Central Corridor Transit Service Study Existing Conditions Report
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1 INTRODUCTION, PURPOSE & SCOPE

This report provides an evaluation of current transit service provided in the Central Corridor to determine its effectiveness and efficiency. It examines existing conditions as well as potential new service, transit market opportunities and facility needs.

Improvement and expansion of the public transit system is a central element of the Metropolitan Council’s 2030 Transportation Policy Plan’s (TPP) approach to accommodating the population and employment growth forecast for the region. The TPP calls for development of a network of transitways consisting of bus-only shoulders, high-occupancy vehicle lanes, bus rapid transit, exclusive busways, Light Rail Transit (LRT) and commuter rail service.

As part of this transitway plan, the Central Corridor light-rail line is scheduled to open in 2014 between Minneapolis and St. Paul as the Green Line. The line is expected to carry an estimated 13.2 million of the annual rides by year 2030, or 9 percent of total regional annual rides. Ridership models project that 40 percent of the Green Line riders will ride bus service to reach the trains at an LRT station. That is a total of 5.3 million annual bus rides.

Metro Transit uses a sector-based approach to address the emerging transit needs within the region. As shown in Figure 1, the region is broken into nine transit planning sectors. Sectors 1, 2, 5, 7 and 8 have undergone prior planning studies similar to the process planned for the Central Corridor review. Pieces of the Central Corridor study area were previously included as part of the NE Minneapolis (Sector 1), NE St. Paul (Sector 2) and Central-South (Sector 5) transit studies. The Central Corridor Transit Service Study will revisit transit needs in this area as well as coordinating bus routes with the new Green Line service.

The study area for the Central Corridor Transit Service Study, shown in Figure 2, is bounded by the Mississippi River on the south, I-35E on the east, Larpenteur/East Hennepin avenues on the north and by Hiawatha Avenue, East Lake Street and the Mississippi River on the west. The Study Area is almost completely urban, including downtown Minneapolis, downtown Saint Paul and the University of Minnesota, and covering many neighborhoods of St. Paul, Minneapolis and the suburbs of Lauderdale, Falcon Heights and Roseville. The population of the Study Area is about 246,170, with minorities making up 35 percent. There are 113,378 housing units. In the neighborhoods immediately adjacent to the Green Line, the population is about 163,790, with minorities comprising 45 percent, in 113,378 housing units. As of 2008, there were about 357,587 jobs in the Study Area, of which, 348,558 jobs were located in the neighborhoods adjacent to the Green Line or about 22 percent of the employment in the entire metropolitan area.

The routes included in the study include all those which operate a significant portion of their total service in the study area and which provide a connection to the Green Line. This includes routes 2, 3, 6, 8, 16, 21, 50, 53, 62, 63, 65, 67, 84, 87, 94, 134, and 144. These routes are indicated in bold lines on Figure 2. Several other routes provide a significant portion of their total service in the study area but do
not provide a connection to the Green Line. This includes routes 46, 61, 68, 70, 74, and 272. These routes are not included in the study, but they are included on maps and other materials in the study for reference. Public transit service provided by the University of Minnesota, including the Campus Connector and circulator routes are also not included in this study.

This report will address the existing conditions of the routes in the study, examining the markets and unmet opportunities that exist for the current transit service being provided. It will also document the development patterns, major attractions and destinations in the Study Area as well as current and future travel patterns.

The Central Corridor Transit Service Study will provide a review of the performance and structure of existing transit service and also examine the integration and expansion of transit service to connect with the Central Corridor Green Line that is expected to begin operating in 2014.

*Figure 1 – Map of Metropolitan Area Transit Planning Sectors and Central Corridor Study Area*
Figure 2 - Map of the Central Corridor Existing Bus Service Network and Study Area
2 EXISTING ROUTE STRUCTURE AND SERVICE LEVELS

In the Study Area, as in most of the Metro Transit network, there are two distinct route structures. The ‘base’ service structure operates all day and the ‘peak’ service structure operates just during weekday rush hour periods.

Base Route Structure
The base route structure in the Study Area is designed to provide a variety of transportation needs. The overall structure is both radial, that is oriented to downtown St. Paul and/or Minneapolis, and a grid of cross-town routes perpendicular to the radial routes. These crosstown routes are spaced about 1-2 miles apart. Crosstown routes in St. Paul extend north and south though crosstown routes in Minneapolis extend east and west. To the north of University Avenue, most of these routes extend to the Roseville area where they terminate at Rosedale Shopping Center at the transit center located there. Rosedale Transit Center is a timed-transfer focal point where eight local routes connect.

Peak Route Structure
During peak hours, the base network remains, generally with improved service levels, and is overlaid by additional peak-only commuter routes. Peak-only routes from the Highland area of St. Paul offer local pick-up from these neighborhoods then operate express service to the University of Minnesota and downtown Minneapolis and Saint Paul. These routes operate in addition to base local routes, either on the same street or on close parallel streets. For example, on Snelling Avenue, Route 84 provides base local service and Route 144 provides peak commuter service. On Cleveland Avenue, Route 87 provides base local service and on Cretin Avenue, a close parallel street, Route 134 provides peak service. On Lake Street/Marshall Avenue, Route 21 provides base local service and Route 53 provides peak service to downtown Saint Paul.

OFF-STREET FACILITIES

Regionally, major off-street transit facilities consist of transit centers and park-and-ride facilities.

Transit Centers
There are no major transit centers in the Study Area. However, Rosedale Transit Center in Roseville is an important destination and transfer point just to the north of the Study Area.

• Rosedale Transit Center – Located on the east side of the shopping center, just southwest of Snelling Avenue and Co Rd B-2. It is served by routes 32, 65, 84, 87, 223, 225, 227, 260, 264, 272 and 801.

Park and Ride lots
There is one small 60 space park and ride lot in the Study Area at Como and Eustis in St. Paul. Park and ride activity is not encouraged in this corridor given the current and expected future transit service density and land uses. This study does not include consideration of park & ride service or facilities.

ON-STREET FACILITIES

Regionally, while there are thousands of bus stops, major on-street transit facilities consist of large waiting shelters with passenger comfort and informational amenities and dedicated rights of way for transit vehicles.
Transit Waiting Shelters
There are many transit waiting shelters in the Study Area, and major facilities are in place in both downtowns and at the University of Minnesota.

Dedicated Transit Rights of Way
There are some significant dedicated transit rights of way in the Study Area. Bus lanes are in place on Cedar, Minnesota, 5th and 6th streets in Downtown St. Paul and on 4th Street, Marquette and 2nd Avenue S. in Downtown Minneapolis. Downtown Minneapolis also has the light rail right of way on 5th Street. There is a bus-way connecting the Minneapolis and St. Paul campuses of the University of Minnesota.

REGIONAL TRANSIT STANDARDS

While several factors influence the propensity to use transit, the primary predictors of transit productivity are density of development at the origin and destination of trips. Transit markets in the seven county Twin Cities region are identified using the Transit Market Index, which is calculated using three primary factors: 1) population density, 2) employment density, and 3) automobile availability. The Transit Market Index measures the potential market for transit services in a given area. Different types and levels of transit services are appropriate for each transit market area.

