

A photograph of a high-speed train, possibly a Shinkansen, stopped at a station platform. The train is silver with blue and red stripes. A person wearing a black hoodie with a Reebok logo and blue jeans stands on the platform. The platform has a yellow tactile paving strip. Overhead power lines and a catenary system are visible above the train. The sky is overcast.

THORNTON TRANSIT STUDY

Draft

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Prepared for



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RESOLUTION

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Executive Summary

Placeholder for executive summary to come with final report

Chapter 1 – Introduction

Purpose of the project

The Thornton Transit Study builds off the vision set by the Transportation and Mobility Master Plan (TMMP) with the following goals:

- Bring Thornton closer to implementing the TMMP's vision.
- Provide clear guidance on how to implement transit improvements throughout Thornton over the next 10 years.
- Make transit a more viable mode choice for residents that do not currently have access to transit.
- Better serve those who are mobility challenged, but not served by RTD's Access-A-Ride.

The transit study includes the following elements:

- **Transit Market Analysis.** This analysis, described in Chapter 2, includes a comprehensive demographic analysis, an evaluation of the existing transit service, an analysis of travel patterns, community input, and a review of peer communities. Chapter 2 highlights the key conclusions of the transit market analysis, while the complete transit market analysis is available in Appendix A.
- **Alternatives Analysis and Community Input.** This analysis, described in Chapter 3, includes an evaluation of five potential “bookend” alternatives for transit improvements in Thornton, including new on-demand service, improvements to existing fixed-route service, and new fixed-route service. The alternatives and evaluation criteria were created based on input from the first round of community engagement and the transit market analysis. The alternatives analysis was used to present benefits and challenges of several potential transit improvements in Thornton. Alternatives were presented to the public, and a preferred alternative for phasing and implementation was developed based on input from the public, stakeholders, and project team.
- **Preferred Alternative and Implementation Phases.** This phasing plan, described in Chapter 4, details the implementation of each transit recommendation over the next ten years. The phasing includes action items for the short-term (first three years), mid-term (three to seven years), and long-term (seven to ten years).
- **Financial Plan.** This plan, described in Chapter 5, details the estimated costs by year to implement each element of the operating plan. This chapter also includes details on funding strategies for these costs.
- **Implementation Plan.** This plan, described in Chapter 6, provides details of implementing on-demand transit and fixed-route transit options. These details include service adjustments, roles and responsibilities, strategies for managing hurdles, and other key factors to implementation.

Chapter 2 – Transit Market Analysis

This chapter highlights the key conclusions of the transit market analysis, which included a comprehensive demographic analysis, an evaluation of the existing transit service, an analysis of travel patterns, community input, and a review of peer communities. The complete transit market analysis is available in Appendix A.

Demographic Analysis

Thornton's residents are diverse in age, income, and travel characteristics. Those who are most likely to rely on transit service for transportation are youth, older adults, people with low and moderate income, people with disabilities, and households with limited access to vehicles. While there are higher concentrations of people with these characteristics in the southern portion of Thornton (generally south of 104th Avenue), there are other areas of the city with higher concentrations of these demographics as well, including:

- A high youth and older adult population north of 136th Avenue.
- Residents living under the poverty line north of 136th Avenue.
- Residents with no or limited access to vehicles in communities between 112th Avenue and 128th Avenue, and in the Todd Creek Area.

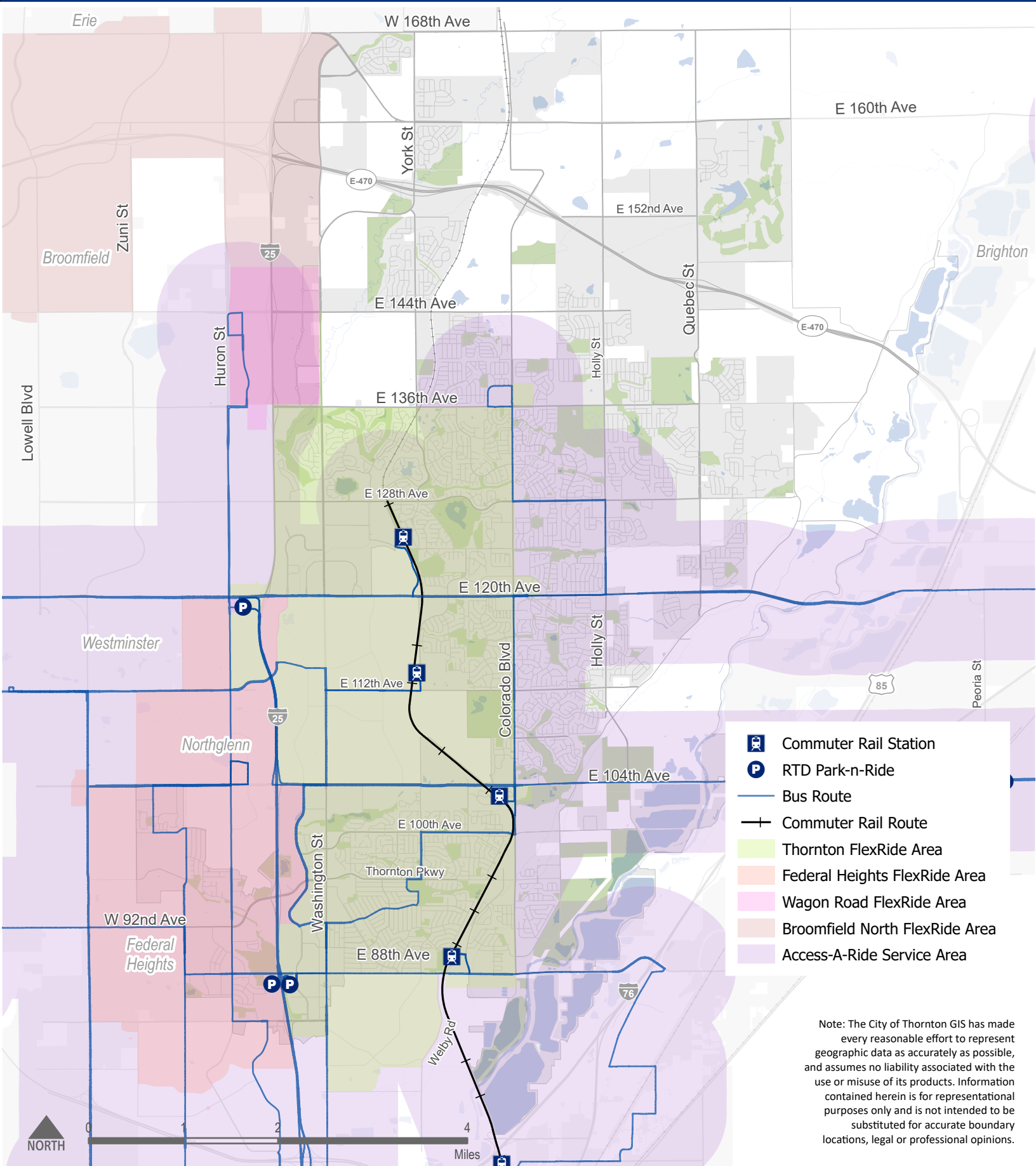
Existing Transit Service

Existing transit service in Thornton is operated by RTD and was found to be:

- **Regionally Focused** – The system is predominantly designed for regional travel, particularly to downtown Denver and the Denver International Airport, and less useful for local travel within Thornton and for east-west regional travel.
- **Limited in Geographic Coverage** – While the southwest part of Thornton (generally south of 120th Avenue and west of Colorado Boulevard) which has the highest transit propensity and is generally covered by transit there are large sections of north and eastern Thornton without any transit. This also leaves parts of these areas in north Thornton devoid of Access-a-Ride service (**Figure 1**). Additionally, many areas of southern Thornton are more than a quarter-mile walk from transit and/or have areas with missing or narrow sidewalks that add additional barriers to accessing transit (**Figure 2**).

Thornton Transit Coverage

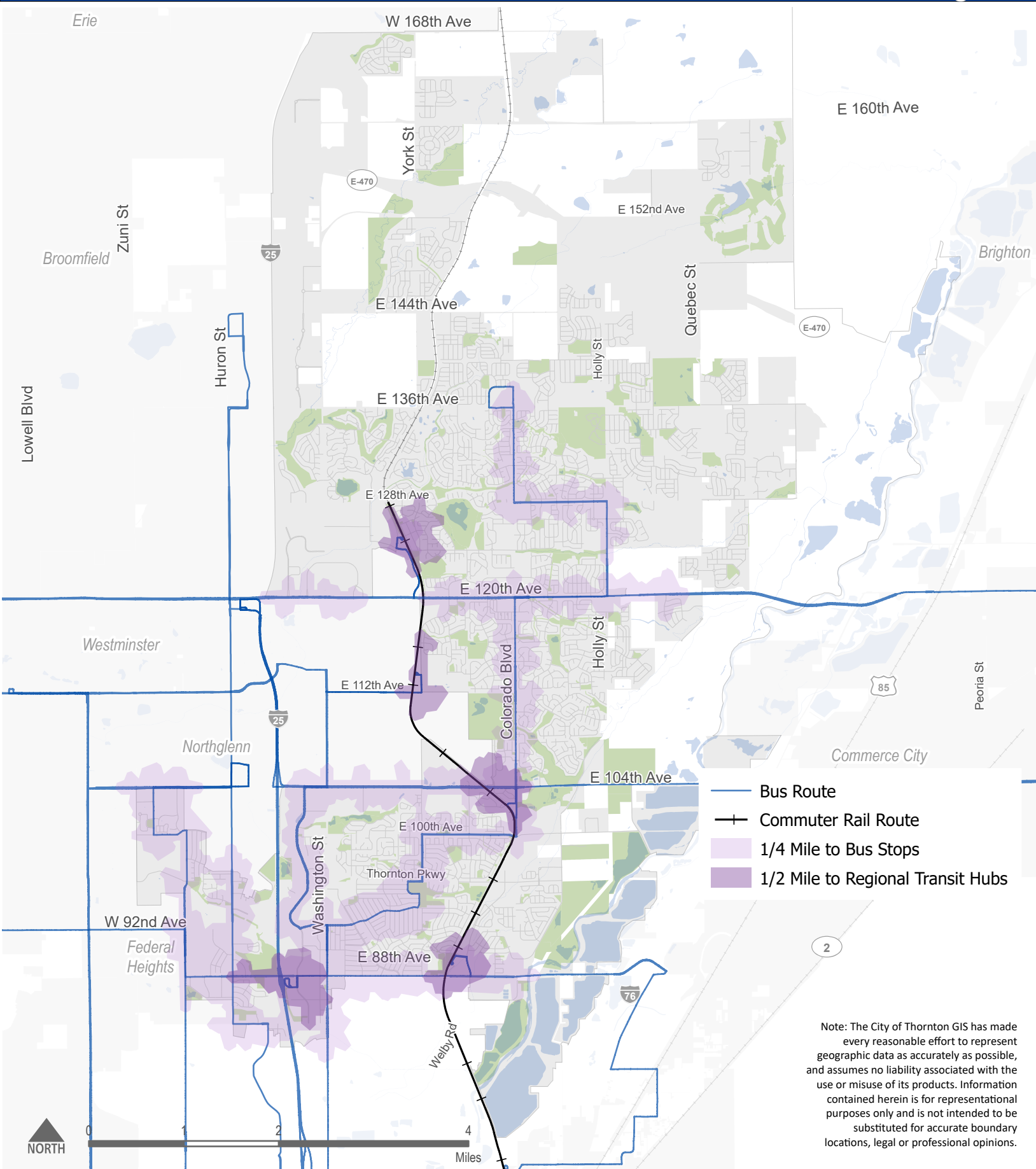
Figure 1



Note: The City of Thornton GIS has made every reasonable effort to represent geographic data as accurately as possible, and assumes no liability associated with the use or misuse of its products. Information contained herein is for representational purposes only and is not intended to be substituted for accurate boundary locations, legal or professional opinions.

Thornton Transit Access

Figure 2



Note: The City of Thornton GIS has made every reasonable effort to represent geographic data as accurately as possible, and assumes no liability associated with the use or misuse of its products. Information contained herein is for representational purposes only and is not intended to be substituted for accurate boundary locations, legal or professional opinions.

- **Low Frequencies** – Most bus service in Thornton operates at 60-minute frequencies, with just three local routes (Route 7, Route 19, and Route 92) plus the N-line and 120X providing 30-minute all-day frequencies. The low frequency is one of the biggest barriers to using transit in Thornton, making it an impractical option for many trips (even where transit exists), especially for short trips and trips that require a transfer.
- **Limited Demand Response Service** – The three FlexRide services that operate in Thornton are designed to fill those gaps in local travel demand, but can be unreliable, difficult to coordinate transfers, and exclude many areas of Thornton. The service also suffers from lack of efficiency typically averaging less than 3 riders per hour. Additionally, because the Thornton FlexRide does not operate after 6 PM, it does not serve evening commuters/service workers.
- **Limited Connectivity Across I-25** – While service is provided on both sides of I-25, service on 104th Avenue does not connect across, and the FlexRide boundaries generally fall along I-25 making connections across I-25 via FlexRide generally impractical.

Existing Travel Patterns

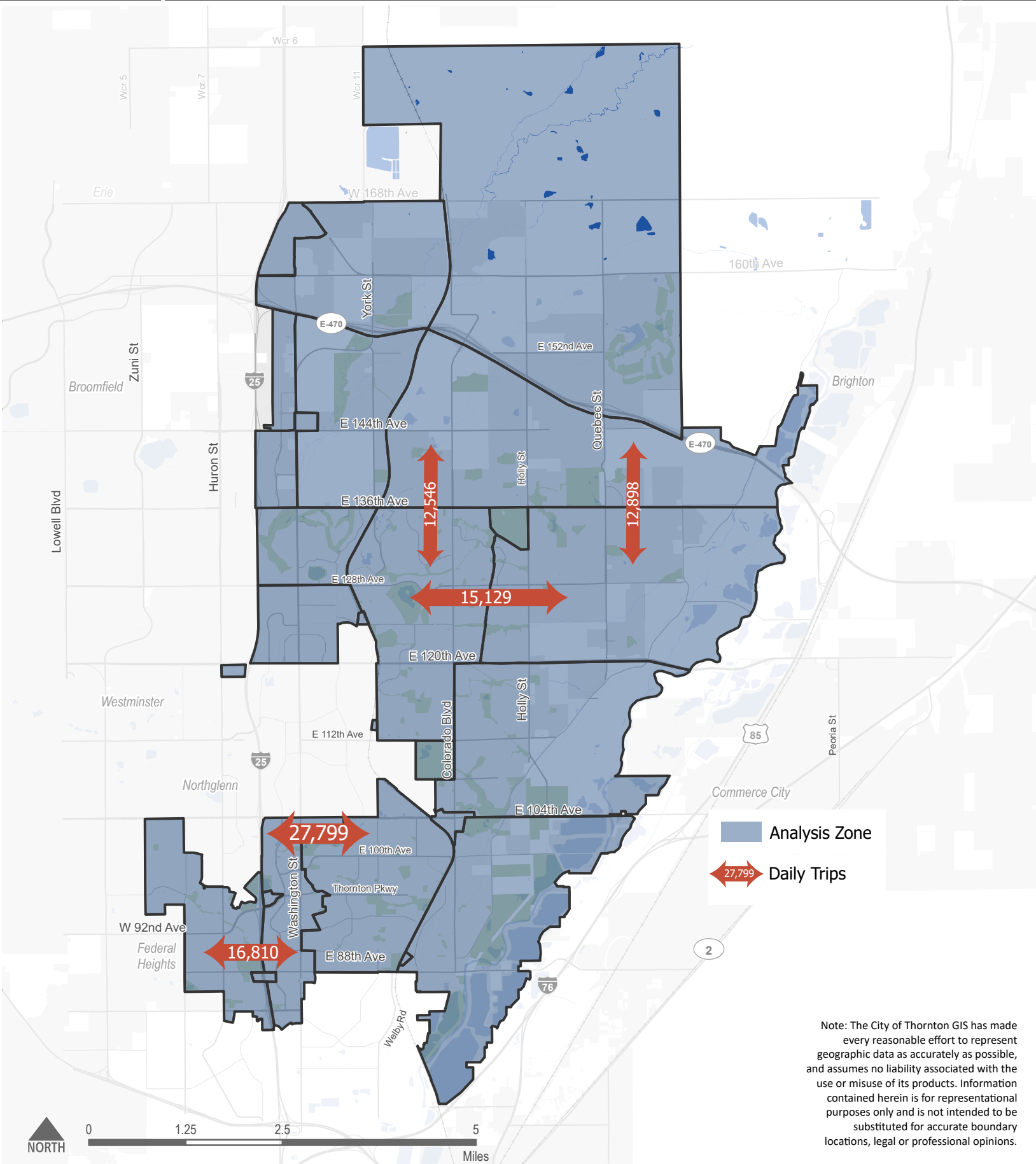
Both [Longitudinal Employer-Household Dynamics \(LEHD\)](#) and StreetLight (origin-destination data) analyses show that there is considerable demand for local destinations in Thornton, and nearly 50% of local trips are two to five miles. More specific takeaways include:

- Non-commute trips make up 82% of trips on weekdays.
- Nearly half of all trips in Thornton have an average speed of 10 to 20 mph from origin to destination.
- The most common trip length is two to five miles.
- The top local trip pairings occur in the southwestern part of the city going to/from the Washington Street corridor from zones directly east or west (**Figure 3**).

Top Trip Pairs within Thornton

March - April 2022

Figure 3



- Most regional trips are destined for Commerce City and Broomfield, but there are also many trips headed to Brighton, Westminster, and to communities along the north I-25 corridor.
- In 2019, the highest concentration of work locations for Thornton residents was along the north I-25 corridor and Downtown Denver. There were also notable nodes in Boulder, Brighton, Broomfield, and at the Anschutz Medical Campus in Aurora.
- Of trips that originate in Thornton's top transit propensity zones, most are destined to adjacent neighborhoods, so trips are predominantly short and close.
- Most people traveling from Thornton to one of the six regional transit hubs in (or near) Thornton originate in the zones immediately around a station. The two exceptions are the Wagon Road park-n-ride and the Crossroads at 104th Station, both of which have much larger travel sheds than the other transit hubs.
- The Carpenter Recreation Center and Thornton Active Adult Center draw people from all areas of Thornton in a fairly evenly distributed manner, while the Trail Winds Recreation Center has a much higher share of trips originating from northern Thornton, with fewer people coming from south Thornton.
- While the Amazon facility (specifically the employee lot) draws trips from across Thornton, there are particularly higher concentrations of trips originating in south Thornton.

