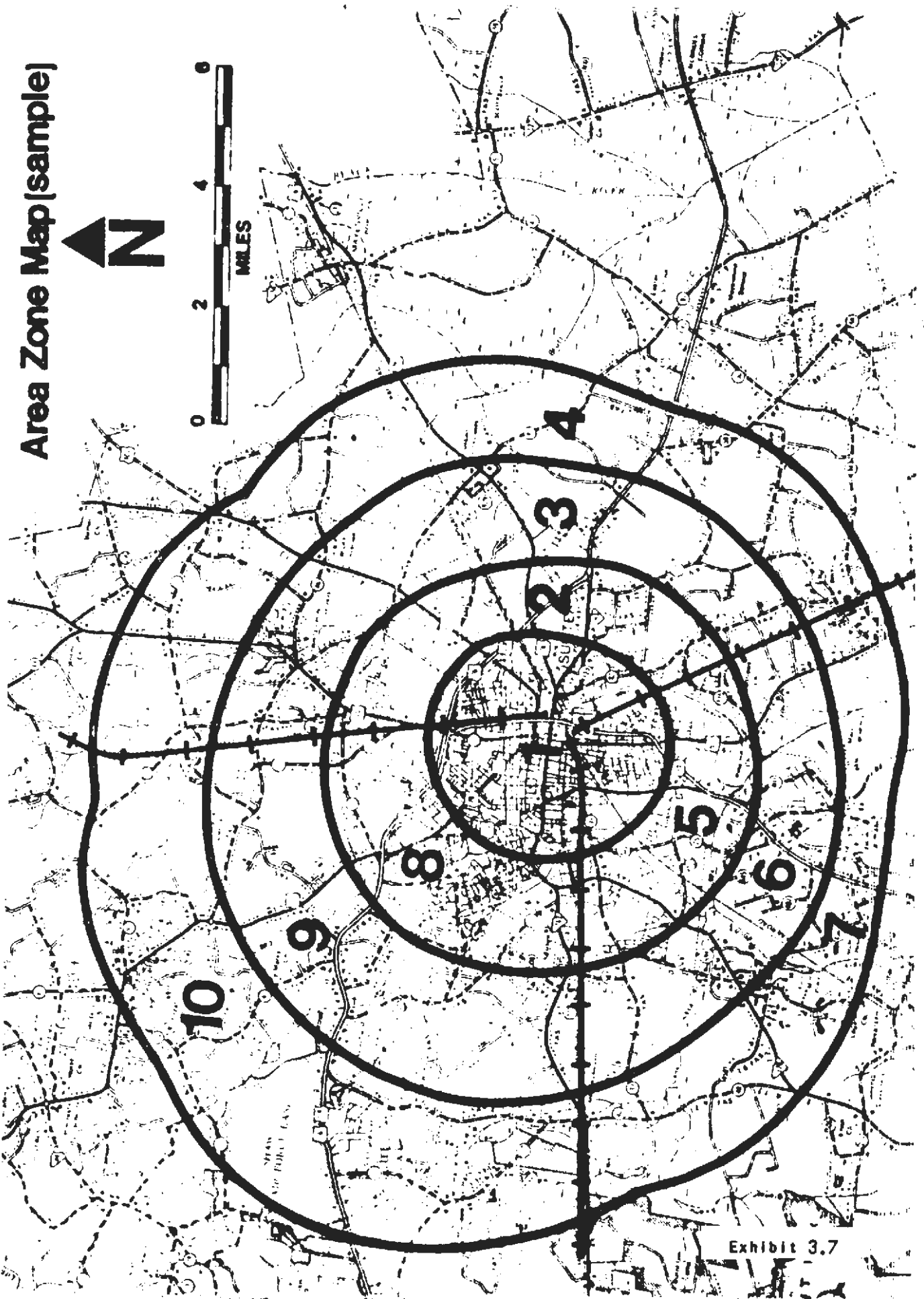


Exhibit 3.7

ZONAL-FARE CALCULATION CHART

[sample]

		Zone										
		Intrazone	1	2	3	4	5	6	7	8	9	10
Zone	Intrazone	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢	¢
	1	¢		\$	\$	\$	\$	\$	\$	\$	\$	\$
	2	¢	\$		\$	\$	\$	\$	\$	\$	\$	\$
	3	¢	\$	\$		\$	\$	\$	\$	\$	\$	\$
	4	¢	\$	\$	\$		\$	\$	\$	\$	\$	\$
	5	¢	\$	\$	\$	\$		\$	\$	\$	\$	\$
	6	¢	\$	\$	\$	\$	\$		\$	\$	\$	\$
	7	¢	\$	\$	\$	\$	\$	\$		\$	\$	\$
	8	¢	\$	\$	\$	\$	\$	\$	\$		\$	\$
	9	¢	\$	\$	\$	\$	\$	\$	\$	\$		\$
10	¢	\$	\$	\$	\$	\$	\$	\$	\$	\$		

Fare
[off-peak reduced rate]

Fare
[full peak-hour rate]

SOURCE: Santee-Lynches Council for Governments and Sumter, S.C.,
Sumter Area Transit Development Program, by Stephen
 Carter & Associates (June 1978).

EXHIBIT 3.7
 (Continued)

TASK C - COST REIMBURSEMENT OF SHARED VEHICLES

Identification and Approval of Shared Services and Bases for Reimbursement - Coordinated routes, schedules, and service unit measures (i.e., passenger trip miles, zone miles, etc.) should have been chosen by now according to procedures and criteria developed in Step 11 and Task B of this step. The federal agency that has the large program impact on the sharable transportation services will have to be contacted for approval on the cost allocation plan of the provider.

The initial cost reimbursement and all subsequent plans would entail the following documents:

- . Organization chart (only changes to organizational structure need be submitted after the first year).
- . Financial reports (certified, if appropriate) or approved budget for the applicable fiscal year(s) with transportation service costs and reimbursements delineated.
- . Applicable cost sharing proposal(s) detailing allocable expenses by function and cost category and reconciled with the financial report or budget for the programs to be combined.
 - Supporting schedule of all direct costs incurred by expense category, identified by specific government grant, contract, or other non-government activities.
 - Supporting schedule of transportation costs identified by expense category claimed as a direct cost under specific government grants, contracts, or other non-government activities.
- . Certification that the shared cost rate plan was prepared in a manner consistent with the applicable cost principles set forth in the Code of Federal Regulations, Title 41.
- . A listing of grants and contracts by federal agency, amounts, period of performance, and the (allocable) shared cost limitations (if any) applicable to each, such as ceiling rates or amounts restricted by administrative or statutory regulations.
- . A copy of the approved grant or contract budget(s) by line item with the cognizant federal agency and applicable clauses on allocable costs.

The allocable cost proposal, together with the supporting documentation would be submitted at the time a cost sharing plan is initially requested. Thereafter, providers would submit the information on an annual basis within ninety days of the close of each fiscal year. Sample tasks for preparing the submittal are listed below:

1. Select and assign staff
2. Review OASC 6 or 8
3. Obtain answers to questions from cognizant federal agency per OASC 9
4. Meet with department head
5. Review organization structure
6. Determine source of financial data
7. Identify nature and amount of federal programs
8. Determine terms of federal program legislation
9. Identify cost pools
10. Establish building use pools
11. Establish equipment use pools
12. Determine allowable and nonallowable costs
13. Identify departmental supportive costs
14. Determine if single or multiple rate method is appropriate
15. Make necessary allocations if multiple rate method is used
16. Include central service cost allocation amount
17. Prepare summary schedule showing rate calculation method
18. Notify cognizant federal agency
19. Inform divisions to use approach on all shared transportation services
20. Prepare instructions for use of plan
21. Progress meetings

Accumulate All Reimbursible Costs - Table 3.5 shows a list of allowable and unallowable costs for allocation reimbursement per general federal guidelines. Any specific program exclusions would have to be handled on a case by case basis and would be so identified in the unallowable portion. Prorated indirect as well as direct costs would be included. A tally of all itemized costs (wages, fuel, etc.) set out in the approval plan will provide the reimbursible amounts. A report similar to the following format would result.

Allowable Costs for Reimbursement

PROGRAM COSTS	ALLOWED?		
	Yes	With Approval	No
The costs shown are for illustrative purposes and are only representative of the many other types of program costs, depending upon the specific Title that would occur in a grant.			
1. Staff Salaries	X		
2. Staff Fringe Benefits, Insurance	X		
3. Wages to Participants	X		
4. Travel	X		
5. Entertainment			X
6. Management Studies, Other Studies		X	
7. Business Insurance, Bonding		X	
8. Communications: Telephone, etc.	X		
9. Maintenance and Repair	X		
10. Rent, Leases, etc.	X		
11. Supplies	X		
12. Utilities	X		
13. Health Care, Child Care, etc. for Participants	X		
14. Interest on Money Borrowed			X
15. Travel Advance not Repaid			X
16. Contributions and Donations			X
17. Indirect Cost *		X	
18. Depreciation, Amortization **	X		

*includes rent, telephone, utilities, depreciation, administrative salaries approved in advance

**Depreciation may or may not be an allowable cost item under certain federal grant programs.

TABLE 3.5

Sample Format: Accumulation of Costs Report

<u>Approved Cost Items</u>	<u>Allowable</u>	<u>Nonparticipating Programs</u>	<u>Fully Unallowable</u>
Wages & Salaries	\$		\$
Fringe Benefits			
Fuel & Oil			
Insurance			

Total

Programs sharing service:

In the sample above, all costs in the first column would be shared according to the plan in a pro rata share among the programs. All costs reimbursable by some programs but not others would be shared pro rata among those programs that allow the costs. The prorating would follow the same scheme as with the total reimbursement column except that the listed programs would not participate. The "Fully Unallowable" category would report costs not captured directly by any program sharing the service.

Perform the Pro Rata Share Calculations - The service units accumulated for each program and the allowable costs over the same period are used to determine the pro rata share for each program as in the following example:

<u>Time Period:</u>	April 1 to April 30		
<u>Service Unit:</u>	Passenger-Trip Miles		
<u>Service Experience:</u>	Program 1	40,000	Passenger-Trip Miles
	Program 2	50,000	" " "
	Program 3	10,000	" " "

Allowable and Unallowable Costs:

All Programs	\$2,700	(A)
Nonparticipating Program 2	450	(B)
Nonparticipating Programs 1 & 3	350	(C)
Fully Unallowable	500	(D)
<u>Total</u>	<u>\$4,000</u>	(E)

Cost Share:

	(A)	(B)	(C)	(D)
Program 1	40%	40%	40%	0%
Program 2	50%	50%	50%	0%
Program 3	10%	10%	10%	0%
<u>Total</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>0%</u>

Pro Rated Cost:

	(A)	(B)	(C)	(D)	(E)
Amount to Program 1	\$1,080	\$180	\$000	\$000	\$1,260
" " " 2	1,350	000	175	000	1,525
" " " 3	270	45	000	000	315
<u>Total</u>	<u>\$2,700</u>	<u>\$225</u>	<u>\$175</u>	<u>\$000</u>	<u>\$3,100</u>

Each program would be charged the amounts computed with a statement of the entire calculation supplied to each.

