CHAPTER 8

TRANSIT VISION PLAN

8. TRANSIT VISION PLAN

8.1 Transit Vision

Transit is a critical component of an effective and efficient multimodal transportation network. The only way to achieve this network is to create a plan for transit within Temple that is tailored to the needs, desires and characteristics of the City. The Transit Vision Plan provides updated transit routes and maps that define the desired elements of transit in the City, which needs to be a somewhat fluid plan that is flexible to changes in technology, demand, and financial constraints. The Vision recommends conceptual improvements to the transit system to enhance service delivery and support multimodal mobility.

8.1.1 Transit Goals and Objectives

Goals and Objectives were developed through discussion with city leaders, stakeholders, and the public. Five of the nine Goals include Objectives specific to promoting the use of transit within the City and evaluating its impact on the network. The goals and objectives that guide the Transit Vision Plan include the elements listed in the figures below:

Choices:

- Increase transit ridership to pre-COVID levels.
- Provide mobility improvements so drivers/ travelers can select their destination based on the quality of the destinations, not quality of their trip.
- Evaluate emerging technologies to consider modifications to the planning and design process to incorporate new modes, technology, and best practice.

Connections:

- Increase mode choices to residence or place of employment.
- Increase accessibility to transit.

Prosperity:

- Improve low income and minority transit.

Mobility:

- Improve frequency and coverage of transit service.

Fund and Implement:

- Provide development plans that support strategic initiatives that improve funding for transit and active transportation.

Quality of Place:

- Promote place-making through the development of context-sensitive complete streets design elements.

8.1.2 Public and Stakeholder Feedback

As discussed in Chapter 3, public and stakeholder feedback was solicited at key points in the planning process and was accepted on an on-going basis through digital platforms. The following summarizes what we heard from the public and stakeholders related to transit:

- Improve availability of transit.
- Mediate the three barriers to using transit which were ranked almost equally: access, poor connections to desired destinations, and frequency of service.
- Evaluate the significant mobility challenges in Temple are safe and connected pedestrian and bike facilities, transit options, accessibility, and maintenance of existing roads.
- Consider micro-mobility options, such as bike rentals and point-to-point transportation.
- Consider a shuttle service to nearby restaurants for employees at Baylor Scott and White Hospitals.

The Transit Vision Plan described in the following sections is designed to achieve these stated goals and provide transit service delivery that meets community needs and expectations.

A hub and spoke model of transit refers to the design of a route network. Typically, this type of network design centers around one or two central transit locations, from which all other routes disperse as “spokes” from the hub.

8.2 Existing Transit in Temple

Operating under the Hill Country Transit District, “The HOP” provides all fixed-route services in the study area. The HOP is a regional public transit system that started in the 1960s as a volunteer transit service and evolved to serve a nine-county area. Serving multiple cities through the largely rural service area, the HOP is a coverage-based, hub-and-spoke system.

Currently, there are two transfer stations, one in Killeen and one in Temple, that serve as the major ‘hubs’ and are connected in a linear pattern by two main routes. The HOP runs nine different fixed bus routes in the communities of Temple, Belton, Harker Heights, Killeen, and Copperas Cove. Two routes serve the City of Temple.

- Route 510 – VA Hospital/Temple College/Temple Mall/ Walmart
- Route 530 – Adams Ave/Temple HS/Social Security Office

Additional details on the existing transit conditions in Temple can be found in Chapter 4 and Appendix B: Comprehensive System Assessment (CSA) Technical Memorandum.

8.3 Market Analysis

The Transit Market Analysis served as the foundation of the Transit Vision Plan and explored the existing conditions of fixed-route bus transit in the study area by examining each route's ridership by stop, as well as by identifying how much of the underlying transit market is served by the routes.

Analyzing the existing transit service and the underlying transit market revealed the strengths of the existing system as well as gaps in service delivery. The analysis revealed areas in the City of Temple where there was an opportunity to use appropriate service strategies to better match the service delivery with the demand of the market being served.

8.3.1 Riders and Market Served

Understanding how the existing transit network functions were key to developing recommendations that would improve service for existing passengers and expand the system to make it more attractive for new passengers.

Figures 8.1 and Figure 8.2 show the results of the buffer analysis to assess the amount of transit market served by the existing fixed-route system.

The Figure 8.1 map shows that areas of both high population and employment are being served in locations outside of Temple, such as Belton, Harker Heights, and south Killeen. However, there are still many block groups in west Temple, north Temple, and southeast Temple that indicate medium-to-high levels of population and employment that are not currently served by the fixed-route transit system.

Figure 8.2 compares the levels of targeted transit riders (TTR) in each block group to the quarter-mile buffer generated around the existing transit stops. The map illustrates that there are block groups with high levels of TTR around Temple. The largest concentration of these groups is located in southeast Temple, with a few spread across south Temple.

