



SOUTHWEST
transitway

green means go.

Southwest LRT

Technical Memorandum No. 3

SCREENING EVALUATION CRITERIA

September 9, 2009



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1.0 INTRODUCTION

1.1 Background

During the Southwest Transitway Alternatives Analysis (AA) two bus rapid transit (BRT) and eight light rail transit (LRT) alternatives were evaluated in a tiered approach to determine which would best meet the purpose and need for the project. A set of goals were established by the Southwest Policy Advisory Committee (PAC) and tiered. The first tier goals were to (1) improve mobility and (2) provide a cost-effective/efficient travel mode. The second tier goals included (3) protect the environment, (4) preserve quality of life and (5) enhance economic development. The BRT and LRT alternatives were evaluated initially on goals 1 and 2, which would determine if an alternative was feasible. If an alternative met goals 1 and 2, it would then be evaluated based on goals 3, 4 and 5. Based upon application of this tiered evaluation process, the Southwest Transitway AA identified three LRT alternatives (LRT 1A, 3A and 3C) as those that best met the purpose and need for the project. Refer to Appendix A at the end of this memorandum for the Summary Evaluation of Alternatives Table. The three LRT alternatives were recommended for further evaluation in the Draft Environmental Impact Statement (DEIS) Process, during which the Locally Preferred Alternative (LPA) would be selected. The intent was to include an analysis of the critical environmental resource issues prior to selection of the LPA.

1.2 Purpose

The purpose of this memorandum is to document the methodology to be used for evaluating LRT alternatives in order to identify the LPA in a manner consistent with the Federal Transit Administration (FTA) New Starts 5309 process. The FTA considers the AA phase of project development to be complete when the LPA is selected by the local and regional decision makers and adopted by the metropolitan planning organization (MPO). In this region the Metropolitan Council is the MPO and the LPA would be adopted into the financially constrained long range metropolitan transportation plan called the Transportation Policy Plan (TPP). For the Southwest LRT, a decision was made by the Southwest PAC not to declare the LPA in late 2006, but instead to carry three LRT alternatives into the DEIS process in order to include a more in depth environmental impact assessment than is typical during the AA phase and also to reflect the updated local comprehensive plans which were scheduled for completion in 2008. Once the LPA is adopted by the Metropolitan Council, a request to enter Preliminary Engineering (PE) may be submitted to the FTA. The Locally Preferred Alternative (LPA) will be the Build alternative for full NEPA and MEPA evaluation in the DEIS. The Build alternative will be assessed and compared to the No Build alternative in order to determine all environmental consequences, as required by federal and state laws and regulations, associated with the proposed project. The DEIS will also identify potential actions to avoid, reduce or mitigate potential adverse environmental impact to be considered in the project development process and addressed in the Final EIS (FEIS).

The Southwest Transitway AA was completed in December 2006 and resulted in a recommendation that LRT alternatives 1A, 3A, and 3C be included in the DEIS process with the goal of narrowing them to one LRT alternative that would proceed into PE. There have been changes to the built environment since the completion of the AA, therefore this screening evaluation process includes the updating of the information included in the Southwest Transitway AA where appropriate. The process for evaluating the alternatives to select the LPA

will combine a focus on consistency with the Purpose and Need Statement for the Southwest LRT project, application of the primary FTA New Starts project justification criteria, and critical environmental issues that are likely to have substantial affect on the viability of the LRT alternatives. The intent of the screening process is to provide information to decision makers so they can make an informed decision as to which of the Build alternatives best meets the purpose and need of the project with the minimum of environmental disruption, and is most likely to meet the FTA critical criteria for entry into the New Starts program.

2.0 ALTERNATIVES FOR EVALUATION

On February 13, 2007, the Hennepin County Regional Railroad Authority (HCRRRA) accepted the Southwest Transitway AA which recommended that LRT 1A, LRT 3A, and LRT 3C be carried forward into the DEIS for further evaluation before the LPA is selected. Refer to Figure 1 for a map of the LRT alignments.

During the NEPA/MEPA Scoping process a sub-alternative to LRT 3C was proposed. On January 20, 2009, the Southwest PAC recommended that the LRT 3C (11th/12th Street) sub-alternative to LRT 3C (Nicollet Mall) be included in the DEIS. On January 27, 2009, the Hennepin County Regional Railroad Authority (HCRRRA) concurred with the Southwest PAC recommendation including the LRT 3C (11th/12th Street) along with the LRT 3C (Nicollet Mall), LRT 3A and LRT 1A alternatives in the Southwest LRT DEIS. The original LRT 3C alignment is referred to as LRT 3C-1 (Nicollet Mall) and the sub-alternative is referred to as LRT 3C-2 (11th/12th Street).

3.0 EVALUATION METHODOLOGY

The screening evaluation methodology builds upon information generated during the Southwest Transitway AA, refining it to reflect the updated local comprehensive plans and the environmental impact analysis.

The screening evaluation includes all of the evaluation measures from the AA for the tier one goals to improve mobility and provide a cost-effective/efficient travel option. Refer to Appendix B at the end of this document for an AA and Evaluation Criteria Comparison Table.

