This memo provides a summary of the methodologies used for evaluating pedestrian and bicyclist access for the proposed Rush Line Bus Rapid Transit (BRT) Project stations, as well as an analysis example for each mode.

The walkshed analysis measures a half-mile walking distance to and from each station under three scenarios: (1) existing conditions, (2) proposed Rush Line BRT Project station area improvements and (3) a broader set of station area improvements including work planned by other agencies. The mapped results help the reader visualize how improvements to the pedestrian environment expand the utility of the BRT stations. Further, the analysis includes estimates of how many people live and work within the walksheds as an indicator of potential for walk-up station demand.

The bikeshed analysis measures a 3-mile bicycling distance to and from each station using both a low-stress network and the entire legal right-of-way (called the “high-stress network”) under two scenarios: (1) existing conditions and (2) proposed Rush Line BRT Project station area improvements as well as work planned by other agencies, including an extension of the Bruce Vento Trail.

In this memo, the walkshed analysis methodology and results are presented first, followed by the bikeshed analysis. Each modal section includes a description of how the walksheds and bikesheds are built and mapped examples of the results for a single station area with an explanation of how to interpret the maps. The walkshed map example is for the proposed Buerkle Road station, and bikeshed map example depicts results for the proposed Maryland Avenue station. Mapped results for all stations are included in the attachments. Results of the walkshed population and employment analysis for all station areas are also included in this memo.

WALKSHED ANALYSIS

Building Station Area Walksheds

The Toole Design team built a set of half-mile\(^1\) pedestrian walksheds surrounding the proposed BRT stations. The example shown in this memo is the Buerkle Road station. The walkshed methodology uses sidewalks and roadway crossings as the base network layer, rather than roadway centerlines.

\(^1\) The Federal Transit Administration (FTA) defines all pedestrian improvements within a half-mile of a transit station to have a \textit{de facto functional} relationship with the transit station when assessing FTA funding eligibility. Additional improvements beyond one-half mile may also be included if they are within a distance people will travel to the station on foot. Source: \textit{Final Policy Statement on Eligibility of Pedestrian and Bicycle Improvements under Federal Transit Law} (FTA, 2011). Available at \url{https://www.federalregister.gov/documents/2011/08/19/2011-21273/final-policy-statement-on-the-eligibility-of-pedestrian-and-bicycle-improvements-under-federal}. Accessed December 11, 2018.
This type of network layer allows the walkshed to be calculated based on pedestrian-specific facilities, such as sidewalk presence or gaps, and ease of intersection crossings.

The underlying pedestrian network was built using a set of sidewalk and crossing imputation procedures to transform an existing roadway centerline dataset within a half-mile Euclidean radius around the proposed BRT stations. Interstates and limited access roadways were removed from the initial roadway network before generating sidewalk and crossing features. Existing infrastructure was verified using aerial imagery. Due to time and budget constraints, this analysis assumes that the existing and proposed pedestrian network is compliant with the Americans with Disabilities Act, but this has not been verified.

The walksheds were calculated by accumulating the amount of time (seconds) it takes to walk one-half mile at 3.5 feet per second. The amount of time required to walk along each segment from start to finish is coded to each segment. The maximum walkshed limit is 755 seconds (about 13 minutes), which is the amount of time it would take a pedestrian to travel one-half mile at 3.5 feet per second (2.4 miles per hour). Intersection delays are added to roadway crossings in the network to approximate actual walking conditions in which a pedestrian may have to wait for a crossing signal or suitable gap. Delay duration was estimated using a proportion of the time required to cross the intersection, according to the following parameters:

- Arterial roadway crossings at a signalized intersection: 75 percent delay.
- Arterial roadway crossings at an unsignalized intersection: 90 percent delay.
- Collector street crossings: 25 percent delay.
- Local street crossings: no added delay.

These delays are only coded to segments that directly cross the arterial or collector street; segments crossing local streets along an arterial or collector do not have an added delay. For example, if one is walking along Buerkle Road and crossing a local street, no added delay was assumed; whereas if one is crossing Buerkle Road, an intersection delay was assumed since Buerkle Road is classified as a collector street. The same intersection assumptions were used in the analysis for both existing conditions and planned improvement conditions.

Three versions of the pedestrian network were developed for this analysis. The first network represents existing pedestrian conditions. Only existing sidewalks and shared use paths are included in this network, along with the imputed intersection delay values. The second and third versions of the network, collectively referred to as “planned improvement” conditions, represent two scenarios: one based on the proposed Rush Line BRT Project station area improvements included in the 15 percent plans and another based on a broader collection of planned improvements by multiple agencies. These additional planned improvements included features in the approved concept plans from September 27, 2018 labeled as “future work by others” as well as other planned improvements provided by city and county staff.

Both the existing conditions and planned improvement conditions networks are visualized on maps using a 75-foot buffer around all segments within the walkshed. Additionally, buildings that are both on a parcel that intersects the walkshed and are within 225 feet of the walkshed buffer (i.e., within 300

---

2 Existing sidewalks and shared use paths were verified using aerial imagery.
3 Additional improvements were provided by Ramsey County, city of White Bear Lake, city of Maplewood and city of Vadnais Heights.
feet from the segments in the walkshed) are highlighted on the maps. Highlighted buildings are more likely than non-highlighted buildings to have access to a BRT station within a 13-minute walk.

**Mapping Station Area Walksheds**

Maps 1 through 3 provide an example walkshed analysis and output for the proposed Buerkle Road station using the methodology outlined in this memo. Similar output maps for all proposed stations are included in Attachment 1.

Map 1 displays the pedestrian walkshed under existing conditions. The existing walkshed uses only existing sidewalks and shared-use paths within a 13-minute walk (half-mile walking distance at 3.5 feet per second) from the proposed BRT station and includes the arterial and collector street crossing delays. The yellow polygon represents the existing walkshed catchment area that a pedestrian is able to reach within a 13-minute walk using only existing sidewalks and shared-use paths. The blue lines denote existing sidewalks. The green lines represent existing shared-use paths. The blue existing sidewalk segments that are not within the yellow walkshed polygon represent segments that are not accessible using the existing sidewalk network within 755 seconds, but that are within or near to the half-mile Euclidean distance station area.

Maps 2 and 3 show the pedestrian walkshed under two scenarios of planned improvement conditions. Map 2 contains the existing walkshed and the proposed Rush Line BRT Project station area improvements included in the 15 percent plans. Map 3 contains the existing walkshed, the proposed Rush Line BRT Project improvements and additional planned improvements from other agencies. Like Map 1, the thin blue lines denote existing sidewalks. The outlined dark purple lines represent planned new sidewalks or shared-use paths from the 15 percent plans. The outlined light blue lines represent additional planned improvements within the station area. The light purple “Project Improvement Walkshed” and light blue “Projects by Others Walkshed” depict areas that are accessible to the BRT station within a 755-second walk with the improvements in the 15 percent plans and all planned improvement conditions, respectively. Areas located outside these shaded “planned improvement” walksheds represent areas that take longer than 755 seconds to walk to. Areas where the purple or blue walksheds are visible represent areas that previously did not have access to the BRT station within a half-mile walk using sidewalks or shared-use paths but would have access after adding these planned improvements to the network. Versions of Map 3 for each station area are included in Attachment 1.

---

4 Walksheds are built using a 75-foot buffer from the sidewalks and shared-use paths that are traversable to/from the proposed stations and are within 755 seconds of walk time.
Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path

Existing Conditions Walkshed*

Buildings near the Existing Conditions Walkshed

*This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.
Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements

- **Existing Conditions Walkshed**
- **Project Improvements Walkshed**
- **Buildings near the Existing Conditions Walkshed**
- **Buildings near the Project Improvements Walkshed**

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.

4/3/2020
PEDESTRIAN WALKSHED ANALYSIS
Map 3: Existing Conditions, Project Improvements, and Projects by Others
Station Name: Buerkle Road

Key

T Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

- Existing Conditions Walkshed*
- Project Improvements Walkshed**
- Projects by Others Walkshed***
- Buildings near the Existing Conditions Walkshed
- Buildings near the Project Improvements Walkshed
- Buildings near the Projects by Others Walkshed

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

4/3/2020
Pedestrian Network Gap Identification

For people to choose to walk to a proposed station, users ideally have a direct route that feels comfortable. A circuitous route, an uncomfortable road segment or a challenging intersection may discourage people from walking to the station. This section describes the framework for identifying pedestrian network gaps.