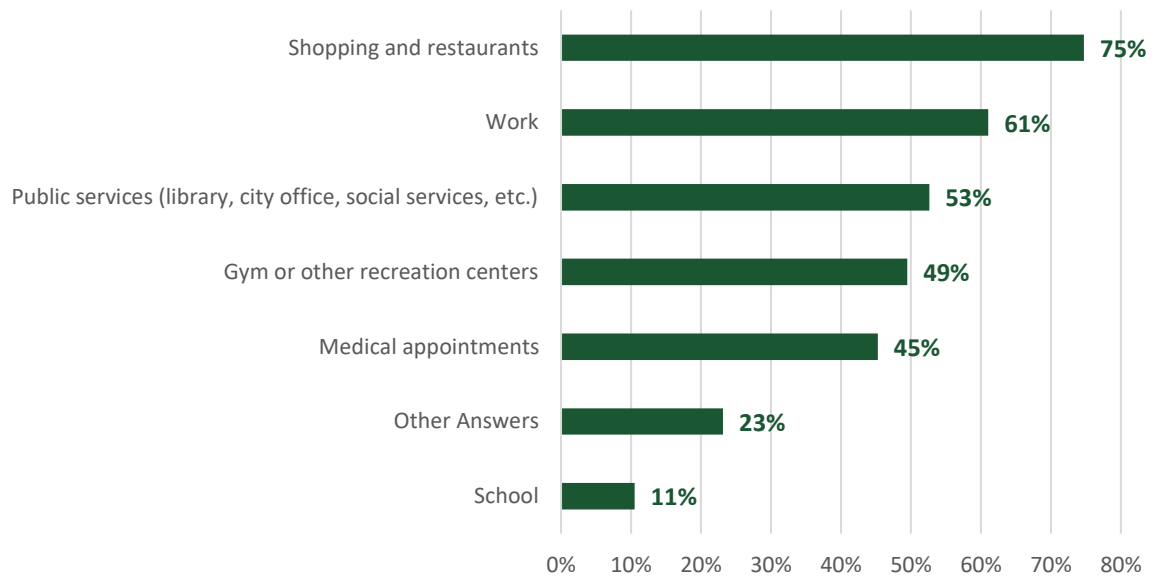
Community Input

Community input was provided through public outreach and a dedicated stakeholder working group. This stakeholder group was made up of local and regional partners, including staff from various City of Thornton departments, DRCOG, RTD, and CDOT, who met three times throughout the project and guided the process. The following are key takeaways from the community input process:

- A disproportionately high percentage of survey respondents live in north Thornton (as compared to the actual population distribution) meaning respondents from south Thornton, which has a higher percentage of transit-reliant population, may be underrepresented in the survey.

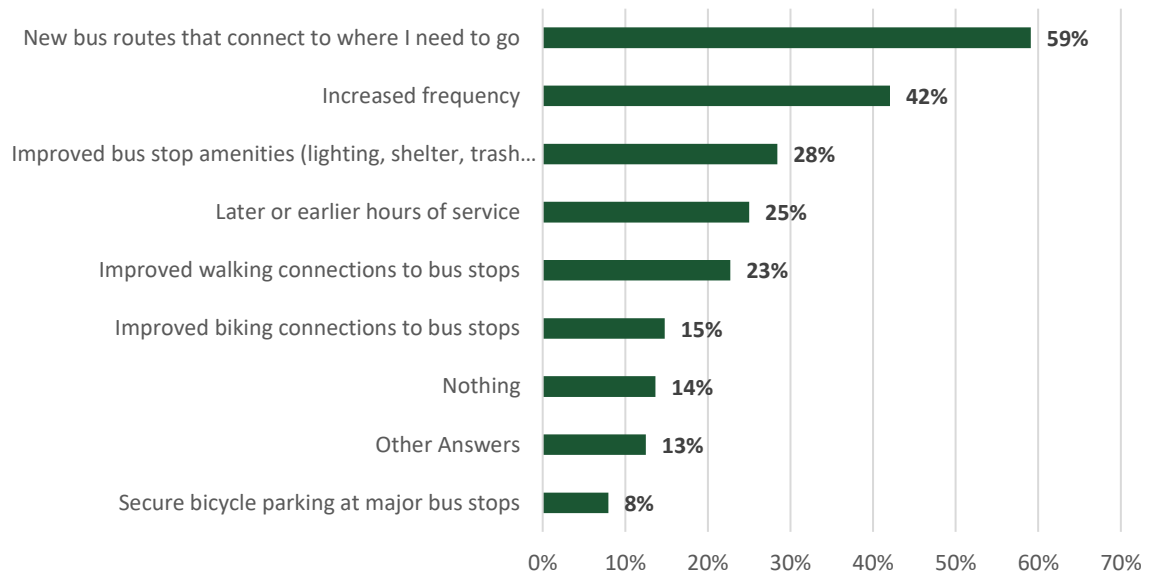
- The top desired destinations for transit include shopping and restaurants, work, and public services (**Figure 4**).

Figure 4: Desired Destinations Using Public Transit



- The top desired transit improvements include increased frequency (particularly along the N-line), earlier and later hours of service, and additional first/last mile transit service within Thornton to connect to the rail stations (**Figure 5**).

Figure 5: Desired Bus Service Improvements



- For both existing FlexRide and with any new on-demand service, residents' top priority is being able to be guaranteed a ride within 15 to 30 minutes of a request, followed by a convenient booking platform and consistent, professional drivers.
- Other characteristics that impact first/last mile connections like bicycle and pedestrian facilities are important to consider when planning new services.
- Desired destinations are dispersed throughout the community.
- The FlexRide can be challenging to use as it's not always available and difficult to make transfers.
- Traveling from one side of I-25 to the other and making most local trips in general in Thornton is very difficult due to the low frequency of existing transit service, lack of transit service in some areas, and need to transfer.

Peer Community Analysis

When looking at communities that are like Thornton, such as Lafayette, CO; Kent, WA; and Tracy, CA; local transit service is supplemental and complimentary to regional service. Further, the local services in these communities focus on ensuring access to a wide variety of areas throughout the community by providing a mix of fixed-route services and on-demand services.

Potential Transit Travel Markets

Primary transit travel markets (groups with common demographic characteristics) are important to identify to inform the service alternatives, the service plan, and associated marketing strategies. Through the transit market analysis, including analysis of demographics, existing transit service, community input, and existing travel patterns, the following potential key transit travel markets were identified.

Young Users and School Trips

Youth between the ages of 10 and 17 make up 13% of Thornton's population. These riders may not have a driver's license or access to a vehicle and may be a market for increased ridership. These young users may be more open to app-based on-demand services than other user groups. Typically, the largest demand of trips for this travel market is to get to and from school and to after school activity centers and jobs. This population group is distributed across most of Thornton.

Older Adults

People aged 65 and over make up 10% of Thornton's population. Older adults may be more interested in a new service that picks up and drops them off closer to where they need to go, and areas with missing or uncomfortable sidewalks are going to be a significant barrier to using fixed-route transit. The most desired trip types by this group are to grocery stores, medical facilities and services, and community centers (including the Active Adults Center). Through the active adults focus group, it was made clear that transit improvements are highly supported among this group. While there are several areas of Thornton with higher concentrations of older adults, these areas are distributed across the city, with a notable population in the 55+ community of Todd Creek that is far from any existing transit service.

Individuals and Families with Lower Incomes

Census data showed that people with low and moderate income are mostly in the southern portion of Thornton, but there are other areas to the north where a large portion of the population is living under the poverty line. A low cost, reliable transit service that connects low-income families and individuals with shopping options, local services, and jobs could be an important mobility option for these riders.

People with Limited Access to a Vehicle

About 3% of Thornton households do not own a vehicle, and 14% only have one vehicle. Even in households with one vehicle, there may be people who need to get around but don't have the option to drive, particularly youth and older adults, either because they cannot drive, someone else in the house is using the vehicle, or they choose not to have a vehicle. Transportation for these populations is often challenging, due to the limitations in driving a personal automobile or consistent access to a personal automobile. In some census tracts in Thornton over 5% of households do not have a vehicle, particularly in the southwest, southeast, and in the Todd Creek 55+ neighborhood. By expanding transit options and connections, a new transit service could improve mobility for those who would otherwise have a difficult time accessing the places that they need to go.

People with Limited Mobility or Mobility Assistance Devices

Given that 9% of Thornton residents households have a disability, and those community members may have mobility needs, there is an opportunity to provide a more convenient option using an on-demand solution, especially for those residents that do not meet eligibility requirements for paratransit but may not be able to easily use existing bus services.

Commuters and Service Workers

While RTD does provide some service to regional destinations, particularly to Downtown Denver and Denver International Airport, there are many service-oriented jobs within and near Thornton with varying schedules that are not well served by existing transit service. People working service jobs often do not have access to a vehicle and depend on transit or a friend or family member to get to work.

First/Last Mile Access

There are six regional transit hubs in or adjacent to Thornton that provide bus and/or rail service to destinations throughout the Denver region. While many people use these regional services (or would like to), these hubs are difficult to access without a vehicle from most of Thornton. Improving access via transit to these regional hubs was one of the most desirable transit improvements identified by the community and a potential travel market that is not well served today.

Short, Community-Based Trips

The most common trip type in Thornton are short community-based trips of two to five miles. This market is not currently well-served by RTD and there may be an opportunity for Thornton to fill this gap as the existing transit service is designed largely to serve longer regional and commuter trips. While these trips occur across the city there are particularly high concentrations in south Thornton where densities are higher and there are numerous commercial destinations (particularly around the Washington Street corridor).

Chapter 3 – Alternatives Analysis and Community Input

Five alternatives were evaluated as opportunities for transit improvements in Thornton. The alternatives included variations of new on-demand service, improvements to existing fixed-route service, and new fixed-route service. The alternatives were created based on input from the first round of community engagement and the transit market analysis. The alternatives were intended to be bookends to demonstrate the different benefits and challenges of several transit improvement options in Thornton, with the preferred alternative likely to be a subset or variation of the alternatives.

Description of Alternatives

The project team developed five potential improvements to public transit in Thornton, including two microtransit (on-demand shuttle) options and three options for improving standard bus service.

Microtransit Alternatives

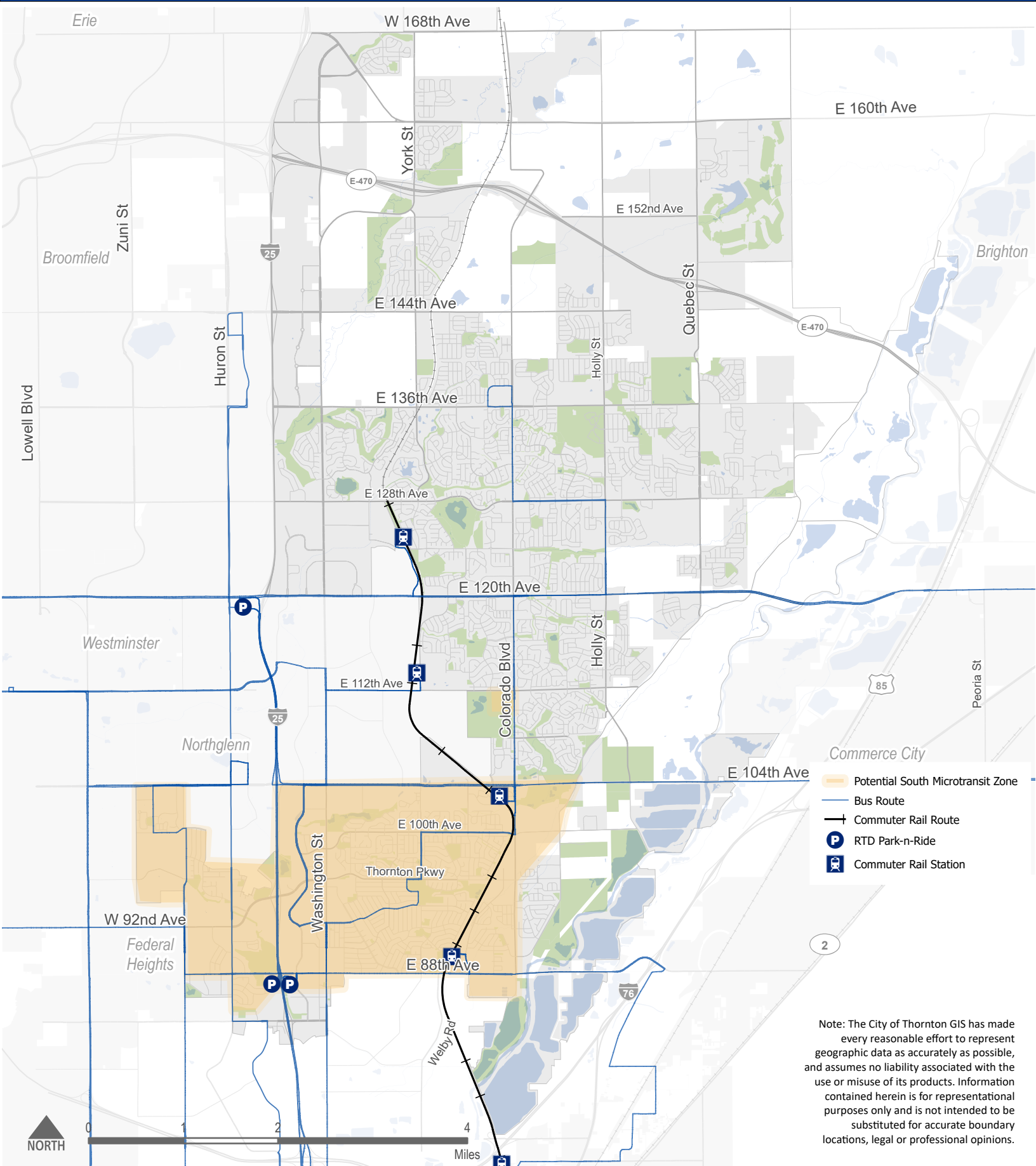
Microtransit is an on-demand transportation service where a ride can be requested from any origin to any destination within a fixed zone. Rides are requested through a smartphone app or phone call and response times are about 15 to 30 minutes after a request is made. A new microtransit service would use either SUVs, minivans, passenger vans, or minibuses (like FlexRide). With any option there will always be at least one vehicle available that is wheelchair/mobility device accessible (ADA compliant). Microtransit alternatives were assumed to be fare free and for purposes of the analysis were assumed to operate 14 hours a day, six days per week.

Alternative 1: South Microtransit Zone

Alternative 1 would provide microtransit service to the southern region of Thornton, generally between 88th Avenue and 104th Avenue, and from Zuni Street to Colorado Boulevard (**Figure 6**). The zone would also provide access to the Margaret W. Carpenter Recreation Center and Thornton Active Adult Center at 120th Avenue and Colorado Boulevard. The zone was slightly modified after community input, as described later in this chapter.

Alternative 1: South Microtransit Zone

Figure 6

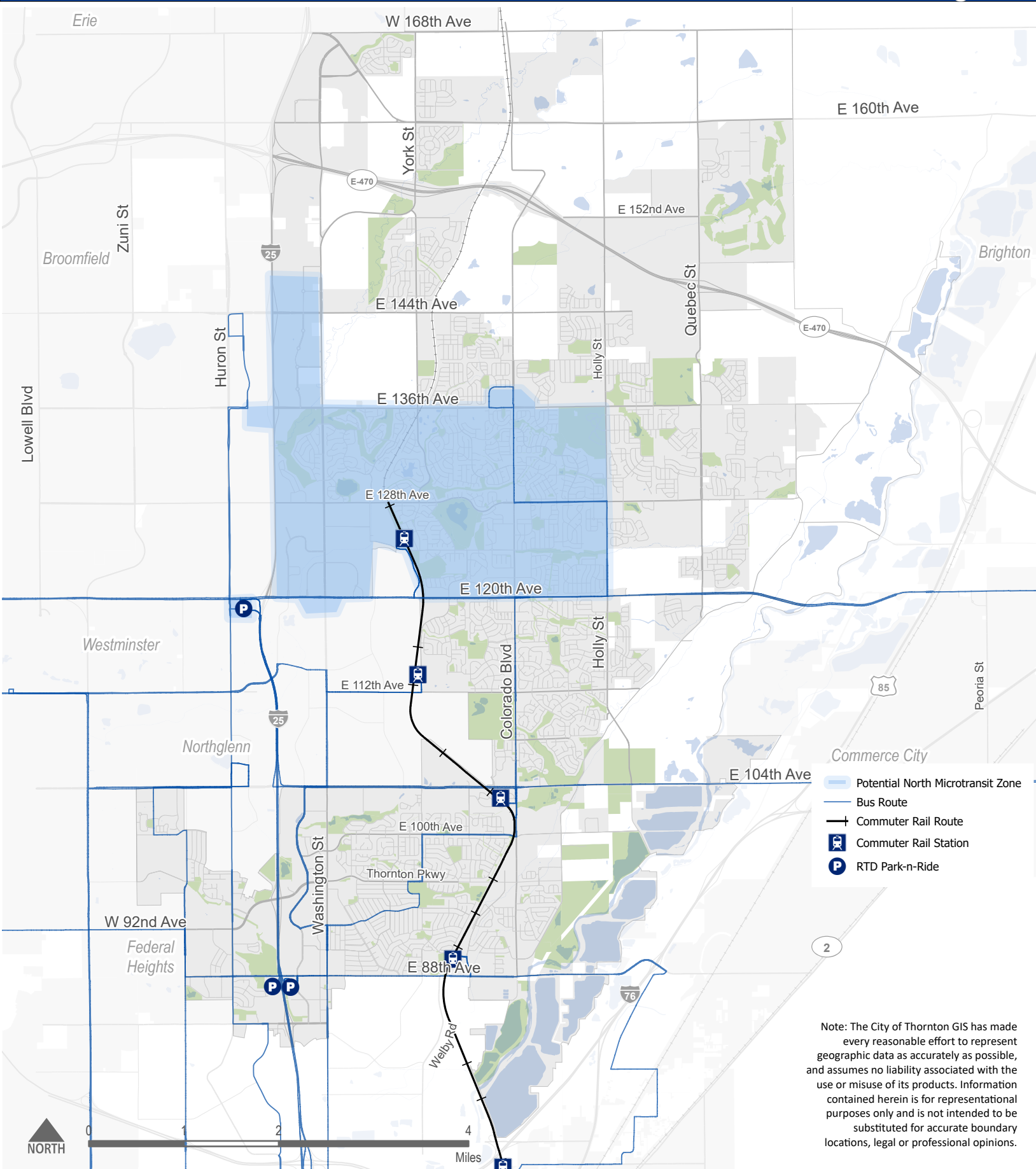


Alternative 2: North Microtransit Zone

Alternative 2 would provide microtransit service to the northern region of Thornton, generally between 120th Avenue and 136th Avenue, and from I-25 to Holly Street (**Figure 7**). The zone would also provide access to the Denver Premium Outlets and the Wagon Road Park-n-Ride in Westminster. The zone was slightly modified after community input, as described later in this chapter.