Figure 8.1: Population and Employment Served by Transit

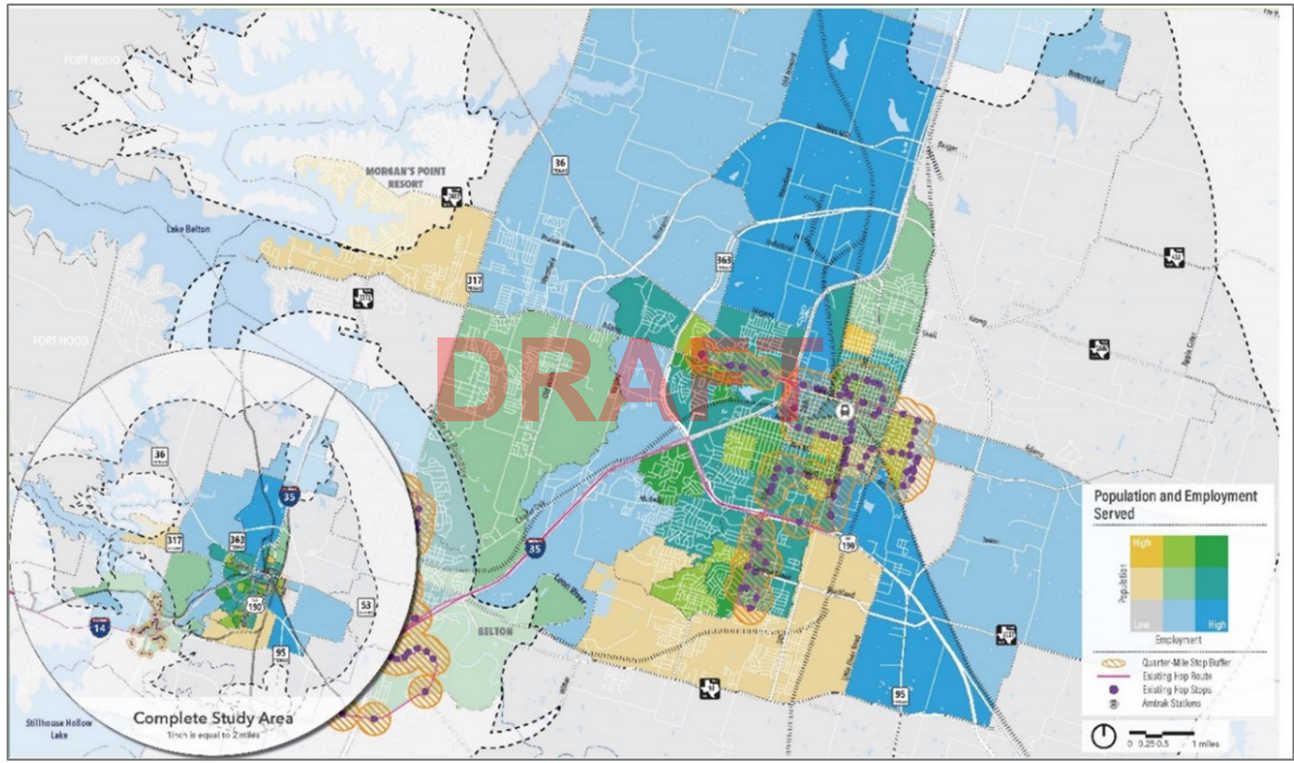

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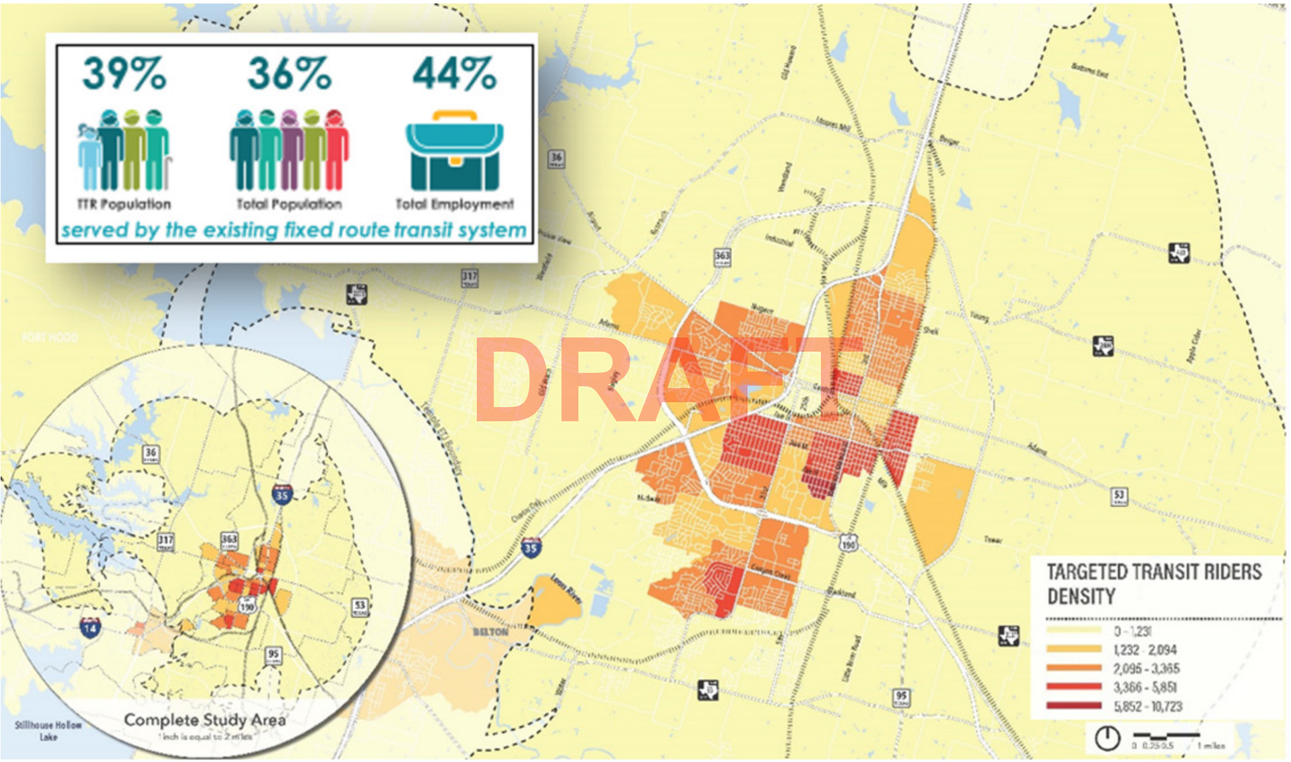
Figure 8.2: Target Transit Riders and Market Served



8.4 Transit Service Improvement Recommendations

Recommendations for the Transit Vision are comprised of route alignment modifications, reductions, and additions, as well as the introduction of a new service delivery strategy known as microtransit. These recommendations contribute to creating a complete mobility profile for Temple that improves access and mobility at both the local and regional levels. The recommendations are a product of 1) the transit scenario analysis that evaluated three transit alternatives and addresses the key findings of the transit market analysis and 2) the input gathered from stakeholders and the public.