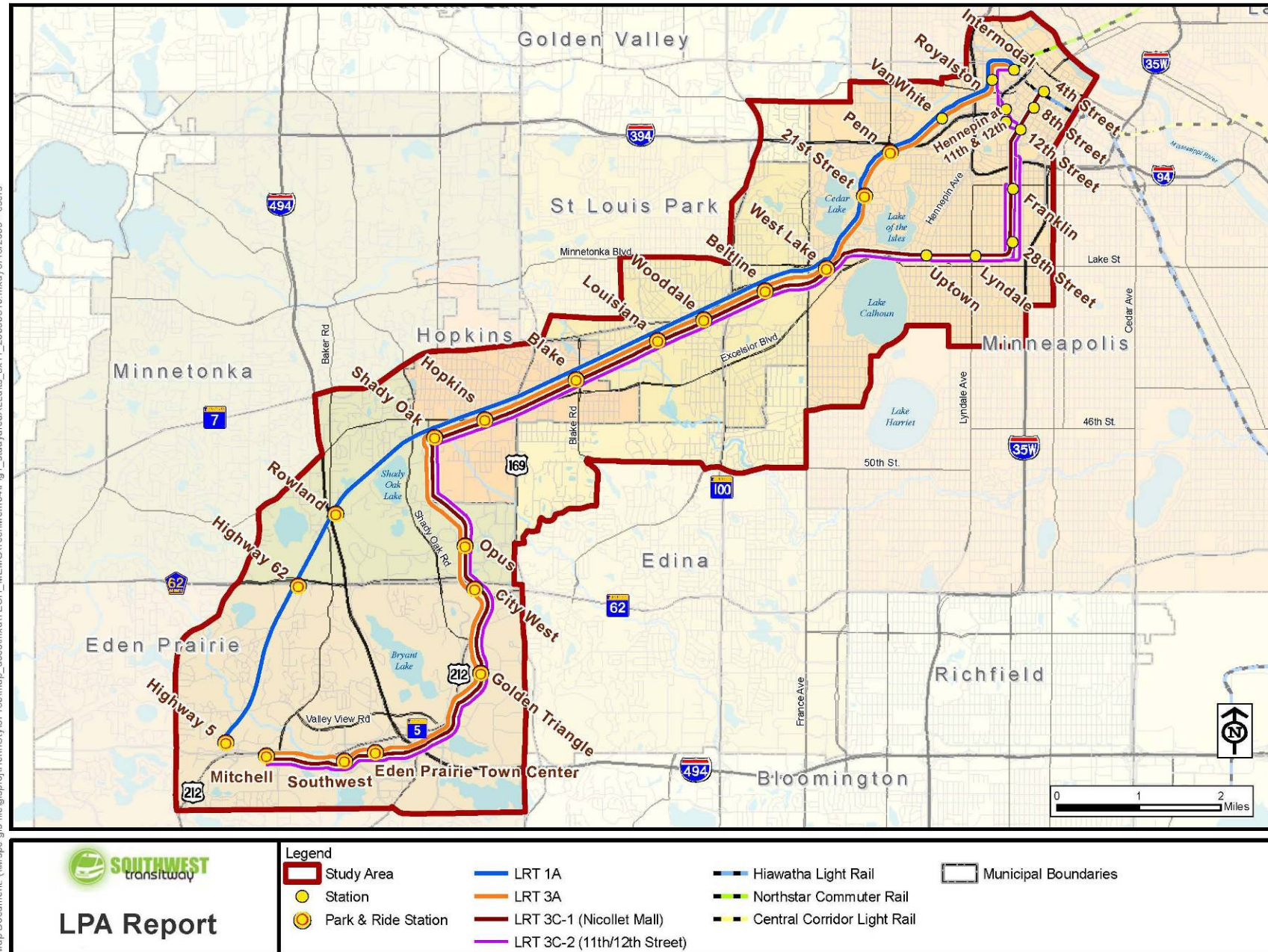
To identify the LPA, each LRT alternative will be assessed using the measures defined in this memorandum.

The evaluation categories are:

1. Planning Compatibility
2. Performance
3. Environment
4. Other Factors

Figure 1

Southwest Transitway Study Area



Map Document: (\\mspe-gis-file\gisproj\HennChy\87130\map_docs\mxd\TECH_MEMO\TechMemo4\Fig1_studyarea\LA_La1s_8x11_20090810.mxd) 8/13/2009 - cseers



LPA Report

Legend	
Study Area	LRT 1A
Station	LRT 3A
Park & Ride Station	LRT 3C-1 (Nicollet Mall)
	LRT 3C-2 (11th/12th Street)
	Hiawatha Light Rail
	Northstar Commuter Rail
	Central Corridor Light Rail
	Municipal Boundaries

The LRT alternatives, by full alternative and by segment where appropriate, will be evaluated to determine how the alternative performs relative to the evaluation criteria. The individual criteria evaluations will be compiled by evaluation category which will lead to the recommendation of the LPA defined as the one that best meets the purpose and need for the project.

The Southwest LRT Consultant Team will generate both quantitative and qualitative data for the LRT alternatives. The consultant team will work with the Southwest Technical Advisory Committee (TAC) to take the raw data and translate it into ratings for each LRT alternative. The following ratings will be used:

- Proceed
- Proceed with Caution
- Does not Proceed

Each of the evaluation categories is listed below with its criteria for evaluation and means of measurement, and evaluation objectives.

3.1 Planning Compatibility

According to the Metropolitan Land Planning Act (MPLA), local municipalities are required to update their comprehensive plans at a minimum every 10 years. Local municipalities in the metropolitan area were required to update their comprehensive plans and submit them to the Metropolitan Council by December of 2008. In addition, the Metropolitan Council updated its systems plans including the Transportation Policy Plan (TPP) which was adopted in January 2009.

The intent with the planning compatibility measure is to incorporate the effects of the changes in the adopted local and regional plans, development, and demographics of area served by each alternative to ensure that any changes since December 2006 are reflected.

Consistency with Adopted Local and Regional Plans

A review of the adopted local and regional plans for the study partners will be conducted to determine if LRT implementation is consistent and compatible with the policies and plans of the affected governmental units. Where preferences for a particular LRT route are specified in an adopted plan it will be noted. The adopted local plans will include the comprehensive plans for the cities of Eden Prairie, Minnetonka, Hopkins, Edina, St. Louis Park, and Minneapolis. The adopted regional plans will include the Hennepin County Transportation System Plan and the Metropolitan Council's TPP.

Criteria: Compatibility or consistency of each LRT alternative with the local and regional land use and transportation plans.

Measurement: Qualitative assessment of stated policies and documentation contained in the adopted local and regional plans of the study partners.

3.2 Performance

The FTA rates projects requesting Section 5309 New Starts funding in the areas of project justification and local financial commitment. These ratings are then combined into an overall project rating. Refer to Appendix C at the end of this memorandum for the FTA New Starts Evaluation and Rating Framework Diagram.

Project evaluation is an on-going process. FTA evaluation and rating occurs annually in support of budget recommendations presented in the *Annual Report on New Starts* and when a project sponsor requests FTA approval to advance their proposed New Starts project into PE and Final Design. Consequently, as proposed New Starts projects proceed through the project development process information concerning costs, benefits, and impacts is refined and the ratings are updated to reflect new information.

Project Justification Rating

Section 5309 of the Intermodal Surface Transportation Efficiency Act of 1991 established funding that is referred to as “New Starts Projects” and criteria for this funding called the “New Starts Project Justification Criteria.” These criteria and supporting documentation are presented to FTA in a Section 5309 Report. Basic New Starts criteria are cost-effectiveness, transit supportive land use, mobility improvements, operating efficiencies, and environmental benefits. The New Starts Project Justification Criteria, and Supporting Measures and Categories Table, and the Evaluation and Rating Framework diagram are displayed in Appendix C at the end of this memorandum.

