C Line: Long-Term Potential Glenwood Realignment Study

November 2016
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I. Introduction

1. What is the C Line?

The C Line is a planned rapid bus line that will enhance transit service along today’s Route 19 bus corridor with increased service frequency, faster speeds, and a more comfortable experience. The C Line will serve the Penn Avenue corridor in north Minneapolis between downtown Minneapolis and the Brooklyn Center Transit Center. The existing Route 19 will continue to run with reduced frequency. With service planned to start in 2019, the C Line will be the Twin Cities region’s second rapid bus line, joining the A Line, which opened along the Snelling Avenue corridor in June 2016.

For more information about the C Line, including the project development process and approved station locations, see the final C Line Station Plan.

2. What is the long-term Glenwood realignment study? When will a realignment decision be made?

The C Line’s alignment along Olson Memorial Highway overlaps with the planned METRO Blue Line Extension light rail line, which is scheduled to enter operations in 2021. Although it will serve a very different area than the C Line north and west of the shared alignment on Olson Highway, the METRO Blue Line Extension will significantly increase transit service along Olson Highway.

Stakeholders have questioned whether Glenwood Avenue could be an appropriate east-west alternative to Olson Highway for the C Line between Penn Avenue and downtown Minneapolis. Metro Transit is committed to identifying the best long-term location for C Line rapid bus and local bus service after light rail service begins. Additional study regarding a rapid bus concept on Glenwood Avenue is necessary to determine its feasibility as a long-term option.

This document and the process surrounding it functions as that additional study. This study resulted in a recommendation to Metropolitan Council for a long-term east-west C Line alignment at the end of 2016.

3. How does this study affect the C Line project outside of the east-west realignment?

The C Line project is progressing outside of this east-west realignment study. This study is independent of the larger project development process. See Figure 1 for the planned C Line project timeline, including anticipated permanent east-west operations within the context of the METRO Blue Line Extension project.

C Line engineering is advancing in 2016 toward completion of final design in 2017. This engineering process includes full and permanent stations in downtown Minneapolis, on Penn Avenue, and in Brooklyn Center, as well as temporary stations on Olson Highway. Construction is anticipated for 2018, with operations beginning in 2019.

C Line operations at permanent stations on either Olson Highway or Glenwood Avenue would not begin until the start of the METRO Blue Line Extension operations, currently anticipated in 2021.

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1 http://www.metrotransit.org/c-line-station-plan
The initiation of the planning process for a permanent Glenwood realignment would be tied to the certainty of METRO Blue Line Extension operations.

*Figure 1: Anticipated C Line project timeline (subject to change)*

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<td>C Line: Planning</td>
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<td>C Line: Operations</td>
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<td>METRO Blue Line Extension: Construction</td>
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<td>C Line: Service w/ temporary Olson stations</td>
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<td>METRO Blue Line Extension: Operations</td>
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<tr>
<td>C Line: Service w/ permanent Olson or Glenwood stations</td>
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</table>

4. What is the community response to the realignment recommendation?

The study of a C Line alignment on Glenwood Avenue was spurred in part by community interest. Stakeholders noted that consideration should be given to a different rapid bus alignment than Olson Highway knowing that the planned METRO Blue Line Extension light rail project would operate on the same roadway.

Metro Transit recommends the C Line move from Olson Memorial Highway to Glenwood Avenue in the long term. See Section II.2 for more information. Community engagement throughout October confirmed general support for this realignment recommendation. Activities included on-bus conversations with existing customers, pop-up outreach at major intersections throughout the corridor, presentations with neighborhood groups, and an open house. With this general support, stakeholders noted an interest in continuing local service on both Olson Highway and Glenwood Avenue to maintain existing transit access on these corridors at some level. See Section VI for more information.
II. East-West Alignment Recommendation

1. Where will the C Line run at the start of service in 2019?

C Line operations will serve temporary stations on Olson Highway at the planned start of service in 2019. This allows C Line buses to operate on Olson Highway before the start of METRO Blue Line Extension light rail construction. It also allows for stations to move when displaced by expected light rail construction, which could begin as early as 2018. Any potential C Line realignment to Glenwood Avenue would occur after the start of C Line operations in conjunction with the start of METRO Blue Line Extension operations.

2. What is Metro Transit’s long-term east-west alignment recommendation?

In the long term (after light rail is operating), the C Line will serve Glenwood Avenue instead of Olson Memorial Highway.

Transit service on Olson Memorial Highway will be substantially increased with the planned addition of METRO Blue Line Extension light rail service, running every 10 minutes throughout the day. Realigning the C Line’s east-west alignment from Olson Highway to Glenwood Avenue will balance transitway service throughout multiple corridors, rather than concentrating transitway investments on a single street. With the C Line on Glenwood Avenue, local bus service on Olson Highway can be better tailored to adapt to customer demand shifting to rail. A Glenwood C Line alignment will also better serve the long-term growth potential of the Glenwood corridor. There are no substantial differences in anticipated travel times or ridership projections between the Olson and Glenwood alignments.

3. When would C Line service move to Glenwood Avenue?

The C Line would begin serving permanent stations on Glenwood Avenue when METRO Blue Line Extension light rail operations begin on Olson Highway. Prior to the start of light rail operations, the C Line will serve temporary stations on Olson Highway, with some light rail construction impacts anticipated.

The timeline to construct permanent C Line stations on Glenwood is dependent upon the METRO Blue Line Extension timeline. Project development for the Glenwood alignment stations would begin upon the Full Funding Grant Agreement award for the Blue Line Extension.

