

7.0 EVALUATION OF ALTERNATIVES

This chapter presents the results of the evaluation conducted for each of the alternatives under consideration for the proposed action. The purpose of the evaluation process is to bring together the salient facts, both qualitative and quantitative, for each alternative so that their benefits, costs and environmental consequences can be evaluated against the stated goals for the proposed project and the region as set forth in Chapter 1.0: Purpose and Need. The intent of this comparative analysis is to facilitate the Central Corridor alternative selection process on the part of the Central Corridor Coordinating Committee (CCCC), in partnership with the Twin Cities Metropolitan Council, and in cooperation with other local, state and federal planning partners.

This chapter also summarizes the environmental justice implications and proposed sources and uses of funds for the project.

7.1 CENTRAL CORRIDOR TRANSIT STUDY GOALS

This section identifies the goals, objectives and evaluation measures that were used to evaluate the proposed project alternatives. The goals and objectives for the Central Corridor were defined during previously completed studies and during the Central Corridor Transit Study beginning with *Technical Memorandum 1 – Previous Study Review and Technology Review and Evaluation* approved by the Coordinating Committee on September 14, 2000. The evaluation measures to address each of these goals and objectives were determined during the subsequent phases of the Central Corridor Transit Study, under the guidance of the Coordinating Committee, and further refined as part of the public participation process.

7.1.1 Project Goals and Objectives

In response to the transportation needs identified for the Central Corridor and the region, three project goals and objectives were identified and adopted by the stakeholders during the Central Corridor Transit Study and refined through the Environmental Impact Statement (EIS) Scoping Process. The three goals used to compare the Baseline Alternative and the two build alternatives, University Avenue Light Rail Transit (LRT) Alternative and University Avenue Busway/Bus Rapid Transit (BRT) Alternative, are:

- **Goal 1: Economic Opportunity and Investment**

Objective A – Support investments in infrastructure, business, and community that sustain the heart of the region.

Objective B – Promote a reliable transit system that allows an efficient, effective land use development pattern in major activity centers which minimizes parking demand, facilitates the highest and best use of adjacent properties, and gives employers confidence that employees can travel to and from work.

- **Goal 2: Communities and Environment**

Objective A – Facilitate the preservation and enhancement of neighborhoods in the Central Corridor.

Objective B – Acknowledge the individual character and aspirations of each place served, and of the region as a whole.

Objective C – Support regional goals for cleaner air and water, more efficient energy use and a safer and healthier environment.

- **Goal 3: Transportation and Mobility**

Objective A – Create transportation improvements that add people carrying capacity, minimize operating costs, improve operating efficiency, provide high quality modal alternatives and reinforce the region’s transportation system.

Objective B – Expand opportunities for all users to move freely to, through, and within the Central Corridor.

Objective C – Enhance the existing transportation infrastructure to serve the high number of transit dependent persons in the Central Corridor.

7.1.2 Evaluation Measures

Following the identification and adoption of the project goals and objectives, specific Measures of Effectiveness (MOE) were then developed to assess the effectiveness of the alternatives in satisfying the project goals. These MOEs were used to compare the Baseline Alternative, University Avenue LRT Alternative and University Avenue Busway/BRT Alternative. The specific MOEs that were applied to evaluate the alternatives under each of the project goals and objectives are described below.

MOES FOR TRANSIT STUDY GOAL 1: ECONOMIC OPPORTUNITY AND INVESTMENT

Objective A – Support investments in infrastructure, business, and community that sustain the heart of the region.

Previous Investment – Transportation

This qualitative criterion addresses the extent to which the alternative is compatible with and supportive of previous investment in transportation infrastructure and technologies.

Previous Investment – Development

This qualitative criterion addresses the extent to which the alternative is compatible with and supportive of previous investment in land development and other infrastructure necessary to service development.

Proximity to Developable and Redevelopable Land

This qualitative and quantitative criterion addresses the amount of vacant, developable, and underdeveloped land within half-mile of the stations proposed for each alternative.

Objective B – Promote a reliable transit system that allows an efficient, effective land use development pattern in major activity centers which minimizes parking demand, facilitates the highest and best use of adjacent properties, and gives employers confidence that employees can travel to and from work.

Proven Technology

This quantitative criterion addresses the extent to which the alternative transportation mode and/or technology have been successfully, efficiently and reliably operated in revenue service.

Consistency with Land Use Patterns

This qualitative criterion addresses the alternative's consistency with existing and future regional and local land use patterns of development and trends.

Service to Major Travel Markets

This criterion is a qualitative measure of the degree to which the alternative will serve major travel demand patterns.

Proximity to Planned Development

This qualitative and quantitative criterion addresses the amount of planned developments located in proximity to the alternative under evaluation.

Parking

This quantitative criterion addresses the capability of the alternatives to reduce the demand for parking in the Central Corridor.

Major Employment Centers Served

A quantitative measure of the number of major employment centers served by the alternative, and the number of employees living within one-third mile of the proposed stations or access points.

Business Community Sentiment

This qualitative evaluation criterion addresses the support or opposition for the alternative from the business community.

MOES FOR TRANSIT STUDY GOAL 2: COMMUNITIES AND ENVIRONMENT

Objective A – Facilitate the preservation and enhancement of neighborhoods in the Central Corridor.

Residential Population Served

A quantitative measure of the number of residents who live within one-third mile of the proposed stations or access points for the alternative.

Consistency with Local Plans

This qualitative criterion addresses the alternative's consistency with the adopted local transportation plans and land use plans, both currently and for the Year 2020 for the Cities of St. Paul and Minneapolis, the University of Minnesota, and the Capitol Area Architectural and Planning Board (CAAPB).

Community Sentiment

This qualitative evaluation criterion addresses the support or opposition for the alternative from the community.

Noise and Vibration

This quantitative criterion addresses the noise and vibration levels of the alternatives as they relate to impact on neighborhoods.

Objective B – Acknowledge the individual character and aspirations of each place served, and of the region as a whole.

Compatibility with Community Character

This qualitative criterion is a measure of the effects of the alternative on and enhancements to quality of life and healthy communities, as well as compatibility with the character of the neighborhood or community.

Potential to Support Smart Growth and Livable Communities

This qualitative criterion addresses the alternative's potential to promote smart growth and livable communities by encouraging infill development and limiting opportunities for sprawl.

Objective C – Support regional goals for cleaner air and water, more efficient energy use and a safer and healthier environment.

Environmental Impacts

This quantitative criterion addresses the potential environmental impact of each alternative in terms of:

- Air Quality
- Water Quality and Floodplains
- Energy

Existing Right-of-Way Utilization

This criterion is quantitative and addresses the extent to which the alternative would make use of existing public rights-of-way, thereby limiting the potential for adverse environmental impact.

MOES FOR TRANSIT STUDY GOAL 3: TRANSPORTATION AND MOBILITY

Objective A – Create transportation improvements that add people carrying capacity, minimize operating costs, improve operating efficiency, provide high quality modal alternatives and reinforce the region's transportation system.

Capacity

This quantitative criterion addresses the number of transit riders for each of the alternatives.

Operating Costs

This quantitative criterion addresses the relative operating costs for each of the alternatives under consideration.

Efficiency

This quantitative criterion addresses the relative efficiency of the alternatives in terms of cost per rider, the ratio of transit capacity to operating costs.

Consistency with Regional Plans

This qualitative criterion addresses the alternative's consistency with the adopted regional transportation plans for the Year 2020.

Intermodal Connectivity

This qualitative criterion addresses the extent to which the alternative provides and/or enhances connections to the airport, bus transfer centers, regional rail system facilities, and other intermodal transportation facilities.

Objective B – Expand opportunities for all users to move freely to, through, and within the Central Corridor.

Regional Connectivity

This qualitative criterion addresses the extent to which the alternative provides connections to regional transportation facilities such as the freeway system, Northstar Commuter Rail, Red Rock Commuter Rail, Hiawatha LRT line and potential Riverview Corridor BRT improvements.

Objective C – Enhance the existing transportation infrastructure to serve the high number of transit dependent persons in the Central Corridor.

Diversity of Population Served

This quantitative criterion addresses the extent to which the alternative serves populations with special needs, such as the elderly, persons under 16, households without a car and minority and low-income populations.

Travel Time Savings

This quantitative criterion provides a relative comparison of estimated total travel time between the core of downtown Minneapolis (Nicollet Mall) and the core of downtown St. Paul (Cedar Street).