Alternative 2: North Microtransit Zone

Figure 7



Fixed-Route Buses

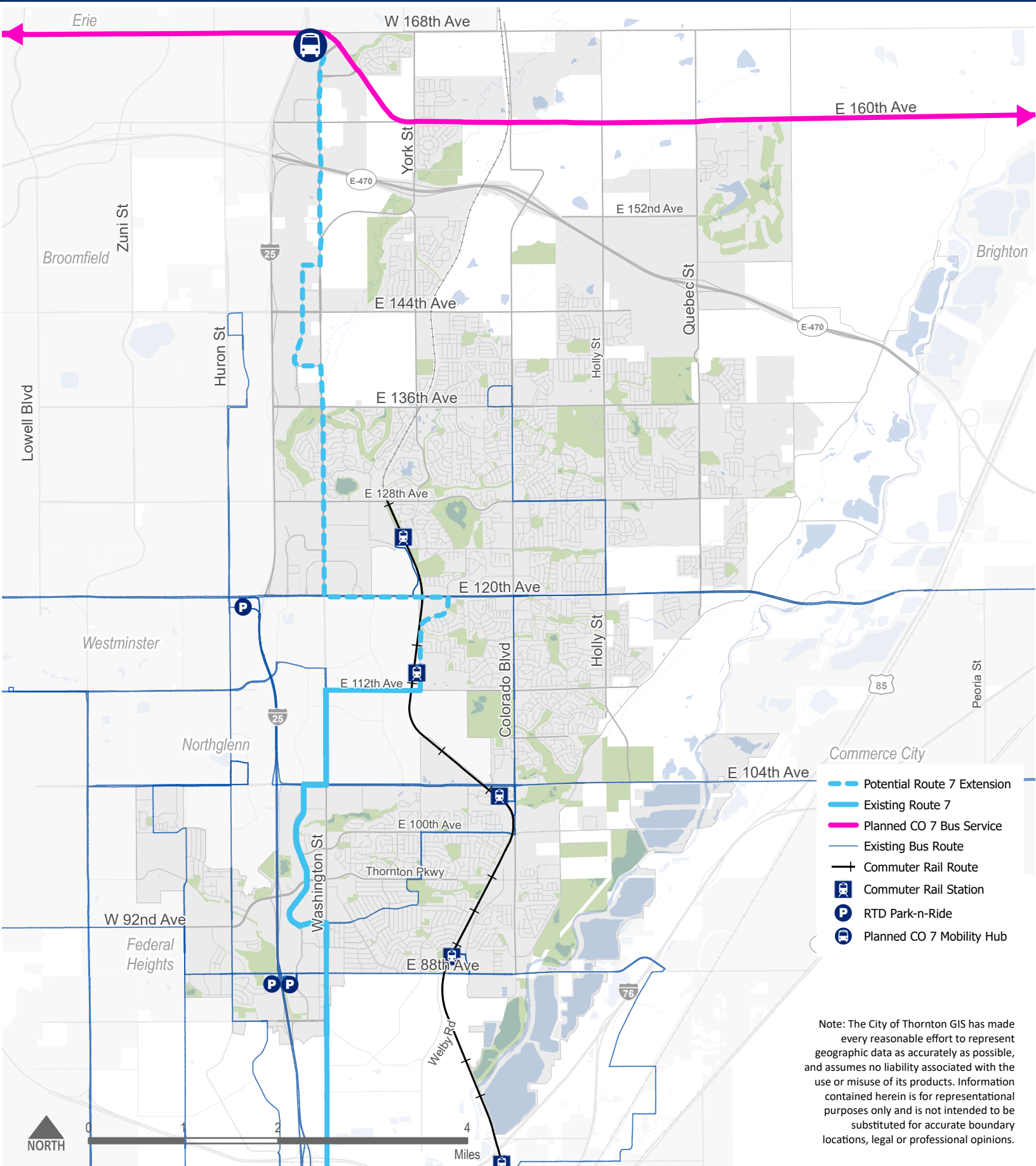
Eleven traditional bus routes (known as “fixed-route” buses) operated by RTD currently serve Thornton in some capacity. These are bus routes that run between set stops on set schedules. Based on input from the first round of community engagement, extending the existing Route 7 (Alternative 3), increasing frequency of existing routes on 120th Avenue (Alternative 4), and increasing frequency on the existing Route 93L (Alternative 5) were identified as opportunities for potential service improvements. Any changes to RTD routes will require interagency coordination between the City of Thornton, RTD, and neighboring communities. The evaluation conducted for this study only analyzed the impacts of these improvements within Thornton. Additional recommendations to fixed-route service were made after community input, as described in Chapter 4.

Alternative 3: Extend Route 7

Alternative 3 would extend the existing Route 7 from its current terminus at the Northglenn – 112th Station to the Larkridge Shopping Center near I-25 and CO 7 where it would connect with the planned bus route along CO 7 and future Bustang stop on I-25 (**Figure 8**). The current route provides service between the 38th & Blake Rail Station in Denver and the Northglenn & 112th Rail Station at 30-minute frequencies throughout the day. The extension would also operate at 30-minute frequencies.

Alternative 3: Extend Route 7

Figure 8

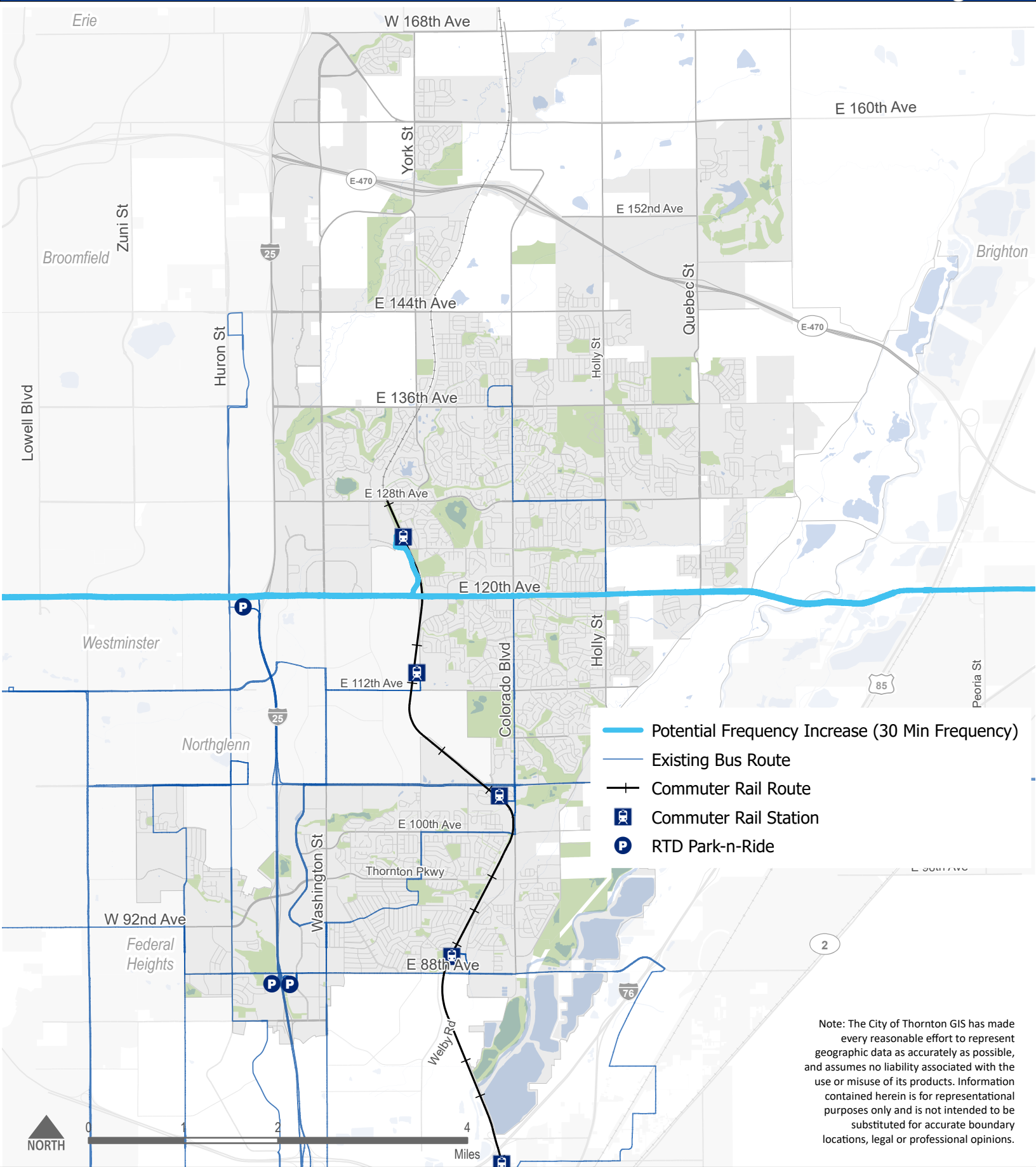


Alternative 4: Increase Frequency on 120th Avenue

Alternative 4 would increase bus frequency (how often the bus comes) on 120th Avenue within Thornton (**Figure 9**) from 60-minutes to 30-minutes throughout the day. Currently, 120th Avenue is served by the Route 120E between the US 36 & Broomfield Station in Broomfield and the Eastlake & 124th Station, and the Route 120L between the Eastlake & 124th Station and the US 85 & Bridge St Park-n-Ride in Brighton. Both routes currently travel at 60-minute frequencies.

Alternative 4: Increase Frequency on 120th Avenue

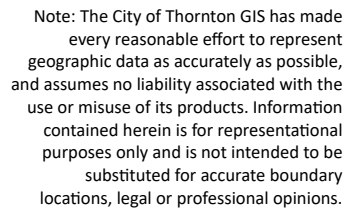
Figure 9



Alternative 5: Increase Frequency on Route 93L

Alternative 5 would increase the frequency of the existing Route 93L (**Figure 10**) from 60-minutes to 30-minutes throughout the day. The 93L currently provides service between the Thornton Park-n-Ride (near 88th Avenue and I-25) and 138th & Cherrywood Park Road at 60-minute frequencies throughout the day.

Figure 10



Evaluation Criteria

Each alternative was evaluated based on a set of criteria that was informed by the first round of public engagement, such as how each alternative serves different demographic groups and destinations across Thornton. Each evaluation criteria are displayed in **Table 1**, along with what was measured, and the methodology used to measure each evaluation criteria. For microtransit alternatives, the analysis was performed for the area of the proposed zone. For fixed-route alternatives, the analysis was performed for the area within a quarter mile of the proposed route alignment.

Table 1: Evaluation Criteria

Evaluation Criteria	Metric	Methodology	Data Source(s)
<i>Ridership Potential</i>	Average Weekday Riders	Estimates of transit ridership at full build-out of each alternative based on peer communities, population and employment forecasts, and research.	Denver Area On-Demand Services, DRCOG Small-Area Forecasts, Transit Cooperative Research Program (TCRP)
<i>Cost</i>	Annual Operating Cost	Estimates of annual operating cost at full build-out of each alternative based on peer communities and RTD cost per revenue estimates	Denver Area On-Demand Services, RTD
<i>Ease of Implementation</i>	Qualitative Ability to Implement	Qualitative assessment of logistical needs for implementing each alternative, including need for vehicles, bus stops, drivers, coordination with partner agencies, etc.	Peer Communities
<i>Equity Index</i>	Number of Census Tracts with High and Medium Equity Scores Served	Using DRCOG's equity index tool, classified Thornton's census tracts by natural breaks of the final equity index score. Alternatives that serve census tracts classified in the top two classes (more likely to be historically disadvantaged) were counted.	DRCOG Equity Index
<i>Connect to Active Transportation Network</i>	Number of Trailheads Served	Using Thornton's trails and trailheads data, calculated number of trailheads served by alternatives.	City of Thornton
<i>Connection to Future Transit Lines</i>	Connection to Future CO 7 BRT	Assessed if the alternative provided access to the future CO 7 Bus Rapid Transit line.	N/A

Area Not Served by Existing 30-Minute Transit Frequencies	Percent of Area Not Currently Served by 30-Minute Transit Frequencies or Better	For microtransit, calculated the percentage of the proposed microtransit zone area that is farther than a quarter mile from an existing bus route that operates at 30-minute frequency or better and farther than a half mile from a transit hub (park-n-ride). For fixed-route alternatives, the same calculation was performed for the area within a quarter mile of the proposed route.	RTD
Area Not Served by Existing Transit	Percent of Area Not Currently Served by FlexRide or 60-Minute Transit Frequencies	For microtransit alternatives, calculated the portion of the proposed zone area not currently within one of the following: a quarter mile of an existing fixed route bus, a half mile from a transit hub, or within an existing FlexRide zone. For fixed-route alternatives, the same calculation was completed for the area within a quarter mile buffer around the proposed route.	RTD
Travel Markets Served			
Schools	Number of Middle/High Schools Served	Number of Thornton middle and high schools directly served by alternatives.	City of Thornton
Student Trips	Number of Middle/High School Students Served	Number of students attending Thornton middle and high schools directly served by alternatives.	City of Thornton
Older Adults (Quantitative)	Percent of Thornton's Older Adults Served	Percent of older adults directly served by alternatives compared to the total of older adults in Thornton.	U.S Census
Older Adults (Qualitative)	Ease of Access for Older Adults	Qualitative Assessment of average distance a user would need to walk to access on-demand service vs. fixed-route transit service.	N/A
Low-Income Families (Quantitative)	Percent of Thornton's Low-Moderate Income Population Served	Number of low-income families directly served by alternatives compared to the total number of low-income families in Thornton.	U.S Census

<i>Low-Income Families (Qualitative)</i>	Ease of Access (likely fare) for Low-Moderate Income Population	Qualitative Assessment of fare required for on-demand vs. fixed-route transit options.	N/A
<i>People with Limited Access to Vehicles</i>	Percent of Thornton's Households with One or Fewer Vehicles Served	Number of households with limited access to vehicles directly served by alternatives compared to the total number of households with limited access to vehicles in Thornton.	U.S Census
<i>People with Disabilities</i>	Percent of Thornton's Disability Population Served	Number of individuals with disabilities directly served by alternatives compared to the number of individuals with disabilities in Thornton.	CDPHE
<i>Access to Service Jobs</i>	Percent of Thornton's High and Medium Employment Concentrations Served	Total area of high and medium employment concentrations as designated by DRCOG directly served by alternatives compared to the total area of high and medium employment concentrations in Thornton.	DRCOG Employment Concentrations
<i>First/Final Mile Access</i>	Number of Regional Transit Hubs Served	Count of regional transit hubs (rail stations or park-and-ride stops) directly served by alternatives.	N/A
<i>Short Community-Based Trips</i>	Number of Key Destinations Served	Number of key destinations within Thornton (including schools, medical centers and hospitals, grocery stores, community and recreation centers, libraries, social services, and other desired destinations from public input) directly served by alternatives.	City of Thornton, First Round of Community Input

Alternatives Analysis Findings

The alternatives were scored relative to each other on a qualitative scale of high-medium-low for each evaluation criteria based on the resulting metrics. Both the quantitative and qualitative results are displayed in **Figure 11**.