TASK D - HANDLING FARE REVENUES

There is a variety of workable systems in operation or testing around the country to meet the needs of fare processing and revenue collection. This manual does not attempt to recommend a single ultimate system for implementation. Instead, existing fare handling systems are categorized by the instruments used for each in Table 3.6. Each system should be evaluated for local application in terms of its ability to meet requirements for accountability and to increase public accessibility to the transportation services operated, when appropriate.

It may be desirable for statewide and local systems to integrate more than one method for fare handling. Table 3.6 may be viewed as a progression of methods to be implemented by developing transportation systems if they want to attract and increase public ridership.

Manually Computed Reimbursements

While this method encompasses existing reimbursement systems, it can be simplified by incorporating the cost allocation and fare calculation systems recommended in this manual. This type of handling for fare revenues may be retained and integrated with others until it is made obsolete by computer handling, if ever. It requires and provides full accountability.

Cash and Tokens

This method is the predominant system for handling fares on urban fixed routes. It may become part of fare handling for a developing system, either separate from reimbursements or integrated on routes where all fares are calculated in the same way. Cash and tokens should help attract public (fare-paying) ridership.

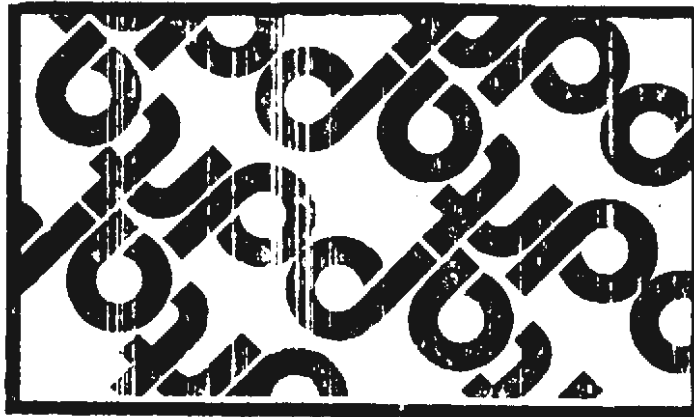
Tickets, Passes, and Credit Cards

All these methods are more advanced than reimbursements and cash. They can simplify or secure handling while improving accountability and marketability. Automated handling of these forms would replace manual reimbursements. Automated or not, however, they may be integrated with cash handling for maximum public accessibility. (Examples of tickets and passes are shown in Exhibits 3.8 and 3.9).

Table 3.6
ALTERNATIVE FARE PROCESSING AND REVENUE COLLECTION SYSTEMS

Fare Processing Methods	Revenue Collection Methods	Instruments to Assist Handling	Comments
Manually computed reimbursements	Sponsoring agencies invoiced for cost and credited for adjustments	Transportation Authorization/Request and Route Dispatch/Check List	Current system incorporating proposed cost allocation and fare calculation systems
Cash and tokens	Direct payment for service (may include advance cash subsidies or reimbursements paid to riders)	Tokens, fare boxes, coin counters (may include receipts for cash fares)	Minimum data or safeguards against misuse of subsidies
Bulk rate tickets and passes	Advance sales and/or distribution to subsidized riders (may include reimbursement only for tickets collected from clients and cancelled)	Variety of forms, as in Exhibits 3.7 and 3.8 (may be prepared for fixed trip and punched or stamped to cancel)	May be printed like a bank check to be read & sorted by computer for automatic billing and data collection
Credit card	Computer readable hard copy (may include adjustable codes for complete data trail)	Credit cards, slips and/or onboard processing device (manual or automatic) and computer access for billing and compiling data	Designed for computer use, expensive for small operations without joint use; reduces manual recording

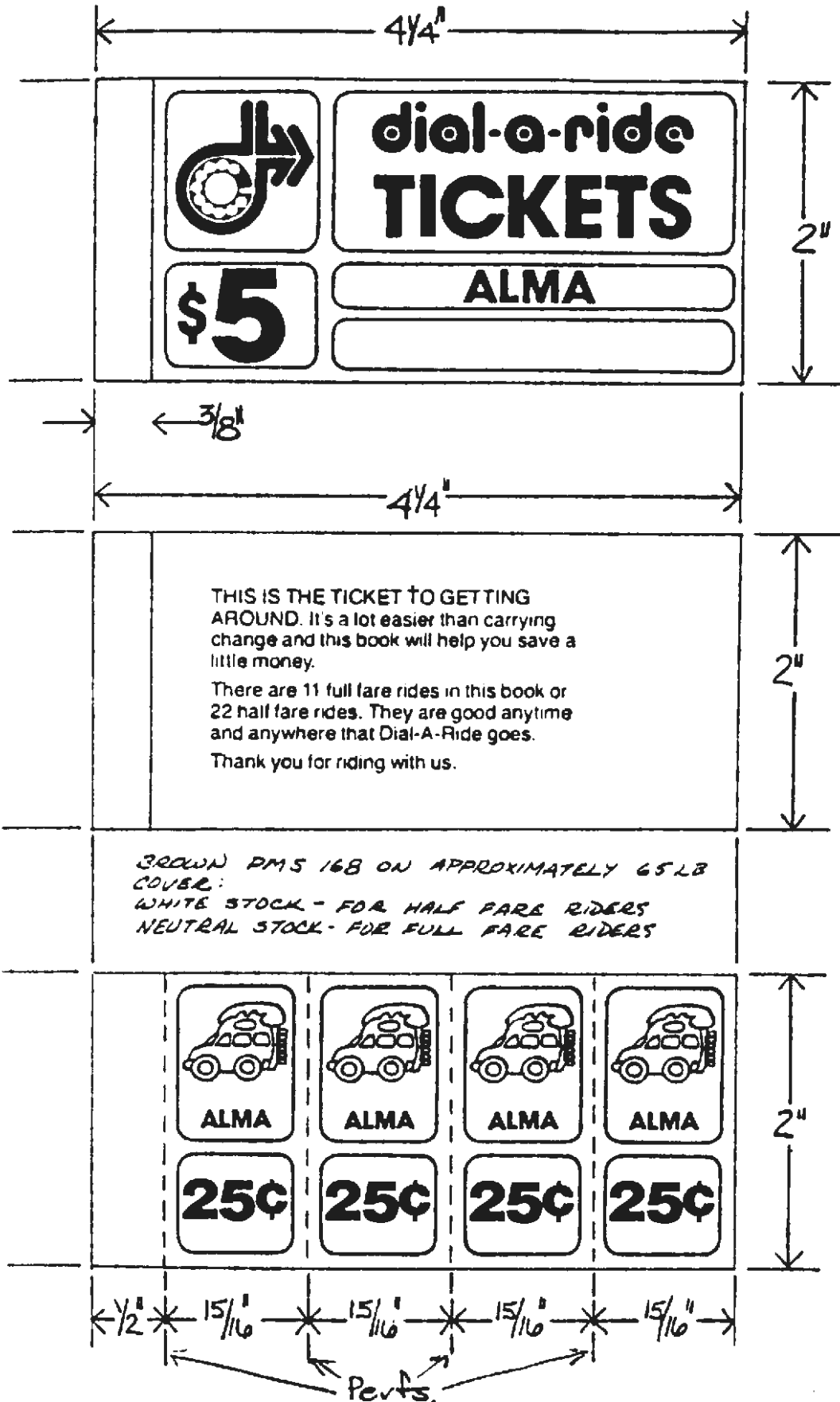
SOURCE: Carter.Goble.Roberts, Inc., 1978.



10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
10	5	1	1	1	1	1		
porta							total	
trip							authorized total	
ticket								
Name _____								
Social Security # _____								

SAMPLE TICKET

SOURCE: Pee Dee Regional Transportation Authority,
A Planning Manual, by Stephen Carter &
 Associates, (February 28, 1978)





SOURCE: Michigan Department of Transportation, Dial-a-Ride Marketing Program [title paraphrased], by Ilium Associates (1977).

TASK E - BUDGETING AND INSURANCE

Budgeting - To develop a budget for transportation operations, it helps to break operating costs into variable and fixed cost components. Costs may then be estimated on the basis of some variable measure (vehicle miles or hours operated) for the items that vary with the level of operations, and at expected fixed rates for others. All costs, both variable and fixed, were reduced to mileage as well as hourly rates to compute the typical cost to operate vans in the Central Midlands Region of South Carolina in Table 3.7. It may be helpful in comparing operating costs in a similar manner for budget purposes. The assumptions used determine what many of the itemized rates will be. The assumptions include the type of vehicle (bus or van) and imply the type of operation it is used for (fixed route or demand response.) Table 3.7 uses percentages for overhead and miscellaneous costs that were based on averages from a national analysis of operating costs for seven small-vehicle transportation systems.⁷

Another approach might be to assume a total per vehicle operating cost and distribute it to the itemized costs used for the budget on the basis of a typical percentage breakdown. Table 3.8 shows such a breakdown based on the same national analysis of seven systems, which was compared to the distribution in the budget of the Pee Dee KIA in South Carolina. To make these itemized breakdowns fit the ones used for the budget, disaggregate accounts need to be grouped according to variable and fixed costs. For example, the aggregate account for Salaries and Wages in the Chart of Accounts, Task A, compares with Supervision when disaggregated to Expenditure Control Code 001. Therefore, if the aggregate is used in the budget, Expenditure Control Code item 000, Salaries and Wages, would compare to Direct Labor, Supervision, and part of Overhead/General and Administrative Costs in Table 3.8.

Insurance - Figures for insurance rates experienced by passenger vehicle operators in the past are probably a poor indication of the best rate available to a new operating entity. Comparative shopping for coverage is recommended. Because of the many factors that influence assigned risk ratings, a new operator is likely to get a wide range of quotes from potential insurers. Also, it may or may not be advisable to exceed minimum required and commonly quoted levels of protection.

⁷Central Midlands Regional Planning Council, Op.Cit.

