



112TH AVENUE STATION AREA MASTER PLAN

FEBRUARY 28, 2017

The central graphic contains four distinct images. The top-left image depicts a modern transit station with a prominent wooden canopy structure. The top-right image shows a residential development with multi-story brick buildings and a green lawn. The bottom-left image is an aerial map of the area with several yellow sticky notes placed over it, indicating specific points of interest or planning notes. The bottom-right image is a site plan showing various density zones: 'Optional Commercial Mixed Use', 'Residential Medium/High Density', 'Residential Medium Density', 'Floodplain', and 'Optional Commercial'. A 'Proposed Park' is also indicated with a green dotted line. A 'TRAFFIC SIGNAL' is marked at the bottom of the plan.





RESOLUTION

A RESOLUTION ADOPTING THE 112TH AVENUE STATION AREA MASTER PLAN AS A PART OF THE COMPREHENSIVE PLAN.

WHEREAS, the Northglenn at 112th Station ("Station") located at 112th Avenue and York Street has been identified by Regional Transportation District (RTD) as a transit station for the North Metro FasTracks corridor; and

WHEREAS, the cities of Northglenn and Thornton share common boundaries on York Street between 112th Avenue and 120th Avenue; and

WHEREAS, Northglenn was awarded Transportation Improvement Program funding to conduct a Station Area Master Plan ("STAMP") for the area surrounding the Station; and

WHEREAS, the cities of Northglenn and Thornton entered into an intergovernmental agreement in August 2015 wherein Thornton agreed to contribute \$10,000 towards the STAMP so that the STAMP would include an assessment of appropriate land uses for the vacant land within the study area within Thornton's jurisdiction as well as transportation connections between Thornton's existing neighborhoods and the station; and

WHEREAS, the 112th STAMP was prepared to guide development in the vicinity of the Station; and

WHEREAS, the STAMP provides guidance related to the types of land uses, infrastructure, and transportation connections desired by the community through specific STAMP elements including the Station Area Vision, the Preferred Alternative, and Implementation Strategies; and

WHEREAS, the Thornton City Council adopted the 2012 update to the Thornton Comprehensive Plan on September 11, 2012; and

WHEREAS, the STAMP furthers the Comprehensive Plan policy to "Facilitate the development of well-designed and integrated mixed-use developments at anticipated future FasTracks stations, and ensure suitable pedestrian connections with surrounding neighborhoods"; and

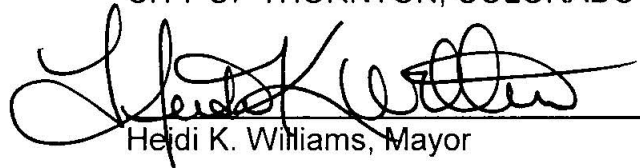
WHEREAS, the 112th Avenue STAMP will be used by City Council, City Boards and Commissions, other City officials, residents, developers, and City staff to ensure a well-designed and integrated mixed-use development around the future Northglenn at 112th Station.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF THORNTON, COLORADO, AS FOLLOWS:

The 112th Avenue STAMP, attached as Attachment A to this resolution, is hereby adopted as an implementation document of the 2012 Thornton Comprehensive Plan.

PASSED AND ADOPTED at a regular meeting of the City Council of the City of Thornton, Colorado, on February 28, 2017.

CITY OF THORNTON, COLORADO



Heidi K. Williams, Mayor

ATTEST:



Nancy A. Vincent, City Clerk

CONTENTS

Acknowledgements	iv
Glossary of Acronyms	vii
Chapter 1 Introduction	1-1
1.1 Background	1-1
1.2 Project Overview and Scope	1-1
1.3 Guiding Principles	1-2
1.4 Key Goals	1-4
City of Northglenn	1-4
City of Thornton	1-4
Overall Transportation and Mobility Strategy	1-4
Overall Land Use and Development Goals	1-4
1.5 Project Area Background	1-5
The North Metro Line	1-5
Northglenn at 112th Station	1-6
Station Area	1-7
1.6 Key Station Area Data Summary: Demographics	1-8
Chapter 2 Land Use Considerations	2-1
2.1 Introduction	2-1
2.2 Transit-Oriented Development Principles	2-1
2.2 Key Station Area Summary: Land Use	2-2
2.3 Other Project Area Studies and Policies	2-4
Northglenn Comprehensive Plan	2-4
City of Northglenn Development Code	2-5
Thornton Comprehensive Plan	2-5
2.4 Key Station Area Data: Parks and Open Space/Schools	2-6
2.5 Market Analysis and Industrial Lands Study	2-7
Introduction	2-7
Summary of Site Analysis	2-7
Residential	2-7
Commercial	2-8
Industrial	2-9
2.6 Developer Panel Review of Initial Concepts	2-10
Summary of Key Findings and Recommendations	2-10

Chapter 3 Land Use Concepts and Preferred Alternative	3-1
3.1 Introduction	3-1
3.2 Alternatives Considered	3-1
Alternative 1	3-1
Alternative 2	3-4
Alternative 3	3-7
3.3 Preferred Alternative	3-10
3.4 Industrial Area Southwest of the Station	3-14
3.5 Key Station Area Data: Utilities	3-19
City of Northglenn	3-19
City of Thornton	3-19
Overall Assessment	3-19
Chapter 4 Strategic Mobility Planning	4-1
4.1 Introduction	4-1
4.2 Overall Station Area Connectivity Goals	4-1
4.3 Key Station Area Data: Roadway Network	4-2
4.4 Key Station Area Data: Transit Network	4-4
Fixed-Route Service	4-4
Call-n-Ride Service	4-6
4.5 Key Station Area Data: Bicycle/Pedestrian Infrastructure	4-7
Off-Street Paths	4-9
On-Street Facilities	4-9
Intersections	4-10
Additional Conclusions and Observations: Northglenn HEAL Committee	4-10
4.6 Proposed Street Network	4-12
York Street Realignment	4-13
4.7 Proposed Pedestrian and Bicycle Connectivity Improvements	4-16
4.8 Transit and Transportation Demand Management (TDM) Enhancements	4-18
Future RTD Services	4-18
Other Transit and Alternative Mode Options	4-18
4.9 Summary: Connectivity Goals	4-22
Chapter 5 Overall Policy Direction and Recommendations for City of Northglenn	5-1
Chapter 6 Implementation Recommendations for City of Thornton	6-1
Appendices	
1. Northglenn at 112th Station Area Market Analysis	
2. Developer Forum Summary and Conclusions	