7.2 EVALUATION AGAINST THE GOALS AND OBJECTIVES OF THE CENTRAL CORRIDOR TRANSIT STUDY

This section discusses the evaluation of the Baseline Alternative, University Avenue LRT Alternative and University Avenue Busway/BRT Alternative relative to the MOEs used to establish the effectiveness in satisfying the goals and objectives of the Central Corridor Transit Study.

7.2.1 Evaluation Methodology

This section identifies the goals, objectives and evaluation measures that were used to evaluate the alternatives under consideration for the proposed action. The evaluation measures address each of the goals and objectives that were established during the Central Corridor Transit Study, and further refined during the public participation process.

The evaluation was performed to determine the degree to which each of the alternatives supports each of the goals and objectives. Three degrees of support – "strongly supports", "supports" and "somewhat supports" - were used to summarize the performance of the alternatives relative to these goals and objectives. The fourth assessment criterion – "does not support" – was used to indicate that the alternative is neutral or has a negative performance. Following the evaluation of alternatives indicated in the subsequent text, the results are then summarized in Section 7.2.5: Summary of Alternatives Evaluation.

7.2.2 Goal 1 – Economic Opportunity and Investment

Objective A – Support investments in infrastructure, business, and community that sustain the heart of the region.

The measures used to evaluate how well the alternatives would support investments in infrastructure, business, and community, while sustaining regional development include:

- Previous Investment – Transportation
- Previous Investment – Development
- Proximity to Developable and Redevelopable Land

Previous transportation investment compatibility included the degree to which the alternative would support the current level of investment in bus and rail routes, the proposed operating agency, and infrastructure such as shared stations, right-of-way, and maintenance facilities. Support for previous developments were determined based on a review of current land use and funded land use development plans. The availability of developable and redevelopable land in the vicinity of proposed station locations was determined from local development plans, interviews with local planners and field reconnaissance.

BASELINE ALTERNATIVE

The Baseline Alternative is consistent with previous roadway and bus transportation investments, and operations could be within the Twin Cities Metropolitan Council responsibility. However, no direct transit-related benefits to previous development investment or developable and redevelopable land would be realized. Overall, the Baseline Alternative "does not support" the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

Previous transportation investment for the Twin Cities Metropolitan Area has historically included roadway and busway infrastructure and currently includes the construction of the Hiawatha LRT line, which will operate between downtown Minneapolis and the Mall of America, including service to the Minneapolis/St. Paul International Airport. The Twin Cities Metropolitan Council is responsible for operations of the current transit services and will serve as the operating agency for the University Avenue LRT Alternative.

The University Avenue LRT Alternative would traverse areas of previous development investment in the corridor, including downtown Minneapolis and downtown St. Paul. The alternative would enter downtown Minneapolis and merge with the Hiawatha LRT line, thus serving major investments in the central business district (CBD). The proposed station locations are highly consistent with previous investments in real estate development and would serve the University of Minnesota, large investments in the Midway area, the State Capitol area, office developments, commercial nodes, and residential neighborhoods.

Published Ramsey County data indicates approximately 450-acres of vacant land within one-half mile of proposed stations in the University Avenue LRT Alternative. As noted in the May 2000 market report (Quam), and verified by windshield survey, there is an excess amount of land along University Avenue awaiting viable development and redevelopment projects. A number of proposed station sites, including those at Lexington Avenue, and Dale Street, are in close proximity to empty land and buildings.

The alternative would have highly compatible elements with current and future transit investments, including shared facilities and the operating agency. The alternative would serve previous development investments, and is in close proximity to developable and redevelopable land. The University Avenue LRT Alternative "strongly supports" the objective.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

The University Avenue Busway/BRT Alternative is also consistent with previous transportation investment, including the Twin Cities Metropolitan Council as the operating agency. The proposed station locations are highly consistent with previous investments in real estate development and would serve the University of Minnesota, large investments in the Midway area, the State Capitol area, office developments, commercial nodes, and residential neighborhoods. The alternative is also in close proximity to developable and redevelopable land.

The alternative would have highly compatible elements with current and future transit investments, including shared facilities and the operating agency. However, bus congestion is already a problem along University Avenue. The ability to add additional bus service is limited and would not serve year 2020 transit demand. The alternative would serve previous development investments, and is in close proximity to developable and redevelopable land. The University Avenue Busway/BRT Alternative "strongly supports" the objective.

Objective B – Promote a reliable transit system that allows an efficient, effective land use development pattern in major activity centers which minimizes parking demand, facilitates the highest and best use of adjacent properties, and gives employers confidence that employees can travel to and from work.

The measures used to evaluate how well the alternatives would promote reliable transit, encourage effective land use patterns in major activity centers and adjacent properties while minimizing parking demand and facilitating travel to work include:

- Proven Technology
- Consistency with Land Use Patterns
- Service to Major Travel Markets
- Proximity to Planned Development
- Parking
- Major Employment Centers Served
- Business Community Sentiment

Proven technology considered transit modes successfully being operated in revenue service in other U.S. cities. Consistency with land use patterns considered existing and planned development, discussions with local planners and field reconnaissance. Major travel markets include downtown Minneapolis, the University of Minnesota campus, the Midway area, and downtown St. Paul. Proximity to planned development was based on review of the local development plans for the Study Area. Parking considered the degree to which an alternative would reduce the current demand for parking and for land to support parking lots and parking structures. Major employment centers included businesses with greater than \$5-million in gross annual sales. Business community sentiment was based on comments received from the business community.

BASELINE ALTERNATIVE

The Baseline Alternative includes proven technology, including conventional roadway and bus technology, plus LRT technology with the Hiawatha project. The alternative is consistent with

current land use patterns, but would not enhance service to planned developments and land use patterns. It would not enhance service to major travel markets or planned developments. In both downtowns, the Baseline Alternative would provide no relief in land use impact as it relates to the demand for parking. It may be expected that continued development under the Baseline Alternative would require additional land currently being used for parking lots and structures and increase the parking deficit. Major employment centers would not receive the enhanced service provided by either build alternative, however the alternative received a total of ten supportive comments during Scoping. Overall, the Baseline Alternative "does not support" the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

In 1999, there were over 20 metropolitan areas in the United States (U.S.) with operating LRT lines, serving an estimated 7.25-million people and carrying an estimated 390-million passengers annually over 1.5-billion annual passenger miles. It has been demonstrated that, under the right conditions, LRT can move more people at less cost per rider, with increased transit ridership and better farebox recovery, than other rail or bus options.

Land use patterns along University Avenue were first shaped by the streetcar system. Nodes of commercial development grew where streetcar lines intersected crossing roadways, with a looser and less dense pattern between nodes. The dominant land use pattern along the middle and eastern portions of the Study Area is a half block of commercial buildings and uses along University Avenue backed with adjacent residential areas. These commercial and residential areas provide the high ridership for the current transit service on University Avenue. Transit service of the University Avenue LRT Alternative is highly consistent with the land use pattern throughout the Study Area.

The University Avenue LRT Alternative would provide direct service to all four major travel markets. The alternative would penetrate the two downtowns, both the west and east banks of the University of Minnesota campus, and the Midway area.

A number of planned development projects in various stages of development are identified in Chapter 5.0: Economic Impact Analysis, including projects in downtown Minneapolis, University of Minnesota campus, Midway and downtown St. Paul. The proposed LRT stations are in close proximity to each of the noted development projects, and the stations would provide transit service for both business patrons and residents. Further, the stations would provide the potential for additional growth of the planned developments.

No additional parking impacts are anticipated in downtown Minneapolis. On-street parking on Washington Avenue and access to parking lots and structures from Washington Avenue could be limited during construction of the proposed tunnel at the University of Minnesota. Approximately 660 on-street parking spaces would be removed on University Avenue between Washington Avenue and Rice Street and approximately 28 on-street parking spaces would be removed at the State Capitol. Approximately 121 on-street parking spaces would be eliminated in downtown St. Paul, and access to approximately ten driveways to/from parking structures and lots could be affected.

The total number of major employment centers that would be served by the alternative is approximately 400, and the total number of employees would be approximately 132,000.

As indicated in the *Central Corridor Scoping Summary Report*, there were 29 total comments supportive of LRT and the need for LRT in the Central Corridor. The respondents favoring LRT

commented that LRT would provide favorable economic development, travel time saving, comfort and convenience for transit within the Central Corridor. These respondents also commented that LRT would reduce automobile congestion while improving air quality and reducing noise.