Table 3.7 FULL COST OF VAN OPERATIONS (CENTRAL MIDLANDS, 1978)		
Variable	\$ Per Vehicle Mile / Hour	
Direct Labor (avg. \$3 wage plus fringes)	\$.161	\$3.54
Depreciation (straight-line on basic equipment)	.070	1.54
Fuel (gas @ 65¢/gal. with tax)	.072	1.58
Maintenance, Parts and Repairs (tires, oil, etc.)	.040	.88
Miscellaneous (.8% of Variables)	.003	.06
Total Variable	\$.350	\$7.60
Fixed		
Supervision (\$10,000 and fringes for fleet of 15)	\$.022	\$.48
Overhead (10.3% of Total)	.045	.98
Insurance (@ \$437 a vehicle per year)	.012	.27
Rent	.000	.00
Taxes (\$12 a year per vehicle)	.000	.00
Miscellaneous (6.3% of Fixed)	.005	.10
Total Fixed	\$.080	\$1.93
TOTAL	\$.430	\$9.53
ASSUMPTIONS: Average speed 22 mph Operating 36,000 mi./yr. per vehicle		
NOTE: With these assumptions, vehicles operate about 33 hours per week. Many drivers are now working 40 hours plus overtime. Assuming an average of 45 hours per driver adds these additional costs:		
Labor (idle and other down time)	\$.059	\$1.29
Additional Overhead	.007	.15
Additional Misc. (Variable + Fixed)	.000	.02
Total Additional Cost	\$.070	\$1.46
ADJUSTED TOTAL	\$.500	\$10.99

SOURCE: Carter.Goble.Roberts, Inc., 1978. [Originally cited in Central Midlands Regional Planning Council, A Transportation Services Study, by Stephen Carter & Associates (April 1978), p. 7-2.]

Table 3.8
COMPARISON OF RTA BUDGETED EXPENDITURES WITH NATIONAL EXPERIENCE

	<u>National Experience</u>	<u>RTA Budget</u>
I. <u>Variable Costs</u>		
Direct Labor	41.0%	35.8%
Fuel, Oil, Tires, Maintenance, Repairs	11.5	21.5
Insurance	2.3	3.5
Depreciation	11.4	0.0
Miscellaneous	<u>0.5</u>	<u>0.7</u>
Subtotal Variable Costs	66.7%	61.6%
II. <u>Fixed Costs</u>		
Supervision	16.6%	21.1%
Overhead/General and Administrative	10.3	5.4
Rent/Furniture/Utilities	2.4	1.9
Taxes	1.9	4.5
Miscellaneous	<u>2.1</u>	<u>5.5</u>
Subtotal Fixed Costs	33.3%	38.4%
TOTAL COSTS	100.0%	100.0%

SOURCE: Carter.Goble.Roberts, Inc., 1978. [Originally cited in Pee Dee Regional Transportation Authority, A Planning Manual, by Stephen Carter & Associates (February 1978), p. 6-4.]

TASK A - COORDINATED CONTRACT OPERATIONS

In Step 6, the target groups for transportation service were identified. In the short term, the transportation disadvantaged population will form the ridership for the areawide system. Therefore, the initial marketing program should provide essential information to this specialized group. The information must be responsive to questions most often raised by them.

Assuming that the transportation disadvantaged group includes those individuals who qualify for special assistance through the human services agencies, the first level of promotions should be oriented toward these concerns:

- . eligibility for transportation assistance
- . schedule of service
- . type of vehicle
- . availability of special equipment
- . length of trip
- . waiting and travel time
- . personal security and safety
- . availability of assistance at destination
- . necessity of transfer
- . condition of vehicle (interior and exterior)
- . attitude of drivers

Promotions for this group must be presented in a concise manner with an emphasis upon graphics to illustrate schedules, routes, and depict equipment types. The primary media for dissemination of information will be human service agencies; then churches; clubs (e.g., senior citizen); schools; public service radio; television and newspaper; and, finally, purchased media time (or space) and individual mailouts.

In the initial development period, the promotions program should emphasize its support role to the primary social services, rather than give the impression that transportation is the human service per se. Cooperative agreements with the various agencies who purchase service from the entity should allow the entity to distribute marketing materials at the time clients are certified. Simply illustrated brochures should be distributed by caseworkers responsible for certifying and counseling the client. Posters should be displayed in agency offices. Information cards on transportation available, giving the entity's telephone number, could be included in the client's package of services information.

Similar information should be made available to churches, clubs, and schools, including the name, number, and address of a staff member to contact for assistance. A routine follow-up to provide ongoing system information is recommended.

Community service announcement time is often available through local radio and television stations. A concisely worded promotional spot should be developed and updated regularly for local radio and television stations. To qualify as a community service, the information should be oriented toward the primary human services programs so it will not be construed as advertising.

Summarizing promotions for the transportation disadvantaged groups, the approach should rely on the human services agencies as the primary disseminators of information, with a systematic follow-up program by the entity. Well-designed, concise, and visible promotional material should be made available to all agencies, churches, clubs, and groups which have contact with eligible clients.

TASK B - SURVEY AND PROMOTE PUBLIC RIDERSHIP

If a system is to be expanded to public ridership, a strong potential group of users for initial marketing emphasis could be the employees of major local industries. A survey was administered to several industries in the Pee Dee Region of South Carolina to determine the degree of interest in a subscription buspool. During the survey, limited promotions included a brochure and posters announcing the service. Exhibit 4.7 includes the survey and promotional material.⁸

Survey efforts were initially directed toward industry management in order to determine the market and support for transportation service during Step 7. Evidence should be presented of a certificate to operate, insurance, and driver training. Efforts could be made to execute a legal instrument between the employer and the entity which, in effect, guarantees it exclusive or, at a minimum, first rights to service.

Following the support of industry management, the promotional effort should concentrate upon the potential rider, illustrating the benefits of this specialized service. The emphasis should be threefold: first, to cost savings; second, to reliability; and third, to the comforts, convenience, and amenities of the service. Special lunch-time or after-work shopping excursions could be offered as vehicle availability allows. Magazines, morning coffee, and other low-cost, onboard amenities could be made available as attractions to use the service.

Initial contacts with the employees can be through company newsletters, bulletin board announcements, group meetings, or mailout information. Once the service is in place, word-of-mouth communications should help sustain the level of inquiry and participation.

Promotional programs for any select latent demand group of choice riders like this can be more easily developed and administered than for the transportation disadvantaged group. The marketing thrust can be very direct and address personal cost savings and other economic, as well as social, benefits. A great deal more flexibility in the actual service can also be achieved, since, other than charter operations, subscription services are the most specialized of any fare-paying operation the entity is likely to provide.

⁸The exhibit includes the following items: 1) draft cover letter from plant manager; 2) promotional material (service and vehicle description, savings to drivers, and sample area map); and 3) questionnaire.

(Company letterhead)

TO: Employees from _____ (selected area) _____
FROM: _____, Plant Manager
SUBJECT: Bus Survey

The area where you live has been selected by the PDTRA for a new bus service to our plant. Lower cost transportation is an effective way for you to have more money to spend, so management is cooperating to help make it possible.

Please consider what you can save by riding the bus to work, and fill out the questionnaire, if you are seriously interested. I hope enough of you will show an interest for the PDRTA to bring the services they are planning to you and, eventually, our employees in other areas. Your participation now could help make more buses available to us all.

(Optional) To encourage participation, (the company allows payroll deductions to pay for your bus tickets) (bus tickets will be sold at the company store). This is a good offer. To take advantage of it, return the completed questionnaire.



Would you like to ride this air-conditioned bus to and from work ... AT A FRACTION OF THE COST OF DRIVING EVERY DAY? YOU COULD SOON, IF YOU AND OTHERS WHO LIVE AND WORK NEAR YOU ARE INTERESTED.

Imagine the comfort of coffee or a cold drink while you ride, and have the time to read, or chat with friends. You can avoid the hassles and high cost of driving, and have a guaranteed seat waiting for you after work, closer than you can park. It won't be hot, like your car after it sits in the sun all day, either.

The PDRTA (Pee Dee Regional Transportation Authority) plans to offer this service in your area in the near future. This survey will show if there is enough interest from people like you to make it possible. Take a look at how much you can save. If saving money and energy is worth making a change in your life, let us know. We think you will like this change.



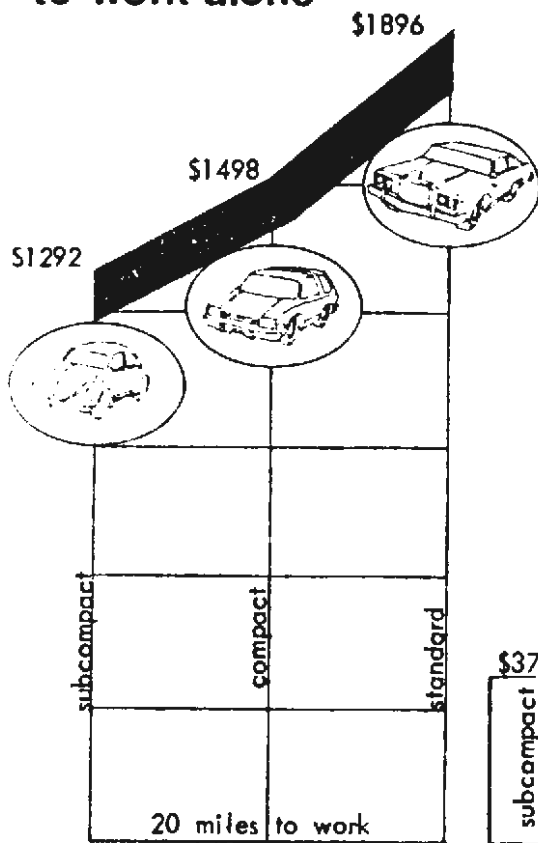
EXHIBIT 4.7 (Continued)

How Much Does It Cost You to Drive to Work?

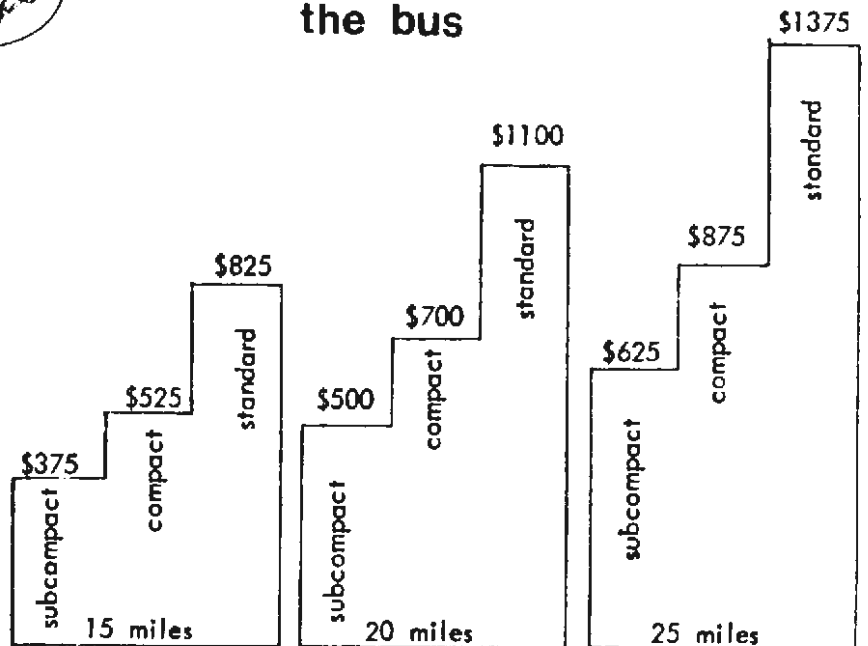
The actual cost of driving is more than many people realize. That is because most of the cost is spread out and paid indirectly. Once the cost of the car itself, the maintenance, parts, taxes, and gas are figured in, it costs at least 19¢ per mile to operate a typical, standard-sized automobile. And you know how fast the price of new cars and gasoline is climbing.