The region has five distinct Transit Market Areas, shown in Figure 3, that are determined based on the Transit Market Index for a given location and nearby areas. Transit Market Area I has the highest density of population, employment, and people without access to automobiles. Because of this, Market Area I is able to support intensive transit service. Transit Market Area II has high to moderately high population and employment densities yielding a market area that is conducive to fixed route transit operations, but not as intensive as in Market Area I.

Appendix G of the 2030 Transportation Policy Plan outlines service design standards for routes based on the market area they service. Transit Market Area I standards for service include:

- 15-minute peak and 30 minute off-peak minimum frequency on radial routes to downtown
- 30-minute peak and off-peak, minimum frequency on cross-town routes
- Maximum desired distance between radials routes is ½ mile;
- Maximum desired distance between cross-town routes is 1 mile.

Most of the rest of the Study Area lies in Transit Market Area II and the guidelines for service are as follows:

- 30-minute peak and 60-minute off-peak minimum frequency on radial and cross-town routes;
- Maximum desired distance between radials routes is 1 mile;
- Maximum desired distance between cross-town routes is 2 miles;

Most of the Study Area within one mile north and south of University Avenue between the University of Minnesota and the State Capitol and including Downtown St. Paul and Downtown Minneapolis lies in Transit Market Area I, and opportunities exist to add significantly more population. The City of St. Paul
is pursuing policies that are supportive of intensification of the corridor’s population density, especially between about Fairview Avenue and Rice Street. Minneapolis is planning for more jobs concentrated in the southeast area of the city, mainly to the north of University Avenue. Primary emphasis therefore will be focused on the parts of the Study Area that are covered by Transit Market Area I.

**STUDY AREA ROUTE COVERAGE AND LEVEL OF SERVICE**

Transit route coverage and hours of service in the Study Area on weekdays generally meet service standards defined in the 2030 Transportation Policy Plan, with a few major exceptions.

Along University Avenue itself, Route 16 operates every 12 minutes at peak times and every 10 minutes midday and early evening. Route 50 operates every 12 minute at peak times and very limited service at other times. Route 16 service operates 24 hours a day. The University Avenue corridor is comprised of denser, more mature neighborhoods with a better established, traditional transit riding patterns.

In the remainder of the Study Area, coverage and frequency varies by time of day and day of the week. During the weekday peak periods, coverage is good. During off-peak times, however, many routes do not operate or operate only limited hours, with several significant corridors or streets that do not have service at certain off-peak times. Some areas have relatively low populations or population densities that do not generate enough ridership to need more service, but other areas in this category do have good densities, but lack service.

These areas are discussed and illustrated below.

- **Weekday Peak Periods (Figures 4 and 6)** – Coverage is good in the Study Area during peak periods, and there are time-saving commuter express and limited-stop routes that overlay or closely parallel local routes:

  Route 53 provides service to downtown St. Paul for commuters living along Lake Street, Marshall Avenue, and Snelling Avenue. Frequencies range from 20 to 30 minutes. This route provides a faster alternative to Route 21.

  Route 94 provides express service between the two downtowns via I-94. About half the trips make stops at Snelling Avenue and on Marion Street with the remaining trips operating non-stop from downtown to downtown. Frequencies range from 5 to 10 minutes. This route provides a faster alternative to routes 16 and 50.

  Route 134 provides service to downtown Minneapolis for commuters living along Cleveland and Cretin avenues. Limited service also connects Minneapolis residents with Cretin Avenue destinations such as the University of St. Thomas. Frequencies range from 10 to 30 minutes.
Figure 3 - Map of Central Corridor’s Transit Market Areas

Legend

Year 2000 Transit Market Areas
- 1
- 2
- 3
- 4
- 5

Study Transit Routes

Notes:

Central Corridor Transit Service Study Existing Conditions Report
Route 144 provides service to downtown Minneapolis via the University of Minnesota Minneapolis Campus for commuters living along Snelling Avenue South. Frequencies range from 15 to 30 minutes.

Route 262 operates as a limited stop route on Rice Street and extends to the northern suburbs of Circle Pines, Lexington, and Blaine. Frequency is every 30 minutes. Local routes supplemented by these commuter lines have peak frequencies of every 10 to 30 minutes.

- **Weekday Midday (Figure 5)** – Coverage is good - essentially the same as in the peak periods in the Study Area, with the exception of Cretin Avenue between Marshall Avenue and I-94, which has no off-peak service. Local route frequencies range from every 10 minutes (Route 16) to every 40 minutes (Route 8), and almost all the others have frequencies of every 20 to 30 minutes. Route 84 and Route 94 have 15-minute frequency.

- **Weekday Evenings (Figure 7)** – Coverage in the Study Area is less than during the midday. Most urban routes operate evenings, but there are some gaps in service, even in some areas that are part of Transit Market Area I:
  - Route 8 ends service at 6:30 pm.
  - Route 62 operates hourly after 9:00 pm.
  - Route 65 operates hourly after 6:00 pm.
  - Route 67 operates hourly after 7:00 pm.
  - Route 87 ends service at 7:00 pm.
  Route 16 runs every 15 minutes. Routes 84 and 94 run every 30 minutes into the late evening. Travel by transit is easy and convenient along the major corridors in the Study Area such as Snelling Avenue and University Avenue during the daytime and evening hours when many workers and students make trips.

- **Owl (Figure 8)** – Daily coverage in the Study Area is limited to Route 16, with hourly service from 1:00 to 5:00 am.

- **Saturday Daytime (Figure 9)** – Coverage in the Study Area is less on Saturdays than on weekdays. Virtually all urban routes operate Saturdays, except routes 8 and 87, leaving some small pockets of Transit Market Area I without coverage. Frequencies vary more widely on Saturdays, and there are low frequencies in some areas that are part of Transit Market Area I, notably:
  - Route 65 operates hourly and from about 8:00 am to 7:00 pm.
  - Route 67 operates hourly and from about 7:30 am to 8:30 pm.
  Route 16 maintains 10-minute frequency, and Route 84 has 15-minute frequency. Route 94 has 30-minute frequency on Saturdays. These routes offer attractive service for the many shoppers making errands in the Study Area.

- **Saturday Evenings (Figure 10)** – Coverage in the Study Area is significantly less on Saturday evenings and this results in service gaps in Transit Market Area I:
  - Routes 65 and 67 have no service after about 8:00 pm.
- Route 62 operates hourly after 7:00 pm.
- Route 16 maintains 15 to 20 minute frequency; most other routes have 30-minute service.

**Sunday Daytime (Figure 11)** – Coverage is the same as it is on Saturdays. Most routes, even sections in Transit Market Area I, have lower frequency on Sunday than on Saturday, with most routes having frequencies that are below standards for Transit Market Area I.
- Routes 62, 63, 65, and 67 operate hourly.
- Route 65 has no service before about 11:00 am and Route 67 has no service before 8:30 am.
- Route 16 has 15-minute frequency, Route 21 has 20-minute service, and the other high performing routes - 84 and 94 have 30-minute frequency. These routes offer attractive service for the many shoppers making errands in the Study Area.

