Table of Contents

Introduction ................................................................................................................................................. 4

Service Overview ........................................................................................................................................ 5
  Revenue Hours and Operating Costs ............................................................................................................. 5
  Ridership and Service Performance ............................................................................................................. 6
  Agency Ridership Comparison ..................................................................................................................... 9
  Service Network ......................................................................................................................................... 9
  Other Transportation Options ................................................................................................................... 10
    B-cycle .................................................................................................................................................... 11
    car2go .................................................................................................................................................... 11

Service Performance ................................................................................................................................. 12

  Ridership ................................................................................................................................................ 13
    Ridership by Time Period .......................................................................................................................... 13
    Ridership by Geography .......................................................................................................................... 14
    Ridership by Service Type ....................................................................................................................... 16
      MetroRail ............................................................................................................................................. 16
      MetroBus Local and MetroRapid .......................................................................................................... 16
      UT Shuttles ......................................................................................................................................... 17
      MetroFlyer and MetroExpress .............................................................................................................. 17
  Service Productivity ................................................................................................................................. 18
    Weekday Productivity .............................................................................................................................. 18
      MetroRail ............................................................................................................................................. 18
      MetroBus Local and MetroRapid .......................................................................................................... 18
      UT Shuttles ......................................................................................................................................... 19
      MetroFlyer and MetroExpress .............................................................................................................. 19
    Productivity by Geography ..................................................................................................................... 20
    Frequency vs. Productivity ....................................................................................................................... 22
    Financial Effectiveness ............................................................................................................................ 23
      Farebox Recovery Ratio .......................................................................................................................... 23
      Subsidy per Passenger ............................................................................................................................. 24
  Service Quality .......................................................................................................................................... 25
    Frequency, Span and Service Availability ............................................................................................... 25
    Reliability ................................................................................................................................................ 27
  Fare Structure .......................................................................................................................................... 28
    MetroRapid ............................................................................................................................................. 29

Service Conclusions ................................................................................................................................. 32

  Service Successes .................................................................................................................................... 32
    Matching Services to Markets ................................................................................................................... 32
    Enhanced Facilities ................................................................................................................................. 32
    Focus on Mixed-use Corridors ................................................................................................................... 33
  Service Challenges ................................................................................................................................... 33
    Low Farebox Recovery ............................................................................................................................... 33
    Fare Structure .......................................................................................................................................... 33
    Lack of Network: ...................................................................................................................................... 33
    Limited Frequent Service: ........................................................................................................................ 34

Appendix A – Glossary of Transit Terms .................................................................................................... 35

Appendix B – Service Performance Charts by Route & Day ................................................................. 37
List of Tables
Table 1: Annual Unlinked Trips per Capita of Selected Cities ................................................................. 9
Table 2: Fare History ........................................................................................................................................ 28

List of Figures
Figure 1: Revenue Hours and Operating Cost .................................................................................................. 5
Figure 2: Annual System Ridership .................................................................................................................... 6
Figure 3: System Productivity .......................................................................................................................... 7
Figure 4: Average Passenger Trip Length ........................................................................................................ 7
Figure 5: Alternative Transportation Modes in Austin ..................................................................................... 11
Figure 6: Summary of Weekday Ridership, Cost and Revenue by Service Tier ................................................. 12
Figure 7: Boardings by Hour and Day .............................................................................................................. 14
Figure 8: Weekday Ridership by Stop ............................................................................................................ 15
Figure 9: Weekday Productivity by Segment (excluding MetroRail/MetroExpress/MetroFlyer) ...................... 21
Figure 10: Weekday Frequency vs. Productivity ............................................................................................. 22
Figure 11: Weekday Average Subsidy per Passenger ....................................................................................... 24
Figure 12: Capital Metro Service Availability ................................................................................................ 25
Figure 13: Midday Frequency by Route .......................................................................................................... 26
Figure 14: Fare Composition by Fare Type ........................................................................................................ 28
Figure 15: Passenger Composition for Routes 1, 3, 801, 803 ....................................................................... 29
Figure 16: Average Trip Length on Routes 1, 801 .......................................................................................... 30
Figure 17: Travel Times on North Lamar / South Congress (Local and MetroRapid Routes) ....................... 31
Figure 18: Weekday Ridership by Route ........................................................................................................ 38
Figure 19: Saturday Ridership by Route .......................................................................................................... 39
Figure 20: Sunday Ridership by Route .......................................................................................................... 40
Figure 21: Weekday Productivity by Route .................................................................................................... 41
Figure 22: Saturday Productivity by Route ...................................................................................................... 42
Figure 23: Sunday Productivity by Route ........................................................................................................ 43
Figure 24: Weekday Farebox Recovery by Route ............................................................................................ 44
Figure 25: Saturday Farebox Recovery by Route ............................................................................................ 45
Figure 26: Sunday Farebox Recovery by Route ............................................................................................... 46
Figure 27: Weekday Subsidy per Passenger by Route ................................................................................... 47
Figure 28: Saturday Subsidy per Passenger by Route .................................................................................... 48
Figure 29: Sunday Subsidy per Passenger by Route ....................................................................................... 49
Introduction

Capital Metro’s Connections 2025 is a transit system study that will rethink public mobility in Central Texas based on an assessment of existing and future market conditions for transit and an evaluation of current transit ridership and service performance. The Connections 2025 plan will address both short-term (5 years) and long-term (10 years) public mobility needs and opportunities within Capital Metro’s current and potential financial capacity. Key goals of this project are to more effectively utilize agency resources, increase the transit-mode share and identify key corridors and areas for improved service in the future.

Since the last service plan conducted five years ago, several changes have occurred in the transit network such as the realignment of the downtown corridors, installation of transit priority lanes, as well as the introduction of MetroRapid service. This Connections 2025 Service Evaluation will evaluate existing ridership and service performance as well as identify and explain recent trends. The result of this Service Evaluation will feed into the development of recommendations for both the five and ten year plans.

This document focuses on the services Capital Metro provides in the Central Texas region, including MetroRail and the fixed-route bus network. The analysis consists of the following components:

- An overview of the service provided by Capital Metro, including a historical analysis to identify general trends, a summary of the network and an overview of how other transportation options, such as B-cycle and car2go, serve the Central Texas region.
- Network and route ridership analysis over both time of day and service geography.
- Performance and financial effectiveness measures analyzed at the route and service tier level.
- Service quality including on-time performance and identifying key trends between Local services and the new MetroRapid routes.
- Key findings from this Service Evaluation, which will guide the development of the final transit plan.
Service Overview

Capital Metro is the transit agency serving Austin and the Central Texas region. The following jurisdictions participate to fund Capital Metro through a 1 percent sales tax: Austin, Jonestown, Lago Vista, Leander, Manor, Point Venture, San Leanna, Volente and portions of unincorporated Travis County and Williamson County. Currently the system provides over 33 million annual trips to a population of nearly 1.3 million residents in its service area. In this analysis, service quantity, ridership and operating costs have been compared to see how Capital Metro has evolved over the past 15 years.

Revenue Hours and Operating Costs

Revenue hours are one measure transit agencies use to show how much service is delivered. Revenue hours in the Capital Metro system have remained relatively flat over the past 15 years. Even with the introduction of MetroRail in 2010, revenue hours have not significantly increased, which is partially due to the two recessions over the past 15 years. Only more recently have revenue hours increased, attributed to the introduction of MetroRapid service and introduction of the initial Frequent Route Network.

Figure 1: Revenue Hours and Operating Cost

While revenue hours have remained relatively stable, operating costs have steadily increased. The cost to operate bus service has more than doubled over the past 15 years, increasing from $60 million in 2000 to over $150 million due in part to labor costs, inflation, high cost of living and due to Austin being the fastest

1 One revenue hour represents one hour of service provided by one transit vehicle and includes recovery or layover time spent at terminals. This value does not include hours spent traveling from one route terminal to another or to and from the depot.
growing city in the United States. These increased operating costs can be attributed to both rising unit costs (inflation) and the introduction of new transit modes like MetroRail and MetroRapid. A goal of Connections 2025 will be to best use Capital Metro’s operating resources in order to optimize both service efficiency and effectiveness.

