

CITIZENS LEAGUE REPORT

TRANSIT:
The Key Thing
To Build Is Usage!

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How the Twin Cities Area Can Plan and
Finance a Balanced Auto/Transit System

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Urban Transportation Facilities
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Approved by
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MAJOR IDEAS

- * This is not a report on transit 'hardware'. The 'hardware' question is--as the Transit Commission's consultants agree--not the place where the Twin Cities area should now take hold of its transportation problem.
- * The key question to settle . . . the key thing to build . . . is patronage for transit. The type, and the quality, of the physical system this area will ultimately construct will depend very largely on the size of the 'market' that can be assembled for transit. Put another way: It seems unlikely that the area will make a really major investment in a transit system without the clear prospect of a growing number of patrons.
- * This means the community is going to have to think about how to build the market for transit.
 - * With the acquisition of the bus companies, the public now has a major financial interest in both the transit and auto/highway modes. Clearly, it cannot fund these as two separate systems, competing against each other and possibly duplicating increasingly expensive services and major facilities, for the area's riders.
 - * Choices . . . policy decisions . . . will have to be made about the relative proportion of trips to be carried by one mode and by the other--corridor by corridor and year by year.
 - * This means, in turn, that some responsible group will need to be equipped with the ability to adjust the levels of price and service to influence the rider's choice of modes.

This is an unfamiliar concept. But it is what is implied . . . if we are, as we say, serious about a 'balanced' transportation system--and, specifically--about tipping the present balance somewhat further in the direction of transit.

- * With all this, increases in the use of transit will require improved facilities . . . and this will require more dollars. They can be made available, by a change in our present policy for the financing of transportation.

The most striking single fact about present financing arrangements is the amount of revenue still coming into the road system from the general revenue (property tax) subsidy provided for its original development. As road use grew, part of the costs were shifted to users (as they have been, for example, for airport development).

. I N O U R R E P O R T

But today the road system is getting more general revenue from property than it needs . . . while transit--where subsidies are needed to build patronage--is getting less. Sound public policy calls for a shift of financing . . . with the auto/highway mode relying relatively more on user sources, and releasing more of its general tax support for the development of transit.

- * These changes can come only through a decision-making arrangement carefully structured to produce really 'balanced' decisions.
- * Planning must, clearly, begin with the Metropolitan Council . . . as the 'general contractor' on the job of urban development, responsible for programming transportation improvements together with sewer and other utility facilities.
- * A specialized agency--a Transportation Board--not composed of road or transit professionals should then transform the Council's general development plans into specific plans for the road and transit agencies to implement.
- * There is no compelling reason to create a second big public works agency, for the construction of transit facilities, when one already exists . . . with competence in right of way acquisition, engineering design and construction supervision. The job of actually building transit as well as highway facilities should, therefore, so far as possible, be assigned to the State Highway Department.
- * The use of transit will not increase, finally, without a dramatically new and different approach to the promotion and 'marketing' of transit service. Customers must be aggressively sought out. New combinations of rates, routes and fares must be tried. New vehicle systems must be developed and demonstrated. This critically important job of building ridership should be the mission of the Metropolitan Transit Commission--reorganized and with its members appointed by the Metropolitan Council.

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SUMMARY OF FINDINGS AND CONCLUSIONS

- I. *Critical transportation problems are coming in the Twin Cities metropolitan area.* The growing volume of movement resulting from increases in population, auto ownership, and trip length will not be eliminated by attempts to rearrange the pattern of land use and development to reduce the total volume of trips. Such changes can have only limited impact over any reasonable period of time. Facilities to accommodate increased volume must be developed.
 - A. People who do not drive, or do not have an automobile available to them, face serious problems. The frequency of public transit service, particularly during off-peak hours on most lines, is very low, and the present routes do not serve many non-drivers and their destinations. Many persons are required to rely on automobiles, despite a preference for transit. Others are served by substitute 'transit' systems developed by private companies and public agencies.
 - B. Problems are increasing, too, for the movement of people within such high-activity centers as downtown Minneapolis, Saint Paul, the University of Minnesota, and some suburban retail/office centers. The increasing number of activities located in various, ever-more-distant buildings within these centers requires more and ever-longer trips for which neither walking nor driving is feasible. Improved planning and continued development of skyways, plus mini-buses and possible small-vehicle people-movers, present good possibilities for resolving problems in the high-activity centers.
 - C. The major transportation problem will be congestion at the peak hours. Overall, the street/highway network--with some limited improvements plus additions to accommodate development on the edge of the built-up portions of the metropolitan area--has capacity sufficient to handle automobile non-peak movements for a long period of time. But, major improvements and additions to transportation facilities and/or service will be needed to handle peak-hour movements.
- II. *The peak-hour problem develops as people in autos try to move to work and home again across the network of freeways and arterial streets, resulting in more and more congestion near the geographic midpoints of the metropolitan area.* Because of the way the Twin Cities area is laid out, people trying to go from one side of the area to another unhappily have to pass through or near downtown Minneapolis, the University of Minnesota, the Midway, or downtown Saint Paul. This congestion can already be observed at peak hours on all major highways leading into these centers and--partly because of congestion on these--even on circumferential routes such as I-494, I-694, and T.H. 100. It is fundamental to understand that much of the congestion on the highway network around downtown Minneapolis, the University, the Midway, and downtown Saint Paul results from movements across the metropolitan area and would exist even if there were no trips to these centers. Congestion is, of course, compounded by the trips to these centers on the same routes.

- III. *Construction of additional parallel or diagonal freeways to relieve the growing congestion during peak hours is not feasible. The demands on space for many 6-12 lane freeways, the consequent relocation of thousands of people, and the damage to the environment and to existing communities are excessive. Public resistance to additional freeways through the built-up areas can be expected to remain high. Freeways constructed for capacity use only 20 peak hours per week and for automobiles carrying an average of 1.3 persons are extremely costly and inefficient.*
- IV. *Future transportation demands must be met by programs that provide more efficient use of both right-of-way and vehicles. This requires reducing reliance on the automobile, increasing the average number of persons per car used, and increasing the number of persons moving through concentrated areas on some multiple-passenger vehicle or facility.*
- V. *The inefficient utilization of the highway facilities results partly because the direct costs of automobile transportation which are apparent to the driver do not reflect the full costs. Auto user fees do not pay the full cost of road construction and maintenance . . . a substantial part is paid from property taxes. General taxes likewise pay most of the cost of traffic regulation and enforcement of traffic laws. Other costs such as air and noise pollution are shifted to those living adjacent to roads . . . or to the environment itself.*
- VI. *The test for transit is to attract an increased proportion of travelers. The construction of a new transit system will not by itself attract riders. We should not expect large numbers of people to leave the comfort and convenience of their private autos without significant new incentives to do so. The high cost of transit proposals made for the metropolitan area is not matched by any assurance that they will attract enough riders to substantially reduce reliance on the auto during peak hours and thereby avoid the duplicate, costly investment in additional freeways.*
- VII. *Increasing the proportion of total trips carried by transit requires a shift away from public policies which presently influence individuals to use autos rather than transit for peak-hour trips. Public policies that work with the relative attractiveness of service and price of both highways and transit are essential if the area is to fulfill the commitment to a "balanced transportation system". This is now being done -- what we are proposing is not a radical departure. First steps in this direction are now being taken. They must be extended.*
- VIII. *The development of policies which can give the metropolitan area a "balanced transportation system" requires:*
 - A. *An improved organization which can integrate the planning for automobiles and transit and make policy decisions. Transportation planning has evolved at least half way from none before 1962 to the Joint Program and the current Transportation Planning Program (TPP). Much of the planning responsibility, however, continues to be divided. Road planning and transit planning are performed by four different organizations and partly by them with the Metropolitan Council in the TPP. In the past several years there have been many studies, but no decisions about the basic direction for transit and/or highways. The problem is that the Management Committee of the TPP is not yet structured to make these decisions.*

- B. *Adequate financial resources to develop required facilities and to operate transit at a high level of service.* Funds are needed for both transit and highways. Transit requires funds for immediate operating deficits and substantial improvements in facilities and service, while highways need funds for their maintenance, rebuilding, improvement and new development on the periphery of the area. The source of funds for the two modes are, however, badly arranged. Transit is expected to rely on user charges even though it cannot support itself, while the auto, which can, is still substantially supported by general property taxes. This mixture of user charges and general revenues needs to be reversed.
- C. *An ability to influence individual decisions in the use of both highways and transit in a way that reduces reliance on the automobile during peak hours.* The factors that do--or could--influence the traveler's decision are not presently operated as part of a public policy to balance use of the system. Farebox charges, parking fees, gas taxes, wheelage taxes, auto license fees and tolls are employed--if at all--only for limited revenue-raising purposes. These and others such as limitations on access and spreading out the peak hour need to be explored and included as part of the overall transportation plan and policies directed to use of facilities and service.

IX. *Reasonable decisions about what transit facilities to develop can only follow when the metropolitan area has the ability to organize, finance and manage its transportation as an integrated system.* Only then can we answer the question of what kind of transit system and what kind of vehicle to select for any new major transit development. In this decision it is important that the area choose a system and vehicle which maximizes:

- A. Use of existing investment in right-of-way and equipment.
- B. Service for non-drivers.
- C. Service for present highway/auto users during the peak hours which will aid in attracting them to transit. This requires a system and vehicles which:
- 1) Can move at high speeds.
 - 2) Provide direct, non-stop, origin-to-destination movement for most trips.
 - 3) Require no transfers between vehicles for most trips or, at minimum, a fast, adequate interface between vehicles.
 - 4) Provide personal security and comfort to the user.
 - 5) Offer all-weather vehicles and facilities.
 - 6) Can be attractively designed into the communities in which development occurs.
 - 7) Contribute to a reduction in air and noise pollution in the metropolitan area.

It is possible that a vastly improved, properly operated bus system might be adequate for this area if the bus can be separated from the automobile congestion. Or, it is possible that a new type of transit system might be developed with the flexibility of a bus system but be more competitive with the auto. This so-called new-technology system is not presently available. However, demonstrations of new technologies are now ready to be made which offer possibilities for the area. By contrast, the use of two vehicles--one on exclusive trunkline right-of-way and another used to collect or distribute people at either end--does not appear to offer the attractive service which a single-vehicle, no-transfer system would provide.

A system built around fixed-rail lines, for example, will require an extensive network of buses to collect passengers near their homes and to distribute a large portion of them to their jobs. Consequently at least one, and for many two, transfers would be necessary simply because of the change in vehicle. A few miles of fixed rail would directly serve and be highly attractive to only a limited number of people given the low density of residential development and employment. As a result, it is very doubtful whether a costly fixed-rail system would make any significant contribution to alleviating transportation problems in the metropolitan area.

- X. *The timing of the decisions for developing a balanced transportation system in the metropolitan area is critical.* Decisions about financing transit, and about an adequate organization for planning and policy-making, are urgently needed first. Although the area must also begin now to explore the specific questions of "what facilities to build" and "how to manage transit and highway use", these decisions cannot properly be made until the area has agreed upon the basic policies and plans.

RECOMMENDATIONS

- I. The Legislature should reduce the amount of general real estate taxes used for roads and streets in the metropolitan area by placing greater responsibility for the cost of private auto transportation on the users and making a portion of the general revenues available for public transit facilities.

Specifically, the 1971 Legislature should:

- A. Reduce the county road and bridge levies on property in the metropolitan area, and limit them.
- B. Grant the Metropolitan Council authority to establish a transit financing district within the area reasonably benefited by transit, and authority to levy on property within this district a graduated, limited amount to finance transit development and operation.
- C. Authorize a transit bonding program (see below).
- D. Enact supplementary areawide wheelage charges or other user fees as a source of revenue for county highways to replace the revenue previously collected from road and bridge levies, and transfer the \$1.00 wheelage tax to roads.

- II. The Legislature should fix responsibility on the Metropolitan Council (MC) to make and carry out essential transportation decisions, and should create--subordinate to the MC--a Transportation Board (TB).

Specifically, the 1971 Legislature should:

- A. Transfer to and vest in the TB, by statute, the transportation planning responsibilities now exercised through the contractual Transportation Planning Program and its Management Committee, which is made up of representatives of the Metropolitan Council, the Metropolitan Transit Commission, the Minnesota Highway Department, the seven counties, and municipalities.
- B. Require the TB to propose, for approval by the MC--by a date and within guidelines set by the MC--specific alternatives and their recommendations for:
 - 1. The proportion of trips to be provided for by transit and highways in specific areas or corridors--particularly the proportion of peak-hour trips.
 - 2. Location and timing of development of major road and transit facilities.
 - 3. Early designation, reservation and acquisition of rights-of-way needed for highways and transit that are, or will become, available.

4. Annual and five-year capital improvement programs.
5. New arrangements for local government and citizen participation in deciding the location and design of transportation facilities.
6. Improved utilization of auto/highway and transit facilities, equipment and personnel.
7. The spacing and timing of the development of access to recommended new or improved limited-access freeways on the fringe of the metropolitan area.

C. Direct the MC, with the assistance of the TB, to propose to the 1973 session of the Legislature recommendations for:

1. Powers which may be needed to manage improved utilization of transportation facilities, such as:
 - * Charges for the use of facilities during peak hours.
 - * Charges for parking during peak hours.
 - * Controls over access to arterial roads and highways.
 - * Ways of spreading out the peak-hour movement.
2. Transfer of responsibility for specific roads among jurisdictions in accordance with their functions.
3. Creation of an integrated transportation fund for the metropolitan area to permit use of available monies where most needed and provisions for additional sources of financing for both highways and transit, such as:
 - * Assessments on benefited property.
 - * Recovery of part of the increase in property values resulting from transportation facility development.
 - * Assessments on various commercial and other organizations which benefit from transportation development based on the number of employees and/or customers.

D. Structure the TB:

1. To consist of seven to nine citizen members, one from each of every two Council districts, who have a metropolitan view and a familiarity with and interest in transportation. They should not represent agencies, builders, suppliers or transportation interests.
2. With members to be selected by the Chairman of the MC with the approval of the MC, and with the chairman designated by the Chairman of the MC.
3. With members serving part-time, and paid a per diem for their services.

- E. Grant the MC power to issue bonds for transit capital improvements, within specified limits, to permit prompt development of transit facilities recommended by the TB.
- F. Make available funds to the MC and to the TB for transportation planning from the metropolitan portion of the required 1½% of federal highway construction funds plus a limited portion of previously recommended wheelage charges and transit financing district revenues.

III. The Legislature should reconstruct the Metropolitan Transit Commission (MTC) to become an enterprise-oriented transit management agency under the MC, with significantly broadened responsibilities to promote peak-hour transit utilization and expand service for the non-driving population.

Specifically, the 1971 Legislature should:

A. Direct the MTC to propose a plan to the MC to include:

- 1. Utilization of manpower and facilities.
- 2. Improvement of services: routes and frequency.
- 3. Coordination of all transit services, including both:
 - * Services provided or contracted for by public agencies.
 - * Services provided by privately owned operators licensed by public agencies.
- 4. Demonstration of new systems of transit -- subject to review by the TB.

B. Continue the powers of the MTC as the manager of the public transit system to:

- 1. Set its own operating and capital budgets, subject to approval by the MC.
- 2. Contract for management of transit operations.
- 3. Employ necessary personnel and make employment agreements.
- 4. Purchase equipment.
- 5. Set schedules and levels of service within guidelines recommended by the TB and approved by the MC.
- 6. Provide public information service and promote transit use.
- 7. Conduct research and experiments with new routes, fares and new technology--subject to review by the TB.

C. Alter the membership of the MTC to consist of five citizens appointed by the Chairman of the MC with the approval of the MC.

- IV. The Legislature should authorize the Minnesota Highway Department, as originally provided in the 1967 transit commission statute, to provide service for the physical development of facilities for both highways and transit.

Specifically, the 1971 Legislature should:

- A. Direct the MC, in its development of transit--to the extent possible--to utilize the services of the Highway Department for:

1. Right-of-way acquisition.
2. Engineering and design.
3. Contract-letting and construction supervision.

DISCUSSION OF RECOMMENDATIONS

Transit Financing

Why must additional funds be made available for transit by the Legislature?

Adequate financing of transit is needed now simply to permit continuation of the only significant transportation service available to people without cars. In addition, transit offers considerable opportunities for an efficient solution to peak-hour movement problems in the future. However, if this alternative is to be seriously considered, the area must first maintain the present transit base and patronage and make improvements to it.

The present sources of revenue for transit, including farebox collections and the \$1.00 wheelage tax, will be inadequate to even maintain the present transit service during the next two years. Presently, it is anticipated that farebox revenue will fall short of the operating costs by \$3,160,480 within the next two years and shortages will continue to mount in the following years--unless efforts are successful to increase patronage.

The service improvements transit will require if it is to attract more riders also lack adequate funding. The wheelage tax, which is presently being challenged in the courts, collected \$1,100,281 in FY 1970. These funds are largely committed to matching the federal two-thirds contribution for the purchase of new buses as part of the improvement program and the acquisition of Twin City Lines. If the wheelage tax cannot be used for transit purposes, the MTC is authorized to levy an amount equal to the number of motor vehicles in the area on the assessed value of the metropolitan area. This amount would be approximately \$200,000 less than the wheelage tax presently collects and would greatly limit the ability of the MTC to fund even the local portion of the bus improvement program, which is only a part of the total program.

How should the Legislature provide funds for transit?

- I. We recommend the Legislature reduce the amount of general real estate taxes used for roads and streets in the metropolitan area by placing greater responsibility for cost of private auto transportation on the users and making a portion of the general revenues available for public transit facilities.

Our recommendation consists of three parts: A reduction in the property tax levies used for roads and streets; use of a portion of the reduced levy for transit within the area reasonably benefited by transit; and a shift from property taxes to user taxes to finance arterial street construction previously financed from property taxes.

The shift in the method of financing highways and transit we recommend anticipates partial funding of both highways and transit from user charges and property taxes. For example, some of the improvements for bus transit are entitled to funds from the highway user fund, which is also a source of funding for local arterial streets. We would expect that this will continue in the future and that funds from this sizable source will be made available to both. Similarly, our recommendation does not contemplate that the full cost of services provided for the automobile from

local budgets be financed by user charges in the near future. Rather, we are recommending that a small portion of the substantial local support for highways be shifted from charges on property to the user and that a portion of the general revenues be made available for public transit.

Why should the real estate taxes for roads and streets be reduced?

Auto/highway transportation has increasingly demonstrated its ability to generate needed funds from its users. The development and improvement of roads and streets before the automobile were the responsibility of local units of government, which levied property taxes to collect revenues for their improvement. With the advent of the automobile, this "infant industry" was further assisted by state-wide support from property tax charges. In 1912, a constitutional amendment was passed which authorized the Legislature to levy up to one mill to be placed in the state road and bridge fund to assist counties in the development of the increasingly necessary improved road network. This was followed in 1920 by another constitutional amendment which first authorized the levying of a personal property charge on automobiles for highway purposes. Later, in 1926, the gas tax was established--the tax which has provided the major revenue for highway construction and maintenance in the state and a portion of the funds for local and county roads, streets and highways.

Increasingly, the combination of user taxes including license fees and gas taxes have become the primary funding source for highway development in the state. Revenues paid by highway users to the state in 1969 totaled \$183,846,000, while an additional \$96,578,000 was collected from users for the federal highway fund. These funds have been growing at a rate of approximately 4½% to 5½% per year, at rates which have remained largely unchanged for the past four years. Assuming 45% of the total highway user taxes in Minnesota were collected from users within the metropolitan area, a total of \$126,188,800 was collected in 1969 in the seven-county metropolitan area. These funds have generated revenues sufficient to fund the complete state trunk highway and interstate network, plus a portion of the construction and maintenance costs on some county and municipal arterial roads.

Even with the substantial revenue-raising capability of auto user charges, however, a substantial portion of the total county and municipal network of roads and streets continues to be funded from local general revenues largely collected from levies on property. In 1969, for example, the seven counties in the metropolitan area collected \$16,330,275 from property--or 72% of the amount that was spent on county roads and bridges, many of which largely function as major arteries in the street/highway network of the area. In addition, municipalities in the area in 1968 funded a total of \$27,796,533 or 73% of their total street/highway budgets from locally raised revenue. These figures do not reflect the additional services provided to auto users from local revenues including traffic law enforcement, traffic direction, safety and emergency services.

In contrast to the 26% of the local street/highway construction and maintenance provided from general real estate taxes, transit today receives no support. In light of the substantial needs for transit and the contribution it can make toward alleviating long-range transportation problems, and the significant revenue-raising capability of auto user charges, we recommend the Legislature begin to reverse the mixture of user charges and general revenues by reducing the general real estate taxes made available for roads and streets by increasing the responsibility for private auto transportation on the users and making a portion of general revenues available for public transit.

Why not fund transit largely from highway trust funds?

Many have advocated that highway user funds be used to support transit. A very small portion of these funds can be used under the Federal Highway Act for some types of essentially capital improvement to bus transit. Indirectly, they are also used to develop and maintain the street/highway network on which bus transit operates. These funds, however, cannot be used to meet operating deficits and under present federal policies and the state view are not available for any non-roadway transit improvements or for any capital improvements separate from the street/highway network.

The use of highway user funds to finance transit is very appealing. It recognizes the fact that transit--to the extent it provides a service that removes a number of autos from the highways--reduces the capital requirements for additional highways. However, the use of these funds is limited by the present constitutional provisions in Minnesota, which limit the use of highway user taxes exclusively to highway purposes.

While it would be desirable to broaden the use of highway funds for transportation purposes to assure that the type of facilities and service is developed that is needed and agreed upon in the metropolitan area, it is likely that this change will take a considerable amount of time to accomplish, and, even after it is done, the fund may not provide any substantial revenue beyond what is needed for highways. These highway needs include continued maintenance and the rebuilding of the present street/highway network, plus limited improvements and new construction on routes on the periphery of the metropolitan area as well as the rest of the state. We believe this issue and the related subject of an integrated transportation fund should be reviewed by the Metropolitan Council with the understanding it develop recommendations for the 1973 session.

What other sources of funds were considered to fund transit apart from highway funds?

Farebox charges -- Increasing the transit fares from the present 30¢ to some higher amount was considered as a possibility for increasing revenues to support the operating costs and provide revenue for improvements to transit. However, increases in bus fares is self-defeating and inadequate. Although the transit network in 1970 collected \$13,857,095 from 50.2 million riders, experience in the past indicates that a 10% increase in the fare will almost automatically result in a 3% decrease in ridership. As a result, fare increases can be expected to do nothing more than barely provide income sufficient to operate the transit system for a decreasing number of riders. They cannot be expected to provide the income necessary to make the substantial improvements needed for transit -- even sufficient revenue to retire bonds. It is possible, however, that if measures are taken to increase ridership, farebox revenue might be sufficient to at least meet the operating costs. In order to reach this position, however, funds will be needed simply to make improvements required in order to attract--or even retain--ridership.

