

8 Evaluation of Alternatives

This chapter evaluates the effectiveness of the No Build Alternative and the Southwest Light Rail Transit (LRT) Project (the Project) based on the information contained in Chapters 2 through 7. The comparison of these alternatives is based on the Project's Purpose and Need Statement as described in Chapter 1. This chapter includes the following sections:

- 8.1 Effectiveness in Meeting the Project Purpose and Need
- 8.2 Environmentally Preferred Alternative

The evaluation in this chapter differs from the evaluation in Chapter 11, Evaluation of Alternatives, of the Draft Environmental Impact Statement (EIS) in that this evaluation focuses on the ability of the Project and No Build Alternative to meet the Purpose and Need. This chapter does not include a discussion of each alternative's attainment of broader goals and objectives and cost-effectiveness that was included in the Draft EIS. These considerations were primarily used and presented in the Alternatives Analysis and the Draft EIS to support the identification of the Locally Preferred Alternative (LPA) and to compare the LPA with other alternatives being evaluated.

8.1 Effectiveness in Meeting the Project Purpose and Need

As presented in Chapter 1, the proposed Project is intended to improve transit service in the Southwest LRT Corridor by addressing the deficiencies and needs that have been identified. The following discussions analyze the effectiveness with which the No Build Alternative and Project address the Corridor needs and achieve the intended Purpose of the Southwest LRT Project, which is as follows:

- The Southwest LRT Project will improve access and mobility to the jobs and activity centers in the Minneapolis central business district, as well as along the entire length of the Corridor for reverse-commute trips to the expanding suburban employment centers.
- The Southwest LRT Project will provide a competitive, cost-effective travel option that will attract choice riders to the transit system. The competitive and reliable travel time for the Southwest LRT Project is attributed to the diagonal nature of the line compared to the north-south/east-west orientation of the roadway network and to the increasing levels of congestion of the roadway network.
- The Southwest LRT Project will be part of the region's system of transitways integrated to support regional transportation efficiency. Since the late 1990s, the Southwest LRT Project has been identified by the Metropolitan Council (Council) as warranting a high level of transit investment to respond to increasing travel demand in a highly congested area of the region. Due to congestion levels on the roadway network, speed and use limitations of the shoulder bus operations, and capacity constraints in downtown Minneapolis, a bus option is limited in its ability to adequately serve the travel demand and to provide reliable travel times.

8.1.1 Improve Access and Mobility to Jobs and Activity Centers for Commuters and Reverse Commuters

The first purpose of the Project is to improve access and mobility to the jobs and activity centers that are: (1) in the Minneapolis central business district; and (2) along the entire length of the Corridor (i.e. for reverse-commute trips to the expanding suburban employment centers).

Exhibit 1.4-5 illustrates the existing concentration of employment within the Project Corridor, with employment activity centers in Eden Prairie, Minnetonka, Hopkins, and St. Louis Park – and within the Minneapolis central business district, which is and will remain the highest concentration of employment in the region. Reflecting regional and local land use and development goals and objectives of increasing employment concentrations within a variety of activity centers outside of central Minneapolis, employment in the Corridor is expected to increase by 36 percent from 2010 to 2040. In Eden Prairie, Minnetonka and Hopkins, which represent much of the Corridor's reverse commute market, employment is projected to increase from 30 percent, 43 percent, and 44 percent, respectively.

The current bus service in the Corridor is predominantly inbound (eastbound) from suburban areas during the morning peak period and outbound (westbound) to the suburban areas during the evening peak period. Eastbound service in the morning to downtown Minneapolis and westbound service in the evening from Minneapolis is much more frequent than the reverse-commute service. For example, there are over six times as many buses traveling from downtown Minneapolis into the Corridor during the evening peak hour than there are serving the reverse commute. Further, many of the transit connections between the Corridor's activity centers do not provide direct connections and instead require circuitous routes and/or transfers, especially in the reverse-commute direction.

8.1.1.1 No Build Alternative

The No Build Alternative would not add light rail or other high capacity transit service into the Southwest LRT Project Corridor and thus would not meet this purpose. Under the No Build Alternative, the bus network would see relatively minor changes in its service delivery and structure (see Exhibit 4.1-4). While transit vehicle hours and miles would increase by approximately 1 percent per year under the No Build Alternative, much of that increase would be devoted to allowing for increased bus travel times due to increased congestion.