The C Line cannot begin serving the Glenwood corridor at the planned start of C Line operations in 2019 because of the need to maintain existing levels of transit service on Olson Highway prior to the start of METRO Blue Line Extension operations. In addition, the Glenwood Avenue bridge over the Cedar Lake Trail/BNSF railroad that provides access into downtown is anticipated to be closed for two years in 2018 and 2019 to accommodate METRO Green Line Extension construction. Limited downtown access during this time precludes C Line service at the start of operations in 2019.
III. East-West Alignment Information

1. What are the alignments under study? How many stations would be built?

Alignment

See Map 1 for a depiction of the Olson and Glenwood alignments under study. Alignments diverge from the common C Line alignment at the intersection of Olson Highway and Penn Avenue and reconvene at the intersection of Glenwood Avenue and 10th Street in the southbound direction and the intersection of 7th Street and Twins Way in the northbound direction. The Olson and Glenwood alignments are nearly equal in length.

![Map 1: Olson Memorial Highway and Glenwood Avenue C Line Alignments](image)

Stations

The Olson alignment would serve four stations, one of which (Olson & 7th Street) was constructed in 2016 through a pilot project. Permanent station locations to be served by the Olson alignment are identified in Table 1. If Olson Highway is selected as the long-term alignment, permanent C Line stations on Olson Highway would be built in coordination with the construction of the METRO Blue Line Extension.
The Glenwood alignment would likely serve five stations, none of which have already been constructed. While other planned infrastructure improvements exist throughout the Glenwood Avenue corridor (see Section IV.1), station construction coordination opportunities are unknown. Potential station locations on the Glenwood alignment are identified in Map 1 Table 1. Station locations are subject to change, but reflect likely options based upon a preliminary review of factors like existing ridership, station spacing, and site context.

*Table 1: General alignment information*

<table>
<thead>
<tr>
<th></th>
<th>Olson Alignment</th>
<th>Glenwood Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length</strong></td>
<td>Southbound: About 1.7 miles</td>
<td>Southbound: About 1.7 miles</td>
</tr>
<tr>
<td></td>
<td>Northbound: About 1.6 miles</td>
<td>Northbound: About 1.8 miles</td>
</tr>
<tr>
<td><strong>Stations</strong></td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>- Olson &amp; Penn</td>
<td>- Penn &amp; Olson</td>
</tr>
<tr>
<td></td>
<td>- Olson &amp; Humboldt</td>
<td>- Glenwood &amp; Morgan</td>
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<tr>
<td></td>
<td>- Olson &amp; Bryant</td>
<td>- Glenwood &amp; Cedar Lake-Dupont</td>
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<tr>
<td></td>
<td>- Olson &amp; 7th Street</td>
<td>- Glenwood &amp; Lyndale</td>
</tr>
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<td></td>
<td></td>
<td>- Glenwood &amp; Royalston/12th</td>
</tr>
</tbody>
</table>
2. What transit service currently exists on each alignment?

Transit service on both Olson Highway and Glenwood Avenue provide eastbound (inbound) connections to downtown Minneapolis. However, routes serve different destinations westbound (outbound). Olson Highway service provides connections to north Minneapolis and Brooklyn Center via Penn Avenue while Glenwood Avenue service provides connections to St. Louis Park and Minnetonka. Area service is shown in Map 2.

**Olson Memorial Highway**

- **Route 19**
  - All-day frequent local service
  - Connects downtown Minneapolis with the Brooklyn Center Transit Center via Olson Highway, Penn Avenue, and Osseo Road / Brooklyn Boulevard
  - More than 200 bus trips per day serve Olson Highway between downtown Minneapolis and Penn Avenue
  - Weekdays: Buses run every 8 minutes during rush hours, every 10 minutes midday, and every 15-20 minutes in the evening
  - Weekends: Buses run every 15-20 minutes on Saturdays and Sundays
• Route 755  
  o Limited-stop rush hour service; bi-directional commuter service  
  o Connects downtown Minneapolis and New Hope  
  o 25 trips per day serve Olson Highway, stopping only at Penn Avenue and 7th Street  
  o Due to limited service, not significantly incorporated into study  

Glenwood Avenue  

• Route 9  
  o All-day local service  
  o Provides transit service on Glenwood Avenue between Penn Avenue and downtown Minneapolis  
  o Connects south Minneapolis and downtown Minneapolis to St. Louis Park and Minnetonka via Glenwood Avenue, Wayzata Boulevard, and Cedar Lake Road  
  o About 90 bus trips per day serve Glenwood Avenue between downtown Minneapolis and Penn Avenue  
  o Weekdays: Buses run every 15-20 minutes during rush hours, every 30 minutes midday, and every 30 minutes in the evening  
  o Weekends: Buses run every 30 minutes on Saturdays and Sundays  
  o Route 9 service is expected to change in 2017 as a result of the West End/Route 9 Transit Study and service restructuring process (see below for more information)  

Glenwood Avenue – Near-Term Service Restructuring  

Changes to Route 9 are currently under review for potential implementation in 2017. The proposed changes are intended to simplify Route 9 west of downtown, eliminate underused or redundant route segments and improve service to the growing high-density job and residential opportunities in the West End development near I-394 and Hwy. 100 from downtown Minneapolis. Figure 2 illustrates proposed changes to the existing Route 9.  