The alternative uses proven technology and is highly consistent with land use patterns and service to major travel markets. The alternative is in close proximity to planned development and serves a higher number of employees than the BRT Alternative. Parking impacts would be greater than the Baseline or BRT Alternatives, however parking demand would also be reduced with increased ridership. Overall, the University Avenue LRT Alternative "strongly supports" the objective.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

The University Avenue Busway/BRT Alternative utilizes proven technology. Some of the projected and existing U.S. systems include Minneapolis/St. Paul, Eugene, Oregon, Orlando, Florida, Cleveland Ohio. BRT provides faster operating speeds, greater service reliability, and increased convenience over traditional buses and may approach the quality of rail transit. BRT has the potential to be a successful mass transit alternative and may require a lower capital investment for implementation when compared with rail infrastructure investments.

Land use patterns along University Avenue were first shaped by the streetcar system. Nodes of commercial development grew where streetcar lines intersected crossing roadways, with a looser and less dense pattern between nodes. The dominant land use pattern along the middle and eastern portions of the Study Area is a half block of commercial buildings and uses along University Avenue backed by adjacent residential areas. These commercial and residential areas provide the high ridership for the current transit service on University Avenue. Transit service of the University Avenue Busway/BRT Alternative is consistent with the land use pattern throughout the Study Area.

The University Avenue Busway/BRT Alternative would provide direct service to all four major travel markets. The alternative would penetrate the two downtowns, both the west and east banks of the University of Minnesota campus, the Midway area.

A number of planned development projects in various stages of development are identified in Chapter 5.0: Economic Impact Analysis, including projects in downtown Minneapolis, University of Minnesota campus, Snelling Avenue Metro Transit bus garage, Midway, downtown St. Paul and West Side Flats. The proposed BRT stations are in close proximity to each of the noted development projects, and the stations would provide transit service for both business patrons and residents. Further, the stations would provide the potential for additional growth. However, bus congestion is already a problem along Washington Avenue. The ability to add additional bus service is limited and would not serve year 2020 transit demand.

No additional parking impacts are anticipated in downtown Minneapolis or at the University of Minnesota. Similar to LRT, approximately 660 on-street parking spaces would be removed on University Avenue between Washington Avenue and Rice Street. No additional impacts are anticipated at the State Capitol or downtown St. Paul. The total number of major employment centers that would be served by the alternative is approximately 395, and the total number employees served is approximately 131,000.

As indicated in the *Central Corridor Scoping Summary Report*, there were six total comments supportive of BRT in the Central Corridor. BRT has the potential to be a successful mass transit alternative and may require lower capital investment for implementation when compared with rail infrastructure investments.

The alternative uses proven technology and is consistent with land use patterns and service to major travel markets. The alternative is in close proximity to planned development and serves a high number of employees and employment centers, although slightly less than the University Avenue LRT Alternative. Parking impacts would be greater than the Baseline Alternative, but less than the LRT Alternative. Overall, the University Avenue Busway/BRT Alternative "supports" the objective.

Table 7.2-1: Goal 1 – Economic Opportunity and Investment

	Baseline Alternative	University Avenue LRT Alternative	University Avenue Busway/BRT Alternative
Goal 1: Economic Opportunity and Investment			
Objective A			
Previous Investment - Transportation	X	●	●
Previous Investment - Development	X	●	●
Proximity to Developable and Redevelopable Land	X	●	●
Average	X	●	●
Objective B			
Proven Technology	●	●	●
Consistency with Land Use Patterns	X	●	●
Service to Major Travel Markets	X	●	◐
Proximity to Planned Development	X	●	◐
Parking	X	◐	◐
Major Employment Centers Served	◐	●	◐
Business Community Sentiment	◐	◐	◐
Average	X	●	◐

- X The Alternative "does not support" the objective
- The Alternative "somewhat supports" the objective
- ◐ The Alternative "supports" the objective
- The Alternative "strongly supports" the objective

7.2.3 Goal 2 – Communities and Environment

Objective A – Facilitate the preservation and enhancement of neighborhoods in the Central Corridor.

The measures used to evaluate how well the alternatives would preserve and enhance neighborhoods include:

- Residential Population Served
- Consistency with Local Plans
- Community Sentiment
- Noise and Vibration

Residential population served is determined from U.S. Census data for 2000. Consistency with local plans is based on review of the adopted plans, including *Regional Blueprint, Twin Cities Metropolitan Area; The Minneapolis Plan* - comprehensive plan for the City of Minneapolis; *St. Paul Comprehensive Plan; University of Minnesota Campus Master Plan; and Comprehensive Plan For The Minnesota State Capitol Area*. Review included Small Area Plans that the City of St. Paul adopted as amendments to the *St. Paul Comprehensive Plan*. Consistency with each of these plans was then determined as indicated in Chapter 3.0: Social and Land Use Impacts. The Community sentiment was determined from responses received during public participation, and noise and vibration impacts were based on FTA criterion indicated in Chapter 4.0: Environmental Impact Analysis.

BASELINE ALTERNATIVE

The Baseline Alternative would provide very little additional transit service to the residential population. The alternative is not consistent with the *City of St. Paul Comprehensive Plan*, or the *University of Minnesota Twin Cities Campus Master Plan*, which identified the need for LRT or busway transit improvements. The alternative received a total of ten supportive comments during Scoping. A noise/vibration assessment is not required and was not performed for the Baseline Alternative, however it may be said that noise levels related to traffic volumes would continue to increase as automobile traffic increases. Overall, the Baseline Alternative "does not support" the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

Total resident population served is approximately 35,500, the highest population served of all the alternatives considered and approximately 9,000 more residents than the BRT Alternative.

The University Avenue LRT Alternative is fully consistent with *The Minneapolis Plan* and the *City of St. Paul Comprehensive Plan* and the recommendations of the St. Paul Planning Commission, which strongly recommends an LRT alignment on University Avenue. Other municipal Small Area Plans seek redevelopment along University Avenue, which would be supported by the alternative. LRT on Washington Avenue is consistent with the *University of Minnesota Twin Cities Campus Master Plan*. LRT would be an incentive to intensification of commercial nodes consistent with adopted plans and zoning. A transit-oriented development overlay district may be useful to allow higher intensity development near station sites.

As indicated in the *Central Corridor Scoping Summary Report*, there were 29 total comments supportive of LRT and the need for LRT in the Central Corridor. The respondents favoring LRT commented that LRT would provide favorable economic development, travel time saving, comfort and convenience for transit within the Central Corridor. These respondents also commented that LRT would reduce automobile congestion while improving air quality and reducing noise.

The predicted noise level would not exceed the FTA Land Use Category 3 *severe impact* criteria, or Category 2 *severe impact* criteria, or Category 1 *impact* criteria. The alternative would exceed the FTA Land Use Category 2 *impact* criteria at 11 locations and the Land Use Category 3 *impact* criteria at one location. Predicted vibration levels would be well below the FTA impact criteria for frequent events measured by the FTA Land Use Categories and from LRT passbys.

The alternative would serve the highest number of residents of the two build alternatives considered. The alternative is very consistent with the master plans and Small Area Plans noted. The response from the community is considered as strongly supportive. When the predicted noise impacts for this LRT Alternative are compared to the University Avenue Busway/BRT Alternative, 83 fewer Land Use Category 2 *impact* criteria and 18 fewer Land Use Category 3 *impact* criteria noise impacts would occur. Vibration levels would be well below FTA impact criteria. Overall, the University Avenue LRT Alternative "strongly supports" the objective.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

Total residential population served is approximately 26,500, which is 9,000 fewer residents than the LRT Alternative.

The University Avenue Busway/BRT Alternative is consistent with *The Minneapolis Plan* and the *City of St. Paul Comprehensive Plan* only if it provides the capacity to meet future transit demand. A BRT facility on Washington Avenue is consistent with the *University of Minnesota Campus Twin Cities Master Plan*, which calls for improved bus transit. BRT would be an incentive to intensification of commercial nodes consistent with adopted plans and zoning. A transit-oriented development overlay district may be useful to allow higher intensity development near station sites.

As indicated in the *Central Corridor Scoping Summary Report*, there were six total comments supportive of BRT in the Central Corridor. These respondents commented that BRT would provide a flexible and cost-effective system for transit and would reduce the potential adverse impacts to neighborhoods and businesses that might be anticipated with the other alternatives.

