COMPREHENSIVE LRT SYSTEM PLAN
FOR HENNEPIN COUNTY

Prepared for

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I. SUMMARY

The Comprehensive Light Rail Transit System Plan has been prepared by the Hennepin County Regional Railroad Authority (HCRRA) in response to a mandate by the Minnesota State Legislature in its 1987 session. In the preparation of the System Plan, the HCRRA considered:

- LRT Design and Service Standards and Policies
- System Definition
  - Location of LRT Service within Hennepin County
  - Patronage Forecast
  - Capital and Operating Costs
- System Financing
- Potential Public Benefits of LRT
- LRT and Corridor Land Use Relationship
- Implementation Methodology Alternatives
- System Operator

Major points are summarized below.
The proposed Yards and Shop facility will be located in the Hawkinga Corridor near I-94 and the proposed Yards and Shop facility will be located in the Twenty-Year Plan. The corridor and initial segments of the four other corridors contained in the Twenty-Year Plan, is proposed to be implemented over an eight-year period. The Stage I Plan includes the initial Twenty-Year Plan includes service in five corridors and a downtown segment located under a project serving the expected growth in population and employment concentrations. The Twenty-Year Plan represents the long-range view of how light rail will serve Hemmingsen County. The recommended Twenty-Year Plan and the Stage I Plan are shown on Figure 1 and Figure 2.

SYSTEM DEFINITION

The analysis of system standards, including standards for collection methods, and other standards and policies regarding system control, are conducted in detail. The analysis of system standards also determine the hours of service, maximum headways, passenger service, and safety of the system. The recommended system is a conventional light rail system using a steel-wheel vehicle riding on a steel rail, electrically powered from an overhead wire, and exclusive (though not necessary) of shared roadways. The recommended system is a conventional light rail system using a steel-wheel vehicle riding on a steel rail, electrically powered from an overhead wire, and exclusive (though not necessary) of shared roadways.
The characteristics of the Twenty-Year Plan and the Stage I Plan are presented on Table 1. The characteristics include corridor length, capital cost, and ridership.

SYSTEM FINANCING

The above described Stage I Plan is estimated to cost $497 million (1988 dollars). The revenue used to retire the bonds to pay for this system are expected to come from federal, state, local, and private sources. At this time the following three revenue sources have been adopted by the HCRRA:

- Property Tax levy of up to 1 mill for Hennepin County
- Tax increment financing through agreements between the HCRRA and cities
- Motor vehicle excise tax (MVET) as directed by the Legislature

Other revenue sources that are candidates to be used to retire the bonds include:

- Hiawatha Special Funding
- I-35W Reconstruction Funds
- Urban Mass Transportation Administration Capital Grant
- Private Sector Development Related Payments
- Other private-sector contributions

The first three revenue sources identified above would cover approximately 64 percent of the required revenue to pay for the 29-mile Stage I system. During preliminary engineering, the financial plan and Stage I system plan will be finalized.
The capital costs and performance forecasts will be refined in Preliminary Engineering. The performance forecasts are based on work reported in the

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BENEFITS OF LRT

Implementation of a light rail transit system in Hennepin County will have beneficial effects in several areas:

- Enhanced transit service in corridors where LRT is constructed
- Increased transit patronage
- More economical use of transit resources
- Reduced auto trips on regional highway system
- Improved air quality in the region
- Reduced bus traffic in downtown Minneapolis
- Reduced auto traffic in downtown Minneapolis
- Reduced need for parking in downtown Minneapolis
- Increased development potential near stations
- Increased development potential in downtown Minneapolis

LRT AND CORRIDOR LAND USE RELATIONSHIP

Each community along proposed LRT alignments will be responsible for making appropriate changes in its comprehensive plan and zoning ordinance. The recommendation is that land use decisions along the LRT alignments should remain the sole responsibility of local units of government. The HCRRA will request the opportunity to review proposals for development along the LRT alignments. Local communities will be asked to examine the potential for funding of develop-
to enhance to the owner’s exact specifications.

Owner control, but enables suppliers to alter final design to their products rather than having to
be made independent of the design and construction. Design/Build schedules a modular degree of
flexibility in operations contractor or a public agency operates the system, the operational decision
Concessions are awarded to contractors who design, furnish, and install each component. Upon com-
pletion, an operations contractor or a public agency operates the system. The Project Manager/Engineer
advances the design to approximately the thirty percent level.

Design/Build

The contractor financial participation in
contracting provides maximum control to the project owner, but limits the likelihood of obtain-
ment. Concessions, contracts are bid and awarded to lowest responsible bidder.

The Project Manager/Engineer prepares detailed plans and specifications for all system comp-

Traditional

Approach will be selected in preliminary engineering.

Four alternative implementation methodologies were defined and analyzed; the preferred ap-

IMPLEMENTATION METHODOLOGY ALTERNATIVES

Local taxing authority,

met-

related LRT construction under an agreement with the HCRRA through the appropriate
Turnkey

The Project Manager/Engineer advances the design as would be done in the Design/Build category, but the performance specifications and thirty percent design are issued for competition as one package. The winning Turnkey contractor completes the design in all areas and fabricates and furnishes the equipment at an agreed-upon price. The Turnkey Contractor also manages the operation of the system, at an agreed-upon price, for a prescribed period to ensure reliability. A minimum period of five years is usually suggested as a reasonable time period for problems to develop.

Super Turnkey

This is the same as the Turnkey approach except that, in addition, the Super Turnkey contractor is made responsible for partial or total system financing and may be involved in the related land development. This approach allows the private sector to prepare "innovative" financing methods. The Super Turnkey approach is likely to require that public agencies cede substantial control over the precise details of the technical/physical solution to the Super Turnkey contractor.

SYSTEM OPERATOR

It is recommended that the LRT system be operated by the Metropolitan Transit Commission. The potential for private sector management of the system would exist.
II. INTRODUCTION

BACKGROUND

Planning for a variety of fixed guideway transit systems has proceeded almost continuously in the Twin Cities since the late 1960s. Some of the major events in that history include:

- MTC sponsored analyses of various technologies, early 1970s
- MTC - Small Vehicle Study, 1974
- Minnesota Legislature prohibition of fixed rail planning, 1975
- University of Minnesota Transitway, 1976
- St. Paul Downtown People Mover, 1976-1980
- Minnesota Legislature lifts prohibition of fixed rail planning, 1980
- Light Rail Transit Feasibility Study, 1981
- Hiawatha Avenue Location and Design Study - EIS, 1979-1984
- I-394 High Occupancy Vehicle Roadway, 1982
- University/Southwest Alternatives Analysis, 1985 (draft)
- Metropolitan Council/RTB identify LRT as preferred mode in University, Southwest and Hiawatha Corridors; University is the priority corridor
1987 Legislation

- Comprehensive LRT System Plan for Hennepin County, 1988
- Ramsey Transit Authority's Metropolitan Council, December 1986
  A Study of Potential Transits for Twin Cities Corridors - Long
- Transit Service Needs Assessment, Regional Transit Board, 1986
- Minnesota Legislative Subcommittees, 1985
- LRT Implementation Planning Program, April 1985

July 1, 1988. The legislation states:

By July 1, 1988, the Hennepin County Regional Rail Authority must develop a comprehensive plan...
sive plan. This section does not prohibit the authority from proceeding with the preparation of engineering plans for any corridor before July 1, 1988.

OVERVIEW OF REPORT

In addition to the Summary and Introduction, this report contains sections which address:

- Metropolitan Policy Framework
- LRT System Planning Process
- System Standards and Philosophy
- Comprehensive LRT System Plan
- Appendices
III. METROPOLITAN TRANSPORTATION POLICY FRAMEWORK

Establishment of overall transportation policy for the Minneapolis-St. Paul metropolitan area is the responsibility of the Metropolitan Council. The most recent edition of the TRANSPORTATION DEVELOPMENT GUIDE/POLICY PLAN was released in draft form in February 1988. As a chapter in the METROPOLITAN DEVELOPMENT GUIDE, the Transportation section describes goals, policies, and plans regarding transportation which support overall goals for metropolitan area development.

In the Transportation Guide Chapter, the Metropolitan Council identifies transportation needs, describes transportation policies and strategies, and proposes a "Transit System Plan" which includes a light rail transit component. Following is a summary of the draft Transportation Guide Chapter as it applies to development of the Comprehensive LRT System Plan for Hennepin County.

TRANSPORTATION NEEDS

The Metropolitan Council expects travel in the region to increase by 63 percent (as measured by vehicle miles of travel) during the 1980 to 2010 period as a result of a 25 percent increase in population, a 37 percent increase in the number of households, and a 41 percent increase in the number of jobs in the region during that period.
The Metropolitan Council recognizes the importance of high levels of accessibility to continued economic development in the region. However, the Council also recognizes the difficulty in maintaining existing levels of accessibility in light of increased demand because of the growing number of people in the region.

The Council has identified several potential solutions to address this issue. One solution is to expand the existing transportation system to accommodate the increased demand. This could involve building new roads or improving existing ones to increase capacity.

Another solution is to encourage alternative modes of transportation, such as cycling or public transit. This could reduce the overall demand for transportation and alleviate some of the pressure on the system.

The Council is also exploring the possibility of developing a comprehensive transportation plan that takes into account the needs of all residents. This plan would need to be flexible and able to adapt to changing circumstances.

In conclusion, the Metropolitan Council recognizes the importance of accessibility to economic development in the region. However, the Council also recognizes the difficulty in maintaining existing levels of accessibility in light of increased demand because of the growing number of people in the region. The Council is committed to finding solutions to address this issue and to ensuring that transportation improvements benefit all residents equally.
DRAFT TRANSIT POLICY PLAN

In response to the transportation needs identified above, the Metropolitan Council has developed the draft Policy Plan. The transit component of the Policy Plan is composed of a series of policies, the Transit System Plan and specific guidelines for the Regional Transit Board's planning documents. Relevant portions of those policies and plans are summarized below.

Draft Transit Policies

Policy 1: The transportation system should contain strong and effective transit components.

Policy 2: Investments in services and facilities should enhance the competitiveness of transit with single-occupant automobiles, particularly for commuters.

Policy 3: Transit (among other methods) should be used to reduce the demand for roadway capacity during peak hours.

Policy 4: Transit resources should be allocated to areas which have demonstrated or identifiable demand.

Policy 5: Many different types of transit are appropriate within the Metropolitan area (light rail transit is specifically mentioned).

Policy 6: All transit services and all other transportation services should be part of an integrated transportation system (all planned transportation services should be consistent with the TRANSPORTATION DEVELOPMENT GUIDE).
The plan identifies High-Frill Transit as a potential component of the system serving selected central cities. Centrals, or providing express and limited-stop service in fully developed suburbs and metro areas.

