Overview

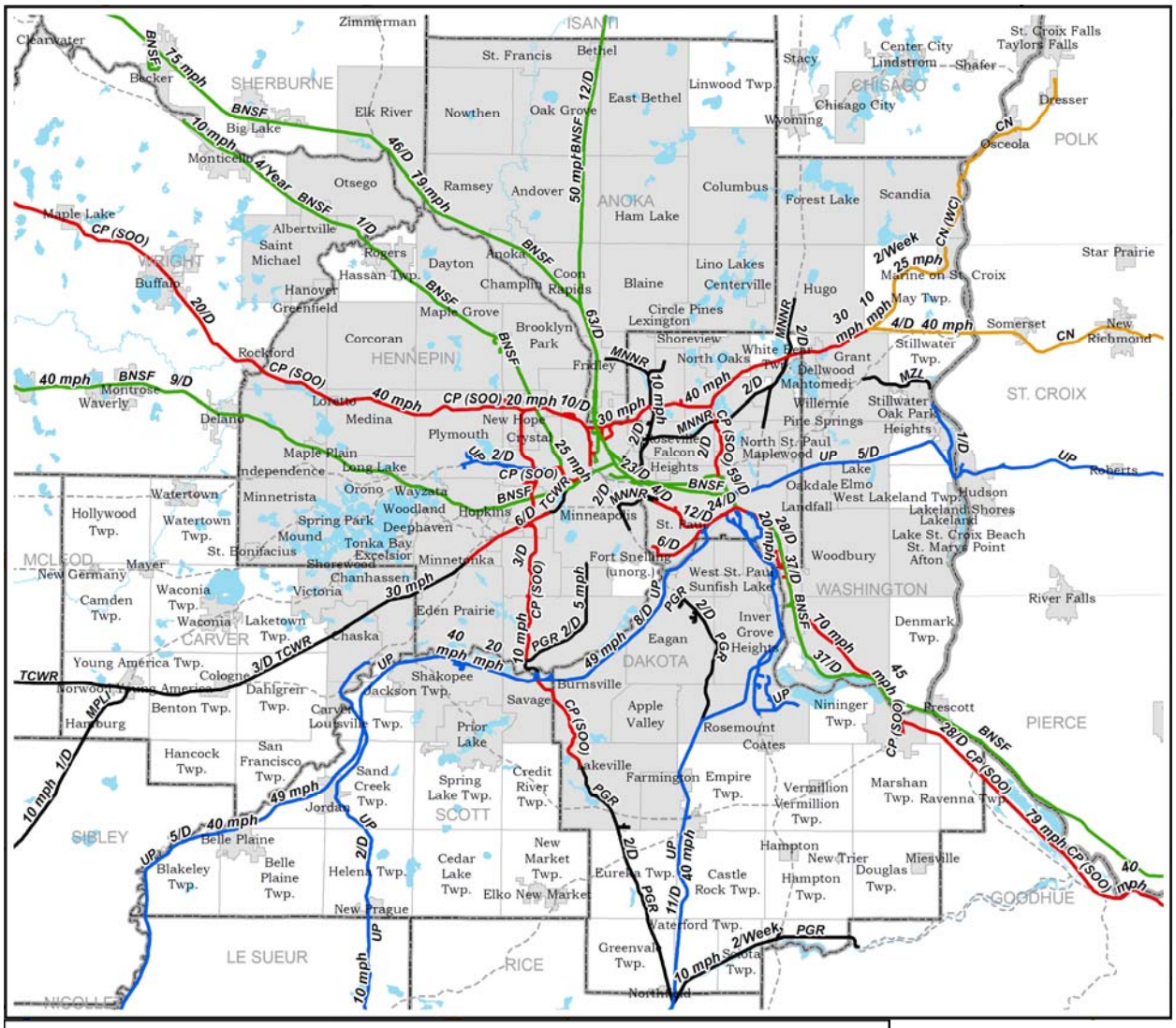
The rail system in Minnesota has long played an important and significant role in the transportation of freight in Minnesota – carrying 30% of all freight tonnage. It is estimated that 5% of the nation's freight rail traffic passes through the Minneapolis/St. Paul complex. Minnesota has the eighth highest number of track miles per state in the U.S.

A strong and vibrant rail system supports economic development, enhances environmental sustainability and increases the business marketability of Minnesota. Many of the State's major industries rely on the freight rail system to effectively provide the means of delivering products which helps to make the State economically competitive with neighboring states. With the expectation of higher energy costs, increasingly strained capacity on roadway infrastructure, and additional regulations on the nations' motor freight carriers, the importance of the nation's railroads will continue to grow.

Most of the railroad track in Minnesota is privately owned – one exception to this general rule is a portion of the Kenilworth Corridor that is part of this exercise.

I. Industry Analysis – Recent Changes

The Staggers Act, passed in 1980, deregulated the railroads, which spawned a series of consolidations, mergers, abandonments and spin offs. Ultimately these transactions that have shaped the rail network that exists today. Deregulation also encouraged competition, which prompted the railroads to implement operating changes which have made freight rail transportation more efficient and safer than ever.



LEGEND

Major Railroads (Class I)

- BNSF (1,598 Miles)
- CN (436 Miles)
- CP (750 Miles)
- UP (462 Miles)

Class II Railroads

- CP (DME, 472 Miles)

Other Railroads

- Class III & Private (778 Miles)

Abandoned Railroads

- Abandoned Lines

A city name on the statewide map indicaties by its size the approximate population

Examples:

Staples	Under 10,000
Brainerd	10,000 to 50,000
Minneapolis	Over 50,000

Railroads Lines:

BNSF.....Primary Operator
(SOO).....Subsidiary Operating Company
48/D.....Train Volume (Trains per day unless noted)
79 mph.....Maximum Authorized Speed

Efficiency changes include longer trains and heavier loads. Individual railcars have also gotten larger and carry more products. 50-foot boxcars are being replaced with 60-foot boxcars with 20% more cubic capacity. Hopper cars, too, have gotten larger. In order to pull longer, heavier trains, locomotives have

gotten heavier and more powerful and more of them are used on a train. Additionally, in many cases, locomotives are now placed both at the front and back ends of a train and, in others, in the middle, as well.

Unit trains (a train that is transported intact from origin to destination without switching) have been used for decades in transportation of coal. The railroads and their shippers have adopted this method of transportation with additional commodities for the economies it provides. Agricultural products are prime examples. The number of cars in a unit train has also increased in recent years. A 100-car unit train of coal was once the limit, but now coal trains often carry 125 cars or more. Unit grain trains are commonly 115 cars. Intermodal traffic has become much more prevalent in recent years, which takes advantage of rail's economy for long haul movements, but also trucks' flexibility for handling the first and last miles.

The rail industry has also become safer over the past couple of decades due to investments in infrastructure and equipment which have reduced train accidents rates (i.e., total accidents per million train miles). Additionally, new technologies have been developed and implemented to make rail transportation safer. Examples include detectors along the tracks which identify defects in passing railcars, ground-penetrating radar to detect subsurface conditions that could compromise the track, and detectors which identify defects in the track itself or rail wheels traveling down the tracks. The Association of American Railroads reports a decline of over 40% in the train accident rate between 2004 and 2012; 2013 is expected to continue this trend. The Rail Safety Improvement Act of 2008 mandates positive train control (PTC), systems that will automatically slow or stop trains before certain train-to-train accidents occur. When PTC is implemented on main lines that carry passengers or hazardous materials, safety will be further enhanced.

The freight rail industry will continue to evolve and react to market conditions and it will, undoubtedly, continue to grow. In 2009, the Association of American Railroads projected that freight rail traffic in the United States would grow by 88% by 2035. As track capacity becomes scarce, carriers like Twin Cities & Western (TC&W) that operate over other railroads' tracks will find negotiations with these other railroads more and more challenging. With the long reach of the rail network, changes near and far can impact rail operations in the Minneapolis area. For instance, the expansion of the Panama Canal to accommodate larger ships may tend to increase barge traffic on the Mississippi River and its tributaries which, in turn, may increase rail traffic to and from ports on the Minnesota River.