Look how much you can save each year, if you were to switch from driving to work alone to riding a PDRTA commuter bus at 25¢ for every three miles.

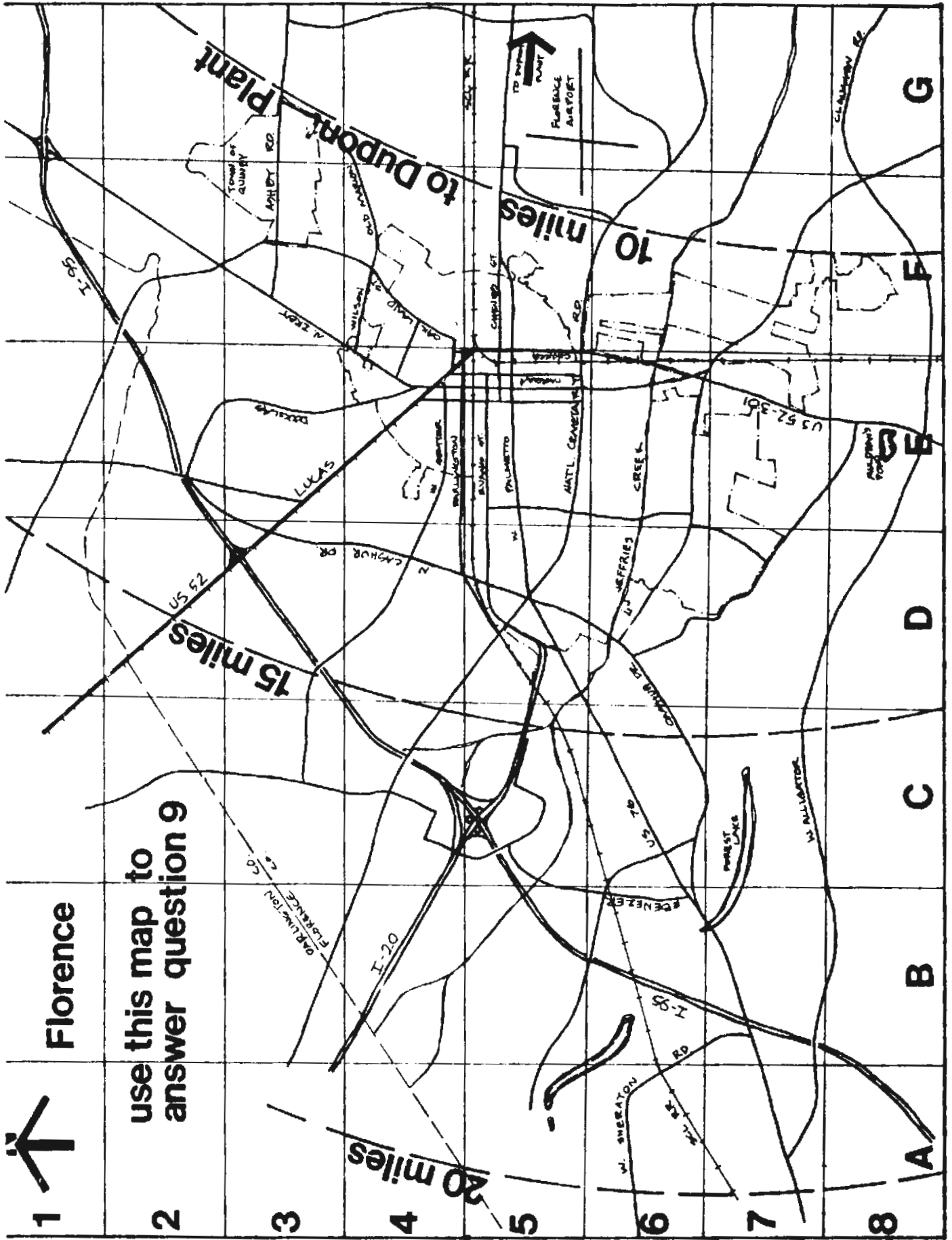
annual cost of driving to work alone



annual cost savings by riding the bus



Distance to Work



1 ↑ Florence

2 use this map to answer question 9

3 ORLINSON CO. FURRING CO.

4 20 miles

5 15 miles

6 10 miles

7

8

9

QUESTIONNAIRE

If you would like to ride the bus to work regularly, please fill out this form.

1. Name _____
2. Mailing Address _____
(include zip code) _____
3. Street Address _____
(if different from above) _____
4. Telephone Number _____
5. Employer _____
6. Shift or work hours _____
7. I would like to ride the bus regularly, if the trip on it between home and work does not take longer than: (check the highest acceptable one)
 - a) 20 minutes _____
 - b) 30 minutes _____
 - c) 45 minutes _____
 - d) one hour _____
 - e) other (How long?) _____

8. If the bus cannot pick me up at home, I would be willing to catch it at:
(name a place where you could stop and there is ample parking, along a major highway and an easy walk from home, or any other convenient stop between work and home)

_____ (Answer NO if unwilling)

Would you prefer to catch it there, rather than at home? Yes _____ No _____

9. According to the enclosed map, answer the following:

	<u>Letter at top & bottom of map</u>	<u>Number beside map</u>	<u>Not on Map</u>	<u>Don't Know</u>
Where do you live?	_____	_____	_____	_____
Where is the place named in question #8?	_____	_____	_____	_____

10. Have you ridden a bus or in a carpool to work regularly before?
(Yes or no) _____

(PLEASE FOLD AND STAPLE TO RETURN)

EXHIBIT 4.7 (Continued)

TASK C - PUBLIC RELATIONS PROGRAM

Since system expansion will probably take place on an incremental basis, the entity should concentrate on achieving maximum promotional exposure within initial service areas and to a limited user group before attempting to expand public relations to the total service area. The marketing program must keep pace with service delivery to be effective.

Marketing and promotional efforts on this broad level require a more comprehensive approach than any of the target group campaigns. A combination of approaches is recommended, but the key ingredient is a uniform program which builds upon itself. For example, a consistent graphics format for all printed material, which reflects the same logo that is used on the vehicles, can be very effective in projecting an image of stability and responsiveness. In the following paragraphs, a summary is presented of specific approaches which should be considered in developing a promotional effort oriented toward a general, fare-paying public.

Radio and Television - One of the most effective (and expensive) marketing tools is radio and television. Since the entity probably has limited funds for buying air time, it should develop imaginative campaigns for these media. Both radio and television have a limited amount of time for public service programs. Every effort should be made to gain maximum access to this public service allotment with special announcements, talk shows, documentaries, and press releases. A sound working relationship should be established with the management of local stations so that maximum exposure for the entity can be achieved. If the system's vehicles have advertising space to sell, the entity may arrange to trade that space to stations in payment for air time.

Newspapers - This is, perhaps, the best single media format that can be used for promotional efforts. The press may give the entity good coverage to report meetings and general announcements. However, the entity could utilize the press more effectively by developing a program of regular press releases concerning the initiation of new services, the addition of key staff members, and other newsworthy items. The business and finance sections of the newspapers will generally print items of interest concerning the business community on a regular basis. If the entity projects the image of a publicly sponsored business, rather than a human services delivery agency, greater exposure as a business operation may be available.

Retail Groups - As the entity extends operations to multi-purposes and the general public, a thrust should be made to enlist support of retail merchants in towns to be served. To the extent feasible, fare (or ticket) discounts should be offered and distributed by the merchants. Presentations, complete with financial details, should be made to the local chambers of commerce. Merchants participating in the reduced fare program should be supplied posters and brochures to be displayed in their establishments.

Special Target Groups - In the early phases of the expanding operations, contact should be made with representatives of facilities such as colleges, technical schools, office complexes, and others. If feasible, a special service could be offered to these places, as in Task B above. If the associated target user groups are located along operational fixed routes, then information designed to attract them could be strategically placed. Contact should be established with appropriate officials of the target institutions, agencies, or groups to determine particular needs of the potential users as well as to explain the proposed service. Reduced fares, additional onboard amenities, and other attractions may be offered as a part of the comprehensive package. Special promotional efforts directed at selected colleges, technical schools, etc., could be used to emphasize the advantages of bus ridership and potential savings to the institution by avoiding construction of parking facilities.

Commercial Advertising - Quite often, outdoor advertising companies will give a price break to public agencies for community service promotions. The entity should explore the potential of utilizing a minimal amount of outdoor advertising in key spots throughout the area. This approach would not be valid until the system is, indeed, extended to the general public. At that time, it could become a component of a comprehensive public relations program.

Workshops/Civic Organizations - Workshops can be beneficial in gaining the support of human services agencies. The purpose of these workshops would be to enlist the support of staff from the agencies and to facilitate coordination. While it would be useful to have client representation at the workshops, the major thrust should be gaining additional ridership through interagency cooperation. At these sessions, scheduled annually or bi-annually if necessary, detailed information on routing, scheduling, and general operations should be presented.

Civic organizations can also be an accessible forum for disseminating information concerning operations. Programs, including slide presentations, exhibits, and brochures, should be oriented toward the general public. Every attempt should be made to persuade members of these organizations to sponsor demonstration programs to attract general public riders.

Regardless of the spectrum of riders, the promotional program should be based upon organized and regular communications, not only with the riders, but with the media, agencies, and facilitators of ridership, as well. Even though the budget for promotions may be much less than desirable, essential communications with key groups and media representatives can help offset the deficiency.

TASK D - PROMOTION OF NEW SERVICES

Clearly, the existing transit dependent users must be retained when new services commence. Changes in routes and schedules necessitate dissemination of the new system information to these current users before transition. Advance, onboard distribution of easily understood brochures, including routes and schedules is a direct means. Early marking of new bus stops with an announcement of when service begins there, and posting the schedule, if possible, are direct promotions which can attract the attention of the latent demand groups. If fixed bus stops are not being established along sparsely populated route segments, the route may still be marked in advance by posting temporary announcements at intersections in those areas. Stops which are relocated should also be posted to inform established riders of the new locations.