3. Infrastructure Assessment
4. H.E.A.L. Walkability Assessments
5. Northglenn at 112th Station TOD Public Space Design Guidelines



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GLOSSARY OF ACRONYMS

CDOT	Colorado Department of Transportation
DRCOG	Denver Regional Council of Governments
HEAL	City of Northglenn Healthy Eating and Active Living Committee
NURA	Northglenn Urban Renewal Authority
PMA	Primary Market Area
RTD	Regional Transportation District
SOV	Single-Occupant Vehicles
STAMP	Station Area Master Plan
TDM	Transportation Demand Management
TIF	Tax Increment Financing
TMA	Transportation Management Association
TOD	Transit-Oriented Development
UDFCD	Urban Drainage Flood Control District

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CHAPTER ONE: INTRODUCTION

1.1 Background

In 2018, the Denver area Regional Transportation District (RTD) will open its North Metro electric commuter rail line, the culmination of years of planning and inter-governmental cooperation between the agency and the communities along the 18.5-mile line. The North Metro line is focused on serving the rapidly growing northern suburbs of the Denver metro area, including the cities of Northglenn and Thornton. One of the North Metro line's stations is located at 112th Ave., on the east side of the city of Northglenn adjacent to the city of Thornton's municipal limits at 112th Ave. and York St.

Station Area Vision (developed by project team and stakeholders):

Create a station area that serves the surrounding neighborhoods as a vital and vibrant community hub, that provides enhanced connectivity between the station and surrounding neighborhoods, and that strengthens and sustains the diverse industrial uses to the south.

This Station Area Master Plan (STAMP) is focused on creating a vision of future land use and coordinated transportation infrastructure in proximity to the Northglenn at 112th Station. This vision will guide future land use decisions in proximity to the station to ensure that land uses and transportation network improvements are transit-supportive and coordinated between the cities of Northglenn and Thornton. This coordination and planning will provide a vibrant, walkable, mixed-use community in and around the station.

1.2 Project Overview and Scope

This STAMP will focus on the traditional ½-mile radius direct station influence areas and the broader, indirect influence or market areas (comprised of people and businesses that are not located in direct proximity to the station but still interact with the station area). These influence areas will incorporate pedestrian, bicycle, and roadway network connections to provide access to the station in addition to transportation services such as forms of paratransit that are critical to station access and ridership. Indirect influence areas could be up to one mile from the station or could be determined by the influence of other stations to the north (Eastlake at 124th Ave.) or south (104th Ave.).

This project relied on a coordinated planning effort between the cities of Northglenn and Thornton to ensure the optimization of potential **transit-oriented development (TOD)** opportunities around the station and to aid in maximizing the utility and usefulness of the planned transit infrastructure.

General Characteristics of Transit-Oriented Development (TOD):

- A vibrant mix of land uses.
- A well-connected street-network and a menu of mobility services.
- Compact and compatible development.

1.3 Guiding Principles

Assuming near-term development will occur, the cities of Northglenn and Thornton would like to maximize the property's development potential, ensure a sense of place, and reflect the cities' values and interests and those of their partners. The following are guiding principles, based on the two cities' planning guidelines and aspirations that summarize their interests:

- **Diversify housing:** The majority of the housing in the area was constructed in the middle of the last century, and the area currently fills the role of providing starter housing or housing that is attainable for residents of the region. The city of Thornton in particular aims to diversify its housing stock with development of the Northglenn at 112th Station area through a mixture of residential products. This mix of housing products should provide emerging styles of housing not currently found in Northglenn and Thornton, should leverage the advantage of the transit infrastructure, and should provide contemporary components of mixed-use placemaking (recently defined by the Urban Land Institute as "combining elements of the built environment in a compelling way that attracts people").
- **Retail:** The two cities' interests are to create a community that includes a small amount of neighborhood-serving retail that is appropriate to levels of demand and that provides convenient and essential retail services to the immediate station area.

Guiding principals for development include...



A diversity of housing types both near the station and in the surrounding area...



Neighborhood-serving retail appropriate to local demand...

- Build transit-supportive mixed-use development:** The site represents a key opportunity for capitalizing on TOD densities (18+ units/acre) and a mixed-use land program that would maximize sustainable and “sense of place” transit-supportive development. The cities desire to use traditional TOD principles of development that are appropriate to the site context and market area while at the same time ensuring the maximum opportunity for the public partnership between the two cities and RTD.
- Create a place:** As the Northglenn at 112th Station area develops, the desire to create a “great place” is critically important and vital to the community. From the outset, the cities’ shared interest has been the creation of a place that leverages the unique assets surrounding the site to create a development with special character and a uniqueness all its own. Placemaking and its tenets will be at the forefront of development proposals that the two cities will seek to endorse.

Guiding principals for development include...



Transit-supportive mixed-use development appropriate to the context of the site...



Placemaking that leverages the assets of the site to create a special character and uniqueness...

1.4 Key Goals

Several goals were formulated by the project team and stakeholders as the project proceeded to help guide the initial development concepts for the station area:

City of Northglenn

- Provide good access to the station from the surrounding established neighborhoods and ridershed.
- Ensure a good transition of existing industrial properties along 112th Ave. to better uses.
- Develop a strategy for the opportunity property closest to the station (5.4 acres).
- Focus on the creation of a “place.”

City of Thornton

- Identify optimal land uses based on proximity to the future station, but also be realistic from a market perspective and existing conditions.
- Identify good multimodal connections to the station and surrounding neighborhoods, existing trails, and the Margaret W. Carpenter Recreation Center.
- Recommend design standards that can help create a TOD-feel and sense of place to the extent possible in this area.

