



8.0 RIDERSHIP

8.1 Summary of Ridership Forecast Methodology

8.1.1 Introduction

Transit ridership forecasting for this Alternatives Analysis evaluated several potential transit improvements within the Corridor between St. Paul and Hinckley. In addition to refinements to existing bus service, alternatives under consideration were BRT, commuter rail, and LRT. The three distinct alignments where transit improvements could be implemented are along I-35E/I-35; the County Regional Railroad Authority (RRA) rights-of-way and TH 61, and the existing Canadian Pacific Railway (former Soo Line), Minnesota Commercial, and St. Croix Valley rights-of-way.

Since the Rush Line Corridor encompasses the Twin Cities Metropolitan Area (Anoka, Ramsey, and Washington Counties) as well as areas outside the Metro Area (Chisago, Isanti, and Pine Counties), two methodologies were used to develop ridership forecasts. The first methodology employed the Metropolitan Council's travel demand model, while the second used 2006 Longitudinal Employment-Household Dynamics (LEHD) data for Chisago and Pine Counties. The Project Team combined the two methodologies to arrive at one set of ridership forecasts for the various transit alternatives for this project. A detailed description of this methodology can be found in the Ridership Forecasting and Results technical memorandum included as **Appendix H** in this report.

A total of ten alternatives were analyzed, as defined in the November 2008 *DRAFT Operating Plan* (included as **Appendix I** in this report). In addition, two LRT sub-options were identified and evaluated; one of these sub-options represented the interlining of Rush Line Corridor LRT service with the future Central Corridor LRT line. The last section of this chapter (8.2 Year 2030 Ridership Forecasts) presents a summary of the ridership forecasts for each alternative modeled for the Rush Line Alternatives Analysis.

8.1.2 Metropolitan Council Model

The Project Team modified the Twin Cities Travel Demand Model to support the requirements of this Study. As suggested by Metropolitan Council travel demand forecasting staff, the Project Team used the following information to estimate transit patronage for the various Rush Line alternatives:

- 2030 MVST Transit network (as provided by the Metropolitan Council in June 2007)
- Hiawatha LRT, Central LRT, Southwest LRT, Northstar commuter rail, Bottineau Express, and Metro Transit Route 59 corridors, along with the regular MVST local and express buses to define the 2030 Base transit network (existing and committed transit improvements)
- 2006 LEHD data projected to 2030 for transit stations beyond Forest Lake – The Twin Cities TAZ network does not model for zones in the Collar Counties and Pine County where the northern terminus of the Rush Line Corridor is located.
- Memorandum entitled *Twin Cities Transit Model Network Coding Methodology and Assumptions*, as provided by the Metropolitan Council.

Input Files

The following input files have been created or modified to reflect the necessary changes to fit each alternative model run:

- Transit Route File
- Highway Network File
- Transit Walk Access Links
- Transit Drive Access Links
- Transit Station Dummy Access Links
- Transit Accessibility Data File
- Adjustment for off-peak LRT Skim Time File.

The specific files modified and a description of the modifications are contained in “Technical Memorandum #3: Ridership Forecasting and Results” included as **Appendix H** of this report.

8.1.3 Purpose of LEHD Analysis

The Rush Line Corridor extends north beyond the boundary of the Twin Cities seven-county metropolitan area. As a result, the Metropolitan Council’s travel demand model does not include the entire corridor to Hinckley. To determine the number of potential transit riders in the Rush Line Corridor north of the seven-county metropolitan area, 2006 LEHD data was used to estimate the potential future ridership for alternatives providing service north of the seven-county metropolitan area.

Forecast Methodology Using LEHD Data

The methodology to forecast Rush Line ridership involved dividing potential transit stations into two sub-groups: origin stations and destination stations; determining origin and destination catchment areas; and estimating the 2030 transit mode share.

8.1.4 Post-Processing Adjustments

For BRT Alternatives 1A and 1B, the model yielded very low ridership at the Union Depot station in downtown St. Paul. Since these BRT alternatives would operate on the I-35 corridor, the inbound buses are routed through downtown St. Paul, and with the terminal stop at Union Depot. Almost all the alightings are occurring in the intermediate stops in downtown that serve the major employment zones. The zones in downtown are not at block level; as such, it is relatively difficult to determine where a

certain trip ends. To help estimate the number of trips to the zones proximate to Union Depot, two methodologies were developed and employed, with the goal of identifying a range of potential ridership associated with the Union Depot for BRT Alternatives 1A and 1B. One methodology is based on the 2006 LEHD data, and another on the travel demand model home-based work (HBW) person trips. A detailed description of these methodologies can be found in “Technical Memorandum #3: Ridership Forecasting and Results” included as **Appendix H**.