The predicted noise level would not exceed the FTA Land Use Category 3 *impact* or *severe impact* criteria or Land Use Category 1 *impact* criteria. The alternative would exceed the FTA Land Use Category 2 *impact* criteria at 94 locations and the *severe impact* criteria at 11 additional locations. The predicted noise level would exceed the Land Use Category 3 *impact* criteria at 19 locations. The BRT Alternative is not expected to exceed the FTA vibration impact criteria anywhere along the proposed project corridor.

The alternative would serve the lowest number of residents of the two build alternatives considered. The alternative is very consistent with the master plans and Small Area Plans noted. The response from the community is considered as supportive, but not as supportive as the LRT Alternative. When the predicted noise impacts for this BRT Alternative are compared to the LRT Alternative, 83 more Land Use Category 2 *impact* criteria and 18 more Land Use Category 3 *impact* criteria noise impacts would occur, however vibration impacts are not expected to occur for this alternative. Overall, the University Avenue BRT Alternative "supports" the objective.

Objective B – Acknowledge the individual character and aspirations of each place served, and of the region as a whole.

The measures used to evaluate how well the alternatives would acknowledge the character of the Central Corridor and region include:

- Compatibility with Community Character
- Potential to Support Smart Growth and Livable Communities

The quality of life within a neighborhood or community is determined by enhancements to the existing neighborhood, community character and cohesion. Negative impacts to neighborhood and community character and cohesion include disruption of existing pedestrian and bicycle routes, disruption of access to community facilities, increasing auto traffic and disruption of established neighborhoods. Positive impacts to neighborhood and community character and cohesion include provision of opportunity for revitalization and support and enhancement of neighborhood retail and commercial centers.

Desirable factors that contribute to smart growth and livable communities include infill development limiting opportunity for sprawl, including enhanced accessibility to parcels that encourages infill development, avoidance of increased accessibility into undeveloped areas, reduced reliance on increased accessibility via roadways, and increased development density that encourages infill development.

BASELINE ALTERNATIVE

The Baseline Alternative would not include potential improvements to community character that would occur with either of the two build alternatives, including improved transit service with connections to major destinations, new streetscape amenities, improved visual quality and new transit-oriented development. In addition, traffic congestion would continue to increase and further detract from community character and aspirations. Although the alternative would provide limited transportation improvements, it would not promote smart growth and enhance livability in the community by encouraging infill development. The Baseline Alternative "does not support" the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

As detailed in Chapter 3.0: Social and Land Use Impact Analysis, LRT transit would be very compatible with community character. University Avenue is an existing transit corridor lined by commercial and industrial land uses, with adjacent residences, and the University Avenue LRT Alternative is unlikely to have major negative impacts on the existing residential neighborhoods located to the north and south. The alternative would provide potential improvements to community character including superior transit service and connections to major destinations, new streetscape amenities, improved visual quality and new transit-oriented development. In addition, traffic congestion would increase at a lower rate as transit ridership increases, further improving community character.

Given the number of potential station sites and the level of transit service possible with University Avenue LRT Alternative, many sites suitable for infill development could be assembled and developed. The alternative would support smart growth goals for new residential, commercial, and office development while providing an amenity to improve the livability of surrounding neighborhoods.

The alternative is compatible with community character and would provide enhancements to improve community character such as new streetscape amenities, improved visual quality and new transit-oriented development. The alternative would promote new residential, commercial, and office development while providing an amenity to improve the livability of surrounding neighborhoods. The University Avenue LRT Alternative "strongly supports" the objective.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

As detailed in Chapter 3.0: Social and Land Use Impact Analysis, BRT would be compatible with community character. University Avenue is an existing transit corridor lined by commercial and industrial land uses, with adjacent residences and the University Avenue Busway/BRT Alternative is unlikely to have major negative impacts on the existing residential neighborhoods located to the north and south. The alternative would provide potential improvements to community character including superior transit service and connections to major destinations, new streetscape amenities, improved visual quality and new transit-oriented development. In addition, traffic congestion would increase at a lower rate as transit ridership increases, further improving community character. However, bus congestion is already a problem along University Avenue. The ability to add additional bus service is limited and would not serve year 2020 transit demand.

The station sites proposed for the University Avenue Busway/BRT Alternative are the same as the University Avenue LRT Alternative, and the same infill opportunities would be available. However, the effect of BRT on growth in the real estate market is not certain. The University Avenue Busway/BRT Alternative may not capture the same market of riders as LRT and may not lead to the same types of infill and smart growth development projects.

The alternative is compatible with community character and would provide enhancements to improve community character such as new streetscape amenities, improved visual quality and some new transit-oriented development. The alternative would promote some new residential, commercial, and office development while providing an amenity to improve the livability of surrounding neighborhoods. However, these would be less positive than the University Avenue LRT Alternative. The University Avenue Busway/BRT Alternative "supports" the objective

Objective C – Support regional goals for cleaner air and water, more efficient energy use and a safer and healthier environment.

The measures used to evaluate how well the alternatives would support goals for cleaner air, water and energy usage include:

- Environmental Impacts
 - Air Quality
 - Water Quality and Floodplains
 - Energy
- Existing Right-of-Way Utilization

Environmental impacts were determined as indicated in Chapter 4.0: Environmental Impact Analysis. Air quality, water quality and floodplain impacts were determined for each of the alternatives relative to current environmental regulations. Energy consumption was determined by establishing the Baseline Alternative consumption as a base then comparing the consumption of the build alternatives. The use of existing right-of-way was considered as a surrogate in determining environmental impacts as based on the estimated right-of-way requirements for the build alternatives from preliminary design information.

BASELINE ALTERNATIVE

For the Baseline Alternative all carbon monoxide (CO) concentrations would not exceed the allowable emissions outlined in the National Ambient Air Quality Standards (NAAQS) of 35 ppm or the Minnesota Ambient Air Quality Standards (MAAQS) of 30 ppm for one-hour and the NAAQS and MAAQS of 9 ppm for eight-hours. The emission inventory for 2008 would consist of 352,853 tons of CO, 41,580 tons of volatile organic compounds (VOCs) and 56,745 tons of nitrogen oxides (NO_x) per year. The alternative would not cause impacts to water quality or floodplains. This alternative would consume 150,072,932 million British Thermal Units (BTUs) of energy annually, which is less than both of the build alternatives. The alternative would not include construction outside of the existing right-of-way. Overall, this alternative "does not support" the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

For the University Avenue LRT Alternative all CO concentrations would not exceed the allowable emissions outlined in the NAAQS of 35 ppm or the MAAQS of 30 ppm for one-hour and the NAAQS and MAAQS of 9 ppm for eight-hours. The annual emission inventory for 2008 would consist of 350,787 tons of CO, 2,066 tons less than the Baseline, 41,402 tons of VOCs, 178 tons less than the Baseline, and 56,752 tons of NO_x, seven tons more than the Baseline Alternative. No significant impacts to the surface water quality in the Study Area are anticipated during construction or operations. The alternative is located outside the 100-year floodplain or on the existing Washington Avenue Bridge and will not impact floodplain. This alternative would consume 150,097,285 million BTUs of energy annually, which is 24,353 million BTUs more than the Baseline Alternative, and 19,784 million BTUs more than the BRT Alternative. The alternative would generally be constructed within the existing right-of-way. Overall, this alternative "strongly supports" the objective.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

For the University Avenue Busway/BRT Alternative all CO concentrations would not exceed the allowable emissions outlined in the NAAQS of 35 ppm or the MAAQS of 30 ppm for one-hour and the NAAQS and MAAQS of 9 ppm for eight-hours. The annual emission inventory for 2008 would consist of 350,577 tons of CO, 2,276 tons less than the Baseline, 41,397 tons of VOCs, 183 tons less than the Baseline, and 56,760 tons of NO_x, 15 tons more than the Baseline Alternative. No significant impacts to the surface water quality in the Study Area are anticipated during construction or operations. The alternative is located outside the 100-year floodplain or on the existing Washington Avenue Bridge and will not impact floodplain. This alternative would consume 150,077,501 million BTUs of energy annually, which is 4,569 million BTUs more than the Baseline Alternative, and 19,784 million BTUs less than the LRT Alternative. The alternative would generally be constructed within the existing right-of-way. Overall, this alternative "supports" the objective.

Table 7.2-2: Potential Environmental Effects, provides a summary of other environmental effects for the Baseline, University Avenue LRT and University Avenue Busway/BRT Alternatives as determined in Chapter 4.0: Environmental Impact Analysis.