**Sunday Evenings (Figure 12)** – Coverage is less than during Saturday evenings, leaving longer gaps in service, leaving major discrepancies from service expected in Market Area I. Route 16 has 20-minute service and Routes 21 and 84 have 30-minute frequency, but Route 94 drops to hourly service.
- Route 65 has no service after about 6:00 pm.
- Route 67 has no service after about 6:30 pm.
Figure 4—Map of Transit Service Frequencies Weekday AM Peak

Map Legend

Combined Local Service Frequency by Street

- **15” or Better**
- **16-30”**
- **31-60”**
- **Less than 60”**

Combined Express Service Frequency by Street

- **15” or More**
- **16-30”**
- **31-60”**
- **Less than 60”**

Notes:

Central Corridor Transit Service Study Existing Conditions Report
Figure 5 - Map of Transit Service Frequencies Weekday Midday

Frequency in Minutes
Weekday Midday 9:00 AM - 3:00 PM

Map Legend
Combined Local Service Frequency by Street
- 15” or Better
- 16-30”
- 31-60”
- Less than 60”

Combined Express Service Frequency by Street
- 15” or More
- 16-30”
- 31-60”
- Less than 60”

Notes:

Central Corridor Transit Service Study Existing Conditions Report
Figure 6-Map of Transit Service Frequencies PM Peak

Frequency in Minutes
Weekday PM Peak Period (3:00 -6:30 PM)

Map Legend
Combined Local Service Frequency by Street
- 15" or Better
- 16-30"  
- 31-60"  
- Less than 60"
Combined Express Service Frequency by Street
- 15" or More
- 16-30"  
- 31-60"  
- Less than 60"

Notes:

Central Corridor Transit Service Study Existing Conditions Report
Figure 7-Map of Transit Service Frequencies Weekday Evening

Map Legend
Combined Local Service Frequency by Street
- 15" or Better
- 16-30"
- 31-60"
- Less than 60"

Combined Express Service Frequency by Street
- 15" or More
- 16-30"
- 31-60"
- Less than 60"

Notes:

Central Corridor Transit Service Study Existing Conditions Report
Figure 8-Map of Transit Service Frequencies Daily Owl (Between 1:00 and 5:00 AM)

Frequency in Minutes

**Daily Owl (1:00 AM - 5:00 AM)**

**Map Legend**
Combined Local Service Frequency by Street
- **15° or Better**
- **16-30°**
- **31-60°**
- **Less than 60°**

Combined Express Service Frequency by Street
- **15° or More**
- **16-30°**
- **31-60°**
- **Less than 60°**

**Notes:**

**Central Corridor Transit Service Study Existing Conditions Report**
Figure 10-Map of Transit Service Frequencies Saturday Evening

Frequency in Minutes
Saturday Evening 6:00 PM - 9:00 PM

Map Legend
Combined Local Service Frequency by Street
- 15" or Better
- 16-30"
- 31-60"
- Less than 60"

Combined Express Service Frequency by Street
- 15" or More
- 16-30"
- 31-60"
- Less than 60"

Notes:

Central Corridor Transit Service Study Existing Conditions Report
Figure 11-Map of Transit Service Frequencies Sunday

Frequency in Minutes
Sunday Midday 9:00 AM - 6:00 PM

Map Legend
Combined Local Service Frequency by Street
- 15" or Better
- 16-30"
- 31-60"
- Less than 60"

Combined Express Service Frequency by Street
- 15" or More
- 16-30"
- 31-60"
- Less than 60"

Notes:
Frequency in Minutes
Sunday Evening 6:00 PM - 9:00 PM

Map Legend
Combined Local Service Frequency by Street
- 15" or Better
- 16-30"
- 31-60"
- Less than 60"

Combined Express Service Frequency by Street
- 15" or More
- 16-30"
- 31-60"
- Less than 60"

Notes:
SERVICE FREQUENCIES
The trunk service frequencies for Study Area routes are summarized in the following table.

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BUS STOP SPACING
The bus stop spacing standard applicable for the Study Area calls for six to eight stops per mile.

- **North-South Routes (e.g. Routes 65, 84 and 87)** – The north-south routes tend to stop at every other cross street. These blocks, however, are shorter at 16 blocks to the mile. Therefore, stop spacing on many of these routes or route segments are in compliance with stop-spacing standards.

- **East-West Routes (e.g. Routes 3, 16, 63 and 67)** – The east-west routes usually stop at every cross street. In Minneapolis and St. Paul, these are relatively long blocks at 8 blocks to the mile. Therefore, most of the east-west portions of these routes or route segments are in compliance with bus stop-spacing standards.

Please see Figure 13 for the map showing bus stops in the Study Area.
Figure 13 - Map of Transit Stop Spacing

**Legend**
- Bus Stops

**Notes:**
*Distances are based on street travel but stop links are drawn as the crow flies.*

*Distances near Green Line may be inaccurate due to light rail construction.*

**Bus Stop Spacing**

- **1 - 300**
- **301 - 659**
- **660 - 880 (Bus Stop Policy Target)**
- **881 - 1,200**
- **1,201 - 2,500**

Central Corridor Transit Service Study Existing Conditions Report

![Map of Transit Stop Spacing](image-url)
BUS SERVICE SPEEDS AND TRAVEL TIMES

Bus service speeds and travel times are affected by a number of factors. Slow traffic, frequent red lights and close bus stop spacing may result in lower bus speeds. Bus-only lanes, transit advantages such as queue jumps and ramp-meter bypasses and free flow traffic result in higher bus speeds.

Local buses and express buses operate at significantly different speeds and provide different travel times. Figure 14 presents the travel time from downtown St. Paul to downtown Minneapolis by local and express bus service. The exhibit indicates that travel times from downtown to Minneapolis on local bus routes vary from approximately 50 minutes on Route 50 in the midday to approximately 63 minutes on Route 16 in the PM peak period. Although Route 3 on Como and Maryland avenues is a longer route, the route has a faster average speed, making the downtown-to-downtown trip in less time than Route 16. The travel time for Express Route 94 bus service, shows higher bus speeds and much lower travel times between the downtown areas reflecting the routing of buses on I-94. Travel time from downtown St. Paul to Minneapolis is about 23 minutes in the midday. In the PM peak period Route 94C has a an estimated travel time of 31 minutes and Route 94D has an estimated travel time of 29 minutes.
Figure 14: Map of Travel Time from Downtown to Downtown

Estimated Downtown to Downtown Travel Times

5th St. (St. Paul) to/from Nicollet Mall (Mpls)

Legend

- Route 3B Front Ave
- Route 16 University Ave
- Route 50 Limited Stop
- Route 94D Express
- Route 3A Maryland Ave

Notes:

Route 3A Midday 57 Minutes
PM Peak 58 Minutes

Route 16 Midday 60 Minutes
PM Peak 63 Minutes

Route 94 94C Midday 23 Minutes
94B PM Peak 29 Minutes

Route 50 Midday 46 Minutes
PM Peak 50 Minutes

Central Corridor Transit Service Study Existing Conditions Report
3 ANALYSIS OF EXISTING RIDERSHIP AND ROUTE PERFORMANCE

DATA COLLECTION

A comprehensive bus stop-level data collection effort was undertaken to inventory existing transit use and to develop a better understanding of the current travel patterns in the Study Area. This section of the report summarizes the results of these data collection efforts. The numbers of passengers on and off by stop were surveyed for weekday, Saturday, and Sunday service periods for each route that operates in the Study Area. All of the scheduled bus trips - 1,998 weekday, 751 Saturday, and 455 Sunday - were sampled multiple times. Data collection was completed during the winter and spring of 2010.