Figure 11: Alternatives Analysis Results

		Legend:	Higher Feasibility	Medium Feasibility	Lower Feasibility		
Evaluation Criteria	Metric	South Thornton Microtransit Zone	North Thornton Microtransit Zone	Extend Route 7	Increase 120th Frequency	Increase 93L Frequency	
Ridership Potential	Average Weekday Riders	200-300	125-225	300-425	125-200	125-175	
Cost	Annual Operating Cost	\$975k-\$1.2M	\$800k-\$1M	\$2M-\$3.3M	\$675K-\$1.1M	\$1.2M-\$1.9M	
Ease of Implementation	Qualitative Ability to Implement	High	High	Low	Medium	Medium	
Equity Index	Number of Census Tracts with High and Medium Equity Scores Served	8	2	1	1	3	
Connect to Active Transportation Network	Number of Trailheads Served	3	1	0	0	1	
Connection to Future Transit Lines	Connection to Future CO-7 BRT	No	No	Yes	No	No	
Area Not Served by Existing 30-Minute Transit Frequencies	Percent of Area Not Currently Served by 30-Minute Transit Frequencies or Better	47%	91%	95%	83%	76%	
Area Not Served by Existing Transit	Percent of Area Not Currently Served by Flex Ride or 60-Minute Transit Frequencies	2%	12%	20%	0%	0%	
Travel Markets Served							
Schools	Number of Middle/High Schools Served	12	8	4	0	5	
Student Trips	Number of Middle/High School Students Served	7,390	6,555	1,589	0	4,891	
Older Adults (Quantitative)	Percent of Thornton's Older Adults Served	33%	29%	9%	11%	23%	
Older Adults (Qualitative)	Ease of Access for Older Adults	+	+	-	-	-	
Low-Income Families (Quantitative)	Percent of Thornton's Low-Moderate Income Population Served	54%	17%	7%	11%	24%	
Low-Income Families (Qualitative)	Ease of Access (likely fare) for Low-Moderate Income Population	+	+	-	-	-	
People with Limited Access to Vehicles	Percent of Thornton's Households with One or Fewer Vehicles Served	55%	19%	8%	12%	23%	
People with Disabilities	Percent of Thornton's Disability Population Served	43%	21%	9%	12%	24%	
Access to Service Jobs	Percent of Thornton's High and Medium Employment Concentrations Served	42%	34%	21%	12%	24%	
First/Final Mile Access	Number of Regional Transit Hubs Served	3	2	1	2	1	
Short Community-Based Trips	Number of Key Destinations Served	76	33	17	12	39	

Key findings of the alternatives analysis are summarized below by alternative:

- **Alternative 1: South Microtransit Zone.** This alternative had more “high” scores across the different evaluation criteria than any of the other alternatives. Specifically, this alternative scored the best for serving the travel markets identified in the travel market analysis. It also scores well in cost and ease of implementation. It was middle-of-the road in terms of ridership potential as compared to the other alternatives. This alternative does not score as well as the others in serving areas that are not currently being served by transit, as the south microtransit zone would overlap with the areas in Thornton with some of the best existing transit services. Overall Alternative 1 scored the best among the criteria evaluated, but it would also be in an area with the most existing transit coverage in Thornton.
- **Alternative 2: North Microtransit Zone.** Alternative 2 had the second highest number of high and medium scores among the alternatives. Alternative 2 scores relatively high among travel markets served, but not as high as Alternative 1. In particular, this zone does not serve as many schools, low-income families, people with limited access to vehicles, or people with a disability as Alternative 1 does. Similar to Alternative 1, Alternative 2 scores high in terms of minimizing cost and ease of implementation, but ridership is not expected to be as high as Alternative 1. Alternative 2 also scored the highest among all alternatives in serving areas that are currently underserved/unserved by transit, as this zone is in an area of Thornton that has minimal existing transit options today.
- **Alternative 3: Extend Route 7.** This alternative performed the lowest among all alternatives in terms of travel markets served. However, Alternative 3 has the highest ridership potential among all of the alternatives, scored the best at connecting to future transit lines and serving areas that are currently underserved by transit. This alternative may also be the most challenging to implement due to both the need to coordinate with RTD (similar to the other fixed-route alternatives) and the additional need to construct bus stops and access to the bus stops along the route.
- **Alternative 4: Increase Frequency on 120th Avenue.** Compared to all the other alternatives, this alternative scored the lowest when comparing all evaluation criteria. It should be reiterated that scoring lower than the other alternatives does not mean that this alternative does not accomplish the desired goals of new transit services in Thornton. Rather, it means that other alternatives might be better suited to serve transportation needs. The area in which Alternative 4 scores highest is in minimizing cost. Ease of implementation, its ability to serve areas that are currently underserved by transit, and providing first/final mile access were all medium scores, while the alternative scored lower in all other metrics as compared to the others.
- **Alternative 5: Increase Frequency on Route 93L.** This alternative scores in the middle compared to the other alternatives. Alternative 5 serves the identified travel markets better than the other two fixed-route alternatives, but not as well as the microtransit alternatives. Cost is in the middle compared to the other alternatives and ridership potential is on the low end compared to other alternatives. Because of the travel markets served this alternative scored better on the equity index than compared to Alternatives 2, 3, and 4.

Community Input on Alternatives

Through a virtual open house and an online survey, all five alternatives and their scoring from the alternatives analysis were presented to the public. In both the open house and the online survey, it was made clear that the alternative improvements shown were still in draft phase and intended to represent bookends for purposes of comparison analysis. The public was made aware that final recommendations may be a subset, combination, or variation of one or all the five improvements and will be refined based on community feedback and further analysis.

Participants of these community engagement efforts were asked to provide input on the evaluation criteria used in the alternatives analysis, preference of alternatives, and preferred service characteristics (days of the week and times of day). Between the virtual open house and the online survey, the project received input from 57 people. For the online survey, the largest portion of respondents (31%) indicated they live in Ward 2, which covers the southeast portion of the City (**Figure 12**). A map of the ward geographies at the moment of this survey is provided in **Figure 13**. There was also a significant portion of respondents who do not live within the city boundaries of Thornton, and the survey received the least number of responses from Ward 1. These are important to note when understanding how respondents' residences impact their choices to answers throughout the survey.

Figure 12: Which City of Thornton Ward do you live in?

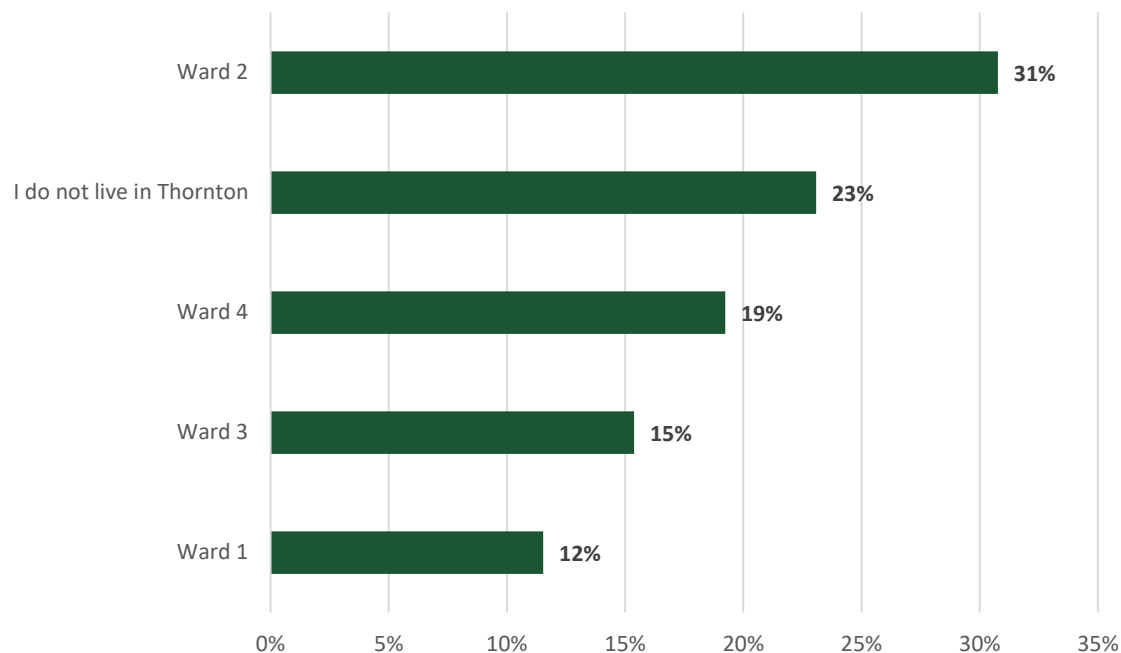
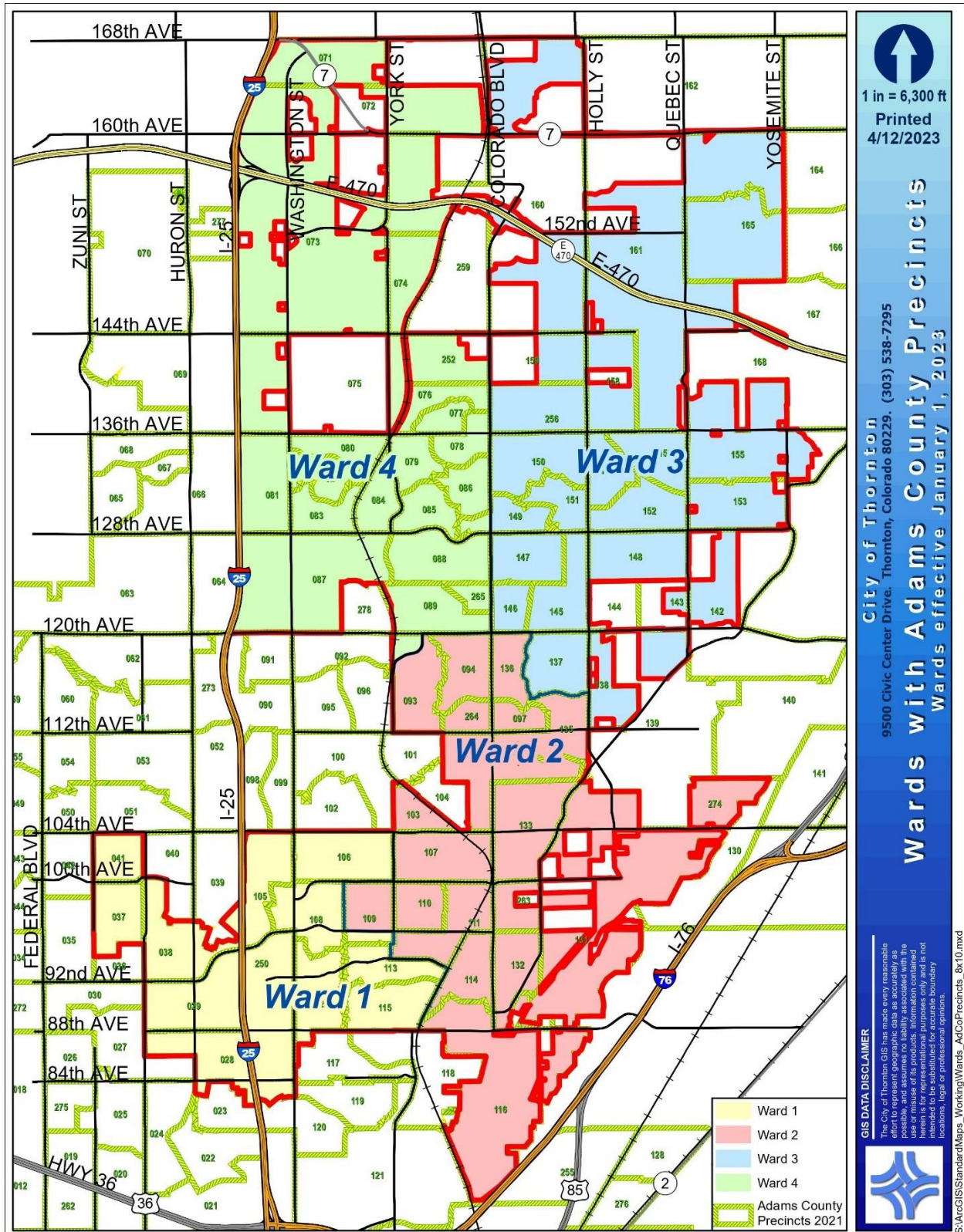


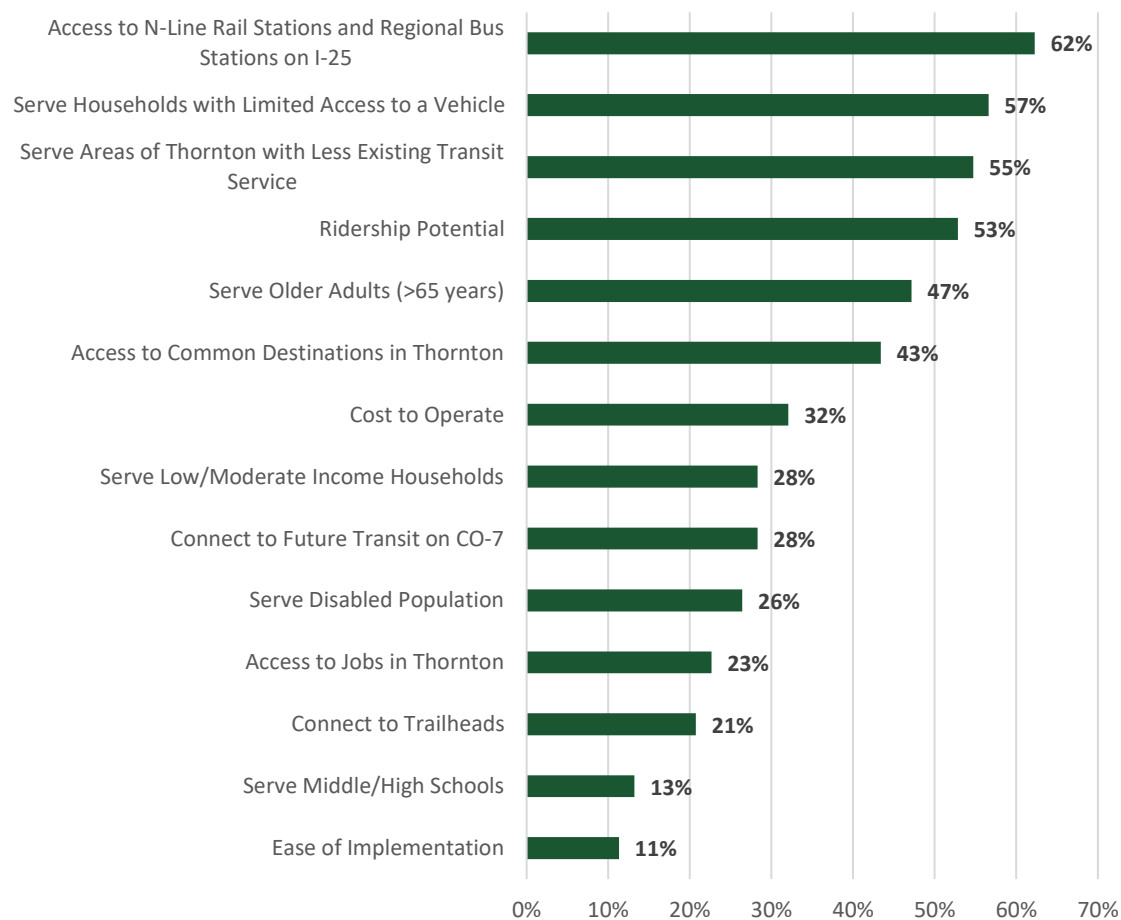
Figure 13: City of Thornton Ward Map, January 2023



Alternatives Survey Results

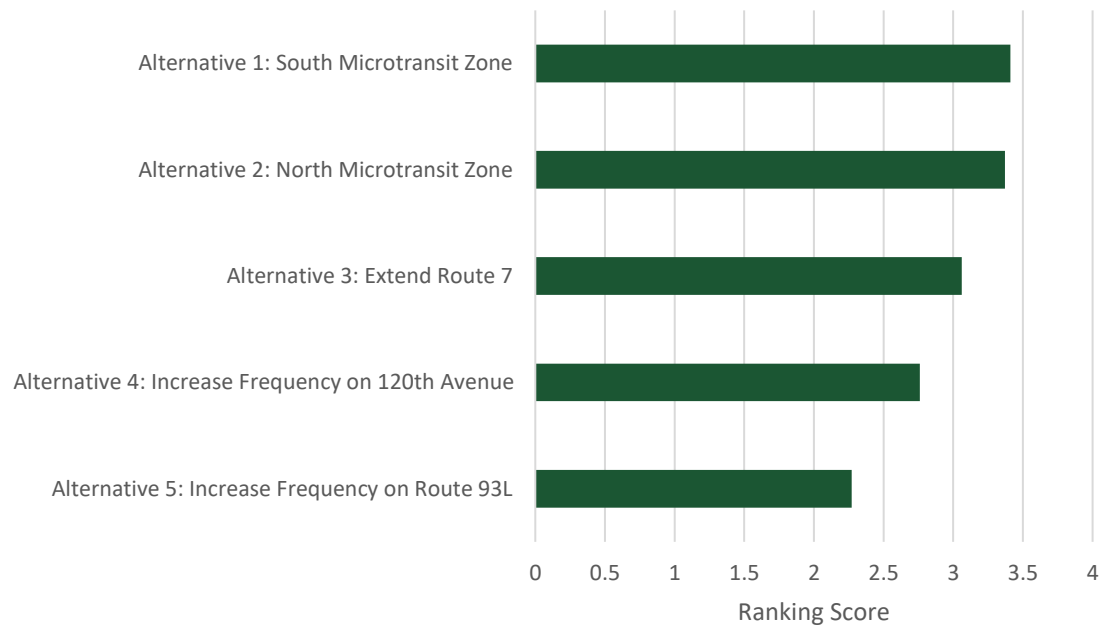
The community was asked to pick the five most important evaluation criteria when it comes to evaluating each alternative. **Figure 14** displays which criteria were the most important to survey respondents. The top factors were access to N-Line rail stations and regional bus stations, serving households with limited access to a vehicle, serving areas of Thornton with less existing transit service, ridership potential, serving older adults, and access to common destinations in Thornton.

Figure 14: Of the Evaluation Criteria used to compare the improvement alternatives, please indicate the five most important to you.