II. Purpose of Study

The Metropolitan Council has a vision for providing light rail transit to the southwestern suburbs of Minneapolis and the locally preferred alternative (LPA), as decided in the Draft Environmental Impact Statement completed in 2012, is via the Kenilworth corridor. One obstacle for attaining this vision is the TC&W freight rail traffic currently using the corridor, part of which is owned by Hennepin County. Collocation of freight rail, light rail and trail in the corridor is problematic due to some areas with narrow rights of way and also due to the preference to segregate freight traffic from transit. There

appears to be no disagreement that TC&W is highly valuable to the Minneapolis area and the region. Rail is an economical, safe, reliable and environmentally-friendly mode of freight transportation, particularly for bulk products. Rail service provided by TC&W to Minnesota and South Dakota shippers of grain, coal, ethanol, and other products enhances the region's competitive advantage in a global marketplace. All parties are in agreement that freight rail service to businesses on the TC&W network should be maintained.

The TC&W began operations in 1991 over a network originally constructed in the 1870's by the Hastings and Dakota Railway. Other interim owner-operators of the rail network include Milwaukee Rail, Soo Line, and Canadian Pacific Railroad. This series of ownership is similar to changes throughout the railroad industry in North America over the past several decades. TC&W operates over 300 miles of track in Minnesota and eastern South Dakota. Because it interchanges with all four of the Class I carriers that operate in Minneapolis/St. Paul area –BNSF, UP, CP and Canadian National (CN)–as well as the Minnesota Commercial Railway (MNNR), TC&W offers its customers a number of shipping options. Such competition keeps freight costs low, which is a boon to the region's economy and global competitiveness. TC&W has nearly doubled its volumes since 1995, now handling approximately 27,000 carloads annually. Of the 27,000 carloads handled by TC&W in 2013, approximately 85% were "eastbound loads" that were interchanged to other Class I railroads in the greater Minneapolis/St. Paul area.

There has been a long search for a viable alternative route for TC&W's freight rail traffic dating back to 1999 and, perhaps, earlier. The status quo for rail operations, however, must be maintained until the United States Surface Transportation Board (STB) approves discontinuance over the current route. Among other issues, the STB would assess the impacts to the operator and shippers when considering rerouting freight traffic. Of course, the public and communities along any potential re-route have concerns, as well. To date, no reroute alternative has gained the approval of all stakeholders.
The Metropolitan Council has asked TranSystems to revisit all previously identified freight rail routing options to assess their viability and to provide an informed and impartial opinion. Numerous rail-related studies have been conducted in recent years. TranSystems reviewed the following studies in order to obtain background information and to understand the various alternatives for freight rail routing that have already been proposed. Staff also applied their previous knowledge gleaned from working on a freight rail capacity study for the St. Paul side of the Twin Cities. Additionally TranSystems personnel attended public open houses and conducted interviews with representatives of the railroads and other stakeholder groups.

It is important that it is understood that the South West Light Rail Transit project could be delayed until the freight rail issue is resolved.

III. Documents that were Reviewed for the Study

A. St. Louis Park Railroad Study (March 1999)

This report summarizes the history of and anticipates the future for railroads through the City of St. Louis Park. The goal of the study was to identify improvements which would limit the impact of freight rail traffic through the City. The study recommended improvements to the Minneapolis, Northfield & Southern (MN&S) line through St. Louis Park, including new connections to the east-west routes of BNSF's Wayzata Subdivision and Canadian Pacific's (CP) Bass Lake Spur (over which TC&W operates), elimination of the wishbone connection, an upgrade of the line, and mitigation methods to improve safety and minimize impacts to neighborhoods. Additionally, the study suggests that planning efforts for introduction of both commuter and light rail commence.

According to the study, the MN&S, which is now operated by Soo Line, a division of CP, carried approximately 60,000 carloads of potash and lumber over the north-south route through St. Louis park as recently as 1979. Between 1979 and 1999 those volumes dropped to about 8,000 annual carloads. Currently, CP uses the line for only one train in each direction daily with about 10 cars per train, or fewer than 4,000 carloads per year.

B. TCWR Freight Rail Realignment Study (November 2009)

This study reviewed six routes for TC&W's freight rail, summarizes the pros and cons of each and estimates the capital costs for implementing the routes. The report recommended that the MN&S route be progressed through environmental and preliminary engineering analysis. The report was not explicit, however, regarding the methods for developing costs. It provided a range of estimated costs to continue use of the Kenilworth route, ($20 to $120 million) with the high end of the range 2.5 times greater than the MN&S route ($48 million) – although the method of arriving at these costs was not clear.. Cost, presumably, was one reason the MN&S route was deemed preferable, even though the low end of Kenilworth's cost range was just 42% of the estimated cost for the MN&S route.

C. Minnesota Comprehensive Statewide Freight and Passenger Rail Plan (January 2010)

The Plan provides a vision for rail transportation in Minnesota with a 20-year planning horizon. It emphasizes the need to invest in rail network improvements in order to keep pace with forecasted growth, to maintain and improve competitiveness, to improve safety, and to alleviate traffic volumes on roadways. The Plan predicts that statewide freight rail (measured by tonnage) will increase by 25% by 2030; in the Twin Cities, the estimate is over 42%. Among other suggestions, the Plan recommends a $24.4 million upgrade to the MN&S line so that CP could use the line to bypass bottleneck areas elsewhere in the rail network. While the volumes on the MN&S have diminished over the last few decades, with upgrades to the line, CP could route more trains over this line in order to provide a route for trains that need not be switched at its St. Paul Yard, which is in the heavily congested area of

Hoffman Junction. While the Plan acknowledges the TC&W freight relocation is being analyzed, it does not delve into the details of the study. It does, however, suggest several topics which should be considered in a relocation analysis. Regarding safety, the Plan describes assessment with measurements of crashes, injuries and fatalities. Active warning devices and positive train control (PTC) were named as primary methods for attaining safety improvements. Freight Rail Study – Evaluation of TCWR Routing Alternatives (November 29, 2010)

Not fully satisfied that the *TCWR Freight Rail Realignment Study* adequately evaluated the alternatives prior to dismissing all but the MN&S Corridor, the City of St. Louis Park requested additional information on the routes. This study is the response to that request, providing more detail on the Chaska Cutoff, Midtown and Highway 169 Corridors. While this study estimates costs for each of the alternatives in excess of $120 million and identifies shortcomings and anticipated challenges with each, the study did not designate any as fatally flawed.

D. SEH Technical Memos

1. Technical Memo #1 (December 8, 2010)

The memo provides background to the railroad industry, an overview of railroad standards, and a commentary on freight studies performed to date. It summarized findings on five routes studied, but broke the Kenilworth route into seven different alternatives for co-location of freight, LRT and trail. The writer deemed all studied options to be non-viable except for the Western Connection (for which writer thought freight subsidies could compensate TC&W for additional operating costs) and two of the Kenilworth co-location options (first, freight, LRT and trail all at-grade and second, trail relocated). The MN&S North Corridor was not addressed in detail in this technical memo because a freight rail study was in process at the time, so it was not ruled out as non-viable.

2. Technical Memo #2 (February 2, 2011)

Technical memo #2 provides more rationale for the conclusions voiced in Technical memo #1.

3. Technical Memo #3 (February 9, 2011)

Upon consideration of the additional costs TC&W would incur over the Western Connection, and the comparable compensation they would need in subsidies, SEH concluded that the Western Connection was not viable after all. They further elaborated on the two Kenilworth options deemed viable and provided co-location concepts for consideration, including an exhibit that demonstrated the anticipated setbacks for Cedar Lake Townhomes compared to existing conditions.

4. Technical Memo #4 (April 18, 2011)

Technical memo #4 compares the Kenilworth route to the MN&S route with respect to cost, grade crossings, and property impacts. It makes clear that even if the Kenilworth Corridor becomes the permanent home to TC&W freight traffic, St. Louis Park will still be impacted with freight trains on the MN&S route (and there is no guarantee that that traffic will not increase). SEH identifies a number of mitigating measures that could be taken to lessen the impact to St. Louis Park if the TC&W trains are routed over the MN&S line.