**Ridership and Service Performance**

Ridership on Capital Metro has fluctuated between 32 and 38 million annual passenger boardings, which is highly correlated with economic cycles. The highest ridership over the past 15 years was observed in 2009, when ridership peaked at 38 million annual boardings. Ridership, however, has not kept pace with the population growth in Central Texas. Additionally, current ridership declines come at a time where the economy is relatively strong, with low unemployment and low gas prices. Reversing the trend of declining ridership is another focus of Connections 2025.

*Figure 2: Annual System Ridership*

An additional metric by which to measure service provided is by the productivity of the system, or the number of passengers the system carries relative to the service provided (encompassing both effectiveness and efficiency). Typically, passengers per revenue hour is the metric used for productivity in the transit industry. Capital Metro’s productivity has remained consistent over the past 15 years, ranging between 30 and 35 passengers per revenue hour, a number comparable to other agencies with similar operating characteristics. More recently, productivity has declined below 30 passengers per revenue hour with the 2014 increase in

---

2 Austin remains the fastest growing city according to several sources, including the Austin Relocation Guide, Forbes Magazine, Slate and USA Today.

3 A goal in the Connections 2025 study is to further study Capital Metro’s ridership changes over the past five years. Gas prices, increased employment, growth outside the central core and student population changes around the UT campus are all contributing factors. See page 9 for information on ridership comparisons to other peer transit agencies.
service hours. During this same 15-year period the average passenger trip length has increased from 3 miles to nearly 4.7 miles. With the expanding population, both in terms of size and geographic coverage, Capital Metro passengers are using the system to complete longer trips than before, adding to the challenge to maintain productivity.

**Figure 3: System Productivity**

![Graph showing system productivity over years](image)

**Figure 4: Average Passenger Trip Length**

![Graph showing average passenger trip length over years](image)
Key Finding: Operating costs for bus services have more than doubled over the past 15 years. During the same time period, ridership has decreased slightly, even with the introduction of new types of transit, more service hours, and population increases. However, Capital Metro still has the highest transit use per capita over the four other major Texas cities (see page 9).
Agency Ridership Comparison

Understanding how Capital Metro performs relative to transit systems of similar size and service areas allows for a better perspective on both ridership and service. Ridership per capita was calculated from the National Transit Database (NTD) in 2014, reporting a selection of cities both in Texas and nationwide to identify the rate of transit usage.

While ridership has been declining, Austin has the highest transit usage per capita in comparison to the four major Texas cities at 31 unlinked trips per capita. DART in Dallas has a similar rate of transit usage within its service area. While the service is less productive than Capital Metro’s, the higher fares charged result in a slightly higher return on costs through the farebox. Of the major transit agencies studied, RTD Denver and Valley Metro have farebox recovery ratios exceeding 25 percent, which are nearly twice that of Capital Metro. Achieving higher farebox recovery ratios allows for more reinvestment into the transit network.

Currently out of the peer group, Denver has the highest per capita transit use at 36 annual trips per capita. This is to be expected given RTD’s much larger investment in bus and rail public transit; however, there are a number of lessons learned from Denver and RTD that can inform Connections 2025, including the productivity benefits of a highly integrated network of enhanced transit corridors with a frequent bus grid in the core urban and non-urban areas.

### Service Network

Capital Metro’s service is comprised of 81 routes operating in Austin and the surrounding Central Texas region. The all-day network consists of a large number of radial routes serving downtown Austin and another set of routes that provide crosstown or feeder connections to the network. Since the last Service Plan five years ago, several changes have occurred:

---

4 Calculated as annual agency passenger boardings divided by the service area population. (Source: NTD 2014)
• MetroRail, which began service in 2010, operates from 6 a.m. to 7 p.m. on Monday through Thursday, from 6 a.m. to midnight on Friday, and 4 p.m. to midnight Saturday. This rail line carries passengers from Leander and Lakeline in the north, through East Austin to downtown.

• MetroRapid Routes 801 and 803 were introduced in 2014, serving as limited-stop routes on Lamar, Congress and Burnet, offering improved service quality and 10 to 15 percent faster travel over Local Routes 1 and 3. These corridors serve as north-south spines of the Capital Metro network, offering high-frequency service to downtown and the UT campus along the Lamar, Guadalupe/Lavaca, South Congress and Burnet corridors.

Rush hour services, such as the MetroFlyer and MetroExpress routes, supplement the all-day network, connecting suburban communities and major corridors directly to downtown or other major employment centers. In addition to the regular service network, several shuttles are dedicated to and partially funded by the University of Texas at Austin connecting the campus to residential communities with high student concentrations. The Capital Area Rural Transportation System (CARTS) provides express commuter service to Austin from surrounding suburban and rural communities not served by Capital Metro. While routes operated by CARTS for Capital Metro (Routes 214, 237, 271 and 990) are included in the service review, other express routes operated by CARTS are not evaluated in this service analysis. Understanding the role each route provides in the Capital Metro network will guide the evaluation of and recommendation for each service. As a result, the service analysis will evaluate different service tiers (Local, Premium/Commuter, and UT Shuttles) separately.

Key Finding: Capital Metro’s all-day all-week network primarily consists of radial and crosstown routes. High-frequency routes either directly serve downtown Austin or connect to other routes that serve downtown at major transfer points. MetroFlyer, MetroExpress and UT Shuttles complement the all-day network by providing services tailored to employment and student travel centers.

Other Transportation Options

Capital Metro prides itself on providing mobility throughout Central Texas. In addition to regular bus service, Capital Metro tries to reduce congestion through ridesharing and encouraging transit use from Park & Ride lots. Individuals and groups can obtain month-to-month lease agreements for MetroRideShare vanpools for trips both inside and outside the Capital Metro service area. Capital Metro subsidizes vanpool service with up to $500 every month for trips operating within the Capital Metro service area and $450 for groups commuting outside the service area. These options allow for Capital Metro to reduce single occupancy commute travel in areas that may not support regular bus service.
In addition to Capital Metro, other alternatives to single-occupancy vehicles exist in Austin as well. These alternatives complement Capital Metro bus services, operating where efficient transit is not competitive.

**B-cycle**

B-cycle, Austin’s shared bicycle system, operates a fleet of 375 bicycles at 50 stations around central Austin to provide last-mile connections. These bicycles serve central Austin, covering downtown Austin, the Drag, South Congress and East Austin. Capital Metro has assisted in the placement for these shared bicycle stations near transit hubs, but no discounts are currently available for transit riders. Annual passes for B-cycle cost $80, which is roughly equivalent to the cost of two 31-Day Local passes. This option complements Capital Metro in the central core by offering short-distance travel options specifically within the downtown region, as well as a more direct connection between transit stops and key downtown destinations.

**car2go**

For trips that extend beyond the B-cycle service area or trips that necessitate a vehicle, car2go operates a carsharing service within Austin. Individuals can select from one of nearly 300 vehicles at any time to complete a one-way journey. Renting a vehicle costs $0.41 per minute, with a one-time set up fee of $35. Users are only charged for time spent in the vehicle if the destination remains within the car2go service area, depicted in Figure 5. This service covers a larger area compared to B-cycle, roughly bounded by MoPac, Pleasant Valley, Koenig and Stassney. Individuals can also use the service to access the airport, The Domain and the Far West neighborhood. This service complements Capital Metro’s service by offering a way to live in Austin without a car through short-term car rentals. Individuals are able to use Capital Metro for the majority of trips, but have the alternative to use car2go for first and last mile trips.