The results from both methodologies were compared to generate a consistent estimate to determine the potential ridership at Union Depot Station for BRT Alternatives 1A and 1B. Based on taking an average of the two methodologies, the estimated ridership rounded to the nearest five transit trips is 75.

Further, the total number of transit trips in downtown St. Paul for stations at Fifth/Sixth Streets and Wacouta Avenue and Fifth/Sixth and Robert Streets was prorated to reflect this estimated contribution at the Union Depot. Therefore, the total estimated ridership for BRT Alternatives 1A and 1B was held constant.

8.2 Year 2030 Ridership Forecasts

Table 8-1 and the **Figures 8-1** through **8-4** present the 2030 ridership by transit mode. The range of average weekday ridership for the Rush Line Corridor by alternative is between 1,040 (No-Build) and 9,610 (modified LRT 1B, routed to the LRT station at Tenth Street and Cedar Avenue). The range for ridership for the Build alternatives is between 1,040 (Commuter Rail 1A) and 8,780 (modified LRT 1B). The ridership for the four BRT alternatives ranges from 4,730 (BRT 2A) and 5,830 (BRT 1A). The two commuter rail alternatives yielded the lowest ridership – 1,040 for 1A and 1,440 for 1B – generally because of lower level of service and access by potential patrons that are associated with this type of transit service.

This analysis also computed the change in corridor ridership for each Build Alternative relative to the TSM Alternative to determine the potential effectiveness of the proposed major transit investment. Both commuter rail alternatives would result in lower corridor ridership than the TSM Alternative. All four BRT alternatives result in either relatively no change (+30 for BRT 2A) or significant increases (+2,360 for BRT 1A). Similarly, LRT alternatives would yield either a relatively small loss (-130 for LRT 1A) or a large increase (+1,900 and +4,140 for LRT 1B and modified LRT 1B, respectively).