E. United Transportation Union Letters (October 4 and 7, 2013)

The United Transportation Union represent many of the train crews that man the trains in the greater Minneapolis/St. Paul area and as such have extensive knowledge of railroad assets – both past and present. The Union suggests an adaptation of the MN&S route in which the connection to the BNSF Wayzata Subdivision is replaced with an alternative route through Nesbitt Yard and Theodore Wirth Corridor.

F. Operations Analysis Technical Memorandum (November 4, 2013)

This reports the results of simulation modeling for TC&W freight over the Kenilworth route and two options for the MN&S route. Results showed that the time of travel is comparable over the routes in question. Fuel usage was expected to be slightly greater over the MN&S route, but not to an extent that it would have a significant detrimental financial impact on TC&W.

G. Draft Environment Impact Statement (October 2012)

The DEIS was primarily performed to analyze the decision of whether or not to pursue the Southwest light rail. The document is primarily concerned with the proposed SWLRT line but does evaluate LRT over the Kenilworth two ways: with freight rail relocated to the MN&S North route and with freight rail collated on the Kenilworth.

H. The East Metro Rail Capacity Study (October 2012)

In the *East Metro Rail Capacity Study*, performed by TranSystems and a host of contributing consultants, the 36% freight growth which is anticipated through East Metro will impair freight train speeds markedly unless significant infrastructure improvements are made. Many of the possible improvements which could improve fluidity, however, would require the cooperation of CP, BNSF and Union Pacific (UP) since they all operate in the area and optimization of the rail network requires that the railroads' property lines be redrawn to some extent. To date, no agreement among the railroads nor commitment to invest in the improvements has been made.

I. Map and Internet Search

In addition to review of formal reports, TranSystems gained understanding of the history of the railroad operations in the Minneapolis area via an internet search and review of freight rail maps (obtained from MnDOT's website).

J. Various Project Open House Minutes and Comments

IV. Screening Criteria

In order to be deemed viable, any potential alternative must meet the following criteria:

- The proposed route must not impose undue hardship on the freight rail operation.
- The proposed route must not significantly impair commercial opportunities for the shippers or the railroad nor unduly thwart their competitiveness.

- The proposed route must not present obstacles to implementation which would unduly delay the re-route or the light rail project.

Once alternatives which do not meet the above criteria were eliminated from consideration, additional criteria was assessed on the remaining alternatives:

- The proposed infrastructure must be sound, meeting industry standards for safety.
- The proposed route must not unduly impact the surrounding community.

TranSystems estimated infrastructure costs or used estimates prepared by other consultants, if available and deemed reasonable, for alternatives meeting the second tier of screening criteria.

Element	Metric or measurement
Operational Considerations	• Maximum train speed • Total travel time • Operating costs (e.g., crew, maintenance, fuel, equipment costs) • Preservation of existing and future freight operations • Total freight capacity
Commercial Considerations	• Preservation of railroad interchanges • Access to existing freight customers
Implementation Considerations	• Extent of right of way acquisition required • Permitting issues
Technical Design and Engineering	• Maximum degree of horizontal curves • Maximum vertical grade • Maximum compensated grade • Constructability
Safety Considerations	• Number of at-grade road crossings • Number of potential train-vehicular conflicts at at-grade crossings
Community Impacts	• Property acquisition (Total Acres, Number, or Land Use) • Traffic Impacts (Road Closures, Out of Route Travel, Etc)
Costs	• Construction • Right of way

V. Description of Alternatives

A. Kenilworth Corridor

TC&W's freight rail traffic currently utilizes the Kenilworth corridor and has since 1998. The track geometry and condition keep this section of track at Class 1, which restricts speeds to 10 mph. This route provides TC&W access to interchange with BNSF, UP, CP, CN and MNNR. From St. Louis Park over the Bass Lake Spur and to the connection with BNSF's Wayzata Subdivision via Kenilworth, this corridor is less than four miles.

The Bass Lake Spur portion of this corridor, which would also be part of the Midtown Corridor, has two busy at-grade crossings in St. Louis Park: Belt Line Boulevard, with over 14,000 cars daily, and Wooddale Avenue, with nearly 6,000 cars daily. The Kenilworth portion of the corridor has two additional at-grade crossings at Cedar Lake Parkway and 21st Street West, but vehicular traffic at these crossings is significantly lower.

The Kenilworth Corridor has been an acceptable route for TC&W traffic. The problem retaining freight over this corridor is that it also houses the Kenilworth Trail and has been slated for the SWLRT route. Portions of the right of way are narrow, so accommodation of all three transportation modes at grade would be challenging. Furthermore, at the time freight was relocated from the Midtown Corridor to the Kenilworth, the plan had been that this was merely a temporary solution until LRT was instituted here and freight relocated a second time. Since finding an acceptable alternative freight route has been challenging, various collocation options have been suggested, including elevating LRT or putting it underground with either a shallow or deep tunnel. Relocating the trail is another consideration.

B. Far Western Minnesota Connection (Appleton to Benson)

Under this scenario, TC&W would run its traffic over the BNSF line between Appleton and Benson. While the distance between Appleton and TC&W's current connection with BNSF's Wayzata Sub is about 10 miles shorter than its existing route, since most of TC&W's customers are east of Appleton, this option results in out of route miles. Traffic originating on TC&W's Minnesota Prairie Line would be especially impacted. After being taken east to Norwood, it would need to go west 118 miles to Appleton, then serpentine back east over BNSF. Carloads originating/terminating along TC&W's mainline east of Milan would all endure a longer total route, incurring greater labor, track, fuel, car and locomotive costs and, perhaps more importantly, slowing delivery by at least a day, perhaps as much as three days.

Even if this route were not operationally detrimental to TC&W, its concept is premised on the assumption that BNSF would allow TC&W to run on its already congested Wayzata Sub from Benson to Minneapolis, a distance of about 120 miles. While the BNSF has agreed to increase TC&W's trackage rights from the Kenilworth connection to an MN&S connection, a distance of about two miles, the representative who spoke with TranSystems was unwilling or unable to commit to extending the rights any further than that. We were not given the impression that BNSF would seriously entertain the idea. There currently is no economic justification for BNSF to increase TC&W's trackage rights to this extent. Accordingly, TC&W's ability to obtain the necessary trackage rights is dubious.

Since the Far Western Connection poses both operational impediments and implementation challenges , the route is deemed fatally flawed and will not be evaluated further.

C. Western Minnesota Connection (Granite Falls to Willmar)

The Western Minnesota Connection is similar to the Far Western Minnesota connection, except TC&W would run its traffic over the BNSF line between Granite Falls and Willmar, rather than Appleton and Benson. From Granite Falls to Hoffman interlocking over the Western Minnesota Connection is about five miles longer than the existing route. Like the Far Western Minnesota Connection, this connection would result in costly out of route miles to TC&W for traffic

originating/terminating east of the new connection at Granite Falls, which would undermine its competitiveness. For example, two of TC&W's largest customers, Southern Minnesota Beet Sugar Cooperative of Renville and South Central Grain & Energy of Buffalo Lake, are located about 15 and 45 miles east of Granite Falls, respectively. Trains to these major customers would have to travel 20 and 50 miles longer, which could add a day to the cost and delivery. (Out of route miles for traffic on the Minnesota Prairie Line could be minimized, though, if TC&W were to also run over BNSF track from Hanley Falls to Granite Falls.)

The high cost of operating the route creates a fatal flaw with the plan and, like the Far Western Connection, it is uncertain that BNSF would actually grant the trackage rights for the route. For the same reasons as with the Far Western Minnesota Connection option, this route is fatally flawed.

D. Chaska Cutoff

The Chaska Cutoff is an abandoned railroad route that runs parallel to Highway 212 from Bonson Junction (east of Cologne) to Chaska. It then crossed the Minnesota River and connects with UP in Shakopee. The approximate route distance from Cologne to the Twin Cities, 42 miles, is comparable to the existing Kenilworth route. Because the corridor has been abandoned as a rail route, right of way has reverted to private property owners. A condemnation process would probably have to be used to reacquire much of the right of way that has reverted. The route demands construction of over 11 miles of new or reconstructed track and a construction of a new rail bridge over the Minnesota River. If the project were to accept federal funding, the NEPA process must be undertaken.