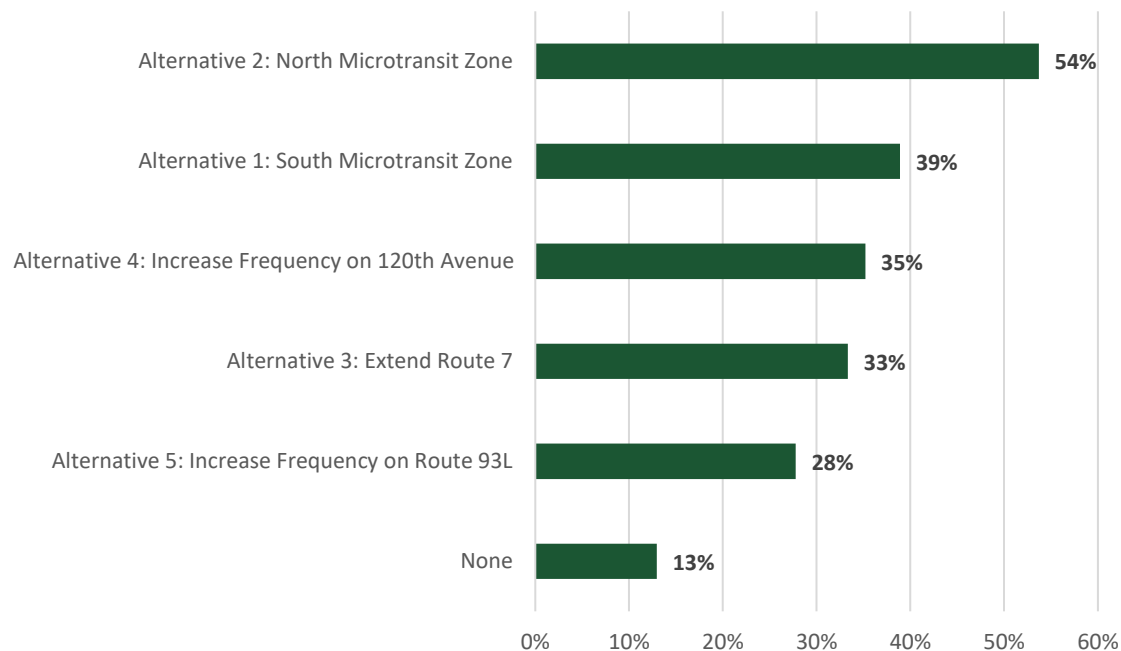
Survey respondents were asked to provide input on the draft alternatives in two ways. The first way was by ranking the alternatives from most preferred to least preferred. For this question the two microtransit zones were ranked highest, followed by Alternative 3 - to extend Route 7 (**Figure 15**).

Figure 15: Based on the comparison between all five alternatives for improving public transit in Thornton, please rank the alternatives from most preferred to least preferred.



The second way in which respondents were asked to provide input on the draft alternatives was by selecting which alternative(s) they would use. **Figure 16** displays that the North Microtransit Zone would be used most, followed by the South Microtransit Zone. It is notable that although the survey respondents ranked the microtransit zones similarly, there is a larger portion of people who said they would use the North one. Further, although the Route 7 extension alternative ranked third, the public input shows that people would more likely use the increased frequency on 120th Avenue. It is important to consider that there were more Ward 2 and Ward 4 residents who responded to the survey than Ward 1 or 3 residents, which corresponds to the transit alternatives that rose to the top by likelihood to use.

Figure 16: If all of these alternatives were implemented, which would you use? (select all that apply)



Input on Service Characteristics

The online survey also asked respondents to rank the days of the week and times of day that they would most likely use transit services in Thornton. **Figure 17** displays the preference of days, with weekdays (Monday through Friday) ranking at the top, followed by Saturday and then Sunday.

Figure 17: Please rank the days of the week you would likely use transit service in Thornton from most likely to least likely. Do not select days you would not use the service.

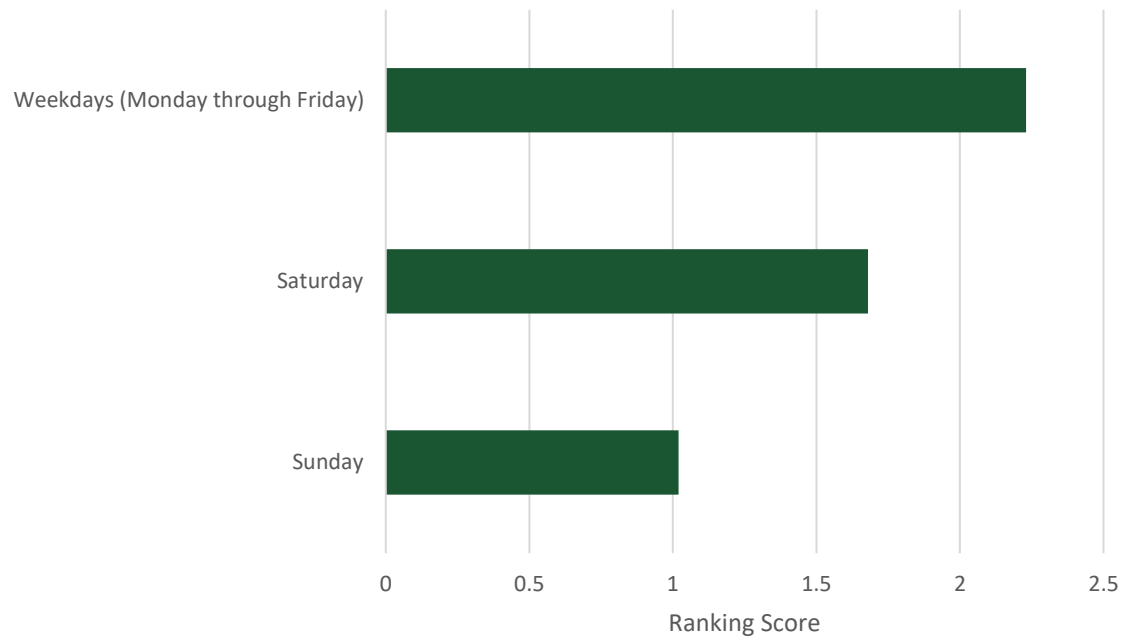
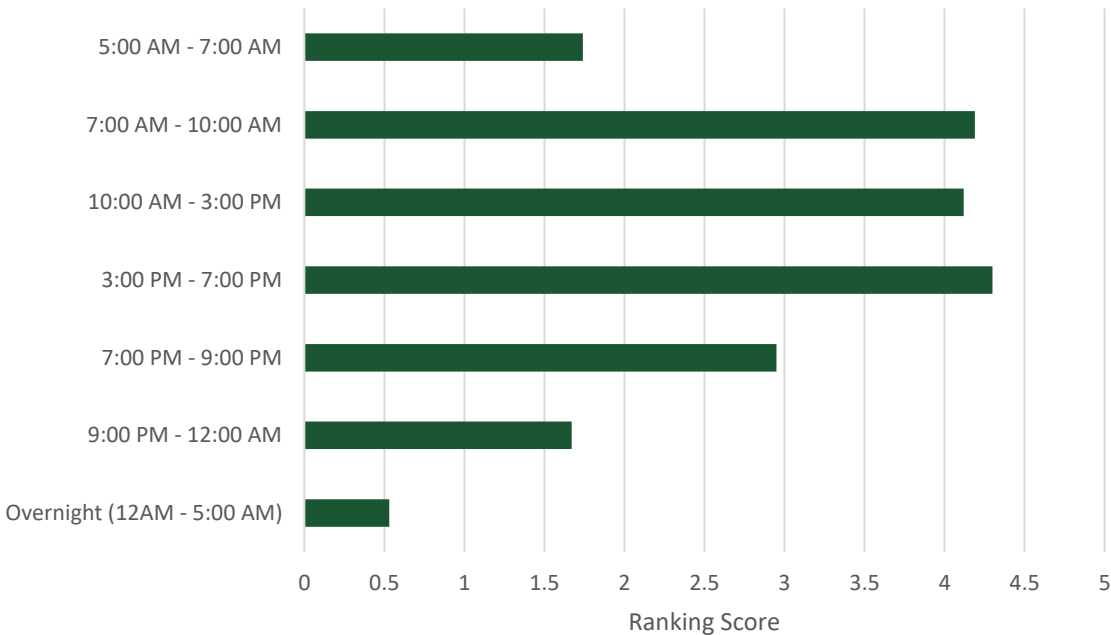


Figure 18 displays the preference for times of the day, with the top desired times of day being 7:00 AM to 7:00 PM. There is also a larger preference for service going toward 9:00 PM than service going earlier from 5:00 AM.

Figure 18: Please rank the times of the day you would likely use transit service in Thornton from most likely to least likely. Do not select times of day you would not use the service.



Other Comments

During the open house and through the survey, the public had opportunities to provide open-ended responses related to changes to the presented alternatives, additional improvements to public transit, and other comments. In general, the open-ended responses were more focused on similar themes seen in the first phase of public outreach, where the public expressed a desire for increased frequency of existing transit services and easier connections to regional transit at the N-Line stations and the regional bus stations. The comments directly related to the presented alternatives expressed a desire to connect to nearby areas outside of the Thornton city boundary, and a desire for the microtransit zones to overlap more to provide north-south connections throughout the city. There were also numerous comments about improvements to the existing RTD FlexRide service and improvements to the RTD website.

Selection of a Preferred Alternative

Based on the evaluation criteria, input from the public, and guidance from the project's stakeholder group, the project team determined that implementation of all alternatives over time would advance the city toward its transit mobility goals. Based on feedback from the public and stakeholders some modifications were made to the microtransit zone boundaries to cover more area. Community and stakeholder input along with anticipated performance metrics also informed a phasing plan to prioritize implementation of certain improvements first. Several additional future transit projects emerged from the evaluation process that were also included as medium and long-term improvements in the plan. The preferred alternative and phasing of each action is described in Chapter 4.

Chapter 4 – Preferred Alternative and Implementation Phases

This chapter describes the preferred alternative and provides guidance on how to phase the transit improvements over a ten-year period between 2025 and 2034. The operating plan is split into three implementation phases:

1. Short-term: 2025 to 2027
2. Mid-term: 2028 to 2031, and
3. Long-term: 2032 to 2034.

Note: All cost estimates are in 2023 dollars and will need to be adjusted for inflation according to year they are implemented. Additionally, the proposed responsible party was identified for each improvement in **Table 2**, **Table 3**, and **Table 4**. The responsible party includes City of Thornton, RTD, or RTD and City of Thornton and potentially other jurisdictions. For improvements where City of Thornton is listed, Thornton will need to initiate this improvement, but funding could come from multiple sources, including both internal and external. For improvements where only RTD is identified as the responsible party, RTD has expressed their intent to make that improvement. For improvements to the RTD fixed-route network where both City of Thornton and RTD are listed, it is assumed that either RTD will need to make this improvement or Thornton (and potentially other jurisdictions) will need to “buy up” service from RTD. However, it should be noted that RTD is not currently allowing buy-ups largely because of the driver shortage, but RTD has indicated a desire to allow buy-ups again in the future. More is described on this risk at the end of Chapter 6 – Implementation Plan.

Short-Term Implementation (2025-2027)

The short-term transit improvements are displayed in **Table 2**, along with service characteristics, cost estimates, and implementation timeline. In the first three years the city will focus on implementing the two microtransit zones and extending the Route 7 north to Larkridge in two phases. *Cost estimates are in 2023 dollars and will need to be adjusted for inflation.

Figure 19 illustrates these short-term improvements in a map. Descriptions of each transit improvement are also provided below.

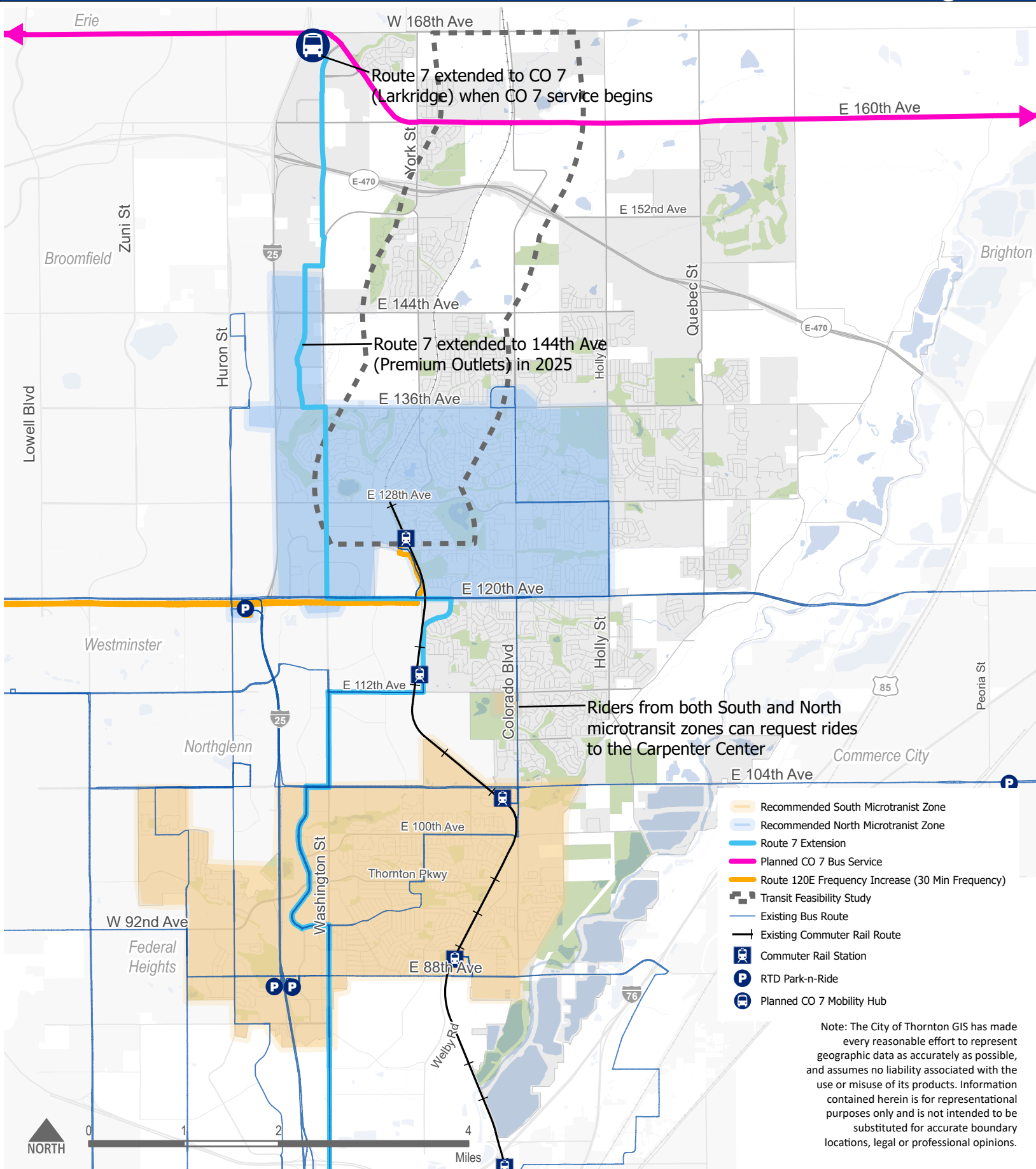
Table 2: Short-Term Implementation Details

Transit Improvement	General Extent Description	Service Hours	Response Time or Frequency	Estimated Annual Operating Cost*	Implementation Year	Responsible Party
South Microtransit Zone	Between southern city limits and 104 th Ave, and from Zuni St to Riverdale Rd. Rides can also be requested to/from the Carpenter/Active Adult Center.	Monday – Saturday 7:00 AM to 9:00 PM	30 minutes	\$1M - \$1.5M	2025	City of Thornton
Route 7 Extension (Northglenn/112th to 144th Avenue)	RTD SOP indicates an extension to 144 th Avenue (Premium Outlets).	Daily 5:00 AM to 12:00 AM	60 minutes	\$600K - \$1.2M	2025	RTD
Route 7 Extension to CO 7 (144th Ave to CO 7)	Extension to the future CO 7 mobility hub (Larkridge Shopping Center).	Daily 5:00 AM to 12:00 AM	60 minutes	\$350K - \$450K	When CO 7 Bus Service Begins (2025/2026)	City of Thornton and RTD
North Microtransit Zone	Between 120 th Ave and 136 th Ave, and from I-25 to Holly St. Rides can also be requested to/from the Carpenter/Active Adult Center and the Wagon Rd Park-n-Ride.	Monday – Saturday 7:00 AM to 9:00 PM	30 minutes	\$800K - \$1.2M	2026-2027	City of Thornton
Transit Feasibility Study for Interim Connections to CO 7	Study for bus service and supporting infrastructure to connect Eastlake & 124 th Station to CO 7 through planned station areas.	TBD	TBD	\$200K - \$300K	2026-2027	City of Thornton
Route 120E Frequency Increase	Routing stays the same as existing between US 36 & Broomfield Station and Eastlake & 124 th Station.	Daily 6:00 AM to 11:30 PM	30 minutes	\$300K - \$500K	2026-2027	RTD

*Cost estimates are in 2023 dollars and will need to be adjusted for inflation.

Short-Term Implementation (2025-2027)

Figure 19



South Microtransit Zone

The area of the south microtransit zone should generally extend from the southern city limits to 104th Avenue and from Zuni Street to Riverdale Road and include a connection point to/from the Carpenter Recreation Center and Thornton Active Adult Center. Riders may request rides from any origin to any destination within the zone boundary. In addition, riders may request rides from the south zone to and from the Carpenter Recreation Center and Thornton Active Adult Center. This zone boundary will allow transfers at three regional transit hubs to the N-line and regional service along I-25: Thornton Crossroads & 104th, Original Thornton & 88th, and Thornton Park-n-Ride. The annual operating cost estimate of \$1M to \$1.5M assumes 14 hours of service six days per week, three vehicles operating throughout the day, and any necessary start-up, administrative, and marketing costs. The alternatives analysis public survey results indicate the highest demand for the service to be between 7:00 AM and 9:00 PM. As will be described in the implementation plan in Chapter 6, the City of Thornton should work with the selected microtransit operator to refine the service area, service days and hours, and required vehicles to best support the community needs over time.

Route 7 Extension to 144th Avenue

RTD's Strategic Operating Plan (SOP) indicates that Route 7 (which currently terminates at the Northglenn & 112th Station) will be extended to the Premium Outlets at 144th Avenue by 2028. The alignment of the route may change over time to best accommodate the travel demand, but the SOP would have every other trip travel to the Premium Outlets, meaning that there would be 30-minute frequency to the Northglenn & 112th Station, and 60-minute frequency between the current terminus and the Premium Outlets. It is recommended that this be completed in 2025 since the demand for this extension already exists. Due to RTD planning to implement this extension, the assumption is that the City of Thornton would not need to fund it. To still understand the rough magnitude of cost, the project team estimates that this route extension with 60-minute frequencies would cost an additional \$600K to \$1.2M to the existing annual operating cost. This cost assumes a standard operating rate provided by RTD, with proportional route distance added.