**Draill Transit System Plan**

Policy 7.

Decisions is encouraged. Public participation in formulation of transportation policy and implementation decisions is encouraged.

Policy 18.

Required in transportation systems. Planning for regional business concentrations should recognize the role of all transportation modes in serving the metropolitan area while minimizing the investment in public transportation facilities and maximizing the investment in other transportation modes. The plan for the metro center should recognize the role of all transportation modes in serving the metropolitan area while minimizing the investment in public transportation facilities and maximizing the investment in other transportation modes.

Policy 15.

Comprehensive plans for metro centers should reflect long-term strategies. Short-range decisions regarding transit should reflect long-term strategies.

Policy 9.

Cost of lower-income populations. While reflecting the cost of providing the service, and in consideration of the resources, transit fares should be set to maintain competitiveness with private automobiles. Providers, depending on which can do so most economically.

Policy 8.
IMPLICATIONS OF DRAFT TRANSIT POLICY PLAN ON HENNEPIN COUNTY LRT SYSTEM PLAN

The draft Transit Policy Plan clearly points toward goals of reduction of peak hour transportation demand and more efficient use of transportation resources. Further, the six corridors identified as potential light rail transit service corridors include the five corridors under active consideration in the Hennepin County LRT System Plan. The sixth corridor is the Minneapolis Northeast Corridor, which is recommended in this plan for analysis by Hennepin County and Anoka County in the near future. The two plans are also consistent in terms of timing; the Transit Policy Plan states that the 1990 to 2010 time schedule suggested for the six-corridor plan could be adjusted based on the availability of project funding.

The conclusion is that the implementation of LRT within Hennepin County is consistent with the draft regional transportation policy plan.
IV. LRT SYSTEM PLANNING PROCESS

The HCRRA established a planning process that directed the technical analysis of a potential LRT system in Hennepin County to be developed concurrently with public input from transportation planning entities, and municipalities and neighborhoods potentially affected.

PARTICIPATION/EOMMUNICATION PROGRAM

Overview

The community participation and communication process was designed to ensure that affected governmental agencies and the public had ample opportunity for input. The specific techniques included a bi-weekly newsletter; informational presentations to city councils, community groups and local business associations; and a structured network of advisory committees. The communication/participation process is illustrated on Figure 3. HCRRA representatives presented LRT information at over 150 meetings between September 1987 and April 1988. A list of these meetings is presented in Appendix A.

Advisory Committees

For each of the five corridors under study plus downtown Minneapolis, a Corridor Advisory Committee was appointed to analyze the LRT issues in the corridor. For the Southwest Corridor, both suburban and city Advisory Committees were formed. Members represented residents and busi-
nesses in the study area, and were appointed by each city along the corridor. In addition, technical staff from each city served on the Technical Advisory Committee, and elected officials served on the Intergovernmental Advisory Committee. Key metropolitan agencies with transportation planning authority were represented on both the IAC and TAC. Two additional committees examined land use and development issues and system financing options.

Each Corridor Advisory Committee was charged with identifying a preferred alignment and recommended station locations for its corridor only. The TAC and IAC were charged with resolving the inconsistencies between CAC recommendations and arriving at a consistent, comprehensive network for the entire system.

Public Review

In addition to Advisory Committee meetings, all of which were advertised in the Newsletter and open to the public, the HCRRA held five public meetings in corridors under study. Over 1,000 people attended the hearings during March 1988. A sixth hearing was televised over the metropolitan public access cable television channel in April. Hennepin County residents watching the program were invited to call in questions for immediate response by Commissioners.

Midway through the committee process, one of the Corridor Advisory Committees also held a public hearing to solicit local input before finalizing its recommendations to the IAC and the HCRRA.

The HCRRA also sponsored a series of breakfast meetings for state legislators, keeping them abreast of the project.
other transportation modes
length, vehicle capacity, speeds, track configuration, train control, connections with
System Operating Standards: Hours of service, service frequencies, maximum train

Specific work tasks included identification of the following:
The preliminary engineering phase to provide the level of detail required for actual system design.
The information was developed at a conceptual design level of detail to be expanded during

Baseline LRT Facility and Equipment Characteristics, operating and maintenance requirements

System Standards and Policies

Figure 4: An overview of work tasks in each work program area are described below and illustrated on

System Implementation Options
System Finance Options
Downzton Metropolis Alignment
Corridor Service Evaluation
System Standards and Policies

Key Areas:
The technical work program for the Comprehensive LRT System Plan involved analysis in five

TECHNICAL WORK PROGRAM
FIGURE 4
Overview of Work Tasks
Feeder bus service
Station Location Opportunities: Pedestrian access, short- and long-term parking
 Compatibility with Downtown Allegeme: El-tip, tunnel
 Compatibility with buses
 Impact on Street Operations: Traffic capacity, parking, turning movements, delays
 Land Use Conflicts: Comprehensive plan, zoning, development potential
 Availability of Right-of-Way: Railroad, street, freeways
 Railgenny/Rail stations: Population and employment, access, service to commuters, transit

Analyses generally used the following evaluation criteria:
Analyzed issues to address particular issues of the corridor, the technical corridor
ity and evaluated alternative alternatives and potential station locations. Although each committee
Each Corridor Advisory Committee begins its analysis with a set of basic criteria designed to define-

Corridor Service Evaluation

Section V of this report and fully detailed in a Technical Memorandum.

The system standards proposed for the Hennequin County LRT System are summarized in

Operation and Maintenance Standards: Types and availability of skills, turn key size

Safety, communications, stations, maintenance yards/shops, support equipment
Reliability and Equipment Characteristics: Vehicles, track, and roadbed, traction power,

System Policies: Safety, security, vehicle and platform height, accessibility, fare col-

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• Travel Time

• Environmental Impacts: Noise, air quality, visual impacts, lighting, park and historic property impacts

• Capital Cost

Each Corridor Advisory Committee submitted a report summarizing its recommendations; the reports are included in Appendix C. The planning and evaluation process continued with study by the Technical and Intergovernmental Advisory Committees and the HCRRA. Both the TAC and the IAC reviewed individual corridor recommendations, integrating the separate recommendations into a comprehensive plan to meet system-wide service and compatibility goals. Minutes of all meetings and copies of technical material distributed at each meeting are on file in the HCRRA's office.

Downtown Minneapolis Alignment

A Downtown Advisory Committee, composed of representatives of downtown businesses and planners, focused on the specific issues of hubbing the LRT system in the central city. The Downtown Committee evaluated the following:

• At-Grade or Tunnel: Deep or shallow tunnel construction

• Location and Orientation: On or off Nicollet Mall, centered in the retail, office or entertainment district, north/south or east/west orientation

• Surface Street Operational Impact

• Through-Routing Multiple Corridors

• Station Locations
Potentially implementing an LRT system was analyzed by studying options used by other cities, through input from experienced LRT system designers at a public forum and through consultation with engineering experts.

**System Implementation Options**

Funding for a Stage I system, property taxes, transportation and benefit assessment districts, and sale of recommendation revenue sources related to the possible LRT revenue sources related to the LAC and TAC.

**System Financing Options**

For review and information into the Comprehensive System Plan, the Downtown Advisory Committee's recommendations were submitted to the TAC and LAC.

- Capital and Operating Costs
- Safety and Personal Security
- Aesthetic Impacts
- Development Impacts
- Rider Comfort and Travel Time
- Office Activity
- Retail Activity
V. LRT SYSTEM STANDARDS AND PHILOSOPHY

Preparation of the Comprehensive LRT System Plan required definition of the characteristics of the light rail system expected to be built. This was required for two reasons:

- To establish how the system will look and operate so that system planners and the public have common expectations regarding the system.
- To identify system characteristics in sufficient detail to allow reliable and consistent capital cost and operating cost estimates.

The system standards adopted for preparation of the Comprehensive System Plan focused on five areas:

- Facilities and Equipment
- Operating Standards
- Policies
- Accessibility
- Service Philosophy
Substations: 750 to 1,000 kw at one mile intervals

750 volts DC

Traction power

Maximum vehicle/train: 3

Seated and standing capacity: 144 to 162

Seated capacity: 64 to 72

Maximum service speed: 55 miles per hour

Four double doors on each side

Double-ended (bi-directional)

Height: 12.6"

Width: 8.9" to 9.3"

Length: 80 to 90 feet articulated

Vehicles

Key components include:

- ease the reliability and cost effectiveness of the system.
- Grid-separate (light-railway). A significant advantage is the potential for high-speed operation and high reliability, if the technology is chosen. The system is typically an overhead contact wire, typically covering a route through a steel-rail, electrified, conventional LRT system is one which uses a steel-wheeled vehicle riding on a steel rail, electrified.
- The light rail system to be built by Hennequin County will utilize conventional LRT technology.

FACILITIES AND EQUIPMENT
- **Track**
  - 115 lbs/yard rail
  - Turnouts: #20 mainline (high speed)
    #8 mainline (low speed)
    #4 yard

- **Signals:** As required

- **Communications:** Two-way radio

- **Security**
  - Emergency telephones at each platform
  - Observation by system employees
  - Security patrols if determined to be needed
  - T.V. monitors

- **Stations**
  - Platform length: 330 feet
  - Platform width: 10 feet (side); 16 feet (center)
  - Platform height: See section on accessibility
  - Equipment includes small radiantly-heated shelter, ticket vending machines, transit information area, benches
  - Construction: attractive, durable, graffiti-resistant, low maintenance
  - Bus transfer facilities as required
  - Park-and-ride facilities as required

- **Yards and Shop**
Train Control: Manual
- Pocket tracks at five-minute intervals
- Crossovers at 1 to 1.5-mile intervals
- Double-track

Track Configuration
- Reserved paved lane: up to 35 miles per hour
- Reserved median: Street speed limit
- Private ROW: 55 miles per hour

Speed Limits
- Maximum: 75 miles per hour
- 15-minute headway: 320 feet

Shorter headway if demand exceeds capacity of maximum length train operating at
- Weekday (midnight-midnight): 30-minute maximum
- Weekday (daytime): 15-minute maximum

Headway
- Weekends: 7:00 a.m. to 12:00 midnight
- Weekday peak periods: 6:30 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m.
- Weekday: 5:30 a.m. to 1:30 a.m.