Table 7.2-2: Potential Environmental Effects

Environmental Element	Baseline Alternative	University Avenue LRT Alternative	University Avenue Busway/BRT Alternative
Hazardous Contaminated Sites (High/Medium) ¹	0	15	9
Vegetation and Wildlife	None	Minimal	Minimal
Aquatic Habitat	None	None	None
Wetlands	None	None	None
Rare, Threatened or Endangered (RTE) Species	None	None	None
Groundwater Resources	None	Possibly during construction	Possibly during construction

¹Contaminated Sites included are those that have a "high" or "medium" rating.

Table 7.2-3: Goal 2 – Communities and Environment

	Baseline Alternative	University Avenue LRT Alternative	University Avenue Busway/BRT Alternative
Objective A			
Residential Population Served	●	●	●
Consistency with Local Plans	X	●	●
Community Sentiment	X	●	●
Noise and Vibration	N/A	●	●
Average	X	●	●
Objective B			
Compatibility with Community Character	X	●	●
Potential to Support Smart Growth and Livable Communities	X	●	●
Average	X	●	●
Objective C			
Environmental Impacts	X	●	●
Existing Right-of-Way Utilization	●	●	●
Average	X	●	●

- X The Alternative "does not support" the objective
- The Alternative "somewhat supports" the objective
- ◐ The Alternative "supports" the objective
- The Alternative "strongly supports" the objective

7.2.4 Goal 3 – Transportation and Mobility

Objective A – Create transportation improvements that add people carrying capacity, minimize operating costs, improve operating efficiency, provide high quality modal alternatives and reinforce the region’s transportation system.

The measures used to evaluate how well the alternatives would add efficient transit capacity with modal alternatives for the Central Corridor and region, while minimizing operating costs include:

- Transit Capacity
- Operating Costs
- Efficiency
- Consistency with Regional Plans
- Intermodal Connectivity

Transit capacity was based on the Central Corridor Ridership Forecasts described in memorandum dated March 21, 2002 and included in Appendix 9.12. Operating costs were determined as described in Chapter 2.0 Alternatives Considered. Efficiency, the operating cost per transit rider, was determined as the ratio of transit capacity to operating costs.

Consistency with regional plans was determined based on compatibility with adopted regional transportation plans for the Year 2020. Intermodal connectivity considers the opportunities of the alternative to link trips to other modes of transportation, including connections to the airport, bus transfer centers, regional rail system and other intermodal transportation facilities. Northstar Commuter Rail, Red Rock Commuter Rail, Hiawatha LRT and Riverview Corridor improvements are not included in this analysis since they are considered in the Regional Connectivity MOE.

BASELINE ALTERNATIVE

In 2008, the Baseline Alternative would have 28,400 daily riders, but attracts no new transit riders, provides no reduction in daily auto trips and does not reduce daily miles traveled. The Baseline Alternative would have an annual operating cost of \$56.7 million, the lowest of the alternatives considered. Overall these improvements will not have a significant effect on the traffic operations in the immediate area around the proposed transit alignments, although they can be expected to provide some improvement in the operating efficiency of the regional transportation network. The alternative does not support the Twin Cities Metropolitan Council "Transit 2020" plan that specifies LRT on University Avenue. The alternative would not enhance intermodal connections to the airport, bus transfer centers, regional rail system or other intermodal choices.

Although the alternative does have reduced operating costs, it has the highest cost per rider for the alternatives considered. The Baseline Alternative is not consistent with regional plans and does not enhance intermodal connections. The Baseline Alternative "does not" support the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

In 2008, the University Avenue LRT Alternative would have 38,100 daily transit riders in the University Avenue corridor, including 3,300 new riders. The alternative involves an annual operating cost of \$60.7 million, the highest of the alternatives. Overall these improvements would have a substantial effect on the traffic operations in the immediate area around the proposed transit alignments, and improvement in the operating efficiency of the regional transportation network. The alternative is highly consistent with the Twin Cities Metropolitan Council "Transit 2020" plan that specifies LRT on University Avenue. Direct intermodal connections would be provided to bus transfer centers, Union Depot and other intermodal choices.

Although the alternative does have the highest operating costs, it has the lowest cost per rider for the alternatives considered. The alternative is consistent with regional plans and provides intermodal connections for more transit riders. The University Avenue LRT Alternative "strongly supports" the objective. However, bus congestion is already a problem along University Avenue. The ability to add additional bus service is limited and would not serve year 2020 transit demand.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

This University Avenue Busway/BRT Alternative would have 35,700 daily transit riders in the University Avenue corridor, including 2,300 new riders. The alternative involves an annual operating cost of \$58.7 million, more than the Baseline Alternative, but lower than the LRT Alternative considered. Overall these improvements would have a substantial effect on the traffic operations in the immediate area around the proposed transit alignments, and improvement in the operating efficiency of the regional transportation network. The alternative is not consistent with the Twin Cities Metropolitan Council "Transit 2020" plan that specifies LRT on University Avenue. Direct intermodal connections would be provided to bus transfer centers, Union Depot and other intermodal choices.

Although the alternative does have lower operating costs than the University Avenue LRT Alternative, it has a higher cost per rider. The alternative is not consistent with regional plans but does provide intermodal connections. The University Avenue Busway/BRT Alternative "somewhat supports" the objective.

Objective B – Expand opportunities for all users to move freely to, through, and within the Central Corridor.

The measure used to evaluate how well the alternatives would provide mobility to, through and within the Central Corridor is regional connectivity. The MOEs presented for Goal 3, Objective A are also pertinent to this objective.

Regional connectivity addresses the extent to which the alternative provides connections to regional transportation facilities such as the freeway system, Northstar Commuter Rail, Red Rock Commuter Rail, Hiawatha LRT and Riverview Corridor improvements. Bus, regional rail, Minneapolis/St. Paul Airport, and pedestrian/hiking/bicycle routes are not included in this analysis since they are considered in the Intermodal Connectivity MOE.

TRAVEL TIMES AMONG ALTERNATIVES

The following table illustrates the travel times between major destinations within the Central Corridor for existing conditions, The Baseline and the build scenarios, with data for three of the major east-west routes and the BRT/LRT technologies and the bus routes that remain open.

Table 7.2-4: Existing and 2020 Peak Hour Travel Time in Minutes

		Existing	Baseline	LRT	BRT
Downtown St. Paul and Downtown Minneapolis	Route 16	55	64	73	73
	Route 50	39	49	NA	NA
	Route 94 B/D	35/26	41/31	NA/31	NA/31
	BRT	NA	NA	NA	42
	LRT	NA	NA	35	NA
Downtown Saint Paul and Univ. of Minnesota (East Bank)	Route 16	43	49	51	51
	Route 50	32	39	NA	NA
	Route 94 B	Na	NA	NA	NA
	BRT	NA	NA	NA	32
	LRT	NA	NA	28	NA
Downtown Saint Paul and Snelling Avenue	Route 16	25	28	28	28
	Route 50	21	23	NA	NA
	Route 94 B	19	22	NA	22
	BRT	NA	NA	NA	18
	LRT	NA	NA	14	NA
Snelling Avenue and Univ. of Minnesota	Route 16	18	21	23	23
	Route 50	13	16	NA	NA
	Route 94 B	NA	NA	NA	NA
	BRT	NA	NA	NA	14
	LRT	NA	NA	14	NA
Snelling Avenue and Downtown Minneapolis	Route 16	30	36	45	45
	Route 50	20	26	NA	NA
	Route 94 B	16	19	19	19
	BRT	NA	NA	NA	24
	LRT	NA	NA	21	NA
Univ. Of Minnesota (East Bank) and Downtown Minneapolis	Route 16	12	15	22	22
	Route 50	7	10	NA	NA
	Route 94 B	NA	Na	NA	NA
	BRT	NA	NA	NA	10
	LRT	NA	NA	7	NA

NA indicates a route or mode that is not operated for the designated trip.