The criteria for selecting the LPA include many of the FTA New Starts criteria including system integration, transit trips, transit service, access, costs. The intent is to update the criteria included in the AA based upon the updated local comprehensive plans, the TPP, and cost estimates based upon the Central Corridor LRT and refined engineering.

3.2.1 Transit Mobility

The intent of this evaluation is to assess each LRT alternative with respect to the following performance measures; system integration, transit trips, transit service, and accessibility.

System Integration

System integration is defined as an LRT alternative’s ability to provide seamless connectivity to existing and proposed high capacity transitways identified in the Metropolitan Council’s TPP with special emphasis on integration with the existing and planned LRT system.

Criteria: Integration into the existing and planned LRT system and regional transitway system.

Measurement: Assess the ability of the LRT alternatives to provide connectivity among LRT lines and other high-demand transit corridors. Performance indicators used to evaluate system connectivity include physical connection, passenger movement/convenience, and minimizing non-revenue service miles.

Transit Trips

Transit mobility is defined as the estimated number of transit riders and new riders attracted to the system in the forecast year of 2030 using the Metropolitan Council's travel demand model (TDM).

Criteria: Level of linked transit trips for the LRT alternatives.

Measurement: Transit utilization by LRT alternative defined as total LRT linked trips in year 2030, total transit system trips in year 2030, trips by zero car households, reverse commute LRT trips in year 2030, new transit trips in year 2030 and transportation system user benefits.¹

Transit Service

Criteria: Quantity and quality of the existing and programmed transit services within the Study Area compared with and without implementation of LRT service.

Measurement: Frequency of LRT and bus transit service, ability of LRT to enhance transit service in the corridor, duplication of transit service, and overall transit system efficiency.²

¹ Transportation system user benefits (TSUB) represent the changes in mobility for individual travelers that are induced by a project. TSUB estimates are required by the FTA for projects being considered for Section 5309 New Starts discretionary funding provided through the FTA. TSUB are used by the FTA to compare projects throughout the U.S. They are measured in hours of travel time savings and summed over all travelers.

² Transit system efficiency is often measured in the following ways: passenger trips per vehicle capacity mile; passenger trips per revenue vehicle capacity hour; passenger miles per revenue vehicle capacity mile; and passenger miles per revenue vehicle capacity hour.

Access for People, Housing and Jobs

Accessibility is based on the updated local comprehensive plans including updated socioeconomic data reflecting planned growth by 2030. The assumed growth patterns in the Study Area directly affect the performance of the LRT alternatives. The cities of Minneapolis, St. Louis Park, Minnetonka, Edina, Hopkins and Eden Prairie have revised and updated their estimates of 2030 population, household and employment based on their most current comprehensive plans. These estimates are pending approval by the Metropolitan Council and therefore can not be considered 'official' values. They are, however, the best available information and therefore have been utilized to evaluate the accessibility provided by the Southwest LRT alternatives.

Criteria: Accessibility.

Measurement: Population, households and employment within ½ mile of stations for each LRT segment and alternative. Refer to the tables below for the segments that comprise each LRT alternative and the stations included on each segment.

LRT Alternative	Segments
LRT 1A	Segment 1, Segment 4, Segment A
LRT 3A	Segment 3, Segment 4, Segment A
LRT 3C-1 (Nicollet Mall)	Segment 3, Segment 4, Segment C-1
LRT 3C-2 (11 th /12 th Street)	Segment 3, Segment 4, Segment C-2*

*Segment C-2 includes two alternate route options for tunneling between the Midtown Corridor (28th Street Station) and 12th Street instead of under Nicollet Avenue. Option C-2A would tunnel under Blaisdell Avenue and Option C-2B would tunnel under 1st Avenue South. Because these are located within one block east and west of Segment C-2 they have not been separated for the purpose of this evaluation.

Segment	Stations on Segment
Segment 1	Highway 5, Highway 62 and Rowland Rd.
Segment 3	Mitchell, Southwest Station, Eden Prairie Town Center, Golden Triangle, City West and Opus
Segment 4	Shady Oak, Hopkins, Blake, Louisiana, Wooddale, Beltline and West Lake
Segment A	21st Street, Penn, Van White, Royalston, Intermodal, 5th Street and Nicollet Mall (4th Street)
Segment C-1 (Nicollet Mall)	Uptown, Lyndale, 28th Street, Franklin, 12th Street, 8th Street and 4th Street
Segment C-2 (11th/12th Street)	Uptown, Lyndale, 28th Street, Franklin, 12th Street (Nicollet Mall), 11 th at Hennepin Ave, 12 th at Hennepin Ave, Royalston, Intermodal, 5th Street and Nicollet Mall (4th Street)

3.2.2 Costs

Capital Costs

Capital cost estimates for 2008 will be developed based upon refined conceptual engineering and will include contingencies for potential environmental mitigation recommendations. The estimates are developed for the screening of the LRT alternatives and are based on Central Corridor LRT unit costs and the Southwest Transitway AA from 2006. Capital costs are defined as the one-time costs to construct the transitway, including the guideway (ballast, track and catenary system), stations, structures, right-of-way, engineering/design, administrative costs and contingencies.

Criteria: Capital cost for each LRT alternative reported in year of expenditure dollars (YOE 2015/\$).

Measurement: Total capital costs and cost per mile.

Operating and Maintenance Costs (O&M)

2015 operating and maintenance cost estimates will be developed consistent with FTA guidelines for each LRT alternative.

Criteria: Operating/maintenance costs by LRT alternative.

- Southwest LRT O&M costs
- Southwest LRT O&M costs per route mile
- System wide LRT O&M costs
- System wide transit O&M costs

Measurement: Year 2015 LRT maintenance O&M cost

Criteria: Operating cost of the LRT line.

Measurement: Operating cost/revenue hour, operating cost/revenue mile, operating cost/passenger hour and operating cost/passenger mile.

Cost Effectiveness Index (CEI)

Criteria: FTA Cost-Effectiveness Index (CEI).

Measurement: FTA Fiscal Year (FY) 2011 cost effectiveness rating.