Hours of Service

Operating standards define the way in which the LRT system will be operated. Key issues include:

OPERATING STANDARDS
POLICIES

The System Plan has been developed assuming that the following policies are adopted by the system operator:

- Fare Collection: Self-service, proof-of-payment
- LRT/Street Intersection
  - LRT on private ROW: Railroad-style flashers and gates
  - LRT on street ROW: Traffic signal controlled, with full or partial preemption or prioritization

ACCESSIBILITY

One remaining issue which has been deferred to the preliminary engineering phase of project development is the means by which handicapped accessibility will be provided. The options include:

- High platform stations: Loading platforms are constructed at the same elevation as the floor in a standard LRT vehicle. The vehicle is accessible at all doors. Mobility-impaired people reach the platform via ramps or lifts.
- Low platform stations: Loading platforms are constructed at curb height. People with mobility impairments access the vehicle from a special short high platform section which serves one door of the vehicle. Mobility-impaired people reach the short high platform section via ramps or lifts.
- Low floor cars: Vehicle manufacturers are beginning to develop light rail vehicles with floor heights in the 14 to 16-inch range. If reliable and economical low floor vehicles
Throughout downtown.

To provide competitive service between corridors, the LRT must maintain higher travel speeds.

and lower stations and stops at longer spacing.

from suburban areas to conventional and adequately sized park-and-ride or bus transfer facilities.

of destinations which offered relatively fast travel speeds to the CBD/University area, good access
door-to-door travel times and travel cost must be competitive. This principle led to consideration
with both ends in one or two corridors.

The primary market segment of interest is trips between a point located in one of the corridors

The light rail transit service must efficiently serve trips between corridors.

The light rail transit service must be competitive with private automobiles.

The preparation of the System Plan was guided by two basic principles.

SERVICE PHILOSOPHY

makes them less obtrusive.

raised platforms are still needed to provide level boarding of vehicles, the lower height
are available, they will be considered during the preliminary design process. Although
VI. COMPREHENSIVE LRT SYSTEM PLAN

The Hennepin County Comprehensive Light Rail Transit System Plan outlines the proposed LRT services within Hennepin County over the next twenty years, and discusses potential extensions of LRT into adjacent counties during that period. Specifically, the Comprehensive LRT System Plan includes:

- Twenty-Year Service Plan
- Stage I System Plan
- Feeder Bus and Park-Ride Plan
- Patronage Forecasts
- Land Use Guidelines
- Stage I Financial Plan
- Stage I Operating Plan
- Residential Property Owner Impact Mitigation
- Implementation Methodology
- Benefits of LRT
Service to transit dependents •
Potential transit patronage •
Significant relief of traffic congestion •

The following criteria:

The corridors were determined to be technologically feasible by the Metropolitan Council in their analysis of the potential for transit capital investment because each corridor met one or more of the following criteria:

- Ka to be coordinated with the Carpenter County Regional Railroad Authority
- Southwest Corridor through Hopkins to Eden Prairie and with an extension to Chaska
- Southwestern Corridor through Hopkins and with possible extensions along the I-494 corridor
- and with possible extensions along the I-494 corridor.
- South Corridor through Richfield and into Bloomington, with extensions to the south
- of America site in Bloomington
- Hiawatha Corridor through the Minneapolis-St. Paul International Airport to the Mall
- be coordinated with the Ramsey County Regional Railroad Authority
- be coordinated with the University of Minnesota with extension to the east to
- University Corridor serving the University of Minnesota with extension to the east to
- coordinated with the Anoka County Regional Railroad Authority
- Northeast Corridor serving northeast Minneapolis with extension to the north to be
- Northeast Corridor to 55th Avenue North, with possible future extensions

(Figure 5). These corridors are:

OVER the next twenty years, light rail transit service is recommended in at least six corridors

TWO-YEAR SYSTEM PLAN
Considered in addition to the Coach Yard site were:

The Coach Yard site was selected after consideration of seven yards and shops site alternatives.

about 60 high rail vehicles.

will accommodate maintenance, repairs, storage and administrative functions for an LRT fleet of

right between I-94 and Franklin Avenue (Figure 6). The site has an area of about 13 acres, and

the LRT maintenance facility will be located at the Coach Yard site, along the McGowen Cor-

to

face-level locations

Preserves opportunities to direct pedestrians from underformed stations to specific sur-

increased capital cost is partially offset by lower operating costs and vehicle requirement

Better elderly and handicapped access

Enhanced passenger comfort while waiting for vehicles

Lack of conflict with street-level activities and traffic operations

Reduced level turns for patrons going downtown

The major advantages of the underformed alignment compared to an Elevated service in-

and MacArthur. The major advantages of the underformed alignment begins near I-94 and 3rd Street and lies into the system near 15th Street.

Another underformed section begins near I-94 and 3rd Street and lies into the system near the

at 25th Street on the south and goes through the CBD to a portal near the HHHMetrodome.

The proposed corridors come together in downtown Minneapolis. The downtown segment of the

Cost efficiencies

-
1-494 Corridor between the Airport and TH 100
Southwest Corridor to Chaska
South Corridor west of I-35W along the Soo Line Railroad
South Corridor with extensions to Dakota and/or Scott County

Comprehensive System Plan include:

- Able to locate corridors that have potential for service beyond the line position of the
- Potential for locating additional LRT services in railroads right-of-way which may become available.
- The HCFRA has also expressed an interest in the post-twenty-year development of LRT and the
- Next forty years available, safety, security, and rail functions to be provided.
- On rail-right-of-way availability, safety, security, and rail functions to be provided.
- The analysis in preliminary engineering will focus
- The potential to locate recreational trails adjacent to LRT service will be investigated in each corridor.
- Analyses of the seven sites found that the Coach Yard site was available, more centrally located.

- Cedar Lake Site - TH 12 near Kenwood
- Brookview Boulevards file - Soo Line Railroad near Humboldt Avenue
- South Halley site - Burlington Northern Railroad, Robbinsdale
- Lyndale Junction site - TH 12, I-94, Fremont Avenue area
- Hennepin County Department of Transportation site - Hopkins
- University Site - Burlington Northern Yards
• Northwest Corridor beyond 85th Avenue
• Circumferential service in the I-494/I-694 corridor

These service concepts have not been evaluated as to technical or financial feasibility.

The Plymouth corridor (Figure 5) is an example of a potential future alignment. Preliminary analysis of the Plymouth corridor indicated that if the right-of-way did become available at some point, a detailed feasibility analysis should be conducted.

A study of the feasibility of extending the tunnel along the South Corridor 29th/Nicollet to 58th Street was also completed. The analysis found that the tunnel would cost approximately $50 million per mile (1988 dollars) because sandstone and limestone geology which allows inexpensive tunneling in the downtown area is not present in the 29th to 58th Street area. It was concluded that this tunnel extension was not feasible. If the cost estimate of LRT service in the I-35W right-of-way increases from the present estimate of $25 million per mile to a level approaching $50 million per mile, the issue should be reconsidered. If the section of tunnel north of 29th Street is constructed prior to service south of 29th Street along I-35W, it would be prudent to design the tunnel to allow a future extension to the south.

The recommendation of the Advisory Committees in selected cases were conflicting and/or narrowly passed. These situations are discussed below:

• The recommendations on at-grade versus tunnel construction in downtown Minneapolis were conflicting and had split votes.

• The recommendation for an alignment in the South Corridor south of County Road 62 had a split vote. Some favored the I-35W right-of-way, fewer favored the Soo Line and a majority wanted the issue to be resolved in the I-35W EIS process.
Compared on criteria such as:

duration, each scenario included all or parts of one or more corridors. Scenarios were evaluated and
downtown Minneapolis section, the yards and shops facility, and the University connector. In ad-
over fifteen distinct Stage I scenarios. All scenarios included the system core which is the

The Technical Advisory Committee and the InterGovernmental Advisory Committee screened

Buildable within a six- to eight-year time frame

Within the financial capability of the HCRA

Demonstrates the benefits of LRT

Meets one or more significant travel needs

Viable LRT project

Feasibility is recommended for implementation:

From the Twenty-Year Plan described above, a Stage I System Plan with the following charge-

STAGE I SYSTEM PLAN

East Bank to the University Corridor - service in a subway on the
north. The Corridor Advisory Committee recommended service in a subway on the
Erdahl, with replacement roadway capacity provided in the railroad corridor to the

The comprehensive system plan recommends service on the University Connector at-

• Capital cost per annual patron
• Annual capital cost per annual patron
• O & M cost per patron
• Total annual cost per annual patron

The Committees concluded that the scenarios which included parts of several corridors (rather than all of one corridor) generated more patronage and were generally more productive.

The Technical Advisory Committee recommended a Stage I scenario which included parts of all five corridors, with the downtown Minneapolis segment at-grade (Scenario K, Figure 7). The estimated construction cost of this project is $481 million (1988 dollars).

The Intergovernmental Advisory Committee reviewed all the scenarios and recommended a Stage I scenario which included the same alignments and lengths as the TAC recommendation. The IAC recommended, however, that the downtown Minneapolis segment be constructed in a tunnel which extends from the HHH Metrodome to the area of 29th and Nicollet on the South and Southwest Corridors, and to near I-94 on the Northwest Corridor (Scenario Q, Figure 8). The estimated construction cost of this project is $532 million (1988 dollars).

After review of all the scenarios, the recommendation of the TAC (Figure 7) and the recommendation of the IAC (Figure 8), the preferred alternative is Scenario R (Figure 9). The difference between Scenario Q and R is that the Northwest Corridor length was reduced slightly; this is consistent with building the most productive (patrons/route mile) components of the system in Stage I.

The recommended Stage I System Plan has a multi-leg concept which was supported by all advisory committees, and allows trips which do not begin or end in downtown Minneapolis to make
use of the system. It provides for maximum utilization of the most expensive part of the system, the downtown segment. It makes light rail accessible to the greatest number of people in all parts of Hennepin County. Table 2 lists the key characteristics of both the Stage I and the Twenty-Year Plan. The development of the patronage values is explained in a later section.

FEEDER BUS AND PARK-RIDE PLAN

The Metropolitan Transit Commission developed feeder bus plans for each of the corridors studied in the development of the Comprehensive Plan, except the South Corridor. The plans identified the following:

- Parallel bus service to be eliminated
- Feeder bus service to be provided
- Net savings in vehicles and miles of service

These plans are available from the HCRRA. Table 3 shows the level of savings in buses and bus miles expected as a result of implementation of LRT.

Park-and-ride facilities will be located at stops along each LRT alignment in order to provide system access to people who are not able to walk or ride a bus to an LRT stop. Large park-and-ride facilities will be located at an end-of-the-line station or at a station with good access to the regional highway system. Small park-and-ride stations will be located, as space allows, at other stations where parking is needed to serve local demand.