---

**Key Finding:** Many mobility options exist in Austin to serve mobility needs. Different services such as vanpooling, bicycle sharing and car sharing complement Capital Metro bus service in providing transportation options for public mobility, playing a part in the development of the transit plan in Connections 2025.
Service Performance

In analyzing Capital Metro service, several metrics are used to identify how the service is performing, both at the route level and within service tiers. Definitions and Service Performance Charts by Route are provided at the end of this report.

- Ridership
- Productivity
- Farebox recovery
- Subsidy per boarding
- On-time performance

Data is collected from a variety of sources. Machines onboard buses called automatic passenger counters (APC) track how many passengers get on and off the bus at each stop for each trip. Vehicle location data is tracked through an automated vehicle location (AVL) system, which uses the GPS receivers on all buses to relay vehicle location information to a central server in real time. This source of information helps inform operating speeds and the on-time performance of each trip. Analysis of existing services draws from data between August and October 2015. Additionally, manual collections of ridership and service data for routes operated by CARTS (214, 237, 271 and 990) which do not have the AVL or APC equipment installed were provided for the same time period.

Figure 6: Summary of Weekday Ridership, Cost and Revenue by Service Tier
Capital Metro currently operates a variety of service types, including MetroRail, MetroBus Local (including routes 1-99 and 200-492, serving downtown, feeder routes, crosstown routes and special services), MetroRapid, UT Shuttle routes, MetroExpress and MetroFlyer services. Figure 6 provides a summary of the characteristics of each service type, and proportionally looks at each service tier relative to the ridership, revenue, and costs to provide. Local service carries the majority of the ridership and cost in the Capital Metro system, with around two-thirds of ridership and comparable shares of costs. UT Shuttles carry proportionally more passengers compare to the cost to operate that service due to the tailored service approach to carry students to and from campus. The agency agreement with UT allows that service to recover much more of the costs of the service compared to other service tiers. MetroRapid and MetroRail both account for approximately 10 percent of the system costs, but carry proportionally fewer people and therefore generate a lesser proportion of farebox revenue. The rush hour nature of MetroExpress and MetroFlyer services result in a lower share of resources allocated to these service tiers.

Ridership

Understanding current ridership activity relative to the service provided is an important indicator of service effectiveness (productivity). To fully understand the ridership and service relationship, both geographic and time-of-day patterns were analyzed. The following sections present this analysis by service type.

Ridership by Time Period

Boardings were analyzed by time period to identify how service is used by time of day and day of week. Weekday ridership exhibits a traditional commute pattern, with high ridership during the morning and evening rush hours and lower ridership during the midday. Ridership peaks during the morning between 8 a.m. and 9 a.m. with 8,100 boardings, while the afternoon rush hour has a higher peak of nearly 10,000 boardings between 4 p.m. and 5 p.m. Midday ridership remains robust, averaging a consistent 7,000 boardings per hour. The strong midday ridership lays the groundwork for a live-work-play lifestyle ridership market that utilizes the system all day. Early morning and evening service had significantly lower ridership, which corresponds to reduced overall public travel during these periods. Saturday ridership is approximately half of weekday ridership at 56,000 boardings, while Sunday ridership is lower at 40,000 boardings. Weekend ridership patterns do not exhibit the peaking phenomenon found on weekdays, with consistent ridership over the afternoon. Ridership on Saturday evenings is robust, mirroring weekday evening ridership. Austin’s nightlife and the availability of evening service to dense student residences offer well-utilized alternatives to driving. Late night service is available along major corridors on weeknights and Saturday nights, with additional service Thursday through Saturday nights. Late night Saturday ridership is higher than weekday ridership, continuing the trend resulting from Austin’s nightlife scene and transit’s ability to capture part of this market demographic.
Ridership by Geography

Corridors with frequent service usually have higher ridership. However, frequency itself does not generate ridership. Routes need to have frequency combined with transit-supportive densities that offer access to a variety of trip generators and attractors. Examples of these mixed-use corridors in Austin include South Congress, Lamar and Guadalupe. While the corridors with strong ridership operate between the north and south, other concentrations of ridership appear on east-west corridors such as Oltorf and Rundberg.

Heavy ridership is found in downtown Austin, surrounding the UT campus, and at major transfer points such as Austin Community College Riverside, Highland Mall and Westgate. These destinations not only allow for transfers within the network, but are key destinations within the Capital Metro network. Neighborhoods with large student populations such as the Far West, served by UT Shuttle Routes 661 and 681, Crossing Place, served by Route 670, also have high ridership activity. A main driver of ridership in these areas is higher population density as well as frequent service on UT Shuttles. Additionally, high ridership locations can be found where frequent routes connect with crosstown routes such as the South Congress Transit Center or at North Lamar Transit Center. Higher ridership at these locations are not likely caused by local demand, but are more likely attributable to passengers transferring between routes. Few boardings occur in the service area periphery, as the lack of development density and mixed-use corridors reduce the potential success of traditional fixed-route bus services.

Key Finding: High ridership locations correlate with high concentrations of population, such as East Riverside and Far West, or employment centers such as downtown Austin and UT. Corridors with high ridership connect these concentrations and run north to south in Austin.
Figure 8: Weekday Ridership by Stop
Ridership by Service Type

Understanding where ridership currently exists is beneficial to determine where service is successful and where service needs to be adjusted to match customer demand. In this analysis, individual routes in various service types were compared to each other to better reflect how routes performed relative to comparable services.

MetroRail

MetroRail has average weekday ridership of just under 2,800 passengers, which corresponds to the 13th busiest weekday route in the system. Two factors keep MetroRail from having higher ridership: first, MetroRail’s role is primarily a commuter service with station locations that do not necessarily support all-day ridership. Stations are typically surrounded by large Park & Ride facilities in suburban communities like Leander or smaller residential developments within the City of Austin. While transit oriented development is occurring at many of these stations, current ridership does not yet reflect the availability of new developments at stations such as Plaza Saltillo or MLK. The primary destination of MetroRail passengers is downtown or UT via Rail Connector routes. Second, the lack of double tracking in multiple locations prevent this route from attracting spontaneous choice users through its current 30-minute rush hour frequency. MetroRail is expected to have service improve to every 15 minutes during rush hour in 2018. Getting MetroRail to play a stronger role in the all-day, all-week lifestyle transit network through existing projects such as double-tracking the corridor and future projects will be a key objective of Connections 2025.

Saturday MetroRail ridership is less than half of weekday ridership. Several reasons contribute to the lower ridership numbers. First, fewer commuter trips occur on Saturday, reducing the usefulness of weekend rail service, especially in the suburbs. Additionally, the role of the Saturday service is to provide service to entertainment functions downtown, as service operates between 4 p.m. and midnight. As a result, passengers who would otherwise use rail for early morning or midday trips have to use alternative forms of transportation.

MetroBus Local and MetroRapid

The highest weekday ridership bus routes in the Capital Metro system in numerical order are Routes 1, 7, 10, 300 and 801. These five routes account for 29 percent of all weekday ridership in the Capital Metro system, meaning that improvements to these five routes alone would benefit more than one in three daily riders. Routes 7, 300 and 801 are part of the frequent network, which operate at least every 15 minutes, facilitating spontaneous consumer travel. Both MetroRapid Routes 801 and 803 have lower ridership in comparison to the less frequent Local Routes 1 and 3. More explanations on this ridership differential are given in the MetroRapid section.

Among Local routes, specialty services such as Night Owl routes (Routes 481 – 486), senior shuttles (Routes 490 – 492) and Rail Connectors (Routes 464 – 466) have lower ridership compared to regular Local routes.

5 Many transit trips involve transfers, especially on the strong network spines like these, thus significantly more than 1/3 of the linked trips (individual riders rather than boardings) involve these routes daily.
These specialty routes often operate during limited service spans (e.g., midday or overnight service only) and do not have the same ridership potential as other routes. The Local routes with the lowest ridership include Routes 214, 237, 464, 465 and 466. These routes are all feeder services, with Routes 214 and 237 functioning to connect rural locations to more major corridors and Routes 464, 465, and 466 serving as Rail Connectors to link MetroRail with employment centers. The success of these Rail Connectors is highly dependent on the success of MetroRail; the limited rail services constrain their ridership potential.