Overall Transportation and Mobility Strategy

- Examine mobility to and from the station, for all forms of transportation in an effort to promote transit use and enhance access to the station.
- Outline operational improvements to existing transportation services and innovative approaches to alternative strategies that would provide the highest levels of accessibility.
- Provide pedestrian and bicycle connections to the transit station.
- Connect existing trail and open space networks.
- Create a safe and convenient environment to walk and bicycle through and between activity centers and neighborhoods.
- Improve pedestrian access across regional thoroughfares.

Overall Land Use and Development Goals

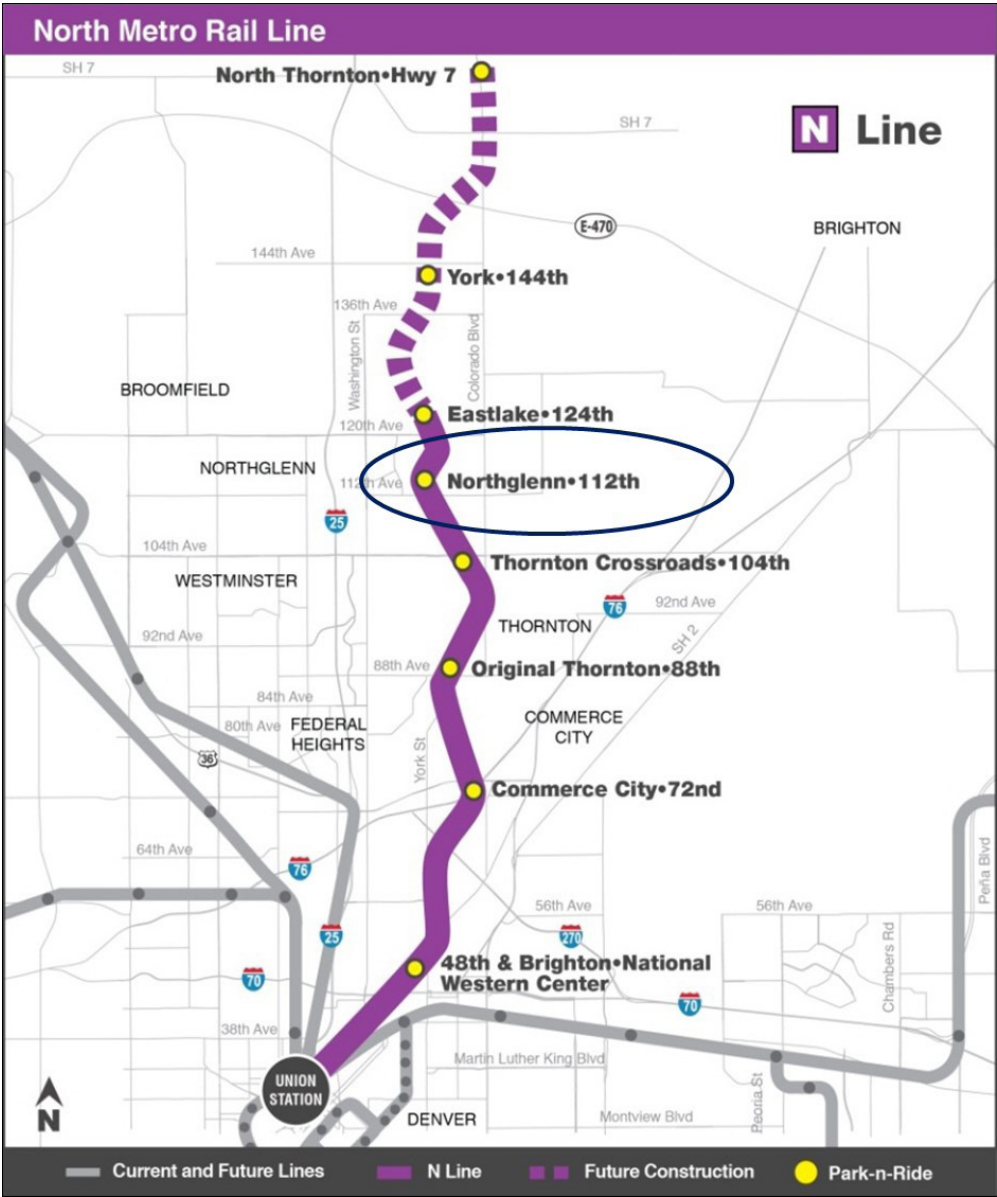
- Examine and promote land use policies, urban design standards, and development strategies that will assist the cities of Northglenn and Thornton in fostering high-quality development and active and vital neighborhoods.
- Understand the future market demands for development and conditions that may foster Transit Oriented Development.
- Build community consensus around a long-term vision for the station area that leverages RTD’s investment and promotes transit-supportive uses.
- Promote a mix of housing types, with higher densities located closer to the station.

1.5 Project Area Background

The North Metro Line

The North Metro commuter rail line is part of the RTD FasTracks regional transit system expansion program to build more than 100 miles of rail transit throughout the Denver region. The Northglenn at 112th Station is part of the 18.5-mile North Metro line that is proposed to run from Denver Union Station in downtown Denver, through Commerce City, Thornton, and Northglenn to just north of Highway 7 in north Thornton. Currently, the line is funded to the Eastlake at 124th Station, as shown in Figure 1-1, and is expected to open in 2018. This means that, under current plans, the Eastlake at 124th Station is assumed to be the end-of-line station when the line opens in 2018.