Capital cost estimates prepared for the Stage I Plan include an allowance for 5,000 parking spaces in park-and-ride lots. In the Stage I System, major park-and-ride facilities will be located in the vicinity of downtown Hopkins on the Southwest Corridor, at the end of the South Corridor align-
<table>
<thead>
<tr>
<th>Segment</th>
<th>Length (Miles)</th>
<th>Daily Ridership</th>
<th>Capital Cost (1988 $ Million)</th>
<th>Range Year 2010</th>
<th>Stage I Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University Connector</td>
<td>1.5</td>
<td>15</td>
<td>9'200 - 12'000</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>Hawai`i Corridor</td>
<td>1.0</td>
<td>00</td>
<td>17'300 - 22'500</td>
<td>114</td>
<td>110</td>
</tr>
<tr>
<td>South Corridor</td>
<td>1.2</td>
<td>11</td>
<td>19'600 - 22'500</td>
<td>149</td>
<td>145</td>
</tr>
<tr>
<td>Northwest Corridor</td>
<td>1.2</td>
<td>11</td>
<td>19'600 - 22'500</td>
<td>147</td>
<td>145</td>
</tr>
<tr>
<td>Southw. Corridor</td>
<td>1.5</td>
<td>13</td>
<td>16'600 - 20'000</td>
<td>117</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>1.4</td>
<td>21</td>
<td>16'900 - 22'000</td>
<td>127</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>3.4</td>
<td>19'600 - 22'500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.4</td>
<td>138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metro Mileage Plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>70'000 - 91,300</td>
<td>138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.38</td>
<td>$138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| NOTE: The capital costs and patronage forecasts will be revised in Preliminary Engineering. The ridership forecasts are based on work reported in the
|                   |               |                 |                               |                |              |
|                   |               |                 |                               |                |              |
| NOTE: The capital costs and patronage forecasts will be revised in Preliminary Engineering. The ridership forecasts are based on work reported in the

| Yards and Shops   | 11.3          |ː3.4             | 9'000 - 12'000                | 20             | 20           |
|                   | 000           |                 |                               |                |              |
|                   |               |                 |                               |                |              |
**TABLE 3**

**BUS SERVICE CHARACTERISTICS WITHOUT AND WITH LRT**

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Daily Bus Miles</th>
<th>Peak-Bus Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fall 1987</td>
<td>With LRT</td>
</tr>
<tr>
<td>Hiawatha</td>
<td>8,163</td>
<td>5,792</td>
</tr>
<tr>
<td>Southwest</td>
<td>7,018</td>
<td>5,736</td>
</tr>
<tr>
<td>University Connector</td>
<td>3,361</td>
<td>2,644</td>
</tr>
<tr>
<td>Northwest</td>
<td>4,926</td>
<td>4,107</td>
</tr>
</tbody>
</table>

| TOTAL        | 23,468    | 18,279   | -22%    | 226       | 175      | -23%    |
System Plan.

Table 4 presents the factors used for each of the corridors examined in the Comprehensive LRT.

- Travel time advantage by right-of-way type and geographic sector
- Changes in corridor and downtown population and employment

The patronage forecasts were prepared using the "pivot point" methodology. In this procedure, estimates of future LRT patronage were drawn from a study of potential transit capital investment prepared for many metropolitan area corridors.

As a part of this study, patronage forecasts were made in the Simon, Glassett and Laramie Corridors - Long Range Transit Analysis (the LRA report), published by the Metropolitan Council in December 1986.

Timelines for the LRT can be constructed near ends of the LRT lines. (Indicated spaces built in Phase 1.) These spaces would be connected near ends of the LRT lines. The preparation of the Twenty-Year Plan included provision for about 8,000 park-and-ride spaces.

To special need and opportunity, smaller park-and-ride lots may be constructed at other locations in the corridors in response. These smaller park-and-ride lots will be built in the Hawaiian corridor in Phase I because of the lack of right-of-way for that part. The Twelve Mile corridor in Phase I is not expected that a large park-and-ride lot

PATRONAGE FORECASTS
<table>
<thead>
<tr>
<th>Corridor</th>
<th>Population/ Employment Factor</th>
<th>ROW Type</th>
<th>Sector</th>
<th>Row Type</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest</td>
<td>1</td>
<td>Railroad</td>
<td>1.26</td>
<td>1.22</td>
<td>1.18</td>
</tr>
<tr>
<td>University</td>
<td>1</td>
<td>Arterial</td>
<td>1.00</td>
<td>1.00</td>
<td>1.28</td>
</tr>
<tr>
<td>Hiawatha</td>
<td>1</td>
<td>Freeway</td>
<td>1.20</td>
<td>1.20</td>
<td>1.24</td>
</tr>
<tr>
<td>South</td>
<td>1</td>
<td>Freeway</td>
<td>1.12</td>
<td>1.12</td>
<td>1.16</td>
</tr>
<tr>
<td>Southwest</td>
<td>1</td>
<td>Railroad</td>
<td>1.26</td>
<td>1.22</td>
<td>1.18</td>
</tr>
</tbody>
</table>
2010 Forecast. LRT Patronage. An estimate of patronage in the first year of operation weighed basis, corridor growth accounts for approximately ten percent of the year of operation is estimated by applying the factors related to corridor growth. On a corridor basis, patronage is improved transit service and corridor growth. Patronage after two years prepared for the forecast year of 2010. These forecasts were prepared by applying the following factors:

Opening Day Patronage Forecasts: As previously stated, patronage forecasts were prepared using the stop that had previously been on the end of the line, and the extension was already LRT patronage. The extension was added to improve efficiency and convenience. However, this means that when a line is extended, many park-and-ride facilities are made to improve service to their destinations. The park-and-ride facilities are also provided for the people on the LRT.

Generally, patronage is not proportional to corridor length, nor do people ride LRT if the corridor length did not coincide with the sector boundaries. If by-sector forecasts prepared for the LRTA report, further adjustments were made for each sector of the system. The adjustments were made by considering the LRT system. In most cases, the length of corridor which is included in the forecast represents patronage expected on the LRT system forecast for three years. The LRT system is forecasted as the twenty-year plan.

For the Comprehensive LRT System Plan, the Metropolitan Council forecasted the elimination of corridor overlap. By where possible, enhancements were made to reflect different route lengths in some cases, and in other cases, transit service improvements were applied.
is 65 percent of the 2010 value, with growth to 90 percent of the 2010 value by the second year.

In May 1988, a one-day peer review of the patronage forecasts was held. Mr. Richard Pratt of R.H. Pratt & Associates, Mr. James Ryan of COMSIS, and Mr. Gordon Schultz of Barton-Aschman conducted the review. A summary of the major points of the review included:

- The basic approach of starting with existing bus riders and factoring for changes in population/employment and travel times is sound.
- It is better to understate versus overstate the ridership projections.
- If the base ridership forecast in Year 2010 is in the low 90,000 riders/day, the panel concluded that the range between 70,000 and 90,000 riders/day is a better forecast.
- The major variables that influence transit ridership include the following:
  - downtown employment
  - price and availability of gasoline
  - feeder bus service
  - corridor bus service reorientation
  - park-and-ride spaces
  - downtown parking cost
- Future work activity should analyze in detail the relationships among the LRT service, the feeder bus service, and other corridor bus service. This work will define the relative service levels and provide a better understanding of the following system variables:
  - number of light rail vehicles required
  - size of yards and shop facility
  - escalator design
users drops.
former and new users. As ridership grows, because of new development, the percent of former bus
proportionately 80 percent of the riders would be former bus transal users and 20 percent would be an-
proportionately 80 percent of the riders would be former bus transal users and 20 percent would be the
-Of the riders forecasted to use the system after ten years of operation it is estimated that ap-
Forecast riders presented in Table 2 were developed. In capital investment and the ridership Forecasting Peer Review Committee work, the range of
On the basis of the forecasts presented in the Metropolitan Council study of the potential for tran-

From a patronage standpoint having is the best land use for development around our
Single long corridor of the same length,
Service in multiple corridors will give better system productivity performance than a

A budget of between $200,000 and $300,000 should be established for transit planning

Future studies should also analyze the relative travel to/from downtown, travel begin-

- sizing of station access facilities
- LRT route interlining
- system revenue
### TABLE 5
**DAILY TRANSIT RIDERSHIP FORECASTS**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Full System Year 2010 Forecast</th>
<th>Stage I Forecast Year 2010</th>
<th>After Two Years of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hiawatha</td>
<td>17,300 - 22,500</td>
<td>13,000 - 17,000</td>
<td>13,000 - 17,000</td>
</tr>
<tr>
<td>South</td>
<td>24,500 - 32,000</td>
<td>15,300 - 20,000</td>
<td>11,400 - 14,900</td>
</tr>
<tr>
<td>Southwest</td>
<td>16,600 - 22,000</td>
<td>14,500 - 18,800</td>
<td>13,100 - 17,100</td>
</tr>
<tr>
<td>Northwest</td>
<td>19,600 - 25,500</td>
<td>18,000 - 23,500</td>
<td>14,800 - 19,300</td>
</tr>
<tr>
<td>University Connector</td>
<td>9,200 - 12,000</td>
<td>9,200 - 12,000</td>
<td>9,200 - 12,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>87,200 - 114,000</strong></td>
<td><strong>70,000 - 91,300</strong></td>
<td><strong>61,500 - 80,300</strong></td>
</tr>
</tbody>
</table>

**Note:** The ridership forecasts are based on work reported in the Metropolitan Council report dated December 1986, "A Study of Potential Transit Capital Investments in Twin Cities Corridors," and the results of the Patronage Forecasting Peer Review Committee work.
assessments or other methods.

- Finance LRT station stop area construction through tax increment financing, bench-

Local government units, through cooperative agreements with the HCRFA, should

- Local government unit.

LRT station/stop area planning should be carried out jointly by the HCRFA and the

alignment, or those which may affect implementation of the LRT system plan,

HCRFA. On development proposals located within one-fourth mile of a proposed LRT

Local government units are encouraged to request review and comment by the

in carrying out their functions.

County, Regional and state agencies should recognize the future construction of LRT

or encounter LRT implementation.