Table 8-1: Preliminary Rush Line 2030 Ridership

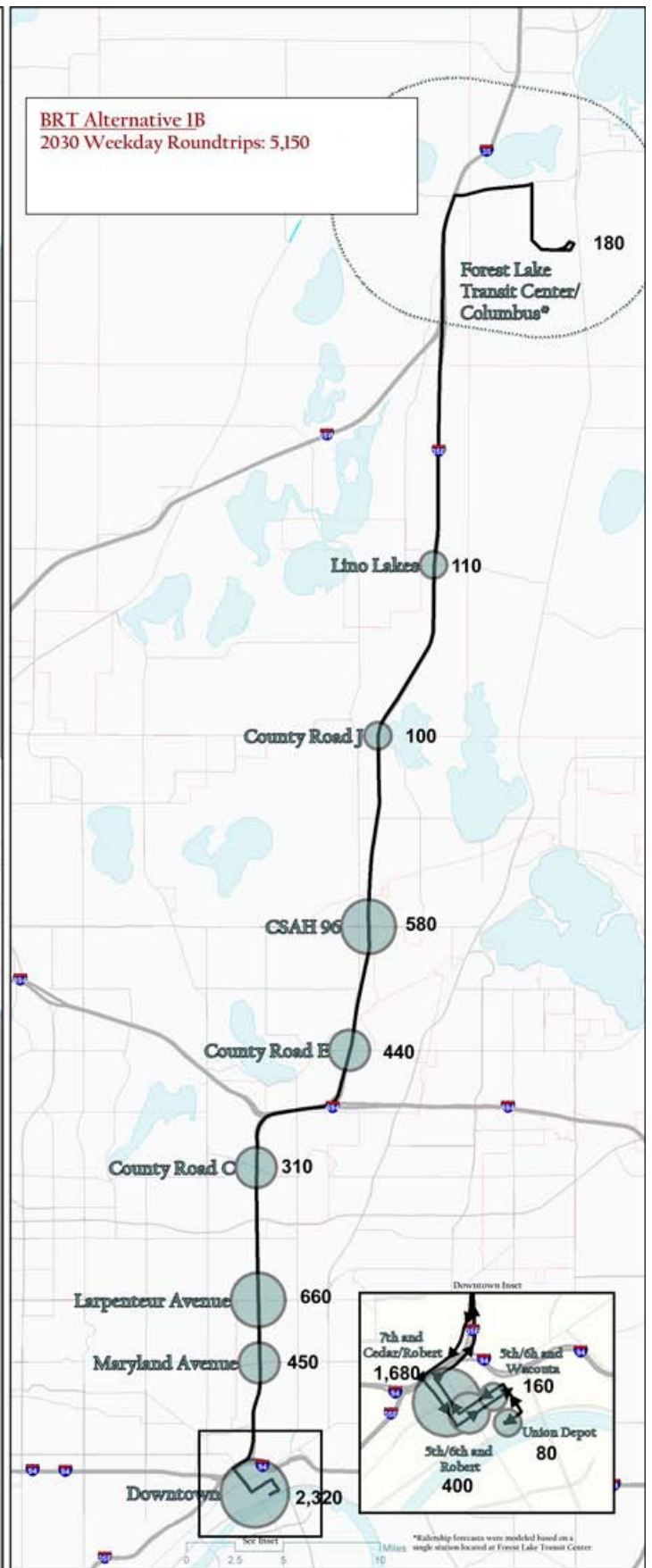
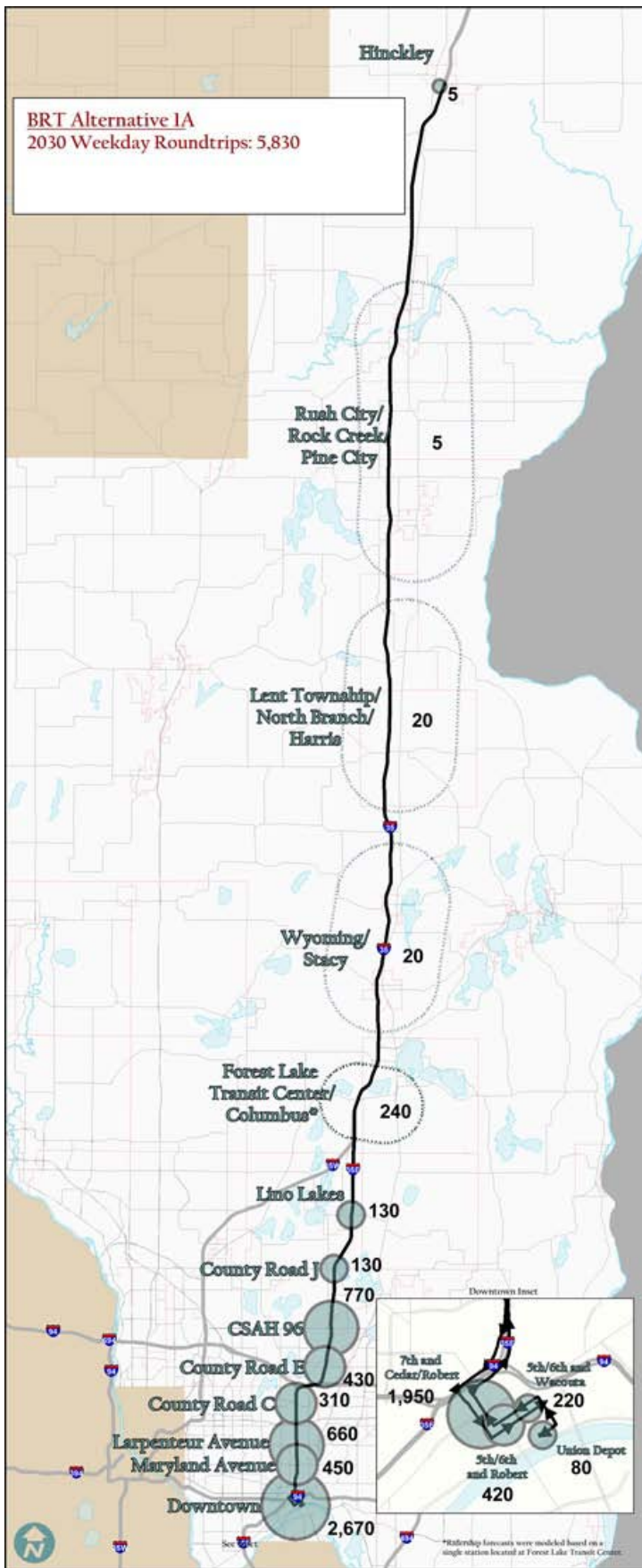
2030 Average Weekday Ridership by Alternative ¹											
Route	No-Build	TSM	BRT 1A via I-35 to Hinckley	BRT 1B via I-35 to Forest Lake	BRT 2A via County RRA to White Bear Lake	BRT 2B via County RRA to Forest Lake	Commuter Rail 1A via County RRA to Hinckley	Commuter Rail 1B via CP Rail to Hinckley	LRT 1A via County RRA to Maple-wood to Union Depot ²	LRT 1B via County RRA to White Bear Lake to Union Depot	LRT 1B - Modified via County RRA to White Bear Lake to Cedar & 10th Station ³
59	430	2,110	480	460	30	20	520	480	30	40	30
265	230	1,180	1,240	1,230	90	-	10	390	220	30	30
266	250	810					620		990		
275	120	360	290	320	390	360	330		380	340	290
287	30	210							250	250	250
Rush Line Express		810		570	270	200			2002	220	230
Subtotal - Feeder Routes	1,040	5,470	2,000	2,580	770	590	1,480	880	2,080	880	830
BRT											
To Highway 96			2,190	2,210	4,730	2,380					
To Forest Lake			2,850	2,950		2,970					
To Hinckley			800								
Commuter Rail											
To Forest Lake							440	660			
To Hinckley							600	780			
LRT											
To Beam									3,260		
To Highway 96										6,490	8,780
Subtotal - Build Routes	-	-	5,830	5,150	4,730	5,350	1,040	1,440	3,260	6,490	8,780
Corridor Total	1,040	5,470	7,830	7,730	5,500	5,930	2,520	2,320	5,340	7,370	9,610
Change Relative to No Build	-	4,430	6,790	6,690	4,460	4,890	1,480	1,280	4,300	6,330	8,570