Assessments and tax-increment financing -- The direct assessment against benefited property for transit development or assignment of property taxes from the increases in tax base resulting from transit development are two methods which have some potential for funding transit capital improvements and should be considered for longer-term capital programs. The major limitation at the present time, however, is that they are not reasonable methods for collecting the short-term funds needed for immediate equipment and service improvements or to fund anticipated operating deficits. They should be largely limited to permanent capital improvements which will affect the value of land and buildings adjoining them--values which can be measured for the purpose of establishing assessment districts or in determining areas where increases in the value of property are directly attributable to the capital improvements.

There has been considerable discussion about using these financing methods for major transit capital improvements. In Chicago, for example, the downtown area is essentially constituted as a special assessment district for the purpose of underwriting the capital cost of a major subway program within that area. Likewise, the special assessments method was used to finance a large portion of the cost of the Nicollet Mall.

Tax-increment financing, which is authorized for urban renewal programs, is another method of capital financing. Under this arrangement, increased taxes resulting from the particular improvement--transit, highways, or urban renewal--are set aside to be placed in a special fund to retire bonds used for financing the improvement. Many issues must yet be resolved and much work needs to be done before it will be possible to use tax-increment financing for transit improvement programs. For example, some questions which need to be answered include: What effect will setting aside a portion of the increase in taxes resulting from transportation improvements have on the financing of schools and local governments which partly depend on these increases as part of their estimates of increased income? Should tax-increment financing be applied only to transit or should it also include highways? How much of development and the increase in value is attributable to transportation improvements, and how is this measured?

General revenue funds--income and sales taxes -- These substantial sources of taxes were considered as possible general revenue sources for transit financing. However, these sources have become increasingly the major means of financing general government services at the state and national level and will be heavily used to fund many services such as education, welfare, recreation, and others which cannot reasonably rely on user charges for their support.

General revenue funds--property taxes -- The property tax today is the primary source of funds for local units of government including a substantial portion of the construction and maintenance of streets and highways. Transportation, as between other local governmental services, provides a more direct service to property owners than many others--in making possible access from one location to another. Employers, for example, require transportation facilities--either streets or transit--to enable employees to reach their plant. Similarly, residents who pay property taxes need transportation facilities to make their numerous trips. As between other general revenue sources, therefore, property taxes appear to be a reasonable source of funds for transportation facilities. However, the substantial reliance on the property tax to fund all types of local governmental services has resulted in a substantial reliance on this tax to the point that it is questionable whether additional funds can reasonably be collected from it. In light of this condition, the portion of the property tax used for transportation purposes cannot be reasonably increased. However, if the present use of property

taxes for street and highway purposes was reduced, it would then be possible and reasonable to make available this portion for transit.

What does our recommendation propose for the funding of transit and highways?

We recommend the 1971 Legislature take the following four steps:

I - A. Reduce the county road and bridge levies on property in the metropolitan area, and limit them.

The county road and bridge levies presently constitute only a part of the total local governmental expenditures for street and highway purposes. These roads presently function as many of the major arterial roads serving to connect local residential streets with the highways and freeways. In some cases, they are even built to freeway standards and are indistinguishable from the roads constructed by the Highway Department. Currently, the mill levies which are authorized and levied vary considerably between the counties, as follows:

<u>County</u>	<u>Levy Authorized</u>	<u>1970 Mill Levy</u>
Anoka	25	15.94
Carver	35	29.74
Dakota	25	17.93
Hennepin	10	13.35*
Ramsey	10	6.21
Scott	35	31.96
Washington	25	19.30

* Hennepin County mill levy is for the public works budget.

One possibility in the initial reduction of road and bridge levies would be to reduce these levies by 6 mills, the present minimum mill levy. As the mill levies of counties for road and bridge funds are reduced, they should also be limited by a comparable amount to avoid the possibility of subsequent increases which would be possible without such limits.

I - B. Grant the Metropolitan Council authority to establish a transit financing district within the area reasonably benefited by transit, and authority to levy on property within this district a graduated, limited amount to finance transit development and operation.

Our recommendation would limit the authority to levy property taxes for transit purposes--either to meet operating costs or for improvement--to property which could be reasonably served or benefited by transit. This would mean that the presently unsettled, largely rural areas around the periphery of the seven counties which would not receive any transit service would not be required to contribute to its support. We suggest that the Metropolitan Council be given the authority to establish this district and the authority to levy on property within it a graduated, limited amount to finance transit development and operation. The Metropolitan Council, after appropriate study and consultation with the MTC, can best determine what the service area for transit is likely to be, and the areas which will reasonably benefit from this service. The degree of service provided within the transit

district could also be recognized by employing varying rates of taxation to property receiving varying levels of service.

The taxes authorized within the transit district should be set by statute and limited to no more than the reductions in county road and bridge levies. This would assure that the transportation burden on the property tax dollar does not increase.

If the road and bridge levies were reduced by 6 mills, in 1970 there would have been a reduction of \$8,452,538 in property taxes in the metropolitan area. Even if the transit financing district were smaller than the total seven-county area and the mill levy were only 4 mills, approximately \$5 million would have been made available for transit in 1970.

- I - C. The Legislature should grant the Metropolitan Council power to issue bonds for transit capital improvements, within specified limits, to permit prompt development of transit facilities recommended by the Transportation Board.

The MTC presently has authority to issue long-term revenue bonds and to use income from farebox receipts and the wheelage tax to retire them. The bonding authority of the MTC, therefore, is limited by the amount of operating revenue which can be committed for the retirement of bonds. This limitation could place substantial constraint on the improvement of the bus system if new sources of revenue are not provided and the wheelage tax is used to meet operating losses expected in the next few years or if the wheelage tax cannot be used for transit. The MTC does not have authority to issue lower-interest general obligation bonds.

The short-term (5 year) capital improvement program of the MTC contemplates renewal of the bus fleet and other improvements to bus mass transit plus payment for the acquisition of Twin City Lines. The total cost of these is estimated to be \$36 million, with two thirds of the total anticipated to come from federal funds and the remaining one third from local funds. The Urban Mass Transit Administration has reserved \$2,723,800 in 1971 and a total of \$9,723,800 in the first application for federal funds. The MTC has borrowed \$6 million in two-year certificates of indebtedness to provide short-term local capital funds for the first two years of improvements. These have been underwritten with a pledge of 85% of the receipts from the wheelage tax. Eventually the MTC plans to finance the entire program with longer-term bonds. The income from the \$1.00 wheelage tax would be sufficient to fund retirement of bonds for this program. However, the expected operating deficits make it appear there will not be sufficient funds to service even long-term bonds if these funds must be used to meet operating expenses.

Our recommendation would authorize use of lower-interest general obligation bonds. These bonds would have the full faith and credit of the tax base of either the metropolitan area or that of the proposed transit taxing district pledged behind them. This would permit the issuance of lower-interest bonds with a resulting lower total cost for capital improvements. We recommend the Legislature set the amount of bonds which may be issued within limits that will permit prompt development of transit facilities recommended by the Transportation Board (see recommendation II). These limits should initially be set to provide at least funds sufficient to substantially improve the existing bus system and possibly, if needed, the local one-third share of a new technology demonstration. Repayment of the bonds should come from any excess income of the MTC, from new sources such as assessments, or if necessary from a debt service levy on property. In later years, following recommendations and approval by the Transportation Board and the Metropolitan Council,

additional bonding authorization may be needed to provide funds for a substantial addition to the bus system and/or development of new rapid transit systems. Considerable effort will be needed, particularly at this time, to develop other revenue sources to provide funds for debt service.

- I - D. The Legislature should enact supplementary areawide wheelage charges or other user fees as a source of revenue for county highways to partially replace the revenue previously collected from road and bridge levies, and, if this is done, transfer the \$1.00 wheelage tax to roads.

Our recommendation looks toward development of areawide wheelage charges or other user fees as the major source of local funding for county roads and highways. Present and even increased state aid from the state highway user fund should continue, and might provide a portion of the replacement. Any remaining local funds needed for these arterial highways should be collected from road users instead of general real estate taxes. The wheelage tax was selected since it can be limited in its collection to a specific area such as the seven counties. In addition, this is one form of user charge which has not yet been heavily used.

Wheelage charges are used extensively elsewhere in major cities and counties for revenue purposes. In the event that transit is granted major sources of funding, then the present \$1.00 wheelage tax could be transferred to roads and made a part of the supplementary areawide wheelage charges. Counties, under our recommendation, would not receive less support for their highway network than they presently receive. Instead, our recommendation would simply shift the source of funding from real estate taxes to road user wheelage charges.

Transportation Planning and Decision-Making

Why fix responsibility in the Metropolitan Council to make and carry out essential transportation decisions?

The present arrangement for transportation planning and particularly for the making of major decisions is not working. The fragmented planning, plus the direct expression of individual builders and of highway and transit interests, has resulted in an organizational arrangement in which major decisions will be extremely difficult to make.

The general governmental organization for the metropolitan area--the Metropolitan Council--is the only body which can make the necessary decisions and at the same time weigh and balance the importance of transportation facilities against other major public services and requirements for the metropolitan area. Presently, planning for the transit system appears to compete with highways and vice versa, as the specialized building interests each attempts to attract trips or riders from within the same corridor. Unless the area can make the difficult choices and follow through with its major decisions, it is quite possible that we will see attempts to essentially duplicate the investment in transit and highways to accommodate the same number of trips.

There is a significant indication that the transportation agencies, particularly the Minnesota Highway Department and the Metropolitan Transit Commission, are waiting for direction from a metropolitan transportation plan. The Highway Department,

according to the Highway Commissioner, would welcome direction from the Metropolitan Council on the difficult decisions about what highways should be built and where they should be generally located. It also appears that similar direction would be welcomed by the MTC. What is needed now is to place positive responsibility in the Council, which can then get on with beginning to make some of the decisions which are needed -- decisions which can provide direction to the major building organizations.

Who should perform the transportation planning job?

- II - A. We recommend that the 1971 Legislature create--subordinate to the Metropolitan Council--a Transportation Board (TB) which is granted the transportation planning responsibilities now exercised through the contractual Transportation Planning Program and its Management Committee.

The present organization responsible for comprehensive long-range metropolitan transportation planning is the Transportation Planning Program. The key decision-making body within this program is the Management Committee, made up of the Chairman of the Metropolitan Council, the Chairman of the Metropolitan Transit Commission, the Minnesota Highway Commissioner, a representative of the seven counties, and a representative of the municipalities. This body presently adopts the yearly planning program which spells out what activities will be undertaken in transportation planning. It also acts, with the assistance of two advisory groups--the Technical Advisory Committee and the Policy Advisory Committee--to recommend major policies for the Transportation Section of the Metropolitan Development Guide.

The makeup of the Management Committee poses substantial difficulties in the making of tough choices between transit and highways within particular corridors. For example, if a transportation policy for handling of peak-hour movements suggests that transit be the preferred means of travel, the present organization, which is made up of essentially three highway planning and building organizations and one of transit, finds it extremely difficult to discuss such a policy without determining the extent to which such a policy would jeopardize their plans and future programs. The explicit representation of highway and transit interests in the body which recommends major transportation policies greatly reduces the possibilities of achieving balanced transportation decisions.

Why create a board under the Metropolitan Council just for transportation planning?

One alternative for developing a transportation planning organization would be to vest this responsibility directly in the Metropolitan Council. However, although the planning staff can continue to come directly from the Council, we concluded that the considerable amount of work which urgently remains to be done in transportation planning, and the many alternatives which must be considered, would place considerable demands on the Council, which has many other responsibilities beyond transportation. It is also desirable that a separate board function to direct this substantial planning program and be encouraged to develop, consider and air various alternative approaches to handling identified transportation problems. Under our recommendation, the Council would still make the major decisions but would be presented with possibilities and recommendations worked out by its planning board. In addition, the Council can and should provide guidance to the transportation planning function from policies it adopts as part of its overall Metropolitan Development Guide. We would anticipate that transportation planning and decision-making will evolve as a two-way process, with major development policies adopted by the Council

providing direction to the TB, and with transportation policies developed by the TB flowing into the Council for their adoption as part of the Development Guide for the region.

Establishment of a separate board under the Council for transportation planning and policy development is consistent with the Council's approach of setting up separate boards in specific areas largely for planning purposes. The Health Board and the Criminal Justice Advisory Council were established during the past two years, not to operate programs but to plan and advise the Council in these areas. Our recommendation that the Legislature establish the Transportation Board recognizes the urgency of getting this board set up and would simply expedite this and provide some direction to the issues that need to be resolved.

Why not place transportation planning responsibility in the Metropolitan Transit Commission under the Council?

Transportation planning--if it is to be comprehensive and balanced--must include both transit and highways. Since the area has an organization to operate and promote the needs of transit, it would be inappropriate to assign it this overall planning responsibility, since it does not build and operate highways. Although we recommend the MTC be placed under the Council (see recommendation III), it would be difficult to assign it the overall planning job as there could be no more assurance that plans would be objective and balanced from a transit agency than the highway department.

What major issues should the Transportation Board be looking at and attempting to resolve in recommendations during the next few years?

Specific issues in transportation planning and critical decisions which need to be made have been identified. What is needed now are some recommendations and decisions on a number of basic issues.

II - B. We recommend the Transportation Board propose, for approval by the Metropolitan Council--by a date and within guidelines set by the Council--specific alternatives and recommendations for basic issues in the transportation of people in the metropolitan area.

Our recommendation that the TB propose specific alternatives and their recommendations by a date and within guidelines set by the Metropolitan Council should begin to set some deadlines for the key decisions needed for transportation development in the metropolitan area. Although considerable additional planning remains to be done, it is essential that deadlines be established in the formulation of recommendations in a number of issues -- otherwise, we will probably see simply more studies in the effort to gain more time to avoid these major policy questions.

Specific issues which need to be resolved and on which recommendations should be made by the TB include:

II - B - 1. The proportion of trips to be provided by transit and highways in specific areas or corridors--particularly the proportion of peak-hour trips.

The major building decisions and determinations about how the transportation system will operate can be made only when decisions have been made about essentially how these trips should be handled. These decisions are most important, as they relate

to the proportion of peak-hour trips moving in specific areas or corridors. These corridors have already been generally defined in earlier studies and various highway and transit alternatives have been suggested as ways of handling the peak-hour movement in these areas. Without a decision about what proportion of trips should be handled by transit and by highways, it is likely that the area will continue to see both transit and highway proponents seeking to serve travelers within these corridors on public facilities which will be competing with each other. The metropolitan area needs direction and decisions about what the optimal investment in highways and transit to serve peak-hour movements in particular areas should be, simply to avoid the costly, wasteful, duplicate investment in both types of transportation facilities. The key decision before the Transportation Board should be to determine what the roles of highways and transit should be in accommodating peak-hour trips and, following this, what guidelines should be followed in the development of needed facilities.

II - B - 2. The location and timing of development of major road and transit facilities.

The metropolitan area, if it is to have facilities which perform the function assigned to them when they are needed within the funds available for their development, should begin to determine where these facilities should be located and when they should be constructed. This includes not only the location and timing of development of metropolitan highway thoroughfares but also the service level and route network for transit. Presently, these key capital improvement decisions--their location and timing--are made by the individual building agencies (the Highway Department, the MTC, the counties, and some municipalities) following the plans and programs prepared by these organizations. Some coordination between these agencies exists in the approval by the Highway Department of county and municipal state aid road projects, plus the discussions between the Transit Commission and the Highway Department, counties or municipalities in the development of facilities needed for transit on the street/highway network. However, this coordination does not generally attempt to measure in any overall way the contribution that specific projects will make toward alleviating significant transportation problems, nor does it attempt to determine any priority for the development of projects from available funds. Similarly, the difficult decisions involved in locating major arteries are largely left to the building organization in its negotiations with local municipalities and communities. These important decisions which will affect the development of the metropolitan area and the operation of the transportation system require the assistance and aid of the metropolitan transportation organization and direction from this body to assure development of an adequate system.

II - B - 3. Recommendations are needed to designate, reserve or acquire rights-of-way as early as possible that will be needed for transit and highways--particularly those that are, or will become, available.

In developing a transportation plan for the metropolitan area, when it is determined that major facilities need to be located in areas which are presently not built upon, or when rights-of-way become available that might well be used for transportation facilities, steps should be undertaken to reserve these for the needed facilities. For example, there is considerable evidence that the metropolitan area may need a second circumferential freeway beyond I-494 and I-694 to serve areas which will be coming into development during the next 10-15 years. Most of this arterial highway will be located on land which is presently not built upon --

land which could be reserved or even acquired at substantially lower cost today than in the future. Likewise, some of the major freeways connecting the metropolitan area to outstate Minnesota must be improved or new locations developed to provide an adequate system of highways for weekend recreational movement and a high level of accessibility to economic activities which flow between centers in the region served by the metropolitan area. In these cases, rights-of-way should also be reserved or acquired as soon as these routes can be located. The early designation, reservation or acquisition of rights-of-way for facilities which will be needed would guarantee that development would not occur on these sites, that conflict with communities would be minimized, and that land would be acquired at a substantially lower cost than would otherwise be required after development occurs on these sites.

Similarly, some rights-of-way which may be needed for transit should be reserved if they become available in the next few years. It is possible, for example, that some of the existing railroad right-of-way which could serve transit or even highways will not be needed by the railroads and will become available for development in the next few years. It would be a tragedy if any of these routes could serve the transportation network of this area--particularly transit--but were not reserved or acquired for transit when they became available. Already, one limited route of the Minnesota Western Railroad (a subsidiary of Chicago and Northwestern) is proposed for abandonment from near downtown Minneapolis out to and beyond T.H. 100. It would be unfortunate if the area should lose the opportunity which this right-of-way presents if it was determined that it was needed but it was not reserved or acquired.

II - B - 4. The TB should propose annual and 5-year capital improvement programs.

Capital improvement programming of transportation facilities would greatly assist in assuring that projects developed each year were consistent with the transportation plan for the metropolitan area. Such programming would make it possible to determine what the total capital improvement needs of the area are, and to match these with the available funds. In addition, such programming would assure that projects are built each year which will make the greatest contribution to alleviating transportation problems and that funds are spent where they will do the most good. Development of annual and 5-year capital improvement programs in recommendations by the TB would greatly assist in providing guidance to the building organizations and give the metropolitan area and individual communities a clearer idea about projects that will be undertaken.

II - B - 5. The TB should propose new arrangements for local government and citizen participation in deciding the location and design of transportation facilities.

Present arrangements for local government and citizen participation in the critical decisions relating to the location and design of transportation facilities are inadequate. Generally, they rely upon either public hearings or the appointment of citizen advisory boards. These devices, however, have not worked, as they do not involve citizens and local units of government early in the planning process before locational decisions are well advanced. Many of the most difficult and trying disputes in the location of freeways, for example, revolve around the objections by local communities within the central cities or even between municipalities and the Highway Department. These objections and the resistance of local communities--particularly in the central cities--partly occurred because of the lack of involvement by people within the communities affected early in the planning process.

Public hearings--even those held to consider alternative locations within a general corridor--for freeways or permanent transit facilities on exclusive rights-of-way are clearly an inadequate means for involving affected residents in these decisions which will affect them. The sporadic calling of public hearings tends to bring citizens into the planning process only after some decisions are made, and more often than not results in organized opposition to the proposals. An ongoing, continuous mechanism for citizen involvement is needed to involve people in an understanding of what is happening to the movement patterns in the metropolitan area, how these affect their area, what alternatives might be developed to alleviate particular problems, to indicate how the local community will be served, and what effort can be made to minimize the disruption to the area from possible facilities. The Transportation Board should consider, for example, development of local community councils in the central cities as outlined in the Citizens League report, "Sub-Urbs in the City", as a mechanism to achieve this early involvement of citizens in the planning process.

Similarly, arrangements for local government participation in the location and design of transportation facilities are needed. An ongoing vehicle for continuous communication and coordination between the staff and public officials of local municipalities and the metropolitan transportation planning function is essential if metropolitan transportation planning is to succeed. Although this occurs to some extent at the present time and is encouraged by the local approval required for location and development of highway improvements, it should be improved. Much of this can be done in the discussions about proposed comprehensive plans developed by municipalities which might be reviewed to determine if provisions are made for metropolitan transportation facilities which pass through local municipalities. In addition, the planning and engineering staffs of municipalities, plus the public officials involved in planning and public works programs, should be engaged in the early discussions about the metropolitan transportation network.

II - B - 6. The Transportation Board should propose and make recommendations for the improved utilization of auto/highway and transit facilities--equipment and personnel.

Considerable work is needed to determine what measures would improve the utilization of existing auto/highway and transit facilities. At the present time, it appears there is considerable excess capacity in the transit system and low utilization of equipment and personnel during the off-peak hours. Similarly, during the peak hours, the utilization of automobiles is very low and consequently the capacity of the arterial network to handle peak-hour trips is much below what could be handled even within automobiles. The utilization of these expensive transportation facilities and the return on the substantial investment could be greatly increased if steps were outlined that would encourage increased utilization during the peak hours. Efforts which would increase the use of transit vehicles during off-peak hours could result in improving transportation for people without cars and increasing the use of the fixed equipment investment in transit. A guide outlining what measures should be undertaken to improve utilization would greatly contribute to solving some of the transportation problems in the metropolitan area.

II - B - 7. The TB should propose and recommend the spacing and timing of development of access to recommended new or improved limited-access freeways on the fringe of the metropolitan area.

Currently, the Metropolitan Development Guide in its Transportation Section outlines some policies for the spacing of access on freeways. These were largely proposed to preserve the metropolitan-through movement character of these high-speed, high-capacity roads and to reduce the possibilities for unsafe movements. As new or improved limited-access freeways are proposed, these standards should be reviewed by the TB to determine whether the projects conform to these standards or whether the standards should be modified.

As the metropolitan area continues to develop, a major opportunity for influencing where development will occur is presented by the decisions about what new freeways to develop and their location. The access provided by these freeways has had considerable influence on land development and on the pattern of development in the metropolitan area. The TB and the Metropolitan Council should seriously consider what impact the development of new highways will have on the pattern, whether this is consistent with other policies of the Council, and, if they are not, whether or when these highways should be built. It is possible that some of these highways will be needed to accommodate the weekend recreational movements and the trade movements between the metropolitan area and outstate Minnesota. These situations might call for the early development of proposed freeways before the Council would like to see land development occurring in the areas adjoining them. One way of resolving this difficulty might be to establish policies on when access to adjoining land is developed and making the decisions about providing ramps to the freeways apart from the time when the actual freeway is constructed. Such a policy would not damage the accessibility of people living within the areas through which the freeway passes, as they would continue to be served by the existing street/highway network. The major impact of such policies would largely be on land values and the timing of development.