To provide a larger sample at a lower cost, Metro Transit used its automatic passenger counters (APCs) to collect the data. Since only about one-third of the fleet is equipped with APCs, buses equipped with APC equipment were rotated through the Study Area routes to collect the sample.

Weekday Transit Ridership
On weekdays 1,568 in-service hours are provided in the Study Area. The distribution of these in-service hours by time of day is illustrated in the first chart of Figure 15. Approximately 20 percent of in-service hours are provided during the AM peak period (6:00 to 9:00am), another third during the mid-day period (9:00 am to 3:00 pm), a quarter during the PM peak period (3:00 pm to 6:30 pm), with the remaining revenue hours provided during the evening hours (including less than two percent between 1:00 and 5:00 am). The second chart of Figure 15 illustrates the distribution of the total number of passengers boarding throughout the day. An average of about 90,000 weekday boardings were counted, with 19 percent occurring during the AM peak period, 38 percent during the mid-day period, and 25 percent during the PM peak period. The final chart in Figure 15 illustrates the average number of boarding passengers per in-service hour throughout the day. This chart shows that the level of transit service in the Study Area throughout the day is reasonably well matched with the distribution of demand throughout the day. Figure 15a shows the average passengers per in service by route on weekdays.

Weekend Transit Ridership
On weekends 897 in-service hours are operated each Saturday and 609 in-service hours each Sunday in the Study Area. The distribution of these revenue hours is illustrated in the top chart of Figure 16. Approximately 60 percent of these revenue hours are provided between 9:00 am and 6:00 pm. This chart also illustrates the distribution of total number of passenger boardings counted with the APC equipment throughout Saturdays and Sundays. An average of about 45,600 boarding passengers was observed on Saturday, with 65 percent occurring between 9:00 am and 6:00 pm. On Sunday, an average of about 29,400 boarding passengers was observed with 70 percent occurring between 9:00 am and 6:00 pm. This chart shows that the level of transit service in the Study Area throughout weekend days is reasonably well matched with the distribution of demand throughout the day. Figure 16a shows the average passengers per in service by route on weekends.
**Figure 15-Service and Boardings by Time of Day on Weekdays - 2010**

**Weekday In-Service Hours**

- **Y-axis**: In-Service Hours
- **X-axis**: Start Time of Surveyed Trip

**Weekday Passenger Boardings**

- **Y-axis**: Passenger Boardings
- **X-axis**: Start Time of Surveyed Trip

**Weekday Passengers per In-Service Hour**

- **Y-axis**: Passengers per In-Service hour
- **X-axis**: Start Time of Surveyed Trip
Figure 15a-Chart Passengers per Revenue Hour by Route Weekdays - 2010

Weekday Passengers per In-Service Hour by Route

Route

Midday
PM
AM
Other

Passengers per In-Service Hour
Figure 16-Service and Boardings by Time of Day on Weekends - 2010

Weekend In-Service Hours

Weekend Passenger Boardings

Weekend Passengers per In-Service Hour
BOARDINGS BY ROUTE AND DAY OF WEEK

All day boardings per bus stop on each route for an average weekday, Saturday and Sunday during the survey period are presented in Figure 17 – Weekday, Figure 18 – Saturday, and Figure 19 - Sunday. Routes are overlaid on the land use / density map to show the correlation between boardings and population and employment densities. This exhibit shows that University (routes 16, 50), Selby (Route 21), Grand (Route 63) and Snelling (Route 84) avenues, are the highest ridership lines. The exhibits indicate some very high volume transit routes in the east-west direction along University Avenue and in the north-south direction along Snelling Avenue.
Ridership and Service

Saturdays

Legend

Saturday Boardings by Stop (Spring 2010)

- 0-10
- 11-50
- 51-100
- 101-500
- More than 500
- Study Transit Routes

Jobs Per Acre on Commercial Land Use

- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use

- 0-10
- 10.1-20
- 20.1-30
- More than 30

Study Area

Central Corridor Transit Service Study Existing Conditions Report
Ridership and Service

Sundays

Legend

Sunday Boardings by Stop (Spring 2010)  Jobs Per Acre on Commercial Land Use

- 0-10
- 11-50
- 51-100
- 101-500
- Study Transit Routes

Persons Per Acre on Residential Land Use

- 0-10
- 10.1-20
- 20.1-100
- More than 100

Notes:

Central Corridor Transit Service Study Existing Conditions Report
**SERVICE PERFORMANCE BY ROUTE**

Service performance is summarized for each of the routes on the following pages for the local and express services, respectively. For weekdays, please see Figure 20, Saturdays, Figure 21, and Sundays, Figure 22. The routes are sorted by high performance to low performance in terms of their average passengers per in-service hour.

The values in these tables reflect the service levels and ridership during the winter of 2010. The in-service hours and passengers per in-service hour are calculated for the entire route and not just for the route segment within the Study Area. The passengers per route are the total average Automatic Passenger Counter (APC) counts per day.

**Figure 20-Weekday Route performance**

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Route</th>
<th>In-Service Hours</th>
<th>Boardings</th>
<th>PPISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Express</td>
<td>375</td>
<td>13.8</td>
<td>778</td>
<td>56.25</td>
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<tr>
<td></td>
<td>94</td>
<td>83.3</td>
<td>4,238</td>
<td>50.89</td>
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<tr>
<td></td>
<td>365</td>
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<td>596</td>
<td>49.23</td>
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<td></td>
<td>452</td>
<td>4.8</td>
<td>190</td>
<td>39.51</td>
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<td></td>
<td>353</td>
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<td>138.1</td>
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<td></td>
<td>50</td>
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Boardings are the total average of Automatic Passenger Counter (APC) counts per day.

PPISH is the average Passengers per In-Service Hour.
### Figure 21-Saturday Route performance

<table>
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<tr>
<th>Service Type</th>
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<th>In-Service Hours</th>
<th>Boardings</th>
<th>PPISH</th>
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</thead>
<tbody>
<tr>
<td><strong>Saturday</strong></td>
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<td></td>
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<tr>
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<td>94</td>
<td>31.6</td>
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<td>3,491</td>
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<td></td>
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<td>68.8</td>
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<td>84</td>
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### Figure 22-Sunday Route performance

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<th>Boardings</th>
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<td>Express</td>
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<td>516</td>
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<td>63</td>
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<td>67</td>
<td>17.0</td>
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<td>21.40</td>
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<td>586.1</td>
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<td><strong>Sunday Total</strong></td>
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<td>609.0</td>
<td>29,412</td>
<td>48.30</td>
</tr>
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Boardings are the total average of Automatic Passenger Counter (APC) counts per day.

PPISH is the average Passengers per In-Service Hour.
4 DEMOGRAPHICS AND LAND USE

Transit ridership levels are affected by population and employment densities, major generators such as shopping malls, schools and universities, as well as population groups most likely to use transit such as youth, seniors, and lower income households. This section of the report outlines the existing demographics in the Study Area.

POPULATION AND EMPLOYMENT DENSITY

Population Density
The Study Area has one of the densest areas of residential population in the region as seen in Figure 23. Within Minneapolis, there is continuous high density residential area extending east of downtown to the University of Minnesota in the Cedar-Riverside neighborhood, and then east of the campus as far as the city limits with St. Paul. The majority of the residential density within St. Paul extends east-west due to the geographic layout of the city. The higher density residential area in the Study Area extends west of the State Capitol to Lexington Parkway and south of Minnehaha Avenue, north of Summit Avenue. There are additional pockets of residential density centered on Energy Park Drive east of Snelling Avenue, along Rice and Jackson streets, near the St. Paul Campus of the University of Minnesota, at Cleveland and Marshall avenues (near the University of St. Thomas) and along West 7th Street near Sibley Plaza Shopping Center.