- Encourage LRT implementation issues and encourage to review other programs which may have the potential to support

support LRT, changes needed, if any, to zoning ordinances and official maps; Juristic-

means, as desired, to land use plans; provisions to transportation plans needed to

LRT system plan, revisions should include identification of LRT alignments, advise-

Each planning jurisdiction should revise its comprehensive plan to reflect the adopted

the following guidelines are recommended:

use, the HCRFA solicited input from local and regional planning officials. As a result of that input,

Recognizing that implementation of a high rail transit system has the potential to influence land

LAND USE GUIDELINES
STAGE I FINANCIAL PLAN

Fourteen different sources of LRT construction funds were examined during preparation of the Comprehensive Plan:

- Property Tax: Hennepin County
- Property Tax: Metro Transit Taxing District
- General Sales Tax: Hennepin County
- Payroll Tax: Hennepin County
- Hotel/Motel/Liquor Tax: Hennepin County
- Drivers License Fee: Hennepin County
- Motor Vehicle Registration Fee/Wheelage Tax: Hennepin County
- State Motor Vehicle Excise Tax
- Cigarette Tax: State of Minnesota
- Sales Tax on Parking: Minneapolis
- Tax Increment
- Gasoline Tax: Hennepin County
- Head Tax: Hennepin County
- Benefit Assessment District

Each source was evaluated by the Finance Committee. The Finance Committee developed a preliminary financing package which included four revenue sources: property tax, motor vehicle
Other Private Sector Contributions

Private Sector Development Related Payments

Urban Mass Transportation Administration Capital Grant

I-35W Reconstruction Funds

Hawaii Special Funding

To provide the remaining capital funding include:

64 percent of the funds needed to construct the Stage I system. Other sources which may be used
(properly tax, motor vehicle excise tax, and tax increment financing) will provide approximately
(revenue from these four sources would provide cash flow to support $375 million of bonds
This work was completed prior to the development of specific Stage I
The recommended financing plan is shown in Exhibit 6. These identified sources of revenue

The technical Advisory Committee and the Interdepartmental Advisory Committee recom-

Other sources can be identified, or current funding sources can be enhanced, or the construction period
(mean County). The Finance Committee also stated that in the context that additional funds

The purpose of the chart was to set general limits on funding capability for LET in Hen.

Issued over a six-year period. 

The revenue from these four sources would provide cash flow to support $375 million of bonds

Registration tax surcharge, State motor vehicle excise tax, and tax increment (see Appendix C),
### TABLE 6
RECOMMENDED LRT FINANCING PACKAGE

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Rate</th>
<th>Assumptions</th>
<th>Yield Between 1989 - 2016 in Inflated Dollars (millions)</th>
<th>Bond Issue(s) Supported by Revenue Source (millions)</th>
<th>Estimated Percent of Capital Cost Coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property Tax</td>
<td>1 mill</td>
<td>4% inflation</td>
<td>$480</td>
<td>$218</td>
<td>38%</td>
</tr>
<tr>
<td>Motor Vehicle Excise Tax</td>
<td>6%</td>
<td>30% of MVET to MnDOT</td>
<td>$155</td>
<td>$70</td>
<td>14%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30% of Metro Share</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2% inflation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax Increment Financing</td>
<td></td>
<td>Value of property covered grows from $5-$75 million</td>
<td>$71</td>
<td>$32</td>
<td>6%</td>
</tr>
<tr>
<td>Other Sources</td>
<td>NA</td>
<td>4% inflation</td>
<td>$390</td>
<td>$177</td>
<td>36%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>$1,096</td>
<td>$497</td>
<td>100%</td>
</tr>
</tbody>
</table>

**NOTE:** The total yield is $1,096 million which allows the payment of the principal and interest on $497 million bonds issued over an eight-year period with an eight percent average coupon.
(MTC). Operation by the MTC achieves the following:

It is recommended that the LRT system built by Hennepin County be operated and maintained dollars with year 2010 passenger forecasts). The estimated annual farebox revenue is $20 million per year (1988 million per year) 1988. It is estimated that the LRT operating and maintenance cost of the proposed system will be $288

<table>
<thead>
<tr>
<th>10 minutes (2-car trains)</th>
<th>15 minutes (3-car trains)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Connector</td>
<td></td>
</tr>
<tr>
<td>Northwester - South Line</td>
<td></td>
</tr>
<tr>
<td>Southwest - Hiawatha Line</td>
<td></td>
</tr>
<tr>
<td>Headway With 3-Car Trains</td>
<td></td>
</tr>
<tr>
<td>Estimated Peak Period</td>
<td></td>
</tr>
</tbody>
</table>

**Stage I Operating Plan**

**Table 7**

A preliminary operating plan (Table 7) was developed for the purpose of estimating operating...
- Presents an integrated transit system to the public under one management and one decision-making process
- Insures the maximum coordination of feeder buses and the LRT
- Provides an environment to maximize the positive aspects of the remaining surface bus system and the line-haul capabilities of the LRT
- Places the responsibility for removing competitive surface bus routes with the agency operating the LRT system
- Minimizes any potential confusion relative to transfers between the buses and the LRT
- Single agency responsibility for budgets and approval of transit operating assistance

The MTC will be required to establish a new LRT Division, to be headed by a senior-level manager and administered under rules and procedures (to be developed) appropriate to the needs of a rail system and separate from the existing bus operation. This requirement will assist in providing the most cost-effective transit system for the region. This approach to operations does not preclude the possibility of a system supplier or the private sector managing the operation of the LRT system.

The projected operating deficit of the LRT is proposed to be funded through the existing MTC/RTB programs and process. The above discussion of feeder bus plans indicates a significant savings in bus operating costs; these savings will off-set a major portion of the LRT operating deficit.


PHOTO 10 Illustrates the major LRT system implementation components.

LRT Project Components

The planning of LRT stations.

with rail transit construction. In some instances, developers or adjacent land and have participated in
the planning of new transit stations. In recent years, there have also been great interests in coordinating LRT development
and maintenance of the system with rail transit construction. However, the nature of this work requires a high level of expertise
and resources, but also the transition of this work. In addition, options may be feasible
system implementation will include not only the construction and procurement of facilities and equipment, but also the transition of this work. In addition, options may be feasible.

The implementation methodology defines the contractual relationship between HCRRA and the

IMPLEMENTATION METHODOLOGY

The HCRRA will develop a plan to ensure compensation of contiguous residential property

RESIDENTIAL PROPERTY OWNED IMPACT MITIGATION

or any similar impact caused by light rail transit implementation.

owners found to be adversely affected by the noise, open space, appearance, traffic, property value,
Maintenance personnel, and facilities maintenance personnel. Transportation supervisor, shift leader, and train operators. Security staff vehicle requirements of the person. Person will be responsible for the establishment of the structure of the existing transit agency or by a new LRT operation structure. The new public LRT operation requires that an organization be coordinated. Service to the public LRT operation must define and specify services provided, including definitions and requirements. This ensures public policy decisions (who will run the system and how) must be made, an

Operations will commence upon the completion of Design and Construction. Prior to

Station structure; and handicapped access.

- Sidewalks and building entrances; park-and-ride lots; elevators and escalators for any subway or surface operations; public and amenity; public power, shelter; heat; ventilation, public for temperature, lighting, and pedestrian equipment including platforms and surface lights and work: lighting, entrance to, and beyond above the basic station entrance; and in the case of a subway section, means of construction.

- Support structures: structural steel, bridge, rail, steel, underground concrete, concrete, concrete; trackway, electrical, surfacing foundations, underground conduit, bridge, concrete, electrical, surfacing foundations, underground, concrete; bridge, steel, rail, support structures, and structural steel; rail, and bridge; concrete; and concrete.
• Financing must be arranged through some combination of public and private sources to fund design, construction and ongoing operations.

• Related Land Development is likely to occur in the public right-of-way used by LRT as well as on adjacent private lands. Mechanisms can be implemented to capture a portion of the revenue these new developments will create for LRT system use.

The issue is how the above-defined LRT components should be related during system implementation and operation.

Alternative LRT Implementation Methods

Alternative methods of dividing the implementation work are discussed below. There are variations and hybrids of the methods shown, but those outlined represent the basic alternatives.

Traditional. The Project Manager/Engineer specifies the system elements (vehicles, electrification, signals, communications, fare collection, etc.) or components of the system elements (e.g., substation equipment, catenary network, track material, etc.) and issues separate detailed specifications for bid. At the same time, the civil design is advanced to 100 percent drawings. Contracts are awarded for the system elements and components, and the contractors fabricate and furnish the equipment. The civil contract drawings are also issued for bid and awarded to low, responsible bidders; the contractors construct the LRT infrastructure. These construction contractors (or other contractors) could also install the electrification, signals, communication equipment, and fare collection. Upon completion, an operations contractor or a public agency operates the system. Traditional contracting places maximum control, risk, and responsibility with the project owner.

Design/Build. The Project Manager/Engineer advances the design to the performance specification level in the case of the systems elements and to thirty percent in the case of the civil design.
relocated land development. Financing might take the form of loans (e.g., vendor financing) or
munificence. The contractor is made responsible for partial or total system financing and is involved in the
Tunkey. This is the same as the Tunkey approach except that in addition the Super

in a single entity. This removes many external interfaces related to claims.
responsibility for cost/schedule performance, quality, and achievement of performance standards
operation in the Tunkey Contractor. Property-specific and managed, this approach focuses
Tunkey further lessens owner control but transfers responsibility and risk for successful system

is usually suggested as a reasonable time period during which potential problems would develop.

The winning Tunkey contractor completes the design in all areas and tabulates and furnishes the

the contractor. The reasonable, reasonable
percent establishes the basic system parameters, allows for defensible cost estimation, and keeps
competition as one package. Having the Project Manager/Engineer advance the design to Utility
Design/Build category, but the performance specifications and Utility design are issued. For
Tunkey, the Project Manager/Engineer advances the design as would be done in the

thus achieving an advantage in subsequent negotiations to those firms successful in the initial stage.

less property-specific and managed. This approach can have the effect of limiting competition;
design to their products rather than having to "re-engineer" to the owner's exact specifications.
Design/Build sacrifices a modest degree of owner control, but enables suppliers to tailor final

independent of the design and construction.

in an operational context, a Public Agency operates the system; the operational decision is made
the thirty percent civil designs are issued for bid as Design-Build sections. Upon completion,
The system elements each are awarded to contractors who design, furnish, and install the equipment.
lease/buy-backs. There could also be a potential for funding portions of the system, particularly at or around stations, through joint development.

The Super Turnkey approach makes the contractor responsible for financial and land development arrangements, but is likely to require that public agencies cede substantial control over the precise details of the technical/physical solution to the Super Turnkey contractor.

Evaluation of Alternative Implementation Methods

The evaluation of the applicability of the alternative implementation methods centers around the following criteria:

- Contractual, Construction, and Performance Risk
- Time Schedule
- Responsibility/Accountability
- Budget Control/Cost
- Quality

A discussion of the above criteria relative to civil, systems, stations, and related land development follows.

Civil. This element carries the greatest number of unknowns (e.g., soil condition variances), involves numerous third parties (utilities, railroads, and other public jurisdictions), and also involves property acquisition. If a subway or tunnel is part of the LRT, the risks are even greater. With a thirty percent level of design completed by the owner, all potential contractors either have to complete a significant amount of additional engineering or include a significant contingency in any fixed price bid.
Some foreign projects (e.g., Santiago, Tijuana, Manila) are using LRT systems. Systems procurement for transit/industrial contracts for several North American LRT projects (e.g., Portland, Sacramento, San Jose) has successfully been implemented using the Synchronization/Design/Bid approach. An important consideration in the integration of the various systems components is the need for a high degree of control. The traditional method approaches the highest degree of control. The owner of the civil component of an LRT system should not approve feasibility to use a linker or super linker approach for all portions. This approach is not directly available for the majority of the systems. It requires a high level of maintenance and repair of all links with a linker or super linker schedule for availability of each-of-way and clearance of all links with a linker or super linker to an increased cost caused by the infrastructure. The owner will have to take this risk and establish a firm problem and a cause of many delays on fixed guideway projects. The delays have also resulted in a failure to make high-of-way available for the majority of the railroads.
Regarding the Turnkey approach, no single manufacturer can provide all of the systems components. Thus, a Turnkey approach will require several companies to cooperate, organized either as a joint venture or as a prime contractor with subcontractors.