What major transportation issues need to be explored and decided upon that will require legislation in the 1973 session?

A number of transportation issues are not yet clearly defined, and specific recommendations have not yet been developed which will require legislative authorization or changes in statutes in order to develop an adequate, well-utilized transportation system for the metropolitan area.

II - C. We recommend the Metropolitan Council, with the assistance of the Transportation Board, propose to the 1973 Legislature recommendations for powers which may be needed to manage improved utilization of transportation facilities, recommendations on the appropriate jurisdictions for specific roads in accordance with their functional classification, and recommendations relative to creation of an integrated transportation fund for the metropolitan area.

A number of alternative ways of improving the utilization of transportation facilities need to be explored to determine their possible effects and their feasibility. For example, a determination must be made of what will be the effect of controls over access to arterial roads and highways or of charges for parking during peak hours on the number of persons per automobile and the ridership of transit. More specifically, we recommend that the Metropolitan Council undertake, with the assistance of the TB, studies and evaluation of four possible policies which could substantially improve the utilization of transportation facilities. These include:

- * Charges for the use of facilities during peak hours. These charges might be compared with tolls which could either be collected at heavily traveled points along the freeway network or possibly by monitoring vehicles along heavily traveled arterial streets/freeways with monthly charges billed to the users. Other variations include the possibility of having graduated charges on portions of the street/highway network, depending upon the volume of traffic and the capacity of the network in a given area. Such charges would begin to recognize the substantial burden which heavy peak-hour movements place on the more direct routes for trips across the metropolitan area. These charges might well encourage many travelers to increase the number of persons in an automobile to distribute the cost per person, encourage some to take transit and others to use the less direct and less heavily traveled arterial streets during these hours.
- * Charges for parking during peak hours. A charge for entering or leaving parking facilities during the peak hours should be seriously explored as one possible way of increasing utilization of transportation facilities. It is possible these charges might be imposed on all parking facilities above a particular size in the metropolitan area, whether or not there are fees imposed for the use of these parking facilities. Although it is possible that such charges might only be limited to parking lots or ramps serving major employment centers, the installation of collection devices should be considered for virtually all significant parking facilities which are used by cars during the peak hours. This system is already employed in the city of Baltimore for general revenue purposes, where a 15¢ charge is placed on top of existing parking fees or as a charge in lots which are provided at no cost to the driver. The feasibility of developing a system of peak-hour parking charges, their levels, and the cost of installing and maintaining collection devices needs to be fully explored. It is possible, however, that charging for movement during the peak hour at the end of the trip would be an incentive for travelers to pool their rides or use transit.
- * Controls over access to arterial roads and highways. Development of controls which would regulate the access to major arterial roads and freeways is another possible way of improving the utilization of transportation facilities. The Minnesota Highway Department and the MTC are currently planning a demonstration of this approach on I-35W from downtown Minneapolis to the Minnesota River. The demonstration, however, will probably be limited largely to giving buses preferential access to the freeway and not extend to automobiles with more than one or two persons. Essentially, the idea expressed here would be to monitor the number of vehicles on heavily traveled freeways during the peak hours and limit the access when the capacity of them has been reached. It is possible this approach will encourage people to use transit which will continue to have preferred access to the freeway or other slower but less heavily traveled arterial streets. The application of this approach, however, may limit its use only to limited-access freeways because of the need to have adjoining streets to handle the movement of autos which may be denied access during periods of heavy travel.
- * Ways of spreading out the peak-hour movements. The spreading out of the peak-hour movement by the staggering of work hours also should be considered as one possibility for alleviating congestion at the peak hours. The actual staggering of work hours, however, might be difficult to accomplish and would appear to make the smallest contribution toward improving the utilization of transportation facilities during the peak hours, as arrangements for car-pooling

would be hampered and little incentive would exist for the use of transit. However, the reduction in the severity of congestion during the peak hours by this means should be explored to the extent that it reduces the demand for additional facilities to handle these largely work-trip movements.

- II - C - 1. Following consideration of these suggested alternative methods or any others proposed which would improve the utilization of transportation facilities or reduce the peak-hour movements, the Metropolitan Council should propose to the 1973 Legislature the powers which may be needed to implement their recommendations.

Currently, the power to impose charges for the use of facilities or for parking during the peak hours, or powers which might encourage the spreading out of peak-hour movements, are not available to the Council or to other units of government. Controls over the access to arterial roads and highways presently reside largely in the agency with jurisdiction over these facilities--in most cases, the Highway Department. The need for such powers is not imminent, and they should be granted only after a determination is made about the use of existing street/highway and transit facilities as part of the overall transportation plan for the area.

- II - C - 2. The Metropolitan Council, with the assistance of the TB, should propose to the 1973 Legislature recommendations for the transfer of responsibility for specific roads among jurisdictions in accordance with their functions.

The realignment of the street/highway network on the basis of function and the assignment of the appropriate jurisdiction (municipalities, counties, and the State Highway Department) in accordance with their capabilities and resources, is needed. Such a classification and assignment of jurisdiction would clearly focus the available resources on the areas of greatest needs; should serve to relieve local units of government of much of the cost attendant to the movement of heavy volumes of fast, through traffic, and assure that the agency responsible for development and maintenance of certain types of highways has the capability needed to perform this function. The functional classification study recommended can build upon work already under way by the Minnesota Highway Department. Some examples of questions which should be answered in these studies include: What capabilities do the various county and municipal public works departments have to design, construct and maintain facilities such as residential streets, various types of arterial surface streets, expressways, and limited-access freeways? To what extent are the resource capabilities of each of the jurisdictions matched with the cost of constructing, maintaining, and operating various levels of streets and highways?

The need for a functional classification of streets and highways in the metropolitan area arises in the discussion of suggestions that possibly the State Highway Department is the most appropriate agency to construct and maintain limited-access freeways plus high-speed, high-volume roads -- while counties should be responsible for the major arterial, lower-speed, middle-range-capacity arterial surface streets which connect and serve freeways and communities within the county -- and municipalities have responsibility for the lower-volume, slower-speed intra-community arterial and residential street network. At the present time, each of the jurisdictions is permitted to build whatever facilities it decides are necessary within its available resources. As a result, the State Highway Department is responsible for roads all the way from major freeways down to low-capacity arterial streets within the built-up urban area, while counties construct and maintain freeways, major arterials, and even

many lower-volume roads, and some municipalities do likewise. The functional classification of roads and the assignment to appropriate jurisdictions will be necessary if many needed facilities are to be built in the future. For example, unless the State Highway Department has jurisdiction over major freeways, it is possible that many of those proposed which are presently assigned to counties may not be developed when they are needed, because they do not have adequate resources or possibly the capability to develop them.

II - C - 3. The Metropolitan Council, with the assistance of the TB, should propose to the 1973 Legislature recommendations on the creation of an integrated transportation fund for the metropolitan area and additional sources of financing which might be used for both highways and transit.

The creation of an integrated transportation fund has been proposed by consultants to the MTC as a way of permitting use of available funds where they will be most needed in development of an adequate transportation system for the metropolitan area. Such a fund contemplates the pooling of presently available transportation dollars and their use on any types of facilities without regard to the source of funding. This approach would have the benefit of assuring that needed facilities are built or provided in accordance with priorities established within the metropolitan area. Funds which might be placed in this integrated transportation fund include a portion of the following: State Highway Department funds apportioned for development of trunk highways in the metropolitan area, a portion of the county and municipal state aids allocated to these jurisdictions for highway development, plus transit revenues from riders or revenues from sources made available to the MTC.

The establishment of an integrated transportation fund should follow a determination by the Metropolitan Council about the total transportation needs of the metropolitan area and a comparison between the revenues available to various jurisdictions and the development of highest-priority projects or services. In addition, the limitations placed on the use of some funds, particularly highway user funds, and their availability need to be explored in terms of the effect on overall development of transportation facilities and services within the metropolitan area. A review of the constitutional limitations on the use of highway user funds needs to be made. Removal of these limits would greatly increase the possibilities of assuring that available funds, from whatever source, are spent for transportation facilities or services that are judged to be most needed in the metropolitan area.

II - C - 3. Additional sources of financing for both highways and transit need to be explored and recommendations formulated by the Metropolitan Council for the 1973 Legislature.

Various sources of financing which should be considered include:

- * Assessments on benefited property. Some highway and transit improvements which directly serve or benefit adjoining property might reasonably be paid for by assessments on this property. This might include highway interchanges that provide access to major activities, transit stations along exclusive rights-of-way transit lines, plus expensive construction such as highways in tunnels and subways that are desired by major activity areas.
- * Tax-increment financing. The recovery of part of the increase in property values resulting from transportation facility development potentially offers a major possibility for a new source of transportation funds--particularly

for capital improvement. This could include the land adjoining freeways which increases in value because of the accessibility and visibility of these locations as well as similar areas adjoining the stations on any exclusive right-of-way transit lines. Before this possible funding source can be employed, however, a determination is needed about the likely impact on local government services which may depend upon these increases for their own services or possible increases in cost of service needed by this additional development.

- * Activity assessments on various commercial, employment, or other activities attracting a number of people which benefit from transportation development... This might consist of a combination of a business and occupancy tax which could be applied with some flexibility to different kinds of activity depending upon the number of people they attract to specific locations. The unit of measurement might vary from the patronage in restaurants, theaters, or amusement places, the number of spaces available in parking lots and ramps, the number of rentable rooms in hotels, the volume of sales in retail establishments, or the number of employees in offices or plants. Essentially, this approach recognizes the important function which the transportation system performs in enabling movements to occur to specific locations.

How should the Transportation Board be structured?

- II - D. We recommend that the Transportation Board consist of 7 to 9 citizen members, one from each of every two Metropolitan Council (MC) districts, selected by the Chairman of the MC with the approval of the MC. The chairman should be designated by the Chairman of the MC. Members should serve part-time, and be paid a per diem for their services. They should have a metropolitan view and a familiarity with and interest in transportation. They should not represent agencies, builders, suppliers or transportation interests.

The substantial planning responsibilities of the Transportation Board and the impact of these decisions on the mobility of people and development in the metropolitan area suggest that the Board be of adequate size to encourage an understanding of various transportation problems and serious consideration of alternative approaches to their solution. Yet, the Board should not be so large as to be unworkable. We have recommended that it consist of 7 to 9 members--one from each of every two Council districts. The geographic representation built into this Board will better enable communication between members and the public officials, citizens, and Council members in their areas in development of metropolitan transportation policies and proposals, than if the members were selected at large without regard to geographic areas.

The selection of members by the Chairman of the MC with the approval of the MC, and the designation of the TB chairman by the Chairman of the MC, will assure that the TB is cognizant of the major policies of the Council and improve the possibilities for communication between the policy-recommending and the policy-setting bodies. It is important that the Council have a close working relationship and confidence in the TB if the needed communication on difficult policy choices is to occur.

The members of the TB should be citizens with a metropolitan view and some familiarity with and substantial interest in transportation. However, it is important that this body not consist of representatives of agencies or units of government, builders, suppliers or special interest groups which operate transportation

facilities; that it does not financially benefit from programs, and is not organized to support only highways or transit. The TB--as a deliberative, planning body--will be able to function only if members do not have commitments or set points of view which limit their ability to consider alternatives in a detached manner. The existing agencies and special interests can reasonably be expected to make their positions known to the TB and will do so without representation on the TB.

The work of the TB, although it will require considerable energy and dedication, will not require the full time of members. Rather, the TB should meet frequently to consider material developed by the staff, to discuss alternative policies, and to provide direction to the staff. Members, therefore, can be part-time. The expense and time required for service on the TB should be recognized by compensation of them. This compensation should be commensurate with the pay of members of service boards under the Metropolitan Council.

What staff should be provided to assist the Transportation Board?

The TB will require considerable technical assistance if it is to successfully perform its assigned tasks. A staff will be needed to assist in obtaining an understanding of various transportation problems, to develop and analyze various alternatives for solving these, to aid in communication with municipalities, counties, agencies and citizens and in other work of the Board.

It is important the work of the TB staff be directed by the Board. Also, the close relationship between the Metropolitan Development Guide--particularly its Transportation Section--and a Transportation Policy Guide suggest the staff of the TB have close contact with the MC and its staff. It is essential there be maximum communication between the MC and the TB -- both the staffs and members -- in development and adoption of policies.

We anticipate the present staffing arrangement for the Transportation Planning Program could be continued and would well serve the TB. Under this arrangement, a separate transportation staff to serve the TB would be employed by the Council and located in the same building as the Council. This would enable the TB to continue to build on the work already accomplished and assure that a close relationship would exist between the TB and the MC programs.

How can transportation planning activities in the metropolitan area be funded?

- II - F. The 1971 Legislature should make available funds to the Metropolitan Council and to the Transportation Board for transportation planning from the metropolitan portion of the federal highway construction funds which must be used for transportation planning plus a limited portion of previously recommended wheelage charges and transit financing district revenues.

The total budget of the Transportation Planning Program in 1970 was \$1,132,000. Approximately half of this, or \$557,000, was funded by the Council. This total includes the \$115,000 pledge of the Council to the work program adopted by the Management Committee, plus additional council-sponsored projects related to transportation planning.

The remaining \$575,000 was collected from agreements with the Highway Department--\$400,000, the MTC--\$25,000, the seven counties--\$100,000, and Minneapolis and St. Paul--\$50,000. In addition to the planning done by the Transportation Planning

Program, individual agencies and units of government also engaged in considerable amounts of planning. The MTC, for example, contracted with a consultant for a \$619,000 follow-up study to an original consultant's report contracted for in 1968. A substantial portion of the cost of many of these studies and of this planning--particularly by the Minnesota Highway Department, the MTC, and the Metropolitan Council--is provided from federal planning funds such as the 1½% of the federal highway construction funds which must be spent for comprehensive long-range transportation planning, from mass transit grants to the MTC, and HUD and DOT funds to the Metropolitan Council.

Our recommendation proposes that funds for transportation planning continue to come largely from federal grants plus the metropolitan portion of the 1½% of federal highway construction funds which can reasonably be apportioned to the metropolitan area and a limited portion of previously recommended wheelage charges and transit financing district revenues. It is possible that if 45% of the 1½% of federal highway construction planning funds were made available to the metropolitan area for transportation planning, \$663,300 would have been provided in 1969. Additionally, if 1½% of the proposed wheelage taxes were contributed to planning, an additional \$90,000 would have been made available. It is difficult to estimate what the revenues from a transit financing district might be, but even assuming a minimal amount at a level no higher than \$5 million, approximately an additional \$75,000 could have been made available. The resulting total of \$828,000 would slightly exceed the present budget for transportation planning.

Transit Operations

What should be the role for the MTC if responsibility for long-range transit planning is placed in the Transportation Board?

- III. The Legislature should reconstruct the Metropolitan Transit Commission (MTC) to become an enterprise-oriented transit management agency with significantly broadened responsibilities to promote peak-hour utilization and for servicing the non-driving population.

The MTC under our recommendation should be a management agency whose primary purposes should be to promote transit use, to seek out transit opportunities, and to assure that transit service is provided to the non-driving population in the metropolitan area. The Commission would not directly operate transit vehicles but should continue to contract with a company having the necessary expertise to manage bus operation. The members and staff of the MTC, instead, should direct their attention to determining ways of better utilizing manpower and facilities, improving services--particularly to non-drivers, and exploring opportunities for public transit which might exist with public agencies, private businesses, and various forms of transit in the metropolitan area.

What's different about this "enterprise-oriented" MTC we propose from the charter service provided by the bus company?

The bus company in the past has sold service on a contract or charter basis when requested. This service can be very profitable, as it generally uses vehicles during the off-peak hours thereby increasing the utilization of equipment and personnel. As a result, it represents increased income beyond what is otherwise collected from the regular transit service. However, only 7% of the revenue of Twin City Lines was produced from this service in 1970.

The numerous "transit substitute services" that are seen in the metropolitan area in publicly or privately operated transit vehicles suggest there are numerous opportunities for public transit which have been untapped. School districts, social service agencies, churches, and many private businesses own and operate a sizable number of vehicles essentially to transport their clients or customers. Aggressive marketing of public transit might well relieve these organizations of the added burden of managing and operating this service -- something which requires development of a separate expertise apart from the primary purpose of the organization. In addition to these, there may well be others who would like to have this service but do not care to take on this additional function. The MTC would greatly benefit in the utilization of transit vehicles and personnel from the increased income these opportunities present.

How would these enterprise-oriented responsibilities of the MTC be expressed and assessed?

III - A. We recommend that the 1971 Legislature specifically direct the MTC to propose a plan to the MC to include ways of utilizing manpower and facilities, improving services, coordinating all transit services, and make proposals for the demonstration of new systems of transit.

The MTC, in carrying out its responsibilities as an enterprise-oriented management agency, should develop programs which will promote the use of transit and indicate in a plan proposed to the Metropolitan Council various ways that increased utilization of manpower and facilities and improvements in service--particularly for the non-driving population--can be achieved.

The various items which should be included in the plan would outline steps which can be taken in the following areas:

1. The utilization of manpower and facilities. This would include an analysis of the existing use of equipment and personnel during the peak hours and particularly during the non-peak hours. A program detailing alternative ways of marketing service or increasing efficiency might also be included.
2. Improvement of services. The annual plan of the MTC should outline what service improvements have been made during the past year on the regular public transit system, together with their results. It should also contain proposals for changing or adding additional routes and increases in the frequency of service.
3. Coordination of all transit services. The plan should outline existing transit services provided or contracted for by public agencies with others than the MTC and the extent of transportation service provided for hire by companies licensed by units of government or public agencies within the metropolitan area. The MTC should also indicate the extent to which it can provide this service and the ways it intends to coordinate these.
4. Proposals for the demonstration of new systems of transit. The plan should contain statements outlining proposals for the demonstration of new systems of transit, their location, cost, and the extent of MTC financial participation. Such proposals should be subject to review by the TB.

Which powers of the MTC, as the manager of the public transit system, should be continued?

- III - B. The MTC should continue to have the powers, as manager of the public transit system, to set its own operating and capital budgets--subject to approval by the MC, contract for bus operations, make employment agreements, purchase equipment, schedule service, provide public information service, promote transit; and conduct research and experiments with new routes, fares and new technology--subject to review by the TB.

The MTC, as a management and transit-operating body, should continue to exercise powers which are needed for these purposes. Among others, these include the setting of its operating and capital budgets--subject, as at present, to approval by the MC. In addition, its powers to contract for bus operations, make employment agreements, purchase equipment, and set schedules of service, as well as provide public information, must be continued.

The power to experiment with new routes, review and evaluate the level of fares and their structure, also are functions that should be performed by the MTC. Likewise, it should continue to study and evaluate new-technology systems--their potential, feasibility, and possible application in the metropolitan area. Actual experiments or demonstrations of these new systems, however, should be subject to review by the TB.

Why not simply place the MTC directly in the Metropolitan Council?

- III - C. We recommend that the 1971 Legislature restructure the MTC by altering its membership to consist of 5 citizens appointed by the Chairman of the MC with the approval of the MC.

The duties of the MTC as an enterprise-oriented management organization will be considerable. Under our proposal, the MTC would continue to hear requests for service, changes in routes, and proposals for changes in fares. In addition, it will continue to make numerous decisions about service improvements including the frequency of vehicles, their routes, and the purchase of new equipment or facilities. These matters are highly visible and important to the public and can be expected to require a considerable amount of time. Because of these important duties and the public concern about transit service, we concluded that a separate Transit Commission should continue to function but that it should be closer to the Council than at present.

The members of the MTC should be appointed by the Chairman of the MC with the approval of the MC to increase communication and coordination between these two organizations and to eliminate some of the problems experienced in the selection of members under the present procedures, such as the difficulty in agreeing on selection of members by two counties. Under our proposal, the utilization and service plan of the MTC and its operating capital budgets would be subject to approval by the MC. In addition, a demonstration of new systems of transit would be subject to review by the TB. It is important that communication between these three organizations be made as easy as possible. This would be greatly assisted if the MC selects the members of the MTC.

The essentially management responsibilities of the MTC suggest that it would be possible for this work to be handled by a smaller board consisting of 5 members.

Citizens appointed as members to the MTC would not have to be selected to represent equal-sized districts. However, it is probable, and desirable, that in the process of making appointments, seats be adequately distributed among the various parts of the seven-county area which are served by transit.

Transit Development

What should the role for the Minnesota Highway Department be in transit development?

- IV. We recommend the Legislature authorize the Minnesota Highway Department, as originally provided in the 1967 transit commission statute, to provide service for the physical development of facilities for both highways and transit.

The Minnesota Highway Department, with its considerable expertise in all facets of engineering and development of highways, would be an appropriate agency to provide many of the services in the future development of any permanent transit facilities that may be constructed in the metropolitan area. There appears to be little reason to develop a separate staff to perform functions which are already well developed within an existing agency in another one simply because it is a separate organization. Steps need to be taken which will reaffirm a primary role for the Highway Department in the physical development of facilities for both highways and transit.

- IV - A. We recommend the 1971 Legislature direct the Metropolitan Council, in its development of transit--to the extent possible--to utilize the services of the Highway Department for rights-of-way acquisition, engineering and design, and contract-letting and construction supervision.

Adoption of this proposal will encourage the Metropolitan Council to look toward the Highway Department for services already developed within this department for the construction of highways. This direction should enable the Council to use the services of others if it judges that the Highway Department cannot reasonably provide them. However, efforts should be made to inform the Highway Department about the possible need for its services and an assessment be made by the Highway Department as to whether they can provide them.

DISCUSSION OF FINDINGS AND CONCLUSIONS

I

Critical transportation problems in the movement of people are coming in the Twin Cities metropolitan area. The growing volume of movement resulting from increases in population, auto ownership, and trip length will not be eliminated by attempts to rearrange the pattern of land use and development to reduce the total volume of trips. Such changes can have only limited impact over any reasonable period of time. Facilities to accommodate increased volume must be developed.

A. Substantial increases in the total volume of movement are anticipated in the metropolitan area even as some projections are less certain.

The overall growth of the metropolitan area will see a substantial increase in the movement by people during the next 15 years. It is estimated that the total volume will increase 69%, from 3,740,000 average week-day trips in 1968 to 6,337,000 in 1985.

1. Expected increases in the volume of movement are largely attributed to the anticipated growth in population, increased participation in the work force, the number of automobiles, the number and length of trips, and the declining adequacy of transportation service to people who do not drive or do not have automobiles available to them.