Cost Effectiveness Rating	Cost Effectiveness Value
High	\$12.49 and under

Medium-High	\$12.50 - \$15.99
Medium	\$16.00 - \$24.99
Medium-Low	\$25.00 - \$30.99
Low	\$31.00 and over

3.3 Source: New Starts Criteria thresholds FTA will use in FY 2011 for assigning a High, Medium-High, Medium, Medium-Low or Low cost effectiveness rating for each proposed project. FTA publishes updates to these breakpoints annually to reflect the impact of inflation. Critical Environment Issues

Seven environmental issues have been identified as “critical” because the presence of these critical issues or resources, as well as the potential for impacts to each one, could substantially alter the ability of the project sponsor to implement the project in a timely manner and within the financial resources available.

Four environmental resource areas; historic properties, natural resources, water resources and Section 4(f) properties; are protected by federal and/or state laws and regulations. These regulations provide one or more agencies the authority to protect each resource. Typically, regulatory agencies have a key role in determining the extent of resource impacts by the proposed undertaking, evaluating the effectiveness of the proposed mitigation(s) for identified impacts to the resource, and managing the issuance of permits or approvals that allow projects to alter or affect a resource.

Resource regulations and the authority granted to the resource agencies range from effectively prohibiting the disruption of the resource to allowing the agency to permit alterations to the resource. Independent of the extent of control granted to the resource agencies, the cost in time and money for a project proponent to deal with the issues can be substantial. Therefore, it is imperative that decision makers have an understanding of the extent of potential conflicts between the proposed undertaking and these resources.

The remaining three critical environmental issues; hazardous/contaminated materials, geological conditions, and noise/vibration, have the potential to substantially increase project costs and result in project delays. Therefore, it is imperative that decision makers understand the relative risk associated with the presence of these resources.

The assessment of the alternatives by resource area during the screening process focuses on the identification of the presence of the resource, the extent of the resource within or adjacent to each alternative, the relative value or importance of the resource, and the complexity of addressing impacts to the resource. The assessment conducted for the LPA selection process documents the presence and extent of the seven critical resources and the likely impacts to these resources from implementation of the build alternatives. During the preparation of the DEIS, however, more details will be available regarding proposed construction limits; and a more complete assessment of existing conditions, resource impacts, and potential mitigation will be provided.

Historic Properties

Section 106 of the National Historic Preservation Act (NHPA) of 1966, revised as “Protection of Historic Properties: (36 CFR Part 800), became effective on January 11, 2001 and requires federal agencies, or designees to consider the effects of their actions on historic properties before undertaking a project. The Southwest LRT Project is applying to receive FTA funding and therefore must comply with Section 106 of the NHPA of 1996, 1992 as amended, and with other applicable federal and state mandates including the Minnesota Field Archeology Act, the Minnesota Historic Sites Act and the Minnesota Private Cemeteries Act. A historic property is defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP). The Section 106 process consists of steps for: 1) identifying and evaluating historic properties; 2) assessing the effects of an undertaking on historic properties; and 3) consultation for methods to avoid, minimize or mitigate any adverse impacts.

Criteria: Evaluate the potential for effects upon historic properties.

Measurement: Based upon existing data the number of historic properties will be compiled for an assumed Area of Potential Effect (APE)³ for each LRT alternative:

Natural Resources

There are several federal and state laws that require proposed projects to evaluate and avoid adverse impacts on valued natural resources. The following is a brief overview of the predominant laws.

Section 7 of the Endangered Species Act (ESA) of 1973 (16 USC 1531-1544) requires that all federal agencies consider and avoid, if possible, adverse impacts to federally listed threatened or endangered species or their critical habitats, which may result from their direct, regulatory, or funding actions. The United States Fish and Wildlife Service (USFWS) is responsible for compiling and maintaining the federal list of threatened and endangered species. Section 7 of the ESA also prohibits the taking of any federally listed species by any person without prior authorization.

The State of Minnesota’s endangered species law (MN Statute 84.0895) and associated rules (MN Rules 6212.1800-.2300) regulate the taking, importation, transportation and sale of state endangered or threatened species. The DNR administers the state listed rare, threatened and endangered (RT&E) species.

The Migratory Bird Treaty Act of 1918 (16 USC 703-712) governs the taking, killing, possession, transportation and importation of migratory birds, their eggs, parts and nests. Such actions are prohibited unless authorized under a valid permit.

³ Note that the Section 106 process requires the lead federal agency, in this case the FTA, to determine the APE. The FTA has delegated responsibility for portions of the Section 106 process to the Minnesota Department of Transportation Office of Environmental Services (Mn/DOT OES); the Mn/DOT OES has not yet determined the APE for the project alternatives. Therefore the LPA screening methodology will use the term “preliminary project limits” to identify the area that would likely be defined as the APE.

Aquatic habitat is protected by the DNR through the public waters permit. The DNR Protected Water Permit and Crossing License reviews ensure that bridge construction or reconstruction is not detrimental to significant fish and wildlife habitat (including but not limited to obstruction the movement of game fish or disrupting fish spawning) or protected vegetation. Any anticipated adverse effects require implementation of feasible and practical measures to mitigate.

- Criteria: Potentially impacted natural resources within one mile of each LRT alternative.
- Measurement: Based on existing data, develop an inventory of the following for each LRT alternative:
- Critical habitat for threatened or endangered species
 - Presence of threatened or endangered species
 - Vegetation restoration areas
 - Wetlands or bodies of water that provide habitat for flora and fauna of interest

Water Resources

Water is a closely regulated resource. The key agencies and regulations for water resources are identified below.

United States Army Corps of Engineers (USACE)

Navigable waters are regulated under Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403) and Section 404 of the Clean Water Act (CWA) (33 USC 1344). The RHA regulates work involving a change in the course, current, or cross-section of navigable waters, including wetlands. Impacts to wetlands are regulated by several agencies under the CWA if they are connected or adjacent to “navigable waters” of the United States. Section 404 of the CWA requires a permit to be issued by the USACE prior to the placement of any dredged or fill material into any waters of the United States, including wetlands. Section 401 of the CWA requires the affected state to issue a water quality certification, or a waiver, for each Section 404 permit.

Minnesota Pollution Control Agency (MPCA)

The MPCA establishes water quality standards and conducts periodic water quality monitoring for surface water, groundwater and wastewater. Water quality standards are implemented primarily through National Pollution Discharge Elimination System (NPDES) permits issued to dischargers by the member states (MN Statute 115; MN Rule 7050). The MPCA and the City of Minneapolis review draft NPDES permits. The MPCA reviews COE permits and is responsible for issuing Section 401 water quality certification.