Were the infrastructure already in place, the Chaska Cutoff could work for TC&W's operations, assuming that the UP would agree to offer the short line trackage rights from Shakopee to St. Paul. While there are some advantages to UP if this route was reestablished, there are a number of disadvantages to the other competing railroads. While the distance traveled for UP shuttle grain trains would be reduced, the complexity of the interchange with the other carriers–CN, CP, BNSF, and MNNR–would be substantially increased.

The light rail project could be delayed until the freight rail is up and running. Our understanding is that the SWLRT time horizon is much shorter than this, so the Chaska Cutoff is inconsistent with that goal. Furthermore, TC&W has voiced its disinterest in owning and accepting responsibility for additional track miles. These considerations present major obstacles to implementation of this route.

E. Highway 169 Alignment to BNSF

The Highway 169 route is a former railroad right of way was abandoned a number of years ago and much of the right of way purchased by the State agencies and used for the new Highway 169 alignment. The alignment went from TC&W's track in Hopkins north and east to connect with the BNSF Wayzata Subdivision just west of Louisiana Avenue. The distance from Hopkins to its current connection with BNSF's Wayzata Sub would be less than half a mile longer over the Highway 169 route. TC&W has very few customers, perhaps just one, on its line east of Hopkins, so there would be little out of route mileage. While there hasn't been much traffic recently, TC&W does also serve customers on the MN&S south of Saint Louis Park and would want to continue to have access to them. That traffic would incur out of route miles, but only about 2.5 miles. There would also have to be access maintained for TC&W

to serve customers north of St. Louis Park and would need access to them. Accordingly, the existing track on the Bass Lake Spur and wishbone connection would need to be maintained (or wishbone connection replaced with a more direct interchange) even if the Highway 169 corridor were used for TC&W's connection with other carriers in the St. Paul terminal.

The corridor has since been converted to Cedar Lake Trail and housing developments in addition to highway right of way. The roadway infrastructure adjacent to this corridor has been highly developed, as well, including Highway 169 interchanges with Excelsior Boulevard and Highway 7. Use of federal funds for the project would necessitate NEPA evaluation and reintroduction of freight rail in the corridor could trigger an Environmental Assessment (EA) or Environmental Impact Statement (EIS). After that, property acquisition, which would likely entail condemnation, would have to take place. These considerations present major obstacles to implementation of the route.

F. MN&S North Connection with BNSF

The MN&S line through St. Louis Park was assumed to be the permanent route for TC&W's freight route when the Midtown Corridor was acquired by Hennepin County for future transit use and freight was relocated to the Kenilworth Corridor. At that time the move was believed a temporary solution and, it appears, that no in-depth study was made into the challenges for making the connection between the Bass Lake Spur and the MN&S. The MN&S route is currently an active freight route for CP, though current traffic levels are quite low, normally just one train a day in each direction with, perhaps, ten cars per train. Due to the low volume, CP has maintained the route at Class I, which restricts speeds to 10 mph. As part of the DEIS, a conceptual interchange for the tracks was proposed. Since then, several other options have been suggested. (For initial screening, these differences will not be analyzed, but rather the corridor evaluated as a single option.) The MN&S route also entails reinstitution of a former rail connection between the MN&S and the BNSF's Wayzata Sub (Iron Triangle). TC&W's route from St. Louis Park to its current point of interchange with the BNSF, via the MN&S, is just over four miles. Accordingly, should connection issues be overcome and track geometry work, the MN&S route would be comparable to the Kenilworth from an operations perspective. The MN&S route also entails a new connection between the Bass Lake Spur and the MN&S going south, . This feature would allow the TC&W's traffic to the south are greatly improved over current conditions. Granted, this traffic has been negligible in recent years.

The BNSF is receptive to TC&W's traffic entering the Wayzata Sub at the MN&S, rather than at Kenilworth, but insists that a 10,000-foot siding be installed on its line to help handle the traffic. Furthermore, if the MN&S route were used, the TC&W would lose track storage capacity from the Bass Lake Spur. Accordingly, if the MN&S route is pursued, the BNSF siding and additional yard tracks elsewhere on the TC&W should be considered part of the freight relocation project.

G. UTU Route

The UTU route makes use of the MN&S, but instead of making a connection with the BNSF at the former "Iron Triangle" interchange, it continues north via the MN&S Wirth corridor and through Nesbitt Yard. It connects with the BNSF Wayzata Sub east of the current Kenilworth connection. The route would require track reconstruction and replacement over portions of the corridor no longer exist. The viability of UTU route is contingent upon overcoming any interchange issues of the MN&S

route. This route is about 1.5 miles longer than the MN&S route and has sharper curves. The route would, undoubtedly, be operated at slower speeds than on the BNSF mainline. At a high level, the necessary track work north of the BNSF line appears to be more extensive than reinstating the Iron Triangle and constructing a siding on BNSF's Wayzata Subdivision, where the right of way provides ample room for the expansion. For these reasons, the UTU route is deemed inferior to the MN&S route and it is not considered necessary to study it further.

If, however, the MN&S route would be deemed viable, except that BNSF rescinds its acceptance of TC&W traffic at a MN&S interchange or an insurmountable obstacle is encountered with reconstruction of the Iron Triangle connection, the UTU route could be revisited at such time.

H. MN&S South Connection with UP

This route takes TC&W traffic south from Saint Louis Park over the MN&S, through Edina, Bloomington, across the Minnesota River and connecting to the UP on its Mankato Subdivision at Savage, Minnesota. This route was designed as a "passenger train route" and has only 90 lb. rail and thus would need an almost complete rebuild to accommodate today's modern freight trains. As discussed previously for the MN&S route to BNSF, the MN&S is currently an active freight route for CP, but with very low volumes. Due to the low volume, CP has maintained the route at Class I, which restricts speeds to 10 mph. The route crosses the Minnesota River at Savage on a swing span bridge owned by TC&W, which would need to be upgraded or replaced if substantial tonnage was to move over this line. The MN&S currently crosses over the UP's Mankato Subdivision tracks; there is not an interchange in place.

In order to reach the Twin Cities terminal, TC&W would take the Mankato Sub north. This route from Saint Louis Park to Hoffman interlocking is about 15 miles longer than TC&W's current route: 32 miles (12 on MN&S and 20 on UP), as compared with 17 miles via the Kenilworth Corridor and BNSF's Wayzata Sub (or 18 miles via Kenilworth, BNSF and MNNR). A sizable and growing portion of TC&W's traffic–over 40% of TC&W's carloads–however, is unit grain trains interchanged with UP destined to locations south on the Mankato Sub. The shippers of these trains would enjoy a shorter overall trip and could avoid the congested areas of Target Field and the terminal by going west on the Mankato Sub, rather than east (12 miles on MN&S versus 37 on Kenilworth/BNSF/UP). With 60% of traffic traveling 15 miles further and 40% traveling 25 fewer miles, freight traffic would shave a mile off its routes on a weighted average basis. (TC&W's portion of the route, however, would have a weighted average increase of seven miles.)

There are advantages to Union Pacific to establish this new interchange in order to (1) shorten the total route for their customers, as well as to (2) reduce traffic in the congested Twin Cities terminal. The tracks on the Mankato Subdivision, though, are often occupied due to the high level of industrial switching performed on the line. In order to increase the capacity to minimize TC&W's train delay on the route, UP suggests two long sidings be constructed between Savage and the yards in St. Paul. UP agrees that the terms of the trackage rights must protect TC&W's interchange capabilities with CP, BNSF and MNNR. Other freight infrastructure needed for MN&S south connection to work includes: upgrade of 12 miles of the MN&S, including CTC, refurbishment or replacement of the TC&W bridge over the Minnesota River, and a wye connection to the UP Mankato Subdivision. Since the line is an

existing freight corridor where the upgrade was on existing railroad right of way, the necessary infrastructure improvements could be expedited. But there are engineering challenges because of the physical layout – curves and grades will become an issue. It appears that there are a number of 8 degree reversing curves along the route and any attempt to modify them might entail conflicts with neighbor in Parks and wetlands.