Figure 1-1: North Metro Rail Line

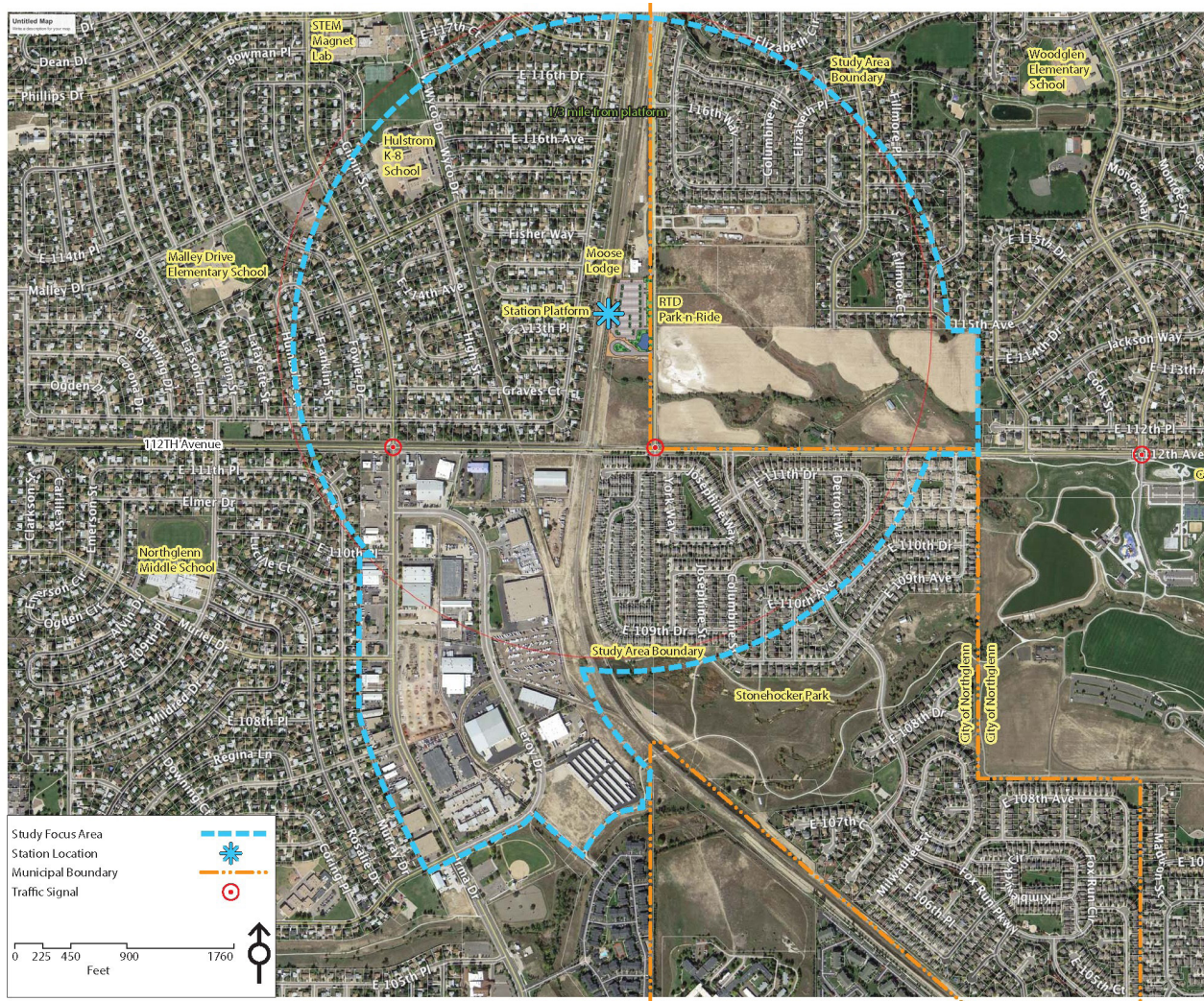


Source: RTD

Station Area

Figure 1-3 illustrates the station area under study for this project (roughly a half-mile radius from the station platform). York St. comprises the municipal boundary between Northglenn and Thornton. The station site itself is adjacent to single-family residential development to the west and southeast, and an industrial park to the southwest (west of the railroad line). On the Thornton side, the station is adjacent to vacant parcels, drainage ways, and a horse ranch immediately to the east, with single-family residential to the northeast and east.