Minnesota Department of Natural Resources (DNR)

Wetlands are regulated by the DNR if they are identified as public waters or public waters wetlands. Public waters are all water basins and water courses that meet the criteria set forth in

Minn. Stat., Section 103G.005, subd. 15, and that are identified on Public Water Inventory (PWI) maps and lists authorized by Minn. Stat., Section 103G.201. Proposed impacts to these types of wetlands would require a permit from the DNR.

Federal Emergency Management Agency (FEMA)

Floodplains are regulated under EO 11988. This EO requires all federal agencies to evaluate and, to the extent possible, avoid adverse impacts to the floodplain areas, which may result from actions they administer, regulate or fund. This EO specifically requires floodplain impacts to be considered in the preparation of an EIS for major federal actions. FEMA, under the national Flood Insurance Program (NFIP), has the authority to regulate floodplains and floodways. The City of Minneapolis administers these regulations, including activities such as construction, excavation, or deposition of materials in, over, or under waters which may affect flood stage, floodplain, or floodway boundaries.

The 100-year flood is used by the NFIP as the standard for floodplain management and to determine the need for flood insurance. The boundary of this floodplain is defined by the flood elevation that has a one-percent chance of being equaled or exceeded each year.

Rivers or streams where FEMA has prepared detailed engineering studies may have a designated floodway, which is defined as the area where floodwaters are likely to run deepest and fastest (FEMA 2007). It is the area of the floodplain that should be reserved (free from obstruction) to allow floodwaters to move downstream. Placing fill or buildings in a floodway may block the flow of water and increase flood elevations. Such activities in the floodway are generally restricted and require mitigation in the form of compensatory volume to offset lost floodway storage.

Minnesota Wetland Conservation Act (WCA)

To maintain and protect wetlands the Minnesota Legislature approved and the Governor signed the Wetland Conservation Act (WCA) in 1991 (as amended). Cities, counties, watershed management organizations, soil and water conservation districts and townships implement the act locally. The Minnesota Board of Water and Soil Resources administers the act statewide and the DNR enforces it.

Minnehaha Creek Watershed District (MCWD)

The Minnehaha Creek Watershed District (MCWD) is the regional governmental unit responsible for managing and protecting the water resources of the Minnehaha Creek Watershed. The District covers 181 square miles that ultimately drain into the Minnehaha Creek. The district includes all or part of 27 cities and two townships in Hennepin and Carver Counties. The cities of Hopkins, St. Louis Park, and Minneapolis are within the district. MCWD is responsible for construction permitting as it pertains to projects that effect erosion, floodplains, wetlands, dredging, shoreline or streambank improvements, stream and lake crossings, stormwater management and ensuring that new construction projects meet the goals and requirements established by the watersheds. The agency will ensure that BMPs, as outlined in the NPDES Permit, are used to limit sediment and particulate runoff during construction activities.

Bassett Creek Watershed Management Commission (BCWMC)

The Bassett Creek Watershed Management Commission (BCWMC) manages surface water within the boundaries of the BCWMC, which exceeds 40 square miles and is divided into four major subwatersheds. The cities of Minnetonka, St. Louis Park, and Minneapolis are represented by the BCWMC to facilitate the management of the watershed's water resources. The BCWMC is responsible for regulating flooding, and to maintain and enhance the quality of the surface and ground water resources in the watershed. In 1989, a permit program was required for appropriations from small watercourses. The BCWMC developed a policy establishing standards and criteria defining when water could be appropriated from public water courses and wetlands, and included a draft permit application form. Permit applications are evaluated by the cities and permits are issued by the cities. The BCWMC also reviews applications to the DNR for public waters work permits.

Nine Mile Creek Watershed District (NMCWD)

The Nine Mile Creek Watershed District (NMCWD) is a special purpose unit of government established in accordance with Minnesota State Statute 103D. The responsibility of the Nine Mile Creek Watershed District is to protect and manage the water resources within the District's legal boundaries. The Nine Mile Creek Watershed District is approximately 50 square miles in surface area and encompasses the land area tributary to Nine Mile Creek. The District is located in Hennepin County. Portions of the cities of Eden Prairie, Edina, Hopkins, and Minnetonka are located within the Nine Mile Creek watershed. In 1963, the NMCWD established a permitting program to protect the natural resources of the NMCWD by establishing minimum requirements for the grading, water quality, water quantity, floodplain protection, and wetlands.

Riley/Purgatory/Bluff Creek Watershed District (RPBCWD)

The Riley/Purgatory/Bluff Creek Watershed District (RPBCWD) works with other government bodies to regulate stormwater runoff, improve water quality, and provide recreation. The District also works with developers on any project that proposes to alter floodplains, wetlands or streams. The RPBCWD requires permits for such projects to ensure that land use changes do not negatively impact water quality and flood protection. District review of permits provides an opportunity for citizen input on water related issues. With the newly approved Water Management Plan, the District now may pursue projects that improve water quality. These projects, like past flood control projects, will be conducted in full cooperation with municipalities. Regulatory authority of the RPBCWD was transferred to LGUs in 2008.

Criteria: Water resources within ¼ mile of each alignment and assess the potential of the Project to adversely affect those resources.

Measurement: Using existing data create an inventory for each alternative to measure the following:

- Designated Waters of the US subject to US Corp of Engineers 404 permitting requirements
- Wetlands

- Riparian areas
- Floodplains
- Watershed management resources
- Areas of shallow groundwater
- Ground water recharge areas
- Utilizing the inventory described above, estimate the area of potential disturbance of the resource, the character or extent of disturbance, and the issues associated with, or complexity of securing the necessary permits

Contaminated Properties

Locations containing hazardous/regulated material can create risks in the form of project delay and costs associated with remediation. Typically projects prefer to avoid sites that represent a potential for substantial remediation costs and/or an on-going liability to manage the site. Therefore, the objective of the criteria is to assess the exposure that each alternative could present to the project associated with environmental remediation. This evaluation consists of two major parts: identification of contaminated sites and development of a cost estimation model to estimate the potential “risk” associated with each alternative.

Criteria: Occurrence of properties with known or the potential of producing hazardous or contaminated materials that could be encountered by the Project.

Measurement: Based on existing data, inventory number of contaminated sites in proximity to each LRT alternative corridor.

Cost estimates of remediation for known and potential contaminated sites as a result of the construction of each of the LRT alternatives.