8.4.1 Guiding Principles

The Transit Vision Plan is based on 4 guiding principles specific to the City of Temple's needs, namely: improving connectivity, eliminating route deviation, supporting route directness, designing efficient route spacing, and using bi-directional service. Designing route alignments and service delivery strategies to address these principles involves the synthesis of multiple data sets and resources. The data and resources listed below informed the customized recommendations to achieve the Transit Vision Plan:

- Public and stakeholder input
- Transit provider input
- Previous transit plan
- Transit market analysis

The following narrative provides an overview of the guiding principles that informed the route alignment, design, and service delivery strategies:

Connectivity

Connectivity is a function of the intersection between various transit routes or between the transit system and other transportation systems. Because fixed-route transit does not provide direct transportation between most people's trip origins and destinations, users often need to use other forms of transportation (also known as first/last-mile transportation) to get to and from bus stops. Therefore, fixed-route transit systems must achieve efficient and effective connectivity to other transportation systems, to other transit networks or services, and between different routes within the same system. The alignment modifications are designed so that routes intersect with and connect to the Temple transfer station and other networks as directly as possible, particularly pedestrian and bicycle networks.

Route Deviation

When a route's alignment is drawn to include minor deviations away from its most direct path to serve a single stop along with the deviation, the efficiency and travel time of that particular route are negatively impacted. These deviations reduce route productivity even further when the stops placed there have relatively low boarding activity (boardings + alightings). Where possible, the alternatives eliminate route deviations from fixed-route service. Parameters to serve as guidelines for evaluating deviations generally follow a rule of using a percentage of riders that would board along with the deviation and the time it takes for the deviation, and the number of passengers the deviation would negatively impact.

Route Directness

Like the concept of route deviations, route directness impacts the efficiency and travel time of a particular fixed route. Route directness refers to how immediately a route travels between stops that are adjacent to one another on the service schedule.

Route Spacing

Route spacing is a measure of the distribution of two or more routes that come into proximity with one another. Consideration of fixed-route spacing was used to determine whether any service is being duplicated in any given area. In areas with high densities, duplication of service can increase bus frequencies and save time for passengers when one or more routes intersect or run along a shared segment. However, in a large service area where densities of population and employment are relatively low compared to other urban areas, the geographical duplication of service markets is more likely to occur when routes run parallel to each other on separate corridors. This results in a lost opportunity to distribute service coverage to a wider area, meaning that certain populations and destinations could go unserved or under-served. The alternatives propose routes spaced in a way that prevents different routes from running parallel and providing similar service to a corridor. More specifically, if two or more fixed routes have segments that run parallel to each other but do not overlap or intersect, these segments should be spaced at least a half-mile apart to help increase the geographical coverage of service.

Bi-Directional Service

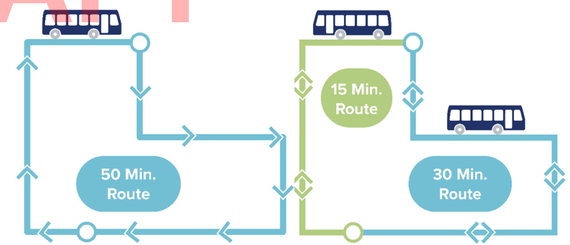
One of the most critical concepts of this transit vision is the idea of bi-directional service. While a service relying on one circulator route provides good physical coverage and access to opportunities, it can force passengers to deal with significant out-of-direction travel and increased travel times. Because circulator routes operate on a loop, if the bus travels the loop in only one direction, some passengers will have to first travel away from their desired destination before the route eventually reaches their stop further along in the loop. This has compounding negative effects; not only does it increase travel time, but the perception of the inconvenient travel pattern may discourage some people from using transit. Figure 8.3 illustrates how a bi-directional route network can solve travel time issues that persist with a single-direction circulator route thereby making the routes more desirable to use.

Although a circulator service may initially help provide physical coverage and access, the service is limited in its ability to respond to changing demand and other potential context changes. For instance, if a specific section of a circulator route starts to experience higher ridership, the circulator can only increase frequency for the entire route, rather than simply increasing service on the section experiencing higher ridership. By contrast, if the area experiencing higher ridership was serviced by a bi-directional route network, the frequency can be increased along the in-demand section of the route (also illustrated in Figure 8.3). The bi-directional network allows service to be adaptive to transit demand and better allocate resources.

Figure 8.3: Circulator vs. Bi-Directional Comparison

OPTION A: The bus runs in one direction along one loop.

OPTION B: The bus runs in both directions along multiple segments.

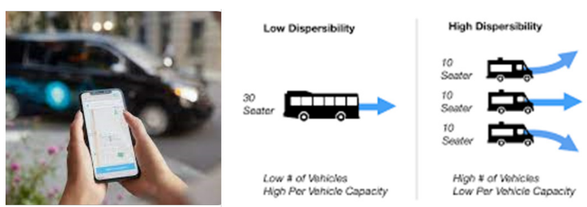


8.4.2 Microtransit Mobility Zones

In two of the alternatives analyzed, microtransit plays a key role as a service delivery tool. Microtransit, or on-demand transit, is like a fixed-route bus because passengers walk to meet a vehicle at a 'virtual bus stop' in mobility zones that may be up to ¼ or ½ of a mile from their requested location. However, it is different from a fixed route bus as there are no schedules or fixed routes. Instead, trips must start and end within specified zones that fill gaps in the bus network.