The completed walkshed analysis revealed gaps in the pedestrian network. The Toole Design team used the results of the walkshed analysis and Google Earth/Google Maps to identify network gaps and barriers near the proposed stations. Potential barriers such as highways, railroad tracks and topography were considered when identifying sidewalk gaps. The analysis did not include an Americans with Disabilities Act assessment of the existing sidewalk to identify gaps or sidewalks in disrepair. The analysis did not include an assessment of the pedestrian experience related to factors such as motor vehicle speed, motor vehicle traffic, criminal activity, police presence, shade, pedestrian scale lighting, etc.

The gap identification process started in the immediate proposed station area and then worked concentrically from the station area approximately one to four blocks to locate missing sidewalk segments and connections to the Bruce Vento Trail. Removing gaps would expand the immediate walkshed area by providing better connections to the existing sidewalk and trail network adjacent to the proposed station area. The improved walkshed perimeter was also reviewed for adjacent sidewalks or trails that could potentially expand the pedestrian connectivity to the station area if the missing gap was filled. Map 4 depicts the results of this sidewalk gap analysis for the Buerkle Road station area and Attachment 2 includes the results for all proposed stations north of downtown Saint Paul.

Pedestrian Network Gap Analysis

The gap analysis identified existing pedestrian network barriers and opportunities for pedestrian improvements that may be considered as part of the Rush Line BRT Project. The gaps presented in Attachment 2 represent sidewalk segments and trail connections that can increase pedestrian connectivity to proposed station areas. Rush Line BRT Project staff will work with stakeholders to determine if the improvement should be included in the Rush Line BRT Project or if addressing the gap is more appropriate to include in the broader station area planning process.

Seven factors were used to analyze each connection. Each of the factors was assigned a level of priority. The Barriers and Opportunities for Pedestrian Improvements Summary Table presented in Attachment 2 represents the results for each potential improvement. The blue colored cells in the table represent a higher priority. The yellow colored cells in the table represent a lower priority. Factors considered include:

- **Adjacent land use:** Do adjacent land uses tend to generate pedestrian activity (residential, commercial/retail, community center, parks, schools, etc.)?
  - Blue indicates a higher level of potential pedestrian activity in the adjacent land use (residential, commercial/retail, parks, schools, etc.).
  - Yellow indicates a lower level of pedestrian activity in the adjacent land use (warehouse, industrial).
WALKSHED AND BIKESHED ANALYSIS

- **Barriers:** Does the segment help pedestrians cross/traverse a railroad, a highway or steep topography?
  - Blue indicates the connection removes significant barriers that pedestrians must cross or go around to reach the station.
  - Yellow indicates the lack of significant barriers on the pedestrian route.
- **Comfort:** Does the posted speed limit and/or average daily traffic volume on the adjacent roadway cause discomfort for pedestrians walking along the road?
  - Blue indicates local streets with a low posted speed limit and/or average daily traffic volume.
  - Yellow indicates an arterial or collector street with higher posted speed limit and/or average daily traffic volume.
- **Constructability:** Does the improvement location or existing conditions present significant issues that influence the potential cost of constructing the improvement?
  - Blue indicates no known extraordinary constraints that significantly influence the cost of construction.
  - Yellow indicates barriers that directly influence the construction process (steep slopes, noise walls, structures, potential easements or right-of-way).
- **Desire lines:** Is there evidence of more than occasional pedestrian activity along the segment (i.e., worn walking paths)?
  - Blue indicates evidence of pedestrian activity.
  - Yellow indicates no evidence of pedestrian activity.
- **Proximity to the proposed station:** Does the segment provide a direct connection to the station or is it within the immediate vicinity?
  - Blue indicates segments within a one-fourth mile buffer of the closest station.
  - Yellow indicates segments beyond a one-fourth mile buffer of the closest station.
- **Street pattern:** Does the street and trail network provide multiple pathways to access the station, or is the street network limited and the segment provides a more direct route to the station?
  - Blue indicates a disconnected grid network and/or curvilinear street pattern with limited connections to the station.
  - Yellow indicates a more gridded street network that provides multiple direct connections to the station.

It is noted that “safety” is also a factor to consider; however, a comprehensive safety analysis was not undertaken to determine if a new sidewalk connection would address a known safety issue. Also, the gap analysis did not include identifying all of the potential pedestrian crossings that could be improved with marked crosswalks and/or traffic control (i.e., rectangular rapid-flashing beacons, high-intensity activated crosswalks, etc.).
*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

4/3/2020
Estimating Population and Employment in Station Area Walksheds

WALKSHED POPULATION AND EMPLOYMENT METHODOLOGY

Toole Design used block group-level population totals from the US Census Bureau American Community Survey\(^5\) and block-level employment totals from the US Census Bureau Longitudinal Employer-Household Dynamics survey.\(^6\) For both population and employment data, these represent the finest scale data available that are updated regularly. Block groups are clusters of blocks for the purposes of Census data collection and reporting, and they typically are drawn to have about 600 to 3,000 people in them.\(^7\) Spatially, block group size varies with population density; in areas with lower density, block groups must cover a larger area to reach the target population size. Blocks are smaller than block groups by definition (i.e., because several blocks comprise each block group) but are still smaller on average in areas with higher density. Conversely, the walksheds are calculated by closely buffering the street network to best approximate realistic pedestrian access using sidewalks and shared use paths.

Map 5 illustrates why this spatial mismatch complicates calculating population within the walksheds using the Buerkle Road station area as an example. The yellow area is the “existing conditions” walkshed around the Buerkle Road station. This walkshed overlaps with four block groups, outlined in red. Only a small portion of each of these block groups falls within the walkshed. For blocks (not pictured), the mismatch is not as striking, but there is still considerable spatial mismatch between the size and shape of Census blocks and the analysis walksheds.

To address this data challenge, Toole Design estimated population within the walkshed using proportional allocation based on area of overlap. In effect, if 10 percent of a block group’s land area falls within the walkshed, then 10 percent of that block group’s population was allocated to the walkshed. Likewise, if 25 percent of a block’s total area falls within the walkshed, then 25 percent of that block’s employment was allocated to the walkshed. This method is imperfect; it assumes a uniform distribution of jobs or residents throughout the block or block group’s area, when population and employment alike actually tend to cluster along streets and block faces. However, the errors are expected to be modest, to average out across the aggregation of multiple block groups and – importantly – to be relatively stable and consistent across the rural-urban continuum present in station areas.

Toole Design applied the following procedure to calculate walksheds on both existing conditions and planned improvements:

- Calculate density per square mile.
  - Population: Calculate each block group’s population density in people per square mile, using “land area” as the denominator.

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\(^7\) https://www.census.gov/geo/reference/gtc/gtc_bg.html
• Employment: Calculate each block’s employment density in jobs per square mile, using “total area” as the denominator.

• Measure proportional area.
  • Map the intersection of all walksheds with all connected block groups and blocks.
  • Calculate the area of walkshed-block group intersections in square miles.

• Allocate employment and population.
  • Population: Multiply the walkshed-block group intersection by its corresponding block group’s population density to produce an estimated number of people living in that polygon.
  • Employment: Multiply the walkshed-block intersection by its corresponding block’s employment density to produce the estimated number of jobs in that polygon.

• Calculate results.
  • Sum the population and employment estimates for each walkshed to produce station area totals.
  • Calculate the percent difference between existing and planned improvement conditions for both population and employment.
PEDESTRIAN WALKSHED ANALYSIS
Map 5: Existing Conditions Walkshed and Block Groups Example
Station Name: Buerkle Road

Key
- Planned Station
- Existing Conditions Walkshed*
- Buildings near the Existing Conditions Walkshed
- Block Groups

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
As many of the walksheds overlap with one another, a separate procedure was used to remove duplicate overlapping areas before calculating the entire corridor-level population and employment estimates.

**WALKSHED POPULATION AND EMPLOYMENT RESULTS**

Table 1 displays the population estimates for each station area under existing conditions and after planned improvements have been built. Likewise, Table 2 summarizes employment estimates in walksheds. The final column for each table shows the percent difference between existing and planned conditions. Percent differences are only calculated for stations that have planned pedestrian improvements that affect the extent of the walkshed.

The corridor total for both existing and planned conditions is smaller than the sum of each station area’s estimates due to overlapping walksheds as previously noted. Values are rounded to the nearest resident or employee or nearest percentage point.