Population.

The metropolitan area continues to experience substantial population growth. In 1950, 1,186,000 lived in the metropolitan area. This increased 29% in the next decade to 1,525,000 in 1960, and another 23% to 1,874,000 in 1970. Projections for the future indicate increases to 2,689,000 in 1985, and 3,400,000 by 2000.

Automobiles.

The number of automobiles used by people in the metropolitan area has increased even more rapidly than the growth in population. For example, in 1950 there were 336,000 passenger vehicles, in 1960 534,000, and in 1970 there were 852,000. A large proportion of these increases of 59% every ten years was made possible by increases in the median family incomes of people. It also reflects the preferences of people to make many new trips for various purposes and/or the need for an automobile in the face of no adequate transportation alternative to conveniently make many necessary trips.

Income.

The future projections of incomes of residents and a higher level of participation of women in the work force make it appear that even more automobiles can be purchased per household than at present. Some studies have estimated that family incomes will increase from \$5,800 in 1960 to \$7,000 in 1970 and up to \$15,000 in the year 2000.

Persons per vehicle.

One of the results of the increased number of automobiles and their availability to more persons has been that the number of persons in each vehicle per trip has been declining. It is likely that with the projected increase in the supply of autos and the greater variety of trips people may make there will be a further reduction in the number of persons per car from 1.6 in 1958 to 1.38 in the year 2000.

Trip length.

The length of trips has been increasing in recent years and is expected to increase in the future. Average trip length, for example, is expected to grow from 5 miles in 1958 to 8.38 miles in 2000. A large proportion of these longer trips will be work trips such as those presently made by people from homes in Maple Grove to industries in the St. Paul Midway, from Edina to 3M in Maplewood, from Burnsville to downtown Minneapolis, from Wayzata to Control Data in Bloomington, and from Fridley to Industrial Parks in Plymouth.

Density of development.

The increases in the length of trips results in part from the continued spread in the development of the metropolitan area with its increases in space for dwelling units and the scattered location of centers of employment. Generally, studies indicate that increases are anticipated to continue, with the average space per dwelling unit growing from 9,650 square feet in 1968 to 12,200 square feet by the year 2000.

The Twin Cities metropolitan area, because of its original and continued single-family character, has one of the lowest densities of people per square mile of any major metropolitan area in the country. The Twin Cities has 6,100 per square mile by comparison with cities such as New York 25,966, Chicago 16,014, San Francisco 16,307, Washington D.C. 12,442, Baltimore 11,993, Cleveland 11,542, Seattle 6,810, Cincinnati 6,569, Los Angeles 5,447, and Kansas City 3,983.

2. Many assumptions underlying the projections for increased travel volume in the future are being questioned and are uncertain. However, estimates are needed if only to anticipate problems and reasonable--at least short term--projections can be made.

The projection of substantial increases in population and the total volume of traffic are essentially based on many unstated assumptions or public policies. Most projections are based on historic trends and on a continuation of certain assumptions about economic and population growth, technological development, the behavior of people, and public policies pertaining to the use of transportation facilities. Some of the assumptions and policies which may be questioned include the following:

- a. Continuation of the present pattern of development and the freedom of a person to live and work where he desires or determines. Under this assumption or principle, people are free to seek and change jobs to fit their situation or desires--wherever they may exist. In other words, they are not limited to jobs within the community in which they live, nor do they have to move if they find a job some distance from their home.

- b. Reliance on the automobile for all types of trips. This assumes that transit will not be available and/or be acceptable for virtually any types of trips other than possibly a small proportion of work trips to the downtowns.
- c. The use of roads is "free". Apart from the normal cost of automobile operation, no additional charges exist for use of streets or highways during the peak hours nor at any other time.
- d. Highways will be built to accommodate increases in the number of trips thereby avoiding congestion.
- e. The portion of a family's budget going into automobile transportation will not increase beyond its present level.

Many of the basic assumptions and policies which underlie future transportation volume predictions are being questioned and are no longer as certain as they were a few years ago. For example, although the number of automobiles continues to rise at a rapid rate, declining birth rates over the past decade make it appear that the 1964 projected population of "4 million people by the year 2000" will not be realized. On the other hand, the percentage of the population engaged in work is continuing to increase above earlier projections.

Other factors influencing the volume of travel are also changing. The cost of auto transportation, which has remained at approximately 10% of the average family's budget, may increase in the near future partly as a result of the new cost of air pollution and safety devices plus possible increases in highway taxation for increasingly costly construction and maintenance. These may all contribute to an increase in the purchase and operating cost of automobiles.

It is entirely possible that, for a variety of reasons, many highways will not be built at all, or will be constructed only after they are needed and will thereby not be sufficient to accommodate the increases in the number of trips. For example, if the level of highway taxation is not increased to keep up with accelerating costs, there will be a reduction in the total number of miles of highway which will be built.

Finally, changes in public policy and those activities undertaken in the short term toward alleviating transportation problems, plus changes in the behavior and choices of people, will all contribute to uncertainties about the reliability of long-term projections.

Transportation planning, and its associated projections, are necessary if only to anticipate problems that may exist. They permit the development of alternative policies which can provide direction to the solution of problems and to the expenditure of public funds which are available. As future--particularly long-term--projections are made, however, it is important that assumptions underlying them be reviewed and stated. Many uncertainties about these exist at the present time that could result in reductions in the estimates of the total volume of movement.

- B. Increases in the volume of travel will not be eliminated by attempts to rearrange land uses. These attempts, more likely, will influence the pattern of development rather than the number of trips.

The rearrangement of the pattern of land-use development in the metropolitan area has been advocated as a long-term way of minimizing the volume of travel by more closely tying the location of a person's home to his place of employment or concentrating the place of residence of a person who has his place of employment in a major activity center along high-speed rapid transit lines connecting them.

The major advantage of these concepts from the point of view of transportation is to substantially reduce peak-hour movements or at least channel them in such a way as to increase the economies of movement by larger vehicles than the automobile.

1. Three basically different approaches to the rearrangement of land use and development have been suggested. They include:

- a. The planning and construction of the variety of housing needed and desired by employees close to their jobs. Theoretically, this would greatly minimize the work-trip movement. For example, development of housing around the downtowns providing housing with the amenities desired by people who work there and within their income ranges would contribute to a reduction in the rush-hour movement to jobs in these major centers.
- b. The concentration of employment in a limited number of centers and of housing along lines radiating out from these centers. This approach would tend to focus and increase the channeling of traffic during the peak hours, thereby improving opportunities for larger-capacity vehicles to move people along heavily traveled corridors.
- c. Dispersion of the existing major centers of employment--particularly of the downtowns and other major centers--is a third approach. The concentrated movement in some corridors would be decreased due to removal of trips to these centers, and facilities--probably freeways--could be more easily developed to interchange at the crucial locations occupied by these major employment centers. This approach, however, would encourage the further spread of development over a larger area and increase the distances that people might have to travel to many activities.

2. Various techniques to achieve a rearrangement of land uses have been proposed.

Techniques which would either bring the place of residence close to the place of work, or concentrate these two activities along given lines, have been suggested, together with a number of others that would exert varying influences over the pattern of development. Some of these include:

- a. The placement of new major public facilities--sewers, transportation routes, parks and open space--in locations and according to a schedule that will encourage the desired type of development of private facilities--homes, retail shopping, offices, and industries;
- b. The designation of desired types of development in land-use plans (major retail, industrial and office centers, high-density residential development) and their control by zoning and subdivision regulations;
- c. Public acquisition of land with resale or leasing to those who will develop what is desired; and, finally, public development of desired activities.

Some of these tools more directly relate to providing open space or sewage collection for the metropolitan area and only indirectly will have a substantial effect on the pattern of development. However, the historic effect of transportation routes on development has focused considerable attention on transportation decisions together with land-use controls as methods for strongly influencing the location and development of major activities.

3. Decisions about what transportation facilities to build and their location can somewhat influence the pattern of development--particularly on the edge of the built-up portion of the metropolitan area.

The present land use/transportation network has exerted a significant influence over the existing pattern of development. The influence of newly developed major freeways leading out of the highly developed portion of the metropolitan area is already apparent in the development around the Twin Cities area. For example, the development of I-35W to the south as one of the first major freeways in the interstate program greatly contributed to development which rapidly followed in the settlement of Burnsville, Apple Valley and Lakeville. Similar development was experienced to the north in New Brighton and Blaine with the development of I-35W. This effect can be expected to follow to the northwest on I-94, to the southwest with the development of T.H. 169 and T.H. 212, and in Dakota County along T.H. 3, I-35E, and T.H. 55.

Major additions or improvements to highway arterial facilities will be necessary in the developing urban fringe where there is no feasible alternative other than to extend the automobile facilities to serve this new settlement. Although the concentration of new housing and employment centers within these developing, newly settled areas may enable some type of transit to connect these activities, it is likely that these areas will not function as separate, new, free-standing towns. Most of the homes and employment centers in these developing areas are closely related to the economic activity of the metropolitan area, and residents of these developments will seek employment and recreation in a number of locations throughout the area, while employment centers will find their employees as much from outside of the immediately adjoining development as from within it. These developing areas will probably rely on the automobile for most of their trips, as does the rest of the metropolitan area, and therefore will need the complex of residential streets and arterial roads to enable them to have the mobility available to people in the rest of the region.

Upgraded and improved highway facilities in heavily traveled corridors leading out of the metropolitan area will probably also be developed. These will be necessary to provide a high level of mobility for an increasing number of week-end recreational trips and for some business and market trips between the metropolitan area and regions outside of it.

Major opportunities for controlling the shape and pattern of development of the expanding metropolitan area--particularly on the fringe--are afforded by decisions about the location and timing of development of major additions to the highway arterial facilities in these developing areas. These decisions should follow stated metropolitan development policies and be consistent with them if the objective of shaping the pattern of development is to be achieved.

There is no necessity for every state trunk highway or major artery leading into the metropolitan area to be a high-speed, high-volume road. There ought to

be an alternative for slow drivers and considerable attention directed to the impact on the environment of many of these routes before decisions are made to upgrade or provide new facilities.

4. Decisions about the building and location of major transportation facilities or efforts to rearrange land uses, although they may somewhat influence the pattern of development, will have only a limited effect on the total volume of movement.

The existing pattern of development, because it is already established, becomes the basis and limit for realistic projections of land-use proposals.

Existing investments and patterns of behavior will tend to reinforce the existing pattern of land use, thereby limiting the opportunities for major change--apart from some opportunities arising in the major clearance of older portions of the central cities. Only a few areas within the already settled and developed urbanized portion of the metropolitan area are available as raw land or land with higher and better uses that can most easily be influenced by land-use controls or by transportation investments. Major opportunities for shaping the pattern of development are largely available only on the raw land in the urban fringe which will be coming into development as the population increases. Similarly, it will be extremely difficult to influence the location of major employment and retail centers, since a substantial number of those which will be used by the population in this area for the next 20 to 50 years are already developed or in the process of development.

The present ability of the metropolitan area to positively locate major private facilities affecting the pattern of development is limited, either because of existing governmental arrangements or because of the economic forces operating on the planning and land-use agencies. Zoning and planning regulations are largely controlled by local municipalities, each of which is concerned with the character of development within its area, the convenience of shopping and employment opportunities for their population, and the growth and mixture of property in their tax base. Even if responsibility for this zoning and subdivision control were shifted or shared with the Metropolitan Council and changes were made to reduce fiscal disparities, for example, it is likely that the continuing interest of municipalities and the economic interests which have historically operated on planning commissions would make it extremely difficult to "hold the line" on some types of development which would appear inconsistent with a detailed land-use plan, and in any case it would only slowly change the pattern of development.

Positive land-use planning and development tools which would direct both public and private development and assure that it happens are not presently available to the governmental units in this area. Even if they were, however, it would be difficult to project their effects on the transportation system, as people would probably continue to live in one location and work some distance away.

We have concluded that it will not be possible to significantly change the pattern of development in the metropolitan area--particularly existing land uses and their location--in such a way as to substantially alter their effects on the transportation system, at least for a long period of time. Efforts related to these goals of shaping development may be desirable for a variety of purposes, and considerable opportunities exist to achieve them in presently unsettled areas on the fringe and in some central city areas undergoing renewal or those close to the downtowns or the University. However, all of these are likely to have only a limited effect in reducing even slightly the total volume of movement or, most importantly, relieving the peak-hour movement which this metropolitan area is likely to experience.

I - A

People who do not drive, or do not have an automobile available to them, face serious transportation problems. The frequency of public transportation service, particularly during off-peak hours on most lines, is very low, and present routes do not serve many non-drivers and their destinations. Many persons are required to rely on automobiles, despite a preference for transit. Others are served by substitute 'transit' systems developed by private companies and public agencies.

A. A sizable number of people in the metropolitan area do not drive or have an automobile available to them.

Generally, the automobile is the "preferred" means of travel. Yet, many cannot afford it, do not qualify, are unable to use it, or do not desire to use it. As a result, they are severely limited in their mobility in a transportation system which relies almost totally on the automobile. This situation is particularly critical for low-income persons and families, the elderly and the handicapped. People who might be termed "non-drivers" include:

- 1) Handicapped people unable to operate an automobile.
- 2) Elderly people who do not have sufficient income to own an automobile or who are unable to drive.
- 3) Unemployed persons seeking a job without income sufficient to purchase an auto.
- 4) Persons not authorized to operate an automobile, such as those whose license has been suspended or revoked.
- 5) People who do not know how to operate an automobile.
- 6) Young people--those not licensed or without incomes or funds to purchase an auto.
- 7) Housewives in one-car families where the breadwinner uses the car for work trips.
- 8) People who prefer not to own or drive an automobile.

In 1960, it was estimated there were 76,000 households without cars or approximately 255,360 persons. By 1985 this number will increase to 94,000 households or 329,000 people. In addition, the increases in the number of elderly people, plus individuals in all of the above-mentioned categories, could result in approximately 20% of the total population which will have very limited transportation available to them if the area continues to rely on the automobile for all types of trips.

One of the difficulties in providing transportation for non-driving people results from their wide dispersion throughout the metropolitan area. Although a majority of these people lived within the central cities in 1960, they were largely scattered throughout the city and not concentrated in only a few communities. In the future, it is anticipated there will be even further dispersion of this population. Projections, for example, would indicate that whereas in 1960 52% of the population in the age group 10-19 years lived within the central cities, by 1985 this will decrease to 31%. Likewise, a shift in the location of elderly people from the central cities to the suburbs can be expected. In 1960, 75% of this group lived within the central cities, whereas in 1985 only 45% will be there. Apart from the scattered locations in which these people are living, they have many differing transportation needs, varying destinations at differing times, and a varying ability to pay for transportation. The location, travel needs and desires, and the income of this population will pose major problems in attempts to provide transportation to them.

One of the goals of public transit should be to provide an adequate, high level of service to non-drivers. It must particularly recognize the transportation needs of low-income persons and families, the elderly and handicapped and their limited ability to pay for service. Additions and improvements in the transit service that would make the greatest contribution to their mobility should look toward providing door-to-door pickup and delivery service for many of this group who experience diffi-

culty in getting to and using regular public transit service--a service which often poorly serves the locations of shopping, employment, medical, and cultural activities they desire.

B. Non-drivers lack adequate public transportation service.

Presently, public transit provides the only alternative available to a portion of the non-drivers. Indeed, studies indicate that 73% of the total riders on transit today can be viewed as "captive" riders. Although public transit may be the only alternative available to these people, in many instances it does not provide much service and in other cases it is simply not convenient. Many must rely on others--friends, relatives or agencies--to make many trips, while others simply avoid making trips if they can do so, and many are required to purchase and operate an automobile if they can afford to do so.

1. Transit service and patronage has steadily declined for the past two decades.

The use of mass transportation in the Twin Cities area on the lines of the major company, Twin City Lines (now owned by the Metropolitan Transit Commission) has steadily declined for the past two decades, from 201 million riders in 1946 to 74.5 million in 1957, and to the lowest level in history at 50.5 million in 1970. Transit services have similarly been trimmed each year to match riding levels. Total vehicle miles, for example, declined from 21.3 million operated in 1957 to 15.5 million in 1968. Service cuts have been primarily accomplished by shortening the runs of many buses and by decreasing the frequency of service, while the total of one-way miles of line has remained relatively constant.

2. The level of transit service--apart from the peak hours on some lines--is very low.

Although the basic transit network has not changed substantially during the past two decades, in many instances the level of service has substantially declined. Waiting time for buses has increased on many lines at all times--but particularly during the off-peak hours of the day and the evening. It is not unusual to have service only every 20 to 30 minutes on many lines during these hours, and in the evening buses may come as infrequently as once every hour.

3. The transit route network fails to serve many of the non-drivers.

Few changes in the route network of the major transit company have been made during the past two decades when settlement has largely occurred outside of the two central cities. In a few instances, independent private transit operators have developed essentially rush-hour services to serve portions of developing suburbs such as Bloomington, New Hope, Crystal, Coon Rapids, Spring Lake Park, and Brooklyn Center. However, most of the transit lines continue to focus on the two downtowns and do not conveniently service many of the employment and retail centers in the suburbs. Cross-area trips frequently require inordinate amounts of time largely because of the inadequate route structure, the infrequency of service, and the slow speed of movement.

C. The Metropolitan Transit Commission has proposed a number of improvements to the regular public transit service which, if carried out, should increase the level and attractiveness of service.

The Metropolitan Transit Commission has developed a 13-point improvement program for transit in the metropolitan area. As a first step in this program, in 1970 it acquired Twin City Lines. Studies prepared for the Commission outlined a broad 13-point program to upgrade the transit service. This program calls for the following:

- 1) Complete renewal of the 620-bus fleet on a regular annual basis. Orders have been placed for the first 93 of these.
- 2) Purchase of 16 mini-buses to improve the center city distribution.
- 3) Consolidation of the present three garages to two.
- 4) Installation of 135 passenger shelters at major boarding points.
- 5) Development of park-and-ride facilities at 19 points around the Twin Cities area.
- 6) Installation of 3,000 bus service signs to identify bus boarding points and to provide service information.
- 7) Installation of two-way radios in buses to improve schedule adherence and system speed.
- 8) Establishment of exclusive lanes for buses on three streets in downtown Minneapolis and two in downtown St. Paul.
- 9) Initiation of a public information program including central telephone information service and readable pocket schedules.
- 10) Revision of the fare structure to provide more equitable fare zoning without reducing ridership.
- 11) Major revision of the current bus routes, including changes in 13 of 18 Minneapolis routes and 11 of 17 St. Paul routes.
- 12) Driver-actuated traffic signals to give buses preference at key intersections.
- 13) Use of computers for schedule-making.

The ambitious program outlined by the MTC will require continuous efforts and dollars not presently available to the Commission. The estimated cost of the program in 1969 dollars, excluding the cost of park-and-ride facilities, totals \$27,968,774. Even assuming two-thirds federal assistance for this program, a total of approximately \$10 million must be raised locally to achieve even this limited program. It is unlikely that farebox revenues and the present wheelage tax will be sufficient to even meet the operating cost of the transit system, let alone provide any revenue to fund this improvement program.

D. There is substantial excess capacity in transit vehicles during off-peak hours which can be used to improve non-driver transportation.

One of the difficulties in the operation of a public transit system--particularly one developed to handle peak-hour movements--is that a number of vehicles and a substantial amount of labor are not well-utilized during non-peak hours. This results, in part, because the network of transit often does not conveniently serve non-drivers and their generally shorter shopping, cultural and recreational trips. In addition, the number of non-drivers, although significant, is substantially less than the number of people making peak-hour trips. As a result, there is substantial fall-off in patronage during these non-peak hours, with a consequent reduction in farebox revenues well below the cost of providing service on the transit network. In an effort to reduce the operating cost during these non-peak hours, approximately half of the bus fleet is put in storage. This results in a reduction in the frequency of service on most lines during the off-peak hours.

Another goal of public transit should be to seek out opportunities which would increase the utilization of transit during the non-peak hours and substantial improvement in the level of transportation to non-drivers. Improvements in service and use of incentives to attract patrons during these hours should be considered as ways of increasing the utilization of transit vehicles. For example, fare reduction should be explored for either all or a portion of the non-drivers as an incentive for them to use transit during these non-peak hours. In addition, services might be developed to provide for the particular travel needs of some of the non-driving population, such as the elderly and the handicapped, during these hours, thereby improving their mobility.

- E. Presently, the transit agency makes little effort to expand and sell its service to those who desire or need it.

Many private businesses and public agencies provide 'transit' service to their customers or clients in part because of the failure of public transit to market its service. Numerous public agencies, for example, presently provide transit service for groups of people who lack adequate transportation to places where public agencies operate various programs. These agencies, therefore, not only have the responsibility of operating the particular program with which they are charged, but in addition must engage in the business of transportation. Often, this includes the purchase and maintenance of vehicles, the hiring of drivers, the scheduling of service, and other related aspects of the management of a transit service. Although a few of these public agencies, such as the University, presently contract with the MTC for service, many others continue to either operate the service independently or contract with private operators. Some of these include:

1. Public schools -- Independent school districts within the metropolitan area provide a substantial amount of transportation for their students. This consists of various services from picking up nearly all the students from their homes and bringing them to and from school, or transporting only students who are in remote locations or in special education programs. Frequently, field trips during the school day are also provided.
2. Non-Public Schools -- Transportation of students to many non-public schools is contracted for by the parents through the school or is directly provided by the schools as part of the total school program and absorbed in tuition charges. This service is generally made available to students who are not easily served by the existing public transit system. In cases where the public transit routes provide reasonable service between the student's home and the school, the students are not provided with any service, and substantial numbers use the public transit system. Public transit is also used to a large degree within the two central cities, where school transportation is not provided to those students unless they live in remote areas or have physical disabilities that would limit their use of public transit. In addition to daily home-to-school service, non-public schools also contract for transportation for field trips during the school day.
3. Social and Health Service Agencies -- Many public and semi-private social service and health agencies provide transportation services to meet the particular needs of their clients. These include agencies such as Pilot City Health Center in North Minneapolis, which provides transportation to the Health Center for residents on the near northside; settlement houses and elderly service agencies that operate a transportation service for persons in senior citizen homes to take them on shopping and medical trips.
4. Private Businesses -- Many business concerns operate essentially a transit service to attract customers. Examples of this service include apartment houses that provide transportation to downtown or the University, plus automobile repair dealers, medical centers, and parking lot operators who provide shuttle service between their businesses and major employment centers.

A large number of transit trips are also accommodated by private operators that provide a service for hire. Some of these include taxi companies and limousine service. This service is generally provided either at regular intervals at specified locations, or on demand. The user will normally contract for this service and pay a fee directly to the driver.