Proposed service changes impact the immediate area of the potential long-term C Line Glenwood alignment. Route 9 would be simplified from the existing six branches to two branches. Due to low ridership, service would be eliminated on Cedar Lake Road between Penn Avenue and Glenwood Avenue. Also, eastbound in the morning peak hour and westbound in the afternoon peak hour, service on the entire route east of Glenwood Avenue and Cedar Lake Road would operate every 20 minutes instead of every 15 minutes. The portion of Glenwood Avenue where service frequency would be reduced makes up the majority of the potential C Line realignment length.  

While these near-term changes would reduce service on Glenwood Avenue to better meet demand, a realignment of C Line service to Glenwood would result in service increases to approximately 10-minute frequencies throughout the day between Penn Avenue and downtown Minneapolis.
Figure 2: Route 9 Transit Study proposed concept plan

Route 9

Route Information
Route 9 west of downtown will be simplified. The six branches will be reduced to two. Due to low ridership, service will be discontinued on:
- Cedar Lake Road between Glenwood and Penn avenues
- Glenwood Avenue west of Penn Avenue and on Xenia Ave (Route 9H)
- Cedar Lake Parkway, Ewing Avenue, France Avenue, 26th Street, Barry Street and the East Frontage Road of Highway 100 (Route 9K)
- Zarthen Avenue between Cedar Lake Road and 16th Street

Alternative service on new Route 645 will replace Route 9D service between Louisiana Avenue Transit Center and the intersection of Park Place/Wayzata Boulevard. Between Park Place/16th and Wayzata Boulevard/Utica service will be rerouted via 16th Street and Utica to better service the West End.

Frequency
- Rush Hours: 20 minutes
- Midday: 30 minutes
- Evening: 30 minutes
- Owl: No service
- Saturday and Sunday: 30 minutes

Span of Service
- Weekday: 5 a.m. to 1 a.m.
- Saturday: 5:30 a.m. to 1 a.m.
- Sunday: 6 a.m. to 11 p.m.

Legend
- Proposed Route 9
- Current Route 9
- Study Area
- Park & Ride Lots
- Areas of Concentrated Poverty

Potential long-term Glenwood realignment study area
3. What is the existing ridership on each alignment?

See Table 2 and Map 3 for information about ridership at the corridor level. It is important to note that each corridor currently provides service to different destinations in the northbound or outbound direction.

Table 2: Corridor ridership, total

<table>
<thead>
<tr>
<th></th>
<th>Olson Alignment</th>
<th>Glenwood Alignment</th>
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<tbody>
<tr>
<td><strong>Total On</strong></td>
<td>1,016</td>
<td>390</td>
</tr>
<tr>
<td><strong>Eastbound</strong></td>
<td>594 (58%)</td>
<td>356 (91%)</td>
</tr>
<tr>
<td>(Inbound) On</td>
<td></td>
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<tr>
<td><strong>Westbound</strong></td>
<td>422 (42%)</td>
<td>34 (9%)</td>
</tr>
<tr>
<td>(Outbound) On</td>
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Source: Fall 2014, APC data
Olson Memorial Highway

On Olson Highway, Route 19 served just over 1,000 customer boardings on average per weekday in the fall of 2014. About 42 percent of boardings (about 420) were in the northbound direction toward Penn Avenue/Brooklyn Center, with 58 percent of boardings (about 540) in the southbound direction toward downtown Minneapolis. Transit customers use Route 19 service on Olson Highway to travel in both directions in fairly balanced numbers.

For existing bus stops on the Olson alignment, nearly 42 percent (more than 175) of existing northbound (outbound) boardings occur at the stop at Olson Highway and 7th Street. All other bus stops serve about 40 northbound (outbound) boardings per day on average. Northbound boardings along Olson Highway would be particularly impacted by a realignment of the C Line to Glenwood. See Section V.4 for more information.

Southbound (inbound) ridership is more evenly distributed throughout the corridor, with stops at Morgan Avenue, Humboldt Avenue, and Bryant Avenue serving between 100 and 135 average weekday boardings.

Glenwood Avenue

On Glenwood Avenue, Route 9 served about 390 customer boardings on average per weekday in the fall of 2014. About 9 percent of boardings (about 35) were in the westbound direction toward St. Louis Park and Minnetonka, with 91 percent of boardings (about 360) in the eastbound direction toward downtown Minneapolis. This suggests transit customers on Glenwood Avenue primarily use Route 9 as a means into and out of downtown Minneapolis without large demand for transit service westbound to suburban destinations. Westbound stops predominantly function as drop-off locations.

For existing bus stops on Glenwood Avenue, the combined Lyndale (West) and Lyndale (East) stops form the center of transit activity along the corridor. Of the 11 intersections with bus stops along this corridor, over 36 percent of all corridor boardings occur at Lyndale (West) or Lyndale (East), about 140 out of 390 total boardings.

4. What are the surrounding community demographics?

See Maps 4-9 for information about the community demographics surrounding the Olson and Glenwood alignments.

The geographic proximity of the two corridors (between a quarter-mile and third-mile) results in comparable demographic characteristics; the percentage of transit dependent households or population that are people of color are consistently high adjacent to both corridors. Census block groups south of Glenwood Avenue tend to have a lower percentage of low income populations than block groups north of Glenwood Avenue.