Employment Density
The majority of the employment density in the region focuses on downtown Minneapolis and St. Paul. Within the Study Area, the corridors with significant employment density are Lake Street in Minneapolis, and University Avenue, 7th Street and Energy Park Drive in St. Paul, as shown in Figure 24. The University of Minnesota and the five schools that make up the Associated Colleges of the Twin Cities (ACTC): Augsburg, Hamline, Macalester, St. Catherine, and St. Thomas are also significant employers in the Study Area.

Retail Centers
Retail centers, like other major activity centers, are large trip generators that usually serve as focal points for transit service. Figure 25 shows the location of shopping centers in the Study Area. Most of the retail shopping centers are community and neighborhood retail centers. They are mainly located along University Avenue, Grand Avenue, and Ford Parkway. The closest regional retail center is Rosedale. It is complemented by the nearby HarMar Mall shopping area in Roseville, just outside the limits of the Study Area. The next closest regional retail center is the Mall of America located to the south. However, both downtown Minneapolis and St. Paul have subregional retail as well as the area around Midway Shopping Center along University Avenue east of Snelling. Recent research has shown that there is more retail area in the midway area than at Rosedale. Highland Village on Ford Parkway and Unidale Mall at Dale Street and University Avenue has a concentration of community retail.

Colleges, Universities and Secondary Schools
The Study Area is particularly known for its concentration of post-secondary educational campuses. See Figure 26 for a map of their locations and the concentrations of student populations, persons aged 20 – 24 years. These are the post-secondary schools are in the Study Area, with full time students, both under-graduate and graduate level: The University of Minnesota – Minneapolis, University of Minnesota – St. Paul, the Associated Colleges of the Twin Cities (ACTC): Augsburg College, Hamline University, Macalester College, St. Catherine’s University - St. Paul, St. Catherine’s University – Minneapolis, University of St. Thomas – Minneapolis, and St. Thomas – St. Paul. Other significant educational institutions include the College of Visual Arts, Concordia College, William Mitchell College of Law, and St. Paul Vocational Technical Institute. As summarized in Figure 27, there are a total of about 91,542 students at all the post secondary schools in the Study Area and in, or close to Transit Market Area I.
Figure 23-Map of Residential Density

Residential Density

Legend

<table>
<thead>
<tr>
<th>Persons Per Acre</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>Yellow</td>
</tr>
<tr>
<td>11-15</td>
<td>Light Green</td>
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<tr>
<td>15-20</td>
<td>Green</td>
</tr>
<tr>
<td>20-30</td>
<td>Dark Green</td>
</tr>
<tr>
<td>More than 30</td>
<td>Dark Blue</td>
</tr>
</tbody>
</table>

Notes:

- Study Transit Routes
- Sources: Metropolitan Council 2010 Generalized Land Use Inventory
- 2010 US Census Blockgroup Population
- Residential Land Use Categories: Farmstead, Seasonal/Vacation, Single Family Attached, Manufactured Housing Parks, Single Family Attached, Single Family Detached, Multifamily, Mixed Use Residential

Central Corridor Transit Service Study Existing Conditions Report
Employment Density

Legend

Jobs Per Acre on Commercial Land Use

- 0-2
- 2.1-5
- 5.1-10
- 10.1-20
- 20.1-200
- Greater than 200

Notes:

Sources: Metropolitan Council 2010 Generalized Land Use Inventory
2008 Longitudinal Employer Household Dynamics US Census

Commercial Land Use Categories: Agricultural, Industrial and Utility,
Extractive, Golf Course, Institutional, Mixed Use Commercial,
Mixed Use Industrial, Mixed Use Residential, Airport, Office, Retail
and Other Commercial

Central Corridor Transit Service Study Existing Conditions Report
Figure 25 - Map of Retail Centers

Legend
- Grocery Stores
- Discount Stores
- Shopping Mall

Notes:
- 2010 Retail and Other Commercial Land Use
- **Locations and completeness of retail centers may be inaccurate.**

Central Corridor Transit Service Study Existing Conditions Report
Figure 26-Map of Post-Secondary Schools and Population Ages 20 – 24 Years Old

Legend

<table>
<thead>
<tr>
<th>Percent of Population 20-24 Years</th>
<th>Notes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5.2%</td>
<td></td>
</tr>
<tr>
<td>5.3-8.5%</td>
<td></td>
</tr>
<tr>
<td>8.6-15.4%</td>
<td></td>
</tr>
<tr>
<td>15.5-34%</td>
<td></td>
</tr>
<tr>
<td>34.1-77.5%</td>
<td></td>
</tr>
</tbody>
</table>

Post Secondary Schools and Population Ages 20 to 24

Sources: 2010 Decennial Census
NCompass Technologies Landmarks

Central Corridor Transit Service Study Existing Conditions Report
**Figure 27-Enrollments in Post-Secondary Schools - Fall 2011**

<table>
<thead>
<tr>
<th>Post-secondary Schools</th>
<th>Weekday Students</th>
<th>Weekend Classes?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augsburg College, Riverside Ave., Minneapolis</td>
<td>3,936</td>
<td>Minor</td>
</tr>
<tr>
<td>Hamline University, Hewitt Ave., St. Paul</td>
<td>4,871</td>
<td>Yes*</td>
</tr>
<tr>
<td>Macalester College, Grand Ave., St. Paul</td>
<td>1,987</td>
<td>Minor</td>
</tr>
<tr>
<td>St. Catherine's University, Randolph Ave., St. Paul</td>
<td>2,932</td>
<td>Yes</td>
</tr>
<tr>
<td>St. Catherine's University, Riverside Ave., Minneapolis</td>
<td>964</td>
<td>Yes</td>
</tr>
<tr>
<td>University of St. Thomas, Summit Ave., St. Paul</td>
<td>7,348</td>
<td>Yes</td>
</tr>
<tr>
<td>University of St. Thomas, S. 10th St., Minneapolis</td>
<td>3,152</td>
<td>Yes *</td>
</tr>
<tr>
<td>Concordia University, Concordia Ave., St. Paul</td>
<td>2,842</td>
<td>Yes</td>
</tr>
<tr>
<td>St. Paul College (Technical), Marshall Ave., St. Paul</td>
<td>9,728</td>
<td>Minor</td>
</tr>
<tr>
<td>William Mitchell College of Law, Summit Ave., St. Paul</td>
<td>1,025</td>
<td>None</td>
</tr>
<tr>
<td>College of Visual Arts, Summit Ave., St. Paul</td>
<td>200</td>
<td>None</td>
</tr>
<tr>
<td>University of Minnesota, Minneapolis (estimate)</td>
<td>42,440</td>
<td>Yes</td>
</tr>
<tr>
<td>University of Minnesota, St. Paul (estimate)</td>
<td>10,117</td>
<td>Yes</td>
</tr>
<tr>
<td>Total University of Minnesota</td>
<td>52,557</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Total post-secondary schools</strong></td>
<td><strong>91,542</strong></td>
<td></td>
</tr>
</tbody>
</table>