Some suppliers have expressed an interest in the Turnkey approach based on experience with projects outside the U.S. The "price" of some loss of control by the Owner may be worth considering if the Turnkey contractor is prepared to accept some of the cost and schedule risks, and if he is made responsible for operations management of the system for an extended period of time beyond the normal two-year warranty time (say at least five years overall).

There is some thought among transit engineers that the contractual link between the major components of building the system and operating it may bring additional benefits. By holding the contractor responsible for management of operations (local forces already in place will perform actual works under the turnkey contractor's management), there is a financial incentive not to allow operating costs to exceed initial projections. The contractor may be more careful to design equipment to reduce operating and maintenance costs, because equipment failures will reduce his profit. Conversely, reliable, maintainable equipment will reduce costs, hence increasing profit.

In conclusion, a Design/Build approach for Systems components will apply contracting methods successfully used on other recent North American LRT projects and allow tighter Owner control. A Turnkey approach, however, may offer additional benefits regarding risk transfer and operating responsibility, albeit at the price of reduced County control.

Stations. The most appropriate implementation method for stations depends upon whether or not adjacent development opportunities exist.

Traditional contracts are most appropriate to construct those stations where no developer involvement will occur. This will ensure maximum County control and coordination with other stations.
More economical use of transit resources

Increased transit patronage

Enhanced transit service in corridors where LRT is constructed

Several areas:

Implementation of a light rail transit system in Henepin County will have beneficial effects in

**Benefits of LRT**

...be made based on conditions as they develop during the process. Consideration of these alternatives will continue during preliminary environmental decisions will

Conclusions

...discussed above and other developments on private land adjacent to the LRT right-of-way.

I envision the development of stations integral with adjacent real estate projects as

discussed above and other developments on private land adjacent to the LRT right-of-way.

Certain LRT stations and interstations can proceed together to solicit land development/property owner-in-

...discussed above and other developments on private land adjacent to the LRT right-of-way.

Related Land Development Considerations in the State of Minnesota have no control over local land

...discussed above and other developments on private land adjacent to the LRT right-of-way.

Super Trolley concepts are suggested where stations can be provided (i.e., pulling and pulling by

...discussed above and other developments on private land adjacent to the LRT right-of-way.

Surveys for LRT functional requirements (e.g., platform dimensions, weather protection for

...discussed above and other developments on private land adjacent to the LRT right-of-way.

Surveys for LRT functional requirements (e.g., platform dimensions, weather protection for

...discussed above and other developments on private land adjacent to the LRT right-of-way.

Surveys for LRT functional requirements (e.g., platform dimensions, weather protection for
• Reduced auto trips on regional highway system
• Improved air quality in the region
• Reduced bus traffic in downtown Minneapolis
• Reduced auto traffic in downtown Minneapolis
• Reduced need for parking in downtown Minneapolis
• Increased development potential near stations
• Increased development potential in downtown Minneapolis
VII. APPENDICES

A. List of Meetings

B. Committee Membership Lists

- Intergovernmental Advisory Committee
- Technical Advisory Committee
- Financial Advisory Committee
- Land Use Advisory Committee
- Downtown Advisory Committee
- Northwest Corridor Advisory Committee
- Southwest Suburban Corridor Advisory Committee
- Southwest Minneapolis Corridor Advisory Committee
- South/I-35W Corridor Advisory Committee
- Hiawatha Corridor Advisory Committee
- University Connection Advisory Committee

C. Advisory Committee Summary Reports
APPENDIX A

List of Meetings
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Intergovernmental Advisory Committee
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03-23-88
Southwest Suburban Public Forum
03-21-88
Northwest Suburban Public Forum
03-18-88
Intergovernmental Advisory Committee
03-16-88
South Public Forum
03-14-88
Hamline, Univeristy & Downtown Public Forum
03-11-88
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South (I-35W) Corridor Advisory Committee
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Technical Advisory Committee
02-04-88
Technical Advisory Committee
02-03-88
Appendix B

Committee Membership Lists
Mayor Mary Anderson
474-9222
593-8000
City of Golden Valley
E.A. Lucille Crow
Mayor Jim Oids
474-5233
City of Excelsior
Mayor Mary Curtenay
927-861
City of Eden
Mayor Gary Peterson
637-2262
City of Eden Prairie
Mayor Thomas Baker
537-8421
City of Chaska
Council Member Danial Resh
448-2854
City of Brooklyn Park
Mayor James Krautkramer
(560-6022)
844-8000
City of Brooklyn Center
Council Member Gene Lohota
(370-5914)
651-2850
City of Bloomington
Mayor Kurt Laughinghouse
881-5911
City of Bloomington

Phone

Appointments Authority

Co-Chairs: John Deros, Steve Keesee

Intergovernmental Advisory Committee

County Norton
Sam S. Siyanch
E.F. Robb, Jr.
John Keesee
Kandy Johnston
Jeff Spartz
John E. Deros, HCRRA Chair

Hennepin County
<table>
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<tr>
<th>Appointing Authority</th>
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<td>(alt. Jim Shirley)</td>
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<td>Council Member Brian Coyle</td>
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<td>Council Member Steve Cramer</td>
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<td>City of Minneapolis (Mayor)</td>
<td>Bill Barnhart</td>
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<td>Mayor Larry Donlin</td>
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<td>(alt. Bob DeGhetto)</td>
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Metropolitan Council
Anoka County
Ex-Officio Members

Cään
Park Reserve District

Representatives
Minnesota House of Representatives

Minnesota State Senate

Commerce
Greater Minneapolis Chamber of Commerce

Downtown Council of Minneapolis

University of Minnesota

MTC

Counts
Minneapolis Assoc. of Urban

Metropolitan Airports Commission
Harold Greenwood

Transportation
Randy Halvorson

Appointees

InterGovernmental Advisory Committee (Continued)
## TECHNICAL ADVISORY COMMITTEE

Chair: Natalio Diaz

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<td>George Isaacs (alt. Dottie Reitow)</td>
<td>484-7512 545-5848</td>
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Name: Doug Elass
Phone: 296-4302

Name: Steve Keele
Phone: 374-3822

Name: Mark Kaplan
Phone: 372-9504

Name: Richard Joseph
Phone: Norwest Investment Services

Name: Bruce Gilmore
Phone: 338-3888

Name: Ruth Franklin
Phone: Norwest Investment Services

Name: Harlan Engleman
Phone: Marguerite Bank Minneapolis

Name: Pat Downey
Phone: 755-2880

Name: Michael Dougherty
Phone: BCE

Name: Mayor Larry Donlin
Phone: BCE

Name: Stanley Cowie
Phone: Pat Downey, Dahkins

Name: Phil Carluthers
Phone: City of Minneapolis

Name: Représentant du Miller, Hopwood, Representantes de
Phone: Minneapolis House of

Name: Jerry Chornomazki
Phone: Exit 130

Name: Greg Andrews
Phone: The Bank North, Crystal

Name: Representative
Phone: 333-1511

Name: Regional Transit Board
Phone: 292-8818

Name: Chair: Commissioner Jeff Spartz

FINANCIAL ADVISORY COMMITTEE
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<td>The Bank North, Crystal</td>
<td>533-1511 ext. 153</td>
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<td>Minnesota House or Representatives</td>
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<td>Representative Ken Nelson</td>
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<td>Vance Opperman</td>
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<td>Carl Pohlad</td>
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<td>Ann Perry</td>
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<td>John Olson</td>
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<td>Walter R. Feist</td>
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<td>Oliver Byrum</td>
<td>924-2500</td>
<td>City of St. Louis Park</td>
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Chair: Councilmember Tony Scallon

Land Use Advisory Committee
# DOWNTOWN ADVISORY COMMITTEE

**Chair:** Bob King

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<td>Council Member Barbara Carlson</td>
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<td><strong>Greater Minneapolis Chamber of Commerce</strong></td>
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<td>Lowell Anderson</td>
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<td>Donald Benson</td>
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<td>Thomas Dale</td>
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<td>(alt. Brooks Clark)</td>
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<td><strong>Downtown Council of Minneapolis</strong></td>
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<td><strong>Metropolitan Transit Commission</strong></td>
<td>Dennis Tollefsbol</td>
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**Northwest Corridor Advisory Committee**

**Golden Valley**
- Kevin McKeese
  - Phone: 655-2763

**City of Robbinsdale**
- David Kagen
  - Phone: 737-4534
- Jim Piontkowski
- Bill Brown
- Mike Holz

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- Barbara Johnson
  - Phone: 521-4422
- Altred Babington-Johnson
- Edward Garry

**City of Crystal**
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- Adrian Kvinge
  - Phone: 544-6020

**City of Brooklyn Park**
- Bill Dix
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- Duane Webster
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- Dick Eng
  - Phone: 527-6676
- Charles Darch
  - Phone: 424-8000

**City of Brooklyn Center**
- Gaylend Hatter
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- Bob Elmgren
  - Phone: 332-2561
- Todd Pederson
  - Phone: 227-8266
- Jayne Khar
  - Phone: 333-2225

Chair: Charles Darrah
SOUTHWEST SUBURBAN CORRIDOR ADVISORY COMMITTEE MEMBER LIST

Chair: Doug Ewald  
Vice Chair: James Brimeyer

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<td>Douglas Fell</td>
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474-9141
Jan Haugen
City of Shorewood

474-7528
Clark Connell
City of Greenwood

370-2575
Charles Watson
City of Deephaven

929-1768
Allen Friedman
Appointing Authority

934-2500
James Brimyer
City of St. Louis Park

291-1215
Andrew Steden
Appointee

SOUTHWEST SUBURBAN CORRIDOR ADVISORY COMMITTEE MEMBER LIST (CONTINUED)
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- Vern Lichtinger

- Don Anderson

- George Karas

City of Minneapolis

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  (414) Tom Dutte)
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  (414) Mary Peterson)
  Phone: 338-7807