General promotions in the media should also precede initiation of new services. The general and special latent demand groups should be sought out to promote the expanded and improved aspects of the new services, just as if operations were not already established. While the general public relations campaign may be managed by the entity at the start, staff limitations require the temporary aid of a public relations firm or consultant to handle intensive promotions of new routes during the early developmental period of the entity and prior to the filling of any staff positions established for public relations responsibilities.

Route-Specific Promotions (Using Logo and Colors)

- . Media campaign blitz with finalized schedules (free public relations and paid advertisements)
- . Erect (and paint) shelters and bus stops and post temporary announcements along routes
- . Flyers with schedules distributed in residential neighborhoods, in destination zones and to riders on board (also by mail)
- . Convenient advanced ticket sales (may include introducing new fare plan)
- . Uniformed drivers operating trial runs and introducing new equipment on public display in new service areas

TASK E - PROMOTIONS AND PUBLIC RELATIONS BUDGET

This promotional program has been segmented into three levels by types of service delivered. Initially, special attention should be given to the specific users being served as the system develops a solid ridership base. After initial promotions, the entity should budget the ongoing cost of public relations as part of the unit cost for service. Attempts should be made to persuade the contracting human services agencies that, at one cent per vehicle mile, the cost of promotions returns substantial service benefits to their clients. By contributing to greater efficiency and utilization of routes, the cost per passenger served can be expected to decrease in the long term. Contractors may be able to consider promotions an eligible cost only if it is lumped with general administration items, however.

The anticipated unit costs for promotions are segmented in Table 4.2 according to three levels. The differences reflect the relative cost of reaching each segment of the market and the expected return on expenditures. In relationship, the administrative cost associated with contract operations will probably be higher, but not chargeable to promotions. Instead, these higher costs may be directly allocable to the respective programs by accounting control codes.

Level of Promotions	Cost Per Vehicle Mile	Associated Services
Contract Operations	1¢	Direct contracts only
Selected Public Ridership	1¢	Subscription routes
General Public Relations	5¢	Other publicly accessible operations

SOURCE: Pee Dee Regional Transportation Authority, A Planning Manual by Stephen Carter & Associates (February 28, 1978) Draft.

An initial lump-sum budget for promotions and public relations is recommended. Subsequently, the entity would recover the cost of promotions as a regular line item charged against all operations. Initially, it may be based on the rates per vehicle mile shown in Table 4.2. For publicly accessible routes operating 200,000 annual miles, the contribution to marketing programs would be \$10,000. That revenue would go toward the salary of staff members working on public relations, promotional materials, and/or professional services. Once experience has

established the ongoing cost of promotions and public relations, this charge should be adjusted to produce only the income needed to sustain it.

As funds accrue for the promotional effort, a public relations director should be employed. This individual should coordinate all of the image and public relations efforts of the entity. Sustaining success of areawide public transportation services is closely linked to the ability of the entity to project and maintain an image that will persuade the general public to increasingly select public transportation for a portion of its personal travel needs. This image will depend largely upon the professional quality of the promotional effort.

TASK A - INTEGRATING OPERATIONS

Some subtle differences between this analysis and coordinated route planning require explanation. It should be apparent from the approach described that this analysis is broader than just the past record of demand. In fact, it is an attempt to compare experience, even though it may be affected by restricted ridership, with the theoretical demand for public route services by the total area population. It evaluates the feasibility of, and best design for, incremental improvements even without good historical ridership data.

Integrating operations means trying to remain creative and responsive to need for service. Fixed routes, by their nature, are not frequently changeable. But full demand responsiveness is not the only alternative to fixed routes. Service combinations, flexible or limited feeder routes supplementing a fixed route core service, for example, may be best in certain operating environments. A methodical analysis of experience to date improves chances of predicting success of the planned service structure.

Approach to Integration Analysis

1. Identify popular service areas - Based on personal experience and recorded ridership data for existing services, areas of high steady demand and the tendency for peak hours in demand should be apparent. Areas with steady demand requiring several operations close together should be considered candidates for integration for special service types operating there.
2. Compare with planned public routes - If service areas identified in number one (1) above were also planned in Step 7 to support public routes, the integration potential is confirmed. A more efficient operation and/or increased level of service is probably justified in those areas. Where route structure is not complex, this information may be enough to decide on implementing planned routes. Modified or supplemented versions may be selected, as necessary, to maintain the level of all existing services.
3. Obtain technical assistance for computer analysis - Where route structure is complex, final route design may need to be assisted by computer analysis. While one end of all the trip demand in an origin area or destination zone may be serviceable by one or a few routes, linking the riders with all the points demanded at the other end of their trips may not be. Distributing all the trips to other existing or integrating routes may be too complex for manual analysis. By entering acceptable service level constraints similar to those suggested in Step 10, the same

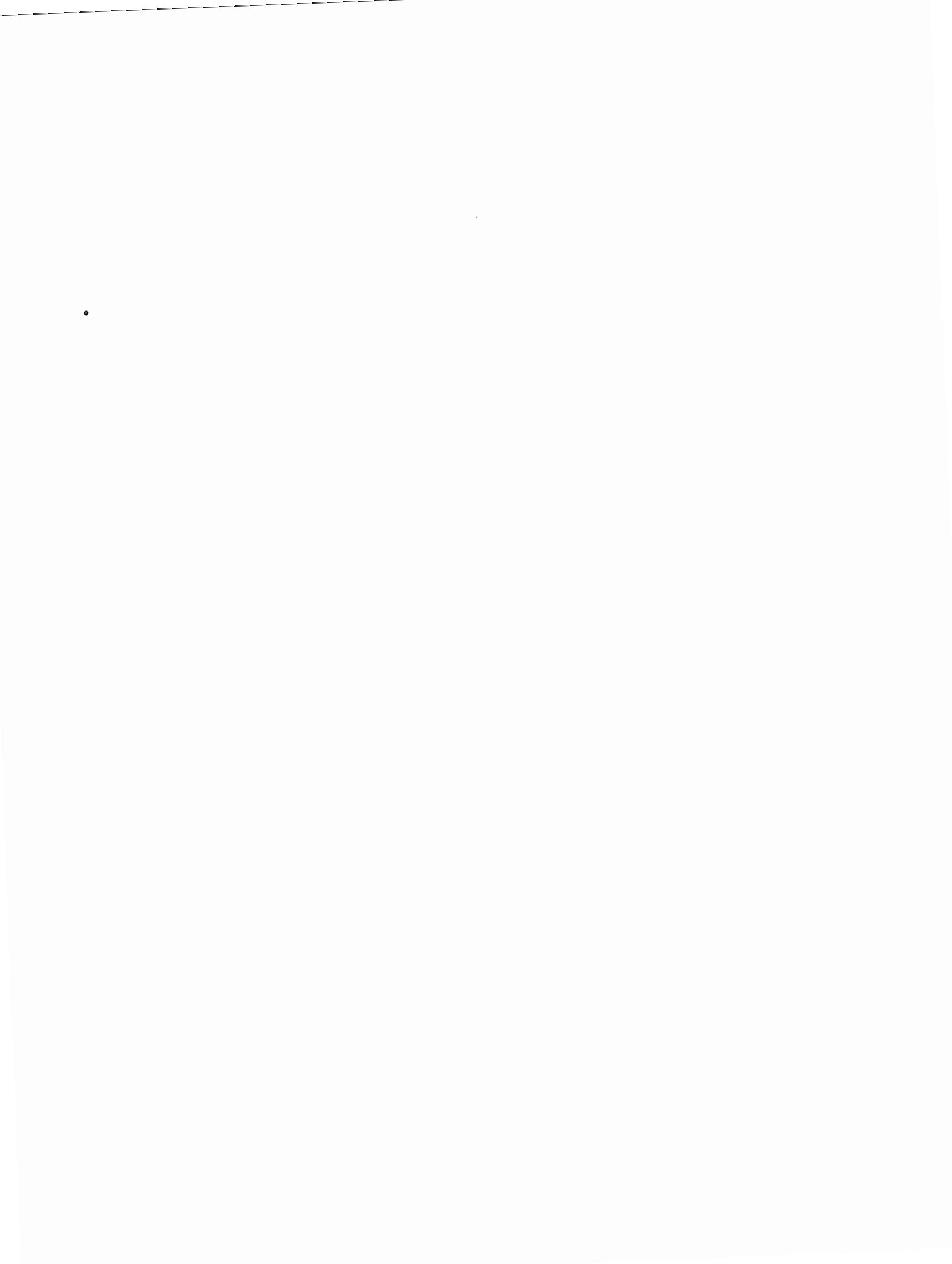
type of computer program will produce the minimum required routes and schedules to achieve objectives.

4. Survey attitudes toward change - This approach does not suggest changing human-oriented services based on computer analysis alone. Present users of service being considered for integration should be surveyed to determine the plan's acceptability. If too many riders do not consider it an improvement or equal level of service, the plan will not be feasible.
5. Consider need for supplemental service - If the number of riders disapproving plans to integrate routes is small, evaluate the feasibility of maintaining an acceptable level of service to them as well. This may be accomplished with supplemental specialized or limited service routes. The new combination of integrated routes may still require fewer vehicles, cost less and/or provide a higher overall level of service than before.

Auditing, Reporting and Evaluation

V

Technical Supplement



TASK A - ORGANIZATIONAL CONTROL STANDARDS

The general and specific standards of the internal audit effort are as follows:

1. Examinations of financial transactions, accounts, and reports and compliance with applicable laws and regulations shall include sufficient examination to determine whether:
 - . the program is maintaining effective control over revenues, expenditures, assets, and liabilities.
 - . the entity is properly accounting for resources, liabilities, and operations.
 - . the financial reports contain accurate, reliable, and useful financial data and are fairly presented.
 - . the entity is complying with the requirements of applicable laws and regulations.

2. A review of the efficiency and economy shall include inquiry into whether, in carrying out its responsibilities, the entity is giving due consideration to conservation of its resources and minimum expenditure of effort. Examples of uneconomical practices or inefficiencies the internal auditor should be alert to include:
 - . procedures, whether officially prescribed or merely followed, which are ineffective or more costly than justified.
 - . duplication of effort by employees or between organizational units.
 - . performance of work which serves little or no useful purpose.
 - . inefficient or uneconomical use of equipment.
 - . overstaffing in relation to work to be done.
 - . faulty buying practices and accumulation of unneeded or excess quantities of property or supplies.
 - . wasteful use of resources.