**LIMITATIONS OF THE POPULATION AND EMPLOYMENT ANALYSIS**

As previously discussed, the proportional area method has some known limitations. It assumes that, on average, population and employment density within a block group or block is relatively even. In some cases, this assumption does not hold and the results can be unexpected. The Buerkle Road station provides a good illustration of this phenomenon. The population estimate for the Buerkle Road walkshed increases by 137 percent from all project improvements, due to planned sidewalk improvements near the BRT station. The walkshed increases in size considerably between the existing conditions and planned improvement conditions. However, the area that is added to the Buerkle Road walkshed due to these improvements is dominated by retail and unlikely to actually contribute residents to the walkshed. The literal interpretation (estimated 137 percent increase in population that can access the station within a half-mile walk) is flawed, but the underlying meaning is still true. Walking access to the station increased considerably, including the connection of several major retail destinations to the walkshed. This is confirmed by the employment estimate for the Buerkle Road station: under the planned improvement conditions, the number of jobs within a half-mile walk of the station is expected to increase by 240 percent from all planned improvements, which may perhaps be a slight underestimate due to the aforementioned limitations.

This analysis relies on population and employment data from 2016 and 2018, respectively, for all calculations. Changes in population or employment over time, between now and when the Rush Line BRT Project is completed and opened, cannot be accounted for. Research from the University of Minnesota has shown that fixed guideway transit, such as the Rush Line BRT Project, when paired with a well-connected street grid and other supportive built environment features, has the potential to promote job growth in station areas.8

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### Table 1: Estimates of Total Population in Station Area Walksheds Under Existing Conditions and After Planned Improvements Have Been Built

<table>
<thead>
<tr>
<th>Station Name</th>
<th>Existing Conditions</th>
<th>Project Improvements</th>
<th>All Planned Improvements</th>
<th>Percent Difference vs. Project</th>
<th>Percent Difference vs. All</th>
</tr>
</thead>
<tbody>
<tr>
<td>14th Street</td>
<td>4,373</td>
<td>4,373</td>
<td>4,373</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Mt. Airy Street</td>
<td>2,592</td>
<td>2,592</td>
<td>2,592</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Olive Street</td>
<td>1,407</td>
<td>1,407</td>
<td>1,407</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cayuga Street</td>
<td>1,803</td>
<td>1,803</td>
<td>1,803</td>
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<td>0%</td>
</tr>
<tr>
<td>Payne Avenue</td>
<td>4,021</td>
<td>4,021</td>
<td>4,021</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Arcade Street</td>
<td>4,686</td>
<td>4,686</td>
<td>4,686</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cook Avenue</td>
<td>4,508</td>
<td>4,649</td>
<td>4,649</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Maryland Avenue</td>
<td>4,563</td>
<td>5,120</td>
<td>5,120</td>
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<td>12%</td>
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<tr>
<td>Larsoft Avenue</td>
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<td>105%</td>
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<tr>
<td>Frost Avenue</td>
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<td>929</td>
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<tr>
<td>Highway 36</td>
<td>691</td>
<td>827</td>
<td>827</td>
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<td>20%</td>
</tr>
<tr>
<td>Maplewood Mall Transit Center</td>
<td>880</td>
<td>880</td>
<td>880</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>St. John's Boulevard</td>
<td>698</td>
<td>758</td>
<td>758</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Buerkle Road</td>
<td>127</td>
<td>196</td>
<td>302</td>
<td>54%</td>
<td>137%</td>
</tr>
<tr>
<td>County Road E</td>
<td>321</td>
<td>330</td>
<td>438</td>
<td>3%</td>
<td>37%</td>
</tr>
<tr>
<td>Cedar Avenue</td>
<td>413</td>
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<td>Whitaker Street</td>
<td>635</td>
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<td>812</td>
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<td>28%</td>
</tr>
<tr>
<td>Downtown White Bear Lake</td>
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<td>1,064</td>
<td>1,064</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Entire Corridor</td>
<td>26,735</td>
<td>28,033</td>
<td>28,812</td>
<td>5%</td>
<td>8%</td>
</tr>
</tbody>
</table>

### Table 2: Estimates of Total Employment in Station Area Walksheds Under Existing Conditions and After Planned Improvements Have Been Built

<table>
<thead>
<tr>
<th>Station Name</th>
<th>Existing Conditions</th>
<th>Project Improvements</th>
<th>All Planned Improvements</th>
<th>Percent Difference vs. Project</th>
<th>Percent Difference vs. All</th>
</tr>
</thead>
<tbody>
<tr>
<td>14th Street</td>
<td>15,494</td>
<td>15,494</td>
<td>15,494</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Mt. Airy Street</td>
<td>8,511</td>
<td>8,511</td>
<td>8,511</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Olive Street</td>
<td>2,685</td>
<td>2,685</td>
<td>2,685</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Cayuga Street</td>
<td>1,744</td>
<td>1,744</td>
<td>1,744</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Payne Avenue</td>
<td>1,814</td>
<td>1,814</td>
<td>1,814</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Arcade Street</td>
<td>1,753</td>
<td>1,753</td>
<td>1,753</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
### BIKE NETWORK ANALYSIS

#### Building Station Area Bikesheds

The Toole Design team conducted a bicycle level of traffic stress (LTS) analysis and built a set of 3-mile bikesheds surrounding the proposed Maryland Avenue station. The bikeshed methodology uses the existing off-street bicycle facilities as well as the existing roadway network, classified by LTS score.

#### BICYCLE LEVEL OF TRAFFIC STRESS ANALYSIS METHODOLOGY

The LTS methodology uses characteristics of the roadway such as speed limits, the amount of motor vehicle traffic, number of travel lanes, bikeway design elements and other roadway characteristics to classify segments of the network into one of four levels. Trails are typically classified as low stress (level 1) and major arterials are often high stress (level 4). This classification is important because people have different levels of comfort interacting with motor vehicle traffic when they are biking or considering biking. The LTS analysis can later be augmented by a demand analysis to highlight

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roadway segments in areas where demand for bicycling trips is high, but traffic stress is also high, to visualize areas where existing facilities may be inadequate to meet the demand.

Research by Roger Geller, Jennifer Dill and others indicates that while avid bicyclists are accustomed to interacting with motor vehicle traffic, most people have little tolerance for interacting with traffic while riding a bike and are very worried about being struck by a motor vehicle. In fact, these concerns discourage many people from trying biking in the first place. The share of people that are interested in biking but concerned about traffic comprise 51 to 56 percent of the population (avid or confident bicyclists comprise 12 to 13 percent, and the remainder have no interest in riding a bike). They prefer quiet streets, trails and other "low stress" places to bike that have limited motor vehicle traffic or are separated from traffic.

The Mineta Transportation Institute, a California-based research institution, developed the LTS framework to classify streets from low-stress to high-stress using four levels that mirror the four types of bicyclists:

- **LTS 1** streets are comfortable for people of all ages and abilities, including children.
- **LTS 2** streets are comfortable for most adults, including people who are interested but concerned about bicycling.
- **LTS 3** streets are comfortable for those who are confident bicyclists.
- **LTS 4** streets are the most stressful classification and are uncomfortable for most people except for those who are very confident bicyclists.

As opposed to other methods to determine the suitability of streets for bicycling (e.g., bicycle level of service), the LTS method provides a greater weight to parameters that affect bicyclist comfort level: traffic separation, motor vehicle traffic speeds and volumes. While most people are comfortable bicycling on quiet streets, the LTS method requires physical separation between bicycles and cars when traffic levels and speeds exceed certain thresholds. This is important because separation from motor vehicle traffic may be the most important factor to consider when encouraging more people to bicycle to the stations.

This method uses several base criteria for determining traffic stress (street width, posted speed limit and presence of on-street parking) as well as additional criteria depending on facility type (bike lane width, traffic volume when streets do not have bike lanes and number of driveway/street crossings for paths).