Figure 1-3: Project Station Area

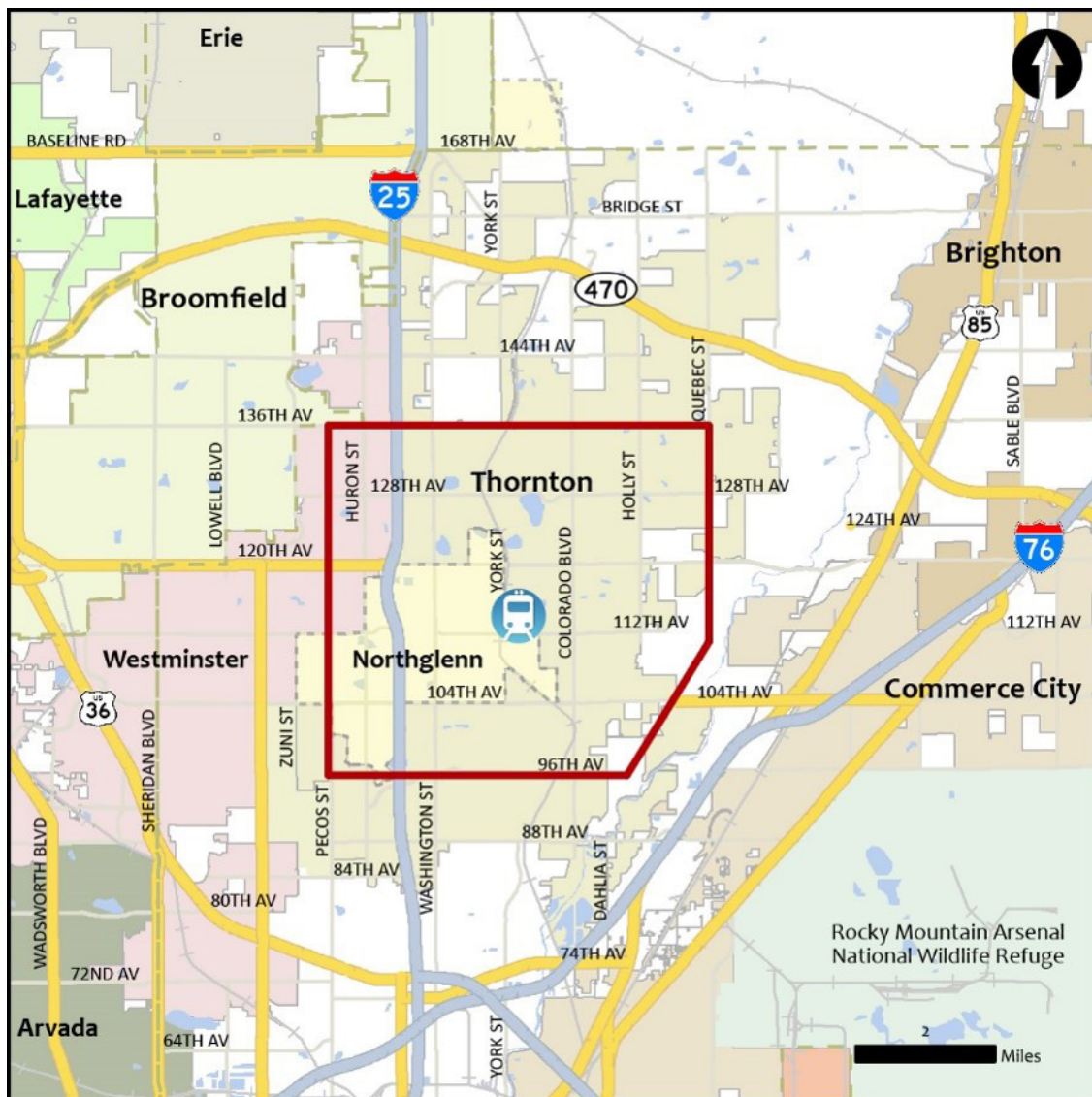


Source: Project Team

1.6 Key Station Area Data Summary: Demographics

This section summarizes the major demographic information included in this report's Station Area Market Analysis, the full text of which is included in Appendix 1. The analysis is focused on the station area as well as what is called a Primary Market Area (PMA), which is the area from which a project will draw the majority of its residents (housing), patrons (retail), employees (office, industrial, institutional) and visitors. These areas will also likely be a source of competition/ demand. A real estate market area is an area with generally comparable population and household characteristics. In the case of residential projects, it is typically a two-to-three mile radius. The boundaries of the PMA generally represent a three-mile market area and extend just west of I-25, north to 136th Ave., south to about 96th Ave., and east to the current edge of development in Northglenn/Thornton (see Figure 1-4).

Figure 1-4: Primary Market Area



Source: Northglenn at 112th Station Area Market Analysis, ArLand Land Use Economics

Population and Household size: Table 1-1 summarizes the population and household size data for the station area, the PMA, and local jurisdictions. Approximately 3,400 people live within the station area. Average household sizes in the station area are about 2.7 persons per household and slightly higher throughout the PMA. The city of Northglenn has an average household size of 2.58, while the city of Thornton has 2.93 persons per household.

Table 1-1: Population and Household Size

2015 Estimates

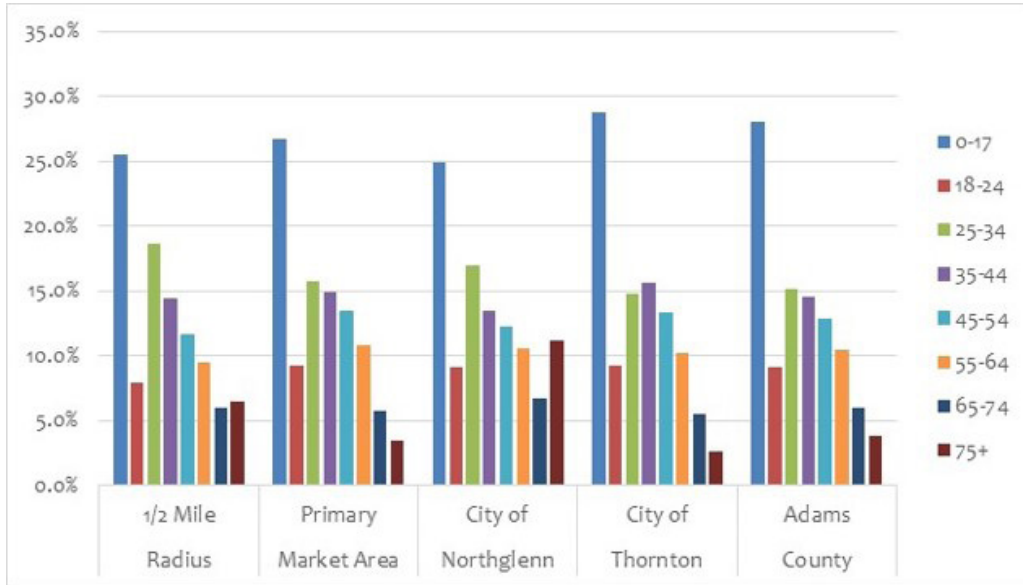
	Persons	Households	Persons / Household
1/2 Mile Radius	3,400	1,262	2.69
Primary Market Area	129,825	47,217	2.75
City of Northglenn	37,016	14,349	2.58
City of Thornton	132,388	45,209	2.93
Adams County	481,372	166,988	2.88

Source: Claritas, ArLand

Source: Northglenn at 112th Station Area Market Analysis, ArLand Land Use Economics

Age: Figure 1-5 illustrates the age breakdown of the station area, the Primary Market Area, and local jurisdictions. There is a concentration of seniors in Northglenn (with persons 65 and over comprising more than 15% of that city’s population, compared with Thornton at 9%), while the ½-mile radius around the station and the city of Northglenn have a relatively higher percentage (17-20%) of millennials (25-34 years) compared with Thornton (at 15%).

Figure 1-5: Age Distribution



Source: Northglenn at 112th Station Area Market Analysis, ArLand Land Use Economics

Why is this important? The age analysis shows that the station area and the two cities have healthy proportions of the key demographic groups that traditionally both ride transit and take advantage of mixed-use developments around transit stations – millennials and seniors.

Ethnicity: The Primary Market Area and the comparative areas are predominantly White, although a significant percentage of the population is of Hispanic origin. Residents of Hispanic origin comprise 31% of the population within a ½-mile radius from the station, compared with 38.9% of the population in Adams County (as shown in Table 1-2).