Efficiency and economy are both relative terms and it is virtually impossible to give an opinion as to whether an organization has reached the maximum practicable level of either. Therefore, it is not contemplated in these standards that the examiner will be called upon to give such an opinion; however, the examiner's findings should provide the capability for evaluators and reviewers to make the judgement.

3. A review of the results of programs or activities should inquire into the benefits achieved and whether the programs or activities are meeting established objectives. The reviewer should consider:

- . the relevance and validity of the criteria used to judge effectiveness in achieving program results.
- . the appropriateness of the methods followed to evaluate effectiveness in achieving program results.
- . the accuracy of the data accumulated.
- . the reliability of the results obtained.

In some cases, an internal auditor may be asked to participate in a program evaluation effort by accumulating data himself for evaluation of a program or activity under review. When such work is to be done on a coordinated basis, the evaluation techniques should be uniformly prescribed for the whole program at some central level.

A complete review of internal controls as a specific requirement would often be prohibitive in terms of available resources. Therefore, the reviewer should concentrate attention on those controls that are important to the issues being examined.

TASK B - MECHANICS OF CONTROL

Specific characteristics of sound internal control are as follows:

- . A plan of organization which provides appropriate segregation of functional responsibilities.
- . A system of authorization and record procedures adequate to provide reasonable accounting control over assets, liabilities, revenues and expenses.
- . Sound practices to be followed in performance of duties and functions of each of the organizational elements or related entities.
- . A degree of quality in personnel commensurate with responsibilities. Only capable and experienced personnel of demonstrated reliability should be assigned to key positions in the internal control system.
- . Directors must review and appraise the established system of internal control periodically to make sure that it is operating as planned and will continue to provide adequate safeguards.

The detailed methods by which the above may be accomplished are as follows:

1. Division of Duties - The plan of organization and the assignment of duties to individuals should be arranged to provide for a maximum separation of functions for custodianship of assets; authorization, operation and review; and recordkeeping and accounting. Within each of these functions, it is desirable that duties be assigned in such a way that the work of one person tends to check the accuracy and propriety of the work of another.
2. Adequate Personnel - Adequate personnel is a necessity for the establishment of sound internal control.
 - . Selection - Only candidates possessing the necessary qualifications should be chosen for positions including control responsibilities.
 - . Training - Many jobs can be performed more effectively if the employee receives specific training, either before assuming the duties or while on the job.

- . Supervision - Even with good selection and training, there is still need for proper supervision for guiding, checking, and appraising performance of employees. The type and the degree of supervision should vary for different kinds of employees.
- . Bonding - Good selection and supervision of personnel, plus other measures of internal control, are by no means a guarantee that fraud can be prevented. The sad histories of embezzlements or fund misappropriations show that it is usually the trusted employee who has caused the employer big losses through dishonesty. It is, therefore, advisable to have key people bonded. Not only will this mean that the employer will be reimbursed in the event of a loss covered by insurance, but the careful investigation of the employee's previous record, usually made by the insurance company before issuing the bond, may reveal past irregularities which will cause the insurance company to decline to bond the employee, thus warning the employer of the risk involved.
- . Enforced Vacations and Rotation of Duties - Employees engaged in fraud are usually so involved in juggling the records to cover up their irregularities that they fear a substitute who would take over their duties for even a short time and discover discrepancies which would lead to investigation and exposure. Such employees, naturally, are reluctant to be away from their jobs. The policy of enforced vacations, therefore, can be preventative. This policy not only may reveal irregularities, but presumably acts as a deterrent to persons who might otherwise succumb to temptation. The rotation of assignments from time to time among persons performing the same type of duty, such as clerks posting different groups of accounts receivable, has the same general effect.
- . Acceptance of Individual Responsibility - If an employee knows that a certain act or the approval of a specific action can be traced long after the act took place, more careful work and less dishonesty usually results.

Assignment of responsibility requires the signature or initials of certain employees on various forms.

3. Procedural Measures - Procedural measures provide the means and prescribe the method of doing a job. Their effectiveness in promoting internal control for processing accounting data will be dependent upon how skillfully they are designed and how diligently they are observed or executed. These measures include the chart of accounts and accounting manual, appropriate forms and records, suitable processing procedures, procedure manual, and internal auditing.

Internal checks on the organization in terms of the flow of transactions, which provide for effective operation and protection against fraud, as well as unintentional errors, are one of the most important aspects of this control concept. A division of responsibility in such a manner that no single individual or group has exclusive control over any one transaction or series of transactions is a major principle on which control is predicated. Internal checks are a part of any good standard operating procedure. If all transactions can be fully processed only by following prescribed procedures, then internal checks are operating effectively.

Some of the most commonly used internal checks or precautionary routines are in the following areas:

- . Control over cash accounts - authenticated deposits, recording cash receipts, bank reconciliation statements, pre-numbered checks, check signing authority, "paid" cancellations, blank and void check handling.
- . Control over petty cash - eligible payments, size of fund, purchase approval, receipts, reimbursed receipt cancellation, surprise count of funds.
- . Control over purchasing - segregation from accounting, pre-numbered purchase orders, authorizing requisitions, segregated employee purchases, excess quantity control, receiving of filled orders.
- . Control over personnel records and procedures - hiring, dismissal, time keeping, approving vacation and leave, payment and leave discrepancies, employee evaluation and review.

- . Control over payroll - payroll preparation and distribution, changes in pay scale, handling unclaimed paychecks, signing for paycheck receipt, spot checks.

TASK A - STANDARDIZED REPORTING

Four reporting forms have been developed, which are recommended to achieve full accountability of transportation operations and services to subsidized riders. Their use would establish a standardized data base and reduce administrative data manipulation at the lowest levels, where computer assistance is least feasible. Although it may also result in more detailed record keeping for many transportation services, it is believed that with the use of this reporting system, increased efficiency will counteract any tendency for it to consume more manhours than the existing systems. The benefits of standardized reporting are expected to advance the capability to coordinate transportation funding programs and integrate public ridership within the same systems.

The recommended reporting system includes two continuous data collection instruments for ridership and operations information. Copies may also be submitted for monthly reports to agencies requiring detailed reporting on all services to their clients, or they may be retained at the provider (coordinator and/or operator) level to maintain full records there. Both include full instructions for preparation. Summary reports for the information on these forms have not been designed although retrievable data items are discussed specifically in Step 12 and generally throughout the manual. As collection instruments, however, these completed forms include enough detail to meet the requirements of all funding sources, if agreement is reached on a basic concept of fare calculation and cost distribution-reimbursement.

Transportation Authorization/Request Form

This form can be completed either by an operator upon receiving a called-in request for transportation, or by participating agencies authorizing clients for transportation services. Mailed-in forms should have a copy retained by the authorizing agency. The transportation provider also uses copies during dispatch planning and to summarize monthly adjustments to requested services. At the end of each month, the adjusted copy may accompany an invoice for services rendered. (This form may be considered optional if other required forms are more detailed and serve the same purpose.) Form #1 is an example of a Transportation Authorization/Request Form.

Route Dispatch/Check List Form

Form #2 is an example of a Route Dispatch/Check List. This form is an operational log sheet designed to be compatible with cost reimbursement based on units of service other than passenger miles for fare calculation purposes. For maximum recording space onboard, only the summary items required from the driver are requested on this form. However, form copies may also be submitted monthly for detailed reporting. If required by each participating agency, such detailed reporting would

TRANSPORTATION AUTHORIZATION/REQUEST

Operator/ Provider _____ Date Filed _____, 19__

Source _____ Effective Dates _____

Name _____ Mailing Address _____

ID# _____ Phone _____

Pickup _____:_____ Return _____:_____ Origin Address _____

Arrive _____:_____ ET _____:_____ Destination Address _____

Depart _____:_____ ET _____:_____ _____

Operator's use only
ET _____:_____
ET _____:_____

Special Service _____ Trip purpose(s) _____

Operator's use only	
Route(s) _____	Fare \$ _____
<u>Adjustments from route check sheets</u>	Month of _____
Total Charge \$ _____	

Directions to pickup point:

DIRECTIONS FOR PREPARING TRANSPORTATION AUTHORIZATION/REQUEST

This form may be used to authorize transportation of riders over a period of time. Service may be requested on a regular basis for subscribers. The form may be used for subsidized riders whose fares are reimbursed by a sponsoring agency or for riders who are billed directly for fares. It is also for recording one-time, called-in requests for transportation. It may be filled out by the requesting party and mailed to the provider in advance, or by the provider during called-in requests.

Circle the word(s) Authorization and/or Request to indicate its present use.

- Operator/
Provider - enter name of transportation organization (coordinating or operating entity) unless preprinted
- Date Filed - stamp or write in the date this form is prepared
- Source - stamp or write in the name of the sponsor or other authorizing agency if not preprinted;
- enter "cash" or operator's name for direct request by a fare-paying rider
- Effective Dates - enter new authorization period (and days for subscribers);
- indicate expiration date for a request by a current authorized rider
- Name - first and last name of rider;
- subsidized riders use full name with middle initial if required by sponsor
- Mailing Address - enter for new authorizations only (include zip code)
- ID # - enter current, newly assigned, or adopted identification number (SSAN)
- use suffix: E= age 60 or older, H= handicapped (can not drive standard equipped car), and additional local codes as appropriate
- Phone - enter a telephone number where rider can be reached to confirm service or for other follow-up contact

- Pickup/Arrive - request service either by time of pickup at origin or time of arrival at destination (not both - dispatcher will complete)
- Depart/Return - if round trip requested, indicate either desired time of departure from destination or time of return to origin (not both - dispatcher will complete)
- ET (P,A,D or R) - dispatcher enters Estimated Time of Pickup, Arrival, Departure or Return when unable to meet a requested time
- Origin Address - enter common name or best obtainable street address and vicinity for point of pickup and return (locate by zone code if zones are used);
- enter "same" if same as mailing address
- Destination Address - enter common name or best obtainable street address and/or vicinity for point of arrival and departure (locate by zone code if zones are used)
- Special Service - indicate special assistance required or expected at each point of service (coded P, A, D, R, or T= in transit)
- Trip Purpose - enter "work", "health", "nutrition", "education", "other", "all", and/or additional purpose categories for local use
- Routes - dispatcher enters identification for assigned route(s) to serve the trip (in order from origin to destination if transfer is involved - indicate return routes or "reverse" for round trip);
- route codes should identify operator, service component and area, etc. as appropriate for aggregating services
- Fare \$ - dispatcher enters one-way fare for requested service, including service charge for special services (if return fare differs, enter both)
- Month of - when billing, enter current month for which fares are being totaled
- Adjustments... - summarize total monthly service or adjustments to fares for service as requested. Refer to Route Dispatch/Check Lists for the routes involved on the days service was requested (no shows, cancellations, service charges, altered trips)

Total Charge \$ - calculate total fares for monthly billing from these entries: Effective Dates, Fare \$, and Adjustments...