In general, though, the Olson alignment would provide consistent access to residential land uses throughout the length of the corridor. The Glenwood Avenue corridor, though, contains predominantly commercial or industrial land uses on its eastern portions. Comparing the housing unit density and employment density maps (Maps 7 and 9, respectively) highlights this contrast in types of land uses served between the two corridors.
Map 6: Population Density (Census Block)

Map 7: Housing Unit Density (Census Block)
IV. Interaction with Other Infrastructure Projects

1. What other roadway or transit projects are planned for this area?

The Metropolitan Council is currently developing the METRO Blue Line Extension and METRO Green Line Extension light rail projects that travel through the area. Hennepin County is also leading several roadway improvements on Glenwood Avenue.

METRO Blue Line Extension (anticipated 2018-2021)

The METRO Blue Line Extension light rail project will operate northwest from downtown Minneapolis through north Minneapolis, Golden Valley, Robbinsdale, Crystal, and Brooklyn Park. The METRO Blue Line Extension is planned to run on Olson Highway between 7th Street and Penn Avenue, with stations at Van White Memorial Boulevard and Penn Avenue. The C Line would include a station at the intersection of Olson Highway and Penn Avenue to make connections to the Blue Line Extension.

The planned addition of the METRO Blue Line Extension to Olson Highway is a central driver of this C Line realignment study. Construction is currently planned to begin in 2018, with operations starting in 2021. Dependent upon project timelines, potential opportunity exists to coordinate METRO Blue Line Extension and C Line construction efforts.

Additional information can be found on the project website.

C Line - METRO Blue Line Extension Connection

The planned METRO Blue Line Extension Penn Ave Station would be located in the median of Olson Highway just east of Penn Avenue. A center platform would serve both directions of LRT travel.

C Line platforms would be located at this same intersection regardless of alignment, so any differences in alignment distance to the light rail station are marginal. The number of street, lane, or light rail track crossings can be better indicator of the strength and safety of the transit connection.

See Table 3 and Map 10 for more information.

Table 3: Connection between C Line and METRO Blue Line Extension

<table>
<thead>
<tr>
<th>Northbound C Line Platform</th>
<th>Olson Alignment</th>
<th>Glenwood Alignment</th>
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<tbody>
<tr>
<td></td>
<td>On Olson Highway east of Penn Avenue</td>
<td>On Penn Avenue south of Olson Highway</td>
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<tr>
<td></td>
<td>- 90’ to LRT</td>
<td>- 100’ to LRT</td>
</tr>
<tr>
<td></td>
<td>- 1 street crossing (Olson Highway)</td>
<td>- 1 street crossing (Olson Highway)</td>
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<tr>
<td></td>
<td>- 4 lanes of traffic</td>
<td>- 3 lanes of traffic</td>
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<tr>
<td></td>
<td>- 1 LRT track</td>
<td>- 1 LRT track</td>
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**METRO Green Line Extension (anticipated 2018-2021)**

The METRO Green Line Extension light rail project will operate from downtown Minneapolis through the communities of St. Louis Park, Hopkins, Minnetonka, and Eden Prairie. A Royalston Avenue/Farmers Market Station is planned near the intersection of Glenwood Avenue and Royalston Avenue. C Line platforms on either alignment would be located less than a quarter mile from this light rail station.

Construction is currently planned to begin in 2018, with operations starting in 2021. As part of light rail construction, the project will remove and replace the Glenwood Avenue bridge over the Cedar Lake Trail/BNSF railroad and future light rail corridor, just west of 12th Street/Royalston Avenue. This bridge is anticipated to be closed for up to two years (2018-2019) during construction.

Additional information can be found on the project website[^3].

[^3]: [http://metro council.org/Transportation/Projects/Current-Projects/Southwest-LRT.aspx](http://metro council.org/Transportation/Projects/Current-Projects/Southwest-LRT.aspx)
C Line - METRO Green Line Extension Connection

The planned METRO Green Line Extension Royalston Avenue/Farmers Market Station would be located between the two potential C Line alignments, slightly closer to the Glenwood alignment. The number of potential LRT track crossings varies depending upon LRT direction of travel due to the separate directional platforms at this station.

See Table 4 and Map 11 for more information.

Table 4: Connection between C Line and METRO Green Line Extension

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<tr>
<th>Olson Alignment</th>
<th>Glenwood Alignment</th>
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<tr>
<td><strong>Northbound C Line Platform</strong></td>
<td><strong>Southbound C Line Platform</strong></td>
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<tr>
<td>- 1,150’ or about 5.5 min. walk to LRT</td>
<td>- 800’ or about 4 min. walk to LRT</td>
</tr>
<tr>
<td>- 3 street crossings; 7 lanes of traffic</td>
<td>- 1 street crossing; 2 lanes of traffic</td>
</tr>
<tr>
<td>- 2-4 LRT tracks dependent upon direction of LRT travel</td>
<td>- 0-2 LRT tracks dependent upon direction of LRT travel</td>
</tr>
<tr>
<td>- 3 street crossings; 7 lanes of traffic</td>
<td>- 3 street crossings; 6 lanes of traffic</td>
</tr>
<tr>
<td>- 2-4 LRT tracks dependent upon direction of LRT travel</td>
<td>- 2-4 LRT tracks dependent upon direction of LRT travel</td>
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Glenwood Avenue Reconstruction (anticipated 2019)

Hennepin County is planning to substantially improve Glenwood Avenue between Aldrich Avenue and 7th Street in 2019, in coordination with METRO Green Line Extension construction of the Glenwood Avenue bridge over the Cedar Lake Trail and railroad tracks west of Royalston Avenue/12th Street. The road will be fully reconstructed between Aldrich Avenue and the west end of the bridge over I-394. The road will be repaved between the east end of the bridge over I-394 and 7th Street. The project will improve pavement conditions and upgrade sidewalks and bicycle facilities. Potential construction coordination opportunities between the Glenwood Avenue reconstruction and any Glenwood C Line stations are being examined.