Under the No Build Alternative, there would not be a substantial increase in either the quantity or quality of transit service between the Corridor and the Minneapolis central business district in either the commute or reverse-commute directions. Only four existing bus routes would see major service and/or routing changes. Further, there would be only one new crosstown route, which would connect areas of Eden Prairie, Minnetonka, and Hopkins. That new crosstown bus route would be relatively infrequent and, because of the circuitous and congested street network on which it would operate, it would have relatively long transit travel times between the activity centers. As a result, the No Build Alternative would not improve mobility and access for either Corridor commuters to the Minneapolis central business district or for reverse commuters destined for Corridor employment centers south and west of central Minneapolis.

8.1.1.2 Project

The Project will introduce new light rail service that will meet both elements of this project purpose. First, the Project's proposed light rail extension will connect residential areas throughout the Corridor to employment and activity centers in the Minneapolis central business district. The light rail extension, including its connecting feeder bus service and new park-and-ride lots, will substantially improve both access and mobility to those centralized jobs and activity centers. Further, by providing one-seat rides to the existing METRO Green Line, the Project will extend the improved access and mobility to include other employment and activity centers, such as the University of Minnesota and the St. Paul central business district.

Second, the Project will substantially increase access and mobility to jobs in the Corridor that are west and south of the Minneapolis central business district. Those reverse-commute trips will see substantial increases in the delivery and quality of transit service. In general, the frequency of service for reverse-commute trips on the proposed light rail extension will be the same as for commute trips, thereby providing increased transit access. Further, transit travel times for reverse-commute trips via the new light rail service will tend to be substantially reduced, compared to existing and 2040 travel times under the No Build Alternative. In addition, those reverse-commute transit travel times will be much more reliable, because the light rail service will not operate on congested roadways and it will be less likely to be impeded by adverse weather affecting roadways. Those improvements in transit travel times and reliability will substantially improve mobility for reverse-commute trips.

8.1.2 Attract Choice Riders to the Transit System by Providing a Competitive, Reliable, Cost-effective Travel Option

The second purpose of the Project is to attract choice riders to the transit system by providing a competitive, reliable, cost-effective travel option in an area of the region that is experiencing congested roadway connections. In particular, the intent of this purpose is to efficiently attract new choice riders to the transit system by: (1) providing a new diagonal transitway that augments the north-south/east-west orientation of

the existing roadway network, thereby reducing transit travel times in the Corridor, especially between the major activity centers; and (2) grade separating that transitway from the increasingly congested regional and local roadway network, thereby increasing the speed and reliability of transit service in the Corridor.

Regional highways in the Corridor are laid out in a grid pattern, which requires express bus service using them to travel north or south and then east or west to connect activity centers that are situated in a southwest to northeast orientation. At the local level, much of the roadway network through this area is circuitous due to geographic constraints, such as lakes and freight rail alignments, and there are several one-way street operations. Unlike streets on a standard grid, circuitous streets tend to require buses to frequently turn at intersections. Turning buses are generally slower and require slightly more intersection capacity. One-way street networks can make it difficult for bus riders to locate stops for a return trip, and buses traveling through one-way street systems are often required to take a circuitous route, which adds distance to every trip.

This purpose also recognizes the link between increased congestion and the deterioration in the competitiveness of bus transit to attract choice riders. Most importantly, transit travel times tend to increase at a greater rate than automobile travel times in response to the same congested roadway network. Further, the number and frequency of accidents tends to increase with growing congestion, which leads to additional congestion. Between 2010 and 2040, daily vehicle trips in the region will increase by 28 percent and, as a result, congestion is forecast to worsen by 2040. With the expected traffic increases caused by population and employment growth and few roadway capacity increases due to funding constraints, the Corridor will experience more intense and more extensive congestion on the region's regional highways and local streets. Exhibit 4.2-2 illustrates the substantial increase in congested principle arterials that will occur by 2040.

8.1.2.1 No Build Alternative

The No Build Alternative would not introduce a new travel option to attract new choice transit riders, and thus it would not meet either of the two elements of this purpose. First, the No Build Alternative would not introduce a new diagonal transitway into the Corridor and thus transit travel times in the Corridor would not become more competitive. Instead, bus service in the Corridor would continue to operate on the north-south and east-west street grid or on the circuitous local roadway network. Second, bus service in the Corridor under the No Build Alternative would continue to use local roads and regional highways that will become increasingly congested. Congested roadways and intersections will result in longer delays for both automobile traffic and bus transit. Compared to today, Corridor transit travel times under the No Build would tend to increase and transit reliability would tend to decrease. Most importantly, buses in the Corridor would tend to have either no or reduced competitive advantages in travel time or reliability relative to automobiles, which would also be true for buses that use the regional highway network because of the speed and use limitations of the shoulder bus operations. As traffic volumes exceed the capacity of roadways and intersections along the Corridor, travel times will increase. Longer traffic delays and reduced transit service reliability would be detrimental to the quality of life of residents and employees in the Corridor.