- Mike Collison
  (414) Rick Patausk)
  Phone: 861-1802

- Don Launburger
  Phone: 333-1280

Appointee Authority

South (I-35) Corridor Advisory Committee
HIAMATHA CORRIDOR ADVISORY COMMITTEE

Appointee

Donn Hayes
Paul Harrington
Larry Lee
Robert Darr

Appointing Authority

City of Bloomington

City of Minneapolis

Metropolitan Airports Commission

Metropolitan Sports Facilities Commission

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865-4016
831-7939
887-9635
853-7563
721-4927
729-0515
729-3070
722-2392
674-0416
724-8350
332-0386
338-6161
827-4240
670-2214
869-6620
332-0331
371-5300

Jan Del Calzo
(alt. Caroline Sawyer)

Wilbert Viitala
(alt. Roger Dymoke)

Kermit Randall
Barbara Kritzman

Carroll Anderson

B-17
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UNIVERSITY CONNECTION ADVISORY COMMITTEE
APPENDIX C

Advisory Committee Summary Reports

Appendix C contains the reports of the Downtown, Hiawatha, University Connection, Finance and Land Use Advisory Committees to the IAC and the TAC. Also included are summary reports of other Corridor Advisory Committees (Northwest, Southwest Suburban, Southwest Minneapolis, and South/I-35W). The complete reports of the latter committees are bound under separate cover.
February 2, 1988

Report of the Downtown Advisory Committee
for the
Hennepin County Comprehensive LRT System Plan

To: Intergovernmental Advisory Committee

From: Chair Bob King, For the Committee
(Membership List Attached)

Re: Recommendation on LRT Service in Downtown Minneapolis

SUMMARY

After consideration of numerous alternatives, the Downtown Advisory Committee recommends to the Intergovernmental Advisory Committee that the light rail transit (LRT) line in downtown Minneapolis have the following characteristics:

- At-grade construction.
- North-south orientation.
- Serve the area between 2nd Street and 11th/12th Streets.
- Contra-flow on adjacent one-way streets.
- Utilize Marquette Avenue.
- Address accessibility issues of elderly and handicapped.
- Include measures to mitigate operations and aesthetic impacts.

The Committee prefers the system defined above because it most successfully:

- Maximizes street-level activity.
- Reinforces the compact-core development concept.
- Serves the Mills District and Convention Center areas.
- Minimizes perceived personal security problems.
- Minimizes capital cost.

To facilitate advancement of the LRT planning process, the Downtown Advisory Committee further recommends that:

- Detailed planning of the recommended alternative begin immediately in order to more precisely identify its components, impacts, and required mitigation measures.
- Concurrently, a plan should be developed for the underground alternative which ensures that right-of-way for the tunnel and access may be acquired.
- These recommendations be transmitted to the Minneapolis City Council for review as soon as possible.

The Downtown Advisory Committee directed that these recommendations be transmitted to the Intergovernmental Advisory Committee.
blocks or one-mile in length. These tunnels would be approximately ten to twelve 

north-south option along Marquette were analyzed. An east-west option along 7th Street and a 

station. An east-west option along 7th Street with "cut-and-cover" 

constructed as a bored tunnel, with "cut-and-cover" 

numbered 45 feet underground and most likely be 

Shallow Tunnel – This tunnel would be located approximately

Nicollet.

and an alternative between the Metrodome and 29th/

and near the Third Avenue Distributor on the west 

options included tunnels between the Metrodome on the 

Sandstone approximately ninety feet underground. 

Sandstone Tunnel – A tunnel located in St. Peter

defined, each had location and station options:

over a five-month period. Those basic alternatives were 

stations with LRT service. The committee met ten times 

with developing a preferred plan for serving downtown 

The Downtown Advisory Committee for the Comprehensive Light

DOWNTOWN

ON LRT SERVICE

DOWNTOWN ADVISORY COMMITTEE RECOMMENDATION

February 2, 1988
- At-Grade - the surface alternatives included routes with east-west as well as north-south orientation. Full transit malls, semi-transit malls, and contra-flow operation were evaluated. Routes between Hennepin and Third Avenue and between 2nd Street and 12th Street were defined.

Initially, alternatives on Nicollet Mall were not considered because the Nicollet Mall Implementation Board voted not to have LRT service at-grade on the mall.

The evaluation criteria included service to users (including proximity to employment and retail, travel times, elderly and handicapped service, and connections to radial corridors), impact on traffic and curb use, relationship to surface buses, impact on street level retail and pedestrian activity, personal security, capital cost, operating and maintenance cost, and consistency with city plans for downtown.

Based on the analysis, the committee concluded:

- At-grade service is preferred to underground service primarily because it will strengthen street-level activity, lower capital costs, and minimize perceived personal security problems.

- The at-grade service should have a north-south orientation to reinforce the compact core development concept for downtown.
Second/Margarette to make room for LRT service.

...required to replace bus service, removed from north and south downtown transit terminals, is a shuttle transit service on Nichollet Mall, connected access for the elderly and handicapped.

Special attention is required to provide adequate lighting, landscaping, signage, barriers, etc.

not be limited to, surface treatment, shelters, street cable, this treatment could include, but should be extended with the existing downtown treatment to fit with the existing design.

The at-grade LRT service will require special design.

West corridor and the I-35W corridor.

depend upon LRT location decisions made in the south.

Further extension to the west or south will be studied as part of the south to I-35W.

Riverfront street; this location will provide service to the second Marquette Avenue.

Contra-flow on a pair of adjacent streets including the preferable LRT alignment in downtown Minneapolis is the sense of the downtown advisory committee that is two-way semi-mm on Margarette.

- Contra-flow operation on Margarette/Nichollet
- Contra-flow operation on Second/Margarette

The three location and service alternatives are:
The at-grade alternative will require a series of mitigation measures to address impacts on street operation, curb use, street curb-cut access, downtown traffic signal system, bus operations, street capacity, and utility impacts.

The committee further recommends the following:

- Detailed planning for the at-grade alternative should begin immediately to further refine the plan and define the required mitigation measures.

- Concurrently, a plan should be developed for the underground alternative which ensures that right-of-way for the tunnel and access may be acquired.

- The conclusions of the Downtown CAC should be sent to the Intergovernmental Advisory Committee and the Minneapolis City Council as soon as possible.
Metroplitan Transit Commission

Downtown Council of Minneapolis

Greater Minneapolis Chamber of Commerce

City of Minneapolis

Appointing Authority

January 15, 1988

Bob King
Chair
Boulevard.

would extend from the DB Route East along TH 100 to Brooklynn
an at Branch Line to the Brooklynn/Brooklynn Center area. This spur
Committee also passed a resolution supporting Runway consideration of
In addition to selecting a preferred Northwest Alignment, the
site were redeveloped as a more intensive land use.
The Crystal Airport location would only be included if the airport

O 88th
O 77th
O 63rd
O Crystal Airport
O Bass Lake Road
O 49th
O 36th
O Golden Valley Road
O Plymouth
O Penn
O Emerson

The committee selected a preferred alignment in their meeting of

The meetings held between October 14, 1987, and February 12, 1988,
these activities were completed by the committee in a series of seven
sites and recommendations of types of access at the various stations.
A transit service philosophy, identification of preferred stations
LRT Alignment to serve the corridor. The task required formulation of
The primary responsibility of the committee was to select a preferred

The NWCA was composed of representatives from Brooklynn Center,

I. SUMMARY

Report to the HCRRA
NORTHWEST CORRIDOR ADVISORY COMMITTEE
March 4, 1988
Another function of the southwest corridor is to efficiently bring city residents to employment and activity centers in the suburbs. A 29th street alignment provides access to LRT for more Minneapolitans residents than the Chicago Northwestern alignment along the western edge of the city. A 29th Street alignment offers 5. Another major function of the southwest corridor is to efficiently bring suburbion residents and downtown workers to the large commercial, office and activity areas within the southwestern area of the city. A 29th Street alignment offers significant improvements on the John Wayne/Hiawatha and Central Corridor segments.

The committee’s recommendation is based on the following assumptions:

• at the Convention Center (assumed to be a downtown station)
• Nicollet in the vicinity of Franklin
• Nicollet in the vicinity of 28th Street
• Nicollet in the vicinity of Nicollet Avenue
• Nicollet in the vicinity of Lake Street

The committee recommends an east/west alignment running parallel to 29th Avenue N. just east of Hiawatha Avenue. The tunnel enters downtown Minneapolis.

Nicollet Avenue, at Nicollet, the recommended alignment turns north in a tunnel to enter downtown Minneapolis.

Approved by the committee at its February 4, 1988, meeting.

SOUTHWEST MINNEAPOLIS CORRIDOR ADVISORY COMMITTEE RECOMMENDATIONS

2/5/88
BRI, Inc.
University of Minnesota, and the airport. By using exclusive rail right-of-way, the 29th Street/Nicollet tunnel alternative allows higher speeds and better travel time for riders travelling longer distances, without significantly impacting Minneapolis neighborhoods and streets.

The Southwest Minneapolis Committee is cognizant of the higher capital cost of a tunnel alternative, but believes the issue of cost should be thoroughly analyzed to take into account the following factors:

- Reduced capital costs as evidenced by previous local tunnelling projects (MWCC sewers)
- Capability of a Nicollet tunnel to accommodate both southwest and south (I-35W) corridors
- Need for fewer trains underground
- Reduced operating costs underground
- Possible need for more expensive (low platform) cars above ground
- Possible eventual need for an underground system downtown
HENNEPIN COUNTY REGIONAL RAILROAD AUTHORITY
COMPREHENSIVE LRT SYSTEM PLAN

SOUTHWEST SUBURBAN CORRIDOR ADVISORY COMMITTEE RECOMMENDATIONS

Approved by the Committee at its December 14, 1987, meeting.

- The Committee recommends the northerly alignment from downtown Minneapolis to Excelsior. The south alignment should also be included in the Southwest Corridor LRT System at least as far as Baker Road/I-494 at the earliest opportunity.

- The extension of any line through a residential area should be done with the utmost regard for the legitimate concerns of people whose property is affected.

- The Committee recommends the following for inclusion in the inventory of potential LRT station sites (see maps attached):

  **Minneapolis City Limits to 9th Avenue (Hopkins)**
  1. Beltline Boulevard/Ottawa Avenue, St. Louis Park
  2. Wooddale Avenue, St. Louis Park
  3. Louisiana Avenue, St. Louis Park
  4. Tyler Street at Excelsior Boulevard, Hopkins
  5. Excelsior Boulevard at 9th Avenue, Hopkins
  6. 9th Avenue, south of Main Street, Hopkins

  **North Alignment - 9th Avenue (Hopkins) to Excelsior**
  8. Country Village Shopping Center, Minnetonka
  11. Williston Road, Minnetonka
  12 Highway 101, Minnetonka
  13. Deephaven City Hall, Deephaven
  14. Highway 7, south of Excelsior Boulevard, Excelsior
  15. Water Street, Excelsior

  **South Alignment - 9th Avenue (Hopkins) to Eden Prairie**
  16. Baker Road at I-494, Minnetonka
  17. County Road 62, Minnetonka/Eden Prairie
  18. Valley View Road, Eden Prairie
  19. Highway 5, Eden Prairie
  20. County Road 4 at proposed Highway 212, Eden Prairie

- The Southwest Suburban Committee encourages the Southwest Minneapolis Committee and the Hennepin County Regional Railroad Authority to recommend the most efficient and timely route through Minneapolis to Downtown.
The work on this corridor required substantial coordination with the work on other corridors, congestion of I-35W, and adequacy of available right-of-way.