* School of Law

**Youth Population**

School-aged children are major contributors to transit ridership, mainly because their mobility needs are dependent on others. **Figure 28** presents the current locations of secondary schools, as well as the percentage of the population in the older high school age category, 16 years to 18 years of age. There are four large High Schools in the Study Area. These include “Central” on Lexington Parkway at Marshall Avenue, “Como Park” on Como at Grotto Street, “Highland Park” on Snelling Avenue near Highland Parkway in St. Paul, and “South” on 31st Street, just west of Hiawatha Avenue in Minneapolis. Other secondary St. Paul schools in the Study Area include “AGAPE”, “Gordon Parks High School” and “Washington Tech Secondary Magnet” (ex-Arlington High School). **Figure 29** shows Fall 2010 enrollment of 4,415 at all St. Paul secondary schools in the Study Area for the 10th – 11th – 12th grades. The 9th grade counts indicate that student population will remain stable for the next four years overall for these schools. The school districts in both cities are considering moving toward transportation of high school students via city bus rather than school bus so there is a potential for higher ridership during the school year on Metro Transit bus lines that serve these schools.

The exhibit indicates the highest concentration of youth population is located in St. Paul along the east end of University and Marshall avenues and also along Jackson Street north of downtown. As expected, school enrollment appears to closely match the youth population distribution. The youth market is particularly important to transit in both the short term and long term. In the short term, youth are dependent on others for mobility making them a prime market for transit, especially with after-school travel. The long term potential is based on retaining them as riders into their adult lives by providing superior service that meets their changing mobility needs. A key element for refining transit service in this sector will be consideration that universities, colleges, and senior high schools have good connections to their student communities.
Figure 28-Map of Secondary Schools and Population Ages 16 to 18 Years Old

Legend

Schools

- High School
- Middle School

Percent of Population Ages 16 to 18
(Natural Breaks Statistical Breakdown of 7-County Area)

- 0-1.5%
- 1.6-2.5%
- 2.6%-3.4%
- 3.5-4.6%
- 4.7-10.6%

Notes:

Sources: 2010 Decennial Census
NCompass Technologies Inc. Landmarks

Central Corridor Transit Service Study Existing Conditions Report
Students in 10th, 11th and 12th grades ages about 16 - 18 years.

<table>
<thead>
<tr>
<th>Secondary Schools in St. Paul CC Study Area</th>
<th>Weekday Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGAPE Teen Parent High School, Prior Ave.</td>
<td>104</td>
</tr>
<tr>
<td>Central High Senior School, Lexington Ave. S.</td>
<td>1,665</td>
</tr>
<tr>
<td>Como Park Senior High School, Maryland Ave. W.</td>
<td>1,200</td>
</tr>
<tr>
<td>Highland Park Senior High School, Snelling Ave. S.</td>
<td>1,125</td>
</tr>
<tr>
<td>Gordon Parks High School</td>
<td>247</td>
</tr>
<tr>
<td>Washington Tech Secondary Magnet School, Arlington*</td>
<td>74</td>
</tr>
<tr>
<td><strong>Total secondary schools in CC Study Area =</strong></td>
<td><strong>4,415</strong></td>
</tr>
</tbody>
</table>

Note* Washington Technical Secondary was Arlington High School until 2010.

Senior Population
Like the youth population, the senior population is a market segment that has special mobility needs that can be served well by transit. Transit can replace the personal vehicle when driving is no longer possible or available and transit is much less costly for those on fixed incomes. The areas with the greatest senior population density are primarily in the more suburban areas of the region. Figure 30 shows the senior population concentrations within the Study Area as well as senior housing sites.

It is evident that the majority of these housing sites account for much of the senior population density in a given location. St. Paul has a notable concentration of seniors living along the southern end of Lexington Parkway in high-rise residential centers as well as south of the West 7th Street corridor and west of I-35E. Como, Minnehaha Avenue, Franklin Avenue SE and the east end of University Avenue also have concentrations of senior population. The principal mobility focuses for seniors are good access by transit to community activities, medical appointments, and shopping.

Households in Poverty
The areas with greatest amount of poverty are situated near the downtown/urban core of both Minneapolis and St. Paul. Figure 31 shows the greatest concentrations are located just south of downtown Minneapolis as well as north of downtown St. Paul and along 7th Street and University Avenue in St. Paul. These areas of high poverty are also known for their ethnic diversity and are often homes to first generation immigrants. Effective transit can be the substitute for the expense of automobile ownership and contribute in a strong way to the climb out of poverty. Figure 32 maps household incomes to complete the picture of the economic situation of residents in all parts of the Study Area.

Minority Population
The Federal Transit Administration defines minority persons as persons who identify themselves as American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino Populations, and Native Hawaiian and Other Pacific Islander. Figure 33 shows minority populations using 2010 Decennial Census Data. The greatest concentrations of minority populations are located west and north of downtown St. Paul along with areas south and east of downtown Minneapolis.
Figure 30-Map of Population Aged 65+

Population over 65 & Nursing Homes

- **Nursing Homes**
- **Study Transit Routes**

**Count of Beds**

Persons over 65 Per Acre

- 0-1
- 1.1-2
- 2.1-5
- 5.1-10
- More than 10

**Notes:**

Sources:
- Metropolitan Council 2010 Generalized Land Use Inventory
- 2010 US Census Blockgroup
- MN Dept. of Health, Health Care Facility and Providers Database (July 2011)

Residential Land Use Categories: Farmstead, Seasonal/Vacation, Single Family Attached, Manufactured Housing Parks, Single Family Attached, Single Family Detached, Multifamily, Mixed Use Residential

Central Corridor Transit Service Study Existing Conditions Report
Figure 31-Map of Population in Poverty

[Map showing population in poverty with color coding for different poverty rates.]

Legend
- Population in Poverty
- Source: 2009 American Community Survey

Notes:
- Study Area
- Transit Routes

Central Corridor Transit Service Study Existing Conditions Report
5 SUMMARY OF DEFICIENCIES AND OPPORTUNITIES

The Study Area is dominated by Transit Market Area I in the core area that lies about one mile either side of University Avenue. In the City of St. Paul this is the area south of Como Avenue and north of St. Clair Avenue. This core area generally has existing transit service characteristics that fit the standards for Transit Market Area I, with the exception of frequency and span, which are substandard on evenings and weekends. On Sundays, the only consistently high frequency service (defined as every 15 minutes or better) is found on the University Avenue bus line itself. Examples of bus routes that do not meet Transit Market Area I standards are routes 8, 65 and 67.

Transit Market Area II is found in the Study Area between the University of Minnesota and the St. Paul City limits with Minneapolis, north of Pierce Butler Route and generally south of Grand Avenue in St. Paul. Route 87 is located mostly in Transit Market Area II in the Study Area. But it doesn’t meet the service standards for Transit Market Area II, since it has no evening or weekend service.

Frequencies in Transit Market Area I should be no less than every 30 minutes every day, according to service design standards in the Transportation Policy Plan, but on many of the routes that serve the core part of the Study Area, hourly service is the rule on evenings and on weekends.