Route 7 Extension to CO 7

Between the anticipated commercial and mixed-use development north of 144th Avenue, the mobility hub to be constructed at I-25 and CO 7, and new transit service to run between Brighton and Boulder on CO 7, it is recommended to extend Route 7 to this mobility hub along a Grant Street/Washington Street alignment. It is currently uncertain who would fund this extension. It may be RTD, the city, or a combination. The annual operating cost estimate of this extension from 144th Avenue to CO 7 is \$350K - \$450K at 60-minute frequencies. The cost assumes a standard RTD operating rate proportionally applied to route distance.

North Microtransit Zone

The general area of the north microtransit zone is recommended to initially extend from 120th Avenue to 136th Avenue, and from I-25 to Holly Street. The zone also extends to 148th Avenue between I-25 and

Washington Street. Riders may request rides from any origin to any destination within the zone boundary. In addition, riders may request rides from the north zone to and from the Carpenter Recreation/Active Adult Center and/or the Wagon Road Park-and-Ride. The annual operating cost estimate of \$800K to \$1.2M assumes 14 hours of service six days per week and three full-time vehicles and one part-time vehicle (three vehicles during peak hours). This cost estimate also includes Like the south microtransit zone, the City of Thornton should work with the selected microtransit operator to modify the service area, service days and hours, and required vehicles to best support the community needs over time.

Transit Feasibility Study for Interim Connections to CO 7

According to the RTD FasTracks program, the N-Line (which currently has a temporary end of line station at the Eastlake & 124th Station) is to be completed to CO 7 with stops at York & 144th and CO 7. As of 2023, funding the completion to CO 7 is not available, and RTD states the completion of the final 5.5 miles will be complete when funds become available, which may not happen for another 20 or 30 years – or more. As this area of Thornton is expected to grow significantly in the next decade, the City of Thornton should study the feasibility of providing an interim bus service between the Eastlake & 124th Station and CO 7, including to the planned N-line station that would be at 144th Avenue. This study should consider the transit service type (fixed-route, deviated, vehicle type, etc.), the alignment, stations, land acquisition, ridership demand, and implementation timing given development and other bus connections along CO 7; the initial CO 7 service plan includes stations in Thornton at the CO 7/I-25 Mobility Hub, Holly Street, and Quebec Street. Furthermore, the study should consider locations for the future N-Line station areas and other infrastructure needed to support both the interim service and the N-Line extension (such as park-n-rides and bicycle/pedestrian connections).

Route 120E Frequency Increase

To increase frequency of service on 120th Avenue within Thornton, modifications to frequency will need to occur to both the Route 120E and Route 120L. Route 120E, which runs between the US 36 & Broomfield Station and the Eastlake & 124th Station, currently operates at 60-minute frequencies east of Wagon Road Park-n-Ride. RTD has indicated they are likely to increase frequencies of the Route 120E to operate at 30-minute frequencies during the peak periods at some point in the next year or two. The recommendation in this plan is to increase to 30-minute frequencies in the midday as well. The estimated additional annual operating cost for increasing frequency on the segment between Wagon Road Park-n-Ride and the Eastlake & 124th Station all day is \$300K to \$500K, assuming a standard RTD operating rate.

Mid-Term Implementation (2028-2031)

The mid-term implementation transit improvements are displayed in **Table 3**, along with service characteristics, cost estimates, and implementation timeline. Mid-term recommendations include making adjustments to the existing microtransit services and providing enhancements to fixed-route transit through frequency increases, new routes, and route extensions. Recommended mid-term improvements are illustrated in a map (**Figure 20**) and descriptions of each transit improvement are provided below.

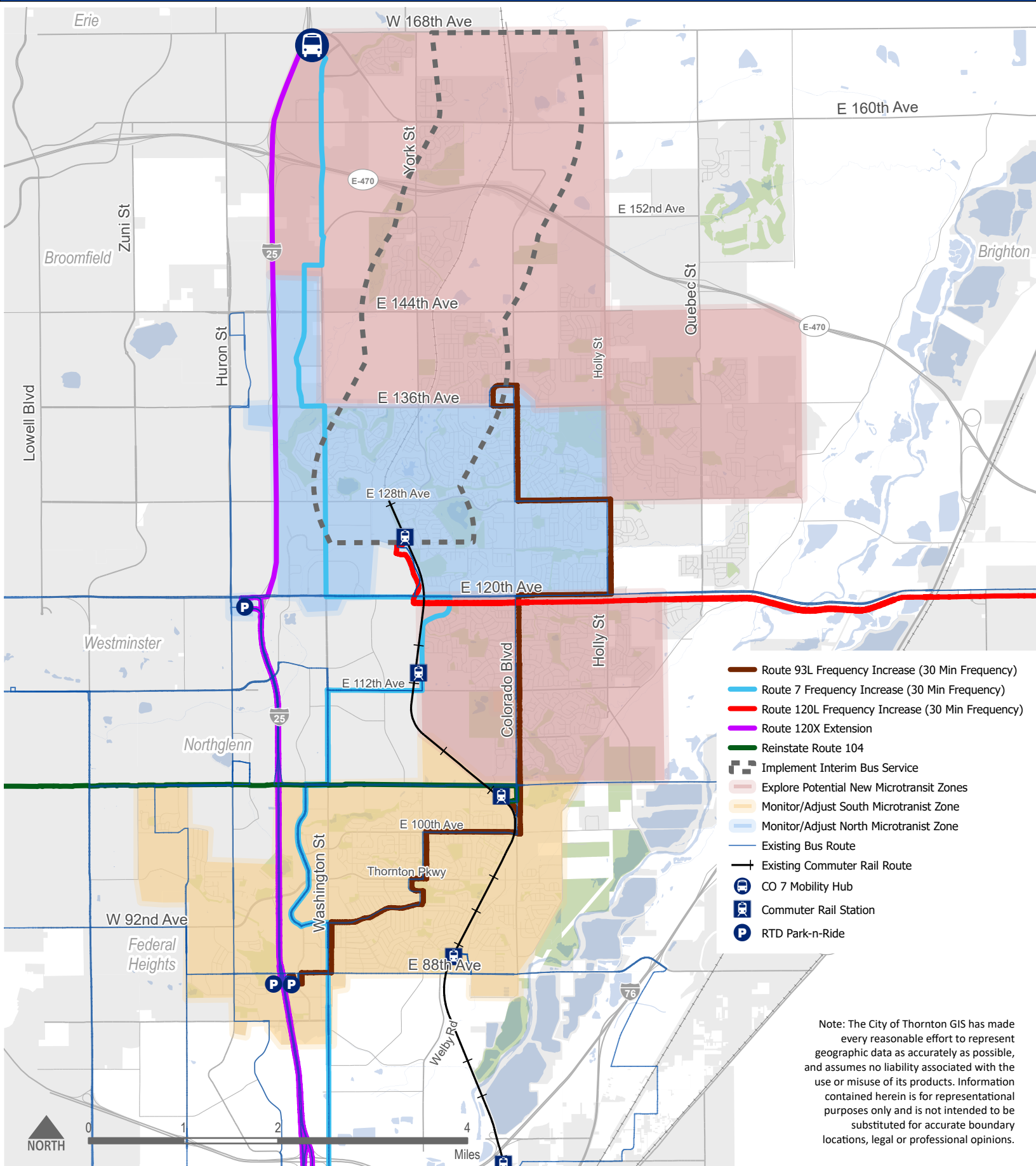
Table 3: Mid-Term Implementation Details

Transit Improvement	General Extent Description	Service Hours	Response Time or Frequency	Estimated Annual Operating Cost*	Implementation Year	Responsible Party
Adjustments to South and North Microtransit Zones and Potential New Zone(s)	Consider adjusting service areas or creating new service areas to accommodate any travel gaps identified in initial implementation.	TBD	30 minutes	Approx. \$200K - \$300K for improvements , and \$800K - \$1.2M per new zone	2028-2031	City of Thornton
Route 93L Frequency Increase	Routing stays the same as existing between Thornton Park-and-Ride and 138 th & Cherrywood Pk Rd.	Daily 7:00 AM to 9:00 PM	30 minutes	\$1.2M - \$1.9M	2028-2029	City of Thornton and RTD
Route 7 Frequency Increase	Along entire route, including extension; from Northglenn & 112 th Station to CO 7.	Daily 5:00 AM to 12:00 AM	30 minutes	\$1M - \$1.6M	2028-2029	City of Thornton and RTD
Route 120L Frequency Increase	Routing stays the same between Eastlake & 124 th Station and US 85 & Bridge St Park-and-Ride.	Monday – Saturday 5:30 AM to 12:00 AM	30 minutes	\$400K - \$600K	2028-2029	City of Thornton, RTD, Westminster, Broomfield
Extend 120X to CO 7	Extension to the future CO 7 mobility hub (Larkridge Shopping Center).	Monday – Saturday 5:00 AM to 12:00 AM	15 minutes during peak times; 30 minutes during off-peak times	\$800K - \$1.5M	2029-2031	City of Thornton, RTD, Adams County, Brighton
Reinstate Route 104	Per RTD North Metro Corridor Bus Operations Service Plan, reinstate a route along 104 th Ave between US 36 & Church Ranch Station and Thornton Crossroads & 104 th Station.	Daily 5:00 AM to 12:00 AM	30 minutes	\$1.1M - \$1.4M	2029-2031	City of Thornton, RTD, Northglenn, Westminster
Implement Interim Bus Service per Transit Feasibility Study	Bus service and infrastructure to connect Eastlake & 124 th Station to CO 7 through planned stations areas.	TBD	TBD	TBD	2029-2031	City of Thornton and RTD

*Cost estimates are in 2023 dollars and will need to be adjusted for inflation.

Mid-Term Implementation (2028-2031)

Figure 20



Adjustments to South and North Microtransit Zones and Potential New Zone(s)

The city should evaluate the performance of the microtransit systems on at least a monthly basis, including tracking ridership per service hour, response times, top destinations, unfulfilled ride requests, customer service, demand by time of day, and feedback from the public. Based on the performance the city may need to make periodic adjustments within the first few years to improve the service and match available funding. Adjustments may be needed to the service boundaries, times of day, days of week, number of vehicles, types of vehicles, minimum trip distances, etc. to maintain the utility of the service to the community.

Based on performance, community feedback, and available resources it may also be appropriate to explore additional areas within the city to add new service, such as filling the gap between the North and South microtransit zones between 104th Avenue and 120th Avenue and north of 136th Avenue. The city should also periodically engage with other jurisdictions (such as Northglenn, Westminster, Federal Heights, and Adams County) to see if there are opportunities to jointly provide service to meet the travel demand to destinations in adjacent communities. Given the uncertainty of future modifications and expansions, mid-term cost estimates for these adjustments cannot be determined, but would be directly linked to service area size, population density, population demographics, and number of service hours.

Route 93L Frequency Increase

The 93L currently provides service between the Thornton Park-n-Ride and 138th & Cherrywood Pk Rd at 60-minute frequencies during peak times. It is recommended to increase the frequency on this route to 30 minutes. The estimated annual operating cost of increasing service is \$1.2M to \$1.9M. Like the other route extensions or frequency increases of existing RTD routes, the City of Thornton will need to work with RTD to make this improvement. If RTD does not consider this service change to be justified by its own metrics, the City of Thornton may need to finance the “buy-up” of the service to provide the desired frequency.

Route 7 Frequency Increase

In the mid-term, it is recommended to increase the frequency of Route 7 between the Northglenn & 112th Station and CO 7 to 30 minutes. This will cost an estimated \$1M - \$1.6M in annual operations in addition to the operating cost of the Route 7 extension at 60-minute frequencies recommended as part of the short-term implementation. The City of Thornton will need to collaborate with RTD to determine financing and service delivery for this transit improvement.

Route 120L Frequency Increase

It is recommended to increase the frequency of the 120L in the mid-term between the Eastlake & 124th Station and the US 85 & Bridge St Park-n-Ride in Brighton from 60 minutes to 30 minutes. The annual operating cost to do so within the portion of the route that is within Thornton is \$400K to \$600K. Additional funding from RTD or other jurisdictions this route passes through, including Adams County and Brighton, will be needed to increase frequency in the portion of the route outside Thornton.

Extend 120X to CO 7

Input from the public and the study's stakeholder group recommended the extension of Route 120X to the future mobility hub at I-25 and CO 7. The route currently runs between Denver's Union Station and the Wagon Road Park-n-Ride at 15-minute peak-direction frequencies and 30-minute off-peak frequencies. The estimated annual operating cost to extend the route to CO 7 assuming the same frequency is \$800K to \$1.5M in addition to the current cost of operating the route. However, as this route extension moves toward implementation, the specific routing, frequency, and scheduling will need to be determined and may impact operating cost. Because this route travels along I-25 there are multiple jurisdictions on the west side of I-25 (Westminster and Broomfield) in addition to Thornton on the east side that would benefit from this service. Therefore, funding should be coordinated with RTD in conjunction with the surrounding jurisdictions.

Reinstate Route 104

Prior to the COVID-19 pandemic, RTD operated Route 104 at 60-minute frequencies, connecting Thornton communities to the US 36 & Sheridan Station along 104th Avenue. In preparation for the opening of the N-Line in 2020, RTD prepared the North Metro Corridor Bus Operations Service Plan, which detailed the bus routes that would support the operation of the N-Line. One of the proposed routes was to modify Route 104 to connect the US 36 & Church Ranch Station and the Thornton Crossroads & 104th Station along 104th Avenue. Route 104 was discontinued starting in April 2020. A key concern expressed throughout the Thornton Transit Study is the lack of transit connections across I-25, so reinstating Route 104 was raised repeatedly by the community. It is recommended that RTD reinstate this route to provide this critical connection with 30-minute frequencies. The estimated annual operating cost for the portion of the route within Thornton is \$1.1M to \$1.4M. Given this route crosses multiple jurisdictions (including Northglenn and Westminster) funding should be a collaborative effort between RTD, the City of Thornton, and surrounding jurisdictions.

Implement Interim Bus Service per Transit Feasibility Study

Pending the completion of the **Transit Feasibility Study for Interim Connections to CO 7** that will be completed in the near-term phase, the city should consider implementing recommendations that come out of the study in the mid-term. Bus service would provide an interim transit connection between the Eastlake & 124th Station and CO 7, including service to 144th Avenue, until RTD is able to extend the N-Line north to CO 7 as planned as part of FasTracks.

Long-Term Implementation (2032-2034)

The long-term implementation transit improvements are displayed in **Table 4**. These improvements are less detailed due to the uncertainty of the transit landscape in 2032 through 2034. Most of the improvements are targeted toward adjusting and improving the services that would have been implemented in the previous phases.

Table 4: Long-Term Implementation Details

Transit Improvement	General Extent Description	Service Hours	Response Time or Frequency	Estimated Annual Operating Cost	Implementation Year	Responsible Party
<i>Adjustments to South and North Microtransit Zones and Potential New Zone(s)</i>	Consider adjusting service areas, creating new service areas where gaps exist, or scaling back where new fixed-route service may be sufficient.	TBD	30 minutes	TBD	2032-2034	City of Thornton
<i>Frequency Increases Across Fixed Routes</i>	Consider increasing frequencies of fixed-route buses across Thornton in demand areas.	TBD	15-minute peak hours, 30-minute off-peak hours	TBD	2032-2034	City of Thornton and RTD
<i>Route Extensions Across Fixed Routes</i>	Consider extending other routes to connect to growing areas, such as along York St, Colorado Blvd, Holly St, and Quebec St.	TBD	30 minutes	TBD	2032-2034	City of Thornton and RTD

Adjustments to South and North Microtransit Zones and Potential New Zone(s)

The city will continue to monitor and adjust microtransit service zones and operations as needed to maintain efficient service within available funding, in particular riders per hour and adequate response times. In addition to expanding to new areas to fill gaps in the network, adjustments may also include scaling back service in locations that may be getting more robust and complete fixed-route service that would more efficiently fill the transit service demand for a particular area.

Frequency Increases Across Fixed Routes

The city will monitor ridership and potential demand along existing transit corridors in the community and work with RTD to explore increasing the frequency of fixed routes with the highest demand. Assuming that all recommendations to short-term and mid-term implementation on fixed-route service will be successful, all transit services in Thornton will have a frequency of 30-minutes or better. During the long-term phase of implementation, the City of Thornton should work with the public and RTD to identify any routes where improving frequency to 15 minutes during peak hours can provide a beneficial impact to riders and community members. These will typically be routes with relatively high existing ridership, that connect into key destinations, and provide key connections throughout the city and region. Core routes identified for higher frequency service in the future by the TMMP are those that operate along Washington/Grant Street (currently Route 7), 88th Avenue (Route 92), and 120th Avenue (120/120L).

Route Extensions Across Fixed Routes

In the long-term implementation phase, the city will evaluate the need and feasibility of extending fixed route service to increase transit coverage to areas that are continuing to grow. Over the next decade additional development is expected across Thornton, particularly north of 144th Avenue. Providing transit coverage to these areas will become increasingly important as more and more people begin living and working in the area. Potential extensions or new routes to explore include along York Street (in conjunction with the interim bus service connections to CO 7), Colorado Boulevard, Holly Street, and Quebec Street. These route extensions would connect with other transit services, with the aim being to increase transit access and overall connectivity.

Chapter 5 – Financial Plan

Short/Mid-Term Financial Plan

The financial plan detailed in **Table 5** describes the estimated financial commitment (in 2023 dollars) to deliver each transit improvement identified in the Transit Operating Plan described in Chapter 4 in the short-term and mid-term implementation phases from 2025 to 2031. Costs are summarized by year and organized by the assumed agency that would be responsible for the given improvement, including Thornton, RTD, or undetermined as RTD, Thornton, and/or other jurisdictions.

City of Thornton Financial Responsibility

It is assumed that Thornton would be responsible for assembling funding for:

1. Microtransit service, including start-up and adjustments over time, and
2. Infrastructure costs (e.g., bus stop improvements) to extend RTD Route 7 to CO 7/Larkridge
3. Conducting a transit feasibility study for interim connections to CO 7.

It is assumed that the microtransit services would be turn-key operated through a third-party vendor, as detailed in Chapter 6.