Section 4(f) Properties

The US Department of Transportation (USDOT) prohibits the use of public parks, recreation areas, wildlife/waterfowl refuges or significant historic sites from being used for transportation uses unless there is no feasible and prudent alternative.

Section 4(f) of the Department of Transportation Act of 1966 (49 USC 303) requires that federal transportation projects consider the effects of a project on certain protected resources. A Section 4(f) resource is a publicly owned park, recreation area, wildlife/waterfowl refuge, or significant historic site. Regulations prescribing procedures for implementing the Section 4(f) process are found in 23 CFR 771.135.

Criteria: Section 4(f) properties within 500 feet of each alternative and assess the potential for impacts to those resources.

Measurement: Based on existing data, inventory of 4(f) properties and potential impacts.

Geological Evaluation

The objective of the criteria is to assess the geological conditions that could present special conditions during construction and potentially require special construction techniques or methods to mitigate.

Criteria: Near surface geological conditions.

Measurement: Based on existing data evaluate the geological conditions for the following:

- Construction suitability
- Soil stability
- Tunneling activities
- Near surface or shallow ground water

Noise and Vibration

For the purposes of this evaluation noise and vibration emission characteristics associated with the existing Hiawatha LRT will be used to evaluate potential noise and vibration emissions associated with the proposed Southwest LRT. The noise and vibration screening procedures for the Southwest LRT are based on methodologies presented in the FTA manual, *Transit Noise and Vibration Impact Assessment* (May, 2006). For the DEIS, corridor-wide General Noise and Vibration assessment models will be performed in accordance with the FTA Transit Noise and Vibration Impact Assessment Guidelines. Where residential development density is greatest, detailed Noise and Vibration Assessments may be performed per FTA methods (2006) to refine the assessment of potential noise and vibration effects associated with the proposed project.

Criteria: An appropriate noise screening distance will be selected and adjusted to suit the particular operational parameters of this project. In absence of detailed and finalized design information on grade crossing and pedestrian crossing locations, the adjusted noise level accounts for unrestricted bell use and horn use. The noise screening distance is applied to either side of the centerline for each LRT alignment alternative to determine the noise study area, and, potentially noise-sensitive properties within the area of noise influence.

Likewise, vibration screening distances will be selected and adjusted to account for potentially efficient LRT-induced, ground-borne vibration propagation characteristics, as indicated by the soil survey. The noise and vibration screening distances will be applied to either side of the centerline of each LRT alignment alternative to determine the noise study area and vibration study area respectively, where potentially noise- or vibration-sensitive properties fall within an area of influence.

Measurement: Inventory the number of potentially noise-sensitive properties within the area of noise influence.

Inventory the number of potentially vibration-sensitive properties within the area vibration influence.

Geologic characteristics to propagate or transmit ground-borne vibration.

3.4 Other Factors

Other factors that typically contribute substantially to the cost and or feasibility of the proposed project are:

- ◆ The extent of property acquisition and displacements of residents or commercial occupancy;
- ◆ The overall constructability of the alternative; and
- ◆ The disruption or modification of the proposed alternatives to existing transportation facilities and capacity.

Property Acquisition

- Criteria: Evaluate property acquisition estimates.
- Measurement: Calculate an estimate of full property acquisitions for each LRT alternative in acres.
- Calculate an estimate of partial property acquisitions for each LRT alternative in acres.
- Using county assessor records estimated market value to calculate the total cost of real property acquisition and relocation for each alternative.

Construction Complexity

- Criteria: Evaluate the constructability of each LRT alternatives using the following criteria:
- Construction site accessibility
 - Capacity of work site to accommodate construction activities (size and configuration)
 - Availability of materials storage and stockpile space in close proximity to project
- Measurement: The measurement of constructability is assigned as a percentage of the unallocated contingency spread among the SCC cost categories in the workbook.

Transportation Capacity

- Criteria: Evaluate the impact of each alternative on the existing and planned transportation capacity.
- Measurement: Quantitative assessment of the roadway travel lanes removed from service by alternative. Qualitative assessment of the potential impacts to several factors, including the changes to highway and roadway capacity (number of lanes affected), intersection capacity (at-grade crossings, access modifications), bridges, driveways, parking facilities, and bicycle/pedestrian trails.

Permitting

Major transit projects, like any major infrastructure project, require a number of permits and approvals, be they construction-related, property-related, or environmental. At this phase of the project, it is not possible to have a complete understanding of the permits and approvals required for implementation of the project. However, an preliminary assessment of permitting requirements can be made based on the current understanding of construction complexities and environmental resources.

Criteria: Evaluate the potential permitting requirements for each alternative.

Measurement: Develop a matrix to illustrate potential permitting requirements for each LRT alignment.