Table 1-2: Ethnicity

Race/Ethnicity	1/2 Mile Radius	Primary Market Area	City of Northglenn	City of Thornton	Adams County
White	74.9%	77.9%	74.8%	75.7%	72.3%
Black	2.2%	2.0%	2.4%	1.9%	3.1%
American Indian	1.9%	1.2%	1.5%	1.2%	1.4%
Asian/Pacific Islander	4.9%	4.8%	4.0%	5.2%	4.0%
Other / Two or more	16.1%	4.4%	17.2%	16.1%	19.2%
Hispanic Origin*	30.7%	27.6%	31.7%	33.5%	38.9%

Source: Claritas, ArLand

* can be of any race

Source: Northglenn at 112th Station Area Market Analysis, ArLand Land Use Economics

Household income: Residents in the ½-mile radius from the station have a median household income of \$64,100, compared with the city of Northglenn at \$49,400 and the city of Thornton at \$65,400 (see Table 1-3).

Table 1-3: Median Household Income

2015 Estimates

	Median HH Income	Avg HH Income
1/2 Mile Radius	\$64,103	\$68,092
Primary Market Area	\$63,568	\$72,308
City of Northglenn	\$49,377	\$57,883
City of Thornton	\$65,437	\$75,386
Adams County	\$57,751	\$69,066

Source: Claritas, ArLand

Source: Northglenn at 112th Station Area Market Analysis, ArLand Land Use Economics

Why is this important? This information shows that the station area has a relatively high median household income compared with Adams County overall, indicating the potential for relatively strong economic support for new development around the station.

Household growth in the PMA is forecast at less than 0.5% per year through 2040. Most of the forecast population growth in the northern metro region is anticipated to take place along the E-470 corridor. Employment in the PMA is also anticipated to grow at 0.7% per year, with most of the growth occurring near the I-25 and E-470 interchange area.

Why is this important? Household growth is relatively low in the market area, especially compared with other areas of the metro region. This indicates stable neighborhoods but also could limit the residential demand around the station.

CHAPTER TWO: LAND USE CONSIDERATIONS

2.1 Introduction

This chapter provides an overview of the project station area and its relationship to the RTD North Metro station and previous studies and analyses that have been conducted in the area, and other relevant data. As the project team began exploring key issues related to new development and redevelopment of the station area, it documented several key principles for decision-makers to consider.

2.2 Transit-Oriented Development Principles

The Northglenn at 112th Station area presents a unique opportunity for a Transit Oriented Development (TOD). TOD has many definitions, but it generally has three major characteristics:

- TOD includes a **vibrant mix of land uses** to allow people to comfortably live, work, and enjoy amenities in and around the station area. Instead of land being designated for just one purpose such as single-family housing, commercial or industrial, TOD allows a mix of uses within a station area. Often this means having retail or office uses on lower floors of buildings, with residential above. Alternatively, it could mean having different uses located within comfortable walking distance of each other. While most transit patrons will use the North Metro line to travel inbound to Denver in the morning and outbound to Northglenn and Thornton during the evening, TOD can help to foster more balanced two-way travel so that riders have a reason to travel to the station area for jobs, school or shopping.

Key TOD Principles



A vibrant mix of land uses...



A walkable street network...



Compact and compatible development...

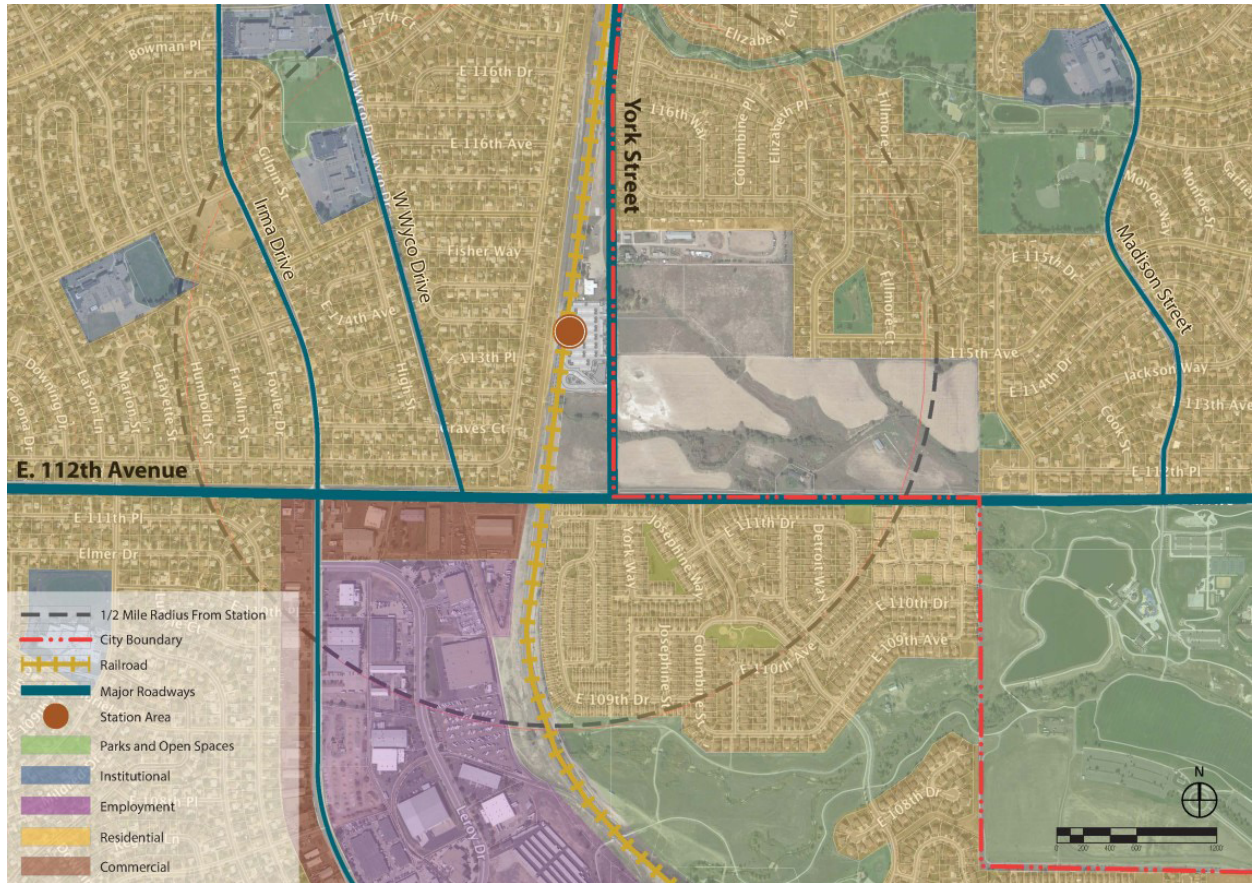
- **TOD includes a well-connected street network that makes it easy and convenient to get around on foot, by bicycle, car and on transit.** TOD is generally located within walking or biking distance of a transit facility and provides the ability for residents or employees to walk to and from their origins and destinations, reducing the need for driving. For example, local residents might have easy walking access to the transit station, stores, and restaurants, or employees and students who arrive at the station by commuter rail could easily walk or bike to their places of work or school. A key goal of TOD is to reduce the need to drive and encourage the use of alternative travel modes such as rail, bus, bicycle and walking. The idea of TOD fostering travel by means other than private autos goes hand-in-hand with the two cities’ goals of encouraging bicycle and pedestrian mobility.
- TOD includes compact and compatible development. TOD allows higher density development – or more units and square footage per acre – than other traditional neighborhoods. It might include both horizontal and vertical mixed uses, meaning that more and different types of development could occupy a smaller ‘footprint’ of land than traditional development. This type of compact land use pattern promotes easy pedestrian connections and comfortable access to the transit station and surrounding uses. To do so successfully however, and to garner support by the local community, TOD must be designed to complement the existing character of surrounding areas, so that the scale of higher density and compact development is seamlessly integrated into the predominantly single-family, lower density character of the surrounding communities.