¹ Numbers may not sum exactly due to rounding. Ridership estimates are based on November 2008 Draft Operating Plans prepared by Connetics Transportation Group, URS Corporation and Metro Transit.

² Under Alternative LRT 1A, the Rush Line bus service terminates at the Forest Lake Transit Center, forcing patrons from the northern segment of the corridor to transfer to another bus route to reach either downtown St. Paul or the light rail service on the County RRA ROW.

³ To determine the potential ridership effects of interlining the Rush Line LRT 1B with the Central Corridor LRT in downtown St. Paul, URS ran a modified sub-alternatives. This sub-alternative used the same headways as Central Corridor, i.e. 7.5 min St. Paul, with a terminus at the Cedar/10th Street Station. This model run was completed for the purpose of comparison to terminating light rail service at the Union Depot.

Sources: URS, Metropolitan Council Travel Demand Model, 2006 LEHD



Source: URS, Metropolitan Council Travel Demand Model and LEHD.

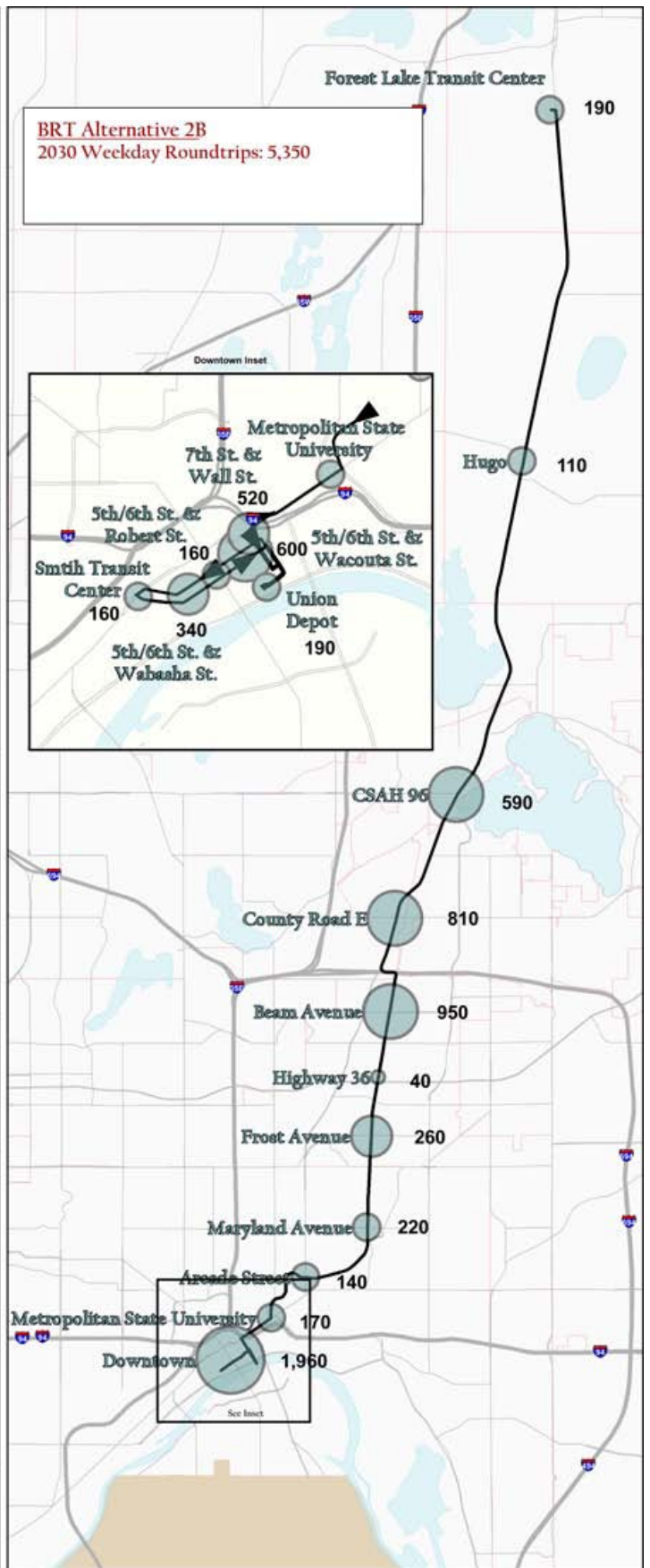
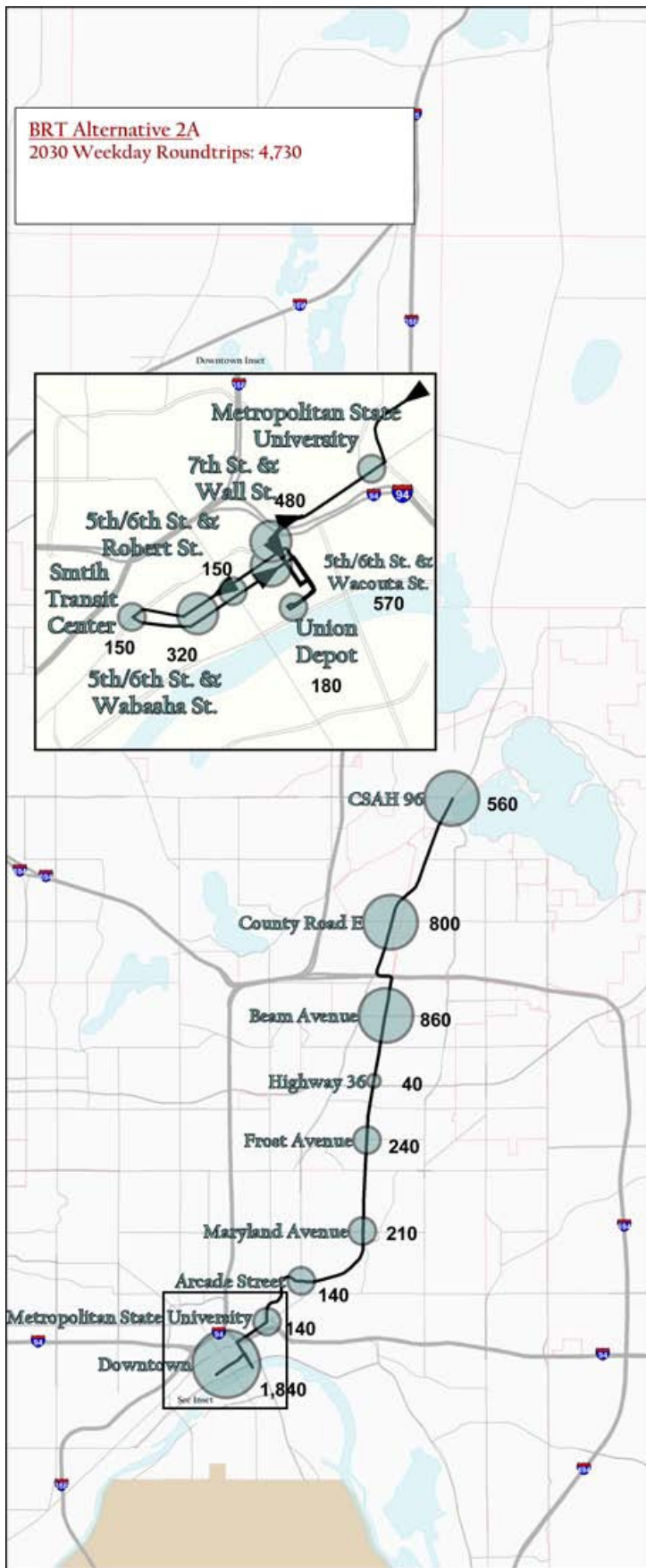
Figure 8-1
Bus Rapid Transit Analysis