Changes to bicycle facilities would not preclude C Line operations on Glenwood Avenue. It is expected a Glenwood C Line realignment would result in the use of a shared lane for roadway users throughout the length of C Line platforms. See Sections V.5-7 for more information.

Additional information can be found on the project website⁴.

Glenwood Avenue Repaving (anticipated 2017)

Hennepin County is planning to repave Glenwood Avenue between Xerxes Avenue and Aldrich Avenue in 2017. This will be a mill and overlay project and not a full reconstruction. The project will improve pavement conditions and incorporate changes to bicycle facilities, and will not change sidewalks. Changes to roadway cross sections and pavement striping will be considered as part of this project. Potential changes roadway design include the removal of sharrow and one lane of parking and the addition of bicycle lanes on both sides of the roadway from Gramercy Avenue to Thomas Avenue.

Changes to bicycle facilities would not preclude C Line operations on Glenwood Avenue. It is expected that a Glenwood C Line realignment would result in the use of a shared lane for roadway users throughout the length of C Line platforms. See Sections V.5-7 for more information.

2. What would happen to the existing Olson & 7th Street Pilot Station?

Olson & 7th Street Pilot Station

A BRT-ready station at Olson & 7th Street was designed in 2014 and constructed in 2016 to improve the existing high use bus stop while also piloting BRT improvements along the planned C Line. Construction was substantially completed in the summer of 2016. Station improvements are pictured in Figure 3.

With an Olson alignment, the C Line would serve both platforms of the BRT-ready pilot station.

With a Glenwood alignment, the C Line would not serve the station. The northbound platform would continue to serve local bus routes. The southbound pilot station platform could eventually be used by planned D Line rapid bus service on the Chicago/Emerson-Fremont corridor.

⁴ http://www.hennepin.us/residents/transportation/glenwoodmpls
Figure 3: Existing 7th Street Pilot Station platforms (NB on left, SB on right)
V. Alignment Comparisons: Customer Impacts, Operations, and Other Considerations

1. How would each alignment affect transitway coverage and long-term network design?

Both alignments would connect to the METRO Blue Line Extension (at the Penn Ave Station) and the METRO Green Line Extension (at the Royalston Ave/Farmer’s Market Station). See Section IV.1 for more information. The long-term network design of existing local routes on Olson Highway and Glenwood Avenue would continue within Metro Transit’s service development process. Local service changes related to the opening of the METRO Blue Line or Green Line Extensions are anticipated to be considered approximately 18 months prior to the start of any new light rail service.

Olson Memorial Highway

An Olson C Line alignment would result in both METRO Blue Line Extension and C Line service providing service every 10 minutes on Olson Highway between Penn Avenue and downtown Minneapolis.

Glenwood Avenue

A Glenwood C Line alignments distributes the enhanced light rail and rapid bus transitway service across two corridors instead of focusing both on Olson Highway alone.

2. How would travel time compare for each alignment?

Travel time differences between alignments are negligible. For both alignments, estimated travel time between 7th Street & Hennepin Avenue and Olson Highway & Penn Avenue is approximately eight minutes.

However, efficient C Line travel times on Glenwood Avenue are dependent upon transit signal priority (TSP) and platform curb extensions. TSP allows buses to request early green time and/or extended green time to reduce time spent at red lights. Curb extensions allow buses to load and unload passengers in the lane of traffic, eliminating the need for delay-inducing merge movements.

On the Glenwood alignment, TSP improvements would be anticipated at the following intersections:

- Glenwood & Penn
- Glenwood & Morgan
- Glenwood & Cedar Lake
- Glenwood & Dupont
- Glenwood & West Lyndale
- Glenwood & East Lyndale
- Glenwood & Royalston Avenue/12th
- Glenwood & 10th
- 7th & Twins Way
3. What is projected ridership for each alignment?

High-level ridership modeling suggests that long-term C Line ridership would be similar between the Olson and Glenwood alignments, or about 9,000 rides per day by 2030. Ridership projections for both alignments include the planned operations of the METRO Blue Line Extension.

However, the Twin Cities region’s experience from the 2014 implementation of the Green Line on University Avenue suggests that customers tend to favor rail over bus when both options are available in a corridor. Potential future ridership would likely be greater with a Glenwood alignment than with an Olson alignment serving the same corridor as LRT.

4. How would each alignment connect transit customers to destinations?

Trips to northbound and southbound destinations from the Olson Highway and Glenwood Avenue corridors would be impacted with each alignment scenario. Each alignment creates tradeoffs in walk distances and service frequencies that impact customers differently throughout the corridor.

Each corridor currently provides service to different destinations in the northbound/westbound direction. If looking at total number of boardings, Olson Highway facilitates more than 2.5 times more activity than Glenwood Avenue (about 1,000 total boardings compared to about 390). The number of customers experiencing any single travel impact from a realignment to Glenwood will be generally greater on Olson Highway than Glenwood Avenue.