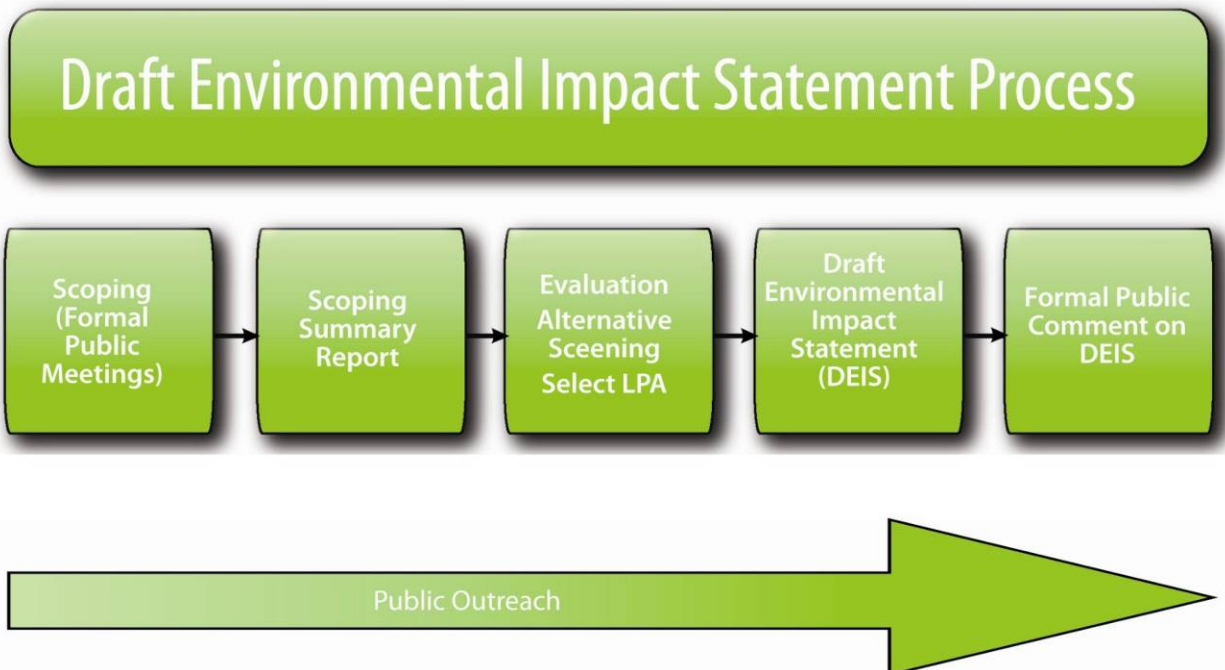
4.0 RESULTS

The results of the evaluation for each evaluation criteria category will be documented and presented in individual technical memoranda. Each alternative will be assessed utilizing all of the criteria and the strengths and weakness of each alternative evaluated. If any alternative is determined to have unavoidable adverse impacts that do not occur in other alternative such conditions will be documented and the severity of the issue assessed.

Typically, the screening of alternatives and the selection of the LPA involves a series of trade offs in order to answer the question; "Which alternative provides the greatest mobility improvement, is the most cost-effective/efficient while minimizing environmental impacts?"

The results for each of the evaluation criteria will be summarized in a matrix by LRT alignment. An overall summary matrix will be developed to compare each of the LRT alternatives with respect to the result of their individual evaluation criteria. Refer to Appendix D for an example of a summary matrix for the evaluation criteria. The results of the evaluation will be employed to select the LPA.

Figure 2 DEIS Process



After the LPA is selected the DEIS will proceed into a detailed analysis of the impacts and potential mitigation for the LPA. The environmental areas that will be assessed include the following:

- ◆ Groundwater and Soil Resources
- ◆ Water Resources
- ◆ Biota and Habitat
- ◆ Threatened and Endangered Species
- ◆ Air Quality
- ◆ Noise and Vibration
- ◆ Hazardous/Regulated Materials
- ◆ Electromagnetic Fields and Utilities
- ◆ Energy Use
- ◆ Land Use, zoning and economic development
- ◆ Demographics and socioeconomic factors
- ◆ Neighborhood compatibility
- ◆ Environmental Justice
- ◆ Visual quality and aesthetics
- ◆ Construction effects
- ◆ Transportation
- ◆ Cultural and historic resources

The combined impacts identified during the evaluation and potential mitigation measures will be identified in the DEIS.

Appendix A - Summary Table From Alternatives Analysis (AA)

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Table 1 Summary Evaluation of Alternatives from AA

Alternatives	Tier 1 Goals			Results	Tier 2 Goals			Recommendation
	Goal 1: Improve Mobility	Goal 2: Provide a Cost-Effective, Efficient Travel Option			Goal 3: Protect the Environment	Goal 4: Preserve and Protect the Quality of Life in the Study Area and Region	Goal 5: Support Economic Development	
Enhanced Bus (Baseline)	Carry forward as Baseline alternative (Required)				Carry forward as Baseline alternative (Required)			Carry forward as Baseline Alternative
BRT 1 - Eden Prairie to Minneapolis, HCRRA	●	●	Does not meet Tier 1 Goals; Do not carry forward					
BRT 2 ¹ - Eden Prairie to Minneapolis, Golden Triangle/Opus/TH 169/HCRRA	●	●	Does not meet Tier 1 Goals; Do not carry forward					
LRT 1A - Eden Prairie to Minneapolis, HCRRA/Kenilworth/Royalston	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	◐	Carry forward for further analysis	
LRT 2A ¹ - Eden Prairie to Minneapolis, I-494/HCRRA /Kenilworth/Royalston	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	◐	Other alternatives better meet Tier 2 Goals. Do not carry forward	
LRT 3A ¹ - Eden Prairie to Minneapolis, Golden Triangle/Opus/HCRRA/Kenilworth/Royalston	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	○	Carry forward for further analysis	
LRT 4A - Hopkins to Minneapolis, HCRRA/Kenilworth/Royalston	●	◐	Part of full alternative. Do not carry forward					
LRT 1C - Eden Prairie to Minneapolis, HCRRA/Midtown/Nicollet	◐	●	Does not meet Tier 1 Goals; Do not carry forward					
LRT 2C - Eden Prairie to Minneapolis, I-494/HCRRA /Midtown/Nicollet	◐	●	Does not meet Tier 1 Goals; Do not carry forward					
LRT 3C - Eden Prairie to Minneapolis, Golden Triangle/Opus/HCRRA/Midtown/ Nicollet	◐	◐	Meets Tier 1 Goals; Carry Forward to Tier 2	◐	◐	○	Carry forward for further analysis	
LRT 4C ¹ - Hopkins to Minneapolis, HCRRA/Midtown/Nicollet	●	●	Part of full alternative. Do not carry forward					
Evaluation Breakpoints								
● Does not support goal				Supports goal on fewer than 4 of 6 measures	Supports goal on fewer than 7 of 10 measures	Supports goal on fewer than 3 of 4 measures		
◐ Supports goal				Supports goal on 4 of 6 measures	Supports goal on 7 of 10 measures	Supports goal on 3 of 4 measures		
○ Strongly supports goal				Supports goal on all measures	Supports goal on all measures	Supports goal on all measures		

Source: Southwest Transitway Alternatives Analysis Final Report, HCRRA, 2007.