8.1.2.2 Project

The Project will meet the second purpose of attracting choice riders to the transit system in a cost-effective manner by: (1) providing a new diagonal transitway that reduces transit travel times in the Corridor, especially between the major activity centers and especially in the reverse commute direction; and (2) grade separating that transitway from the increasingly congested regional and local roadway network, thereby increasing the speed and reliability of transit service in the Corridor. In particular, the Project will introduce a grade-separated diagonal transitway in the Corridor that will: reduce transit travel times; improve transit reliability; increase the overall transit demand; and increase transit's mode share. That is, the new light rail transit service introduced in the Corridor by the Project will provide a competitive and reliable transit option that will attract choice riders.

Except for at-grade light rail crossings of streets, the new light rail service will operate within exclusive transit right-of-way, which will separate the light rail service from the slowing and reliability-reducing effects of congestion. Under the Project, approximately one-third of the passenger miles within the Corridor will occur within that exclusive transit right-of-way, generally unaffected by roadway congestion and

deteriorating speeds over time. Transit travel time improvements of the Project over the No Build Alternative reflect greater efficiency and reliability of transit service offered by the Project, as it would be able to adhere more strictly to its operations schedule and provide more predictable travel times, contrasted to bus service on more congested roadways under the No Build Alternative. As a result, the Project will attract those new choice transit riders in a more cost-effective manner, compared to the efficiency of Corridor bus network the No Build Alternative.¹

Because of its travel time and coverage advantages compared to the No Build Alternative, the Project is forecast to result in 13,240 new transit trips on an average weekday in 2040, compared to the No Build Alternative. Most of those new transit trips represent a shift from trips taken using a personal automobile. In total, the Southwest LRT Green Line Extension is forecast to carry 32,679 transit rides in 2040 on an average weekday. The increase in transit ridership under the Project reflects the demand for and attractiveness of faster and more reliable transit service in the Corridor.

8.1.3 Be Part of a System of Integrated Regional Transitways

The third purpose is to expand the region's system of integrated transitways into the Southwest LRT Project Corridor. This purpose reflects the regional goals and objectives of linking land use and transportation plans. The Council has determined that the Corridor warrants a high level of transit investment because of the population and employment growth that has and will continue to occur in the Corridor, especially within targeted activity centers, in response to local and regional land use plans. Those plans recognize that the existing and planned roadway network will become increasingly congested over time. Further, those plans recognize that the increasingly congested roadway network and the bus system that operates on it cannot adequately support those land use plans where concentrations of population and employment are targeted. Instead, the region is looking to the system of integrated regional transitways to supplement the roadway and bus networks with high capacity and high quality transit connections. The intent is to serve those targeted activity centers and their associated increases in travel demand with a system of fast and reliable transitways.

8.1.3.1 No Build Alternative

The No Build Alternative would not expand the region's system of integrated transitways into the Corridor where regional and local land use plans have targeted major job and activity centers. Therefore, the No Build Alternative would not meet the purpose of expanding the region's integrated transitway into the Corridor.

Instead, the Corridor would be connected to that regional transitway system through a bus network that would be substantially similar to the existing bus network – buses operating on increasingly congested regional and local roadways. Thus, transit access and connectivity between the Corridor bus system and the regional transitway system would generally remain the same or worsen due to the impact of increased traffic congestion on transit access times. Bus capacity constraints within downtown Minneapolis would limit the region's ability to expand transit service capacity linking the Corridor to the other regional transitways. As such, and as described in Section 3.1, the No Build Alternative is not compatible with or is neutral in its support of many local, Hennepin County, Council, and Minnesota Department of Transportation land use and transportation plans that have been developed or amended to specifically include or reflect the introduction of light rail service into the Corridor and the associated changes to land use sustained by transit investment.

8.1.3.2 Project

The Project will meet this purpose through its expansion of the region's integrated transitways into the Corridor. Specifically, the Project will extend the existing METRO Green Line light rail service into the Corridor with approximately 14.5 miles of grade-separated right-of-way and 16 new light rail stations. That expansion of the regional transitway system into the Corridor will replace much of the No Build Alternative's reliance on the local bus network to provide that connection.