Similarly, service design standards call for span of service for Transit Market Area I of at least 18 hours, seven days per week, but most bus routes that closely parallel or cross University Avenue in the adjacent neighborhoods operate for eight to 10 hours on Saturday or Sunday. These bus routes usually begin service at 9:00 am and end service by 9:00 pm on Saturdays and as early as 6:00 pm on Sundays.

Service coverage is generally in compliance with service design standards, with the exception of urban cross-town route spacing. Dale Street and Snelling Avenue are two miles apart, but cross-town bus routes should be one mile apart in Transit Market Area I. Therefore, there should be another cross-town bus route added between Snelling and Dale, at least in Transit Market Area I from roughly Selby Avenue to Energy Park.

Opportunities will exist for a significant improvement in the connecting bus service network given a strong emphasis on providing frequent connecting bus service with Green Line trains at all times. Duplicative radial bus lines to the downtowns should be curtailed to the extent possible during the peak and off-peak hours. The resources should be reinvested in more frequent cross-town and feeder bus lines that operate at compatible frequencies to the Green Line for reliable connections every time. Bus hours should be added to fill in the gaps in bus service span daily. Priority should be placed on improving the frequencies of bus service operating in Transit Market Area I.

Connecting bus service will be much more critical to the success of the Green Line than has been the case with the Hiawatha or “Blue” Line. This is because the critical difference between the Central Corridor and the Hiawatha Corridor is that Hiawatha is not strictly an urban corridor, but a hybrid urban/suburban corridor with significant park & rides at most of its suburban stations. Access by automobile to the Hiawatha Corridor light-rail line is significant, but will be insignificant in the Central Corridor Study Area. Every effort should be made to achieve the ridership goals for the Green Line.
without the undesirable impacts of unsanctioned park & riding (or “hide and riding”) near the Green Line stations along University Avenue. Access by foot, by bus, and by bicycle must be the rule along the Green Line.
APPENDIX
## Route Profile Table

### 2010 Central Corridor Study Area Bus Routes

<table>
<thead>
<tr>
<th>Route</th>
<th>General Information</th>
<th>Weekday</th>
<th>Saturday</th>
<th>Sunday</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Route Description</td>
<td>In-service Hours</td>
<td>Platform Hours</td>
<td>Daily Bus Trips</td>
<td>Peak Buses</td>
</tr>
<tr>
<td>-------</td>
<td>---------------------</td>
<td>---------</td>
<td>----------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>In-service Hours</td>
<td>Platform Hours</td>
<td>Daily Bus Trips</td>
<td>Peak Buses</td>
<td>Average Speed</td>
</tr>
</tbody>
</table>
Central Corridor Transit Service Study

Route 2 Weekday Boardings

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30
Route 2 Sunday Boardings

Central Corridor Transit Service Study

Route 2 Sunday Boardings

- Jobs Per Acre on Commercial Land Use
  - 0-10
  - 10.1-20
  - 20.1-100
  - More than 100

- Persons Per Acre on Residential Land Use
  - 0-10
  - 10.1-20
  - 20.1-30
  - More than 30

Westbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200

Eastbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200
Route 3 Weekday Boardings

Central Corridor Transit Service Study

Route 3 Weekday Boardings

Jobs Per Acre on Commercial Land Use

- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use

- 0-10
- 10.1-20
- 20.1-30
- More than 30

Westbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200

Eastbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200
Central Corridor Transit Service Study

Route 3 Sunday Boardings

- **Westbound Boardings by Stop**
  - 0-10
  - 11-50
  - 51-200
  - More than 200

- **Eastbound Boardings by Stop**
  - 0-10
  - 11-50
  - 51-200
  - More than 200

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30
Route 6 Weekday Boardings

Central Corridor Transit Service Study

Route 6 Weekday Boardings

<table>
<thead>
<tr>
<th>Route 6</th>
<th>Southbound Boardings by Stop</th>
<th>Northbound Boardings by Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jobs Per Acre on Commercial Land Use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-10</td>
<td>10.1-20</td>
<td>20.1-100</td>
</tr>
<tr>
<td>Persons Per Acre on Residential Land Use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-10</td>
<td>10.1-20</td>
<td>20.1-30</td>
</tr>
</tbody>
</table>

Legend:
- Route 6
- 0-10
- 11-50
- 51-200
- More than 200
Route 6 Sunday Boardings

Central Corridor Transit Service Study

Route 6 Sunday Boardings

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30

Southbound Boardings by Stop:
- 0-10
- 11-50
- 51-200
- More than 200

Northbound Boardings by Stop:
- 0-10
- 11-50
- 51-200
- More than 200

Route 6

*Central Corridor Transit Service Study*

*Jobs Per Acre on Commercial Land Use*
- 0-10
- 10.1-20
- 20.1-100
- More than 100

*Persons Per Acre on Residential Land Use*
- 0-10
- 10.1-20
- 20.1-30
- More than 30

Southbound Boardings by Stop:
- 0-10
- 11-50
- 51-200
- More than 200

Northbound Boardings by Stop:
- 0-10
- 11-50
- 51-200
- More than 200
Route 8 Weekday Boardings

Central Corridor Transit Service Study

Route 8 Weekday Boardings

Westbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200

Persons Per Acre on Residential Land Use

- 0-10
- 10.1-20
- 20.1-30
- More than 30

Jobs Per Acre on Commercial Land Use

- 0-10
- 10.1-20
- 20.1-100
- More than 100

Eastbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200

Route 8

Central Corridor Transit Service Study
Route 16 Sunday Boardings

Central Corridor Transit Service Study

Route 16 Sunday Boardings

Westbound Boardings by Stop

<table>
<thead>
<tr>
<th>Jobs Per Acre on Commercial Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
</tr>
<tr>
<td>10.1-20</td>
</tr>
<tr>
<td>20.1-100</td>
</tr>
<tr>
<td>More than 100</td>
</tr>
</tbody>
</table>

Persons Per Acre on Residential Land Use

| 0-10                               |
| 10.1-20                            |
| 20.1-30                            |
| More than 30                       |

Eastbound Boardings by Stop

<table>
<thead>
<tr>
<th>Jobs Per Acre on Commercial Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
</tr>
<tr>
<td>10.1-20</td>
</tr>
<tr>
<td>20.1-100</td>
</tr>
<tr>
<td>More than 100</td>
</tr>
</tbody>
</table>

Persons Per Acre on Residential Land Use

| 0-10                               |
| 10.1-20                            |
| 20.1-30                            |
| More than 30                       |

More than 200

0-10
11-50
51-200
More than 200

0-10
11-50
51-200
More than 200
Route 50 Weekday Boardings

Central Corridor Transit Service Study

Route 50 Weekday Boardings

Westbound Boardings by Stop

<table>
<thead>
<tr>
<th>Jobs Per Acre on Commercial Land Use</th>
<th>0-10</th>
<th>10.1-20</th>
<th>20.1-100</th>
<th>More than 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons Per Acre on Residential Land Use</td>
<td>0-10</td>
<td>10.1-20</td>
<td>20.1-30</td>
<td>More than 30</td>
</tr>
</tbody>
</table>

Eastbound Boardings by Stop

<table>
<thead>
<tr>
<th>Jobs Per Acre on Commercial Land Use</th>
<th>0-10</th>
<th>10.1-20</th>
<th>20.1-100</th>
<th>More than 100</th>
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<tbody>
<tr>
<td>Persons Per Acre on Residential Land Use</td>
<td>0-10</td>
<td>10.1-20</td>
<td>20.1-30</td>
<td>More than 30</td>
</tr>
</tbody>
</table>
Central Corridor Transit Service Study