In general, a Glenwood realignment would result in travel impacts to northbound Route 19 customers (over 420 boardings per day) because of the loss of direct high-frequency access to the Penn Avenue corridor. Compared to existing conditions, a tradeoff would be created prioritizing shorter walk distances for lower frequency or higher frequency for longer walk distances. Regardless of a potential C Line realignment, southbound customers would continue to have travel options via some combination of light rail, rapid bus, or local bus service.

A Glenwood realignment would result in positive impacts to existing Route 9 riders on Glenwood Avenue (about 390 boardings per day). Northbound customers would obtain direct access to the Penn Avenue corridor that does not currently exist on Glenwood Avenue. This is a significant new connection for the Glenwood corridor and is not reflected in the existing westbound ridership numbers (less than 40 total boardings per day) encompassing service to western suburbs. Southbound customers on Glenwood Avenue would experience more frequent access to downtown Minneapolis at C Line stations, supplementing existing eastbound local bus service.
5. How would each alignment affect traffic movements?

Olson Memorial Highway

No curb extensions are planned. While buses would stop in a lane of traffic, two other travel lanes are available for the continued movement of all vehicles.

Glenwood Avenue

The design concepts in Appendix A note the need for a curb extension at most potential station locations on Glenwood Avenue. The existing right-of-way and sidewalk widths are too narrow to accommodate rapid bus facilities, so the bumpout provides the necessary space for things like enhanced shelters and fare payment equipment.

Because Glenwood Avenue is a two-lane roadway, C Line buses will stop in the single lane of traffic with stations on curb bumpouts. This use of the single lane of traffic for loading and unloading will also occur at C Line stations on Penn Avenue. See Figure 4 for more information.

*Figure 4: Rapid bus operations in single lane of traffic*
6. How would each alignment affect bicycle facilities?

Olson Memorial Highway

No on-street bicycle facilities currently exist on Olson Highway. An off-street cycle track is planned to be built in coordination with the METRO Blue Line Extension. This facility is planned for the north side of Olson Highway and will not interfere with any permanent C Line stations.

Glenwood Avenue

The design concepts in Appendix A note the existing and potential future conditions of bicycle facilities along the corridor. Future bicycle conditions on Glenwood Avenue are likely to change in conjunction with the Hennepin County reconstruction and repaving projects noted within Section IV.1, but will not preclude the addition of the C Line to Glenwood Avenue.

The presence of the curb extension and single lane of traffic will require a shared use condition for transit, cyclists, and motorists for the length of C Line platforms. A bicycle lane, for instance, would transition into and out of a shared use condition before and after C Line stations. A consistent floating bus stop concept with a bicycle lane routed behind a transit platform is not possible due to right-of-way restrictions throughout the corridor.

See Figure 5 for additional information about how potential C Line platforms on Glenwood Avenue could interact with bicycle facilities.

Figure 5: Transit-bicycle interaction conditions
7. How would each alignment affect on-street parking?

Station bumpouts are frequently considered at locations where the area against the curb is currently used for on-street parking. A station bumpout in a parking lane would generally use the space of four to five parking spaces. When platforms are sited at existing bus stops, no-parking restrictions are already in place for the length of the bus stop zone. In some cases, on-street parking impacts may also be mitigated by adding spaces in other locations. Table 5 compares alignment parking impacts.

Table 5: Parking impacts

<table>
<thead>
<tr>
<th>Olson Alignment</th>
<th>Glenwood Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stations with no anticipated parking impacts</strong></td>
<td><strong>Stations with anticipated parking impacts</strong></td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>- Olson &amp; Penn</td>
<td>- Penn &amp; Olson</td>
</tr>
<tr>
<td>- Olson &amp; Humboldt</td>
<td>- Glenwood &amp; Lyndale</td>
</tr>
<tr>
<td>- Olson &amp; Bryant</td>
<td>- Glenwood &amp; Royalston/12th</td>
</tr>
<tr>
<td>- Olson &amp; 7th Street</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>- Glenwood &amp; Morgan</td>
</tr>
<tr>
<td></td>
<td>- Glenwood &amp; Cedar Lake-Dupont</td>
</tr>
<tr>
<td>Notes</td>
<td>Notes</td>
</tr>
<tr>
<td>No parking currently exists on Olson Highway</td>
<td>Current parking conditions may be affected by near-term Glenwood Avenue repaving and reconstruction projects</td>
</tr>
</tbody>
</table>

The potential for on-street parking impacts on Glenwood Avenue is highest near the intersection of Glenwood Avenue and Morgan Avenue, a likely station location given its relative concentration of ridership demand and commercial destinations. See Figure 6 for information about existing parking use at this location. At the intersection of Glenwood Avenue and Morgan Avenue, weekday parking utilization is heavier east of Morgan Avenue (about 40 to 60 percent of capacity) compared to west of Morgan Avenue (about 5 to 15 percent). Parking utilization is greater on Sundays during Redeemer Lutheran Church service hours, located on Glenwood Avenue between Morgan Avenue and Logan Avenue.
8. How much would each alignment cost to build?

Preliminary cost estimates have been developed at less than 1% engineering. See Table 6 for more information.

Olson Memorial Highway

Preliminary estimates for construction of the three new stations (six directional platforms) on Olson Highway are between $2 million and $2.5 million. The construction of all three stations would be coordinated with the METRO Blue Line Extension project, likely resulting in cost savings compared to independent construction.

The fourth station for a long-term Olson alignment at Olson & 7th Street has already been constructed as part of a separate project.