In addition to these basic principles, successful TOD usually requires the implementation of urban realm design guidelines to focus on all public areas, including parks, plazas, and shared spaces, to ensure quality development and a people-friendly environment. The Northglenn at 112th Station TOD Public Space Design Guideline, included as Appendix 5, provides suggestions for many of those design guidelines.

2.2 Key Station Area Summary: Land Use

Figure 2-1 shows existing land use in and around the station area. The figure shows that the station is surrounded by residential development, with major undeveloped parcels shown in gray immediately around the station (most of which is located in the city of Thornton). To the southwest, there is the industrial park which has commercial (primarily retail-focused) uses along the northern tier fronting on 112th Ave. and along the west side of Irma, and employment-based uses within the remainder of the area. The industrial park represents an opportunity to connect employment to the station and to housing elsewhere along the corridor. Note that there is very little in the way of existing commercial or retail development within walking distance of the station.

Figure 2-1: Current Land Use in the Station Area



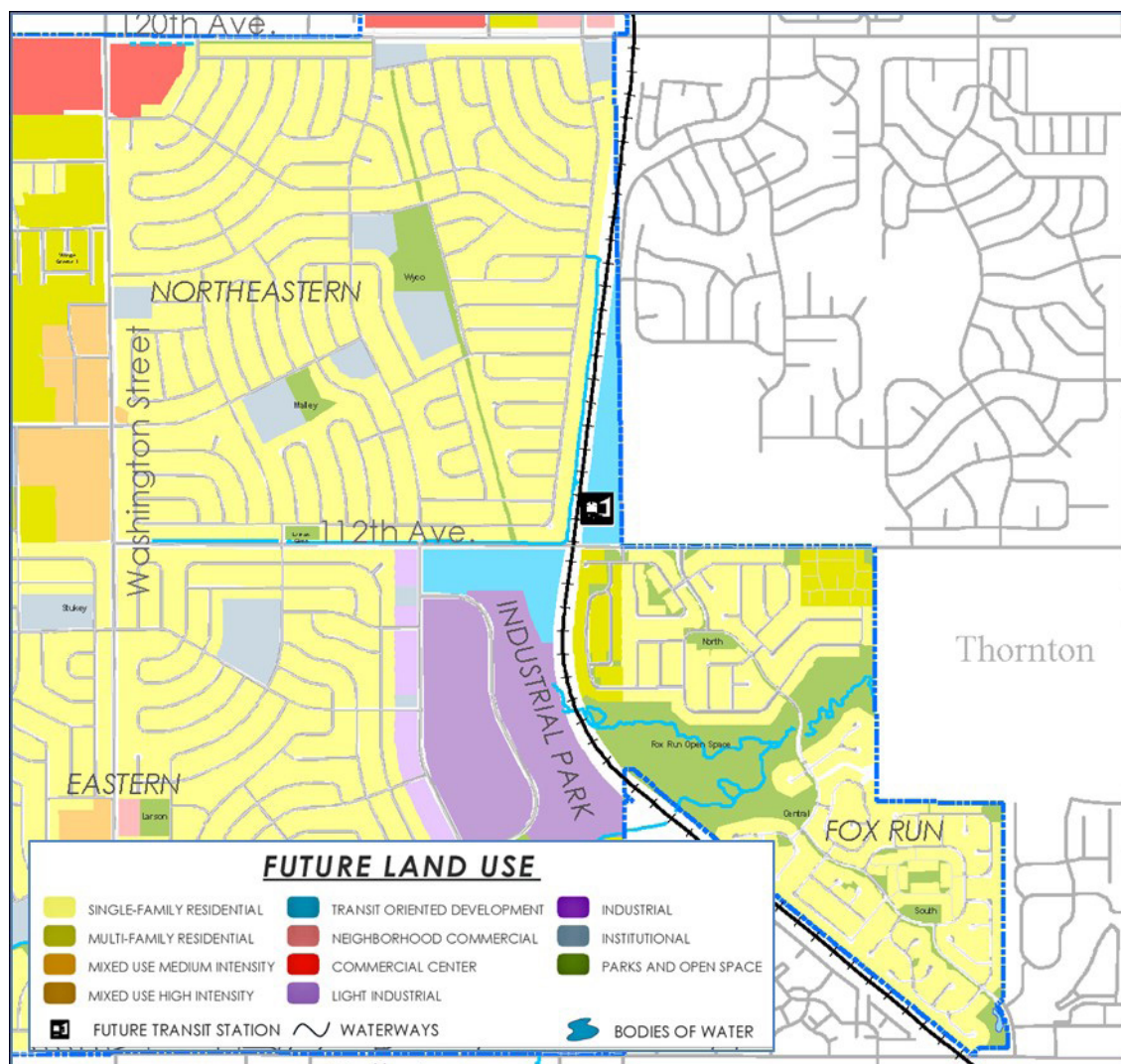
Source: Project Team and cities of Northglenn and Thornton