Legend 2030 Ridership

- 50 or Fewer
- 51 - 250
- 251 - 500
- 501 - 1,000
- Over 1,000

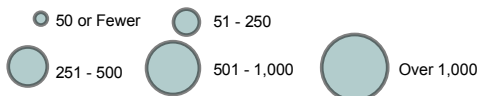
Note: Numbers may not sum due to rounding.



Source: URS, Metropolitan Council Travel Demand Model and LEHD.

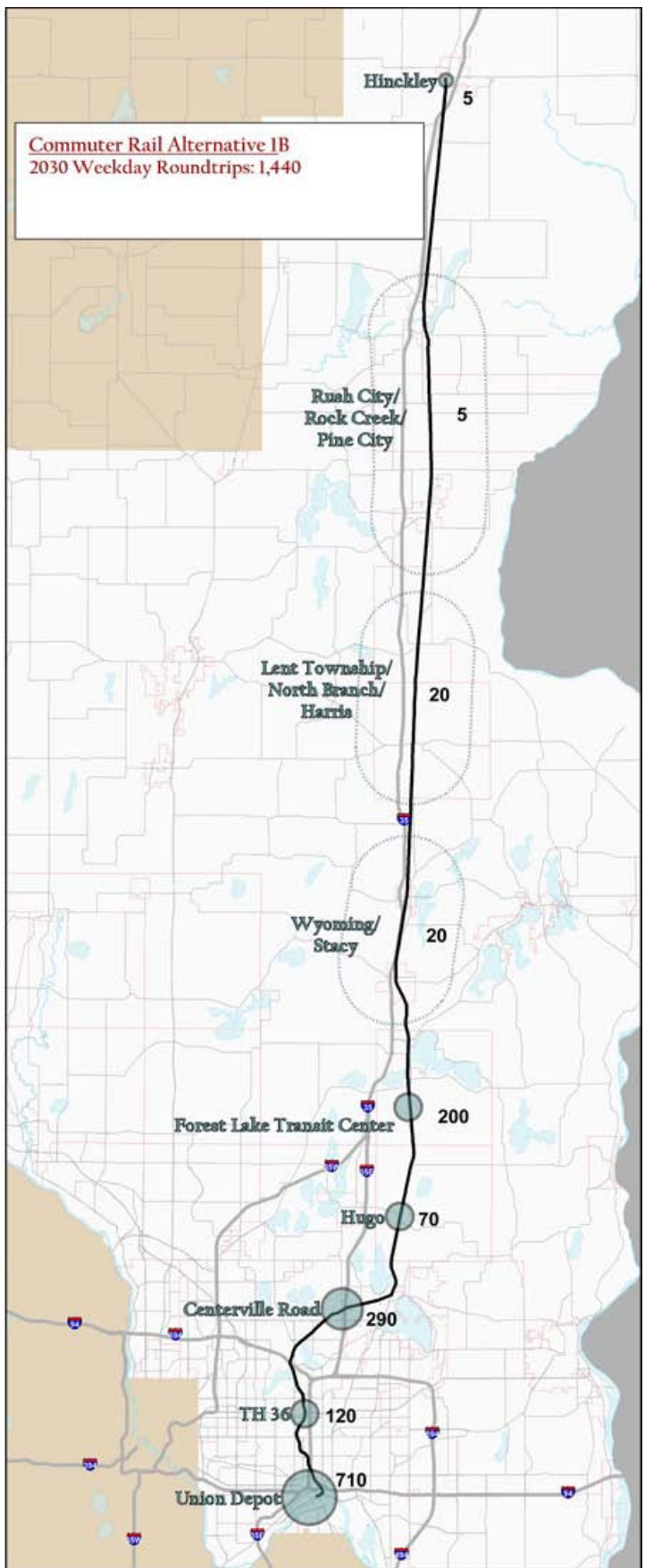
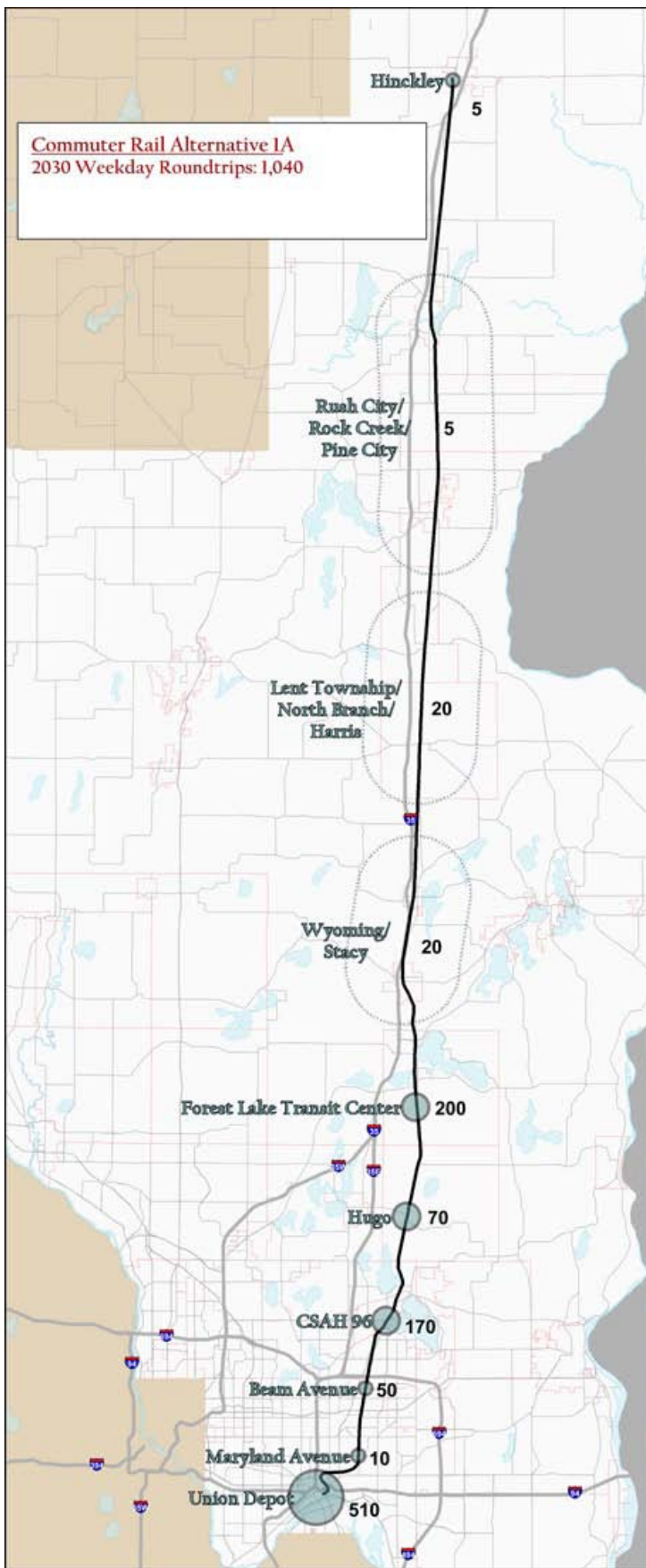


Legend 2030 Ridership



Note: Numbers may not sum due to rounding.