RTD Financial Responsibility

Operations costs for the following transit improvements are assumed to be fully financed by RTD as they are either slated as action items in the RTD System Optimization Plan or RTD has verbally communicated an intent to improve service:

1. Extend RTD Route 7 to 144th Avenue at 60-minute frequency
2. Increase peak period frequencies of RTD Route 120E to 30-minute

RTD, City of Thornton, and/or other Jurisdiction Financial Responsibility

Finally, the responsible party for the following transit improvements is unknown at the moment. These improvements will require coordination between the City of Thornton, RTD, and/or other jurisdictions, and may be funded by any or all of these agencies through internal and/or external sources:

1. Operations cost to extend RTD Route 7 from 144th Avenue to CO 7/Larkridge
2. Increase midday frequency of RTD Route 120E to 30-minutes
3. Increase midday and peak period frequency of RTD Route 93L to 30-minutes
4. Increase midday and peak period frequency of RTD Route 7 extension to 30-minutes
5. Increase midday and peak period frequency of RTD Route 120L to 30-minutes
6. Extend RTD Route 120X to CO 7/Larkridge

7. Reinstatement of RTD Route 104 along 104th Avenue between US 36 & Church Ranch Station and the Thornton Crossroads & 104th Station

It should be noted that all operations costs shown in the plan are service costs for the portion of routes operating only within Thornton. For example, the costs shown to increase the frequency of Route 120L are just the cost of the small portion within Thornton, based on the proportional route distance within Thornton, and do not include the cost of operations for the portion that operates in unincorporated Adams County or Brighton. Given the regional nature of the transit system there are some transit improvements that are dependent on the cooperation of RTD and other jurisdictions to bear the cost of improvements outside of the city boundaries.

Furthermore, for the improvements to RTD routes (which include the majority of recommendations) if RTD is unwilling or unable to finance the improvements on their own, a potential financing strategy would be for Thornton to explore “buying-up” service to fund the frequency increase or route extension. If after a period of time the service buy-up results in ridership performance metrics that meet RTD’s minimum standards, RTD may take over cost of financing the route. This model has been implemented historically in places like Boulder and Commerce City (Route 104L). It should be noted that RTD has temporarily suspended service buy-ups largely due to an ongoing driver shortage but hopes to allow them again in the future.

Table 5: Short/Mid-Term Financial Plan

Short-Term				Mid-Term			
Transit Improvement	2025	2026	2027	2028	2029	2030	2031
Thornton Costs*							
South Microtransit Zone (including start-up costs and future adjustments)	\$1M - \$1.5M	\$1M - \$1.5M	\$1M - \$1.5M	\$1.2M - \$1.7M	\$1.2M - \$1.7M	\$1.4M - \$1.8M	\$1.4M - \$1.8M
North Microtransit Zone (including start-up costs and future adjustments)	-	\$800K - \$1.2M	\$800K - \$1.2M	\$1M - \$1.4M	\$1M - \$1.4M	\$1.2M - \$1.6M	\$1.2M - \$1.6M
Potential New Microtransit Zone	-	-	-	-	-	\$800K - \$1.2M	\$800K - \$1.2M
Transit Feasibility Study	-	-	\$200K - \$300K	-	-	-	-
Thornton Costs Subtotals	\$1M - \$1.5M	\$1.8M - \$2.7M	\$2M - \$3M	\$2.2M - \$3.1M	\$2.2M - \$3.1M	\$3.4M - \$4.6M	\$3.4M - \$4.6M
RTD Costs							
Route 7 Extension (Northglenn/112th to 144th Ave at 60-minutes)	\$600K - \$1.2M	\$600K - \$1.2M	\$600K - \$1.2M	\$600K - \$1.2M	\$600K - \$1.2M	\$600K - \$1.2M	\$600K - \$1.2M
Route 120E Frequency Increase	-	-	\$300K - \$500K	\$300K - \$500K	\$300K - \$500K	\$300K - \$500K	\$300K - \$500K
RTD Costs Subtotals	\$600K - \$1.2M	\$600K - \$1.2M	\$900K - \$1.7M	\$900K - \$1.7M	\$900K - \$1.7M	\$900K - \$1.7M	\$900K - \$1.7M
Thornton, RTD, and/or other Jurisdictions							
Route 7 Extension (144th Ave to CO 7 at 60- minutes)	-	\$350K - \$450K	\$350K - \$450K	\$350K - \$450K	\$350K - \$450K	\$350K - \$450K	\$350K - \$450K
Bus Stop Improvements/ New Bus Stops for Route 7	\$600K - \$1.2M	\$600K - \$1.2M	-	-	-	-	-
Route 93L Frequency Increase	-	-	-	-	\$1.2M - \$1.9M	\$1.2M - \$1.9M	\$1.2M - \$1.9M
Route 7 Frequency Increase (Northglenn/112th to CO 7 at 30-minutes)	-	-	-	\$1M - \$1.6M	\$1M - \$1.6M	\$1M - \$1.6M	\$1M - \$1.6M

Route 120L Frequency Increase	-	-	-	-	\$400K - \$600K	\$400K - \$600K	\$400K - \$600K
Route 120X Extension to CO 7	-	-	-	-	-	\$800K - \$1.5M	\$800K - \$1.5M
Reinstate Route 104	-	-	-	-	-	\$1.1M - \$1.4M	\$1.1M - \$1.4M
Thornton, RTD, and/or other Jurisdictions Costs Subtotals	\$600K - \$1.2M	\$1M - \$1.7M	\$350K - \$450K	\$1.4M - \$2M	\$3M - \$4.6M	\$4.9M - \$7.5M	\$4.9M - \$7.5M

*Cost estimates are in 2023 dollars and will need to be adjusted for inflation.

Long-Term Financial Plan

The actions that are currently undetermined in terms of cost and responsibility include the following three improvements:

1. Implement interim bus service along future N-line extension between 124th & Eastlake Station and CO 7
2. Increase frequency of high-ridership RTD routes in Thornton to 15-minutes (e.g., Route 7, Route 120, and/or Route 92)
3. Add or extend additional RTD routes along future north-south corridors to CO 7 (e.g., along York Street, Colorado Boulevard, and/or Quebec Street)

These three improvements would be implemented either toward the end of the mid-term phase or throughout the long-term phase and would depend on a variety of factors. The interim bus service and associated cost is dependent on the recommendations of the Transit Feasibility Study completed during the short-term implementation phase. Similarly, costs for the frequency increases on high-ridership RTD routes and additional routes or extensions of routes to CO 7 will be directly related to the number of service hours the bus routes will provide, and the human and infrastructure support the routes will require.

Furthermore, it is assumed that all of the improvements mentioned throughout Chapter 4 will continue into the long-term phase, meaning that the financial commitments will remain constant, only changing due to service enhancements, changes to the responsible party, and/or inflation.

Potential Funding Mechanism

The following is a list of potential funding mechanisms Thornton can explore to finance Thornton's share of microtransit or fixed-route transit improvements identified in this plan. This list is not exhaustive and should be considered a starting point.

DRCOG TIP Funding

DRCOG has provided matching funding through the Transportation Improvement Program (TIP) for microtransit services that fill a local transportation need in other areas of the Denver Region. Thornton could explore this option and submit a TIP application to partially fund transit improvements in Thornton.

RTD Partnership Program

RTD launched their [Partnership Program](#) in 2023, which made available \$2 million dollars per year for up to three years to transit and mobility projects operated by local governments or Transportation Management Associations/Organizations (TMAs/TMOs) within the district. Thornton could consider applying for funds during a future Call for Projects through this program to support funding for local transit improvement projects.

Federal Funds

Federal funds for transit service improvements are likely to flow through RTD, DRCOG, or CDOT. In general, Thornton should work with these regional agencies to secure federal funding. Federal funds for transit projects typically come in the form of formula funding, competitive grants, or earmarks. There are occasionally one-time federal funding programs that could potentially fund microtransit services. [Federal funding opportunities for microtransit](#) and fixed-route transit can change from year to year and Thornton should keep updated on those potential options over time.

Local Funds

It is recommended that the local contribution for start-up pilot microtransit service be funded through the general fund initially to build public awareness and make sure the service is performing well and meeting mobility goals. Long-term local transit funding options may include funding through the general fund, or establishing a dedicated transportation/transit funding stream, such as through sales tax, property tax, transportation utility fees, or other fee programs.

Chapter 6 – Implementation Plan

On-Demand Transit

Service Delivery

The South and North microtransit zones are recommended for implementation in the first three years. Microtransit can be operated either through a turn-key contract (third-party service provider) or agency-operated, whereby the City of Thornton would fully manage and operate the service. Turn-key contracts involve delivering a service plan directly to a service provider and relying on that provider to implement the service. The vendor is typically experienced in delivering fixed-route, flex-route, and on-demand transit service and would manage all aspects of the service. Based on the logistical advantages and disadvantages displayed in **Table 6**, it is recommended that the two microtransit zones be operated through a turn-key contract.

Table 6: Advantages and Disadvantages to Turn-Key Contracts for Microtransit Services

Advantages	Disadvantages
Quick deployment	Requires oversight by City of Thornton
Does not require City of Thornton to have experience operating a transit service	Flexibility, responsiveness, and adaptability are constrained to the terms of the contract and to the capacity of the vendor
Does not require hiring of additional City of Thornton personnel (e.g. vehicle operators, administrative staff, maintenance teams)	Less control of service quality, customer experience, and operational procedures
Vendor is responsible for service quality and compliance	
Vehicle capital costs are included in the contract – minimizes the capital assets that City of Thornton must acquire	
Allows City of Thornton to take advantage of the vendor's existing scale	

Potential Vendors

There are several national vendors providing turn-key microtransit service today. These include Downtowner, RideCo, Spare Labs, Transloc, and Via, among others. These vendors provide service in a variety of Colorado communities, such as Denver, Lafayette, Lone Tree, Golden, Steamboat Springs, and Aspen. There are also many local, regional, and national contract transit service providers who may be interested in participating in an RFP for microtransit service provision within Thornton. The turn-key contractor should be selected based on experience, project/area understanding, project approach, capabilities, ability to deliver, qualifications of the team, references, and overall value.



Hybrid and Electric Vehicle Infrastructure

If the City of Thornton determines that it is in its best interest to pursue hybrid and/or electric vehicles for its preferred vehicle fleet for the microtransit service, it will need to work with the selected vendor to do so. In general, many vendors are experienced with providing microtransit services with a variety of vehicle types. Although these details will be determined through the turn-key contracting process, the more that the city is able to offer in terms of vehicle storage, charging, maintenance, washing, etc., the less costly the turn-key contract with the operator will be. It should also be noted that opting for a fully electric microtransit fleet will require a feasibility analysis on daily vehicle miles. This analysis will help determine the necessary vehicle range and the number of vehicles needed to meet the service's daily demand.

Service Adjustments and Monitoring Plan

Throughout the implementation of the new microtransit services, the service may need to be adjusted periodically to better serve local needs. This section describes elements of a monitoring plan that should be implemented early in the life of the on-demand transit services and used to determine whether and when service changes are needed. In essence, this monitoring plan sets the expectations for when changes should be made.

Tracking Ridership

The number of daily riders using the new transit service is a basic metric that the contract vendor will be able to provide to Thornton on a regular basis. Ridership can be reported both as the total number of passenger trips per day and the average number of passengers per vehicle service hour. As discussed in the alternatives analysis of Chapter 3, the South microtransit service is projected to have 200-300 passenger trips per day and the North microtransit service is projected to have 125-225 passenger trips per day. These estimates are based on five to seven passengers per vehicle service hour on the South microtransit service, and four to six passengers per vehicle service hour on the North microtransit service. Over the first one to two years, the ridership may be lower while the city and its partners build awareness about the service and community understanding of this new transportation resource grows. As seen in

Table 7, the goal for the first year of service should be an average of 150-200 passenger trips per day on the South microtransit service and 75-125 passenger trips per day on the North microtransit service, growing over the course of the following two years.

Table 7: Average Daily Passenger Expectations by Year of Service Implementation

Service Area	Year 1 of Implementation	Year 2 of Implementation	Year 3 of Implementation
South Microtransit Zone	150-200 Daily Passengers	200-250 Daily Passengers	200-300 Daily Passengers
North Microtransit Zone	75-125 Daily Passengers	125-175 Daily Passengers	125-225 Daily Passengers

If the service is not meeting the ridership targets, then some additional analysis may be needed to pinpoint whether there are times of day when the service is utilized at a higher rate. If so, a determination can be made on whether a service span adjustment is needed. While ridership is a key metric, it should not be the single metric for measuring whether the initial service is performing successfully. When Thornton is determining whether to extend the service, metrics like response time, rider satisfaction, and the rate at which the service completes the intended trip types should be among the factors considered.

Tracking Ride Times

The number of passengers that can be served within a daily service span is dictated, in part, by the amount of time vehicles spend completing trips and the amount of time vehicles spend traveling between trips, also known as deadhead. It is assumed that single passenger trips will take, on average, 10 minutes from origin to destination. It is also assumed that a 50% buffer should be added into trip time estimates for deadhead or for passengers sharing their trip with others making an unrelated trip, which will likely extend the ride time for both individuals. Factoring in the buffer time, it is assumed each passenger will experience a 15-minute average trip fulfillment time (time between when a passenger requests the trip using the app or calling and when they are picked up). If, after the first three months, the actual per passenger trip time exceeds 15 to 20 minutes, the service plan should be adjusted to better reflect local travel conditions.

It is also projected that the average trip fulfillment time should be 15 to 20 minutes and ideally no longer than 30 minutes. The selected vendor will be able to provide a response time by passenger trip. If it is found that the average response time is longer than 15 to 20 minutes, then changes may be needed in order to provide riders with a more accurate sense of potential response time.

Tracking User Experience

While metrics like ridership can convey system productivity, more qualitative indicators are also important. The experiences of early riders should be captured to learn of any unanticipated issues with service provision. Rider feedback can be captured through post-trip surveys distributed either electronically via the smartphone app or using paper copies that are distributed by the vehicle operator. In order to ensure the highest response rate possible, it is recommended the survey be brief with two to three key questions. Paper surveys should also include a pre-paid postage envelope, so respondents face minimal barriers to returning their surveys.

Since the contract vendor will track the quantitative aspects of each trip, like response time and time in vehicle, the survey can be used to assess ease of use of the reservation system, whether riders find the vehicles comfortable, whether riders have positive interactions with vehicle operators, and whether the rider overall travel experience has improved because of the new service.

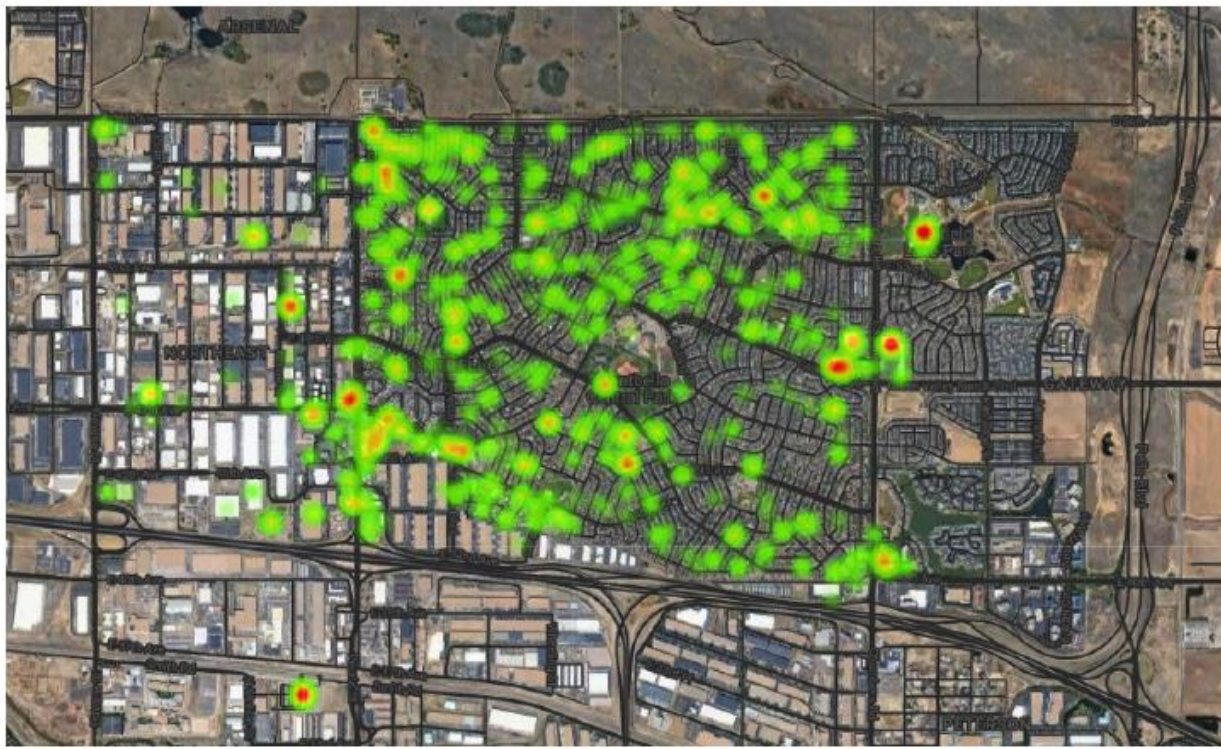
The surveys should be offered to each rider during the first six months of service in English and Spanish. Following a survey response evaluation period, surveying should then be conducted at regular intervals to be determined by the City of Thornton and for passenger samples instead of all riders.

Beyond the qualitative factors that the survey will provide, the city can track overall rider satisfaction, aiming for a 90% or more satisfaction rate. Furthermore, the city should aim for a 1% complaint rate based on customer complaints that are registered and regularly reviewed.

Evaluating Service Area Scope

The initial service zone has been drawn based on the travel market assessment and stakeholder input. It is possible that some portions of the service area may be disproportionately heavy trip generators or popular destinations. Monitoring the origin and destinations patterns by trip will allow Thornton to understand whether the service area needs to be modified or if there are particular origin-destination pairs and routes that are utilized at a high rate. The selected vendor will likely be able to provide visualizations of trip patterns like the example shown in **Figure 21** to help Thornton evaluate service utilization and potentially make adjustments such as narrowing the service area or establishing fixed pick-up/drop-off locations that serve popular destinations. This data will also inform the envisioned mid-term and long-term adjustments and potential new microtransit zones after 2027.