Many of the public agencies and private businesses get into the transportation business to provide a better substitute service than is otherwise available on regular public transit. In the process, however, these substitutes weaken the ability of public transit to improve its utilization.

The coordination of transit service provided by public agencies, plus the selling of this service to them and to private businesses, presents major opportunities for increasing the utilization of public transit.

It is possible that public transit, with its various-sized vehicles, could provide a large part of the service presently directly provided by either the public agencies or private entrepreneurs. One example would be the use of public transit for school transportation. Although the peak-hour movement when the MTC buses are heavily used also occurs at the same time as the morning movement of students, by a slight rearrangement of the hours of the school day buses used for peak-hour service could be used to transport students to and from schools between the peak hours of the day. It is possible that this might be done at a lower cost to the school districts than their presently contracted service. These buses would also be available for use during the day on numerous field trips taken by students.

A second example would be the use of mini-buses that will largely serve to carry people from remote parking lots in the downtown into the center during peak hours. These vehicles could be used to provide specialized transportation for elderly people who desire to make shopping, medical, or cultural trips during the non-peak hours. Other possibilities need to be explored with private businesses and a review made of the use of taxis for public transit and/or the effect of licensed transit services on the patronage of public transit.

I - B

Transportation problems are increasing for the movement of people within high-activity centers such as downtown Minneapolis, Saint Paul, the University of Minnesota, and some suburban retail/office centers. The increasing number of activities located in the various, ever-more-distant buildings within these centers requires more and ever-longer trips for which neither walking nor driving is feasible. Improved planning and continued development of skyways plus mini-buses and possible small-vehicle people-movers present good possibilities for resolving problems in these centers.

A. Circulation and movement difficulties within some high-activity centers are becoming serious.

Many people presently are experiencing difficulties in conveniently making some of the movements they desire in high-activity centers such as downtown Minneapolis and Saint Paul, the University of Minnesota, and some developing major employment/retail centers such as at I-494 and T.H. 100.

As the major centers continue to grow, the distance between retail, office and parking facilities increases. This necessitates longer trips for which neither walking nor driving is feasible. This situation is becoming more serious as trips which increasingly must be made on foot expose people to inclement weather, conflict with the automobile at street crossings, and consume increasing amounts of time which may even limit the opportunities for people to do what they desire.

- B. Some possibilities for resolving high-activity center circulation and movement difficulties have been identified and are beginning to be developed.

Agreement is emerging that in the near future automobile movements will have to be limited within high-activity centers and that persons using automobiles for work trips to these centers (or to the University) should largely leave them in parking facilities on the periphery. Streets within these centers should be reserved for internal circulation movements and short trips during the day to businesses in these centers. However, development of parking facilities in peripheral locations will increase the distances which many must walk to finally arrive at their destinations.

The development of some elements of an attractive, convenient pedestrian circulation network in some of these centers is beginning -- particularly in the second-story skyways in the downtowns. In addition, mini-buses and regular buses are used or will be circulating within some centers to carry people between the distant parking facilities or buildings within these centers. Further development of a skyway network in some activity centers where distances between buildings permit bridging the street and/or the development of a network of mini-buses and/or small-vehicle people-movers present exciting possibilities for handling circulation of pedestrian movement. Possibly, we will see the day when horizontal movement can be provided in the same manner as elevators provide for the vertical movement of people.

These centers offer an opportunity for an initial demonstration of personalized new-technology systems, since the volume of movement is substantial and the extent of the network could be limited for demonstration purposes. A line within these centers, for example, could demonstrate the contribution such a vehicle could make to conveniently handle these circulation movements without inconveniencing people more than they would otherwise experience without the system.

- C. Major issues about the standards for construction, responsibility for further extension of the network, and the funding of additions to these systems remain to be resolved.

The development and funding of the second-level pedestrian circulation networks within the downtowns has been largely accomplished by private developers in Minneapolis or by arrangement as part of an urban renewal program in Saint Paul. In spite of significant accomplishments, however, there has been a considerable lag and unwillingness by private interests or public authorities to develop and finance adequate extensions to the skyway network or to develop other means of circulation in these areas. Minneapolis, however, is currently submitting an application for federal funds for this purpose. The Metropolitan Transit Commission is beginning to develop a role in the circulation system by developing a network of mini-buses to serve as part of the internal circulation system within downtown Minneapolis.

Responsibility for the further extension of the circulation network, particularly where there are long distances between parking facilities or buildings, has not been determined. Likewise, the hours they should be open, the size standards for construction, the security measures needed in these pedestrian networks, and the agencies responsible for construction and operation, remain to be resolved.

- D. The public role in planning and development of internal circulation networks within high-activity areas needs to be further clarified and developed.

The public presently has a role in the development of these internal circulation systems--from the public easements approach in St. Paul to the mini-buses provided by the Metropolitan Transit Commission in Minneapolis. However, their separate

development and operation by private developers, as in Minneapolis, impairs their use as part of the public transportation network. Since they are an important element in the transportation system, they should be included in a coordinated plan.

At a minimum, a comprehensive metropolitan transportation plan is needed which would include these internal circulation networks and assign a public role in their planning. The construction and operation of these systems are presently and should remain primarily the responsibility of private developers and local municipalities within which they are located. Municipalities should be responsible to develop standards and possibly assist in the development and operation of pedestrian skyways, while the MTC should seek out opportunities to assist in the development and operation of people-movers and in an initial demonstration of new technology for one of these centers.

I - C

The major transportation problem in the metropolitan area in the future will be congestion at the peak hours. Overall, the street/highway network--with some limited improvements plus additions to accommodate development on the edge of the built-up portions of the metropolitan area--has capacity sufficient to handle automobile non-peak movements for a long period of time. But, major improvements and additions to transportation facilities and/or service will be needed to handle peak-hour movements.

A. Severe transportation problems can be anticipated for peak-hour trips.

A total of 32% to 40% of all trips in many corridors are made during the morning and evening peak hours--a period of 4 hours, or 17% of the day. This concentrated movement, which is largely to and from work or school, is of such proportions that congestion with its accompanying delays and frustrations is already being experienced on portions of a number of routes. A few of these include I-94 near the University, I-35W south of downtown Minneapolis, Wayzata Boulevard (T.H. 12) west of downtown Minneapolis, I-35E north and I-94 east of downtown St. Paul, T.H. 100 in the western suburbs of Minneapolis, I-694 in Anoka County, and on numerous arterial streets.

Existing and programmed highways will not have sufficient capacity to handle the growing peak-hour volume. A common experience is the opening of a new freeway which for a limited time reduces the travel time to jobs and the traffic on nearby arterial streets. Within a couple of years, however, traffic increases, speed decreases, and the movement on previously relieved arterial streets increases.

A long-term pattern of congestion can be expected to grow in the metropolitan area in the following ways and with these effects:

- 1) The period of peak-hour congestion, which is presently comparatively short on many routes in the area, can be expected to increase over longer periods of time from the present 7:00-8:30 a.m. and 4:00-5:30 p.m. to 6:30-9:00 a.m. and 3:00-6:30 p.m. each weekday. For many, this will mean slower movement to work, a reduced level of mobility, losses in productivity, and consequent losses of income.
- 2) Delays from congestion where the given movement of automobiles exceeds the capacity of the artery will result in even more severe conditions--such as stalling or halting movement--on those portions of major arteries already experiencing

congestion, plus delays for longer distances on arterials adjoining these sections, and the appearance of congestion in a number of new locations.

- 3) The volume of traffic on surface arterial streets adjoining congested freeways will substantially increase as drivers seek out alternative routes. These will likely increase to levels experienced before the development of the freeways.
- 4) The cost of operating an automobile during peak hours will increase because of the lower efficiency of the automobile and slow, halting movement and stalling.
- 5) The degree of air pollution on congested arteries will increase, thereby more seriously affecting those presently having to absorb it and exposing ever-larger numbers of additional people who live adjacent to increasingly heavily traveled arterial streets and freeways. Although efforts are under way to stabilize or reduce pollution emissions, especially in new automobiles, the gains in reduction per car may be offset by the increase in the number of automobiles, so that present levels may not be reduced. In any case, air pollution will remain a serious problem unless there are major innovations in pollution control.

B. The capacity of highways and streets is sufficient to handle non-peak-hour movements for a long period of time.

The existing and programmed network of streets and highways--if adequately maintained--appears to have capacity sufficient to handle the bulk of the anticipated movement of auto users during non-peak hours for a relatively long period of time.

Substantial unused capacity in the current and programmed highway network during the 20 non-peak hours of the day will enable people with cars to have a high level of mobility for many years. This situation will likely exist since, although a large portion of the total trips are made during these 20 hours, the bulk of them are the shorter-distance, local-shopping and recreational trips. In addition, the capacity of the highway and arterial network can be expected to increase for the next 7 to 10 years with the completion of most of the interstate highways plus improvements to existing arterial streets.

- * Programmed freeways and highways for which large amounts of land have been acquired will be completed and will add to the capacity of the network. Although controversies over limited sections on some of these routes remain to be resolved, it is likely, because of the substantial commitment of public funds already made to them, that they will be settled and construction will be completed. The major programmed freeways and highways presently scheduled include: I-94, I-335, I-35W, and T.H. 55 (Hiawatha Avenue) in Minneapolis; I-94 and I-35E in Saint Paul; plus I-94, I-35E, T.H. 100, and Hennepin County 18 in suburbs around the two central cities.
- * Arterial street and highway improvements--such as surfacing, computerized operation of traffic signals, development of turning lanes at major intersections, and grade separations on major trunk highways--are being planned and scheduled by the Minnesota Highway Department, Minneapolis and Saint Paul, and Hennepin and Ramsey Counties under the federal TOPICS (Urban Traffic Operations Program To Increase Capacity and Safety) program or as part of the regular construction programs. Continued work on the surface arterial streets by counties and municipalities as part of their regular public works program will also contribute to increases in the total capacity of the street/highway network.

Occasional delays in localized situations--such as before and after events and on special days of the year in areas around Metropolitan Stadium, the University, and some major shopping centers--are likely to be experienced. Likewise, delays due to weather conditions, accidents or road repair can be expected to continue.

Many of the conditions which motorists find very aggravating today that result in occasional delays or disruption to the normal pattern of movement during the non-peak hours can and should be remedied. Non-emergency road repairs, for example, could be done on weekends or in the lowest periods of travel flow. Similarly, the flow of materials to construction sites or to buildings adjoining major arteries, which presently interrupt the flow of traffic, can be better regulated by shifting deliveries from the streets to building docks off of them or to hours of the day with low traffic volumes.

While the continued maintenance and improvement of the existing highway network plus the additions presently programmed will provide capacity sufficient to handle auto movement during the non-peak hours, major improvements and additions to facilities and/or service will be needed to handle peak-hour movements.

II

The peak-hour problem, which develops as people in autos try to move to work and home again across the freeway/arterial network, appears as a piling-up of congestion near the geographic midpoints of the metropolitan area. Because of the way the Twin Cities area is laid out, people trying to go from one side of the area to another unhappily have to pass through or near downtown Minneapolis, the University of Minnesota, the Midway, or downtown Saint Paul. It is fundamental to understand that congestion on the highway network around these major employment centers results from the cross-area movements and would exist even if there were no trips to these centers. It is, of course, compounded by the trips trying to reach destinations within these centers on the same freeway/arterial routes.

- A. Peak-hour congestion which will exist on many major freeways throughout the entire metropolitan area will be most severe on routes leading into and around downtown Minneapolis, the University, the Midway, and downtown Saint Paul.

Future traffic projections indicate that severe congestion can be anticipated within only a few years on major freeways and arterial streets which lead to or pass near the geographic midpoints of the metropolitan area. This results largely because of the substantial, continuing increase in the movement of people trying to go from one side of the metropolitan area to another. Because of the way the Twin Cities area is laid out, and the location of the major transportation routes, they must pass through or near downtown Minneapolis, the University of Minnesota, the Midway, or downtown Saint Paul. Although the capacity of freeways leading into and around these centers is among the largest in the metropolitan area, it is well below what will be needed to accommodate the tremendous increase in travel that is anticipated. As a result, severe congestion can be anticipated within only a few years in some areas, including the following: The joint portion of the inner ring around downtown Minneapolis--particularly the I-94 tunnel and the joint section of I-35W and I-94; I-94

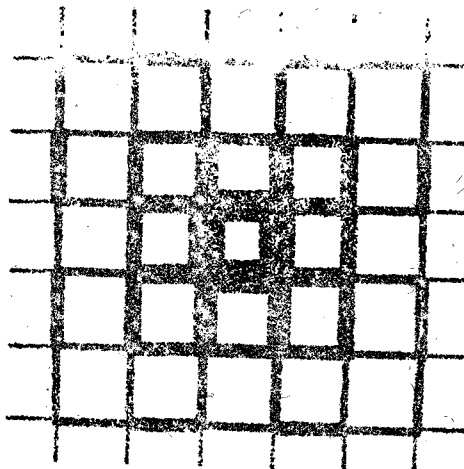
from T.H. 55 (Hiawatha Avenue) in Minneapolis to T.H. 280 in Saint Paul; the joint section of I-35E and I-94 around downtown Saint Paul; I-94 to the east of downtown Saint Paul; and T.H. 12 (Wayzata Boulevard) west of downtown Minneapolis.

These major arteries perform a number of functions, including providing access for persons whose destinations are in the downtowns, for limited circulation around the downtowns, plus, most importantly, as through routes and major interchanges for movement across the metropolitan area. It is anticipated that increases, particularly in the through movement, will be most substantial--well in excess of the designed capacity of the freeway network to handle them. For example, the number of trips crossing a line circling downtown Minneapolis will increase by 116% - from 532,000 in 1968 to 1,154,000 in 1985. Approximately 529,000 or 85% of the 622,000 additional trips will be through trips, whereas only 93,000 or 15% of the increase will have origins or destinations in the downtown. Similarly, the area around downtown Saint Paul will experience a 72% increase in trips - from 412,000 in 1968 to 707,000 in 1985. Of the total increase of 195,000 trips, approximately 143,000 or 73% will be through trips, and only 52,000 or 27% will have their origins or destinations in this downtown. This condition might also be illustrated by noting that, in 1968, 54% of the total trips in the area around downtown Minneapolis had their origins or destinations in this center but by 1985, with the doubling of trips, this figure will decline to 33%. In Saint Paul, a comparable situation exists where in 1968 45% of the trips around downtown Saint Paul went into or started from this center, whereas in 1985 only 33% will start or end there.

- B. Congestion on routes leading into and around the downtowns, the University, and the Midway would exist even if there were no trips to these centers. It is, of course, compounded by the trips trying to reach destinations within these centers on the same freeway/arterial routes.

Projections of 1985 travel volumes in the Joint Program indicate that the number of through trips, alone, passing near downtown Minneapolis will increase by one third, or 244,000 per day more than the total of all trips into and through this area in 1968. In Saint Paul, the increases in through trips will be lower, with a total of 59,000 or 13% more than the total number of through and downtown-bound trips in 1968.

It is apparent that the freeway/arterial network surrounding downtown Minneapolis will not be adequate in 1985 to even handle just the through trips, whereas in Saint Paul the network has capacity just short of the total needed to accommodate this type of movement. The substantial increase in the volume of through trips passing near the geographic midpoints of the metropolitan area is a phenomenon that occurs on a grid network of freeways, which is the basic layout of the network in the Twin Cities area. These routes passing near the center provide the most direct means of movement for trips across the metropolitan area. This phenomenon is illustrated below.



The congestion on routes around the downtowns, the University, and the Midway is further compounded by trips which are destined for these centers. As a result, the freeway/arterial network around downtown Minneapolis (which will be congested in 1985 simply from the 776,000 through trips) must further handle an additional 378,000 trips to and from the downtown area. In Saint Paul, the network, which is just short of capacity to handle the 471,000 through trips, must also accommodate 236,000 trips into this center.

The major corridors that will be most severely congested even with an increase in transit patronage and improvement in service include the following: Minneapolis--freeways and arterial routes leading to the south, west, northwest and northeast of the downtown; Saint Paul--routes to the downtown from the east, south, and northeast. The piling-up of traffic on major routes leading into the downtowns, the University and the Midway can be expected to affect movement in the morning even as far out as some of the circumferential freeways such as T.H. 100 at the intersections of T.H. 12, 55, and 7; I-694 near I-35W and possibly T.H. 65 and the 62nd Street Crosstown and I-494 near I-35W.

During the evening rush hour, congestion will be felt most severely on all major freeways around the downtowns, the University and the Midway and will be observed not only in slow, halting movement on these routes but also in a backing up of traffic on all streets providing access to the major freeways and arterials.

Major solutions to peak-hour congestion problems in areas around the two downtowns need to recognize both the growing crosstown movements and those whose destinations are within the downtowns. Alternatives which will only reduce the downtown portion of these trips will not provide any substantial, long-term relief to the growing congestion problem in these areas.

III

Construction of additional parallel or diagonal freeways to relieve the growing congestion during peak hours is not feasible. The demands on space for many 6-12 lane freeways, the consequent relocation of thousands of people and the damage to the environment and to existing communities, are excessive. Public resistance to additional freeways through the built-up areas can be expected to remain high. It is extremely costly and inefficient to construct freeways which will be used to capacity only 20 peak hours per week by automobiles carrying an average of 1.3 persons.

- A. Continued reliance on the automobile to handle peak-hour movement (if we are to avoid unacceptable levels of congestion) requires the building of at least 8 to 10 additional major freeways in the built-up portions of the metropolitan area.

Major new-additional freeways outlined in studies of the Joint Program and the Highway Department include the following:

Minneapolis and adjoining suburbs:

- 1) Southwest Diagonal from downtown Minneapolis to T.H. 100.
- 2) Northwest Diagonal from downtown Minneapolis to T.H. 100.
- 3) 28th Street Crosstown north of Lake Street from near France Avenue to I-94 near T.H. 280.
- 4) Cedar Avenue from 24th Street to the 62nd Street Crosstown.
- 5) Northeast freeway from I-35W near Johnson Avenue to I-694.

Saint Paul and adjoining suburbs:

- 1) Northeast Diagonal--new T.H. 212 from I-35E to I-694.
- 2) Prior-Cleveland Connector to parallel T.H. 51 from the Shortline route near Snelling Avenue to I-35W.
- 3) T.H. 61 from I-94 to north of T.H. 36.

B. Development of proposed new freeways to handle the peak hour will have many adverse effects throughout the metropolitan area. These include:

- 1) Destruction of many existing land uses and consumption of large amounts of space for a poorly utilized transportation network.
- 2) Disruption and the severing of numerous existing communities.
- 3) Reduction of the possibility of achieving one of the goals of the area expressed in the Metropolitan Development Guide---the concentration of commercial and office activities.
- 4) Destruction of the public transit system--the only major means of transportation to non-drivers.
- 5) Exposure of larger numbers of people to air and noise pollution.
- 6) The displacement and relocation of thousands of people.
- 7) Reduction of the housing stock, particularly homes for lower-income people.
- 8) A decrease in the value of homes in locations (usually in the central cities and nearby suburbs) which previously enjoyed proximity to major employment centers without compensation while increasing the values of those in more distant locations to their benefit.

C. It is questionable whether the auto/freeway approach, even if pursued, would do what is needed or could be accomplished.

Inability to anticipate "demand".

It is doubtful in the long run that sufficient lanes can or will be built to meet "demand". New highways today are built to reach capacity in 10-20 years, yet they are filled to capacity at the peak hours after only a few years. In the planning of highways, "demand" has always been underestimated, so that within a few years it is necessary to begin planning the next series of parallel freeways to relieve congested ones. Freeways are not flexible, and once in place are extremely difficult to expand, even to the point where it is less costly to acquire land for additional lanes than to construct them on a second level over existing right-of-way. Consequently we need to look at not only the freeways proposed in the Joint Program studies but also a possible third generation of highways which may follow. Questions which this possibility presents include: Where will the possible third generation freeways be located even within a limited portion of the area such as the northern half of Minneapolis after I-94 and the Northwest Diagonal are built? Similarly, where would a second Southwest Diagonal be located in Minneapolis and adjoining suburbs between I-35W and the proposed Southwest Diagonal? What complex of freeways will be needed to handle the mammoth movement of cars near the downtowns as more lanes cross or end near these centers?

Community Opposition.

Opposition to the construction of new freeways is increasing in local areas. Evidence of this in the metropolitan area has appeared in disputes over the location on the East Side of T.H. 212 and the Prior-Cleveland Connector in Saint Paul. In Minneapolis, the Northwest, Southwest, Cedar Avenue, and 28th Street Crosstown freeways were recently removed from planning maps largely because of opposition to their development. This resistance in the past has been very effective in changing the location even of portions of the present interstate network. The most obvious example in the Twin Cities area is the location of I-94 near the University, which passes through the Prospect Park neighborhood. In some cities, such as San Francisco, New Orleans, Baltimore and New York, opposition has stopped the development of some major freeways altogether.

Rebuilding programs reduce capacity and add to congestion.

The major rebuilding of all or portions of worn-out sections of freeway in coming years will further compound congestion during the peak hours and severely limit the ability of even a larger--possibly second or third generation--freeway system to handle the peak-hour movement.

Within the next 10 years, it is likely that major portions of the present freeway network will have to undergo a substantial program of resurfacing or of complete rebuilding. Many of the highway surfaces are wearing substantially faster than was anticipated, and will have to be repaired or rebuilt if unsafe conditions are to be avoided. The closing-down of even a limited number of lanes or of sections of the present freeway network will greatly increase congestion during the peak hours. Similarly, the rebuilding of any major section of the freeway network to eliminate safety hazards will also contribute to peak-hour congestion.

D. It is inefficient to solve peak-hour problems by developing freeways for peak-hour use by autos carrying 1.3 persons.

Proposed new freeways outlined in the Joint Program are largely to provide additional capacity to handle increasing peak-hour movements. These freeways will be costly. The Minnesota Highway Department in 1968 estimated the cost of eight controversial new freeways proposed in System 14 that would be largely located in the two central cities at \$148,331,000. The total costs of state trunk highway needs in the metropolitan area 1968-86 were estimated to be \$559,509,000. These needs, however, do not reflect the estimated cost in 1970 of completing the Interstate program in the area, which is \$256,047,500, nor do they include many freeway or expressway routes identified in the Joint Program. These figures were based on 1968 cost estimates. It is likely that increases due to inflation and actual costs which are well above preliminary estimates will substantially increase their cost - even possibly double them.

Many of these proposed freeways represent a costly investment for transportation which will be poorly utilized, since many lanes will be used only 20 hours of the 168 hours per week by only 1.3 persons per automobile.