For example, the impact of LRTP alternatives on street traffic, commuter transit, and rail needs to be evaluated. By unanimously adopting a guiding principle to their evaluation, they were able to coordinate with each alternative evaluation criteria. For example, the SCAC clearly expressed a guiding principle to their evaluation, which they adopted to evaluate alternatives the SCAC evaluated included:

- 500 Hartland (south of Cross Town)
- Park Portland (to Cross Town)
- I-35W
- Third Avenue (to 29th Street)
- Nicollet Avenue
- First-Balisdean (to Cross Town)

The universe of alternatives the SCAC evaluated included:

The corridor meeting was also on February 12. After the public meeting, including a public meeting on Saturday, February 13. It's final

Therefore, on December 9, the SCAC recommended to begin (almost) bi-weekly

The county was to consider.

The comprehensive plan that the South Corridor be included in the proposals

further consideration. HMPA felt it was critical to the integrity of the

Minneapolis Department of Transportation Study of I-35W which was concurrent.

In October, the Hennepin County Regional Railroad Authority (HCRA) decided

St. Anthony and Bloomington Respectively, and two representatives from Edina.

1997. The SCAC is comprised of four representatives from Minnetonka's

The South Corridor Advisory Committee (SCAC) began meeting September 17.
Recommendations

At its final meeting on February 13, the SCAC voted on its South Corridor recommendations to Hennepin County. These included:

Preferred Alignment

- I-35W right-of-way (Side slope or median)
- Terminus at 106th Street

Second Choice Alignment

- I-35W right-of-way (to Crosstown area)/Soo Railroad (south of Crosstown)
- Terminus at 110th/Normandale

The South Corridor Advisory Committee voted to adopt a station philosophy that supports the corridor's transit philosophy of "high speed" but provides the greatest potential to promote ridership to relieve traffic congestion on I-35W, while minimizing interference with other transportation systems. The Committee passed a motion that this philosophy must be coupled with station location criteria such as access, available land, minimizing environmental impacts, and development opportunities.

The Committee chose not to identify specific station locations because of the unknown future nature of interchanges, right-of-way, and adjacent land uses along the I-35W corridor due to MnDOT's current study. The SCAC felt it would be unwise at this time to identify station locations based on desirable conditions that, in the future, may actually be significantly different.
December 8, 1987

Hennepin County Regional Railroad Authority
Comprehensive Light Rail Transit System Plan

Report to the Hennepin County Regional Railroad Authority
by the Hiawatha Avenue Corridor Advisory Committee

BACKGROUND

The Hiawatha Avenue Corridor Advisory Committee is composed of residents and representatives of the City of Minneapolis, the City of Bloomington, the City of Richfield, the Metropolitan Sports Facilities Commission and the Metropolitan Airports Commission (membership list attached).

The Committee was charged with the task of making a recommendation to the Hennepin County Regional Railroad authority regarding the location and characteristics of the light rail transit line in the Hiawatha Avenue corridor.

PROCESS

The Committee met three times to review information prepared for this and previous studies of the Hiawatha Avenue corridor relative to light rail transit.

Representatives from each of the three geographic areas in the corridor were asked to state their preferences regarding alignment and other location issues.

Votes were taken regarding the contents of this recommendation. All votes were unanimous.

RECOMMENDATION

Alignment

The Hiawatha Avenue Corridor Advisory Committee recommends that the light rail transit line in the Hiawatha corridor be located:

- East side of Hiawatha Avenue, downtown Minneapolis to Lake Street
- West side of Hiawatha Avenue, Lake Street to 52nd Street
- Minnehaha Avenue, 52nd Street to GSA Building
- Through Airport via tunnel under runways, 70th Street and 34th Avenue
- Into Bloomington via 34th Avenue, 80th Street and 24th Avenue (Figure 1)
Office space.

In the corridor, development would generate an additional 6,990 daily LRT passengers. The HIA recommends that this development be located near the South end of the LRT line. The area south of County Road 62 should have one-Circle Mile. The area north of County Road 62 should serve the area between Cedar Avenue and the Mississippi River with a maximum walk distance of one-half mile. The corridor should be located at or near the park and ride lots, with stops located at approximately one-half mile intervals (as shown in Figure I).
By Ramsey County.

Along University Avenue or along any of the railroad corridors being considered, the route at the Oak Street intersection, the extension of the light rail service, the western terminus at the western terminus of the University of Minnesota Transitway. The extension of the University of Minnesota Transitway at the Oak Street intersection is recommended to be extended to Oak Street and a good feeder bus service is recommended for this purpose. It is recommended that the line extend to Oak Street and a good feeder bus service is recommended

Avenue and Church Street Intersections.

The University connector, the University of Minnesota

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Government units. By the regional authority and local
Joint Authority reviewed by the regional and stop locations shall be
Planning for the station and stop locations shall be

or disapprove development plans.
Government units shall have the final authority to approve
Government units submitted for review. However, local
jurisdictional control or station and local adjacent
impact the LRT corridor or station and local adjacent
development proposals which have the potential to

where appropriate.
should reflect the provision of LRT in future planning.
Tranist Board and the Metropolitan Transit Commission
as the Minnesota Department of Transportation, the Regional
other Regional and State Transportation Agencies such

All local Government units and counties affected by LRT

2. LRT Coordination

encourage the use of LRT.
Authority to plan, prepare and publicize improvements that
Local Government units should review their regulatory

Local Government units should review their ordinance

Local Government units should review their regulatory

LRT routes through LRT development processes.
should follow their ability to encounter the development of
metropolitan plans. At a minimum, local jurisdictional roles
LRT routes to impact local transportation plans reflecting
Local jurisdictional roles assess the potential of the

potentially LRT routes.
comprehensive plans for the land use element of
Local Government plans should depict plans and

All local Government plans should depict plans that

improved to reflect the location and timing of LRT
were prepared under the land planning Act will need to be
various corridor areas within the Metropolitan area for the
The LRT plan is designed to provide transit service in

Overall Planning Guidelines for Light Rail Transit
Final Draft
3. **Land Use Related Financing**

- The basic LRT system including standard stations should be paid for out of broader, area wide revenues. Properties that may be construed to be benefitted by a station should not be assessed for any part of the basic system.

- Local governments may finance architectural and site planning enhancements to stations through local land use controls and revenues. These techniques may include tax increment financing or benefit assessment as determined by the local government.

- The local governments should plan for preservation of right of way for LRT and station development for Phase I or that for which financing has been approved by the Railroad Authority, County or State.
authority to seek legislative approval to allow such
pledge additional mitigation to secure this rating, the
highest possible bond rating. If it is necessary to

II. If the Authority issues the debt, it should secure

4. A transit impact fee for new development only.

added benefits.

3. Assessments paid by the property owner based on

2. A share of gasoline taxes.

fiscal disparities.

1. A share of Hennequin County's contribution to

for the first or additional phases of the system.

D. What the following four revenues be made available

4. Motor vehicle excise taxes

3. A surtax on motor vehicle registration fees

2. Tax increment

1. Property tax

pay for the system.

C. What the following four revenues be used first to

B. That the term of any debt not exceed 25 years.

1 of 1 mill.

A. That the Authority levy and collect a property tax

Following recommendations:

needed for the initial phase, the committee makes the
Exhibit 1 and assuming that approximately $375.0 million is

I. Assuming the variables contained in the attached

RECOMMENDATIONS BY THE FINANCE ADVISORY COMMITTEE

a pledge.
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<td>$465,373.52</td>
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**PropertyTax:**

- **Property Tax Assesst Value:** $1,898,298.90
- **AssessVal:** $1,898,298.90
- **Rate:** 2.00%
- **Value:** $1,898,298.90
- **Tax Payable:** $37,965.98
- **Real Estate:** $1,898,298.90
- **Personal Property:** $0.00
- **Other Liabilities:** $0.00
- **Total:** $1,898,298.90

**Tax Calculation:**

- **AssessVal:** $1,898,298.90
- **Rate:** 2.00%
- **Tax Payable:** $37,965.98

**Property Tax:** $37,965.98

**Rate:** 2.00%

**Total:** $1,898,298.90

**Liabilities:**

- **Personal Property:** $0.00
- **Other Liabilities:** $0.00

**Total Liabilities:** $0.00

**Total Tax Payable:** $37,965.98
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<td>4.34%</td>
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<td>11.18%</td>
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<td>12.67%</td>
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<td>19.86%</td>
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HISTORICAL & CURRENT

TAXABLE ASSESSED VALUATIONS

EXHIBIT I

Prepared by Witter & Schneeber
<table>
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<th>casio 5% Average Annual Increase</th>
<th>casio 2% Average Annual Increase</th>
<th>casio 0% Average Annual Increase</th>
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<tr>
<td>Productable Assessed Value 1 Mill</td>
<td>Tax Year Tatable Resized By</td>
<td>Projected X 5% Average Annual Increase</td>
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<tr>
<td>Projectable assessed value 1 Mill</td>
<td>Tax Year Tatable Resized By</td>
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<td>Projectable assessed value 1 Mill</td>
<td>Tax Year Tatable Resized By</td>
<td>Projected X 0% Average Annual Increase</td>
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### Exhibit II

#### Scenario C

<table>
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<th>Scenario A</th>
<th>Scenario B</th>
<th>Scenario C</th>
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<table>
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Prepared by Miller & Schroefer

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Address market value annually

Inflation 4.0% annually

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TAX INCUMMENT FINANCING

EXHIBIT III
## EXHIBIT IV

**MOTOR VEHICLE REGISTRATION SURTAX**

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82,493,719 164,987,438 247,481,157

Inflated 2.0% annually
700,000 vehicles @ $70

Prepared by Miller & Schroeder
(surtax)
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Date 30% to DOT

40% to DOT 50% to DOT

20% of Metropolitan Tax

Exhibit A
Proposed use of M.V.E.T. for HCRRA LRT

100% of M.V.E.T.

1988 EST. $ 232M

M.V.E.T.

5% Existing Increment

75% Roadway

25% Transit

80% Metro

20% Outstate

30% LRT Capital

70% Other Transit

1989 $ 4.2M