¹ For example, the Project will attract more new Corridor transit trips per new hour and mile of transit service than the number of Corridor transit trips per hour and mile of transit service under the No Build Alternative. New Project transit trips and hour/miles of service are compared to the No Build Alternative.

The long-range comprehensive land use and transportation plans for the Twin Cities region both call for continued investment in a system of regional transitways, including the Southwest LRT Project. As described in the plans, the region's investment policy includes land use development expectations to leverage and support its transit investments, identifying cost-effective means of improving multimodal access to regional destinations, and improving mobility and reliability on the regional highway system. Further, the Project's proposed light rail stations are expected to experience additional mixed-use development, compared to the No Build Alternative. The expected increase in development density around light rail stations resulting from the construction of the Project is consistent with regional and local plans. These plans acknowledge the value of extending the regional transitway into the Corridor as an important way to support efficient land use development.

8.2 Environmentally Preferred Alternative

The National Environmental Policy Act (NEPA) requires that, in cases where an EIS has been prepared, the Record of Decision (ROD) must identify all alternatives that were considered, specifying the alternative or alternatives that were considered to be environmentally preferable (40 Code of Federal Regulations [CFR] 1505.2(b)). The environmentally preferable alternative or alternatives is the alternative or alternatives that would promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative or alternatives that cause the least damage to the biological and physical environment and the alternative(s) that best protects, preserves, and enhances historic, cultural, and natural resources.

The Draft Environmental Impact Statement's evaluation of alternatives preliminarily found that LRT 3A (relocating existing freight rail service from the Kenilworth Corridor) was the Project's environmentally preferred alternative and that LRT 3A-1 (co-location) would "fail to rise to the environmentally preferred alternative" (see Chapter 11 of the Draft EIS, p. 11-12).

As noted in Section 2.5 of the Supplemental Draft EIS, the findings reached in the design adjustment process that occurred after publication of the Draft EIS led to adjustments to the Locally Preferred Alternative, with the retention of freight rail in the Kenilworth Corridor (LRT 3A-1). In April 2014, the Council identified the design adjustments to be incorporated into the Project: the Shallow LRT Tunnels – Over Kenilworth Lagoon (which will include co-location of light rail and freight rail in the Kenilworth Corridor – LRT 3A-1). In summary, the Council found that, relative to the other options considered, the Shallow LRT Tunnels – Over Kenilworth Lagoon (LRT 3A-1) would provide the best balance of costs, benefits, and environmental impacts, and in doing so found that it would best meet the Project's Purpose and Need (see Chapter 1). In particular, the Locally Preferred Alternative with the Shallow LRT Tunnels – Over Kenilworth Lagoon (LRT 3A-1) will:

- Result in less harm to Section 4(f)-protected properties (compared to the displacement of the Park Spanish Immersion School playground with freight rail relocation)
- Include the Southerly Connector replacing the Skunk Hollow switching wye that will facilitate freight rail movements
- Minimize the reconstruction of freight rail tracks and related adverse impacts
- Include design refinements that will help avoid diminishing the potential for TOD around light rail stations in close proximity of freight rail tracks
- Provide safe and convenient pedestrian crossings of freight rail tracks at the proposed Wooddale, Beltline, and 21st Street stations
- Avoid the displacement of residents and businesses in St. Louis Park and Minneapolis (compared to the full acquisition of approximately 32 residential, commercial, and institutional parcels under freight rail relocation)
- Include bicycle and pedestrian improvements and the study of potential traffic-related improvements that will improve access to light rail stations and across the light rail and freight rail alignment in the Kenilworth Corridor (compared to the construction of a berm for the freight rail alignment in St. Louis Park that would tend to divide a residential and commercial neighborhood)

- Permanently displace approximately six fewer acres of wetland

As a result of the design adjustments that occurred after publication of the Draft EIS, the co-location of light rail and freight rail in the Kenilworth Corridor (LRT 3A-1) is the Project's environmentally preferred alternative.²

² In addition, through the Section 404 wetland permit process, the U.S. Army Corps of Engineers has preliminarily determined that, compared to the relocation of freight rail (LRT 3A), the co-location of freight rail and light rail in the Kenilworth Corridor (LRT 3A-1) is the Least Environmentally Damaging Practicable Alternative (LEDPA). See Section 3.9 for additional information on the Section 404 wetland permit process and documentation and the U.S. Army Corps of Engineers' preliminary LEDPA determination.