Passengers can book a trip using a smartphone application ("app"), a website, or through a call center. To book a ride, a passenger starts by indicating the number of passengers in their party and their desired pick-up and drop-off locations. Similar to the more common Uber and Lyft services, when booking a ride using the app, passengers will be able to see a map showing the geographic zone in which the service is offered. Requesting a trip beyond this zone is not possible, so passengers always know where the micro-transit service is available. Once the passenger submits a trip request, they are given an option that tells them when the vehicle will arrive and where to meet it. Typically, passengers must wait between 10 and 30 minutes for a trip, although this may vary depending on the level of demand and the number of vehicles available. Passengers can track the vehicle in real-time using the app. The passenger is provided with vehicle information—for example license plate, driver name, driver photo, and vehicle ID number. Passengers can usually cancel a ride at any time before pickup.

Figure 8.4: Potential Microtransit Dispersibility



Once the vehicle arrives, the driver confirms the passenger's details using the driver app. Passengers can pay using credit and debit cards, transit passes, cash, vouchers, and more. Most microtransit providers take care to include payment options for people without credit cards or bank accounts to ensure that the service is accessible to all. The passenger is then taken to their destination. Along the way, the vehicle will pick up and drop off other passengers heading in the same direction, but care is taken to avoid lengthy detours for passengers already on board. The passenger can track their progress using the app. After each trip, passengers may be automatically emailed a receipt or view it in the app. Passengers may also be able to provide real-time and post-trip feedback through the app.

Microtransit Examples

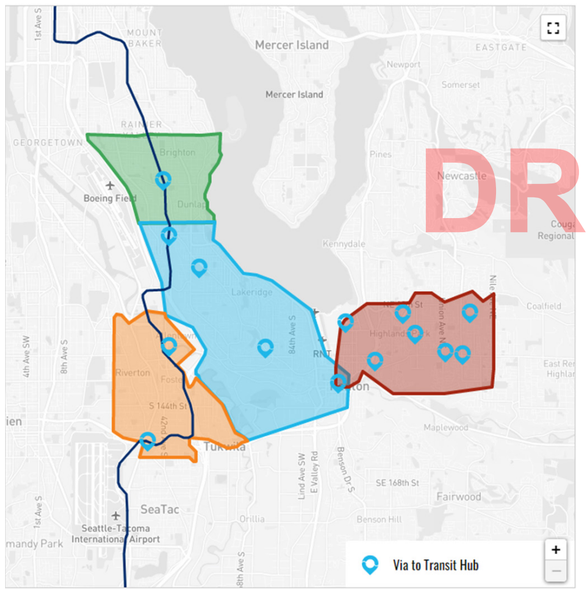
Microtransit has become more available throughout the US as locations without access to transit look for options to connect their residents. Not all locations are fit for a service such as microtransit but some examples have showcased benefits to the community.

L.A. Metro is one agency that recently expanded its microtransit services by adding three new service zones. The project is called Metro Micro with a cost of $1 per ride with fare adjustments being considered shortly. Their service has 5 zones for riders to choose from. More information on Metro Micro can be found at their website: https://micro.metro.net/

Picture Source: https://micro.metro.net/

King County Metro near Seattle, WA extended their microtransit service for a second year after a pilot project tested the feasibility of the program. The on-demand service connects residents to and from transit community hubs in four service areas. Hours of operation are Monday-Saturday 5 a.m. to 1 a.m. and Sunday 6 a.m. to 12 a.m. Figure 8.5 displays the service zones provided. Additional information on the services provided can be found at their website: https://kingcounty.gov/depts/transportation/metro/travel-options/on-demand/via-to-transit.aspx

Figure 8.5: King County Microtransit Zones



Source: King County Metro

The Central Ohio Transit Authority (COTA), near Columbus, Oh has also introduced microtransit to their community. The on-demand transports multiple customers who hail a transit vehicle at the nearest transit stop through the app. The service is provided in 4 areas throughout central Ohio including Grove City, Westerville, Northeast Columbus, and South Side areas. Hours of operation vary through each location served. Additional information on the program can be found at the website: https://cota.com/services/cota-plus/

Picture Source: https://cota.com/services/cota-plus/

The City should consider the following if implementing a pilot microtransit program:

- Pickup window – The City should set the amount of time a pick-up can occur before or after the scheduled pickup time at +/- 20 minutes during the pilot and then strive to lower it to 15 minutes once service is established.
- Negotiated trip window – The City should set the time to +/- 60 minutes as the amount of time a dispatcher can schedule a trip before or after the requested pickup time.
- Detour allowance - The time or distance allowed during a trip to pick up additional passengers should be set to achieve an average ride time of approximately 20-30 minutes or better per passenger, which would be comparable to the average ride time of the current fixed-route service in Temple.

8.4.3 Alternatives Analysis

The alternatives analysis described in this section provides an overview of the candidate service alternatives developed by the project team. The benefits and tradeoffs between each alternative are described. Each alternative includes a map and performance metrics. These alternatives were set up in a manner that allowed the project team to isolate the strengths and eliminate the weaknesses of each and determine the preferred combination of route and service concepts that would have the support of the community, City leadership, project partners, and City staff. The other effective feature of this process is that several of these concepts can be implemented in a sustainable and phased process.

The performance metrics used for this analysis are based on the Comprehensive System Assessment – Existing Conditions analysis. The percentages are based on the total percentages of the study area. While each of these alternatives adds a new route there are also tradeoffs associated with achieving more intuitive routing, bi-directional service, and more frequency. Some coverage service is proposed to be reduced and this impacts the percentage of the population and employment covered under the quarter-mile buffer. An example of this can be seen in Alternative A where service was modified around the Baylor Scott and White Hospital. This hospital accounts for 10,189 jobs and is the biggest job center in Temple under Alternative A, less of the block group is covered under the quarter-mile buffer than under the existing service but the proposed service would be enhanced under this plan and the expectation would be that those jobs that fall just outside of the buffer would still be within a reasonable walking distance and would still use the service.