I. Midtown Corridor

The Midtown, or 29th Street, Corridor was TC&W's route to the metro area before it was relocated to the Kenilworth Corridor in 1998. Track has since been removed and a trail constructed. This corridor is in a trench and a series of overhead bridges, some historic, provide grade separation from the north-south streets in the area. Per the *Evaluation of TCWR Routing Alternatives,* these structures currently provide just 19 feet of clearance. (Minnesota guidelines call for 22 feet of vertical clearance and many railroads insist on 23.5 feet for new structures. Granted, these structures are not "new", so may not need to meet those more stringent standards.) Construction of Highway 55 and the Hiawatha LRT effectively severs the corridor between Cedar Avenue and 26th Avenue South. East of Highway 55, the Midtown Corridor would connect with existing CP tracks on which MNNR operates. These tracks have some at-grade and some grade-separated roadway crossings. The track crosses the Mississippi River on an existing bridge to connect with the St. Paul terminal. The route to CP's St. Paul Yard using the Midtown Corridor would be slightly shorter than the existing route via the Kenilworth and BNSF's Wayzata Sub. Furthermore, there is significantly less traffic over the tracks operated by MNNR than the Wayzata Sub. It would also bypass Target Field, which is a bottleneck in the system.

TranSystems concurs with Hennepin County Regional Railroad Authority's (HCRRA) assessment in the *TCWR Freight Realignment Study* that significant capital costs would be required to reinstate freight rail traffic over the corridor due to existing infrastructure for Highway 55 and Hiawatha LRT. The exact nature of needed improvements and estimated costs, however, were not evaluated in an initial screening.

In addition to the infrastructure investment, reinstituting the Midtown Corridor for freight service would face permitting challenges since the corridor is listed on the National Register of Historic Places and two of the bridges are on parkland. Furthermore, rail freight through Midtown may complicate or thwart plans for a streetcar in the corridor. Due to these serious implementation challenges, TranSystems does not recommend further evaluation of the route.

VI. Tier 1 Screening

Proposed Freight Route	Operations	Commercial Considerations	Implementation Considerations
Kenilworth Corridor	○	○	○
MN&S North	◐	○	◐
UTU route	◐	○	●
Midtown Corridor	○	○	●
Chaska Cut-off	◐	◐	●
MN&S South	◐	◐	◐
Former RR alignment Hwy 169	◐	◐	●
Western MN connection with BNSF (Granite Falls-Willmar)	●	●	●
Far Western MN connection with BNSF (Appleton-Benson)	●	●	●

○ Strongly supports goal ◐ Supports goal ● Does not support goal

In the initial screening, the Western and Far Western Minnesota connections are ruled out because they add significant time and miles to TC&W's route, making them cost prohibitive to operate. Undermining TC&W's competiveness is a fatal flaw.

The Midtown Corridor, Chaska Cutoff and former railroad alignment along Highway 169 would all provide reasonable operating conditions for TC&W. In fact, the first two offer some advantages to their current route, including a shorter route for some or all of the traffic and avoidance of the bottleneck near Target Field. Also, the Midtown Corridor it maintains TC&W's access to sidings on the Bass Lake Spur. The fact that these routes no longer are existing rail nor "rail banked" corridors poses obstacles that would add years to the implementation schedule, if they would be approved at all. While not a

"fatal" flaw, these considerations are enough for TranSystems to suggest these options not be advanced for further study.

Since the Kenilworth Corridor is the existing route and the goal is to provide operations at least as favorable as they exist today, it is deemed to meet that goal. This route, however, demands that TC&W operate over BNSF's busy Wayzata Subdivision and pass Target Field, an area that is quite congested.

While the MN&S North and UTU routes could be operated much like the Kenilworth Corridor, the loss of use of the sidings on Bass Lake Spur would impair TC&W's operations, so these options were not deemed to "strongly" support the goal for operations. This shortcoming could be overcome, however, if these plans allowed for additional storage tracks on the TC&W network, preferably between Norwood and Hopkins so that the capacity is available for use with all carloads from TC&W's main line and also from the Minnesota Prairie Line. If the option for the MN&S North also provided a new southbound connection, as well as a northbound connection, it would provide significantly improved operations for TC&W's traffic to Savage, which has been negligible in recent years.

While the UTU route does support operational goals, it is not deemed necessary to consider it for further study because it is similar, but inferior to, the MN&S North route. It is similar in that its viability is contingent upon all the same issues the MN&S is subject to, including curves, grades and community impacts through Saint Louis Park. It is considered inferior because it entails a longer route with more costly infrastructure requirements on the north end of the route. Furthermore, some of the upgrades necessary would infringe upon parklands, which present an obstacle to implementation.

VII. Tier 2 Screening

Proposed Freight Route	Tier 1 Screening			Tier 2 Screening			
	Operations	Commercial	Implementation Obstacles	Engineering	Safety	Community	Cost
Kenilworth Corridor	○	○	○	○	○	◐	$160/$300 Million*
MN&S North	◐	○	◐				
DEIS connection				●	◐	◐	NCN
Modified MN&S connection				●	◐	◐	NCN
Brunswick East connection				◐	◐	●	NCN
Brunswick West connection (at-grade and elevated)				◐	◐	●	NCN
Brunswick Central connection (at-grade and elevated)				◐	◐	●	NCN
TranSystems Alternate connection				○	○	◐	$105 Million
MN&S South	◐	◐	◐	◐	◐	●	NCN

○ Strongly supports goal ◐ Supports goal ● Does not support goal

*Kenilworth costs shown represent the reported cost estimates for the "Shallow Tunnel" and "Deep Tunnel" respectively. These costs were developed by consultants other than TranSystems. This does not reflect the cost associated with LRT construction, trail improvements or relocations or upgrade of the existing freight rail.

A. Kenilworth Corridor

1. Engineering

Since the Kenilworth route is in operation today, it is clearly a viable route for TC&W's freight rail. The maximum grade, which is near 21 St. on the Kenilworth is1.05%, the maximum curve is 6 degree and the maximum compensated curve (which takes into account the horizontal curve and grade changes

combined) is 1.29%. Beyond the Kenilworth, TC&W trains run through the MNNR yard at which its approximate maximum grade, curve and compensated grades are .70%, 7 degree 30 min., and 1.30%, respectively. The Kenilworth is maintained to Class I standards, which restricts freight speeds to 10 mph.

The engineering challenge with the Kenilworth is when light rail is added to a narrow corridor already housing freight rail and a trail. All three could readily be accommodated at-grade, except for sections of the corridor get as narrow as 59.5 feet. In these areas, light rail could be restricted to one track, a method that has been used with some success in Denver. Alternatively, the trail could be relocated, for instance, on the opposite side of Cedar Lake. Another alternative would be for the freight and light rail lines to be separated with a barrier wall with the bicycle trail overhead. Other consultants are studying the possibility of putting the light rail below grade with either a shallow or deep tunnel. TranSystems did not review any of these alternatives in depth, but believe none of the above-ground options present an insurmountable engineering challenge. We will defer to Burns and MacDonnell to offer conclusions regarding the engineering for the tunnel options.

2. Safety

From a freight perspective, the Kenilworth is a safe route at low speeds. Recently a $3 million project was completed to temporarily address maintenance issues. There are two at-grade crossings on the Kenilworth, at Cedar Lake Parkway and at 21st Street West. The other two are located on the Bass Lake Spur, at Wooddale Avenue and Belt Line Boulevard. The two on the Bass Lake Spur have significantly more vehicular traffic, so the potential for train-vehicular conflicts and accidents is greater in those locations.

Safety along the Kenilworth could be further enhanced by upgrading the track to Class 2 or Class 3 standards and/or implementation of CTC and defect detection systems if freight rail continued to operate in the corridor.

3. Community

The Kenwood community is very proud of the neighborhood, the housing stock, the natural resources and the award-winning multi-use trail. Since the Kenilworth corridor was only supposed to be used for freight service temporarily, we expected to hear uproar from the community that the freight trains have run through the Kenwood neighborhood for over 15 years (so far). On the contrary, Minneapolis citizens attending the public meeting in Minneapolis, as a whole, voiced some level of acceptance of continued freight traffic on this route. Many expressed greater concern over the introduction of light rail in the corridor. Some suggested that a more populous area would generate greater light rail ridership and economic development, therefore, the light rail route should be reconsidered. Others expressed flexibility with collocating freight rail, light rail and the trail. Others were open to options for moving the trail, elevating the trail, or putting the light rail underground.