Directions... - give directions to pickup point when it is unclear from Origin Address entry (if there is not enough space to complete directions, use reverse side and enter "over" in this space - include complete directions in one place, either front or reverse)

ROUTE DISPATCH/CHECK LIST

Operator _____

Date _____ 19__

Route # _____

Start _____ : _____

Vehicle # _____

Driver _____

Name	ID#	Origin-Destination	No Show	Svc. Chg.	Late	Dest. ETA
Total Unscheduled Riders	Total Cash Riders	Fares Collected	Miles Traveled		Finish	

Form #2

DIRECTIONS FOR PREPARING ROUTE DISPATCH/CHECK LIST

This form is designed to encourage dispatch planning for operations other than fixed routes. For subscription routes that are repetitious from day to day, the dispatch information may be copied. Dispatch information should be prepared by the dispatcher or driver prior to each tour* operated. Fill in the information requested at the top of the page. The planning should follow the steps below:

1. Sort the Transportation Authorization/Request forms assigned to the respective route(s) or tour for the same schedule in order of pickup or return. Inserted sheets if necessary to indicate destination points in the order they will be served.
2. Transfer the requested information from each of these to the first three columns on this form with the following exceptions:
 - when a scheduled rider does not have an authorized identification number, enter the cash fare amount under ID #;
 - under Origin-Destination enter in the row for each rider only origin address and origin and destination codes (if used);
 - enter destination addresses (with codes) in the sequence the points will be served.
3. No Show column: Enter "CNX" when a scheduled subscriber has cancelled. For 16(b) 2 vehicles and others requiring trip purpose information, enter the first letter(s) indicating trip purpose.
4. Svc. Chg. column: Enter one mark (1) for each chargeable unit of special service requested (eg., each occurrence of assistance beyond vehicle boarding and disembarking). An "O" may be an appropriate entry for lift operation.
5. Alt./ Late column: Enter "ALT" when a scheduled subscriber has requested to alter an authorized origin or destination. Enter "+" or "-" and the appropriate amount of fare adjustment instead when the altered trip results in a fare different from the authorized trip fare (if policy allows this adjustment).

* tour is a term used to describe a period of operation for vehicles not on fixed routes from the time it is centrally dispatched or begins its service day until it enters any new phase of operation. A tour includes more than one vehicle trip and one or more routes.

6. Dest. ETA column: At check points where time reporting is required (certain program destinations like CETA) or desired, enter estimated time of arrival, according to the route schedule or earliest arrival time promised.

Spaces may be left between each row of entries when it is likely that unscheduled riders will be added enroute and need to be recorded. Or, inserts may be indicated by a number in the left-hand margin and listed on an attached form.

The completed dispatch plan also serves as a check list on which the driver records adjustments to scheduled services. To minimize operational delays, the following notations are recommended as the only ones to be made by the driver enroute:

Mileage - if the vehicle is equipped with a trip meter, reset it - if not, write down odometer reading prior to start;

No Shows - mark "X" in that column (over trip purpose code, if one is entered);

Changes from special services requested - add or cross out marks (||) under Svc. Chg. to adjust service charge units as appropriate;

Altered passenger trips - enter "ALT", "+" or "-", and/or adjusted fare amount in Alt./Late column when passengers change scheduled origin or destination (also change affected origin or destination codes);

Behind schedule - at check points with an ETA entered, indicate the minutes behind schedule in Alt./Late column;

Unscheduled riders - insert information for unscheduled riders added enroute if they must be recorded - if not, simply enumerate (|||) unscheduled passengers under Name and again under ID # for those paying fares in cash (use blanks in the row for the next destination listed - service charges may also be enumerated for unscheduled riders, if desired).

Each route when finished should be promptly summarized for the items in the blocks below the columns (working backwards). When one route includes more than one form, complete all these entries on one form only.

- The driver totals the number of cash-paying riders from those enumerated plus the scheduled riders paying cash - all are indicated in the column under ID #.
- If the driver counts cash fares collected, the driver may enter the total at the completion of the tour - otherwise, the completed list should be turned in with the fares collected and the amount will be entered after counting.

The driver must complete Miles Traveled from the tripmeter or odometer and Finish Time upon completing the tour.

The entries on this form provide full accountability without recording devices or other fare processing instruments. Its use should be simplified when the same recording is accomplished by more advanced methods.

generate masses of copied paperwork for routes with ride sharing of clients from multiple programs. More acceptable would be an approved plan to retain all copies at the regional provider level, with computerized summaries relayed to participating agencies.

Notice that less detail is anticipated in recording cash ridership on this form. It should be pointed out that cash fares may not necessarily have a direct relationship to units of service for direct comparison with subsidized riders. In fact, cash passengers are likely to be partially subsidized indirectly through operational subsidies received by the operator. In that case, it may be necessary to insert origin and destination codes for each unscheduled cash passenger, in addition to enumerating them. This record would permit the fairest cost distribution between cash and other subsidized passengers where unique trip or zone-to-zone fares are used.

The other two reporting forms included in this package are summary reports that are recommended for quarterly submittal to funding sources. Both draw directly from allocated accounting records. As a result, the itemized entries may vary from those shown, which are included as examples. Although largely self-explanatory, each requires some guidance for effective use.

Operator's Financial Status Report Form

Form #3 is an example of an Operator's Financial Status Report. On this form, the Contractor's name is related to the "Program/Fund" disaggregation in the basic accounting structure (Step 12). Include the related control code if it is helpful.

The listed items are numbered according to expenditure control codes used in this manual, which may vary in reality. The items used in this example are the aggregated accounts except for the disaggregated "Materials and Supplies." It is expected that limited disaggregation would be needed for this report, since the itemized accounts should agree with those used in the original budgets.

Percentage signs are included to suggest where percentage computations would be useful, but not mandatory. Credits are included to allow adjustments in expenditures to show up. Examples of credits include depreciation recovered against contractor-owned or supplied vehicles, rebates for unused tickets, and adjustments for corrected fare charges to reflect actual cost.

Vehicle Report Form

This report (Form #4) is for submittal to funding sources which administer the purchase programs that supply each respective vehicle. The control codes from the recommended chart of accounts that relate to each of the variable cost items shown are as follows:

OPERATOR'S FINANCIAL STATUS REPORT

Operator _____

_____ Qtr., 19 _____

Contractor _____

Budget Period _____

Uniform Account/Budget Items	Budget Total	Quarterly Expenditures	Expenditures YTD	Balance
	\$	\$ (%)	\$ (%)	\$
000 Salaries and Wages				
010 Fringe Benefits				
020 Contractual Services				
030 Materials and Supplies				
031 Fuel				
032-4 Vehicle Parts				
035-8 Supplies				
040 Utilities				
050 Insurance				
060 Leases and Rentals				
070 Taxes, Fees and Assess.				
080 Interest				
090 Depreciation and Amor.				
100 Miscellaneous Items				
190				
Credits				
	----	\$ Cr.	\$ Cr.	----
	----	\$ Cr.	\$ Cr.	----
TOTAL	\$	\$ (%)	\$ (%)	\$

Form #3

VEHICLE REPORT

Operator _____

_____ Qtr., 19____

Purchase Program _____

Vehicle # _____
 (indicates special equipment and capacity)

Odometer mileage _____

Variable Cost	Unit Cost	X	Units This Quarter	=	Direct Cost
Labor	\$				\$
Maintenance (Routine)					
Parts, oil					
Fuel					
Depreciation (____%)					
Accidents, Breakdowns (attach reports)					
Insurance					
Other					
Total Variable Cost to Operate					\$
<u>Component Services</u>	Allocated Cost	+	Total Component Units	X	Units this Vehicle =
	\$				\$
Total Allocated Fixed Costs					\$
TOTAL COST TO OPERATE					\$ _____

Vehicle miles this quarter _____

\$/mi. \$ _____

Vehicle hours this quarter _____

\$/hr. \$ _____

Unscheduled hours out of service _____

Full Days in service: Scheduled _____
 This quarter _____

Form #4

- . Labor - Function 11, Expenditures 002 to 004 and 010
- . Maintenance (Routine) - Function 21
- . Parts, Oil - Expenditures 032 to 034
- . Fuel - Expenditure 031
- . Depreciation (indicate percentage charged) - Expenditure 091
- . Accidents, Breakdowns - Functions 22 to 24
- . Insurance - Expenditures 051 to 054
- . Other - All other with the respective vehicle code

The calculation for achieving direct cost by multiplying unit cost and units per quarter is optional if the disaggregation for each is in the chart of accounts used. If not, this calculation provides a means to allocate the costs by item (e.g., Fuel - 65¢ per gal. X 200 gals. = \$130).

Component Services is local aggregation of individual routes by program, which may include a breakdown by area (e.g., county pair) and type service (demand response, fixed route). Costs allocated by these aggregations could be distributed to each vehicle on the basis of some unit that can be readily totaled for all the services in the component aggregation and be identified by vehicle as well. The units could be vehicle miles, vehicle hours, cost to operate, or passenger units of service. The selected measure should be agreed upon as a fair basis for distributing fixed costs allocated to the respective component services.

Vehicle miles and vehicle hours for the quarter should reflect in-service mileage and time available for service. Mechanical down time is indicated by the out-of-service time. That item permits calculating lost opportunity costs associated with accidents and breakdowns. The final items permit conversion from hours to days and longer periods of time reference.

Other Examples - The Mountain Area Transportation System (MATS) in Cherokee County, Georgia has developed a reporting form system that appears to cover minimal data requirements and be relatively easy to use. While the forms in the MATS reporting system may not provide the detailed data of the preceding four-form package, they are presented here as an alternative that seems to work well for their users.

DRIVER'S NAME _____

DATE _____

ROUTE NO. _____

TIME _____

VEHICLE NO. _____

MATS

	NAME	PICK-UP POINT	DESTINATION	AGE	RACE	SEX	HANDICAPPED	SPECIAL	SOURCE	COST			OTHER
										10c	25c	Total	
1.													
2.													
3.													
4.													
5.													
6.													
7.													
8.													
9.													
10.													
11.													
12.													
13.													
14.													

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Form #5

*N.I.E. - NON INCOME ELIGIBLE

Total _____

INSTRUCTIONS FOR M.A.T.S. TRIP SHEETS

General Instructions:

1. Dispatcher will complete trip sheet before each bus run.
2. Any additions or deletions from the trip sheet will be noted by the drivers and brought to the attention of the dispatcher as soon as possible.
3. Drivers will turn in the trip sheet to the dispatcher upon completion of the run. In the event of the driver going directly home on completion of the last run of the day, the trip sheet can be turned in on completion of the first run the next day.
4. Trip sheets will be filed for future reference.