Weekend services follow similar trends to weekday service, with Routes 1, 7, 300 and 801 having the highest Saturday ridership. Less service is offered on weekends in comparison to weekday service. As with weekday service, Local Routes 1 and 3 have higher ridership than MetroRapid Routes 801 and 803 on weekends. While Route 7 remains the highest ridership route, weekend ridership is roughly half of weekday ridership, mirroring general ridership trends. The top five ridership routes on Sunday are Routes 1, 3, 7, 10 and 300, which account for 35 percent of Sunday ridership.

**UT Shuttles**

UT Shuttles have relatively strong ridership, with the highest ridership routes serving as campus circulators. These three routes (640, 641, and 642) collectively carry 9,000 daily passengers. The remaining UT Shuttles have good ridership with a total of over 13,000 weekday boardings. The lowest UT Shuttle ridership routes are hybrids of other routes that operate during evening hours and on Sundays.

While there is no UT Shuttle service on Saturdays, shuttle routes operate limited hours Sunday afternoons. Ridership on UT Shuttles is significantly lower on Sundays at 1,100 passengers, attributed to the lack of classes, a limited span of service and less frequency compared to weekday service.

**MetroFlyer and MetroExpress**

MetroFlyer and MetroExpress routes had the lowest average ridership compared to the other service types, with daily ridership at 1,500 and 2,500 passengers, respectively. While these two services have different fares, the service type of commuter rush hour service with a limited stop or freeway running service are interchangeable for these two services. The highest ridership routes (100, 982, 983) operate all day, while the other MetroFlyer and MetroExpress routes only operate during rush hour. Most rush hour trips on MetroExpress and MetroFlyer operate in the peak direction only, requiring vehicles to operate out of service between the end of one rush hour trip and the start of the next (deadheading). Some of these underutilized resources are used for “reverse commute” purposes, connecting downtown Austin to office parks in Four Points, Tech Ridge and Lantana. These routes (122, 135, 970) have the lowest ridership, but currently do not utilize additional resources due to the operating characteristics of MetroFlyer and MetroExpress.
Service Productivity

Productivity is the measurement of service effectiveness, calculated by dividing total passenger boardings and total revenue hours for each route. It measures ridership generated per unit of service, making it possible to compare the performance of routes with greatly differing ridership and service levels. Productivity is influenced by both market and service design choices. Matching service levels to market opportunities together with designing services that use resources efficiently within an integrated network are the keys to improving service productivity. How customers use transit service also matters. Routes with high seat turnover and short average passenger trip lengths (e.g., UT Shuttle Routes 640, 641 and 642) will have higher productivity than routes with little seat turnover and longer passenger trips (e.g., MetroRapid, MetroExpress).

Weekday Productivity

Productivity is the measurement of the effectiveness of a route, measured by dividing total passenger boardings and total revenue hours for each route. It measures ridership generated per unit of service, making it possible to compare the performance of routes with greatly differing ridership and service levels. Productivity is influenced by both market and service design choices. Agencies do not directly control the market for transit, but they can mitigate poor market conditions through more efficient and effective service and network design. Matching service levels to market opportunities is one way to strengthen service productivity.

MetroRail

MetroRail currently averages nearly 70 passengers per revenue hour. While this is higher than both the Local and MetroRapid service tiers, these vehicles also seat up to 200 individuals per train car. The higher capacity of the vehicle should result in a much higher productivity. This low productivity relative to the service offered results from very high ridership in the peak commute direction coupled with low ridership in the peak non-commute direction and during the midday. MetroRail service is less productive on Saturdays at 42 passengers per revenue hour, only offering service between 4 p.m. and midnight. If MetroRail becomes part of the Capital Metro High Frequency Route Network a significant improvement in productivity should be expected.

MetroBus Local and MetroRapid

Local routes average 25 passenger boardings per revenue hour, with the most productive all day routes being Routes 1, 7, 311 and 300. These routes operate in dense residential corridors and serve major destinations such as ACC and UT. Specialized services such as the senior shuttles and Rail Connectors are less productive compared to the all-day Local buses. Of these Local services, the least productive services operate as feeder services in the periphery, connecting low-density populations to the rest of the Capital Metro network.

---

6 As noted in the Connections 2025 Market Analysis, Capital Metro should continue to work closely with member jurisdictions, especially the City of Austin and Travis County, to identify opportunities to better link transit and land use development to provide conditions for higher ridership and more cost-effective transit.
Route 410, a route that operates between 9 p.m. and 3 a.m. on Thursday through Saturday is the most productive Local weekday route. The efficiency of this route demonstrates a demand for late night service that connects the downtown nightlife with student housing concentrations west of the UT campus, and shows that an efficiently designed service well matched to market opportunities and consumer expectations can be very effective. Night Owl routes display significantly improved productivity on weekends. Since these routes are geared towards individuals returning home from evening activities in downtown Austin, Saturday productivities will usually be stronger than weekdays. Of these night services, Route 483 is the most productive, as it connects the downtown nightlife to East Riverside.

Weekend productivity on other Local routes is comparable to weekday productivity, showing that the existing service frequencies meet current ridership demand. Routes 300 and 325 both increase in productivity compared to other routes on Sunday, as these routes operate every half hour on Sundays compared to every 20 minutes on Saturdays. Some routes are much less productive due to the limited service offered on weekends. For example, the low frequency of Routes 21 and 22, which operate every 45 minutes on Saturdays and every 70 to 80 minutes on Sundays, result in low productivity and few people choosing to use the service.

MetroRapid service averages 20 passengers per hour on weekdays, 18 passengers per hour on Saturdays, and 16 passengers per hour on Sundays. In general, Local service is more productive than MetroRapid service. Both MetroRapid Routes 801 and 803 are less productive than their Local counterparts Route 1 and 3. The currently redeveloping corridor of Burnet reduces the productivity of Route 803 to less than 13 passengers per revenue hour on Sundays, which is lower than many of the Local services provided. MetroRapid challenges are discussed later in the report.

UT Shuttles
Currently, the most productive service type is the UT Shuttles, which operates to coincide with University calendar schedules. Within this group, the UT Shuttle circulators (Routes 640, 641 and 642) have the highest productivity, averaging over 90 passenger boardings per revenue hour. Other routes connecting student housing concentrations to UT average between 20 and 40 passengers per revenue hour on service that runs as often as every five minutes. Sunday service is less frequent, operating only every 24 to 40 minutes. The lower demand for these services on Sundays combined with the lower frequency of service results in a productivity of 21 passengers per hour.

MetroFlyer and MetroExpress
MetroExpress and MetroFlyer services are less productive compared to Local services, averaging 16 and 13 passengers per revenue hour, respectively. MetroExpress and MetroFlyer routes are generally less productive than Local routes due to the long distance they travel without seat turnover, making consideration of boardings per one-way trip also useful. On a per trip basis, MetroExpress and MetroFlyer average 19 and 11 passengers per trip, respectively.
The MetroAirport Flyer connecting UT, downtown Austin, and the airport averages 16 passengers per revenue hour on both Saturday and Sunday, which falls below the average of Local services but reflects improvement over its weekday productivity.