The performance metrics are defined as:

- Targeted Transit Riders - The demographic groups for this metric are more likely to create demand for transit service and include:
  - Population with disabilities
  - Population with limited English proficiency
  - Population of minorities
  - Population aged 65 and older
  - Population aged 17 or younger
  - Population in poverty
- **Population –** any population that falls within a quarter-mile buffer around the proposed transit line. The quarter-mile buffer represents the assumed maximum distance that most people would be willing to travel by foot or assistive mobility device to reach a transit system access point (bus stop or transfer station).
- **Employment -** any employment that falls within a quarter-mile buffer around the proposed transit line, which represents the assumed maximum distance that most people would be willing to travel by foot or assistive mobility device to reach a transit system access point (bus stop or transfer station).

The alternatives below show the differences between the candidate alternatives and the existing Temple transit service provided by routes 510 and 530. For this effort, route 200 is shown as a dashed line so the regional connectivity can be observed, but the route is not included in the metrics analysis because it has regional connections outside of Temple. Microtransit coverage benefits are stated separately from those of the fixed routes because of the different nature of the service and to allow for direct comparison between the alternatives.

8.4.4 Alternative A

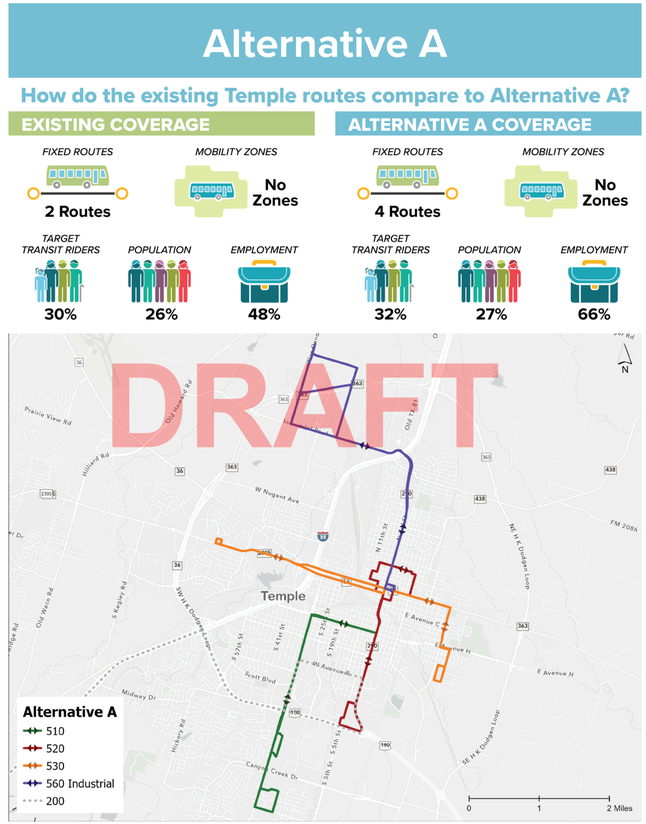
Alternative A builds on the existing fixed-route service offered by the HOP by adding 2 routes, enhancing the route for better frequency, and implementing bi-directional service.

Key Route Descriptions:

- Transition to bi-directional.
- 510 – The proposed 510 route was modified to run in a more intuitive and direct route between the Temple Transfer Station and south Temple. This route will provide a faster trip between the transfer station and key destinations along the route such as the Baylor Scott & White Medical Center and the Temple Mall.
- 520 – The proposed 520 is a modified version of the north section of the existing 510 route. This route would now be a more frequent route with a 30-minute headway and provide direct bi-directional service between the Temple Transfer Station and the VA Hospital and Temple College.
- 530 – The proposed 530 route was modified to provide a more direct, intuitive, and bi-directional service between east and west Temple.
- 560 Industrial Route – The addition of the proposed 560 route will provide service to the industrial park introducing opportunities for more access to jobs.

Figure 8.6 provides an overview of the existing routes compared to Alternative A.

Figure 8.6: Alternative A Overview



8.4.5 Alternative B

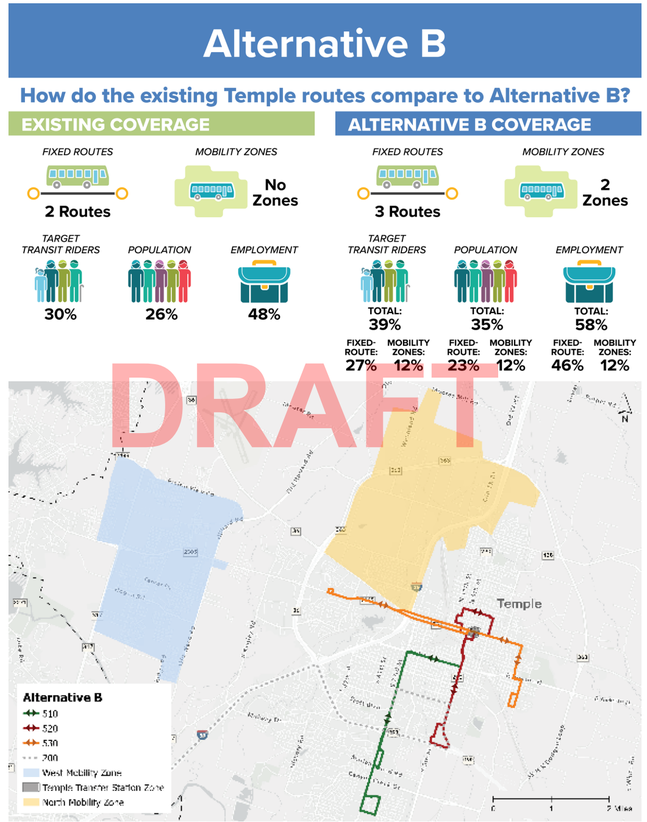
Alternative B builds on the recommendations from Alternative A, minus the addition of Route 560. This alternative introduces the option for Microtransit Mobility Zones in North and West Temple.