For this analysis, traffic stress was calculated using a simplified version of the LTS methodology, as described in Table 3 through Table 5 (adapted from Mineta Institute research).13

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### Table 3: Mixed Traffic Criteria

<table>
<thead>
<tr>
<th>Number of Lanes</th>
<th>Effective Average Daily Traffic Volume</th>
<th>Speed Limit (miles per hour)</th>
<th>LTS 1</th>
<th>LTS 2</th>
<th>LTS 3</th>
<th>LTS 4</th>
<th>LTS 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlaned two-way street (no centerline)</td>
<td>0-750</td>
<td>&lt; 20</td>
<td>LTS 1</td>
<td>LTS 1</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 3</td>
</tr>
<tr>
<td></td>
<td>751-1,500</td>
<td>25</td>
<td>LTS 1</td>
<td>LTS 1</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 4</td>
</tr>
<tr>
<td></td>
<td>1,501-3,000</td>
<td>30</td>
<td>LTS 2</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td></td>
<td>3,000+</td>
<td>35</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td>One thru lane per direction (one-way, one-lane street or two-way street with centerline)</td>
<td>0-750</td>
<td>40</td>
<td>LTS 1</td>
<td>LTS 1</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 3</td>
</tr>
<tr>
<td></td>
<td>751-1,500</td>
<td>45</td>
<td>LTS 2</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td></td>
<td>1,501+</td>
<td>50+</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td>Two thru lanes per direction</td>
<td>0-8,000</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td></td>
<td>8,001+</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td>Three+ thru lanes per direction</td>
<td>Any volume</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
</tbody>
</table>

### Table 4: Bike Lanes and Shoulders Not Adjacent to a Parking Lane

<table>
<thead>
<tr>
<th>Number of Lanes</th>
<th>Bike Lane Width</th>
<th>Speed Limit (miles per hour)</th>
<th>LTS 1</th>
<th>LTS 2</th>
<th>LTS 3</th>
<th>LTS 4</th>
<th>LTS 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>One thru lane per direction, or unlaned</td>
<td>6+ feet</td>
<td>&lt; 25</td>
<td>LTS 1</td>
<td>LTS 1</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 3</td>
</tr>
<tr>
<td></td>
<td>4 or 5 feet</td>
<td>30</td>
<td>LTS 2</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 4</td>
</tr>
<tr>
<td>Two thru lanes per direction</td>
<td>6+ feet</td>
<td>35</td>
<td>LTS 2</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 4</td>
</tr>
<tr>
<td></td>
<td>4 or 5 feet</td>
<td>40</td>
<td>LTS 2</td>
<td>LTS 2</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
<tr>
<td>Three+ lanes per direction</td>
<td>Any width</td>
<td>LTS 3</td>
<td>LTS 3</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
<td>LTS 4</td>
</tr>
</tbody>
</table>

**Notes:**
1. If bike lane/shoulder is frequently blocked, use mixed traffic criteria.
2. Qualifying bike lane/shoulder should extend at least 4 feet from a curb and at least 3.5 feet from a pavement edge or discontinuous gutter pan seam.
3. Bike lane width includes any marked buffer next to the bike lane.

---

15 Standard methodology uses prevailing speed. Speed limits are used where prevailing speed data are not readily available, as in this case.
16 Effective average daily traffic is the average daily traffic for two-way roads; effective average daily traffic = 1.67*average daily traffic for one-way roads.
18 Standard methodology uses prevailing speed. Speed limits are used where prevailing speed data are not readily available, as in this case.
### Table 5: Bike Lanes Alongside a Parking Lane

<table>
<thead>
<tr>
<th>Number of Lanes</th>
<th>Bike Lane Reach = Bike + Parking Lane Width</th>
<th>Speed Limit&lt;sup&gt;20&lt;/sup&gt; (miles per hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>One lane per direction</td>
<td>15+ feet</td>
<td>LTS 1</td>
</tr>
<tr>
<td></td>
<td>12-14 feet</td>
<td>LTS 2</td>
</tr>
<tr>
<td>Two lanes per direction (two-way)</td>
<td>15+ feet</td>
<td>LTS 2</td>
</tr>
<tr>
<td>Two to three lanes per direction (one-way)</td>
<td></td>
<td>LTS 3</td>
</tr>
<tr>
<td>Other multilane</td>
<td></td>
<td>LTS 3</td>
</tr>
</tbody>
</table>

Notes
1. If bike lane is frequently blocked, use mixed traffic criteria.
2. Qualifying bike lane must have reach (bike lane width + parking lane width) ≥ 12 feet.
3. Bike lane width includes any marked buffer next to the bike lane.

---

**BIKESHED ANALYSIS METHODOLOGY**

Toole Design conducted a bikeshed analysis using the results from the LTS analysis. A set of 3-mile bike networks were developed using shared-use paths and roadways that do not restrict bicycle traffic (i.e., limited access highways). These networks were used to produce two bikesheds: one bikeshed for a low-stress network and another for a high-stress network.

A **low-stress** bikeshed was produced using only the **low-stress network segments** (LTS 1 and LTS 2). The low-stress network represents a network that is suitable for those who are less confident bicyclists. Bicyclists in this category are assumed to be unwilling to ride on high-stress facilities; therefore, LTS 3 and LTS 4 facilities have been removed.

A **high-stress** bikeshed was produced using **all network segments** (LTS 1 through LTS 4). The high-stress network includes all facilities on which bicyclists are permitted because confident bicyclists are more willing to ride a bicycle along streets with higher speeds, higher traffic volumes and less separation from motor vehicles.

Proposed Rush Line BRT station area improvements and the following improvements planned by other agencies were then added to the network as low stress segments (LTS 1 or 2):

- Frost Avenue Corridor Trail Improvements (from English Street to White Bear Avenue).
- Bruce Vento Trail Extension Project (from Buerkle Road to Highway 96 E).
- Jackson Street Trail Improvements (from University Avenue to Pennsylvania Avenue).
- Highway 61 Trail Improvements (from County Road F to Cedar Avenue).

The low-stress and high-stress bikesheds were recalculated under planned improvement conditions and overlaid with the existing conditions bikesheds to see where the planned improvements are expanding the area accessible from the station via bicycle.

---


<sup>20</sup> Standard methodology uses prevailing speed. Speed limits are used where prevailing speed data are not readily available, as in this case.
Mapping Station Area Bikesheds

Maps 6 through 8 provide example outputs from the bikeshed analysis for the proposed Maryland Avenue station using the methodology outlined in this memo. Similar maps for all station areas are included in Attachment 3.

Map 6 illustrates the LTS results from planned conditions that reflect improvements by the Rush Line BRT Project and additional improvements by others. LTS 1 and LTS 2 have been combined to define low stress, and LTS 3 and LTS 4 are combined to define high stress. Major roadways and collectors make up most of the high-stress network. Local streets, neighborhood collectors and shared-use paths make up the low-stress network. Based on existing conditions, there is no low-stress bicycle access to the Maryland Avenue station. The only low-stress access is provided by new trail that provides a direct connection between the Maryland Avenue station and the Bruce Vento Trail.

Map 7 displays the 3-mile low-stress and high-stress bikesheds surrounding Maryland Avenue. The low-stress bikeshed is drawn using a blue polygon and represents areas that have access to the proposed BRT station using only the low-stress network. The high-stress bikeshed is drawn using a red polygon and represents areas that have access to the proposed station using the high-stress network that is comprised of LTS 1 through LTS 4. The area within the 3-mile circular buffer but not in either the red or blue polygon represents areas that theoretically could be part of a bikeshed if network connectivity were increased. Bold blue lines represent project improvements, and dashed blue and black lines represent improvements planned by others. Areas shaded darker blue or darker red indicate where the planned improvements are expanding the low- or high-stress bikeshed.

The planned trail improvement that connects the Maryland Avenue station directly to the Bruce Vento Trail provides a low-stress connection that creates a large low-stress bikeshed. The visible high-stress bikeshed that extends beyond to the east and south of the station can be thought of as opportunity areas to improve access to the proposed BRT station.

Map 8 shows the same output as Map 7 but at a different scale to help identify the high-stress streets and poor trail connectivity that prevent the low-stress bikeshed from expanding to the east and south. Improving bicycle access to the station along Maryland Avenue and improving connections to the Bruce Vento Trail from the south can expand the low-stress bikeshed.

---

21 Bikesheds are built using a 75-foot buffer from the street centerline and shared-use paths that are traversable to/from the proposed stations within a 3-mile bicycling distance for the low-stress and high-stress networks separately.
BIKESHED ANALYSIS
Map 6: Bicycle Level of Traffic Stress
Station Name: Maryland Avenue

Key

Planned Station

Bicycle Level of Traffic Stress
- Low-Stress Network
- High-Stress Network

3/31/2020
NEXT STEPS

Pedestrian Network Analysis

The gap analysis identified existing pedestrian network barriers and opportunities for pedestrian improvements that may be considered as part of the Rush Line BRT Project. The gaps presented in Attachment 2 represent sidewalk segments and trail connections that can increase pedestrian connectivity to planned station areas. The next step is for Rush Line BRT Project staff to review the identified gaps and determine if the improvement should be included in the Rush Line BRT Project as it progresses through the design process or if addressing the gap is more appropriate to include in the broader station area planning process.

Bike Network Analysis

Like the walkshed analysis, the bikeshed analysis highlights areas of opportunity for improving low-stress bicycle access to the Rush Line BRT stations. Bicycling can become more appealing to a broader segment of the population as the level of traffic stress decreases. Additional low-stress bicycle facility connections to the Bruce Vento Trail from adjacent neighborhoods and along high-stress arterials can expand the low-stress bikeshed. The high-stress routes present gaps and barriers in the bicycle network. These gaps and barriers can be addressed through station area planning with local communities as well as future community planning endeavors related to transit, trails and non-motorized transportation.