IV

Future transportation demands must be met by programs that provide more efficient use of both right-of-way and vehicles. This requires reducing reliance on the automobile, increasing the average number of persons per car used, and increasing the number of persons moving through concentrated areas on some multiple-passenger vehicle or facility.

- A. The problem of movement at the peak hours is not the lack of space for travel but instead the size and utilization of vehicles.

Present highways and streets could handle substantially greater numbers of people than the present 2,600-3,000 per lane per hour at the peak hours if larger vehicles such as buses were used, if automobiles carried more passengers than 1.3-1.5 persons, or to a lesser extent if the size of the automobile were smaller. Rapid transit on separate structures or guideways also has substantially greater capacity than a 4-lane freeway.

Concern with moving people rather than vehicles has been expressed in a national policy statement by the Secretary of Transportation, John A. Volpe, and the Federal Highway Administrator, F. C. Turner, in September, 1970, as follows:

"It will not be financially possible -- and even if it were, certainly not socially desirable -- to provide all the highway facilities that would be needed in order to satisfy the peak period demands, especially in our larger urban areas, for all of the people who want to drive automobiles. It is necessary to think in terms of how many people can be moved expeditiously on city freeways and streets -- rather than how many vehicles."

"The Federal Highway Administration, recognizing the need to improve the productivity of the urban highway system to the maximum extent possible, believes it is advisable to encourage the greatest use of buses in preference to automobiles."

- B. Various possibilities need to be explored which can increase the number of people moving through a corridor.

Substantially greater numbers of people could be carried on the existing street and highway network if a large proportion were on buses. One lane of freeway, for example, could carry from 10,000 to 35,000 persons on buses--depending on their number--in contrast to 2,600 in present automobiles or from 6,000 to 8,000 if the number of passengers per automobile were increased to 3 or 4. The capacity of other rapid transit systems include: fixed rail--approximately 30,000 persons per line per hour, and yet-to-be-demonstrated new-technology systems which have estimates ranging from 4,000 to 10,000 per line in an areawide network.

1. Use of buses.

Buses could handle a large portion of the peak-hour work-trip movements as they have capacity sufficient to carry the anticipated number of trips on heavily traveled routes. Forecasts for 1985 travel, based on conventional systems with no major changes in the availability or use of automobiles but with congestion on

the freeway network, indicate likely demand for mass transit into downtown Minneapolis of up to 7,000 persons per hour in one direction per line. This figure is well below the actual capacity a bus network could accommodate.

Numerous difficulties relating to the attractiveness of bus transportation must be resolved before such a system could be viewed as a reasonable alternative to the automobile for peak-hour movements as well as any convenient system for non-drivers. These difficulties include the slow movement of buses, the time involved in getting to the bus line and waiting for the bus, and the time consumed in transfers. At a minimum, work will be required to give buses preferential access to freeways and changes in their operation on arterial streets to ease their movement.

2. Car-pooling.

The capacity of freeways and major arterials could also be increased by an extensive system of car-pooling. If the number of persons per car were increased from 1.3 to 3, for example, the number of persons per lane would increase from 2,600 to 6,000. However, it is questionable whether this increase would be sufficient to handle the peak-hour flow on a number of routes.

Coordinating rides will require changes in the behavior of people which could cause considerable difficulty for this approach. For example, agreement on the time of pick-up in the morning and departure in the evening must be made by drivers and riders, as well as a system for compensation or the trading-off in the use of cars. In all probability, incentives would be needed to carry out such a policy. These might include preferred access to freeways, preferred parking locations, or some system of differential charges that would encourage such an approach.

3. Smaller vehicles.

Some additions to the total capacity of highways could be gained if vehicles carrying a single or two persons were smaller. A typical cross section of freeway with its 10-foot-wide lane and 15-20-foot space per car would be reduced to 6 feet by 8 feet, thereby making better use of the available space.

The efficient operation of a smaller-automobile approach would require a substantial increase in the number of such vehicles and almost exclusive use of them for peak-hour movements so that lanes could be re-marked. It would also require much rebuilding of existing facilities where space is not sufficient to readily convert two lanes into three. Numerous problems would also exist on ramps and at interchanges. This approach is practically limited because of the mix in the size of automobiles presently using streets and highways--from semi-trailers and other various-sized trucks to the various-sized cars--which require streets to be built and marked to handle the widest authorized vehicles. Movement in the direction of smaller automobiles would probably require a system of dual lane marking--for small vehicles during peak hours and a mixture at other times, plus limitations over the size of vehicles which would operate at the peak hours. Only marginal increases in capacity will result from increasing the percentage of small cars without these changes.

The possibility of the smaller-automobile approach in terms of handling congestion at peak hours is questionable, as it is doubtful if increases in capacity would be sufficient in many corridors for more than a few years.

4. Transit on separate right-of-way.

Rapid transit on separate or exclusive right-of-way has considerable capacity which could handle the peak-hour movements. In some systems, vehicles might be placed on structures or guideways located within existing right-of-way. Others might need to be on separate rights-of-way which would be considerably smaller, however, than those required for freeways with a comparable capacity.

The most feasible approaches to providing more efficient use of both right-of-way and vehicles require reducing reliance on the automobile by increasing the average number of persons per car through car-pooling or by increasing the number of persons moving through concentrated areas on multiple-passenger vehicles or facilities including buses on freeways/arterial roads or by development of rapid transit systems.

V

The inefficient utilization of highway facilities results partly because those direct costs of automobile transportation which are apparent to the driver do not reflect the full cost. Auto user fees do not pay the full cost of road construction and maintenance . . . a substantial part is paid from property taxes. General taxes likewise pay most of the cost of traffic regulation and enforcement of traffic laws. Other costs such as air and noise pollution are shifted to those living adjacent to roads . . . or to the environment itself.

A. The automobile/highway mode does not pay the full cost of its development and operation.

Contrary to popular belief, the road user does not pay, through user charges (gasoline taxes and licenses), the full cost of automobile facilities.

1. Public general funds are used for the building and maintenance of many local streets and major arteries. These funds are collected from a variety of sources including road and bridge levies on property by the county, or they are incorporated in municipal levies or charges on property. In 1969, counties and municipalities in the metropolitan area spent in excess of \$44,126,808 for the construction and maintenance of municipal and county roads from locally raised revenues largely consisting of property taxes and assessments.

2. Municipalities fund many services directly attributable to automobile users in the enforcement of traffic regulations, traffic direction, intersectional lighting for auto safety, plus rescue and fire services needed occasionally by drivers. These expenditures appear in the public works and the safety budgets of municipalities--budgets which are financed from general revenue (usually property) taxes. Although it is impossible to determine the total costs of these services that can be attributable to the automobile, simply assuming that 20% of the local police budgets might be allocated to this function means that in 1969 municipalities in the metropolitan area spent in excess of \$4,639,835 from local funds on one service to auto users.

B. Many real automobile costs are not recognized by charges to the user but are passed on to other sectors of the economy, absorbed by people living adjacent to freeways, or absorbed by the environment.

1. The public health care system is saddled with the portion of health care costs incurred in automobile accidents which are not paid for out of automobile insurance.
2. Noise and air pollution, plus the abandonment of junk automobiles, are passed on to persons living adjacent to highways, to other sectors of the economy, or to the environment itself.
3. Many of the real costs involved in the construction of highways have not been recognized and therefore are not eligible for compensation, thereby reducing the actual construction cost.

Highway development, after a number of years, now recognizes the relocation costs incurred by persons displaced by right-of-way acquisition. Likewise, the costs of replacement housing for losses to the housing stock were only accepted this past year in the National Highway Act. However, the disruption or severing of existing communities or of natural resource areas is only reluctantly, if at all, accepted. Since the design of highways through parks or other major attractive locations may require more costly facilities such as tunnels, they are ignored or avoided simply to keep the cost per mile as low as possible.

The cost of automobile transportation to the user is well below its actual cost. This results in a low utilization of highway facilities even at peak hours. In addition, since many of the real costs involved in the construction of highways are not recognized, many more miles of under-utilized freeway can be built with available dollars or without increases in user or direct automobile charges.

VI

The test for transit is to attract an increased proportion of travelers. The construction of a new transit system will not by itself attract riders. We should not expect large numbers of people to leave the comfort and convenience of their private automobiles without significant new incentives to do so. The high cost of transit proposals made for the metropolitan area is not matched by any assurance that they will attract enough riders to substantially reduce reliance on the automobile during peak hours, thereby avoiding the duplicate, costly investment in additional freeways.

A. Attractive features make the automobile the preferred vehicle for travel.

The automobile has many characteristics which contribute to making it the preferred vehicle of travelers by most people who can and desire to own and operate one.

Some of these features include:

1. Convenience.

The extreme popularity of the automobile is largely due to its great convenience which permits door-to-door service from wherever a person may be to wherever he desires to go, whenever he wishes to make a trip. In contrast, the greatest limitation on the use of transit is the inconvenience in time and effort needed to make the trip to a station stop where transit is available, further time consumed in waiting for the transit vehicle, and finally the time and effort required to get from the end of the transit trip to the person's final destination. In addition, time may also be required in transfer between transit vehicles if the original transit line does not serve the person's final destination.

The greater convenience of the automobile over transit is not absolute and is diminishing in some locations--particularly during the peak hour. For example, in some major centers such as the University, the downtowns, and some shopping centers, people must walk considerable distances to their cars, whereas transit may be available much closer to their origins. However, the convenience of having transportation immediately available next to the home will continue to make the automobile the preferred means of travel for shopping and most recreational trips.

2. Speed of movement.

The individual operation of the automobile permits a person to make most of his trips directly without stop to his destination. In contrast, conventional transit for most people requires not only time in getting to and from the transit stop but also time for transfers and slower movement than by automobile because of the periodic stops the vehicle makes to pick up riders.

The speed of movement by automobiles and the time required to make a trip are limited by the roads available, the speed limits on them, and by conditions encountered in the trip such as weather, interruptions from accidents, or the slower movement encountered when the volume of flow is in excess of the capacity of the road. These conditions also apply to the existing bus system and limit the speed of its movement. In addition, however, buses are further delayed by the wait required to gain access into a moving traffic lane after they have made a stop.

Generally, the speed of movement in the metropolitan area and the relatively short time it takes to make most trips can be expected to diminish in future years--particularly for work trips on heavily congested routes. Apart from these, the high level of urban mobility provided by the automobile can be expected to continue for a reasonably long period of time and will contribute to making the automobile the preferred means of travel for most non-peak-hour trips.

3. Comfort.

The privacy, temperature controls, and many appointments in the automobile greatly contribute to its comfort and appeal. The ability to travel continuously from home to near a destination in a warm vehicle during the winter or a cool one during the summer, and a vehicle that protects a person from rain or snow, contrasts with the present bus transit trip which exposes a person for part of the

time to possibly unpleasant climatic conditions. The privacy afforded by automobile travel also contributes to its desirability in contrast to types of transit which require standing during the trip or jostling with crowds.

Operation of an automobile, however, frequently is not a satisfying experience for many routine trips because of the concentration required and the frustrating conditions encountered in making some types of trips. In addition, many people prefer to be able to read or do productive work, which is possible on transit, rather than operating a vehicle in their work trips to and from home.

B. Transit is not competitive with the automobile under present public policy arrangements.

Public policies by various units of government have favored and greatly contributed to the need and cost utility of the automobile. These include urban development policies, street and highway development policies, and financial policies which have kept the direct costs of automobile transportation apparent to the drivers below the full cost to the users.

1. Urban development policies have favored the automobile.

Public policies--particularly zoning and subdivision regulations--have contributed to the trend in decentralization of housing and the movement to larger amounts of space per dwelling unit. These favor the use of the automobile over public transit. Indeed, the spread of residential development and the scattered locations of employment would not have been possible without the automobile. Persons living within these newly developed areas must have a car in order to get around. Although the automobile has made the suburban development which we see today possible, it has also limited the movement of some people -- mothers and children at homes that have only a single car which must be used for work trips. Development of transit to serve low-density residential areas is possible, although difficult. However, to the extent public transit is developed, it would provide transportation for those who are without it and, if it can serve the work-trip movement, will free-up the car of single-car families so that it can be used for non-work trips.

2. Development of the substantial street and road network has greatly contributed to the utility of the automobile.

Many of the benefits, the mobility and ease of movement to almost any destination within the metropolitan area were made possible only by the commitment of public agencies to develop the extensive street and road network. Construction of the interstate freeway system and the upgrading of major trunk highways to freeway and expressway standards have further contributed to the speed of movement and greatly reduced the time consumed in making many trips. For others, this network has extended the distance they could travel in the same amount of time and therefore increased their recreational, job, and cultural opportunities. These major improvements and overall upgrading of the street and highway network resulted largely from public policy decisions to invest large amounts of public funds in these programs. For example, the Minnesota Highway Department has spent a total of \$474,114,764 on trunk highways and interstate construction in the metropolitan area during the past six years. In addition, counties and municipalities spent a considerable amount during the comparable period. In contrast to highways, the public transit system--apart from the benefit it receives from road

construction--was entirely privately financed from farebox revenues until the MTC came into existence in 1967. Since then, approximately \$4 million has been collected from wheelage taxes and spent by the MTC for its staff, to maintain or provide service on a limited number of lines, or for planning studies.

3. Public financing policies for road and street construction have kept the direct cost to the users below the full cost of their development and operation, thereby encouraging auto use and under-utilization.

A large portion of the advantage and the ability of people to purchase and operate automobiles results from the present arrangements for funding automobile travel and the limited recognition of numerous cost factors which are passed on to the automobile users. The system of highway funding is fragmented among a series of protected highway user funds plus local property taxes and assessments against benefited property. Many of the costs directly related to automobile transportation are hidden and only indirectly paid by automobile users. These include many services provided by local governments needed for traffic regulation, accident assistance, or the safe operation of automobiles. These costs are generally absorbed within the local municipal budgets, which are funded from property tax levies or other tax sources not directly funded by automobile users.

The rules pertaining to compensation in the construction and improvement of the street and highway system do not recognize a number of costs directly attributable to this development. For example, although persons whose property is taken for highway purposes are compensated, individuals who must absorb the noise and air pollution or whose property decreases in value are not compensated under present arrangements. As a result, the costs of construction of highways and streets are maintained at a level well below their actual costs, thereby increasing the number of miles which can be constructed or reducing the cost to the users.

- C. Several new transit systems or major additions have been proposed for the metropolitan area.

Studies prepared for the Metropolitan Transit Commission by consultants and others call for development of new rapid transit systems or major additions to the existing mass transit. Most of these assume there will be a family of various sizes and types of transit vehicles with an extensive network of feeder or circulating vehicles tying into trunkline (fast-link) rapid transit. The major new proposals in these plans largely focus on the trunkline-express movement. Others have suggested development of a completely new areawide network using personalized small vehicles. The major proposals developed to date include:

1. Rapid rail for trunkline movement on exclusive right-of-way.

Development of a series of high-speed rapid rail trunklines oriented to the downtowns of Minneapolis and Saint Paul were recommended in the Voorhees study for the MTC. This proposal contemplates construction of 71 miles of fixed rail line on exclusive right-of-way to permit high-speed movements on major trunklines. It also includes a network of feeder bus lines and separate express bus lines on freeways to collect passengers and to service areas not close to the rail lines.

The proposed rail lines--as an addition to the transit service--would largely provide high-speed trunkline movement for persons who live close to the lines and whose destinations are directly served by them. They would also decrease the

trip time for many transit users who otherwise would be on slow-moving buses. Another possible benefit would be the contribution this system could make to shaping development of the metropolitan area--particularly the downtowns, which would be provided with a substitute transit service that could bypass the congested inner ring road network. Finally, it was suggested that these lines would encourage high-density corridor development and, to the extent that people living along these lines would be encouraged to take transit, the system would reduce congestion on the highway network. It was noted, however, that the lines by themselves would not make this happen. Strong land-use controls and possible development powers would also be needed.

The contribution which a network of trunkline-fixed rail lines by itself would make to alleviating transportation problems is questionable. These largely automated lines would marginally contribute to a reduction in the future operating costs of transit by substituting some automated operation for the more inflationary costs associated with labor intensive buses. However, these lines would directly serve only a limited number of people, largely because of the low density and the pattern of residential development. Substantial ridership will require an extensive network of transit vehicles which can collect passengers and parking lots for autos bringing people to stations. In addition, the 71-mile network does not serve the present or likely travel patterns of the area, which focuses on the two downtowns but is also in all directions--360 degrees--around the metropolitan area.

2. Buses on exclusive right-of-way for rapid trunkline movement and on streets for distribution.

This proposal, in part, resembles the fixed rail concept except that buses are substituted for rail cars and rubber tires on concrete for steel rail. One variation of the proposal, which is possible because of the greater flexibility of the bus, would be to use the bus to collect passengers along a designated route and then move onto the separate trunkline for higher-speed movement to major centers of employment at the end of the exclusive right-of-way. This system also contemplates using buses or smaller vehicles to either collect passengers or provide express service on freeways in areas not served by exclusive bus service.

The features of the proposed Voorhees 83-mile busway system are comparable to those of rapid rail and would similarly require development of a separate new right-of-way along designated routes to provide high-speed service. One of the features of busways, however, is that, in contrast to fixed rail, they can operate successfully with any amount of exclusive right-of-way. These separate, exclusive facilities could be built either as an entirely separate system or simply as a reliever along portions of the freeway network which are heavily congested. These exclusive lanes for buses could be more adaptable for other purposes than fixed rail, since their pavement is identical to that of roads, thereby enabling possible use by car-pool drivers, emergency vehicles, or even other automobiles whenever transit traffic does not make heavy use of the facility. It is also possible that in the event some type of new-technology system is developed which would make these exclusive lanes obsolete, they could be modified and continue to be used by automobiles.

3. Buses on metered freeways, arterial and surface streets.

This proposal largely builds upon the existing transit system with the addition of controls over use of freeways by cars and with preferential access to

them by buses, thereby permitting higher-speed bus express movement. The frequency of service would be improved by increasing the number of buses, while new areas would be served by additional routes.

A test demonstration of the metered freeway preferential bus concept is presently being planned for I-35W from downtown Minneapolis to the Minnesota River in Bloomington by the MTC and the Minnesota Highway Department. Studies are under way to determine what monitoring, control systems and changes to bus routes would be needed. It is estimated a test demonstration of this concept will begin in 1973.

4. New-technology systems.

Development of new technology--personalized public transit systems--has been suggested as one of the most desirable ways to handle peak-hour movement plus many others during off-peak hours. Such systems feature either an areawide or trunkline network of lines carrying small vehicles responding on demand to passengers, carrying them non-stop or with only a single transfer from close to their origin to near their destination in as short a time as the non-congested automobile mode.

The features making these proposed systems most attractive largely result from their small cross sections by comparison with fixed rail or buses, plus their personalized automated on-demand service. The small cross sections reduce right-of-way requirements thereby possibly permitting use of existing street or alley right-of-way. This feature--if it can be done--would mean that these new systems would cost less than fixed rail per mile to construct, thereby permitting development of an areawide network in contrast to a few trunklines. If the network is to provide direct non-stop service, however, the interchanges of lines are likely to require considerable space. Areawide coverage, however, even if it required one-stop transfer, would place service closer to patrons and their numerous destinations, thereby minimizing the transfer problems and providing a fast, convenient, comfortable service which might well compete with the automobile.

The comparatively lower capital cost per mile of new-technology systems is largely achieved because of the reductions or possible elimination of right-of-way requirements plus lower material and construction costs than would be required for fixed rail or busway networks. Automation would reduce labor costs to a minimum.

The new-technology systems appear to have fewer environmental effects than new freeways, fixed rail or busway alternatives, as fewer people would have to be displaced and there would be less disruption to existing communities. These systems appear to have reduced land-use requirements (unless they provide non-stop service) and, if they are competitive with the automobile, could reduce the land dedicated for parking. Air and noise pollution would also be minimized by comparison with other alternatives.

0. The proposed major transit systems or additions will be costly.

Each of the proposed new rapid transit systems or those which are basically major improvements on the existing system will require a substantial number of dollars. These will be in addition to whatever funds are necessary to improve and operate the existing system. The present bus transit must be continued and improved if the future rapid transit system is to have any substantial base of ridership. All proposed systems, with the possible exception of a complete new-technology system, anticipate

the use of buses or similar vehicles to collect and distribute people from the trunk-line systems and to provide service in areas where trunkline service is not feasible.

The total capital and operating costs of the various proposed rapid transit systems are as follows:

1. Fixed Rail. The capital cost of the 71-mile fixed rail system proposed by Voorhees, together with the feeder and express bus system, is estimated to total \$923 million. In addition, an additional \$3,290,000 per year will be needed to meet the anticipated operating deficits. (The 1985 estimated patronage of 96.2 million persons at 26 to 34 cents per trip would generate \$31,360,000 per year.) Even assuming two-thirds federal reimbursement for capital cost, the local area would still have to find revenue sufficient to retire a total debt of \$850,000,000 (\$308,000,000 for principal and \$542,800,000 in interest over 40 years) plus a minimum of \$3,290,000 per year to meet the operating deficit. The total annual cost is therefore estimated to be \$24,570,000 based on 1968 material and construction costs. The Voorhees report indicates this yearly cost might be reduced by staging the development but would still total approximately \$10-\$15 million per year.

2. Busways. The proposal developed by Voorhees for a system of exclusive right-of-way busways is almost as expensive as the fixed rail system. The capital cost of this 83-mile system with other feeder and express buses totals \$888,000,000 if subways are built in the downtowns, and \$549,000,000 without them. Such a system is expected to sustain a yearly operating deficit of \$510,000 with subways (96.2 million patrons) and \$3,260,000 without subways (78 million patrons).

Assuming two-thirds federal reimbursement for the capital cost of the busways with subways, the local area--based on 1968 prices--would still have to find revenue sufficient to retire a total debt of \$821,333,000 (\$296,000,000 in principal and \$525,300,000 in interest over 40 years) plus a minimum of \$510,000 per year to meet the operating deficits, for a total of \$21,035,600 per year. This total could also be reduced to approximately \$10-\$15 million annually by staging capital development.

The local one-third cost of the capital cost of a busway without subway would total \$516,000,000 (\$182,000,000 in principal and \$334,000,000 in interest) plus a minimum of \$3,260,000 in yearly operating deficits (because of the reduced patronage), for a total of \$16,613,000 per year.