Route Descriptions:

- One Mobility Zone that offers on-demand microtransit options to West Temple to provide transit options to the residents in the areas where new development is occurring.
- One Mobility Zone that offers on-demand microtransit options to North Temple where previous access to the existing service was not available and provides access to the nearby transfer center and Industrial Park. This option will allow for a service frequency that does not have to plan around the shift times of the employers in the Industrial Park.
- Transition to bi-directional.
- 510 – The proposed 510 route was modified to run in a more intuitive and direct route between the Temple Transfer Station and south Temple. This route will provide a faster trip between the transfer station and key destinations along the route such as the Baylor Scott & White Medical Center and the Temple Mall.
- 520 – The proposed 520 is a modified version of the north section of the existing 510 route. This route would now be a more frequent route with a 30-minute headway and provide direct bi-directional service between the Temple Transfer Station and the VA Hospital and Temple College.
- 530 – The proposed 530 route was modified to provide a more direct, intuitive, and bi-directional service between east and west temple.

Figure 8.7 provides an overview of the existing routes compared to Alternative B.

Figure 8.7: Alternative B Overview



8.4.6 Alternative C

Alternative C builds on the recommendations from Alternative A, minus the addition of Route 560. This alternative introduces the option for Microtransit Mobility Zones for all of Temple.

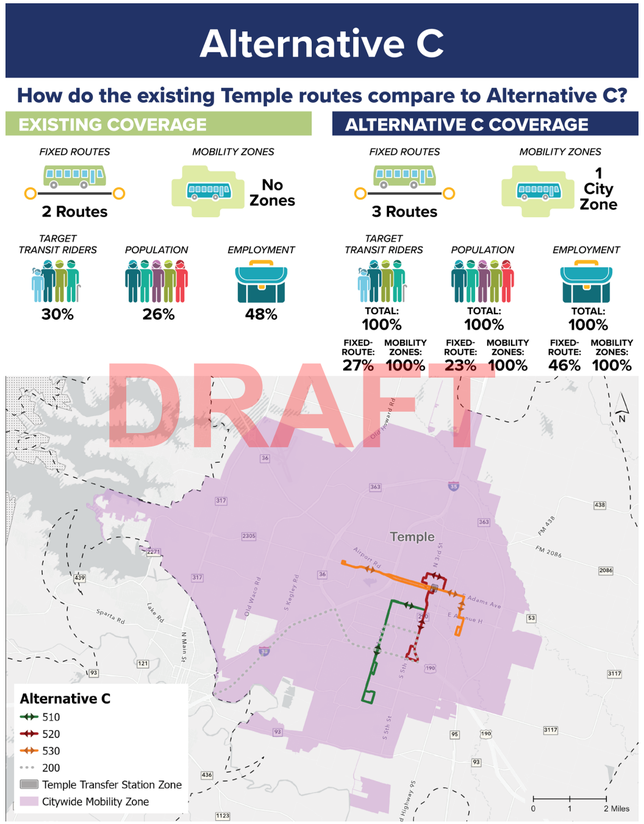
One Mobility Zone that offers on-demand Microtransit options to all of Temple. This will allow for a resident in every part of town to select on-demand as an option to connect into transit or to their destination of choice.

Transition to bi-directional.

- 510 – The proposed 510 route was modified to run in a more intuitive and direct route between the Temple Transfer Station and south Temple. This route will provide a faster trip between the transfer station and key destinations along the route such as the Baylor Scott & White Medical Center and the Temple Mall.
- 520 – The proposed 520 is a modified version of the north section of the existing 510 route. This route would now be a more frequent route with a 30-minute headway and provide direct bi-directional service between the Temple Transfer Station and the VA Hospital and Temple College.
- 530 – The proposed 530 route was modified to provide a more direct, intuitive, and bi-directional service between east and west Temple.

Figure 8.8 provides an overview of the existing routes compared to Alternative C.

Figure 8.8: Alternative C Overview



8.4.7 Alternatives Planning Level Cost Estimation

For each alternative, capital and operating costs were estimated. Capital costs are one-time upfront costs comprised of the cost of new buses and for this effort, $435,000 per fixed-route vehicle and $130,000 per microtransit vehicle are used as a standard cost per vehicle. Every fixed-route requires one vehicle, the North and West Mobility Zones of Alternative B require one vehicle each, and the Citywide Mobility Zone requires three vehicles. Operating costs, which are estimated across one year, involve the number of hours and days of operation and the current cost of operating a vehicle, provided by the HOP as $100.00/hour for a fixed-route vehicle and an industry standard of $55.00/hour for a micro-transit vehicle. The costs estimates were extracted to be specific to the operations in the City and not directly correlated to the operations of HOP routes in their entirety which include other service areas. Table 8.1 provides the variables used for developing cost estimates for each alternative.

TABLE 8.1: VARIABLES FOR COST ASSUMPTIONS

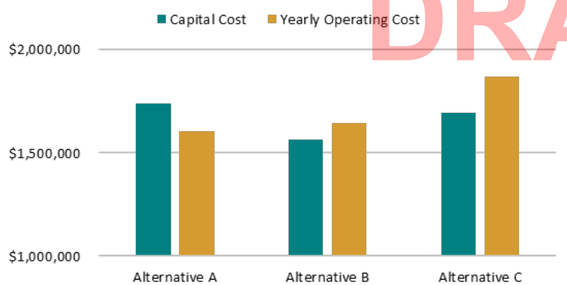
Variables	
Span of Service in Hours (5:25am - 6:45pm)	13.33 hours
Weekday days of service	5 days
Saturday days of service	1 day
Number of holidays	12 days
Annual weekdays of service (365 minus weekends and holidays)	249 days
Annual Saturdays of service	52 days
Fixed-Route Operating Cost per Hour	$100.00
Fixed-Route Vehicle Cost	$435,000
Microtransit Operating Cost per Hour	$55.00
Microtransit Vehicle Cost	$130,000

Table 8.2 shows that upfront capital costs for Alternative A are the highest of the three alternatives, since fixed-route vehicles are more expensive than microtransit vehicles, and this alternative requires the most fixed-route vehicles. However, because Alternative A requires the fewest vehicles overall, its yearly operating costs are the lowest of the three alternatives. Conversely, Alternative C requires the most vehicles and operators, which makes it the most expensive to operate.