ATTACHMENTS

Attachment 1: Rush Line BRT Planned Station Existing and Improved Walksheds
Attachment 2: Rush Line BRT Walkshed Gap Recommendations, and Barriers and Opportunities for Pedestrian Improvements Summary Table
Attachment 3: Rush Line BRT Planned Station Existing and Improved Bikesheds and Bicycle Level of Traffic Stress
ATTACHMENT 1
RUSH LINE BRT PLANNED STATION EXISTING AND IMPROVED WALKSHEDS
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: 14th Street

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Mt. Airy

**Key**
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

---

0.25 Mile
0.5 Mile

**PEDESTRIAN WALKSHED ANALYSIS**
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Mt. Airy

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.

***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Olive Street

Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Cayuga Street

Key

- **Planned Station**
- **Existing Sidewalk**
- **Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**

### PEDESTRIAN WALKSHED ANALYSIS

#### Key

- **Existing Conditions Walkshed***
- **Project Improvements Walkshed**
- **Projects by Others Walkshed***
- **Buildings near the Existing Conditions Walkshed**
- **Buildings near the Project Improvements Walkshed**
- **Buildings near the Projects by Others Walkshed**

#### 3/31/2020

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.

***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
**PEDESTRIAN WALKSHED ANALYSIS**

Existing Conditions, Project Improvements, and Projects by Others
Station Name: Payne Avenue

**Key**
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

---

**Legend**

- Existing Conditions Walkshed* (Golden Yellow)
- Project Improvements Walkshed** (Purple)
- Projects by Others Walkshed*** (Light Blue)
- Buildings near the Existing Conditions Walkshed (Orange)
- Buildings near the Project Improvements Walkshed (Green)
- Buildings near the Projects by Others Walkshed (Light Green)

**Maps**

- 0.25 Mile
- 0.5 Mile

---

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.

***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Arcade Street

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
**PEDESTRIAN WALKSHED ANALYSIS**

Existing Conditions, Project Improvements, and Projects by Others
Station Name: Cook Avenue

Key

- **T**: Planned Station
- **Existing Sidewalk**
- **Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**

**PEDESTRIAN WALKSHED ANALYSIS**

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.

***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Maryland Avenue

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

Legend:
- Existing Conditions Walkshed*
- Project Improvements Walkshed**
- Buildings near the Existing Conditions Walkshed
- Buildings near the Project Improvements Walkshed
- Projects by Others Walkshed***
- Buildings near the Projects by Others Walkshed

- 0.25 Mile
- 0.5 Mile

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Larpenteur Avenue

Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

Key

- Existing Conditions Walkshed*
- Project Improvements Walkshed**
- Projects by Others Walkshed***

Buildings near the Existing Conditions Walkshed
Buildings near the Project Improvements Walkshed
Buildings near the Projects by Others Walkshed

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Frost Avenue

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

<table>
<thead>
<tr>
<th>Existing Conditions Walkshed*</th>
<th>Buildings near the Existing Conditions Walkshed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Improvements Walkshed**</td>
<td>Buildings near the Project Improvements Walkshed</td>
</tr>
<tr>
<td>Projects by Others Walkshed***</td>
<td>Buildings near the Projects by Others Walkshed</td>
</tr>
</tbody>
</table>

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Highway 36

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

- Existing Conditions Walkshed*
- Project Improvements Walkshed**
- Projects by Others Walkshed***

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
**PEDESTRIAN WALKSHED ANALYSIS**

Existing Conditions, Project Improvements, and Projects by Others

**Station Name: Maplewood Mall Transit Center**

**Key**

- **T** Planned Station
- **Existing Sidewalk**
- **Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**

- **Existing Conditions Walkshed***
- **Project Improvements Walkshed**
- **Projects by Others Walkshed***

| Buildings near the Existing Conditions Walkshed |
| Buildings near the Project Improvements Walkshed |
| Buildings near the Projects by Others Walkshed |

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.

***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
**PEDESTRIAN WALKSHED ANALYSIS**

*Existing Conditions, Project Improvements, and Projects by Others*

**Station Name: St. John's Boulevard**

**Key**

- **Planned Station**
- **Existing Sidewalk**
- **Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**

**Legend**

- **Existing Conditions Walkshed***
- **Project Improvements Walkshed**
- **Projects by Others Walkshed***
- **Buildings near the Existing Conditions Walkshed**
- **Buildings near the Project Improvements Walkshed**
- **Buildings near the Projects by Others Walkshed**

---

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.*

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.**

***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.*

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Buerkle Road

Key

Planned Station
Existing Sidewalk
Existing Shared-Use Path
Proposed Rush Line BRT Pedestrian Improvements
Additional Pedestrian Improvement Projects by Others

Existing Conditions Walkshed*  
Project Improvements Walkshed**  
Projects by Others Walkshed***  
Buildings near the Existing Conditions Walkshed  
Buildings near the Project Improvements Walkshed  
Buildings near the Projects by Others Walkshed

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: County Road E

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

Legend:
- Existing Conditions Walkshed
- Project Improvements Walkshed
- Projects by Others Walkshed
- Buildings near the Existing Conditions Walkshed
- Buildings near the Project Improvements Walkshed
- Buildings near the Projects by Others Walkshed

- 0.25 Mile
- 0.5 Mile

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
**PEDESTRIAN WALKSHED ANALYSIS**

Existing Conditions, Project Improvements, and Projects by Others

Station Name: Cedar Avenue

**Key**
- **T** Planned Station
- **Existing Sidewalk**
- ** Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**

---

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.

***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Whitaker Street

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
PEDESTRIAN WALKSHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Downtown White Bear Lake

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others

Existing Conditions Walkshed*
Project Improvements Walkshed**
Projects by Others Walkshed***

Buildings near the Existing Conditions Walkshed
Buildings near the Project Improvements Walkshed
Buildings near the Projects by Others Walkshed

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, and Rush Line BRT project improvements.
***This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
ATTACHMENT 2
RUSH LINE BRT WALKSHED GAP RECOMMENDATIONS, AND BARRIERS AND OPPORTUNITIES FOR PEDESTRIAN IMPROVEMENTS SUMMARY TABLE
Additional Pedestrian Improvement Projects to Consider
Station Name: 14th Street

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider
- Existing Conditions Walkshed*
- Project Improvements and Projects by Others Walkshed**
- Buildings near the Existing Conditions Walkshed
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PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Mt. Airy

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<table>
<thead>
<tr>
<th>Improvement Location</th>
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<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
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<th>City Improvement Location</th>
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</thead>
<tbody>
<tr>
<td>Acker Street</td>
<td>Acker Street</td>
<td>Gateway State Trail</td>
<td>South</td>
<td>0.5 mile</td>
<td>Olive Street (0.25) Cayuga Street (0.5)</td>
<td>Saint Paul</td>
</tr>
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</table>
**PEDESTRIAN WALKSHED ANALYSIS**

**Additional Sidewalk Projects to Consider**

**Station Name: Olive Street**

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<td>South</td>
<td>0.25 mile</td>
<td>Cayuga Street (0.5) Mt. Airy (0.5)</td>
<td>Saint Paul</td>
</tr>
<tr>
<td>East Cayuga Street</td>
<td>Westminster Street</td>
<td>Arkwright Street</td>
<td>South</td>
<td>0.5 mile</td>
<td>Cayuga Street (0.25)</td>
<td>Saint Paul</td>
</tr>
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<td>Arkwright Street</td>
<td>Clark Street</td>
<td>North</td>
<td>0.5 mile</td>
<td>Cayuga Street (0.25) Payne Avenue (0.5)</td>
<td>Saint Paul</td>
</tr>
<tr>
<td>Trail Connection (no ROW)</td>
<td>Bruce Vento Regional Trail</td>
<td>Burr Street</td>
<td>Diagonal (West of Burr Street)</td>
<td>0.5 mile</td>
<td>Cayuga Street (0.25) Payne Avenue (0.5)</td>
<td>Saint Paul</td>
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<tr>
<td>Bush Avenue</td>
<td>Desoto Street</td>
<td>Edgerton Street</td>
<td>South</td>
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<td>Cayuga Street (0.25) Payne Avenue (0.25)</td>
<td>Saint Paul</td>
</tr>
<tr>
<td>Burr Street Bridge</td>
<td>Burr Street (North of Phalen Boulevard)</td>
<td>Burr Street (South of Phalen Boulevard)</td>
<td>West and East</td>
<td>0.5 mile</td>
<td>Cayuga Street (0.25)</td>
<td>Saint Paul</td>
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**PEDESTRIAN WALKSHED ANALYSIS**