Route 62 Sunday Boardings

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30

Southbound Boardings by Stop
- 0-10
- 11-50
- 51-200
- More than 200

Northbound Boardings by Stop
- 0-10
- 11-50
- 51-200
- More than 200
Route 65 Saturday Boardings

Central Corridor Transit Service Study

Route 65 Saturday Boardings

Southbound Boardings by Stop
- 0-10
- 11-50
- 51-200
- More than 200

Northbound Boardings by Stop
- 0-10
- 11-50
- 51-200
- More than 200

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30

0 0.5 1 Miles
Route 65 Sunday Boardings

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30
Route 67 Weekday Boardings

Central Corridor Transit Service Study

Route 67 Weekday Boardings

Southbound Boardings by Stop

- Jobs Per Acre on Commercial Land Use
  - 0-10
  - 10.1-20
  - 20.1-100
  - More than 100

Persons Per Acre on Residential Land Use

- 0-10
- 10.1-20
- 20.1-30
- More than 30

Northbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200

80
Route 67 Saturday Boardings

Central Corridor Transit Service Study

Route 67 Saturday Boardings

<table>
<thead>
<tr>
<th>Southbound Boardings by Stop</th>
<th>Jobs Per Acre on Commercial Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>0.000</td>
</tr>
<tr>
<td>11-50</td>
<td>0.000</td>
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<tr>
<td>51-200</td>
<td>0.000</td>
</tr>
<tr>
<td>More than 200</td>
<td>0.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Northbound Boardings by Stop</th>
<th>Jobs Per Acre on Commercial Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>0.000</td>
</tr>
<tr>
<td>11-50</td>
<td>0.000</td>
</tr>
<tr>
<td>51-200</td>
<td>0.000</td>
</tr>
<tr>
<td>More than 200</td>
<td>0.000</td>
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</tbody>
</table>

Persons Per Acre on Residential Land Use

<table>
<thead>
<tr>
<th>Southbound Boardings by Stop</th>
<th>0-10</th>
<th>10.1-20</th>
<th>20.1-100</th>
<th>More than 100</th>
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<td>More than 200</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Northbound Boardings by Stop</th>
<th>0-10</th>
<th>10.1-20</th>
<th>20.1-100</th>
<th>More than 100</th>
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<tr>
<td>11-50</td>
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<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>51-200</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>More than 200</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Route 84 Saturday Boardings

Central Corridor Transit Service Study

Route 84 Saturday Boardings

- Route 84
- Southbound Boardings by Stop
- Northbound Boardings by Stop

Jobs Per Acre on Commercial Land Use

- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use

- 0-10
- 10.1-20
- 20.1-30
- More than 30

Legend:
- Black
- Yellow
- Orange
- Brown
- More than 200
- Light Green
- Dark Green
- Light Blue
- Light Purple
- Blue
- Green
- Pink
- Red
- White
- Purple
- Brown
- Orange
- Black

Route 84

0 0.55 1.1 Miles

84
Route 87 Weekday Boardings

Central Corridor Transit Service Study

Route 87 Weekday Boardings

- **Route 87**
- **Southbound Boardings by Stop**
  - 0-10
  - 11-50
  - 51-200
  - More than 200
- **Northbound Boardings by Stop**
  - 0-10
  - 11-50
  - 51-200
  - More than 200

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30

86
Route 94 Weekday Boardings

Central Corridor Transit Service Study

Route 94 Weekday Boardings

- Jobs Per Acre on Commercial Land Use:
  - 0-10
  - 10.1-20
  - 20.1-100
  - More than 100

- Persons Per Acre on Residential Land Use:
  - 0-10
  - 10.1-20
  - 20.1-30
  - More than 30

Westbound Boardings by Stop:
- 0-10
- 11-50
- 51-200
- More than 200

Eastbound Boardings by Stop:
- 0-10
- 11-50
- 51-200
- More than 200
Route 94 Saturday Boardings

Central Corridor Transit Service Study

Route 94 Saturday Boardings

Westbound Boardings by Stop

<table>
<thead>
<tr>
<th>Jobs Per Acre on Commercial Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
</tr>
<tr>
<td>10.1-20</td>
</tr>
<tr>
<td>20.1-100</td>
</tr>
<tr>
<td>More than 100</td>
</tr>
</tbody>
</table>

Eastbound Boardings by Stop

<table>
<thead>
<tr>
<th>Persons Per Acre on Residential Land Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
</tr>
<tr>
<td>10.1-20</td>
</tr>
<tr>
<td>20.1-30</td>
</tr>
<tr>
<td>More than 30</td>
</tr>
</tbody>
</table>
Route 94 Sunday Boardings

Central Corridor Transit Service Study

Route 94 Sunday Boardings

- Route 94
- Westbound Boardings by Stop
  - 0-10
  - 11-50
  - 51-200
  - More than 200
- Eastbound Boardings by Stop
  - 0-10
  - 11-50
  - 51-200
  - More than 200

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30
Route 134 Weekday Boardings
Route 144 Weekday Boardings

Central Corridor Transit Service Study

Route 144 Weekday Boardings

Westbound Boardings by Stop

- Route 144
- Jobs Per Acre on Commercial Land Use
  - 0-10
  - 10.1-20
  - 20.1-100
  - More than 100
- Persons Per Acre on Residential Land Use
  - 0-10
  - 10.1-20
  - 20.1-30
  - More than 30

Eastbound Boardings by Stop

- 0-10
- 11-50
- 51-200
- More than 200
Route 262 Weekday Boardings

Central Corridor Transit Service Study

Route 262 Weekday Boardings

- Route 262
- Southbound Boardings by Stop
  - 0-10 jobs per acre on commercial land use
  - 10.1-20 jobs per acre on commercial land use
  - 20.1-100 jobs per acre on commercial land use
  - More than 100 jobs per acre on commercial land use
- Northbound Boardings by Stop
  - 0-10 persons per acre on residential land use
  - 10.1-20 persons per acre on residential land use
  - 20.1-30 persons per acre on residential land use
  - More than 30 persons per acre on residential land use
Route 355 Weekday Boardings

Central Corridor Transit Service Study

Route 355 Weekday Boardings

- Route 355 (black line)

Westbound Boardings by Stop

- Jobs and Boarding Rates
  - 0-10
  - 11-50
  - 51-200
  - More than 200

Persons Per Acre on Residential Land Use

- 0-10
- 10.1-20
- 20.1-30
- More than 30

Jobs Per Acre on Commercial Land Use

- 0-10
- 10.1-20
- 20.1-100
- More than 100

0-10
11-50
51-200
More than 200
Route 375 Weekday Boardings

Central Corridor Transit Service Study

Route 375 Weekday Boardings

- Route 375
- Westbound Boardings by Stop
  - 0-10
  - 11-50
  - 51-200
  - More than 200
- Eastbound Boardings by Stop
  - 0-10
  - 11-50
  - 51-200
  - More than 200

Jobs Per Acre on Commercial Land Use
- 0-10
- 10.1-20
- 20.1-100
- More than 100

Persons Per Acre on Residential Land Use
- 0-10
- 10.1-20
- 20.1-30
- More than 30

0 0.6 1.2 Miles