3. Buses on freeways, streets and metered freeways. The continued use of the existing street and highway network, plus whatever additions are made to this, greatly reduces the capital cost requirements for this approach by comparison with fixed rail or busways, which require acquisition of land for exclusive rights-of-way plus construction of separate new facilities. The capital cost largely consists of the purchases of new buses plus park-and-ride facilities, and some alterations to arterial streets to improve the operating speed of the buses. The estimated total capital cost of an improved bus system with metered freeways totals \$105,000,000, while a system without the metered freeways would cost a total of \$44,000,000. Assuming two-thirds federal support for these capital costs, the resulting local capital cost for 12 years on the non-metered freeway program totals \$19,160,000 (\$14,666,000 in principal and \$4,494,000 in interest), for an annual total capital cost of \$1,596,000. In contrast, the improved bus system with metered freeways would increase the capital cost to a total of \$105,000,000 (due to alterations that would be needed to the freeways in addition to the purchases of buses and other alterations to the arterial network). The local one-third capital cost for this program would total \$36,720,000 (\$35,000,000 in principal and \$1,720,000 in interest), for a total annual capital cost of \$3,060,000.

The operating deficits of an improved bus system without metered freeways are expected to total \$4,888,000 in 1985, in contrast to \$2,360,000 on a system with metered freeways. The difference between these two figures results because of the increase in patronage from 54 million per year for an improved bus system to 61.2 million per year under the metered freeway approach. Combining the annual capital costs with the anticipated annual operating deficits results in a total of \$6,480,000 per year for the improved bus system and \$5,420,000 per year for the improved bus system with metered freeways.

4. New Technology. Presently, workable estimates of the probable capital and operating costs of new-technology systems have not been developed since these systems are not yet available for demonstration. Some prototype systems such as Hov-Air, Uniflo, Alden-Starcar, and Monocab are now available for demonstration, but many problems remain to be answered about their feasibility, possible application in this area, and their usefulness. Much work remains to be done on the hardware, simulations of the system, plus in the determination of their acceptability and the demonstration of their operation. It is likely that, given the remaining necessary engineering and testing, it will be several years before usable cost estimates and a knowledge of their application in this area will be available.

1985 Cost Comparisons for Alternative Transit Systems
(\$ thousand)

	<u>Total Capital Cost</u>	<u>Total 1/3 Capital Cost</u> (incl. princ. & int. on bonds)	<u>Annual Local Capital Cost</u>	<u>Annual Operating Deficit</u>	<u>Annual Total Local Cost</u>
New technology	No estimates available.				
Fixed rail - 71 miles	923,000	350,800	24,570	3,290	27,860
Busways - 83 miles					
with subways	888,000	821,333	20,533	510	21,043
without subways	546,000	516,000	12,903	3,260	16,613
Buses - improved with metered freeways	105,000	36,720	3,060	2,360	5,420
Buses - improved	44,000	19,160	1,596	4,880	6,480

The substantial cost of various alternative transit systems which must be funded from existing or possibly new tax sources has raised serious doubt about the feasibility of accomplishing the proposed programs--particularly the more costly exclusive right-of-way systems. It is noted, for example, that the estimated general patronage of the rapid rail and busway systems with subways totals 96.2 million persons--approximately 36% more than the lowest-cost metered freeway system with 61.2 million persons. However, the annual average cost of the fixed rail and busway system totals \$24,570,000 in contrast to \$5,420,000 for the metered freeway system. The actual cost of substantial improvements in transit by whichever alternatives, however, might be viewed as reasonable if this investment would substantially contribute to alleviating or solving major transportation problems and avoid the costly duplication of freeway facilities.

E. Proposed major additions and improvements of transit will have difficulty attracting a substantial number of auto users.

The effective contribution that transit can make toward resolving transportation problems suggests that proposals be measured in terms of the use which will be made of transit, the impact of their development on highway requirements, and the service provided to non-drivers.

1. Transit patronage is anticipated to increase by from 44% to 78% above an improved bus system if major proposed fixed guideway construction and improvement is made to transit. However, this increase, because of the overall growth in trips, will increase the total percentage of trips handled by transit by only 1.1%--from 3.9% in 1968 to 5% in 1985.

The number of people using transit has declined substantially over the past two decades, both as a proportion of all travel and in absolute numbers. While over 9% of all trips were made by transit in 1958, this percentage dropped to less than 4% in 1968. Studies indicate that simple improvement of transit by addition of buses and changes in routes will result in total patronage of 54 million in 1985 in contrast to 71 million in 1958, 56 million in 1968 and 50 million in 1970. This can be increased to 61.2 million on a metered freeway bus system. The major addition of exclusive right-of-way trunkline transit is anticipated to increase the patronage up to 78 or 96 million--only 7 to 25 million more than what existed in 1958.

In 1985, it is estimated that transit--including exclusive rights-of-way trunkline facilities and buses--will handle 320,000 person trips per average weekday, or 5.1% of the 6,337,000 total. This represents an increase of 173,100 person trips over 1968 but an increase of only 1.2% more of the total even as there is substantial excess capacity in the fixed guideway transit system in 1985. The lower transit usage relative to the total of person trip movements suggests that the building of transit by itself will not attract trips from autos. Rather, these studies would suggest that auto ownership levels will increase, lower-density development will continue, there will be proportionally fewer work trips, and a continuation of the rules pertaining to automobile usage and operation.

2. Development of most proposed rapid transit systems will have little effect on peak-hour congestion or reduce the demand for additional highways.

Development of express transit is expected to only slightly reduce the pressures on major freeways and arterial roads in two or three corridors near downtown Minneapolis by 1985. The Voorhees study indicates that the building of transit will not eliminate road congestion on these corridors largely because of the substantial increases in through downtown traffic, which in the years 1985 to 2000 will likely congest all corridors even if all presently contemplated roads are built and express transit is constructed.

The greatest contribution which express transit makes is in providing more immediate access to the two downtowns, as these centers will be better served by transit than any others, and because the routes into and around them will be most heavily congested from increases in through movements. In the case of the two downtowns, transit will continue to serve approximately 35% to 40% of the total person trips whose destinations are in these centers. However, it poorly serves the through downtown trips which have diverse origins and destinations that cannot be directly served by exclusive right-of-way rapid transit but only

by use of a secondary transit vehicle at both ends of the trip. This situation reduces the attractiveness afforded by express transit to persons making through trips. As a result, although conventional express transit systems can be expected to attract about one third of the downtown travel by 1985, only 2% of non-downtown travel would use the transit system.

The net effect from simply the building of proposed conventional rapid transit systems on the future road requirements is minimal. It is anticipated that most freeways and major arterials will increasingly experience congestion with accompanying demands for new road facilities in spite of the addition of express transit.

3. Service for non-drivers will be only slightly improved with the development of proposed rapid transit systems.

Major additions to transit which upgrade the level of service by extending existing routes, creation of new routes in areas not presently served, and the closer spacing of lines in the service network should contribute to improving the transportation opportunities for many non-drivers. Similarly, increasing the frequency and reliability of service, improvement in vehicles, signing and notice to users, and improvements which would increase the personal security and comfort of users, can all be expected to result in improved service for this group.

Major capital additions to the total transit system in the form of exclusive right-of-way facilities, with stations placed at various points to provide high-speed rapid movement into the downtowns, can be expected to make only a minimal contribution to the transportation opportunities of non-drivers. These high-speed lines will primarily benefit commuters during the peak hours and only incidentally be of great value to the non-driving population. This condition exists largely because the non-driving population is not concentrated in any one area but is widely dispersed throughout the metropolitan area--even within the two central cities. Low-income and elderly people within the inner city communities of Minneapolis and Saint Paul adjoining their downtowns will discover that if their destinations are in the downtowns, regular buses will be more convenient and will make the trip as fast as rapid transit vehicles, which will likely stop at only one or two stations within their communities.

The construction of new transit systems will not by itself attract riders. Their high cost is not matched by any assurance--under existing public policies--that they will attract enough riders to substantially reduce reliance on the automobile during peak hours, thereby avoiding the duplicate, costly investment in additional freeways. These systems will primarily benefit commuters during the peak hours and only secondarily increase service to the non-driving population.

Longer-term additions or improvements in the transportation system which provide for door-to-door pickup and delivery service from their homes to a large number of shopping, employment, medical and cultural centers will make the greatest contribution to the mobility of many non-drivers. This is particularly the case for the elderly and handicapped, who experience difficulty in getting to and using regular public transit service.

VII

Increasing the proportion of total trips carried by transit requires a shift away from public policies which presently influence individuals to use autos rather than transit for peak-hour trips. Public policies that work with the relative attractiveness of service and price of both highways and transit are essential if the area is to fulfill the commitment to a "balanced transportation system".

A. Public policies need to be developed which look toward the utilization of public facilities--including both highways and transit.

The basic question which needs to be resolved in this metropolitan area relative to how peak-hour movement will be accommodated is not what facilities to build -- highways or transit -- or more specifically whether or where a series of rapid transit trunklines should be built on exclusive right-of-way -- or what particular hardware to employ. The basic question, instead, is what public policies need to be developed that will encourage utilization of public facilities at a much higher level than has been experienced in the metropolitan area in the past. If transit is to have a large role in handling peak-hour movements and is to contribute significantly to solving some of the transportation and development problems, what public policies need to be developed that will assure that transit will be used?

Present public policies which relate to the peak hour largely permit congestion to develop and then only respond to it by incremental attempts to improve signaling, widen streets, or even build new lanes. What is needed is a plan and policies which will anticipate the growth in peak-hour movements and provide for more flexible ways in which this movement can be reasonably handled.

B. Public policies must recognize the possibilities that transit can do much to handle peak-hour movements and provide transportation to non-drivers.

Opportunities for transit exist in its ability to handle peak-hour work trips and to provide transportation to non-drivers. The use of public transit vehicles for peak-hour movements is not likely to increase substantially simply in the process of providing them and upgrading the service or equipment. Usage appears to increase only when congestion on the highway network becomes so severe that some drivers seek out an alternative. Experience elsewhere, however, where the levels of congestion are severe would indicate that this condition alone is not sufficient to encourage a large number of drivers to transfer to transit service--partly because transit service is not adequate and because the attractive features of the automobile continue to outweigh what appears to be the inferior service provided by transit.

The usage of transit can be achieved only if changes in public policies grant public transit preferred movement and begin to work with both the service and price of both highways and transit. This would appear to require policies that will permit an increase in the speed of transit and policies that will affect the price of both auto and transit service during the peak hours.

C. Development of public policies which make possible the achievement of the "balanced transportation system" are needed.

A "balanced transportation system" for many years has been one of the general policies in the metropolitan area. The first policy of the Metropolitan Planning

Commission in its Joint Program-Metropolitan Development Guide stated that:

"streets, highways, mass transit, terminals, and parking facilities should be combined into an overall metropolitan transportation system to improve land use, transportation relationships, and to properly balance all elements of the transportation system."

Similarly, one of the policies of the proposed Transportation Section of the Metropolitan Development Guide presently being considered by the Metropolitan Council calls for:

"meeting the transportation needs in corridors through a balanced system, utilizing all modes of travel appropriate to attain metropolitan goals."

The translation of these general policies into programs will require more than just the building of facilities. The "balancing" of the modes further requires that a determination be made about what specific steps need to be taken to assure that facilities which are developed to handle movement--particularly the peak-hour--are used in the agreed-upon plan. This will require a series of policies which will influence individuals to use transit rather than autos in many of the most heavily traveled corridors.

D. The first steps toward development of policies which would make transit a preferred means of travel in some areas are now being taken.

The I-35W preferential bus access demonstration is the first major program in this area which will essentially grant transit preference over the automobile in peak-hour trips. This demonstration contemplates that movement on the freeway will be monitored and automobiles will be restricted in their access when the number of vehicles reaches the capacity of the freeway. Buses, however, will continue to have access to the freeway on separate ramps and will thereby be assured of high-speed movement on the freeway. Auto users will be encouraged to transfer from their cars to transit at designated park-and-ride lots. This approach essentially moves the point of congestion off of the freeway and onto the arterial routes and is intended to encourage people to use transit or to travel on the slower, more congested arterial streets.

A second illustration of preferential movement for transit already exists in downtown Minneapolis and is proposed for downtown St. Paul. In these situations, entire streets (Nicollet Mall and West Seventh) are set aside for exclusive use by transit vehicles, thereby speeding their movement. Additional exclusive lanes for transit are also under study for a number of other routes within these high-activity areas. Similarly, some streets within the University are also reserved largely for transit vehicles. The University increasingly has used access to parking lots and the pricing of parking as ways of encouraging either car-pooling or the use of transit for trips to this major center. It has developed, with the MTC, seven special express bus routes, increased parking rates and reserved close-in lots to cars with three or more persons simply to relieve present congestion and the shortage of parking spaces.

Public policies which will influence individuals to use transit rather than autos for peak-hour trips will not limit the movement of people any more than present highway congestion.

Congestion as we already know it on the street and highway network greatly restricts and limits the movement of people during the peak hours. Without any change in existing public policies, this congestion can be expected to become much more severe in areas presently affected, will be experienced on an increasing number of routes which presently are not severely congested, and will likely extend for longer periods of the day. The development of public policies which would move to influence individuals to use transit rather than their autos for peak-hour trips -- even if this might require some slight increase in the amount of time for many of these trips -- need not be any more restrictive or limiting than conditions already being experienced under policies which essentially give the automobile preferential movement.

VIII

The development of policies which can give the metropolitan area a "balanced transportation system" requires: (a) An improved governmental organization which can integrate the planning and policy-making for both automobiles and transit, (b) adequate and properly arranged financial resources to develop the facilities required and to operate public transit at a high level of service, (c) an ability to influence individual decisions in the use of both highways and transit in a way that reduces reliance on the automobile during peak hours.

The development of an effective transportation system for peak-hour travel and an adequate system of transportation for non-drivers will require public policies which can effectively manage both transit and automobiles. It will not be possible to obtain maximum utilization or to develop a "balanced transportation system" until we begin to think about and plan them together. Given the substantial public investment needed to improve transportation in the future--upwards of one billion dollars--we can no longer afford to ignore transit while planning highways, nor ignore highways when planning transit. If we continue under past arrangements we will lack the resources needed to build both highways and transit and will have less of both than are needed to handle the peak-hour movements. This will occur despite costly, duplicate investment in transit and highways, both of which will be poorly utilized for 148 out of the 168 hours of the week. In order to avoid either of these possibilities, certain requirements are necessary.

- A. The organization for metropolitan transportation planning needs to be improved by giving it the capability and responsibility to make decisions about the integrated planning and development of both highways and transit.

The increasingly metropolitan character of the transportation movements strongly suggests that planning for the system of major arteries, both highways and transit, should be done at the metropolitan level. Movement in the metropolitan area, particularly for work trips, is no longer largely confined to municipal or county boundaries. Instead, the distance between a person's home and job is increasing. Decisions about where people live and work are often made separately--the distance from home to work being only a secondary consideration. Increasingly, the major thoroughfares which handle a large portion of these work trips function as metropolitan thoroughfares rather than as highways to connect municipalities within a county or neighborhoods within a city. Decisions to upgrade existing highways or to develop new ones, and decisions to provide express transit service to serve particular areas, are closely related and strongly influence each other. These decisions affect not

only movement within a particular municipality or county but also the movement patterns and ultimately the development of the metropolitan area.

No organization can effectively plan and decide how to handle the peak-hour movement of people and provide transportation for non-drivers unless it is able to systematically appraise travel conditions and deficiencies, identify specific transportation problems, and develop alternative ways of correcting them. However, it is not sufficient that only this planning ability be built into such an organization.

A metropolitan transportation planning organization, if it is to succeed, must also have the power to weigh, select and implement an optimal alternative to handle identified problems. It is not necessary that this organization operate transit or build and maintain highways. However, it must be able to provide direction to the building and operating agencies about what should be done and the timetable within which improvements should be made.

1. There has been considerable progress in the evolution of a comprehensive transportation planning process in the area. This successful work has contributed much to an identification and understanding of various problems and can be built upon.

- a. Minnesota Highway Department -- Comprehensive regional planning started in 1957 with the creation of the Metropolitan Planning Commission (MPC). Studies by the Minnesota Highway Department in the Twin Cities Area Transportation Study laid the foundation for transportation planning with basic data about the transportation network in the Twin Cities area.

- b. Joint Program -- In 1962, an inter-agency task force was established including the Metropolitan Planning Commission, the Minnesota Highway Department, county highway departments, and the engineering and planning agencies of Minneapolis and Saint Paul. This "Joint Program" was the first major attempt to integrate transportation and land-use planning and was designated the areawide agency for continuous, comprehensive and cooperative planning called for in the 1962 Federal Aid Highway Act. One of the results of this program was a report entitled, "Metropolitan Development Guide", which outlined long-range regional goals for development and a series of highways identified as the "System 14" network.

- c. Metropolitan Transit Commission -- The creation of the Metropolitan Transit Commission in 1967 had as one of its primary purposes the creation and implementation of a mass transit plan for the metropolitan area. The MTC subsequently employed a number of consultants to develop plans for transit improvement and new rapid transit development. These recently concluded studies call for substantial improvement to bus mass transit plus development of a network of separate high-speed transit lines.

- d. Transportation Planning Program -- The cooperative planning effort of the Joint Program, which concluded in 1967, lapsed until 1969 when an agreement was executed between the Metropolitan Council, the Metropolitan Transit Commission, the Minnesota Highway Department, and the seven-county area's county and municipal government units. This cooperative agreement established the Transportation Planning Program (TPP) and designated the Metropolitan Council as the agency responsible for coordinating the continuing, comprehensive and cooperative transportation planning in the metropolitan area. The Management Committee of the TPP, made up of representatives

of each of the contracting groups, was designated to direct the planning efforts and to "make decisions" about the future transportation plans. In addition, advisory groups (one of elected officials--the Policy Advisory Committee; and another of engineers and planners from local agencies--the Technical Advisory Committee) were established to advise the Management Committee in the Transportation Planning Program.

The major work of the TPP to date has been to update the basic data on land development and movement patterns, to identify corridors where major problems in providing for future movement are foreseen, and to develop a framework for a long-range transportation plan. In addition, the organization has been active in developing the Transportation Section of the Metropolitan Development Guide. This document outlines some considerations and policies for transportation planning, specifies a few guidelines for construction in areas such as interchange spacing on highways, and outlines short-range transportation improvements proposed by the individual operating agencies.

The overall coordination of transportation planning with general development planning in the area occurs in the work of the Metropolitan Council and its relationship to transportation agencies and the TPP. The Council has the power to adopt the Development Guide including a section on transportation. In addition, the Council reviews the long-range plans of the MTC and may suspend them if they are in conflict with the goals expressed in the Development Guide. It does not have this power, however, with regard to plans of the Minnesota Highway Department unless they are federally funded. The Council also reviews, comments and makes recommendations on the project applications of transportation agencies for federal grants-in-aid. These projects, however, represent the product of transportation plans and come very late in the planning process.

Overall, the most substantial link in the coordination of transportation planning and its relationship to general development plans occurs at the staff level. The TPP staff, which is employed by the Metropolitan Council and funded by the contributions of the contracting parties, is located in the same building as the Council and the MTC, while the Highway Department is only a couple of blocks away. There appears to be a considerable interchange of information among these agencies at the staff level.

The considerable efforts which have gone into the attempts to develop a comprehensive transportation plan for the metropolitan area and the coordination of agencies are substantial and provide the foundation for future planning in the area.

2. Serious problems remain in the planning of transportation facilities and in the organization designated to make decisions about them in the metropolitan area.

The responsibility and power to plan the transportation system, to make decisions about the improvement of highways and transit--when and where they are built, their funding, and their use--are fragmented in the metropolitan area. Numerous organizations, sources of funding, and responsibilities for portions of the system have historically evolved alongside the cooperative planning efforts of the TPP. *Some elements of the planning process are missing, and, most importantly, basic decisions about the direction for transit and/or highway development have not been made.*

a. Transportation planning responsibility is divided.

Presently there is no single agency in the metropolitan area which has an overall view of transportation facilities--their functions and relationships to each other. Although the Metropolitan Council is designated the "coordinating agency", the actual work program and the specific items which must go into the plan are decided upon jointly by all of the members of the Management Committee of the Transportation Planning Program.

Transportation facilities, even under the cooperative agreement, are largely planned and developed not by the TPP but by the separate independent agencies, such as the Minnesota Highway Department, the seven counties, and the 96 municipalities, while transit is solely the responsibility of the Metropolitan Transit Commission. Each of these organizations employs consultants or has a number of employees developing its long-range plans and yearly programs. The Minnesota Highway Department, for example, is engaged in the early stages of a functional classification study of the road network in the metropolitan area. The Metropolitan Transit Commission, on the other hand, has employed a group of consultants over the past three years at a cost of \$950,955 to come up with proposals for a long-range transit development program. These organizations will frequently communicate the status of their activities to the TPP to inform them about what is happening and about their recent findings.

b. Some aspects of the transportation system are not viewed as the responsibility of any agency.

Major gaps exist in the present planning process. Some important aspects in the transportation system are not considered the primary responsibility of any single agency. Parking, for example, is one large subject which is outside the purview of any single agency or even all of them together. The amount of parking, its location and its development are largely left to the individual developers or may be controlled by the local municipalities through their zoning laws or street access regulations.

c. There is no program for citizen involvement in development of transportation plans.

There is general acceptance of the idea that citizens should be involved early in the planning process. This concern has been evident nationally in the 1968 Highway Act, which requires two public hearings - one on the "corridor" or general location and another on its design and precise location. The concept, however, is broader than simply the holding of public hearings and is well stated in a November, 1969, Policy and Procedure Memorandum of the Bureau of Public Roads:

"Citizen participation is needed at all stages of the planning process beginning with the spelling out of goals and objectives and extending through the choice between alternatives for both land use and transportation. Lines of communication should be established and maintained which will not only seek the views of those affected by proposed programs but demonstrate to them in ways they understand that their views receive full and sincere consideration. This may well require the aggressive use of newspapers, radio and television in addition to public

meetings and organized citizens committees. The organization responsible for the planning process shall make provisions to inform the public completely, to obtain the public views, and to use these views in developing transportation plans."

No program for early participation by citizens has yet been developed by the Transportation Planning Program. Involvement in the planning process in the metropolitan area has largely been by the official agencies involved in planning or building portions of the system and in the holding of hearings for route locations. In a few instances, hearings are also held on more general plans after agreement is reached by the agencies, such as on the Transportation Section of the Metropolitan Development Guide. Others, such as the Metropolitan Transit Commission, have selected a number of people to serve as an advisory group. *However, there is no program to engage citizens within local communities in the discussion about alternative ways of handling various movements or of alternative plans for development of facilities which will directly affect people living within these communities.*

- d. There is no state direction about standards of development for transportation facilities or the particular interests of the state in the transportation system of the metropolitan area.

At the present time, there is no transportation plan for the state which spells out the interests of the state in the development of various transportation facilities or how these are related to overall objectives.