Additional Sidewalk Projects to Consider

Station Name: Cayuga Street

Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider

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<td>Saint Paul</td>
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<tr>
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<td>Westminster Street</td>
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<td>Whitall Street</td>
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<td>Payne Avenue (0.25) Arcade Street (0.5)</td>
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

PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Payne Avenue

Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider

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<td>Westminster Street</td>
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<td>South</td>
<td>&gt;0.5 mile</td>
<td>Cayuga Street (0.25) Olive Street (0.5)</td>
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<td>Saint Paul</td>
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<td>Wells Street Trail</td>
<td>Eastside Heritage Park</td>
<td>YMCA</td>
<td>South</td>
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<td>Arcade Street (0.25)</td>
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**PEDESTRIAN WALKSHED ANALYSIS**

Additional Sidewalk Projects to Consider

Station Name: Arcade Street

Key

- **Planned Station**
- **Existing Sidewalk**
- **Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**
- **Additional Sidewalk Projects to Consider**
- **New Bridge to Consider**

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<td>Edgerton Street</td>
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<td>Bush Avenue</td>
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<td>Trail Connection</td>
<td>0.25 mile</td>
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<td>Saint Paul</td>
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PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Cook Avenue

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider
- Existing Conditions Walkshed*
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## Station Name: Cook Avenue

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<tr>
<td>Duluth Street</td>
<td>Cook Avenue</td>
<td>Magnolia Avenue</td>
<td>West and East</td>
<td>0.25 mile</td>
<td>Maryland Avenue (0.5)</td>
<td>Saint Paul</td>
</tr>
<tr>
<td>Burnquist Street</td>
<td>Magnolia Avenue</td>
<td>Jessamine Avenue</td>
<td>West</td>
<td>0.25 mile</td>
<td>Maryland Avenue (0.25)</td>
<td>Saint Paul</td>
</tr>
<tr>
<td>Rose Avenue East</td>
<td>Etna Street</td>
<td>Prosperity Avenue</td>
<td>North</td>
<td>0.5 mile</td>
<td>Maryland Avenue (0.25)</td>
<td>Saint Paul</td>
</tr>
<tr>
<td>Etna Street</td>
<td>Maryland Avenue</td>
<td>Ivy Avenue</td>
<td>West and East</td>
<td>0.5 mile</td>
<td>Maryland Avenue (0.25)</td>
<td>Saint Paul</td>
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PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Maryland Avenue

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### Station Name: Maryland Avenue

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<tr>
<td>Duluth Street</td>
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<td>Magnolia Avenue</td>
<td>West and East</td>
<td>0.5 mile</td>
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<td>West</td>
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<td>Maryland Avenue</td>
<td>Ivy Avenue</td>
<td>West and East</td>
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<td>Cook Avenue (0.5)</td>
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**PEDESTRIAN WALKSHED ANALYSIS**

Additional Sidewalk Projects to Consider

Station Name: Larpenteur Avenue

Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider

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<tr>
<td>English Street</td>
<td>Nebraska Avenue</td>
<td>Frisbie Avenue</td>
<td>West</td>
<td>0.25 mile</td>
<td>Frost Avenue (0.25)</td>
<td>Maplewood Saint Paul</td>
</tr>
<tr>
<td>English Street</td>
<td>Arlington Avenue</td>
<td>Frost Avenue</td>
<td>East</td>
<td>0.25 mile</td>
<td>Frost Avenue (0.25)</td>
<td>Maplewood Saint Paul</td>
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<tr>
<td>Mcafee Street</td>
<td>Idaho Avenue</td>
<td>Larpenteur Avenue</td>
<td>West and East</td>
<td>0.25 mile</td>
<td>Frost Avenue (&gt;0.5)</td>
<td>Saint Paul</td>
</tr>
<tr>
<td>Clarence Street</td>
<td>Idaho Avenue</td>
<td>Skillman Avenue</td>
<td>West and East</td>
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<td>Mcafee Street</td>
<td>Trail Connection</td>
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<td>Saint Paul</td>
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<td>Larpenteur Avenue</td>
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<td>Dieter Street</td>
<td>North and South</td>
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Additional Sidewalk Projects to Consider

Station Name: Frost Avenue

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<td>Frisbie Street</td>
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<td>Larpenteur Avenue (0.25)</td>
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<td>Bruce Vento Regional Trail</td>
<td>Clarence Street</td>
<td>South</td>
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**PEDESTRIAN WALKSHELD ANALYSIS**

Additional Sidewalk Projects to Consider

**Station Name: Highway 36**

**Key**

- **T** Planned Station
- **Existing Sidewalk**
- **Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**
- **Additional Sidewalk Projects to Consider**
- **New Bridge to Consider**

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<td>West and East</td>
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<td>Clarence Street</td>
<td>Trail Connection (No ROW)</td>
<td>Bruce Vento Regional Trail</td>
<td>Trail Connection</td>
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<td>Hazelwood Street</td>
<td>North and South</td>
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PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Maplewood Mall Transit Center

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider
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<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
<th>Proximity to the adjacent stations (mile buffer)</th>
<th>City Improvement Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennard Street</td>
<td>Kennard Street</td>
<td>Beam Avenue</td>
<td>Diagonal West</td>
<td>0.5 mile</td>
<td>Street. John's Boulevard (0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Kennard Street</td>
<td>Kennard Street</td>
<td>North Hazelwood Park</td>
<td>East</td>
<td>0.5 mile</td>
<td>St. John's Boulevard (0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Mesabi Avenue</td>
<td>Southlawn Drive</td>
<td>White Bear Avenue</td>
<td>North, South and East</td>
<td>0.5 mile</td>
<td>St. John's Boulevard (&gt;0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Southlawn Drive</td>
<td>Mesabi Avenue</td>
<td>Beam Avenue</td>
<td>West and East</td>
<td>0.25 mile</td>
<td>St. John's Boulevard (&gt;0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Radatz Avenue</td>
<td>Southlawn Drive</td>
<td>White Bear Avenue</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>St. John's Boulevard (&gt;0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Beam Avenue</td>
<td>Southlawn Drive</td>
<td>White Bear Avenue</td>
<td>South</td>
<td>0.25 mile</td>
<td>St. John's Boulevard (0.25)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Saint John’s Boulevard</td>
<td>Parking Lot Driveways</td>
<td>Kennard Street</td>
<td>North and South</td>
<td>0.5 mile</td>
<td>St. John's Boulevard (0.25)</td>
<td>Maplewood</td>
</tr>
</tbody>
</table>
**PEDESTRIAN WALKSHED ANALYSIS**

Additional Sidewalk Projects to Consider

Station Name: St. John's Boulevard

Key

- **T** Planned Station
- **Existing Sidewalk**
- **Existing Shared-Use Path**
- **Proposed Rush Line BRT Pedestrian Improvements**
- **Additional Pedestrian Improvement Projects by Others**
- **Additional Sidewalk Projects to Consider**
- **New Bridge to Consider**

**Legend**

- **Existing Conditions Walkshed**
- **Project Improvements and Projects by Others Walkshed**
- **Buildings near the Existing Conditions Walkshed**
- **Buildings near the Project Improvements and Projects by Others Walkshed**

---

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
<table>
<thead>
<tr>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
<th>Proximity to the adjacent stations (mile buffer)</th>
<th>City Improvement Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennard Street</td>
<td>Kennard Street</td>
<td>Beam Avenue</td>
<td>Diagonal West</td>
<td>0.5 mile</td>
<td>St. John's Boulevard (0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Kennard Street</td>
<td>Kennard Street</td>
<td>North Hazelwood Park</td>
<td>East</td>
<td>0.5 mile</td>
<td>Maplewood Mall Transit Center (0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Southlawn Drive</td>
<td>Mesabi Avenue</td>
<td>Beam Avenue</td>
<td>West and East</td>
<td>&gt;0.5 mile</td>
<td>Maplewood Mall Transit Center (0.25)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Saint John’s Boulevard</td>
<td>Parking Lot Driveways</td>
<td>Kennard Street</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>Maplewood Mall Transit Center (0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Mesabi Avenue</td>
<td>Southlawn Drive</td>
<td>White Bear Avenue</td>
<td>North, South and East</td>
<td>&gt;0.5 mile</td>
<td>Maplewood Mall Transit Center (0.5)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Radatz Avenue</td>
<td>Southlawn Drive</td>
<td>White Bear Avenue</td>
<td>North and South</td>
<td>&gt;0.5 mile</td>
<td>Maplewood Mall Transit Center (0.25)</td>
<td>Maplewood</td>
</tr>
<tr>
<td>Beam Avenue</td>
<td>Southlawn Drive</td>
<td>White Bear Avenue</td>
<td>South</td>
<td>&gt;0.5 mile</td>
<td>Maplewood Mall Transit Center (0.25)</td>
<td>Maplewood</td>
</tr>
</tbody>
</table>
PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Buerkle Road