4. Cost

The cost for continuing freight rail on the Kenilworth corridor is minor, including the maintenance to maintain Class 1 track standards. The costs for collocating the light rail with heavy rail and the bike trail are significantly more. These costs vary widely depending upon the way collocation is achieved. Moving

the trail may be the least costly, though right of way acquisition for a trail may take longer than construction of the light rail line. Reducing the light rail to a single track particularly in narrow sections would not cost more than the light rail line itself and could avoid the need to relocate the trail. Higher cost options would include elevating the light rail, elevating the trail or constructing a tunnel for light rail. Since other consultants are studying these options, TranSystems has not estimated these costs. Costs developed by others of the various options range from $20 to over $300 million.

B. MN&S North – DEIS Connection and Modified DEIS Connection

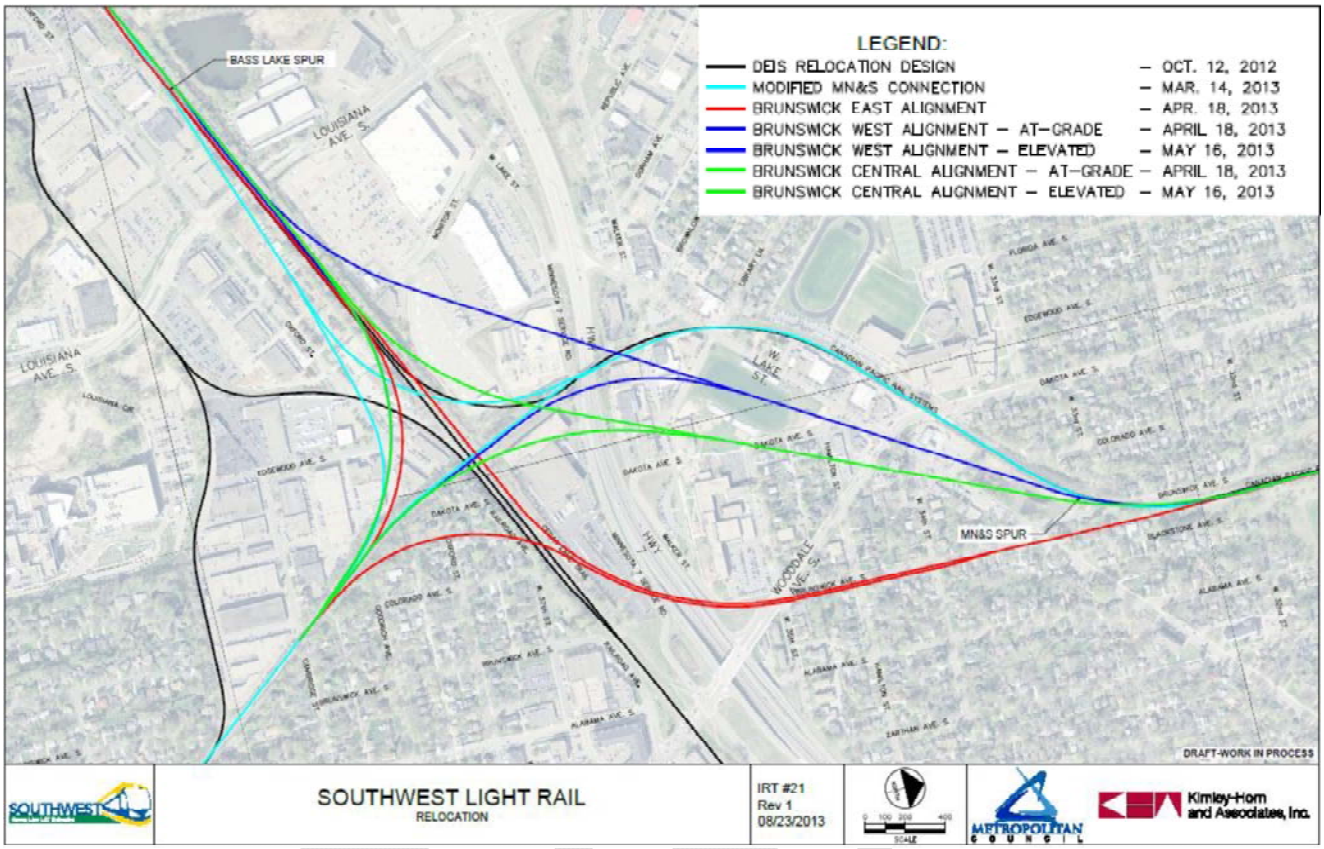
1. Engineering

The concept for an MN&S connection that was included in the DEIS had grades of 1.82% compensated and a series of reversing curves of 8, 5 and 5 degrees, with little tangent between two of the curves. These conditions do not appear to meet AREMA standards, so TranSystems agrees with the TC&W that the route has a number of engineering challenges that may need to be resolved. The modified connection attempted to correct some of these issues, but was not a significant improvement to gain railroad support. Accordingly, both of these options are considered to have fatal flaws, therefore the evaluation of safety, community and cost is not considered necessary.

C. MN&S North – Brunswick East, West, Central Connections

1. Engineering

The various Brunswick options, at-grade and elevated, correct the AREMA deficiencies found in the DEIS and modified DEIS concepts. The maximum grades of these options ranged from 0.4% to 1.05% with curves no more than 6 degrees. The reversing curves allowed 150 feet of tangent between curves, meeting industry standards.



As can be seen in the illustration above, the Brunswick West and Central alignments pass through or near many features of Saint Louis Park. While the Brunswick East alignment avoids most of the community buildings and keeps TC&W freight trains removed from the high school campus, it does introduce freight rail to several additional blocks of residential area. For these reasons, the Saint Louis Park community has rejected all of the Brunswick options.

2. Safety

By meeting AREMA standards, the Brunswick options meet minimum safety standards and can be considered safe for freight train operations.

3. Community

The community of Saint Louis Park is against all of the Brunswick options, both at-grade and elevated, because they go through treasured features of the town: the high school football stadium, the Spanish immersion grade school, and the community center, or several blocks of homes. Safety in the Park representatives argue passionately that additional trains on the MN&S would be unsafe due to the proximity of the high school and grade school and the level of pedestrian traffic around schools. Furthermore, they believe that a high berm or structure would effectively segregate the neighborhoods of Saint Louis Park. TranSystems agrees that the proposed connection would be an improvement if it could be engineered to not directly interfere with so many community buildings. The existing proximity between the schools and railroad cannot be mitigated without extensive relocation of the railroad and/or school. The efforts required to relocate the TC&W railroad through developed areas has

proven to be difficult. Assuming that the existing tracks would not be used for rail traffic is unreasonable and, therefore, would not be considered as a solution. Relocating schools would not be a simple matter, either, but in our opinion would be easier than moving the rail line.

D. MN&S North – TranSystems' Connection

1. Engineering

Using readily available GIS data, TranSystems developed a concept for a new connection between the Bass Lake Spur and MN&S which meets AREMA standards and creates less interference with the community than the Brunswick options. The maximum grade is 0.47%, which is lower than the grade of the Kenilworth; maximum curve is 5 degrees, comparable to curves on the Kenilworth; and maximum compensated grade is 1.0%, again comparable to the Kenilworth route. 100 feet of tangent track is allowed between the reversing curves. Instead of taking the tracks down Brunswick Avenue or through the football field, the concept TranSystems developed entails a structure over MN-7 and through the Golden Auto area, making use of more of the existing MN&S track. To the south, the at-grade switching wye in Skunk Hollow is replaced with an elevated structure similar to the one proposed to the north. The plan closes at-grade crossings at Walker, Lake, West 28th and West 29th Streets. A new roadway adjacent to the highway, grade separated from the railroad tracks, would provide access for the schools busses that regularly transport students between the various school buildings and for emergency vehicles. West 27th Street, which currently does not cross the tracks, will be made into a through street passing under the tracks. As part of the concept, the MN&S line in Saint Louis Park would be upgraded from Class 1 to Class 3 standards, which includes the replacement of jointed rail with continuous welded rail and replacement of ties. The approach to the Minnetonka bridge will be leveled out to provide a more gradual grade both north and south of the structure so that longer trains can be maneuvered safely. A retaining wall is needed to allow for the track raise in order to stay within the railroad's existing 66-foot right of way in this area. (This retaining wall could be eliminated from the plan if properties west of the tracks were acquired to provide an adequate slope away from the tracks.) Both CP and TC&W staff have reviewed this concept and concur that the geometry of the concept is acceptable for TC&W's freight operations.