BASELINE ALTERNATIVE

The alternative would allow continued freeway use, although continued development under the Baseline Alternative would add congestion and extend drive times. The alternative provides the same connections to the intermodal facilities such as Northstar Commuter Rail, Red Rock Commuter Rail, Hiawatha LRT and Riverview Corridor as BRT. The Baseline Alternative "does not support" the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

The University Avenue LRT Alternative has multiple opportunities to link trips to other regional mass transportation systems. The proposed alternative would connect to the Hiawatha LRT line, Northstar Commuter Rail line, the Red Rock Commuter Rail line, and the Riverview BRT. The

connections to the Northstar and Red Rock lines are not seamless, but within closer walking distance than the other alternatives. The University Avenue LRT Alternative is rated as highly enhancing of connections to regional facilities and "strongly supports" the objective.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

The University Avenue Busway/BRT Alternative would have multiple opportunities to link trips to other regional mass transportation systems. The alternative would connect to the Hiawatha LRT line, Northstar Commuter Rail line, the Red Rock Commuter Rail line, and the Riverview Corridor Busway. The connections to the Northstar and Red Rock lines are not seamless, but within the same walking distance as the Baseline Alternative. The University Avenue Busway/BRT Alternative is rated as highly enhancing of connections to regional facilities and "supports" the objective.

Objective C – Enhance the existing transportation infrastructure to serve the high number of transit dependent persons in the Central Corridor.

The measures used to evaluate how well the alternatives would serve transit dependent persons in the Central Corridor include:

- Diversity of Population Served
- Travel Time Savings

Transit-dependent persons were defined as those with special needs, the elderly (age 65 and older), persons under 16, and households without a car, and minority and low-income populations as determined from county averages. The 1990 U.S. Census was used to determine the number of special needs persons within one-quarter mile of transit access points, and the number of minority and low-income populations within one-third mile of transit access points.

Travel time savings were calculated for a model trip between downtown Minneapolis (Nicollet Mall) and downtown St. Paul (Cedar Street) for each alternative, using the Year 2020 Transit Model and comparing to travel time during peak hour for the same trip using the existing bus system (the Baseline Alternative). Travel times to various points within the corridor are provided in Table 6.4-7.

BASELINE ALTERNATIVE

The Baseline Alternative would provide no enhancements in transit service to the transit-dependent, including people with special needs and minority and low-income population. The Baseline Alternative was used as the measure for all alternatives and would provide no travel time saving; in fact, increasing traffic congestion in the corridor would increase the model trip time to approximately 58-minutes for the alternative. The Baseline Alternative "does not support" the objective.

UNIVERSITY AVENUE LRT ALTERNATIVE

The University Avenue LRT Alternative would serve approximately 6,400 persons with special needs and 24,700 minority and low-income residents, the highest for the build alternatives in both categories.

The estimated total travel time is approximately 43-minutes for the University Avenue LRT Alternative model trip between downtown Minneapolis and downtown St. Paul. This would result

in a travel time saving of 15-minutes over the Baseline Alternative and seven-minutes over the BRT Alternative. Travel times to various points within the corridor are provided in Table 6.4-7.

The University Avenue LRT Alternative would serve the highest number transit-dependent persons for all the alternatives considered and would provide a moderate travel time saving over the University Avenue Busway/BRT Alternative and a large travel time saving over the Baseline Alternative. The University Avenue LRT Alternative "strongly supports" the objective.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

The University Avenue Busway/BRT Alternative would serve approximately 5,400 persons with special needs and 20,300 minority and low-income residents, approximately 1,000 and 4,400 persons less than the LRT Alternative.

The estimated total travel time is approximately 50-minutes for the University Avenue Busway/BRT Alternative model trip between downtown Minneapolis and downtown St. Paul. When compared to the Baseline Alternative, an eight-minute travel time saving would be realized, however, travel time would increase by seven minutes over the LRT Alternative. However, bus congestion is already a problem along University Avenue. The ability to add additional bus service is limited and would not serve year 2020 transit demand.

The University Avenue Busway/BRT Alternative would provide some service to the transit-dependent and moderate travel time saving over the Baseline Alternative, but moderate travel time increase over the LRT Alternative. The University Avenue Busway/BRT Alternative "supports" the objective.

Table 7.2-5: Goal 3 – Transportation and Mobility

	Baseline Alternative	University Avenue LRT Alternative	University Avenue Busway/BRT Alternative
Objective A			
Capacity	○	●	○
Operating Costs	◐	◐	○
Efficiency	X	●	◐
Consistency with Regional Plans	X	●	◐
Intermodal Connectivity	○	●	○
Average	○	●	○
Objective B			
Regional Connectivity	X	●	◐
Average	X	●	◐
Objective C			
Diversity of Population Served	X	●	◐
Travel Time Savings	X	●	◐
Average	X	●	◐

- X The Alternative "does not support" the objective
- The Alternative "somewhat supports" the objective
- ◐ The Alternative "supports" the objective
- The Alternative "strongly supports" the objective

7.2.5 Summary of Alternatives Evaluation

After each alternative was evaluated against the Transit Study goals and objectives, the following symbols were applied to each alternative for each objective, then summarized in Table 7.2-2: Comparison of Alternatives Against the Project Goals and Objectives. The table also provides an average rating for each goal, and an overall performance summary for each alternative, which is simply an unweighted average of the ratings for each goal.

7.3 EQUITY CONSIDERATIONS

This section summarizes Sections 3.9, 4.8, 5.3 and 6.10 Environmental Justice concerns as they have been addressed in the evaluation of alternatives for the proposed Central Corridor.

7.3.1 Legal and Regulatory Requirements

Presidential Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, (February 11, 1994) requires that federal agencies consider and address disproportionate adverse environmental effects of proposed federal projects on minority and low-income communities.

The intent of the Department of Transportation Final Order on Environmental Justice [DOT Order 5610.2, *Environmental Justice*, (April 15, 1997)] is to integrate the goals of Executive Order 12898 into DOT operations.

To meet both the requirements of National Environmental Policy Act (NEPA) and Executive Order 12898, this section addresses the characteristics of the affected communities, potential effects on minority and low-income populations and potential mitigation measures.

7.3.2 Community Characteristics

Ethnic composition and income characteristics within the impact assessment area have been identified in accordance with definitions established by United States Department of Transportation (USDOT) and the United States Environmental Protection Agency (EPA) guidance on Environmental Justice.

MINORITY POPULATIONS

Based on the USDOT April 15, 1997, Order 5610.2, minorities are defined as those that are black, Hispanic, Asian American, and American Indian and Alaskan Native.

In Hennepin County, the 2000 county average of minority persons was estimated to be 21.1 percent and in Ramsey County, the 2000 county average of minority persons was estimated to be 24.7 percent.

LOW-INCOME POPULATIONS

In Hennepin County, the 1990 county average of low-income persons (as defined by the U.S. Census Bureau) was estimated to be 9.2 percent and in Ramsey County, the 1990 county average of low-income persons was estimated to be 11.4 percent.

To determine areas of minority or low-income populations, race/ethnic and income characteristics were identified and compared to the overall characteristics of the counties of Hennepin and Ramsey and the cities of Minneapolis and St. Paul. Potential environmental justice issue areas were identified as those census blocks or block groups that exceeded a rate higher than the county's rate of minority and low-income persons. Since the corridor traverses two counties and each county has a different percentages of minority and low-income persons, the county with the lowest percent minority and low-incomes was used as the threshold to determine where minority and low-income populations are located. In both cases, Hennepin County had the lowest percent minority at 21.1 percent and low-income population at 9.2 percent. Environmental justice issue areas were shown previously on Figures 3.9-1: Minority Population and 3.9-2: Population Below Poverty Level. These areas were analyzed for disproportionately high and adverse effects.

7.3.3 Environmental Justice Conclusions

The evaluation of alternatives takes into consideration whether minority and/or low-income populations will bear a disproportionate share of the impacts associated with the alternatives and the extent to which these groups will share in the benefit of the proposed project. Service and impacts to the transit dependent will also be considered. In this evaluation, impacts both positive and negative are identified. Benefits offered by the build alternatives include increased mobility, access to transit, improved access to local businesses and educational facilities, visual enhancements provided in station areas and transit-related redevelopment opportunities. These benefits are frequently accompanied with possible adverse impacts such as potential traffic impacts; displacements of residential, commercial and community facilities; and noise and vibration effects. These effects are evaluated to determine whether or not negative effects can be minimized and benefits can be maximized, with special regard to minority, low-income, and transit dependent populations.

BASELINE ALTERNATIVE

Negative effects of the Baseline Alternative are defined in terms of the benefits foregone. Positive effects of the build alternatives, such as those mentioned above, would not be available to the communities located within the proposed project corridor. While minority and low-income populations are free from direct physical impacts, opportunities for enhancements to the quality of life, supportive land use development patterns and mobility choices are lost with the Baseline Alternative. Minority, low-income, and transit dependent populations are not served to the greatest extent through this alternative.