Glenwood Avenue

Preliminary estimates indicate the construction of the five new stations (ten directional platforms) on the Glenwood alignment would cost between $4 million and $5 million, dependent on the feasibility of coordinating the construction of up to three stations with other corridor projects.
Table 6: Preliminary cost estimates

<table>
<thead>
<tr>
<th>Preliminary Cost Estimate (less than 1% engineering)</th>
<th>Olson Alignment</th>
<th>Glenwood Alignment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between $2 million and $2.5 million for construction of six new platforms</td>
<td>Between $4 million and $5 million, dependent upon feasibility of coordinated construction</td>
</tr>
</tbody>
</table>

9. How would each alignment support economic development outcomes?

There is continued community interest in development potential on both the Olson Highway and Glenwood Avenue corridor.

Throughout the Olson Highway and Glenwood Avenue corridors, transit ties to any economic development potential currently focus on the anticipated arrival of the METRO Blue Line Extension and METRO Green Line Extension light rail projects. Transit, though, is just one of many components that can help catalyze development potential in a corridor. As noted within Metro Transit’s West Broadway Transit Study⁵, transit improvements are often tertiary factors that serve as a catalyst for stronger predictors of development potential like local government policies and the larger private market.

On Olson Highway, LRT may induce denser, transit-supportive development patterns, regardless of the C Line’s alignment.

On Glenwood Avenue, enhanced transit could become one of many contributing factors that eventually lead to economic development opportunities along the corridor.

10. How may future demographics or development shift transit demand?

In partnership with cities, the Metropolitan Council forecasts demographic conditions several decades into the future. 2040 demographic forecasts for population and employment conditions surrounding the Olson and Glenwood alignments are shown in Maps 12 and 13. Overall, projected demographics are not anticipated to substantially change over the next several decades. Employment densities are projected to be focused on the east-southeast portion of the study area and population densities are focused on the western portion of the study area, similar to current conditions.

Economic development goals have been documented within the Bassett Creek Valley Master Plan⁶ for the Glenwood Avenue corridor and the METRO Blue Line Extension station area plans⁷ for the Olson Highway corridor. Transit is anticipated to play a supporting role in any emerging development opportunities considered for the Olson and Glenwood corridors.

⁵ http://www.metrotransit.org/west-broadway-transit-study
⁶ http://www.minneapolismn.gov/cped/planning/cped_basset-creek
⁷ http://www.hennepin.us/residents/transportation/bottineau-community-works
VI. Community Outreach and Engagement

Initial community outreach and engagement regarding the potential C Line realignment began in June and continued through August. The potential long-term realignment was discussed at the community meetings and events identified below. This process focused on conversations addressing general transit needs on Glenwood Avenue and the benefits and concerns that potential C Line service on Glenwood Avenue could bring. It did not focus on a specific realignment recommendation.

- June 26, 2016: Harrison Neighborhood Association Glenwood Revitalization Team meeting
- July 11, 2016: Heritage Park Neighborhood Association board meeting
- July 13, 2016: Bryn Mawr Neighborhood Association board meeting
- July 16, 2016: Jordan Week of Kindness block party
- July 20, 2016: North Loop Neighborhood Association Planning & Zoning meeting
- July 20, 2016: Redeemer Lutheran Church Wednesday Summer Cookout
- August 17, 2016: Redeemer Lutheran Church Annual Block Party
- August 31, 2016: Heritage Commons informational meeting

In general, community conversations maintained a common theme of connections. Developing a stronger transit connection between the Glenwood Avenue corridor and greater north Minneapolis via the Penn Avenue corridor was repeatedly emphasized. Today, transit customers on Glenwood Avenue must travel about a quarter-mile north to the intersection of Olson Highway and Penn Avenue in order to board northbound Route 19 buses.

More frequent and fast connections from Glenwood Avenue to downtown Minneapolis were also commonly discussed. The relative infrequency of transit service on Glenwood Avenue (about every 30 minutes midday) functions as a perceived barrier against more transit use along the corridor.

A more extensive community engagement process occurred throughout the month of October. This process focused on collecting input from the general public and having community conversations about the specific recommendation to move the C Line from Olson Memorial Highway to Glenwood Avenue in the long term. This recommendation was discussed at a Metropolitan Council Transportation Committee on September 26th, and a community engagement process followed throughout the month of October. Several different types of community engagement were used to ensure as many voices as possible were included, like existing customers, residents, businesses, and community organizations along the corridor. These engagement activities are described below.

Community engagement throughout October confirmed general support for the realignment recommendation. With this support comes an interest in continuing local service on both Olson Highway and Glenwood Avenue to maintain existing transit access on these corridors at some level.

On-Bus Mobile Outreach

Metro Transit staff boarded Route 19 and Route 9 buses to present information regarding the recommendation. Over 400 packets of information were given to riders throughout the course of this mobile outreach.
Existing riders were largely supportive of the recommendation, with a strong interest in continuing local service on both Olson Highway and Glenwood Avenue. Customers noted a continuing need for direct transit access between Penn Avenue and Olson Memorial Highway, with local service needed to provide this access.

Staff conducted a total of 10 hours of on-bus mobile outreach on the following days:

- October 6
- October 13
- October 20
- October 21
- October 28

Pop-Up Outreach

Metro Transit staff conducted pop-up outreach at major Route 19 intersections, presenting realignment recommendation information to customers getting on and off the Route 19. Many conversations focused on raising C Line awareness, with general questions about how the C Line would operate and where it stops.