2. Safety

As stated above, the concept meets AREMA standards for Class 3 tracks, so is deemed safe for freight operations up to 25 mph. If desired, an inner guard rail system can be installed between the two rails of the track in order to prevent railcars from falling from the structure in the remote chance their wheels slip from the tracks. The closure of four at-grade crossings limits the areas where trains could potentially collide with vehicles. In order to deter trespassing and to protect pedestrians, the railroad right of way through Saint Louis Park will be fenced, forcing people to cross only at protected grade crossings. In order to provide additional pedestrian mobility across tracks, the concept calls for a pedestrian bridge in the vicinity of the high school. Technological advances of CTC and broken rail detection will be implemented in order to enhance the safety of the line.

3. Community

Because this re-route utilizes MN&S tracks which run between and near to the high school and one of Saint Louis Park's grade schools, TranSystems anticipates that the community will not readily embrace

this routing. Though the concept interferes with community buildings less than some of the Brunswick options, it does interfere with a few local, commercial ventures, and the single rail customer in Skunk Hollow. These businesses would have to be relocated or purchased. The interchange from Bass Lake Spur north clips a corner of Excel Energy, but we understand that this is not a critical portion of the facility and the building could be adapted to accommodate a bridge pier.

We believe the elimination of the wye connection in Skunk Hollow will be advantageous to the Saint Louis Park community. A direct southbound connection to the MN&S will eliminate the noisy and cumbersome switching which is necessary to send railcars that way today and which blocks roadways in the process. It also will open the area up around the proposed light rail station and north of the Methodist Hospital for development. We understand that the hospital is planning an expansion and could do so here, retaining and growing employment opportunities in Saint Louis Park, rather than losing them to another community with more available space.

The DEIS concluded that the Kenilworth route impairs "community cohesion" for Kenwood. If the Kenwood neighborhood's "community cohesion" is, in fact, negatively impacted by freight trains passing through it, then that community would be improved by TC&W's rerouting through Saint Louis Park.

4. Cost

TranSystems estimates the cost of its MN&S North route at $105 million. This cost includes both a north- and southbound connection between the Bass Lake Spur and MN&S, a new connection between the MN&S and BNSF's Wayzata Subdivision, upgrade of the MN&S in this area to Class 3 track standards, roadway and crossing improvements, a pedestrian bridge, fencing throughout the area, and CTC. Beyond the immediate corridor, the cost estimate includes the cost of a 10,000-foot siding on the BNSF and 12,000 feet of yard track somewhere else on the TC&W track. An engineering and 25% contingency allowance has been applied. The cost estimate does not include the cost for property needed for the project.

E. MN&S South Connection to UP

1. Engineering

The same structures proposed for the north- and southbound connections between Bass Lake Spur and MN&S North could be used in for an MN&S South route. At Savage, new east- and west-bound connections with the UP would be needed. Since the MN&S would built as a passenger route (i.e., no heavy loads), the 12 miles of track in between would need a complete upgrade. Today it is used safely at very slow speeds and short trains. Not only is the rail weight (90-lb) insufficient for TC&W's unit trains, the slope on either side of the track is too steep. The railroad right of way appears to be just 66 feet for much of the route. Either a retaining wall would be needed, or in order to avoid a retaining wall, additional property would have to be attained. Miles of the track as it nears the Minnesota River appears to be within wetlands boundaries, so the retaining walls would impact these wetlands during and after construction. The MN&S South route would have a maximum grade of 1.0%, maximum curve of 8 degree-30 minutes, and maximum compensated grade of 1.34%. In order to improve upon this geometry, additional right of way would be required. Since adjacent properties include the Hyland Lake Park Reserve and the Minnesota Valley National Wildlife Refuge, acquisition of the necessary property

would be difficult and would entail mitigation for the impact to these environmental resources. Like the MN&S North option, TranSystems suggests the MN&S South option be equipped with CTC and broken rail detection systems.

The existing swing span bridge over the Minnesota River would need to be inspected to determine whether it could be refurbished to accommodate significant rail traffic or whether it should be replaced.

In Savage, it appears that the connection to UP's Mankato Subdivision to the east could be readily accommodated. The connection to the west which is necessary to achieve the routing benefits to UP's west-bound traffic, however, appears to be problematic. Flint Hills Resources has a facility with several industrial tracks at the point of the proposed interchange which would have to be reconfigured or relocated in order to accommodate a new interchange to the west.

2. Safety

The MN&S South route could be built to Class 3 track standards, which allow for trains to safely operate at speeds to 25 mph. Excluding the two crossings in Skunk Hollow, which would be eliminated, and not counting the crossings on the UP Mankato Subdivision, there are 15 at-grade crossings on the MN&S South route. These crossings and many of the warning devices would need to be upgraded. (Because the concept for upgrading the MN&S South was not developed as fully as the MN&S North route, TranSystems did not evaluate the possibility of closing some of these crossings or providing grade separations.) Two of the roadways, Excelsior Boulevard and Old Shakopee Road, have daily vehicle counts of 24,500 and 22,000, respectively. With additional train traffic on the MN&S, grade separations at these roadways may be warranted.

Fencing along the right of way should be added in developed areas to deter trespassing and to direct pedestrian to appropriately marked and signaled crossings.

3. Community

While the MN&S South route may restore community cohesion to Kenwood and would keep TC&W trains from passing close to Saint Louis Park's high school and Spanish immersion grade school, it would take the trains through the southern part of Saint Louis Park, Edina and Bloomington. To our knowledge, the communities south of Saint Louis Park have not been part of the discussion, it has to be assumed that similar concerns will arise from these communities. We have relied upon our experience proposing and implementing rail projects in other areas, as well as assumed that the citizens of these other communities would have concerns similar to those voiced by citizens of Minneapolis and Saint Louis Park.

4. Cost

TranSystems estimates the cost of the MN&S route to be $185 million. This cost includes both a north- and southbound connection between the Bass Lake Spur and MN&S, a new east- and westbound connections between the MN&S and UP's Mankato Subdivision, upgrade of the MN&S for the 12 miles to Savage to Class 3 track standards, crossing improvements, fencing throughout urbanized areas, and CTC. Beyond the immediate corridor, the cost estimate includes the cost of two 10,000-foot siding on the UP and 12,000 feet of yard track somewhere else on the TC&W track. An engineering and 25%

contingency allowance has been applied. The cost estimate does not include the cost for property needed for the project or for new grade separations at any of the existing road crossings.

F. Comparison of Viable Routes

Based upon the analysis above, TranSystems deems the Kenilworth and MN&S North to be viable routes for TC&W traffic and the the MN&S South route potentially viable. We believe the community and environmental impacts, coupled with engineering challenges at Savage, make this route less advantageous. We further compared these three viable options to help determine whether one was preferable to the others.

1. Cost and Benefits

Each of the three viable routes allow for light rail to be implemented over the Kenilworth corridor and for TC&W to maintain service to their current customers without overwhelming impacts to their operations. In addition to that, there are some additional benefits that should be weighed against the costs.

Description	Kenilworth	MN&S North	MN&S South
Cost	$20 to $300 Million	$105 Million	$185 Million
LRT on Kenilworth & Protect TC&W traffic	Yes	Yes	Yes
TC&W operational improvement for southbound traffic	No	Yes	Yes
Advances MnDOT vision for MN&S as bypass route	No	Yes	Yes
Avoids Target Field area of congestion	No	No	Yes
Provides significantly shorter route for certain rail shipments	No	No	Yes

Both MN&S North and South routes call for a new direct connection from Bass Lake Spur to the MN&S southbound. With this connection, TC&W could take complete trains south on the MN&S to customers at Savage, eliminating the cumbersome switching of a handful of cars at a time through Skunk Hollow. As this is one area of community dissatisfaction with the train operations in Saint Louis Park which could be eliminated by re-routing freight traffic.