**Productivity by Geography**

The most productive route segments are north-south routes in Central Texas as seen in Figure 9. North Lamar and South Congress act as the primary corridor of the Capital Metro network, with high productivity on corridors that intersect Route 1 and 801. Additional north-south corridors that have strong productivity include Manchaca and South 1st in South Austin, Metric Blvd. between Rundberg and Parmer and Airport Blvd. In addition to these primary north-south corridors, several east-west corridors have strong productivity. In South Austin, Slaughter, William Cannon, Stassney, Oltorf and Riverside are corridors with transit supportive population densities, good existing ridership patterns, and form a strong grid on which to build future transit ridership. Strong east-west corridors are more difficult to identify north of the Colorado River, as available east-west street options do not have transit supportive land uses and pedestrian-friendly environments. Good productivity is observed along Rundberg, 45th and Cesar Chavez, which may serve as frequent route candidates for crosstown network elements.
Figure 9: Weekday Productivity by Segment (excluding MetroRail/MetroExpress/MetroFlyer)
Frequency vs. Productivity

In general, frequent routes are more productive than infrequent routes. Routes that operate every 15 minutes or better allow riders to spontaneously use the system without planning their stop arrival time. Figure 10 shows the productivity of weekday routes based on their midday service frequency. Capital Metro follows this general trend, with routes operating every 15 minutes or better being more productive than routes operating every hour. Outliers in this chart include the UT Shuttle circulator routes and MetroRail, which are more productive due to the unique operating characteristics of each route.

Figure 10: Weekday Frequency vs. Productivity

Key Finding: With few exceptions, frequent services are more productive. These exceptions occur where Local service parallels MetroRapid service and where the fare differential incentivizes Local service ridership, versus Premium service, which offers more features and amenities. Productive transit routes are found on linear corridors with transit supportive land uses. In general, service to Austin’s core (downtown and the UT campus) performs much better than feeder routes on the periphery.
Financial Effectiveness

Financial stability, crucial to the success of any transit network, is developed by efficiently managing resources and route investment. Identifying which routes are most or least costly to run can produce a more efficient allocation of resource investment. Routes with strong financial effectiveness are candidates for additional investment while routes with weak financial effectiveness should be analyzed for more efficient services. Two measures taken into consideration for measuring financial effectiveness include farebox recovery ratio and subsidy per passenger. Most transit agencies similar to Capital Metro aim to have farebox recovery ratios above 20 percent and a subsidy per passenger boarding of under $5.

Farebox Recovery Ratio

A farebox recovery ratio is the percent of the cost of operating public transit service that is recovered through fares. The higher the farebox recovery ratio, the lower the subsidy a route needs to operate, leaving more funding available to operate more service. The current system-wide farebox recovery (including MetroAccess) is approximately 10 percent, quite low for a system the size of Capital Metro. Excluding MetroAccess improves the farebox recovery ratio to 15 percent. Other Texas transit agencies have similarly low farebox recovery ratios, but agencies such as RTD Denver and Valley Metro in Phoenix have higher farebox recoveries over 2½ times that of Capital Metro.

On weekdays, fares from Local service only cover 11 percent of the operating costs. Higher MetroRapid fares result in a higher weekday farebox recovery of 13 percent. However, leveraging the network by charging the same fare will likely allow for improved usage and increase these operating statistics. MetroExpress and MetroFlyer routes have a much lower farebox recovery of 6 percent, which is attributable to the longer distance travel without seat turnover on these routes. As mentioned earlier, some routes operate in the “reverse commute” direction, and the low ridership corresponds to a low farebox recovery of less than one percent. However, these services do not require additional vehicles or staff to operate.

While ridership is higher on MetroRail than other Commuter services, this service costs approximately 10 times the cost of regular bus service. As a result, MetroRail fares cover only 11 percent of weekday service costs, which is in line with the system average. Saturday farebox recovery is even lower at 7 percent as a result of the limited hours and frequency.

UT Shuttles have the highest average farebox recovery of 62 percent. The subsidy provided by the University to operate service allows for much higher farebox recovery, as each UT passenger accounts for $1.70 in revenue. Capital Metro and UT Austin have an agreement with 50 percent of operating costs covered by UT. Highly productive services such as the campus circulators (640, 642) are considered revenue positive with farebox recoveries above 100 percent.
Subsidy per Passenger

Subsidy per passenger boarding measures the net cost to operate a route on a “per boarding” basis. It is calculated using passenger revenue minus operating cost divided by the total number of passenger boardings. Financial performance is not always proportional to the service performance. A route could have few boardings, but also a low subsidy per boarding, if the route has low operating costs that could result from the efficient use of few vehicles or a higher average passenger fare.

Capital Metro subsidizes $5.76 for each trip taken. Local routes average a subsidy of $4.23 per passenger, with frequent routes requiring less subsidy in general due to better performance at $3.53 per passenger. Weekend subsidies are similar, averaging less than $5 per passenger. The highest subsidy for Local routes is Route 491, which is a senior shuttle in the Allendale neighborhood. This subsidy is nearly $80 per passenger with very little ridership on weekdays. Currently ridership is higher on Saturdays, which reduces the subsidy, but remains the most subsidized Local route at $21.68 per passenger.

MetroRapid subsidies average less than $5 for both weekdays and Saturdays, but over $6 on Sundays. Both routes have higher subsidies than their Local counterparts despite the higher fare. Route 803 subsidies are significantly higher than those on Route 801. Route 803 ranks as the fifth most subsidized route in the system on Sundays.

Weekday MetroRail subsidies are higher at $18.77 per passenger due to the high operating cost of rail. Saturday subsidies are much higher at $31.50 per passenger. Friday and Saturday late night service was originally subsidized by the city of Austin starting in March 2012 to encourage late night transit use from nightlife activities, but is now funded in its entirety by Capital Metro.

UT Shuttles have a low subsidy per passenger, with Routes 640 and 642 generating enough ridership to operate with no additional subsidy beyond the portion paid by the University. UT Shuttles average a $1 subsidy on weekdays, with higher subsidies on Sundays of $3.60 per passenger. The limited operating hours and lower frequency on Sundays result in the lower ridership and resulting higher subsidy.

MetroExpress and MetroFlyer routes have higher subsidies per passenger in comparison to Local routes. This is attributable to higher operating costs for peak services. MetroExpress routes average a subsidy per
passenger of $7.40, while MetroFlyer routes have higher subsidies of $11 per passenger. As mentioned before, the reverse commute routes (122, 135, 970) appear to have high subsidies, exceeding $47 per passenger. The vehicles would still be required to move between the bus garage and the start of the next trip; as a result, these routes, while they have high subsidies, exist to serve riders using services that otherwise would simply be running empty in the direction of the starting point of a different route.

**Key Finding:** Capital Metro has a very low farebox recovery for routes not affiliated with UT. As a result, much of the funding for the system comes from sales tax revenues. Creating a strong network to encourage ridership will reduce the reliance on outside revenue to operate the system.

### Service Quality

#### Frequency, Span and Service Availability

Frequency and span are key determinants to individuals using the transit system. Frequency is the number one service attribute that encourages new riders to use transit service or encourages current riders to use transit for additional trips – frequency is 3-4 times more important than the speed of service, which is the next highest attribute. Routes with frequencies encouraging spontaneous use (service every 15 minutes or better?) benefit passengers by reducing their out-of-vehicle wait times. If services arrive frequently, passengers can access the bus or rail knowing that the wait time will not be long, allowing them to catch the “next trip” rather than waiting for a specific bus arrival. Higher service frequencies also provide more convenient and reliable transfer connections with other transit services, making network use more attractive. As mentioned earlier, successful transit networks such as those in Denver and Minneapolis have a core network of frequent transit options that allow for a variety of trip making.

Currently four Local routes (7, 300, 325, 331) and the two MetroRapid routes operate frequent service. Additionally, UT Shuttles operate between every 5 and 15 minutes on weekdays during the school year. Data from the American Community Survey and Capital Area

---

7 At 15-minute service frequency, approximately half of riders arrive spontaneously with the other half planning their arrival around schedules. At frequencies of 10 minutes or better, nearly all riders simply show up. Operating a high frequency route network is critical to ongoing ridership growth because the “spontaneous use” customer market is many times larger than the market of riders who plan their trips.
Metropolitan Planning Organization was used to identify the number of people and employment activity with access to frequent transit. Quarter-mile buffers around stop locations provided a measure of access to the transit route network.\textsuperscript{8}

Less than two-thirds of residents in the Capital Metro service area have access to public transit, with 86 percent of jobs accessible. When considering frequent routes alone (including UT Shuttles), only 15 percent of the population and 39 percent of jobs are within a quarter mile of these transit services. With an expanding population in Central Texas, Capital Metro needs to focus on serving the areas and markets where fixed route transit can be successful. Increasing access to a frequent core transit network will encourage all-week lifestyle transit use, allowing individuals to spontaneously use the system.