UNIVERSITY AVENUE LRT ALTERNATIVE

The LRT Alternative offers the opportunity to enhance the quality of life in affected neighborhoods and communities through a major infrastructure investment and related policy changes designed to support transit. The LRT Alternative offers increased access to transit, opportunities for transit-related redevelopment, potential for increased pedestrian and bicycle connections and potential for enhanced visual quality through station area improvements. For the build alternatives, benefits and adverse impacts to protected populations and the general population

are representative of the areas within and adjacent to the proposed project corridor. Opportunities for design option choices that minimize adverse effects to minority and low-income populations are low due to the substantial number of those populations within the proposed project corridor.

The University Avenue LRT Alternative serves high concentrations of minority and low-income populations for the entire length of the corridor. Impacts to neighborhoods, community facilities, community cohesion and parklands would be low. Off-setting benefits such as increased mobility provided by transit improvements and the siting of proposed LRT stations may act as a catalyst to significant new investment in the proposed corridor. Proposed stations would also be new community facilities that would add to the stature of the adjacent neighborhood and serve as focal points to daily activity. The displacement of non-residential buildings would be a negative impact. There would be no displacement of residential structures. Due to the number of minority and low-income populations, potential traffic, noise and vibration impacts would have the potential to be borne disproportionately to minority and low-income populations.

UNIVERSITY AVENUE BUSWAY/BRT ALTERNATIVE

The University Avenue Busway/BRT Alternative offers the opportunity to enhance the quality of life in affected neighborhoods and communities through a major infrastructure investment and related policy changes designed to support transit. The BRT Alternative offers increased access to transit, opportunities for transit-related redevelopment, potential for increased pedestrian and bicycle connections and potential for enhanced visual quality through station area improvements. However, bus congestion is already a problem along University Avenue. The ability to add additional bus service is limited and would not serve year 2020 transit demand. For the build alternatives, benefits and adverse impacts to protected populations and the general population are representative of the areas within and adjacent to the proposed project corridor. Opportunities for design option choices that minimize adverse effects to minority and low-income populations are low due to the substantial number of those populations within the proposed project corridor.

The University Avenue Busway/BRT Alternative serves high concentrations of minority and low-income populations for the entire length of the corridor. Impacts to neighborhoods, community facilities, community cohesion and parklands would be low. Off-setting benefits such as increased mobility provided by transit improvements and the siting of proposed University Avenue Busway/BRT stations may act as a catalyst to significant new investment in the University Avenue corridor. Proposed stations would also be new community facilities that would add to the stature of the adjacent neighborhood and serve as focal points to daily activity. The BRT Alternative would not displace any residential or non-residential structures. Due to the number of minority and low-income populations, potential traffic and noise impacts would have the potential to be borne disproportionately to minority and low-income populations. No vibration impacts are associated with the BRT Alternative.

7.3.4 Mitigation Measures for Environmental Justice Analysis

All impacts identified in this document would be mitigated, if possible, to avoid adverse impacts to all neighborhoods, with special concern and emphasis with regard to minority and low-income populations. The active involvement of all neighborhoods in the corridor would continue to be a goal through design and implementation. Public engagement for all communities along the corridor is explained in detail in Chapter 8.0: Public and Agency Involvement Program.

7.4 SECTION 5309 NEW STARTS CRITERIA

The Ramsey County Regional Railroad Authority (RCRRA) is working with the Federal Transit Administration (FTA) to update the New Starts baseline alternative, capital cost estimates, impacts and estimated benefits of the alternatives. This information will be submitted to FTA as part of the RCRRA's request to advance the locally preferred alternative (when selected by local decisionmakers) into preliminary engineering as a potential candidate for federal New Starts funds.

The United States Department of Transportation (U.S. DOT)/FTA's *Annual Report on New Starts* documents the U.S. DOT's recommendations for the allocation of Section 5309 New Starts funds for proposed major transit capital investments (New Starts), as part of the Section 5309 New Starts Program. The FTA reviews, evaluates and rates the locally generated Section 5309 New Starts criteria for projects in either the preliminary engineering or final design phases of development.

The U.S. DOT/FTA's New Starts program reviews and evaluates each proposed project with regard to the following New Starts criteria:

Project Justification

Mobility improvements;
Environmental benefits;
Operating efficiencies;
Cost Effectiveness (transportation system user benefits);
Existing land use, transit-supportive land use policies and future patterns; and
Other factors

Local Financial Commitment

The proposed share of total project costs from sources other than the Section 5309 New Starts program, including Federal formula and flexible funds, the local match required by Federal law, and any additional [non-New Starts] capital funding ("overmatch"); The stability and reliability of the proposed capital financing plan; The ability of the sponsoring agency (ies) to fund operation and maintenance of the entire system as planned, including existing service, once the proposed guideway project is built.

The criteria under which proposed New Stars projects must be evaluated are established by statute and contained in Section 5309(e), which specifies that the U. S. Secretary of Transportation may approve a grant or loan under the Section 5309 New Starts program only for projects that are:

- based on the results of alternatives analysis and preliminary engineering;
- justified based on a comprehensive review of their mobility improvements, environmental benefits, cost effectiveness and operating efficiencies; and
- supported by an acceptable degree of local financial commitment, including evidence of stable and dependable financing sources to construct, maintain and operate the system or extension.

For each of the project justification criteria (i.e., mobility improvements, environmental benefits, cost effectiveness, and operating efficiencies), the proposed New Start is evaluated against a baseline alternative. The baseline alternative is best described as improvements to the transit

system that are relatively low in cost, and the “best that can be done” to improve transit service in the corridor without major capital investment in new infrastructure.

For each proposed project, FTA assigns one of five descriptive ratings (“high,” “medium-high,” “medium,” “low-medium,” or “low”) for each of the project justification criteria, with “other factors” considered as appropriate. In the case of “other factors,” consistent with Section 5309(e)(3)(H), FTA also considers a variety of other factors when evaluating project justification, including a) the degree to which the policies and programs (local transportation planning, programming and policies, etc.) are in place as assumed in the forecasts, b) project management capability, and c) additional factors relevant to the local and national priorities and relevant to the success of the proposed project.

Similarly, for the three factors used to evaluate local financial commitment, FTA also assigns one of five descriptive ratings ranging from: “high” to “low” as discussed above. These individual ratings are then combined into overall “finance” and “justification” ratings, which in turn, are combined to produce overall project ratings of “highly recommended,” “recommended,” or “not recommended.”

For a proposed project to be rated as “recommended,” it must be rated at least “medium” in terms of both finance and justification. To be “highly recommended,” a proposed project must be rated *higher* than a “medium” for both finance and justification. Proposed projects that are not rated at least “medium” for both finance and justification will be rated as “not recommended.”

These ratings are used to both approve entry into preliminary engineering and final design and as required by Section 5309(e)(6), and to recommend proposed projects for Federal funding commitments. A proposed project must receive a rating of at least “recommended” in order to be approved for any of these purposes. Moreover, it is important to understand that **FTA’s project evaluation is an ongoing process**. As proposed New Start projects proceed through the project development process, information on costs, benefits, schedules and impacts are refined. Consequently, FTA’s ratings will be updated to reflect new information, changing conditions and refined financing plans.

It is important to note that a rating of “recommended” does not translate directly into a funding recommendation in any given Federal fiscal year. Rather, the overall project ratings are intended to reflect overall project merit. Proposed projects that are rated “recommended” or “highly recommended,” may be eligible for multiyear funding recommendations in the Administration’s proposed budget if other project readiness requirements have been satisfactorily met.

The Central Corridor project will require a comprehensive New Start evaluation prior to FTA proceeding with Preliminary Engineering (PE). The initial submittal of New Start criteria to FTA will be submitted as part of a Request to Enter PE. Updated calculations will be submitted to FTA as more detailed and refined engineering design is completed and financial and development plans are developed.

7.5 FINANCIAL ANALYSIS

Financial planning has been an integral element of the Central Corridor project since its inception. A formal financial plan based on deliberations and decisions made to date will be developed for the proposed project by the Twin Cities Metropolitan Council as part of the New Starts process. The financial planning process will continue through preliminary engineering

(PE), final design, construction, and procurement as an integral part of the project development process.