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider
- Existing Conditions Walkshed*
- Project Improvements and Projects by Others Walkshed**
- Buildings near the Existing Conditions Walkshed
- Buildings near the Project Improvements and Projects by Others Walkshed

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
<table>
<thead>
<tr>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
<th>Proximity to the adjacent stations (mile buffer)</th>
<th>City Improvement Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buerkle Road</td>
<td>Highway 61 North</td>
<td>Fanum Road</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>Vadnais Heights</td>
</tr>
</tbody>
</table>
**PEDESTRIAN WALKSHED ANALYSIS**

Additional Sidewalk Projects to Consider

Station Name: County Road E

Key

- **T** Planned Station
- **#** Existing Sidewalk
- **%** Existing Shared-Use Path
- **%** Proposed Rush Line BRT Pedestrian Improvements
- **%** Additional Pedestrian Improvement Projects by Others
- **%** Additional Sidewalk Projects to Consider
- **%** New Bridge to Consider
- **%** Existing Conditions Walkshed*
- **#** Project Improvements and Projects by Others Walkshed**
- **%** Buildings near the Existing Conditions Walkshed
- **#** Buildings near the Project Improvements and Projects by Others Walkshed

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.

**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
<table>
<thead>
<tr>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
<th>Proximity to the adjacent stations (mile buffer)</th>
<th>City Improvement Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road East</td>
<td>International Drive</td>
<td>Highway 61 North</td>
<td>North</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>Gem Lake</td>
</tr>
<tr>
<td>County Road East</td>
<td>Highway 61 North</td>
<td>Scheuneman Road</td>
<td>South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>Gem Lake</td>
</tr>
</tbody>
</table>
PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Cedar Avenue

Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider

*This is how far you can walk in 13 minutes using only the existing sidewalks and shared-use paths.
**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

0.25 Mile
0.5 Mile
3/31/2020
<table>
<thead>
<tr>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
<th>Proximity to the adjacent stations (mile buffer)</th>
<th>City Improvement Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linden Street</td>
<td>Cedar Avenue</td>
<td>Birch Street</td>
<td>West and East</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
</tbody>
</table>
PEDESTRIAN WALKSHED ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Whitaker Street

Key
- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider
- Existing Conditions Walkshed*
- Project Improvements and Projects by Others Walkshed**
- Buildings near the Existing Conditions Walkshed
- Buildings near the Project Improvements and Projects by Others Walkshed

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**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

3/31/2020
<table>
<thead>
<tr>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
<th>Proximity to the adjacent stations (mile buffer)</th>
<th>City Improvement Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Avenue</td>
<td>Hinckley Street</td>
<td>Highway 96 East</td>
<td>West and East</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>Lake Avenue South</td>
<td>White Bear Avenue</td>
<td>Old White Bear Avenue North</td>
<td>West</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>Whitaker Street</td>
<td>Whitaker Court</td>
<td>Lincoln Avenue</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>Whitaker Street</td>
<td>Highway 61 East</td>
<td>Lake Avenue South</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>Hinckley Street</td>
<td>Hinckley Street (Dead End)</td>
<td>Lincoln Avenue</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>Park Street</td>
<td>Park Street (Dead End)</td>
<td>Lincoln Avenue</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>Clarence Street</td>
<td>Clarence Street (Dead End)</td>
<td>Lincoln Avenue</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
</tbody>
</table>
PEDESTRIAN WALKSHEDE ANALYSIS
Additional Sidewalk Projects to Consider
Station Name: Downtown White Bear Lake

Key

- Planned Station
- Existing Sidewalk
- Existing Shared-Use Path
- Proposed Rush Line BRT Pedestrian Improvements
- Additional Pedestrian Improvement Projects by Others
- Additional Sidewalk Projects to Consider
- New Bridge to Consider
- Existing Conditions Walkshed*
- Project Improvements and Projects by Others Walkshed**
- Buildings near the Existing Conditions Walkshed
- Buildings near the Project Improvements and Projects by Others Walkshed

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**This is how far you can walk in 13 minutes using existing sidewalks, existing shared-use paths, Rush Line BRT project improvements, and improvements planned by others.

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<table>
<thead>
<tr>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Distance to Station (mile buffer)</th>
<th>Proximity to the adjacent stations (mile buffer)</th>
<th>City Improvement Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloom Avenue</td>
<td>5th Street</td>
<td>8th Street</td>
<td>East</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>Long Avenue</td>
<td>8th Street</td>
<td>White Bear Center for the Arts</td>
<td>West and East</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>5th Street</td>
<td>Cook Avenue</td>
<td>Lake Avenue</td>
<td>South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>6th Street</td>
<td>Bloom Avenue</td>
<td>Division Avenue</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>7th Street</td>
<td>Washington Avenue</td>
<td>Highway 61 North</td>
<td>South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>7th Street</td>
<td>Highway 61 North</td>
<td>Cook Avenue</td>
<td>North</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>8th Street</td>
<td>Bloom Avenue</td>
<td>Washington Avenue</td>
<td>South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>8th Street</td>
<td>Highway 61 North</td>
<td>Lake Avenue</td>
<td>South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>8th Street</td>
<td>Cook Avenue</td>
<td>Lake Avenue</td>
<td>North</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
<tr>
<td>10th Street</td>
<td>Highway 61 North</td>
<td>Stewart Avenue</td>
<td>North and South</td>
<td>0.25 mile</td>
<td>N/A</td>
<td>White Bear Lake</td>
</tr>
</tbody>
</table>
## Barriers and Opportunities for Pedestrian Improvements Summary Table

<table>
<thead>
<tr>
<th>Closest Station</th>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Adjacent Land Use</th>
<th>Barriers</th>
<th>Comfort</th>
<th>Constructability</th>
<th>Desire Lines</th>
<th>Proximity to the Planned Station</th>
<th>Street Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olive Street</td>
<td>Acker Street</td>
<td>Acker Street</td>
<td>Gateway State Trail</td>
<td>South</td>
<td>Residential</td>
<td>Noise wall</td>
<td>Local</td>
<td>Path through noise wall</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>East Cayuga Street</td>
<td>Westminster Street</td>
<td>Acker Street</td>
<td>Arkwright Street</td>
<td>South</td>
<td>Residential / Commercial</td>
<td>None</td>
<td>Local</td>
<td>Steep slope; fence</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>Arkwright Street</td>
<td>East Cayuga Street</td>
<td>Whitall Street</td>
<td>Arkwright Street</td>
<td>West</td>
<td>Residential / Commercial</td>
<td>None</td>
<td>Local</td>
<td>Steep slope; fence</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>Whitall Street</td>
<td>Arkwright Street</td>
<td>Clark Street</td>
<td>South</td>
<td>Residential / Commercial</td>
<td>None</td>
<td>Local</td>
<td>No evidence</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Trail Connection (No ROW)</td>
<td>Bruce Vento Regional Trail</td>
<td>Burr Street</td>
<td>Diagonal (West of Burr Street)</td>
<td>Residential</td>
<td>Traverse a steep slope; Local (Dead End)</td>
<td>Steep slope; need easement / ROW</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burr Street Bridge</td>
<td>Burr Street</td>
<td>Burr Street (South of Phalen Boulevard)</td>
<td>West and East</td>
<td>Residential</td>
<td>Bridge over an Arterial</td>
<td>Crosses an Arterial</td>
<td>New bridge</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Cayuga Street / Payne Avenue</td>
<td>Bush Avenue</td>
<td>Desoto Street</td>
<td>Edgerton Street</td>
<td>South</td>
<td>Residential / Warehouse</td>
<td>None</td>
<td>Local</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Payne Avenue</td>
<td>Trail Connection (No ROW)</td>
<td>Bush Avenue</td>
<td>Bruce Vento Regional Trail</td>
<td>Trail Connection</td>
<td>Residential</td>
<td>Traverse a steep slope; vegetation</td>
<td>Local (Dead End)</td>
<td>Steep slope; need easement / ROW</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>Payne Avenue / Arcade Street</td>
<td>Wells Street Trail Connection</td>
<td>Eastside Heritage Park</td>
<td>YMCA</td>
<td>South</td>
<td>School / Park / YWCA</td>
<td>Traverse a steep slope; vegetation</td>
<td>Local</td>
<td>Vegetation</td>
<td>Worn path</td>
<td>Direct connection</td>
<td>Grid</td>
</tr>
<tr>
<td>Cook Avenue</td>
<td>Duluth Street</td>
<td>Cook Avenue</td>
<td>Magnolia Avenue</td>
<td>West and East</td>
<td>Residential</td>
<td>None</td>
<td>Local</td>
<td>Worn path</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Burnquist Street</td>
<td>Magnolia Avenue</td>
<td>Jessamine Avenue</td>
<td>West</td>
<td>Residential</td>
<td>None</td>
<td>Local</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maryland Avenue</td>
<td>Rose Avenue East</td>
<td>Etna Street</td>
<td>Prosperity Avenue</td>
<td>North</td>
<td>Commercial</td>
<td>None</td>
<td>Local</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Etna Street</td>
<td>Maryland Avenue</td>
<td>Ivy Avenue</td>
<td>West and East</td>
<td>Residential / Commercial</td>
<td>None</td>
<td>Local</td>
<td>No evidence</td>
<td>No evidence</td>
<td>¼ mile / ½ mile</td>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Larrenteur Avenue</td>
<td>Mcafee Street</td>
<td>Idaho Avenue</td>
<td>Larrenteur Avenue</td>
<td>West and East</td>
<td>Residential</td>
<td>None</td>
<td>Local</td>
<td>May require easement / ROW</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>Hoyt Avenue</td>
<td>Bruce Vento Regional Trail</td>
<td>Mcafee Street</td>
<td>Trail Connection</td>
<td>Residential</td>
<td>None</td>
<td>Local</td>
<td>May require easement / ROW</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
</tr>
<tr>
<td>Larrenteur Avenue</td>
<td>Birmingham Street</td>
<td>Dieter Street</td>
<td>North and South</td>
<td>Residential</td>
<td>None</td>
<td>Arterial</td>
<td>Vegetation; fences</td>
<td>No evidence</td>
<td>¼ mile</td>
<td>Grid</td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- Higher Priority for Improvement
- Lower Priority for Improvement
## ATTACHMENT 2 - WALKSHED AND BIKESHED ANALYSIS