In addition to the frequency of available service, the hours of service also affect the ability for individuals to complete trips. Longer service hours allow for greater trip flexibility and increase customer satisfaction. Currently, Capital Metro operates generally between 5 a.m. and midnight on weekdays with more limited hours on weekends. Some services are more limited, such as most MetroExpress and MetroFlyer services, which operate only during the peak periods on weekdays, or senior shuttles, which operate during the midday only.

\textbf{Key Finding}: The current High Frequency Route Network is accessible to only a small number of residents and jobs in the Capital Metro service area. Adding additional frequent corridors will increase transit ridership throughout the week, building a more sustainable transit network.

\textsuperscript{8} For basic local transit, a $\frac{1}{4}$ mile walk (5 minutes) is used because 80 percent of the riders typically walk that distance or less; for frequent or enhanced transit like MetroRapid the 80 percentile walk distance is up to $\frac{1}{2}$ mile (10 minutes).
Reliability

Service reliability affects a passenger’s ability to predict travel in a timely and consistent manner and is the number one factor in retaining transit customers, who expect the promised service delivered every day, every trip. Two primary components comprise service reliability: service availability and schedule delivery. Service availability metrics include percent service completed (actual v. scheduled) and miles between road calls or service interruptions. Schedule delivery metrics are comprised of on-time performance or frequency (also known as headways) delivery (MetroRapid).

On-time performance helps retain ridership and improve passenger experience. Late and unpredictable arrivals negatively affect perception of service quality and reduce the competitiveness of transit with other modes of transportation. Based on existing Capital Metro standards, on-time trips were those that departed zero to six minutes after their scheduled departure time, slightly less rigorous than the industry standard of zero to five minutes. The service standard is set to achieve 75 percent on-time arrivals at timepoints and 90 percent route terminus on-time arrival. Based on emerging industry best practice, Connections 2025 will recommend updated standards and operating strategies.

In September 2015, Capital Metro had 82 percent of trips arriving on time, 16 percent of trips late, and 2 percent of trips early. High ridership corridors have more reliable Local service compared to MetroRapid service. For example, Routes 1 and 7 are 85 percent on-time, while MetroRapid Routes 801 and 803 are on-time 76 and 81 percent of the time, respectively. The route with the worst on-time performance is Route 491, a senior shuttle, which has only half the trips arriving on-time. Several MetroFlyer routes have poor on-time performance with six of the nine routes not meeting the on-time goal of 75 percent. While some trips run early due to the “make best time” procedure, the majority of these rush hour services run in congested local corridors that challenge on-time performance due to highly variable traffic conditions.

---

9 Recent research conducted by the Transportation Center at UC Berkeley identified unreliable service as the number one reason passengers stopped using transit in the San Francisco Bay Area.

10 MetroRapid on-time performance follows industry best practice and is based on the interval between bus arrivals (headway and spacing model) while the remainder of the system calculates on-time performance based on scheduled arrival times.
Fare Structure

Capital Metro fares are currently among the lowest in the nation, at $1.25 one-way for a Local fare (service including Routes 1-99, 200-492 and UT Shuttles 600-690). Premium fares ($1.75) pertain to MetroRapid service and MetroFlyer Routes 100-199. Commuter fares ($3.50) apply to MetroRail and MetroExpress Routes 900-990. Individuals who purchase passes in a more expensive tier can use any service costing less than the fare tier paid, but there does not exist any mechanism to upgrade fares from a lower tier to a higher tier fare. To discourage abuse of the system, transfers are not included in a single fare. In its place, Day Passes are offered at twice the daily one-way fare, which is also more attractive than the usual day pass 2½ to 3 trip price multiplier.

The Premium category was introduced in 2014 with the introduction of the MetroRapid service. There does not exist any way to upgrade to higher tiers through payment of the fare differential, therefore people will tend to stay within the tier of service purchased.

On Local service, Local fares constitute 61 percent of payments, with 7 percent coming from Commuter or Premium fares. In comparison, 40 percent of MetroRapid service fares come from Premium Day or 31-Day Passes, with roughly four percent coming from Commuter fares.\(^1\) UT students, faculty and staff with a valid ID do not have any fare barrier, as fees are covered by the agency’s agreement with the University. As a result, the proportion of students and staff using MetroRapid is significantly higher than those using Local routes. Even higher proportions of UT affiliated riders use the MetroExpress services, with only 20 percent of fares collected coming from Commuter pass types.

\(^1\) The MetroRapid fare isolation from the mainstream local network is a major disadvantage for work travel and an even bigger problem for shorter lifestyle trip-making that relies more on the network rather than individual corridors.

Table 2: Fare History

<table>
<thead>
<tr>
<th>Year</th>
<th>Local</th>
<th>Premium</th>
<th>Commuter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>$0.50</td>
<td>-</td>
<td>$1.00</td>
</tr>
<tr>
<td>1990</td>
<td>free</td>
<td>-</td>
<td>free</td>
</tr>
<tr>
<td>1991</td>
<td>$0.50</td>
<td>-</td>
<td>$1.00</td>
</tr>
<tr>
<td>2008</td>
<td>$0.75</td>
<td>-</td>
<td>$1.50</td>
</tr>
<tr>
<td>2010</td>
<td>$1.00</td>
<td>-</td>
<td>$2.50</td>
</tr>
<tr>
<td>2014</td>
<td>$1.00</td>
<td>$1.50</td>
<td>$2.75</td>
</tr>
<tr>
<td>2015</td>
<td>$1.25</td>
<td>$1.75</td>
<td>$3.50</td>
</tr>
</tbody>
</table>

Figure 14: Fare Composition by Fare Type
In terms of fare payment, MetroRapid and Local services have a different mix of customer fares. UT ID holders account for 25 and 42 percent of Route 801 and 803 ridership respectively, which is significantly higher than the 10 percent of riders on Routes 1 and 3. With nearly 60 percent of riders on Routes 1 and 3 using Local fares, these individuals cannot easily use the MetroRapid services without purchasing a new pass or paying for an additional full one-way fare.

No data is collected from UT Shuttle routes and MetroRail, as the former is primarily UT student-based and the latter is on a proof of payment system.

**MetroRapid**

MetroRapid Route 801, introduced in January 2014, runs as a limited-stop service between Southpark Meadows and Tech Ridge. This replaced Route 101 which served as a limited-stop route along the same corridor between South Congress Transit Center and North Lamar Transit Center. MetroRapid Route 803 was added shortly after in August 2014, offering limited-stop service on Burnet and South Lamar between The Domain and Westgate. These are Premium fare services, which at $1.75 is $0.50 (40%) higher than the Local fare charged on Routes 1, 275 and 3, that largely run on the same corridors. Both ridership and productivity are higher on the Local routes compared to the MetroRapid routes. This section discusses the primary differences in these services based on fare structure, travel times and travel patterns.

MetroRapid operates on a frequency-based schedule. Real-time information is provided online, on the CapMetro App and at all MetroRapid stations. In the evenings and on weekends, service may run every 20 or 30 minutes. With service frequency over 15 minutes, many customers will opt for the certainty and specificity of Local service timepoints rather than relying on less frequent weekend or off-peak frequency at 20 minutes or above.

---

12 Productivity is measured by total passenger boardings and total revenue hours for each route. Local routes are generally more productive due to higher seat turnover, at an average of 25 boardings per revenue hour, refer to page 11 to review the Summary of Weekday Ridership, Cost and Revenue by Service Tier.