Most riders supported the realignment recommendation, with some riders preferring Olson Highway. Upon learning more about the realignment recommendation, most riders felt it made sense to spread transitway service (i.e., light rail and bus rapid transit) across two streets rather than focusing both on Olson Highway.

Staff conducted a total of 10 hours of pop-up outreach at the following locations:

- 7th Street & Hennepin Avenue (October 3)
- Brooklyn Center Transit Center (October 10)
- Olson Highway & 7th street (October 11)
- Penn Avenue & Lowry Avenue (October 24)
- Penn Avenue & West Broadway Avenue (November 1)

Community Presentations

Metro Transit staff presented on the Glenwood realignment recommendation to neighborhood associations and community organizations throughout the corridor. The presentation also provided information on the project’s ongoing preliminary design phase.

Meeting attendees were largely supportive of the recommendation to realign the C Line to Glenwood in the long-term.

Some community members had a specific interest in how Glenwood Avenue’s roadway design could accommodate rapid bus service from an engineering or technical perspective (e.g., navigation of narrow road width, consideration of winter conditions or bicycle facilities, etc.). As part of the realignment study, project partners determined in the spring of 2016 that rapid bus service is technically feasible on Glenwood Avenue. Community members also frequently commented on their interest in identification
of station locations throughout Glenwood Avenue. The identification of C Line stations on Glenwood Avenue will occur during a future Glenwood-specific station planning process.

Metro Transit staff presented to the following groups:

- Folwell Neighborhood Association, October 3
- Northside Resident’s Redevelopment Council, October 10
- Shingle Creek Neighborhood Association, October 11
- Bryn Mawr Neighborhood Association, October 12
- Harrison Neighborhood Association, October 17
- North Loop Neighborhood Association, October 19
- Heritage Commons, October 19
- West Broadway Businesses and Area Coalition, October 20
- Victory Neighborhood Association, October 26
- Cleveland Neighborhood Association, November 13

Open House

Metro Transit hosted an open house on October 18th to present information on the Glenwood realignment recommendation. Hennepin County Community Works, Hennepin County Transportation, the City of Minneapolis, and the METRO Blue Line Extension Project Office were also present to discuss other transportation projects surrounding the Penn Avenue corridor.

Nearly 40 people attended the open house. Facebook Live was also used to broadcast the presentation component of the open house. Over 1,000 people have viewed that video to date.

Open house attendees were largely supportive of the Glenwood realignment recommendation. As expressed during other community presentations, there was some concern regarding how the C Line could technically operate on Glenwood Avenue. As part of the realignment study, project partners determined in the spring of 2016 that rapid bus service is technically feasible on Glenwood Avenue.

Other

A variety of other types of engagement were used throughout the process, including door knocking at properties along Glenwood Avenue, the use of social media for open house promotion, distribution of email newsletters with project updates, and a large postal mailing to all properties within a quarter-mile of both Penn Avenue and Glenwood Avenue. This mailing distributed letters with realignment recommendation details and preliminary engineering information to over 31,000 properties along the project corridor.

Comments regarding any aspect of the C Line can be submitted to brtprojects@metrotransit.org. Comments or questions can also be submitted to the Community Outreach Coordinator, C Terrence Anderson, atcterrence.anderson@metrotransit.org or 612.719.7086.

Additional information about the recommendation to move the C Line to Glenwood Avenue in the long term, including a public engagement plan, can be found on the project website’s Project Library.8

8 http://www.metrotransit.org/c-line-library
Appendix A: Glenwood Avenue Station Concepts
NOTE 3: FUTURE ROADWAY CONDITIONS SUBJECT TO CHANGE DUE TO 2017 HENNEPIN COUNTY REPAVING MAINTENANCE PROJECT ON GLENWOOD AVENUE (LIMITS ARE THOMAS AVENUE NORTH TO ALDRICH AVENUE NORTH).

LEGEND
- WALK
- FURNISHING ZONE
- CLEAR SPACE
- CLEAR SPACE + WALK-THROUGH
- FURNISHING-ZONE FRONTAGE
- WETLIE STRIP
- BIKE LANE
- NO PARKING
- CURB & GUTTER
- CONCRETE PROPOSED
- CONCRETE IN PLACE
- ADA COMPLIANCE
- EXISTING LANE LINES
- INTERSECTION
- INTERFERENCE (BUILDING)

1" = 25'

LOCAL STREET + DESIGN VEHICLE - SCHOOL BUS

MORGAN AVENUE NORTH

FOOTPRINT #2
AVOID DOORS IN FINISHING ZONE

FOOTPRINT #4
Footprint #4 includes shared lane condition along length of BRT platform.
Footprint #4 includes shared lane condition along length of BRT platform.
Footprint #4 includes shared lane condition along length of BRT platform.

NOTE 3: FUTURE ROADWAY CONDITIONS SUBJECT TO CHANGE DUE TO 2017 HENNEPIN COUNTY REPAVING MAINTENANCE PROJECT ON GLENWOOD AVENUE (LIMITS ARE THOMAS AVENUE NORTH TO ALDRICH AVENUE NORTH)
NOTE 2: FUTURE ROADWAY CONDITIONS SUBJECT TO CHANGE DUE TO 2017 HENNEPIN COUNTY GLENWOOD AVENUE RECONSTRUCTION PROJECT (LIMITS ARE ALORICH AVENUE NORTH TO 10TH STREET NORTH)
Footprint #4 includes shared lane condition along length of BRT platform.