TABLE 8.2: CAPITAL AND OPERATING COSTS BY ALTERNATIVE

	Alternative A 4 Fixed Routes No Mobility Zones 4 Vehicles	Alternative B 3 Fixed Routes 2 Mobility Zones 5 Vehicles	Alternative B 3 Fixed Routes 2 Mobility Zones 5 Vehicles
Capital Cost	$1,740,000	$1,565,000	$1,695,000
Yearly Operating Cost	$1,604,932	$1,645,055	$1,865,733

Figure 8.9: Capital and Operating Cost by Alternative



8.4.8 Partnerships/Funding

The City needs to determine how transit will be funded and who is going to operate the system. This Transit Vision Plan is adaptable and identifies the key strategies and parameters for implementation and ongoing operations.

Contract Revenue

Contracts are funding agreements between the transit agency and another organization to provide transportation services. The organization, which may be a local government, a non-profit organization, an employer, or a university, pay the provider on behalf of their clients. This means that the contract revenue is not considered fare revenue, and therefore does not offset federal funding. Contracts include revenues from regularly provided transit services, which differentiate this type of revenue from charter service.

Federal Programs that Support Public Transportation

Many federal programs provide funding for public transportation and transit specifically. This includes competitive programs such as the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant, the Urbanized Area Formula Funding program (49 U.S.C. 5307), and discretionary grants such as the Grants for Buses and Bus Facilities program (49 U.S.C. 5339).

Urbanized Area Funding 5307

The Urbanized Area Funding 5307 Grant makes federal resources available to urbanized areas (population of 50,000 or more) for transit capital and operating assistance in urbanized areas and transportation-related planning. These funds are apportioned on a formula basis calculated based on the urbanized area population and transit service levels. Key eligible transit activities under this program include planning, engineering, design, and evaluation of transit projects and other technical transportation-related studies; capital investments in bus-related activities, and computer hardware and software. Section 5307 formula funds for the Killeen-Temple urbanized area are dedicated to the HOP under current service agreements.

Grants for Buses and Bus Facilities 5339

The 5339 grant provides federal resources to States and designated recipients to replace, rehab, and purchase buses and related equipment to construct bus-related facilities. Eligible recipients of this grant include recipients that operate fixed-route bus services or that allocate funding to entities that operate the fixed-route service. Additional eligible capital projects include replacing, rehabilitation, or purchasing vans.

Raise Grant

The Raise program allows project sponsors at the State and local levels to invest in road, rail, transit, and port projects. The grant can provide capital funding directly to any public entity including municipalities. Projects are evaluated on several criteria including safety, environmental sustainability, quality of life, economic competitiveness and opportunity, state of good repair, partnership, and innovation. Recent transit awards include dedicated bus lanes in Baltimore and a rail-to-trail project in Arkansas.

Public/Private Partnerships

A public-private partnership is an arrangement between a public or government agency and a private entity that (typically) shifts funding from a sole source of governmental aid (grants) to a diverse approach that also uses private funding. It will also typically place more reliance on the private entity to deliver or operate the project. However, the agreement can extend to multiple aspects including the funding, financing, planning, design, construction, operation, and maintenance of a transportation facility. For example, there are possible public-private partnership opportunities with companies in the Industrial Park that the City can explore when considering transit services to and from the service area.

8.5 Implementation Steps

The recommendations of this Transit Vision Plan will be implemented in phases based on the input of technical analyses, regional coordination efforts, and public and staff input. This implementation section outlines the costs and recommendations for each phase. This phased approach will work in tandem with the MMP to implement the recommendations successfully and sustainably for quality transit throughout the service area that helps contribute to the development of a complete mobility profile. The implementation plan is separated into two phases:

- Phase 1 – Short Term Improvements (1 to 2 years): Fixed route realignment that focuses on building a foundational base for the transit network which connects the community with more frequent, bi-directional, and intuitive service.
- Phase 2 – Long Term Improvements (Years 2 to 5): Implementation of Microtransit service, an additional fixed route, and increased frequency on more fixed-route service.

These phases aim to help disperse costs and prioritize sustainable, phased changes. Within the phases, there are recommendations for prioritizing the implementation of various steps.

8.5.1 Phase 1 – Short Term Improvements

Implement the three routes that serve as the core foundation for each of the proposed alternatives. These include routes 510, 520, and 530.

TABLE 8.3: PHASE 1 COST ESTIMATES

Phase 1 (Realignment of 3 Fixed Routes)	
Total Annual Operating Cost - Weekdays	$995,751
Total Annual Operating Cost - Saturdays	$207,948
Total Annual Operating Cost	$1,203,699
Total Capital Cost	$1,305,000

8.5.2 Phase 2 – Long Term Improvements

Phase 2A

Once the City has the core fixed-route transit network in place and has analyzed ridership data for some time the next step would be to introduce microtransit as a new mobility option. The first microtransit zone should be introduced and marketed as a pilot program. The first zone to be established should be the West Mobility Zone from Alternative B.

TABLE 8.4: PHASE 2A COST ESTIMATES

Phase 2A (West Mobility Zone)	
Total Annual Operating Cost - Weekdays	$182,554
Total Annual Operating Cost - Saturdays	$38,124
Total Annual Operating Cost	$220,678
Total Capital Cost	$130,000

Phase 2B

Once the pilot program has been in place for a year and the City has evaluated performance metrics the next step would be to expand or end the program. If it is determined to be a success, then the next phase would be to introduce a second mobility zone in the north industrial area from Alternative B.