13 Industry best practice is to offer frequency intervals only when service operates every 10 minutes or better during daytime periods with 15-minute service acceptable in the evenings when on-time running is less challenging.
Figure 16 shows the average distance of passenger trips on both Routes 1 and 801. Over the course of a day, Route 801 MetroRapid trips are slightly longer than those on Route 1. However, this differential is normally more pronounced with Local routes serving short distance community trips and MetroRapid service attracting longer distance subregional trips. Attracting more riders to MetroRapid makes strong economic sense for Capital Metro because MetroRapid costs 36 percent less per seat mile to operate compared to Local bus service. The fare barrier and stop placement has resulted in many passengers using the Local service to complete long distance trips as before, resulting in crowding in certain instances and complaints of infrequent service. New developments have occurred since the initial installation of MetroRapid stations; and eight additional stops have been budgeted and planned for both MetroRapid 801 and 803 routes.

MetroRapid services are consistently faster than the Local service provided. One example is shown in Figure 17, where travel times on MetroRapid Route 801 are compared to Local Routes 1 and 275. The greatest difference occurs during the midday period, with weekday MetroRapid service 15 percent faster than the parallel Local service. During peak periods, the advantage of MetroRapid 801 is 9 percent in the southbound direction, while the northbound rapid service is 14 percent faster than Local service. These speed differentials are consistent with basic limited stop service observed nationwide, at a 40 percent premium in price. MetroRapid should be able to achieve a more significant savings in travel time over 20 percent with optimizing the current transit signal priority (TSP) technology, changing operating procedures for MetroRapid by locating

---

14 The 40% higher fares represent a 5% impact on operating cost versus a 36% lower cost per seat mile on MetroRapid.
future MetroRapid stations after intersections ("far-side") and allowing buses to pass while using the Transit Priority Lanes.\textsuperscript{15}

**Figure 17: Travel Times on North Lamar / South Congress (Local and MetroRapid Routes)**

![Travel Time Graphs](image)

**Key Finding:** The MetroRapid service is a positive start from a customer experience and operations perspective, but ridership on MetroRapid is affected by a higher fare and insufficient service performance differentiation that reduce its usefulness to current and potential transit customers.

\textsuperscript{15} Analysis of the first 15 LA Metro Rapid lines found that a 20% travel time differential [and 10 minute or better frequency] was needed for successful corridor differentiation between Metro Rapid and local bus service that maximized cost-effectiveness.
Service Conclusions

Service Successes

Frequent Network: Capital Metro has taken the first steps to build ridership through the implementation of the high-frequency route network. Over the past couple years, Capital Metro has improved several corridors to have 15 minutes or better service on weekdays. However, aside from the school-oriented UT Shuttles, the two MetroRapid routes operate as frequent as every 12 minutes, which is slightly below the ideal target for spontaneous use of 10 minutes. Weekend service is less frequent, with corresponding lower ridership. The full benefit of the High Frequency Route Network will be realized once more corridors and a larger percentage of the population and the destinations have access to frequent transit service all week. Further development of this High Frequency Route Network will be a key goal of Connections 2025.

Matching Services to Markets: Ridership and service performance on the UT Shuttles are significantly stronger than the remainder of Capital Metro services. Part of the success of these routes is attributed to identifying the key market between dense student populations to the UT campus. As noted in the Market Assessment, further refinement of these routes together with a stronger linkage to the mainstream Capital Metro High Frequency Route Network should be pursued to strengthen UT area commuting while enhancing student regional and local travel beyond just school trips. Other services such as senior shuttles should be tailored to meet the specific needs of the community.

Enhanced Facilities: Capital Metro has a large number of well-located transit centers and Park & Rides that allow for the development of an enhanced High Frequency Route Network. Transit center locations will change over time as the service area develops and necessitates evolution of the transit network. The link between the frequent and coverage network is a cost-effective site for transit hubs and ideally, should be located at major passenger origins or destinations or where key transit corridors meet. These hubs should also provide opportunities to connect seamlessly with various community mobility options, such as car and bike sharing, public/private shuttles, ridesharing and ride-hailing services. As efficient functioning facilities, optimizing the location will be a key to network success and a toolbox of various hub options will be needed (e.g., off-street, on-street sidewalk, on-street storefront) that facilitate passenger connections and address vehicle layover needs and operator rest facilities. Additionally, Park & Rides need

---

16 Capital Metro is currently acquiring additional vehicles in order to implement 10-minute service on MetroRapid.
to be located where commuters can be intercepted efficiently and effectively while also serving as transit hubs.

**Focus on Mixed-use Corridors:** High ridership is observed on corridors in Central Texas featuring a pattern of mixed-use developments where a mix of retail and office destinations coincide with higher density residential land use. Mixed-use development allows for a variety of trip generating options which in turn encourages transit use. *Connections 2025* will identify enhanced transit corridors that can already support increased transit mobility investment and others that need higher market intensity to be successful to be part of the High Frequency Route Network; working with the city of Austin and others will be required.

**Service Challenges**

**Low Farebox Recovery:** Capital Metro recovers slightly more than 10 percent of its costs through fares. This is an extremely low number, needing improvement to contribute funding to new service and maintain fiscal sustainability. Increasing fares now would be counterproductive and should wait until the customers and public recognize the much greater value and competitiveness resulting from the implementation of *Connections 2025*. However, the other elements in raising farebox revenue – carrying more riders per revenue hour (effectiveness) and advantageously using vehicle and labor resources (efficiency) – need to be central themes in *Connections 2025*.

**Fare Structure:** Capital Metro currently has a three-tiered fare structure consisting of a Local, Premium and Commuter fare. The tiered system encourages riders to select the cheapest service but not the most cost effective. *Connections 2025* should migrate away from trips and routes (commute thinking) to a frequent network that dominates lifestyle mobility (live-work-play transit). Additionally, “simple and flexible” should be the consumer approach to embrace customers doing different trips every day (e.g., fare capping, integration of transit passes with bikeshare/carshare/rideshare).

**Lack of Network:** Capital Metro remains a route-oriented service, with many routes operating on the same corridor that branch out to different locations. Additionally, Commuter routes often provide very limited “one-seat rides” that may be better served through feeder routes into a frequent service. The lack of network synergy that caters to broad market segments and are attractive for all kinds of trips reduces the utility of the Capital Metro system as a whole. Focusing on an expansion of the High Frequency Route Network that is easy to understand, use and operate will be a key goal of *Connections 2025*.
Limited Frequent Service: While Capital Metro has taken the first steps toward a frequency-based network, more needs to be done. Aside from the school-oriented UT Shuttles, the two MetroRapid routes operate as frequent as every 12 minutes, which is slightly below the ideal target for spontaneous use of 10 minutes. Further development of the High-Frequency Network and promoting the service as such will encourage ridership and reduce the likelihood of future congestion.

---

17 Capital Metro is currently acquiring additional vehicles in order to implement 10-minute service on MetroRapid.
Appendix A – Glossary of Transit Terms

**ADA** – The Americans with Disabilities Act of 1990, a broad civil rights law that prohibits discrimination based on disability.

**Automatic Passenger Counter (APC)** – Sensors installed at each door of a transit vehicle that records the number of passengers that get on and off the vehicle at each stop.

**Automatic Vehicle Location (AVL)** – Devices installed onboard transit vehicles that record the vehicle position and speed. Allows for real-time tracking of vehicles as well as monitoring of on-time performance.

**Average passenger trip length** – The average distance ridden for a passenger trip computed as passenger miles divided by passenger trips.

**BRT** – Bus Rapid Transit; bus service with enhanced service characteristics including infrastructure, vehicle and service level improvements intended to replicate rail at a lower cost.

**Discretionary riders** – Transit riders who choose to use transit over other travel modes.

**E-Bus** – Routes 410, 411 and 412, which operate between 9 p.m. and 3 a.m. on Thursday – Saturday nights during the University calendar year.