The Minnesota Highway Department, a state agency, plans and builds some major highways in the area and, within its planning department, performs studies on what highway facilities may be needed, their location, and timing of development. They are also significant partners in the TPP. This agency also has almost sole responsibility for the management of highway facilities including the policies and regulations over their use.

The Legislature, in discussing the need for a department of transportation in the 1969 session, authorized establishment of a State Transportation Task Force. This organization is made up of departmental representatives of state transportation agencies, plus representatives of municipalities, counties, the Metropolitan Council, the Metropolitan Transit Commission, and the Metropolitan Airports Commission. The Task Force was created in March, 1970. Its purpose was to review various transportation problems: to determine how the state's efforts might best be coordinated in a national transportation planning study; and to make recommendations concerning local mass transit development and the need for state financial assistance. Most of its work consisted of hearing from agencies and organizations about transportation planning efforts and problems, plus discussion about a study of state departments of transportation prepared by the Highway Department.

In spite of the work and the interest at the state level, there is still no general direction from the state and its numerous agencies with respect to the state's objectives and their expression in the transportation plans of the metropolitan area.

- e. There have been many studies, but no decisions about the basic direction for transit and/or highways under the present metropolitan transportation planning organization.

Decisions about the basic direction for transit and/or highway development have not been made by the existing organization, even though successive efforts are being made to coordinate some portions of the planning process. *It is important to note that presently there is no adopted long-range comprehensive plan for the area which provides specific guidelines or policies for management and development of the various highway and transit facilities, their roles in specific areas, the particular facilities which are to be built, or their location and priority. It is questionable whether these important decisions and such a transportation plan can be developed under the present organization.* Without it, the metropolitan area is left without the necessary guidelines with which to review the important building decisions being made by the various highway and transit agencies.

- f. Important transportation decisions which need to be made will be difficult to make in the present organization.

The current organization of the TPP with its representatives from the various building agencies, plus the division between the transit and highway interests particularly in the Management Committee, makes it very difficult to raise important issues which must be resolved if the area is to have an integrated transportation plan. Some of these relate to the basic roles and functions of transit and highways, their utilization and contribution to handling various types of movement, plus the location and priority of development of various facilities.

Important decisions need to be made in the following areas:

- 1) The role of transit and highways in handling peak-hour movements in particular corridors and in transportation of non-drivers.
- 2) The level of mass transit service--the areas which will be served by mass transit and the frequency of service.
- 3) The designation and reservation of rights-of-way that will be needed or will become available for either transit or highways.
- 4) The assignment to various jurisdictions, i.e., counties, municipalities, and the state, of the appropriate level and type of highway in accordance with the functions performed by them.
- 5) Standards on access and interchange spacing on new high-capacity freeways and arterial streets which will be developed on the fringe of the urban area.
- 6) A plan identifying what highway or transit facilities should be built, where they should be located, and when they should be constructed.
- 7) Construction standards related to the safety and aesthetic design of major facilities.

- B. Adequate financial resources are needed within the metropolitan area to develop required facilities and to operate public transit at a high level of service. Additional funds need to be made available--particularly for transit. As a first step, the mixture of user charges and general revenue for highways and transit should be rearranged and reversed.

Improvements in both highways and transit will require substantial public funds in the future. It is essential that funds be available for whatever types of improvements are judged necessary to achieve metropolitan transportation objectives--including both transit and highways.

The present method of funding highways and transit greatly influences what facilities will be developed. *The availability of funds for construction or improvement of highways and transit is probably the single most important factor determining what will be done.* The decisions by the Highway Department, the MTC, municipalities and counties relative to their capital improvement programs are limited by the available funds from designated sources.

The way in which transportation facilities are funded--the source of revenue and how they are collected--affects not only the building agency but also the decisions by persons making trips. Part of the total cost to the individual consists of the tax, fees, parking charges, and farebox charges which he pays. To the extent that these are visible, they can influence his decision about whether he will make certain trips and whether they will be by car or transit. *Therefore, the way in which transportation is funded, the level of charges and the ways in which these are imposed can greatly influence individual trip behavior.*

Highway and transit improvements might be funded from a variety of sources, including user taxes, farebox collections, and general governmental revenues from various sources. It is important that these sources not be limited in their use to either highways or transit, however, or to particular types of highways within jurisdictions, as this pattern can only adversely influence the ability to make decisions about what transportation facilities to build.

Ideally, the system of financing for transportation in the metropolitan area should have the following characteristics:

1) The funding for transportation--both transit and highways--should preferably come from a general transportation fund into which revenues from various sources are deposited. Distribution and use of this fund should not be limited in proportion to the source of the revenues, but instead should be available as required to best provide for the transportation needs of the area.

2) The major sources of revenue for the transportation fund should be primarily user charges--including gasoline taxes, license fees, wheelage taxes, and farebox charges--and others which might be developed, such as charges on automobiles for peak-hour trips, or peak-hour parking charges which relate to the use of public vehicles or facilities which are part of the transportation system.

3) General tax sources such as income, sales and excise taxes should be viewed as possible sources only to a limited degree where transit demand and farebox revenues have not yet built up. Considerable demands for revenue to fund other general governmental services are growing, and their dependence on these sources is likely to reduce the opportunity for funding transportation by these means.

4) Possible revenue sources which should be considered, particularly in funding the capital costs of transit and highway improvements, include: Assessments on benefited property, assessments on commercial and other establishments which directly benefit, and collection of part of the increase in property values which result from the development of transportation facilities.

5) The proportion of the cost of streets and highways paid from general taxation should be substantially reduced due to their demonstrated ability to be funded from user charges. A greater share of these costs should be borne by the automobile user. Non-user taxes now support a substantial part of the cost of automobile transportation through the county and municipal property taxes which fund the local road and bridge development and maintenance, and other local services directly provided to automobile users such as traffic regulations, emergency services, court services, and lighting. The shifting of the cost of these services from general taxes to the automobile users will reduce the economic disparity between automobile and transit travel and reduce the transportation service burdens on local municipal and county budgets.

6) An immediate source of revenue to permit the development and maintenance of a high level of public transit is needed. A portion of the property tax revenues presently used for highway purposes could provide an additional transit-funding source to fund the operating deficiencies anticipated in the early years of the transit improvement program when farebox revenues will not be sufficient to meet the operating costs.

1. Substantial-costly programs can be anticipated to operate and develop an adequate transit system, to adequately maintain and improve existing highways, and to make major additions to the highway network.

Transit Needs

Under present arrangements, the MTC estimates it will require funds, beyond anticipated revenues of \$1,200,000 from the wheelage tax, of approximately \$2,099,266 in FY 1972 and \$3,008,696 in FY 1973 to fund operating deficits, a program of capital improvements to the existing system, and administrative expenses.

Operating deficits -- Transit ridership is anticipated to remain at present levels or possibly to increase slightly in the next few years. At the same time, the cost of operation is expected to increase more rapidly than patronage, so that revenues from the farebox will not be adequate to cover operating costs--assuming the fare is not changed. Revenue forecasts by the MTC prior to its ownership of Twin City Lines forecast an \$800,000 surplus in 1971, but then a movement to a \$222,000 deficit in 1973. Without these surpluses, the MTC projected a \$1.2 million deficit in bus operations by 1973 and approximately \$4 million by 1975.

Recent figures, which show a decline in ridership for 1970 and wage settlements above what was anticipated, indicate earlier projections of income were overly optimistic. Currently, the MTC forecasts a deficit of \$1,260,400 in FY 1972 and \$1,860,000 in FY 1973. Unless major steps are taken to increase ridership, it is quite possible deficits in subsequent years will continue to rise to even larger amounts. Although increasing the fare might be one means of reducing the deficits,

experience has indicated that fare increases will discourage use of transit, so that, although revenue might be slightly increased, patronage would actually decline. It has been estimated, for example, that a 5¢ fare increase would result in an 8% decrease in passengers.

Capital improvements -- A second major cost item for transit is the funds that will be needed for capital improvement of the transit system. These include the improvement of equipment to the existing transit system plus whatever major capital facilities are needed to increase the level of service above current levels and the additional cost of developing any element of transit on exclusive right-of-way.

The 13-point improvement program of the MTC, alone, was estimated in 1969 to require approximately \$30 million. Even assuming federal support for two thirds of the cost of this program, a total of \$10-\$18 million in local funds will be needed. If the local portion of this program were funded by 10-year bonds, a total of \$18 million, or \$1,800,000 per year, would have to be funded locally.

Additional improvements to increase the level of service, the route coverage and to develop more express movement with the buses were recently estimated by MTC consultants to cost \$26 million at the 1970 price level, or \$37.8 million if the program were phased for completion by 1985.

Significant additions of fixed guideway systems on exclusive rights-of-way, together with improvements to bus service, would result in total capital requirements of from \$608 million to \$1.431 billion by 1985.

Highway Needs

Substantial increases in the total highway needs are forecast for the maintenance of the existing network, for new construction related to improvement of existing highways and arterial streets, and for new major additions. These apply to state trunk highways plus county and municipal arterials and streets.

Maintenance -- Maintenance of the highway network alone is estimated to double in less than ten years, with an increase of 195% by 1986. The Highway Department has stated that increases in maintenance costs will exceed revenues generated through increased highway travel and that these costs will increasingly cut into the funds available for construction.

Rebuilding -- In addition to regular maintenance, major expenditures will also be required to simply rebuild worn-out portions of the existing network including bridges and heavily used pavement. One large element for which costs are unknown is the work necessary to resurface or rebuild large sections of the recently constructed interstate highway system that have been heavily damaged during the past few years.

Major new additions or upgrading of present arterials -- The total cost of highway and arterial development must include major new additions to the existing network. The State Highway Department has estimated its needs for these additions or upgraded highways within the metropolitan area will cost \$560 million from 1968 to 1986 based on 1968 cost figures. Even if transit development can provide for much of the peak-hour movement in the

heavily traveled corridors in the center of the metropolitan area, major additions will still be needed on the periphery and to major trunk highways leading out of the metropolitan area. The 1968 cost estimates of all major trunk highway improvements/additions within the metropolitan area, not including those within the central cities beyond the completion of the interstate network, total \$411.178 million. These estimates are conservative and actual costs will be well above this due to inflation and further plan development which may result in almost doubling their cost in the next 15 years.

Although detailed cost estimates for future street/highway needs have not been prepared by all counties or municipalities, based on the Hennepin County figures of \$222 million for 1969-1985 we could say the total cost for these arterials will exceed \$500 million.

2. Existing revenue sources for transportation development are presently limited, particularly for transit, and may not be adequate to fund required programs.

The major sources of funds for transportation development include highway user funds and locally raised revenues for counties and municipalities for highways and farebox collections plus a nominal wheelage tax for transit.

Highway funds -- State and federal highway user funds provided upwards of \$128 million in 1969 for construction and maintenance of trunk highways and municipal and county state aid roads in the seven-county area. In addition, counties and municipalities spent in excess of \$44,126,808 in 1968 from locally raised revenues including property taxes, assessments, fines and parking fees.

The Federal Highway Act has substantially contributed funds to the construction of major highway facilities in the metropolitan area. The interstate highway system, for example, was largely constructed from federal highway user funds which provided 90% of the cost. A total of \$327,675,497 in federal funds was spent on the interstate system from 1964 to 1970, while the estimated cost for completion of this network in the area is \$303,440,000. Federal funds contributed an additional \$71,564,707 during the same period for state trunk highway construction in the area. The recently enacted 1970 Federal Highway Act will continue to provide funds for highway construction at approximately the levels of recent years.

Transit funds -- Transit is almost entirely funded by farebox collections from the 30¢ passenger fare. A wheelage tax of \$1.00 per motor vehicle in the seven-county area is also available to the MTC for its operating expenses. This tax produced \$1,100,281 in income for the MTC in FY 1970.

Federal aid for transit development is gradually becoming available with the passage in 1970 of the Urban Mass Transit Act. These funds are available only for capital purchases and may not be used to meet operating expenses. They will likely be used to fund experiments, partially fund the purchase of private bus companies, and provide a portion of the capital funds for transit facility development. Recent consultants to the MTC have suggested that due to the substantial demands for federal funds--although the recent law permits the federal government to fund up to two thirds of the capital cost of transit development--only \$200 million will likely be available to the metropolitan area during the next ten years unless the total amount of federal funds is increased.

3. The sources of funds for transit and highways are badly arranged. The mixture of user charges and general revenues needs to be reversed.

Transit relies largely on user charges--primarily farebox revenues--as its source of funds. However, these user charges will not generate revenues to meet even the operating costs of transit, let alone any major capital expenditures. The automobile, on the other hand, has had considerable success in generating substantial revenues from its user taxes and yet is still substantially supported by general property taxes, which were levied originally to assist in the early development of the street/road network. There is every indication that the automobile will continue to have considerable success in generating revenue from user charges even as these are increased, whereas transit will need assistance from some general revenue source apart from its user charges if it is to continue and to be improved.

- C. The ability to influence individual decisions in the use of both highways and transit in a way that reduces reliance on the automobile during peak hours will be needed. Factors that do--or could--influence the traveler's decisions about the use of highways or transit are not presently operated as part of public policies to balance use of the system. These need to be explored and included in metropolitan transportation policies which relate to the use of facilities and service.

The improvement of transit, alone, will not increase its patronage or usage to anywhere near its potential. Development of new freeways and arterial streets in the urbanized portions of the metropolitan area will be limited because of their high cost both in money and in their environmental effects. Without additional freeways and arterials, the mobility of people during the peak hours will decline as the present network of interstate highways and major arterials becomes increasingly congested. It is possible, however, that by employing either a series of incentives or regulations which will influence individual decisions over the use of the automobile, congestion can be greatly reduced and the usage of transit substantially increased, so that the public investment in both highways and transit is better utilized.

The use of incentives and/or controls as part of the management of transit and highways is presently limited and only slightly considered by the present transportation organization in transportation planning for the metropolitan area.

1. Powers affecting the use of various transportation facilities are highly fragmented. They largely reside with the local units of government, the Highway Department, the Transit Commission, or with private developers.

Highway/street access, use and operation -- The regulation of access to highways and the movement of vehicles on them, which is a factor that influences use of certain highways, is largely vested in the Highway Department, with important subsidiary decisions made by local units of government such as municipalities and counties. Generally, decisions are made for the specific routes on where access will be provided, where curb cuts are permitted, and where signals will be installed. These numerous incremental decisions, which are often made for the purpose of safety, also have an effect upon the capacity of the specific street and on the operation of the street and highway network. Similarly, decisions about which streets buses will operate on and where stops will be made are largely made by the MTC and municipalities.

IX

Reasonable decisions about what transit facilities to develop can follow only when the metropolitan area has the ability to organize, finance and manage its transportation as an integrated system. Only then can we answer the question of what kind of transit system and what kind of vehicles to select for any new major transit development. In this vehicle-selection decision, it is important that the area choose a system and vehicle which will be consistent with a number of criteria.

- A. The metropolitan area must first have the ability to organize, finance and manage its transportation system before it can determine what transportation facilities to develop.

The metropolitan area, as it prepares to develop policies and determine where and how it will accommodate another 1.6 million people between 1970 and 2000, must--before it begins to build--determine what the transportation needs of the area will be, how the movements in this area will best be accommodated--particularly during the peak hours--and have resources available to develop the needed facilities plus the ability to assure that these facilities are well utilized. Unless this capability is developed before the area begins to construct major highway or transit facilities, it is very possible that either funds will not be sufficient to develop what is necessary, i.e., either an adequate transit and/or highway network will be constructed, or efforts will be made to essentially duplicate facilities which will be poorly utilized, inefficient and wasteful. Only after the area has this capability can it then determine what the role of transit should be, and move on to a determination of the kind of transit system and the kind of vehicle which should be selected for any new major transit development.

- B. In selecting a vehicle for any new major transit network, it is important that the area choose one which maximizes a number of criteria that will permit it to perform the assigned function and operate successfully.

The system and vehicle chosen for a new major rapid transit system should maximize the following:

- 1) Use of existing investment in rights-of-way and equipment to maximize the return from the past investment.
- 2) Provide a high level of service for non-drivers.
- 3) Provide a transit service for highway/auto users during the peak hours which will aid in attracting them to transit.

The selected vehicle should be one which can:

- 1) Move at high speeds.
- 2) Provide direct, non-stop, origin-to-destination movements for most trips.
- 3) Require no transfers between vehicles for most trips.
- 4) Provide personal security and comfort to the user.
- 5) Offer all-weather facilities.
- 6) Be attractively designed into the communities in which development occurs.
- 7) Contribute to a reduction in air and noise pollution.

The use of two vehicles--one on exclusive trunkline rights-of-way and another used to collect or distribute people at either end--does not appear to offer the attractive service which a single-vehicle, no-transfer system would provide. A system built around fixed rail lines, for example, will impose one or more additional transfers on passengers simply because of the change in the characteristics of bus and rail vehicles. An extensive network of buses to collect passengers near their homes and to distribute a large portion of them to their jobs will be required in a fixed rail system. This results as a few miles of fixed rail would directly serve and be highly attractive to only a limited number of people, given the low density of residential development and employment in this area. The unattractive additional transfers required of most riders plus the direct service provided by rail lines to a small proportion of patrons makes it very doubtful whether a costly fixed rail system would make any significant contribution to alleviating transportation problems in the metropolitan area.

It is possible that a vastly improved, properly operated bus system might be adequate for this area if the bus can be separated from automobile congestion, or it is possible that a new type of transit system might be developed with many of the desirable characteristics of a bus system but which is more competitive with the automobile. This so-called new-technology system is not presently available. However, demonstrations of new technology are now ready to be made which offer possibilities for the area.

Since these new-technology systems appear to offer considerable opportunities as a breakthrough for public transit systems, a substantial national commitment and consideration of a local demonstration project are called for in their further development.

X

The timing of decisions for developing a balanced transportation system in the metropolitan area is critical. Decisions about financing transit, and about an adequate organization for planning and policy-making, are urgently needed first. Although the area must also begin now to explore the specific questions of "what facilities to build" and "how to manage transit and highway use", these decisions cannot properly be made until the area has agreed upon the basic policies and plans.

A. The financing of transit and development of an adequate organization for planning and policy-making are urgently needed before any others.

The present transit system--the base upon which any other might be developed--is without any source of revenue adequate to maintain it or to improve it. If transportation is to be provided to non-drivers, and if transit is to play a significant role in handling the movements of people--particularly at peak hours--in the future, funds must be provided now.

Similarly, an adequate organization for planning and policy-making needs to be developed to essentially determine what facilities may be needed, how various movements will be handled, and to provide direction to building agencies about when and where facilities will be needed to accommodate the growing volume of trips. Basic

decisions must be made about how trips--particularly the peak-hour ones--can most efficiently be handled and what steps need to be taken to assure that these policies can be carried out. Until the area has this planning and decision-making ability, it cannot be assured that adequate, well-utilized facilities will be built or that available funds will be spent for facilities which will make the greatest contribution toward alleviating transportation problems.

- B. Decisions about what facilities to build and how to influence the choice between transit and highways should now be explored, but they cannot be properly made until the area has agreed upon the basic policies and plans.

The physical planning decisions by building agencies about where to build either rapid transit or highway facilities are not presently being made in conjunction with any basic policies and plans for the metropolitan area. For example, although the Transportation Section of the Development Guide identifies various corridors with transportation problems, basic decisions about how these problems will be resolved have not been determined. Much planning remains to be done and many alternatives must yet be explored. In addition to these basically locational decisions, however, work must begin to determine what can be done and how the traveler's choice between transit and highways can be influenced. This is necessary if only to assure that facilities which are developed, in fact, are utilized. It is possible, for example, that any new major rapid transit lines developed in the area might well have sufficient patronage if they are heavily used so that the farebox revenue is sufficient, at least, to pay the operating costs. In order for this to be accomplished, however, it would appear that a series of incentives or regulations will be necessary to influence the traveler's decisions to take transit rather than his automobile.

During the next few years, the area must first provide some source of financing for transit and develop an adequate organization for planning and policy-making. After these are assured, continued planning and numerous decisions will and can be made to develop a balanced, well-utilized transportation system for people in the metropolitan area.

WORK OF THE COMMITTEE

Background

The Citizens League has had a continuing interest in transportation problems relating to the movement of people in the Twin Cities area beginning with two reports on "the transit problem" in 1965. These reports recommended establishment of the Metropolitan Transit Commission.

Metropolitan transportation planning and financing was first discussed in a 1968 report on "Highways, Transit and the Metropolitan Council". This report called for designating the Metropolitan Council as the body responsible for overall transportation planning and policy-making, and for establishment of a Transportation Commission under it, for specific transportation policy-making, planning, and program implementation. It also recommended a constitutional amendment to give the legislature greater flexibility in using transportation funds and changes in state laws to improve the equity of apportioning highway user funds to counties.

Following this report, and with publication of the Voorhees recommendations to the MTC, which called for development of an extensive network of rapid transit lines on exclusive rights-of-way, the Citizens League Board of Directors authorized formation of a research committee with the following assignment:

"Review the projected transportation demands of the metropolitan area and the specific proposals before the Metropolitan Transit Commission for various rapid transit systems and those of highway agencies for additional freeways, arterial street improvements and parking facilities in terms of their possibilities and limitations in meeting this demand and the development objectives of the area. Determine how these proposals are related to each other, their projected use, the comparative cost and benefits of these systems, and the possible sources of funding."

Membership

A total of 23 members actively participated in the work of the committee. The Chairman was Wayne H. Olson, a Saint Paul resident and attorney in Minneapolis. Other members were:

Newton Ablahat
J. E. Anderson
Raymond D. Black
Gary Capistrant
Paul F. Cruikshank, Jr.
Mrs. Nicholas Duff
Donald A. Geffen

Robert W. Gutenkauf
John Healey
Stephen Kahne
Joseph Kelso
Jarold A. Kieffer
R. S. Lammers
J. M. Leadholm

Robert McCrea
J. Dudley Moylan
Gerald Olafson
Abe Rosenthal
Robert M. Sinks
Robert F. Van Hoef
L. C. Weber
Cecil T. Young

The committee was assisted by Clarence Shallbetter, Citizens League Research Associate.

ABOUT THE CITIZENS LEAGUE . . .

The Citizens League, founded in 1952, is an independent, non-partisan educational organization in the Twin Cities area, with some 3,600 members, specializing in questions of government planning, finance and organization.

Citizens League reports, which provide assistance to public officials and others in finding solutions to complex problems of local government, are developed by volunteer research committees, supported by a fulltime professional staff.

Membership is open to the public. The League's annual budget is financed by annual dues of \$10 (\$15 for family memberships) and contributions from more than 600 businesses, foundations and other organizations.

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