TABLE 8.5: PHASE 2B COST ESTIMATES

Phase 2B (North Mobility Zone)	
Total Annual Operating Cost - Weekdays	$182,554
Total Annual Operating Cost - Saturdays	$38,124
Total Annual Operating Cost	$220,678
Total Capital Cost	$130 ,000

Phase 2C

If the mobility zones continue to serve as a viable transportation alternative, then the next phase would be to implement the city-wide mobility zone from Alternative C.

TABLE 8.6: PHASE 2C COST ESTIMATES

Phase 2C (Citywide Mobility Zone)	
Total Annual Operating Cost - Weekdays	$547,663
Total Annual Operating Cost - Saturdays	$114,371
Total Annual Operating Cost	$662,034
Total Capital Cost	$390,000

Phase 2D

Implement the fixed-route industrial zone.

TABLE 8.7: PHASE 2D COST ESTIMATES

Phase 2D (Industrial Route)	
Total Annual Operating Cost - Weekdays	$331,917
Total Annual Operating Cost - Saturdays	$69,316
Total Annual Operating Cost	$401,233
Total Capital Cost	$435,000

Phase 2E

Systematically begin adding buses to fixed routes based on their performance metrics (i.e., the route with the most ridership) to provide increased frequency. Begin with routes 510 and 530 which would allow them to operate at a 30-minute headway like route 520.

8.5.3 Alternatives A, B, and C Cost Estimates

Table 8.8 through Table 8.10 provide the cost breakdown of each Alternative based on the phasing approach.

TABLE 8.8: ALTERNATIVE A COST ESTIMATES

Alternative A (3 Fixed Routes, Industrial Route)		
Phase	**Cumulative Operating Cost**	**Capital Cost to Date**
Phase 1	$1,203,699	$1,305,000
Phase 2D	$1,604,932	$1,740,000

TABLE 8.9: ALTERNATIVE B COST ESTIMATES

Alternative B (3 Fixed Routes, West Mobility Zone, North Mobility Zone)		
Phase	**Cumulative Operating Cost**	**Capital Cost to Date**
Phase 1	$1,203,699	$1,305,000
Phase 2A	$1,424,377	$1,435,000
Phase 2B	$1,645,055	$1,565,000

TABLE 8.10: ALTERNATIVE C COST ESTIMATES

Alternative C (3 Fixed Routes, Citywide Mobility Zone)		
Phase	**Cumulative Operating Cost**	**Capital Cost to Date**
Phase 1	$1,203,699	$1,305,000
Phase 2C	$1,865,733	$1,695,000

8.5.4 Key Components/Takeaways for this Transit Vision Plan

- **Increased Frequency –** Through the addition of a new fixed-route (Route 520) and modifications to the existing routes, to create a more intuitive and bi-directional service, the City can be more strategic with transit resources and provide a route that operates every thirty minutes between the DT Transfer Station and Temple College (one of the most productive steps in the existing system).
- **Intuitive Transit Design –** Streamlined bi-directional service minimizes out-of-direction travel, reduces travel time, and fosters easy-to-use and easy-to-understand transit service.
- **The Addition of Microtransit Service –** The addition of microtransit service expands and improves coverage across the entire network, giving riders from areas of the city that don't currently have service the ability to commute downtown more easily via the Temple Transfer Station Mobility Island. Thresholds would need to be set by the City as to when a passenger would be connected to a fixed route versus completing a trip solely using microtransit. Generally, if a passenger is within walking distance (i.e. ¼ - ½ mile) of a bus stop the service would force a passenger to take a fixed route. If the passenger was outside of that threshold, then microtransit would assign them to a trip.
- **Microtransit 'Mobility Island' for Fixed Route Network Connectivity –** A mobility island serves as a way to connect microtransit zones to the fixed-route network. The team microtransit alternatives add a Mobility Island at the Temple Transfer Station.

8.6 Action Plan

This phased implementation plan will serve as a guide and a tool for the City to use as it expands and improves transit service delivery. This tool is intended to be adaptable and the City should move forward expanding transit where opportunities arise through coordination, partnerships, and strategic funding initiatives. The success of this Implementation Plan is dependent on using it in coordination with the Mobility Plan. Without identifying a dedicated local funding source, the plan cannot be implemented in its entirety. Table 8.11 provides a summary of the action plan for active transportation recommendations.

TABLE 8.11: TRANSIT VISION ACTION PLAN

Action	Summary	MMP Goal Achieved
Phase 1: Short-term Improvements	Implement the three routes that serve as the core foundation for each of the proposed alternatives. These include routes 510, 520, and 530.	
Phase 1: Short-term Improvements	Establish a bidirectional service to increase the frequency	
Phase 1: Evaluation of the benefits and costs of the long-term service models.	Undertake a benefit/cost analysis (BCA) of the alternative service models presented in this MMP plus additional service elements that may be feasible with participation of private sector partners, such as subscription service.	
Phase 1: Transition to new or revised operational model.	If the tradeoffs of costs versus benefits are positive, select a preferred operational model for provision of service within Temple, and work with HCTD to determine how that local operational model fits within the overall regional transit governance structure.	
Phase 2: Long-term Improvements (2A)	Establish the West Mobility Zone from Alternative B	
Phase 2: Long-term Improvements (2B)	Establish the second mobility zone in the north industrial area from Alternative B	
Phase 2: Long-term Improvements (2C)	Establish a city-wide mobility zone from Alternative C	
Phase 2: Long-term Improvements (2D)	Implement the fixed-route industrial zone	
Phase 2: Long-term Improvements (2E)	Systematically begin adding buses to fixed routes based on their performance metrics (i.e. the route with the most ridership) to provide increased frequency.	

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