Figure 21: Example of pickup heat map (courtesy of City & County of Denver and Downtowner)



Determining Service Changes

While this service plan seeks to meet the needs of the Thornton travel market, it is possible that in practice the performance outcomes may differ from the service goals outlined here. Thornton should be prepared to collaborate with the selected vendor on making service adjustments on an as-needed basis to ensure the microtransit service is providing efficient service and filling the desired mobility needs. It is recommended that Thornton complete a thorough review of the performance metrics described in this service monitoring plan along with initial responses to the rider surveys after the first year of service. If any goals are unmet or if initial rider satisfaction is low, then targeted service adjustments may be required.

Regular Updates to Elected Officials

As microtransit will be a significant investment in Thornton's intracommunity mobility, it is recommended that staff schedule monthly updates to elected officials through the City Manager's notes to the Thornton City Council for the first year of service. After the first year of service, these updates can be made quarterly. These updates should include summaries of the above metrics to best inform City Council of the progress that the microtransit service is making and if any changes or adjustments are expected. These updates should also include the status of community marketing and outreach efforts. Staff can also encourage the elected officials to ride the new service, leverage their networks to spread the word, and educate constituents about the new service.

Long-Term Goals and Priorities

The service model for microtransit services described in the preferred alternative and the implementation plan is a step towards enhanced mobility within Thornton, and it should be considered as the start to longer-term improvements. The operating and implementation plans detail the initial services. In conjunction with the service adjustment metrics detailed previously, Thornton should strive for having long-term microtransit services that might include:

- Service seven days per week with weekday hours of 5:00 AM to 10:00 PM and weekend hours of 7:00 AM to 9:00 PM.
- Service that can connect Thornton residents, employees, and visitors with destinations that may be outside of the Thornton boundaries (such as in Northglenn, Westminster, and Broomfield).
- Average trip fulfillment time of 15 minutes or less with a mixed fleet of low- or zero-emission vehicles.

To work toward accomplishing the above goals, future improvements to individual zones should be prioritized in the following manner:

1. Expand weekday hours of service to 5:00 AM to 10:00 PM.
2. Add weekend service.
3. Expand service area.

Roles and Responsibilities

It is important to establish and understand the roles and responsibilities of implementing microtransit service in Thornton. **Table 8** displays the different responsibilities of the City of Thornton staff and the microtransit vendor when operating the on-demand service. In general, a turn-key contract allows the City of Thornton to have minimal staff managing the microtransit service as discussed previously. Especially with the initial South microtransit zone, the staff resource need will be approximately 0.25 FTE (full-time equivalent) and can be incorporated into an existing role. As the service grows and as Thornton adds the North microtransit zone, the staff commitment will rise. In its full development stage, overseeing transit services that are funded directly by the City can potentially be a role for one full time employee.

Table 8: Microtransit Roles and Responsibilities

City of Thornton Staff	Microtransit Vendor
Oversee vendor contract	Operate the service day-to-day according to the service plan and per the contract
Manage marketing, branding, and community outreach	Ensure quality of service and compliance with contract
Interpret performance metrics	Be accountable to specific performance metrics and provide excellent customer service; Report on performance metrics
Update City Council on service performance and anticipated service adjustments	Resolve minor customer complaints

Coordinate with surrounding jurisdictions for partnerships on potential cross-jurisdictional services	Provide necessary vehicles, drivers, insurance, dispatch, supervisors, vehicle storage, fuel, maintenance, and microtransit ride-matching technology
Develop community partnerships to support awareness and build ridership	Make suggestions on service improvements, based on operations knowledge
Develop local funding for long-term sustainability	
Review and resolve serious customer complaints	

Strategies for Managing Implementation Hurdles

The implementation plan described in this chapter is an ideal situation for new microtransit services in Thornton. However, the city should be prepared for implementation hurdles to arise (in the case of political, economic, or other unknowns). This section describes a couple of ways in which Thornton can be flexible and adaptable in implementing the new microtransit services.

Delaying Implementation

Although it is anticipated that the two microtransit services will be implemented within the designated timeline, this timeline may change. Delaying implementation, specifically for the second microtransit zone (North microtransit zone), might prove to be an effective measure if Thornton feels like it would be beneficial to continue to improve and garner support for the South microtransit zone. In deciding to delay implementation, it is critical to be ahead on any public marketing and outreach. It is recommended that the City of Thornton announce the upcoming plans for microtransit service to begin the educational component, but to delay announcing service launch dates until they are solidified. This is especially applicable when the South microtransit service will already be operational and the North microtransit zone will still be anticipated.

Adjusting Service Levels

Another option in the case that implementation of the service(s) is deemed difficult is to scale service appropriately to meet capacity. The city can work with the service vendor to reduce service hours or reduce the number of vehicles being deployed to maximize the given resources. It is important to note that these adjustments that result in less convenience for the user may be difficult to communicate to the public. For this reason, the initial service levels should be closely coordinated between the city and the vendor to ensure that any adjustments are made to improve user convenience.

Marketing, Branding, Outreach

A critical aspect of program success is robust marketing and outreach effort. An awareness building campaign should be paired with the service rollout to ensure community members and visitors learn of the new service, understand how to request trips, and are aware of the service area. While traditional avenues, like visually compelling advertisements, will be important, additional community-specific outreach strategies should also be pursued. These can include engaging local stakeholders who have existing community ties to serve as ambassadors for the new service and establishing educational messaging that the new Thornton microtransit service is a public service that is open to all and

highlighting the benefits of using the service (e.g., low cost and shorter travel times relative to existing fixed route bus service).

Overall Marketing Strategy

In order for the microtransit service to be successful, Thornton should place an emphasis on maintaining as broad an outreach approach as possible in order to reach existing and potential transit riders. The city can partner with local businesses, schools, community centers, and other key destinations to post information about the new service. Beyond physical advertisements, the social media networks of these community partners can also be leveraged to broaden awareness. All marketing efforts should focus on educating community members about the service itself and conveying three key messages:

1. Thornton microtransit is a new service that has been designed to help address the mobility challenges residents are facing today.
2. The microtransit service will be both free and offer a comparable travel time to driving for certain trips.
3. The city will continuously seek rider feedback to learn how the new service can be optimized to best meet local travel needs.

In order to effectively disseminate these messages, Thornton should work with the selected vendor to develop a robust brand identity for the service and pursue a broad advertising and outreach campaign, as described below. To ensure the marketing campaign has an effective reach, Thornton can monitor who is utilizing the service through the rider surveys and then target marketing efforts to any groups within the community who have not yet tried the new service. Having a dynamic marketing campaign that tailors messaging to the various audiences within Thornton will help ensure that all efforts to raise awareness target both people who are likely to ride, like existing transit users, and those who are not currently transit users but may benefit from the new service.

Branding

Applying a logo and uniform color scheme on vehicles and on all collateral related to the service will help establish a uniform brand. Brand awareness is critical to developing an understanding that the new Thornton microtransit service is distinctive from existing RTD service that is a new mobility resource. The selected vendor will likely have prior experience with service branding and will be able to advise the city on the parameters for applying new logos and paint to their fleet. **Figure 22** shows examples of branding from various microtransit systems. Developing a distinctive visual style for the system will help community members readily identify the microtransit vehicles.

Figure 22: Microtransit Vehicle Branding Examples



Signage

Signage describing the new service and featuring the branding should be posted in all locations where it is likely community members will start or end rides. Although the current microtransit operations would be zonal, where riders could make trips between any two points within the zone boundaries, these signs can serve to designate pick-up and drop-off locations, which would make the system easier to use. Furthermore, having a signed, dedicated curb space at the N-Line stations and Thornton Park-n-Ride could also help identify the new service and educate potential riders on how to use it. High quality, visually compelling signs can be targeted to key market groups such as active adults, youth, and commuters.

Advertising

Signage can also be adapted into flyers that are posted in popular locations – having system information at local community centers, medical centers, social services locations, and businesses will be important and could take the form of a tabletop rack card with information on how to use the system and where it serves. In addition, the city can partner with local print media along with radio and tv stations to promote the service, such as through the Thornton City Voice paper. While traditional media platforms have a wide reach, social media promotion is also a useful avenue to explore. Social media is particularly effective at reaching younger and commuter audiences, which should be a key consideration in Thornton. The city can use its existing social media presence and also partner with RTD and other community partners who may be willing to promote the service.

Outreach

The city should leverage the existing network of community groups to raise awareness and promote the new service. Key stakeholders, such as the Active Adults Center and Smart Commute, should be invited to serve as ambassadors for the new service. This role can be as simple as committing to including the microtransit service as a discussion topic in community events or promoting the service on an organization's website, social media pages and community boards. The city can also collaborate with ambassadors to periodically visit popular destinations throughout the community and informally discuss the new service with residents.

Employer Partnerships

Partnerships with local employers are another tool the city can utilize. Local businesses with employees who may not have reliable transportation should see the benefit of the new public transit service. Employees who need to travel to Amazon, the medical centers, or the retail centers will find it easy to use the new service to get to employment destinations.

Active Adults Partnerships

As part of this transit study, a distinct group that has voiced their desire for dedicated outreach on transit in general is Thornton's active adult population. In partnership with the Active Adult's Center, the City of Thornton can ensure that this population is engaged and understands how the new service works,

emphasizing that technology is not a limitation to this service. This outreach could include flyers and dedicated learning sessions at the Active Adult's center.

School Partnerships

Local schools can also advertise the new service. While some parents may not be comfortable allowing their child to walk or bike to school, microtransit could be perceived as a safe and efficient travel option, especially when the school supports and advertises the service as a mode for getting to school.

Business Partnerships

The city should work with Thornton's businesses to promote the new transit service. Having printed flyers in local retail establishments and restaurants that announce the new service and how to use it could be an effective way to gain awareness of the service. Businesses could also distribute information to employees and allow local ambassadors to present at staff meetings.

Special Events

The city should consider having a presence at all local events such as markets, visitor events, expos, kids' events, and neighborhood parties. Setting a table with brochures and a friendly community ambassador is a relatively low-cost way to build awareness of the new service.

Microtransit Implementation Timeline

Although it is typical for a pilot microtransit project to take 12 to 18 months to launch once a final service plan is complete, the City of Thornton has been thoroughly and strategically working on this transit study since November 2022. As such, it is possible to accelerate implementation and condense into six to nine months, assuming that contracting with a microtransit vendor could be done efficiently and that Thornton and its community partners can move effectively through the various service preparation steps, shown in **Figure 23**. According to this timeline, it may be possible to have this new service operating by late 2024 or early 2025.

Figure 23: Microtransit Implementation Timeline

6 months before launch	- Finalize program management and oversight - Select turn-key service operator and associated vehicle fleet - Finalize budget and associated operating hours - Select program name, logo, and brand
3 months before launch	- Develop marketing materials and advertising plan - Formalize promotional partnerships with community groups - Work with microtransit vendor on service plan adjustments - Install any permanent infrastructure such as signage
1 month before launch	- Install vehicle brand graphics (vinyl wraps) - Begin intensive advertising and promotion of program launch - Coordinate with program partners and electeds about launch - Test microtransit technology and dry-run service
Launch of operations	- Final planning, promotion, and coordination for launch event - Determine performance monitoring program - Launch event - Intensive advertising and promotion of service
Month 1	- Daily service quality monitoring - Responsiveness to passenger complaints or input - Weekly evaluation of performance metrics - Intensive advertising and promotion of service
Month 2	- Review lessons learned in first month with vendor - Intensive advertising and promotion of service - Ongoing evaluation/monitoring/customer responsiveness
Months 3-6	- Implementation of possible service adjustments - Ongoing advertising and promotion of service - Ongoing evaluation/monitoring/customer responsiveness - Report to electeds and community partners on early results
Months 7+	- Plan for Year 2 of service and added fixed route phase - Ongoing advertising and promotion of service - Ongoing evaluation/monitoring/customer responsiveness - Review and report on first year results

Fixed Route Transit

Provide Supporting Bus Infrastructure

Bus service extensions require appropriate infrastructure to support service, including ADA accessible locations for bus stops, layover locations at the end of the route with bathroom facilities available to drivers, and direct convenient route alignments that can accommodate a 40-foot transit bus. The city should work to provide this infrastructure supportive of bus service along planned future bus route extensions.

Of particular importance in supporting bus service are planning new streets and developments with bus stops, which allow bus circulation, and with convenient pedestrian infrastructure in place. Bus stops should be anticipated in locations along arterial and collector streets to meet RTD design standards (near-side, far-side, etc.), adjacent to pedestrian crossings, where they allow for convenient transfers to crossing transit routes, and as close to high trip generating destinations as reasonably possible. Bus stops and pedestrian access to bus stops should be incorporated into the design of future development. Bus stop location should be considered when designing auxiliary lanes, utility infrastructure, landscaping, drainages, pedestrian crossings, and bikeways. Arterial and collector streets where future bus routes are planned should be designed to accommodate bus circulation and pedestrian access to stops and avoid an overly circuitous design. Lastly, new development along planned bus routes should be designed to be pedestrian oriented, with direct pedestrian connections to land uses and adjacent streets and trails that avoids large parking lots and other setbacks from the street that pedestrians would need to traverse to connect between a building and the street.

Mitigating Unknown Factors (Specific to RTD)

To implement many of the fixed-route transit improvements recommended in the preferred alternative, the City of Thornton will need to strategically partner with RTD and other surrounding jurisdictions. Due to this required relationship, there are number of factors that may pose challenges to the implementation timeline for these fixed-route recommendations. Some factors are routine and can surface at any time while others, like a global pandemic, are unpredictable. When assessing the factors that may pose a challenge to the City of Thornton as it seeks to implement transit improvements to the existing fixed-route network, the following issues are most likely to impede the process:

Inflation

Throughout the COVID-19 pandemic and in the post-pandemic era, inflation has increased and remained high. As noted in the operating and financial plans, the displayed estimated costs are based on 2023 prices. Should inflation rates continue to increase, the cost estimates may soon be too low.

Driver Shortages

RTD, along with other transit providers across the nation, has struggled to hire and retain transit operators for existing service. This challenge is typically more difficult to overcome with fixed-route transit due to a

variety of factors, including federal employment requirements, commercial vehicle training requirements, and workload. Enhancing the existing services to run more frequently or cover more distance requires a larger workforce. The ongoing driver shortage is likely to be a significant barrier to increasing RTD fixed-route service levels in Thornton near-term. It is the primary reason that RTD is not currently allowing service buy-ups.

One strategy some agencies are experimenting with to overcome this barrier is operating transit service at time intervals that are more attractive to drivers, such as eliminating split shifts during daytime hours. The city should continue to maintain close relationships and regular communication with RTD to advocate for improvements and collaborate on strategies to make improvements to the fixed-route network identified in this plan acknowledging that driver shortages are likely to be a near-term barrier.

Strategies for Managing Implementation Hurdles

There are a few strategies to manage potential implementation hurdles related to fixed-route transit. For example, delaying implementation and adjusting service levels to ease the stress on human and capital resources may be a strategy that RTD employs. Some other strategies that the City of Thornton can employ include:

Contract Fixed-Route Service Through a Third-Party Vendor

Although the ideal scenario includes RTD funding and operating fixed-route transit services in Thornton, the city may determine that it is a worthy investment to contract supplemental fixed-route service using a third-party vendor. New fixed-route services that operate fully within the city boundaries (such as the Route 93L) could be contracted through a turn-key contract, similar to microtransit. This may require careful conversations and coordination with RTD, but it could ensure that the city is responsible for meeting its mobility needs and goals, rather than relying on the regional provider.

Organize Regular Meetings between Thornton's Elected Officials and RTD's Elected/Appointed Officials

To keep Thornton and its unique mobility needs part of RTD's priorities, it is important that Thornton's elected officials hold quarterly conversations with RTD's elected officials. Parts of Thornton fall into the I, J, and K RTD districts, so engaging in conversations with those elected district directors can ensure that RTD is making changes that align with Thornton's transit plans.

Conclusion

The 2022 Transportation and Mobility Master Plan (TMMP) established a long-term vision for Transit within Thornton. This Transit Study further analyzed the viability of enhancing public transit in different parts of the city and provides guidance on how to implement transit service improvements in Thornton over the next ten years (through 2034). This study demonstrates that transit, and the expansion of public transit service, is a viable transportation solution within the City of Thornton. Many areas of Thornton are well suited for short-term implementation of on-demand transit service, and some corridors can support expansion of fixed-route transit service. As the city continues to grow, additional areas of the city, particularly in north Thornton, will become more viable for additional transit expansion. This Study provides a phased-approach for gradually expanding transit service in Thornton as the city grows and more resources become available to fund service, prioritizing expansion of service to the locations where transit is likely to be most successful first.

Through a robust transit market analysis, including input from the community, five alternatives were initially developed and refined into a preferred alternative to be implemented over a course of short, mid, and long-term phases between 2025 and 2034. The preferred alternative includes introducing two new on-demand (microtransit) service zones within the city, increasing the frequency of several existing local bus routes, and the extension or creation of other routes. The study also includes a financial plan (with potential funding mechanisms) along with an implementation plan for both the on-demand transit services and the fixed-route transit services. It is emphasized that in order to accomplish the entirety of the preferred alternative, close collaboration between the City of Thornton, RTD, neighboring jurisdictions, and other regional agencies will be crucial.

Expanding public transit will help meet the mobility needs of the community, particularly for the most vulnerable community members that have limited mobility options, and will be a crucial element of achieving the vision identified in the TMMP to enable residents to access all areas of Thornton in a timely manner without using a private vehicle. This study provides an implementation framework to achieve core goals identified early on in the project, including bringing Thornton closer to implementing the TMMP's vision, making transit a more viable choice for residents that do not currently have access to transit, and better serving those who are mobility challenged, but not served by RTD's Access-A-Ride.

Appendix A: Transit Market Analysis

To be attached to the end of the final report. Currently, the "Transit Market Analysis Report" can be accessed on the project's website at

<https://www.thorntonco.gov/government/infrastructure/traffic/Pages/transit-study.aspx>.