Figure 8-2
Bus Rapid Transit Analysis

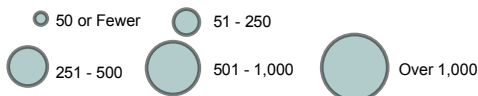


Source: URS, Metropolitan Council Travel Demand Model and LEHD.

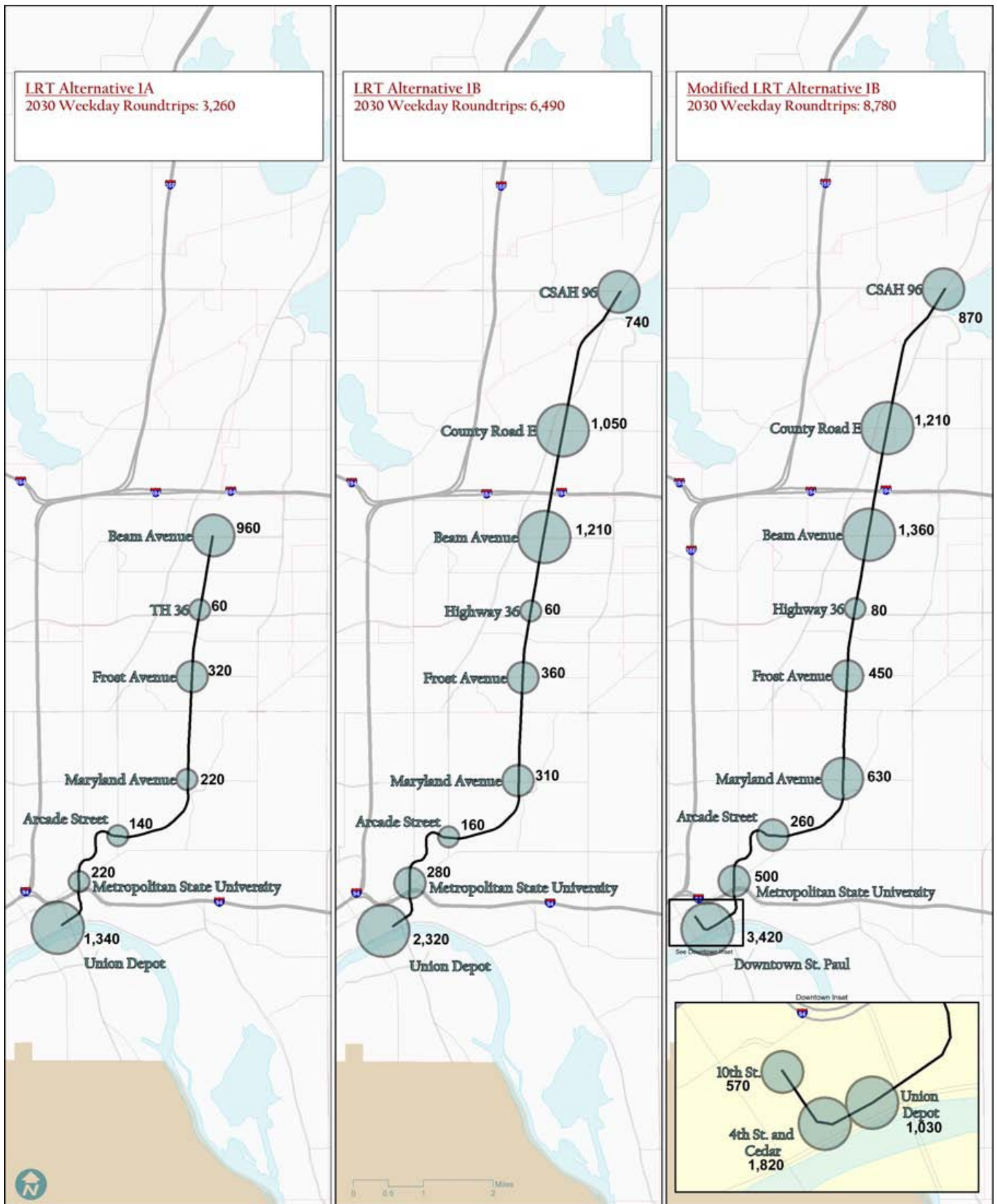
Figure 8-3
Commuter Rail Analysis



Legend 2030 Ridership



Note: Numbers may not sum due to rounding.



Source: URS, Metropolitan Council Travel Demand Model and LEHD.

Figure 8-4
Light Rail Transit Analysis