Appendix B – Alternatives Analysis (AA) and LPA Evaluation
Criteria Comparison Table

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Table 2 AA and Evaluation Criteria Comparison

Southwest Transitway Alternatives Analysis (AA)	Southwest Transitway DEIS Screening	FTA New Starts
Goal 1: Improve Mobility	Locally Preferred Alternative (LPA) Screening	FTA New Starts
Projected Ridership (2030)	Projected Ridership (2030) – Transit Mobility	✓
New Transit Riders (2030)	New Transit Riders (2030) – Transit Mobility	✓
Travel Time Savings (2030)	Travel time Savings – Transit Mobility	✓
Transportation Capacity	Transportation System Capacity – Transit Mobility	
Travel Time Competitiveness	Travel Time Competitiveness – Transit Mobility	
System Integration	System Integration – Transit Mobility	
Transit Dependents Served	Transit Dependents Served – Transit Mobility	✓
Jobs & Population Served	Jobs, population & households – Planning Compatibility	✓
Goal 2: Cost-Effective/Efficient		
Capital Cost (2015)	Capital Cost (2015)	✓
Capital Cost/Mile (2015)	Capital Cost/Mile (2015)	
Operating Cost (2015)	Operating Cost (2015)	
Cost-Effectiveness Index (CEI)	Cost-Effectiveness Index (CEI)	✓
Peer City Comparison	Operating Cost per rev hour, rev mile & passenger mile	✓
Potential Impact to Street Network	Lanes affected - Other Factors	
	Transit Service – Transit Mobility	✓

	Local Plan Consistency – Planning Compatibility	
	Existing/Planned Development – Planning Compatibility	
	Property Acquisitions – Other Factors	
	Transportation Capacity – Other Factors	
	Construction Complexity – Other Factors	
Southwest Transitway Alternatives Analysis (AA)	Southwest Transitway DEIS Screening	EPA
Goal 3: Protect the Environment	LPA Screening	NEPA
Vehicle Miles of Travel		
Emissions		
Residences		
Compact Land Use at Stations		
Natural Env.	Historic & Cultural Resources	✓
	Natural Resources Endangered species Critical habitats Vegetation restoration areas Flora & fauna	✓
	Water Resources Waters of US Wetlands	✓

	Riparian area Floodplains Watershed mgmt resources Shallow groundwater Ground water discharge	
	Hazardous/Contaminated sites	✓
	Section 4(f) – Park	✓
	Geological Resources	✓
	Noise & Vibrations – preliminary impact assessment	✓

✓ = required to meet New Starts Project Justification criteria

Appendix C – New Starts Project Justification Criteria and Supporting Measures and Categories Table and the Evaluation and Rating Framework Diagram

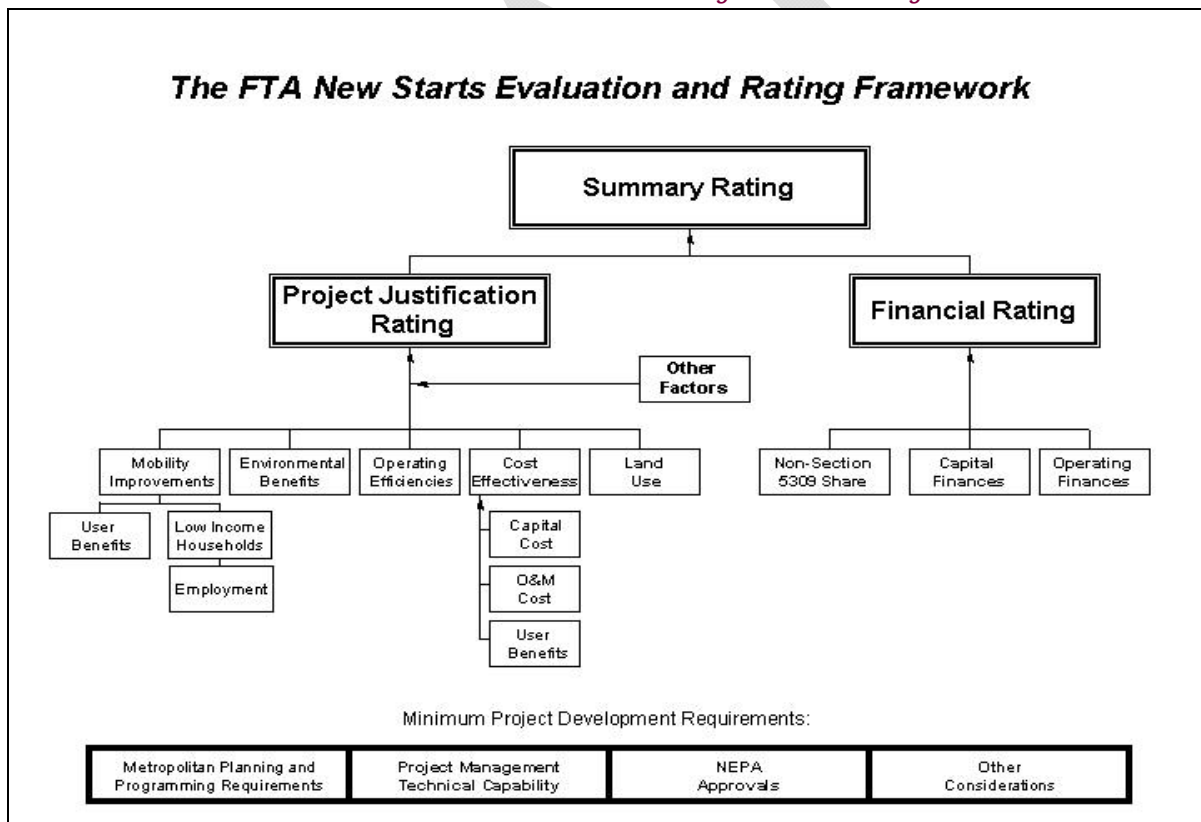
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Table 3 New Starts Project Justification Criteria, and Supporting Measures and Categories

Criterion	Measures/Categories
Cost Effectiveness	Incremental Cost per Hour of Transportation System User Benefit
Transit-Supportive Land Use and Future Patterns	Existing Land Use Transit-Supportive Plans and Policies Performance and Impacts of Policies
Mobility Improvements	Normalized Travel Time Savings (Transportation System User Benefit per Project Passenger Mile) Low-Income Households Served Employment Near Stations
Operating Efficiencies	System Operating Cost per Passenger Mile
Environmental Benefits	Change in Regional Pollutant Emissions Change in Regional Energy Consumption EPA Air Quality Designation

Source: Annual Report on New Starts, Proposed Allocation of Funds for Fiscal Year 2007, Report of the Secretary of Transportation to the United States Congress, Pursuant to 49 U.S.C. 5309(k)(1), Appendix B: FY 2007 Evaluation and Rating Process, page B-8.

Table 4 New Starts Evaluation and Rating Framework Diagram



Source: Annual Report on New Starts, Proposed Allocation of Funds for Fiscal Year 2007, Report of the Secretary of Transportation to the United States Congress, Pursuant to 49 U.S.C. 5309(k), Appendix B: FY 2007 Evaluation and Rating Process, page B-6.

Appendix D - Evaluation Criteria Matrices Example

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