In its state rail plan, MnDOT acknowledged that there is troublesome congestion through the Twin Cities terminal. One recommendation made by MnDOT was that the MN&S be upgraded so that it could be used as a bypass route. The MN&S route beyond Savage can provide access to Mason City and, from there, eastbound connections to Chicago and Milwaukee, or continuing south to Kansas City. Both of the MN&S re-routes would improve portions of the line to help to achieve that vision. Additionally, the MN&S south route takes none of TC&W's traffic past Target Field, which would help alleviate congestion in that area.

The UP points out that a significant and growing percentage of the TC&W traffic is made up of unit trains which ultimately are taken south and west on the UP Mankato Subdivision. This traffic would enjoy a shorter total route, which would tend to reduce transportation costs for the shippers and make the shippers on TC&W's network more competitive regionally and nationally. Furthermore, since use of the route would be beneficial to the UP, there is a possibility that they would entertain a proposal for a public-private partnership for funding the necessary infrastructure improvements.

2. At-grade Crossings

At-grade crossings present potential conflicts between trains and vehicular traffic. The elimination of such conflicts, by either closing a crossing or by providing grade separation, improves safety of a rail line. For at-grade crossings that remain open, enhanced warning devices (e.g., flashing lights, bells) and barriers (e.g., gates, medians) will improve safety.

Hennepin County Public Crossing Information	Current Conditions over Kenilworth		Proposed over MN&S North		Proposed over MN&S South	
	# Crossings	Conflicts	# Crossings	Conflicts	# Crossings	Conflicts
Subtotal Kenilworth / Bass Lake Spur	4	109,620	0	0	0	0
Subtotal MN&S North of Bass Lake	6	28,250	2	45,220	6	28,250
Subtotal MN&S South of Bass Lake	17	151,586	15	150,326	15	526,141
Total Count of Crossings / Conflicts	**27**	**289,456**	**17**	**195,546**	**21**	**554,391**

One measure of safety could be the number of at-grade crossings in existence along these routes.. TranSystems identified 27 public at-grade crossings in Hennepin County, including four crossings on the Kenilworth/Bass Lake Spur, six on the MN&S north of the Bass Lake Spur and 17 on the MN&S south of the Bass Lake Spur to the county line at the Minnesota River. If the TC&W were re-routed over the MN&S north to BNSF (with the concept developed by TranSystems), all four of the crossings on the Kenilworth, the two in Skunk Hollow would be and four of the six crossings north of Bass Lake Spur would be eliminated, leaving just 17 crossings. If the TC&W were re-routed over the MN&S south to UP, the four Kenilworth and two Skunk Hollow crossings would be eliminated, leaving 21.

Perhaps a more meaningful safety measure than merely the count of existing grade crossings would be the number of train/vehicle conflicts they create. By multiplying the number of daily freight trains over the tracks with the average daily traffic counts (obtained from the MnDOT's interactive traffic data map or, if not available there, from the FRA's crossing inventory reports), one can calculate the potential daily train/vehicle conflicts as another measure of safety. As the table above indicates, the re-route of TC&W trains north on the MN&S results in the lowest level of potential conflicts. This is achieved by eliminating busy at-grade crossings of Wooddale Avenue and Beltline Boulevard and by closing and routing trains past roadways with much less traffic. Although re-routing TC&W trains on the MN&S south also eliminates the Wooddale and Beltline crossings, it takes the trains across 15 other roadways in Saint Louis Park, Edina and Bloomington, including heavily traveled Excelsior Boulevard and Old Shakopee Road. Accordingly, this option nearly doubles the train/vehicle conflicts.

(Appendix A provides a list of all public crossings, the assumed number of trains, and average daily vehicles from which the potential conflicts above were calculated.)

3. Proximity to Homes and Schools

Railroad transportation is safe, particularly when compared to other modes of transportation. The standards set by the industry (e.g., AREMA) are done so that trains can operate safely under those conditions. Accordingly, when TranSystems has deemed a route sound from an engineering standpoint, it is deemed to be safe. Proximity to homes or schools does not inherently make a rail route unsafe. Granted, were a derailment or spill to occur, proximity to homes and schools would affect the severity

of impact. For this reason and because some of the stakeholders of this study specifically requested it, TranSystems has compared the three potentially viable options for these conditions.

Description	Kenilworth	MN&S North	MN&S South
Homes within 150 feet	367	140	353

TranSystems obtained parcel data from Hennepin County, but this database did not differentiate residential properties from commercial ones, nor provided number of units for multi-family homes. Instead of using the property records, TranSystems performed an inexact process utilizing the real estate website Zillow.com to identify residences and Google Earth to measure distances. The number of units within condominiums and apartment buildings were estimated, often for a only a portion of large complexes if only part appeared to be within 150 feet of the tracks. The Kenilworth and MN&S South corridors had comparable housing counts, despite the Kenilworth being a much shorter route. The Kenilworth's count was high due to the large number of multi-story apartments and condos along the line. The MN&S South route would be expected to be high since it is 12 miles long. The count would have been higher, but there are significant stretches of industrial property and park reserves near the tracks that had no residences at all. The homes near to the MN&S South route are predominantly single-family homes, with the notable exception of Grandview Square in Edina, a large multi-family complex just west of the tracks. The MN&S North route had the fewest number of homes within 150 feet of the tracks. Since the route is short and the housing consists entirely of single-family homes, except for three condominium buildings near the Iron Triangle connection, the lower count seems reasonable.

Using Google Maps and Google Earth to identify schools in the vicinity and to measure their distance from the tracks, TranSystems compiled the following data:

School Information			Feet to:		
Name	Address	City	Kenilworth	MN&S North	MN&S South
Peter Hobart Elementary School	6500 West 26th	Saint Louis Park	N/A	931	N/A
Holy Family School		Saint Louis Park	2066	615	N/A
Saint Louis Park High School	6425 West 33rd	Saint Louis Park	1895	125	2585
Saint Louis Park Independent Study		Saint Louis Park	1426	415	2350
Park Spanish Immersion School	6300 Walker	Saint Louis Park	795	957	1950
Central Junior High School		Saint Louis Park	571	875	1675
Metropolitan Open School		Saint Louis Park	1506	90	1908
Harmony Theatre Co and School	6121 Excelsior Blvd	Saint Louis Park	N/A	N/A	808
Edina Cahill Historical School	4918 Eden Ave.	Edina	N/A	N/A	1000
Our Lady of Grace Elementary	5071 Eden Ave.	Edina	N/A	N/A	365
Our Lady of Grace Catholic School		Edina	N/A	N/A	365
Ridgeview Elementary School	9400 Nesbitt Ave. S	Bloomington	N/A	N/A	770
Bethany College of Missions	6820 Auto Club Road	Bloomington	N/A	N/A	745

VIII. Conclusions and Recommendations

Based on a high-level review of the nine previously identified options for TC&W's traffic, none emerges as a clearly preferred alternative. TranSystems did not identify any completely new routes, but did suggest another version for the MN&S North route that, in our opinion, resolves many of the shortcomings of the other versions previously presented.

The two western re-routes would result in significant operational impacts to TC&W. The Midtown Corridor, Highway 169 Corridor and Chaska Cutoff may have worked for TC&W's traffic, but reinstating rail in the corridors would be extremely difficult–if not impossible–and time-consuming to implement. For these reasons, TranSystems recommends that these routes not be advanced for further study.

TranSystems concludes that the MN&S South route should be eliminated from consideration due to community, environmental and engineering challenges.

We have concluded that the existing Kenilworth Corridor and the MN&S North (using the connection concept developed by TranSystems) are viable options which should be considered. Cost, timeliness of implementation, and adherence to the State's vision for rail are all factors which would need to be weighed. While both present negative impacts, mitigation measures should be identified to minimize them and incorporated into the plan.