Form Instructions:

1. Heading: Fill out all spaces.
2. Body:
 - a. Name - Name of passengers
 - b. Pick-up Point - Place passenger boarded bus
 - c. Destination - Place passenger left bus
 - d. Age - If 60 or older use 60 plus. If under 60 use a line
 - e. Race - W-white, B-black, etc.
 - f. Sex - M-male, F-female
 - g. Handicapped - Use if wheelchair lift is needed or used
 - h. Special - Any special information
 - i. Source - Funding source, i.e. - ARC, APDC, CSA, \$, Etc.
 - j. Cost -
 - 10¢ - minimum charge plus any additional route mileage
 - 25¢ - charge for miles traveled off main routesNOTE: If client transfers from one vehicle to another during a single trip indicate no charge by placing a line in the column and making note in the OTHER column of which bus the passenger transferred from ie: TRANSFER - WALESKA RUN
 - k. OTHER - Use for indicating information not already accounted for ie, TRANSFERS, not income eligible (NIE)
3. Total : Total of fares for the trip sheet.

Form #5 (Continued)

MATS

MONTH _____

PROGRAM _____

DATE	TOTAL SERVED	RACE		SEX		HANDICAPPED	TRIPS MINIMUM CHARGE	MILES		TOTAL TRIPS	AGE 60+	LOW INCOME
		W	NON W	M	F			10¢	25¢			
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
TOTALS												

INSTRUCTIONS FOR M.A.T.S. RECAP SHEETS

General Instructions:

1. Recap sheets are to be completed for every individual funding source on a daily basis using one recap sheet for each source.
2. Information for recap sheets is obtained from trip sheets.
3. Recap sheets are to be filed with trip sheets at the end of each month.

Form Instructions:

1. Heading: Program space to indicate funding source, ie ARC, APDC, CSA, FARE BOX, ETC.
2. Body:
 - a. Total Served - total number of passengers not including transfers
 - b. Race - W-white & non w-nonwhite
 - c. Sex - M-male; F-female
 - d. Handicapped - if special equipment is required - ie: wheelchair lift.
 - e. Trips minimum charge - number of minimum charge trips
 - f. Miles - 10¢ - number of miles charged other than minimum charge trips
25¢ - Number of miles charged of "off main route travel"
 - g. Total Trips - Total number of passengers including transfers
 - h. Age 60 plus - Number of passengers 60 years old or older
 - i. Low Income - Number of passengers below the current poverty guidelines
 - j. Totals - Monthly totals of each column

Form #6 (Continued)

M.A.T.S. MONTHLY PROGRESS REPORT

PROGRAM

DATE

<u>Number of Clients Served</u>	<u>Number of Minority</u>	<u>Number of Low-Income</u>	<u>Units of Service</u> (Trips - Homes)
-------------------------------------	-------------------------------	---------------------------------	--

INSTRUCTIONS FOR M.A.T.S. MONTHLY PROGRESS REPORT

1. Progress reports to be completed on each funding source on the first working day of each month and transmitted to the central office.
2. Information for progress reports will be found in the total column of the M.A.T.S. trip recap sheet.
 - a. Number of Clients Served: Obtained from total served column
 - b. Number of Minority: Obtained from non-white column
 - c. Number of Low Income: Obtained from low income column
 - d. Units of Service: Obtained from total trips column

Form #7

TASK B - METHODS OF EVALUATION

Process Evaluation - Evaluations of this type are the easiest to implement because they are intermeshed with the entity's ongoing reporting system. Most importantly, process evaluations give managers and board members the opportunity to assess whether or not the predetermined goals and objectives of the system have been met and, if not, what revisions or adjustments need to be made. This type of goal and objective setting, and ensuing evaluation, allows the manager and board members to remain integrally aware of the purpose and success of the transportation system. Revised objectives should be set at the beginning of each operating or funding year and may address, but should not be limited to:

- . Number of passengers served by categorical type
- . Number of passenger miles delivered
- . Cost per passenger trip by purpose, area, etc.
- . Cost per vehicle mile or vehicle hour
- . Cost per passenger mile, zone, or equivalent
- . Total cost of transportation services

Data should be collected on each of the above indices during the program year and compared with the previously stated objectives. This will establish a percentage effectiveness rating for relevant service goals. Data capability must be built into continuous reporting systems, such as those designed in Step 19, and relate to operational objectives, which should be set as a result of work throughout Phase III.

Impact Evaluation - The second aspect of evaluation is the funding agency's approach, which should emphasize the effect of services on the respective client group. This impact evaluation could be accomplished, in part, through the implementation of a client survey administered by agency personnel, drivers, or regular attendants. The survey should be concise and simple. Data items on the survey may include but need not be limited to the information below, some of which may be obtained from reporting forms:

- . Number and type of clients served
- . Personal travel frequency
- . Use of other modes of transportation
- . Perception of service convenience
- . Personal travel comfort
- . Awareness and understanding of system operations
- . Passenger profile
 - Age category
 - Income level
 - Employment status
 - Residential location
(by zones if they are used)
 - Sex and race
(if specifically required)

Appropriate indices should be well established by the time the evaluation takes place. The data items above are used as examples. The most useful specific measures in each case will be arrived at in conjunction with early development objectives established in Step 6.

Glossary of Terms

Glossary of Terms

Accessibility - used throughout this manual to mean that any person should be able to use specific services, regardless of handicaps and without discrimination. See regulations of the U.S. Department of Transportation (DOT) and Health, Education and Welfare (HEW) for requirements of the Rehabilitation Act of 1973, Section 504.

CETA - acronym for Comprehensive Employment and Training Act of 1973. Used to refer to the public manpower programs authorized by that legislation.

Cooperation/Coordination/Consolidation - used as a progression of relationships in the services coordination process. Cooperation is a prerequisite to coordination. Consolidation involves the physical concentration of resources under the control of a single entity.

Component (of service) - used in this manual to describe some distinctive part of a larger transportation system. It may be service under a specific contract, within a given geographical area, for a select target group, etc.

Deadhead - when a vehicle starts on its first trip empty or returns from its last stop with no passengers on board. Deadheading along a certain portion of a route may be unavoidable or may be due to poor planning and missing opportunities to pick up other riders.

Demand responsive - (services) provided as a result of a direct request. Includes taxis and dial-a-ride service, which respond to telephoned requests.

Exclusive ride - describes the type of transportation services provided by taxicabs or dial-a-rides when only one customer rides at a time by policy of the operator.

Fixed Route - path followed by a vehicle operating over the same route repeatedly, usually according to a fixed schedule on an hourly, daily, weekly or other regular basis. The term "route deviation" is used to refer to changes in fixed route systems to accommodate other riders.

Integration (of routes or services) - improved efficiency in a system of vehicle operations designed to reduce duplications or otherwise economize in the cost of operations by combining multiple routes or service components. Integration refers to an internal system improvement. Coordination, conversely, implies an interagency improvement that may be of an organizational nature, or which includes cooperation.

Latent Demand - potential implicit consumer demand including unmet need (explicit demand) and users by choice not currently served.

Glossary of Terms

Level of service - any definition or proposal of service quality and quantity which may include frequency, comfort, convenience, accessibility, coverage, etc. This is the subject of Step 5 - Task D.

Life cycle costs - calculated by analyzing both the capital and operating costs of vehicles and spreading those costs over the expected useful life of the vehicles to enable a comparison of the true cost per year for different vehicles.

Linehaul - a synonym for fixed route service.

Load factor - the actual count of riders for a certain route or time period versus the total seat capacity of the vehicle. A vehicle experiencing a 50 percent load factor is using only half its seats for a given service or time period.

Paratransit - any non-conventional transit service such as dial-a-ride (demand responsive), fixed schedule on flexible route, jitney, subscription, social service transportation, and taxis.

Purchase of services - a contractual arrangement or payment for costs incurred by the operator in the delivery of services (transportation) on the part of an entity or agency instead of operating those services itself.

Reimbursement rate - the measure by which costs are divided or allowable payment scales are multiplied to compute the total reimbursement for services rendered over a period of time. Examples:

- passenger miles (and equivalents discussed in Step 12 - Task B);
- vehicle miles (same as the difference between odometer readings on each vehicle at the beginning and end of the period);
- passenger trip (flat-fare charge for travel from pickup to destination for each passenger).

Ride sharing - any degree of mass transportation that shares use of vehicles to a greater extent than exclusive-ride service. Generally, encompasses all forms of paratransit and conventional mass transit.

RTA - abbreviation for regional transportation authority.

Sections 3, 5, 9, 16(b)(2), or 147 - assistance programs authorized by the Urban Mass Transportation Act of 1964, or the Federal Aid Highway Act (147 only). See Technical Supplement Table 1.1.

Specialized transportation - includes services designed to meet special user needs or in support of specific client services and possibly integrated with publicly accessible transportation services. Examples: elderly and handicapped service, social services transportation, special activity trips for the institutionalized, school buses.

Subscription (route or service) - operated on a reservation basis for users who request regular or repeated service over a specified period of time (e.g., one month).

Target group - used to describe a segment of the population that can be defined and located such that it can be identified as the group to benefit from a specific service or to be selectively addressed for some other purpose (e.g., marketing efforts).

Title III - a portion of the Older Americans Act of 1965 (as amended through 1975 - 1978 amendments pending) that provides grants for programs on aging to states and localities and may be used for paying both operating and capital expenses for transportation services "where necessary to facilitate access to social services."

Title VII - a portion of the Older Americans Act of 1965 (as amended through 1975 - 1978 amendments pending) that provides grants for nutrition programs for the elderly and may be used in part to provide transportation of nutrition program clients to and from meal sites and/or the delivery of meals to homes.

Title XIX - Medical Assistance Program (Medicaid) which is a part of the Social Security Act and is allowed to be used to provide transportation for Medicaid clients to obtain medical services.

Title XX - Social Services for Low-Income and Public Assistance Recipients which is a part of the Social Security Act, and is allowed to be used to provide transportation of clients as long as the state plan provides for transportation as an eligible activity.

Trip generators - sites which attract trips and thereby create a demand for transportation services and facilities, or which otherwise serve as an end point for passenger travel or commodity movements.

Transit dependent - describes persons without access to private means of transportation, who rely on transportation services for mobility.

Transportation disadvantaged - describes persons who do not have access to the predominant and convenient means of transportation in their community for reasons of age, income and/or handicap.

Transportation entity - any public agency or private organization operating and/or coordinating the delivery of transportation services locally, regionally, or statewide as a primary function.

UMTA - acronym for Urban Mass Transportation Administration, U.S. Department of Transportation, which administers programs authorized by the Urban Mass Transportation Act of 1964.

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Joint HEW-UMTA evaluation of
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