**Farebox recovery ratio** – Measure of the proportion of operating expenses covered by passenger fares; found by dividing fare box revenue by total operating expenses for each mode and/or system–wide.

**Farebox revenue** – Value of cash, tickets, and pass receipts given by passengers as payment for rides; excludes charter revenue.

**First mile/last mile** – The first or final leg between a passenger’s origin or destination and the main portion of their transit trip.

**Fiscal Year (FY)** – The annual period for which a business entity establishes a budget for spending. Capital Metro’s fiscal year is from October 1 until September 30 of each year.

**Fixed route** – Service provided on a repetitive, fixed–schedule basis along a specific route with vehicles stopping to pick up and deliver passengers to specific locations; each fixed–route trip serves the same origins and destinations, unlike demand–response service, vanpools, and taxicabs.

**Frequency** – The headway of a bus is the time between bus arrivals. Frequency refers to the rate of a vehicle’s arrival (e.g. every 15 minutes).

**Load standard** – Measures passenger load based on a seated capacity plus a certain number of standees (total capacity) in order to effectively evaluate service utilization.

**Midday period** – The period between the end of the morning peak and the beginning of the evening peak.

**MetroBus Local** – Service provided on a repetitive, fixed–schedule basis that tend to have lower trip lengths. Radial routes operate between downtown Austin and other areas, feeder routes connect outlying areas to the rest of the Capital Metro network, and crosstown routes are regional routes that do not intersect downtown Austin. (Routes 1-99, 200-492)

**MetroRail** – Capital Metro’s commuter rail line that operates between Leander and downtown Austin Monday through Saturday, with extended service between Lakeline and downtown Austin Friday and Saturday evenings until midnight.

**MetroRapid** – Limited-stop service on Routes 801 and 803 which operate with BRT characteristics such as all-door boarding, transit signal priority.
and improved travel times over Local service.

**MetroExpress** – Limited-stop service to and from UT, downtown and Park & Rides.

**MetroFlyer** - Limited stop service to and from neighborhoods and downtown.

**Night Owl** – Service which operates between midnight and 3 a.m. on Monday – Saturday nights.

**Off-peak period** – Non-rush periods of the day when travel activity is generally lower and less transit service is scheduled. Also called “base period” or rush hour.

**On-time performance** – The proportion of the time that a transit system adheres to its published schedule times. Capital Metro defines on-time as arrivals to timepoints between 0 minutes early and 6 minutes late.

**Operating cost** – Monies paid in salaries, wages, materials, supplies and equipment in order to maintain equipment and buildings, operate vehicles, rent equipment and facilities and settle claims.

**Operating revenue** – Receipts derived from or for the operation of transit service, including farebox revenue, revenue from advertising, interest and charter bus service and operating assistance from governments.

**Paratransit** – Comparable transportation service required by the Americans with Disabilities Act (ADA) of 1990 for individuals with disabilities who are unable to use fixed-route transportation systems.

**Passenger load** – The number of passengers on a transit vehicle at any given time.

**Passengers per revenue vehicle hour (Productivity)** – The number of passenger boardings per available revenue vehicle hours. A measure of service productivity.

**Peak period** – Morning and afternoon time periods when transit riding is heaviest, or rush hour.

**Revenue vehicle hour** – The amount of time that a revenue vehicle is operated while it is available for passenger service.

**Recovery / layover time** – The time spent by a bus at the end of the route. Recovery time allows for the subsequent trip to start on time, while layover time gives operators.

**Route miles** – The total number of miles included in a fixed route transit system network.

**Seated capacity** – The number of seats that are actually installed in a vehicle.

**Span** – The time each route is in service. Typically measured from the start of the first trip and end of the last trip.

**Subsidy per passenger boarding** – The difference between operating cost and farebox revenue Capital Metro must pay for every passenger boarding.

**UT Shuttle** – Routes 600-690 with service between the UT campus and areas of high student populations, with schedules oriented towards the University calendar year.

**Vanpool** – Arrangement in which a group of people commute together to and from work in a shared van. Capital Metro’s MetroRideShare program provides eligible groups of 5-12 riders with a month-to-month vanpool lease agreement.
Appendix B – Service Performance Charts by Route & Day
Figure 18: Weekday Ridership by Route
Figure 19: Saturday Ridership by Route
**Figure 20: Sunday Ridership by Route**

<table>
<thead>
<tr>
<th>Route</th>
<th>Sunday Boardings</th>
</tr>
</thead>
<tbody>
<tr>
<td>801</td>
<td>803</td>
</tr>
<tr>
<td>300</td>
<td>7</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>320</td>
<td>37</td>
</tr>
<tr>
<td>317</td>
<td>17</td>
</tr>
<tr>
<td>331</td>
<td>325</td>
</tr>
<tr>
<td>350</td>
<td>5</td>
</tr>
<tr>
<td>328</td>
<td>4</td>
</tr>
<tr>
<td>355</td>
<td>11</td>
</tr>
<tr>
<td>383</td>
<td>33</td>
</tr>
<tr>
<td>323</td>
<td>33</td>
</tr>
<tr>
<td>333</td>
<td>33</td>
</tr>
<tr>
<td>322</td>
<td>32</td>
</tr>
<tr>
<td>321</td>
<td>32</td>
</tr>
<tr>
<td>320</td>
<td>32</td>
</tr>
<tr>
<td>275</td>
<td>27</td>
</tr>
<tr>
<td>305</td>
<td>30</td>
</tr>
<tr>
<td>320</td>
<td>32</td>
</tr>
<tr>
<td>301</td>
<td>30</td>
</tr>
<tr>
<td>311</td>
<td>31</td>
</tr>
<tr>
<td>255</td>
<td>25</td>
</tr>
<tr>
<td>205</td>
<td>20</td>
</tr>
<tr>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>670</td>
<td>6</td>
</tr>
<tr>
<td>680</td>
<td>6</td>
</tr>
<tr>
<td>653</td>
<td>5</td>
</tr>
<tr>
<td>681</td>
<td>8</td>
</tr>
<tr>
<td>663</td>
<td>6</td>
</tr>
<tr>
<td>640</td>
<td>4</td>
</tr>
<tr>
<td>641</td>
<td>1</td>
</tr>
<tr>
<td>100</td>
<td>1</td>
</tr>
</tbody>
</table>

**Legend:**
- **MetroRapid**
- **MetroBus Local**
- **UT Shuttle**
- **MetroFlyer**
Figure 21: Weekday Productivity by Route
Figure 22: Saturday Productivity by Route
Figure 23: Sunday Productivity by Route
Figure 24: Weekday Farebox Recovery by Route
Figure 25: Saturday Farebox Recovery by Route

![Saturday Farebox Recovery by Route Graph](image-url)
Figure 26: Sunday Farebox Recovery by Route

Sunday Farebox

Farebox Recovery Ratio

Route

MetroRapid  MetroBus Local  UT Shuttle  MetroFlyer
Figure 27: Weekday Subsidy per Passenger by Route

Weekday Subsidy

<table>
<thead>
<tr>
<th>Route</th>
<th>Subsidy per Passenger Boarding</th>
</tr>
</thead>
<tbody>
<tr>
<td>MetroRail</td>
<td>$(79.36)</td>
</tr>
<tr>
<td>MetroRapid</td>
<td>$(47.30)</td>
</tr>
<tr>
<td>MetroBus Local</td>
<td>$(68.52)</td>
</tr>
<tr>
<td>UT Shuttle</td>
<td>$(46.93)</td>
</tr>
<tr>
<td>MetroExpress</td>
<td>$(68.52)</td>
</tr>
<tr>
<td>MetroFlyer</td>
<td>$(68.52)</td>
</tr>
</tbody>
</table>
Figure 28: Saturday Subsidy per Passenger by Route
Figure 29: Sunday Subsidy per Passenger by Route