The final financial plan will incorporate the following:

- Estimates of capital costs
- Estimates of operating and maintenance (O&M) costs
- Estimates of farebox revenues and other income from operations
- Evaluation of revenue stream required for capital costs
- Evaluation of revenue stream required for operating costs
- Evaluations of potential funding sources from federal, state, and local governments, including innovative sources

Financial planning will be conducted in accordance with FTA guidelines and will include programs developed for funding capital costs and operating costs for the proposed Central Corridor project and the feeder bus system. Required funding amounts will be expressed in constant dollars and year-of-expenditure dollars, and a cash flow calendar will be established.

The Financial Plan will identify funding sources and establish the financial capacity of the Twin Cities region to construct and operate the Locally Preferred Alternative (LPA). The final version of the Financial Plan will be completed at the conclusion of the Final EIS.

7.5.1 Sources and Uses of Funds Analysis

PROJECTED CAPITAL EXPENDITURES

Capital cost estimates were prepared during the Central Corridor Transit Study. The cost estimates are based on concept designs. Costs were estimated for all major facilities elements. The numbers of units for each facility sub-element were measured from the concept designs and multiplied by unit costs to yield construction costs. The cost estimates include contingencies and "add-on" costs for engineering and design, construction management, insurance, project administration, etc. Costs were expressed separately in 2002 dollars and mid-year-of-construction 2007.

During the PE phase of the proposed project, the cost estimating process will be refined with respect to better definitions for the LPA. Greater detail in the cost estimating will reflect greater detail in design, as well. As the system configuration becomes better defined, contingency amounts will be reduced.

At the conclusion of PE, complete cost estimates will be prepared for the LPA, covering final design, other professional services, insurance, real estate acquisition, procurements, construction, construction management, operations staff development, testing, contingencies, and service start-up. These estimates will provide the basis for a Full Funding Grant Agreement (FFGA) between FTA and the Twin Cities Metropolitan Council. Once the FFGA is consummated, a control budget will be established describing receipts by source, expenditures by purpose, and schedule through start-up of revenue service.

Capital costs will be refined continually during PE and final design. During construction and procurement, forecasted costs will be replaced by bid costs and actual costs as part of the ongoing cost monitoring system.

Cost reporting will be in accordance with the FTA's Transportation Electronic Award Management (TEAM) system . The TEAM specifies a numerical breakdown structure for categorizing and reporting costs. The proposed project's cost-reporting format will conform to the TEAM structure.

Table 7.5-1: Central Corridor LRT and BRT Capital Cost Estimate Summary, presents a summary of the capital costs for the proposed build alternatives.

OPERATING AND MAINTENANCE (O&M) COSTS

Table 7.5-2: Central Corridor Annual O&M Costs, shows projected alternative and bus operating costs in Year 2002 dollars for the proposed build alternatives. Estimated incremental operating costs for the Baseline, University Avenue LRT and University Avenue Busway/BRT Alternatives and supporting bus services include:

- Vehicle operations: operators, supervisors, fuel
- Vehicle maintenance: service and inspection, cleaning, repair, parts replacement
- Fixed facilities maintenance: inspection, cleaning, repair, minor replacement
- Track/guideway maintenance
- Management and administration

O&M cost estimates will be refined during PE and final design.

Table 7.5-1: Central Corridor LRT and BRT Capital Cost Estimate Summary^{1/}

Description	Cost (\$ million)			
	LRT		Busway/BRT	
	2002	2008	2002	2008
Civil construction	\$ 155	\$ 177	\$ 38	\$ 44
Utility allowance	\$ 27	\$ 31	\$ 7	\$ 8
Structures	\$ 41	\$ 47	\$ 0	\$ 0
Stations	\$ 100	\$ 114	\$ 44	\$ 50
Maintenance facility allowance	\$ 20	\$ 23	\$ 9	\$ 10
Traction power system	\$ 15	\$ 18	\$ 0	\$ 0
Signal system	\$ 16	\$ 18	\$ 0	\$ 0
Communications/GPS	\$ 7	\$ 8	\$ 20	\$ 23
Fare collection	\$ 2	\$ 2	\$ 4	\$ 4
Infrastructure Subtotal	\$ 383	\$ 438	\$ 122	\$ 139
Right-of-way allowance	\$ 30	\$ 34	\$ 1	\$ 1
Vehicle allowance	\$ 99	\$ 113	\$ 20	\$ 23
Miscellaneous Subtotal	\$ 129	\$ 147	\$ 21	\$ 24
Engineering and Administration ^{2/}	\$ 120	\$ 137	\$ 37	\$ 43
Contingencies ^{3/}	\$ 103	\$ 118	\$ 31	\$ 35
Soft Costs Subtotal	\$ 223	\$ 255	\$ 68	\$ 78
Preliminary Estimated Project Cost	\$ 735	\$ 840	\$ 211	\$ 241

^{1/} 2008 cost based on 2.7 percent annual rate applied to 2002 cost.

^{2/} Includes 30 percent for infrastructure improvements and 5 percent for vehicles (LRT only).

^{3/} Includes 100 percent for utilities, 20 percent for infrastructure improvements and 5 percent for vehicles.

Table 7.5-2: Central Corridor Annual O&M Costs

	2002	2008	2020
Existing	\$40,500,000	—	—
Baseline	44,800,000	\$56,700,000	\$90,800,000
LRT	48,000,000	60,700,000	97,200,000
BRT	46,500,000	58,700,000	94,000,000

^{1/} Year 2002 costs are inflated at 4 percent per year to derive 2008 and 2020 costs.

CAPITAL MODERNIZATION COSTS

Costs for periodically modernizing and replacing capital equipment will be estimated and assigned a schedule, and will be refined as design progresses. The modernization program will include long-cycle maintenance, equipment overhauls, and other maintenance activities not normally included in operating costs. Also included is routine replacement of rolling stock and replacement of aging building components, such as roofs and pavement. A capital replacement or sinking fund with regular contributions from O&M budgets will be considered for inclusion in the Project Financial Plan.

7.5.2 Capital Revenue Sources

SUMMARY OF CAPITAL FUNDING

Table 7.5-3: Funding By Source, summarizes the funds for final design and construction that are expected to be available.

Table 7.5-3: Funding By Source

Source	Share	Funding by Source (millions)	
		LRT Alternative	BRT Alternative
Federal Transit Administration	50 %	\$420	\$120.5
State of Minnesota and/or Local Entities	50 %	\$420	\$120.5
Total	100 %	\$840	\$241.0

FEDERAL

Funding from Section 5309 New Starts grants would comprise approximately 50 percent or \$420,000,000 (2007 year of expenditure dollars) for the University Avenue LRT Alternative or \$120,500,000 for the University Avenue Busway/BRT Alternative. Federal New Starts funding is estimated to remain at 50 percent through the life of the project as capital costs are incurred.

The federal grant will be formalized in a FFGA. Federal monies will be allocated through the federal budgeting process on a year-to-year basis during design and construction. Once budgeted by Congress, the FTA will authorize the Twin Cities Metropolitan Council to draw against those funds provided that it matches the FTA funds with state and/or local funds at the prescribed ratio, as expenditures are made.

STATE AND LOCAL

County Regional Rail Authorities have the Authority to levy a tax on taxable property as set forth in Minnesota Statute 398A.04, Sub d.8. This source, possibly with assistance from the cities of St. Paul and Minneapolis, is expected to make up approximately ten to fifteen percent of the project cost. State funding, in the form of bonds or general funds, is expected to make up the rest of the non-federal share.

The regional railroad authorities of Ramsey and Hennepin counties have the power to levy a tax on taxable property, as set forth in Minnesota Statute 398A.04, Sub d. 8. This allows the regional railroad authorities to assess and receive tax proceeds to meet their annual budgetary needs.

7.5.3 Operating & Maintenance (O&M) Revenue Sources

The financial plan will estimate revenues from a variety of potential sources to finance the Central Corridor LPA systems operation and maintenance. Following are potential revenue sources:

- Passenger revenue
- Advertising
- Other revenues from operations
- Dedicated transit taxes
- General taxes

The fare and structure for the University Avenue Busway/BRT and LRT Alternatives is anticipated as being the same as other services operated by Metro Transit (Appendix 9.10). The off-board method of fare collection for both build alternatives would be the same as that proposed for the Hiawatha LRT.

Operating funds to support Metro Transit are made up of a combination of operating revenues, State appropriations, Federal funds and Motor Vehicle Excise Taxes.