<table>
<thead>
<tr>
<th>Closest Station</th>
<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Adjacent Land Use</th>
<th>Barriers</th>
<th>Comfort</th>
<th>Constructability</th>
<th>Desire Lines</th>
<th>Proximity to the Planned Station</th>
<th>Street Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larpenteur Avenue / Frost Avenue</td>
<td>English Street</td>
<td>Larpenteur Avenue</td>
<td>Frisbie Avenue</td>
<td>West</td>
<td>Residential</td>
<td>None</td>
<td>Collector</td>
<td>May require easement / ROW</td>
<td>Worn path</td>
<td>½ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>Larpenteur Avenue / Frost Avenue</td>
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<td>½ mile</td>
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</tr>
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<td>Clarence Street</td>
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<td>Skillman Avenue East</td>
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<td>½ mile</td>
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<td>Frost Avenue</td>
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<td>Collector</td>
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<td>Grid</td>
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<td>English Street</td>
<td>Clarence Street</td>
<td>North and South</td>
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<td>Skillman Avenue East</td>
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<td>Frost Avenue</td>
<td>Bruce Vento Regional Trail</td>
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<td>Mesabi Avenue</td>
<td>Beam Avenue West and East</td>
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<td>Local</td>
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<td>Kennard Street</td>
<td>Beam Avenue Diagonal West</td>
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<td>Local</td>
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<td>Direct connection</td>
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<td>Kennard Street North and South</td>
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<td>Fanum Road North and South</td>
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<td>Highway 61 North Scheuneman Road South</td>
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<td>Arterial</td>
<td>No evidence</td>
<td>Direct connection</td>
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**Legend:**
- Higher Priority for Improvement
- Lower Priority for Improvement
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<th>Improvement Location</th>
<th>From</th>
<th>To</th>
<th>Directional (Side of Roadway)</th>
<th>Adjacent Land Use</th>
<th>Barriers</th>
<th>Comfort</th>
<th>Constructability</th>
<th>Desire Lines</th>
<th>Proximity to the Planned Station</th>
<th>Street Pattern</th>
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<td>Linden Street</td>
<td>Cedar Avenue</td>
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<td>West and East</td>
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<td>No evidence</td>
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<td>No curb / gutter; limited ROW</td>
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<td>½ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>Lake Avenue South</td>
<td>White Bear Avenue</td>
<td>Old White Bear Avenue North</td>
<td>West</td>
<td>Commercial</td>
<td>None</td>
<td>Local</td>
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<td>½ mile</td>
<td>Grid</td>
</tr>
<tr>
<td>Whitaker Street</td>
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<td>Lincoln Avenue</td>
<td>North and South</td>
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<td>Local</td>
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<td>No curb / gutter; limited ROW</td>
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<td>No curb/gutter; limited ROW</td>
<td>No evidence</td>
<td>½ mile</td>
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<td>Bloom Avenue</td>
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<td>8th Street</td>
<td>East</td>
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<td>Bloom Avenue</td>
<td>Washington Avenue</td>
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<td>Railroad crossing</td>
<td>No evidence</td>
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<td>Lake Avenue</td>
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<td>Cook Avenue</td>
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Legend:
- Higher Priority for Improvement
- Lower Priority for Improvement
ATTACHMENT 3
RUSH LINE BRT PLANNED STATION EXISTING AND IMPROVED BIKESHEDS AND BICYCLE LEVEL OF TRAFFIC STRESS
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: 14th Street

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Mt. Airy

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Low-Stress Network
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- High-Stress Network
- Future High-Stress Bikeshed

Map showing bikeshed analysis with existing conditions, project improvements, and projects by others for the Station Name: Mt. Airy.

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Mt. Airy

Key

Planned Station
Proposed Rush Line BRT Station Area Improvements
Additional Improvements by Others

Bicycle Level of Traffic Stress

- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

0 0.25 0.5 Miles

Bike Level of Stress

- Low-Stress Network
- High-Stress Network
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Olive Street

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Map showing the existing and proposed bikeshed areas, stress levels, and improvements near Olive Street.
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Cayuga Street

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Existing Conditions, Project Improvements, and Projects by Others
Station Name: Cayuga Street

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Arcade Street

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Station Name: Arcade Street

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Arcade Street

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bike Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Map showing bicycle level of traffic stress with key markers for planned stations, proposed rush line BRT station area improvements, and additional improvements by others.
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Cook Avenue

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Cook Avenue

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Maryland Avenue

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress

- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Map of Bike Stress Levels and Planned Stations in the Maryland Avenue Area.
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Larpenteur Avenue

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Frost Avenue

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

 existing conditions, project improvements, and projects by others: Frost Avenue

3/31/2020

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Highway 36

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Low-Stress Network
- High-Stress Network

Existing Low-Stress Bikeshed
Future Low-Stress Bikeshed
Existing High-Stress Bikeshed
Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Highway 36

Key

Planned Station

Proposed Rush Line BRT Station Area Improvements

Additional Improvements by Others

Bicycle Level of Traffic Stress

- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Maplewood Mall Transit Center

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Map showing planned stations, proposed station area improvements, and additional improvements by others, categorized by bicycle level of traffic stress.
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Maplewood Mall Transit Center

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: St. John's Boulevard

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Buerkle Road

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress

- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: County Road E

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

White Bear Lake

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: County Road E

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress

- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Map showing areas of low and high stress for bicycle traffic, with planned BRT station and other project improvements marked.

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Cedar Avenue

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress

- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Whitaker Street

Key

Planned Station

Proposed Rush Line BRT Station Area Improvements

Additional Improvements by Others

Bicycle Level of Traffic Stress

Existing Low-Stress Bikeshed
Low-Stress Network
Future Low-Stress Bikeshed

Existing High-Stress Bikeshed
High-Stress Network
Future High-Stress Bikeshed

0 0.25 0.5 Miles

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Downtown White Bear Lake

Key
- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress
- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

Station Name: Downtown White Bear Lake

3/31/2020
BIKESHED ANALYSIS
Existing Conditions, Project Improvements, and Projects by Others
Station Name: Downtown White Bear Lake

Key

- Planned Station
- Proposed Rush Line BRT Station Area Improvements
- Additional Improvements by Others

Bicycle Level of Traffic Stress

- Existing Low-Stress Bikeshed
- Future Low-Stress Bikeshed
- Existing High-Stress Bikeshed
- Future High-Stress Bikeshed

White Bear Lake

3/31/2020