2.3 Other Project Area Studies and Policies

Northglenn Comprehensive Plan

In 2010, the City of Northglenn approved *Imagine Northglenn: The Next 40 Years*, the city’s comprehensive plan designed to guide future development throughout the city. It is focused on several key principles including upgraded infrastructure, strong and competitive businesses, livable neighborhoods and homes, and working with RTD to maximize the potential of the new RTD North Metro line and its stations. Figure 2-2 shows the proposed future land uses for the station area. It shows the land immediately adjacent to the station and the land along 112th Ave. to the southwest of the station (north of the industrial area) as “Transit Oriented Development.”

Figure 2-2: Northglenn Comprehensive Plan Assumptions for Station Area



Source: City of Northglenn

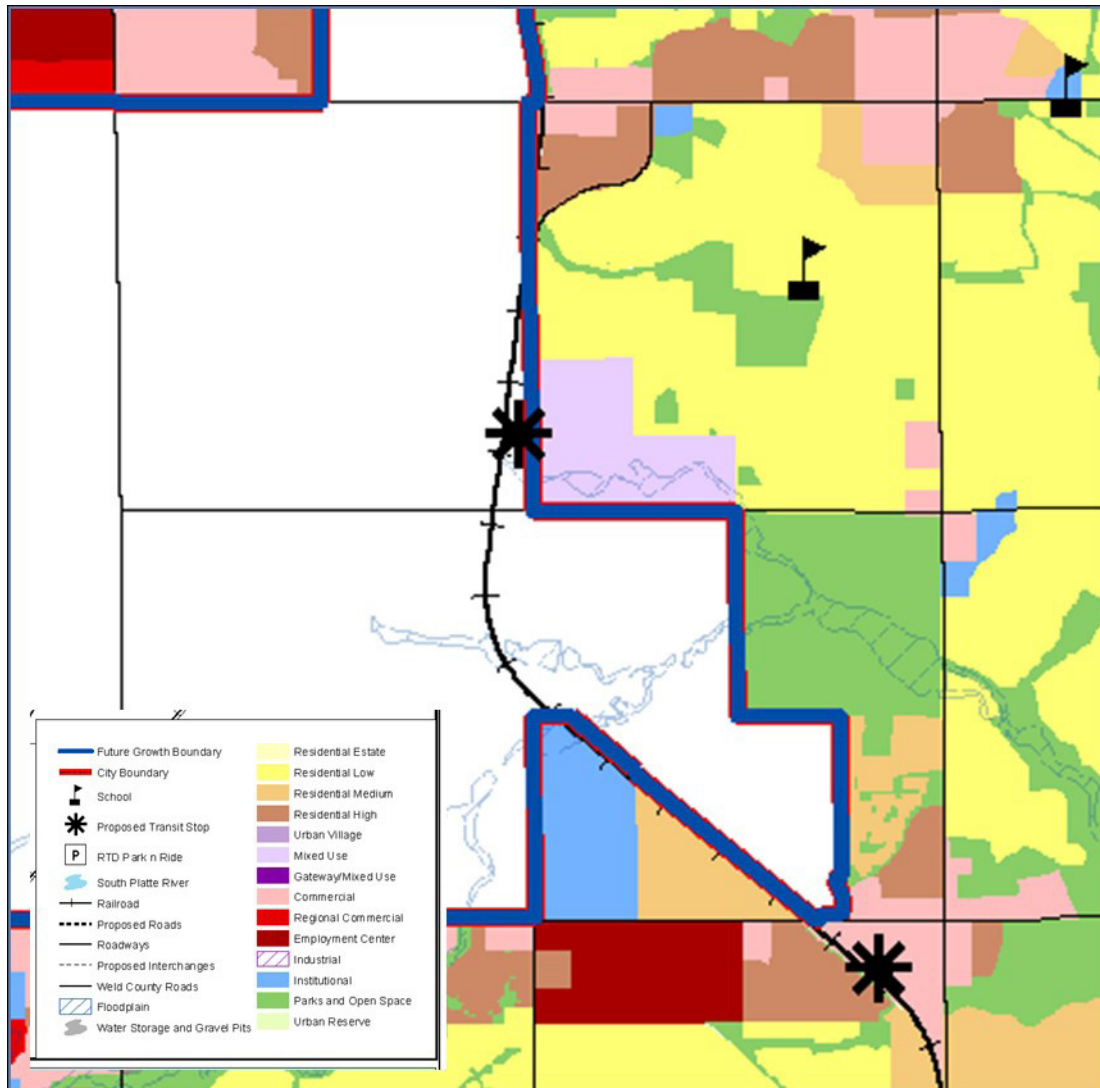
City of Northglenn Development Code

The city of Northglenn is updating its zoning code and subdivision regulations to help the city implement the goals and policies of the 2010 Comprehensive Plan and better accommodate new land uses, changing market and demographic trends, new transit stations, and other infill and redevelopment opportunities. This STAMP will help influence the update of the code and regulations to make specific TOD zoning recommendations for the station area.

Thornton Comprehensive Plan

Figure 2-3 shows future land use for the Thornton portion of the study as reflected in the 2012 City of Thornton Comprehensive Plan. It shows the land immediately adjacent to the station as mixed-use, with residential land uses surrounding it to the east and north.

Figure 2-3: Thornton Comprehensive Plan Assumptions for Station Area

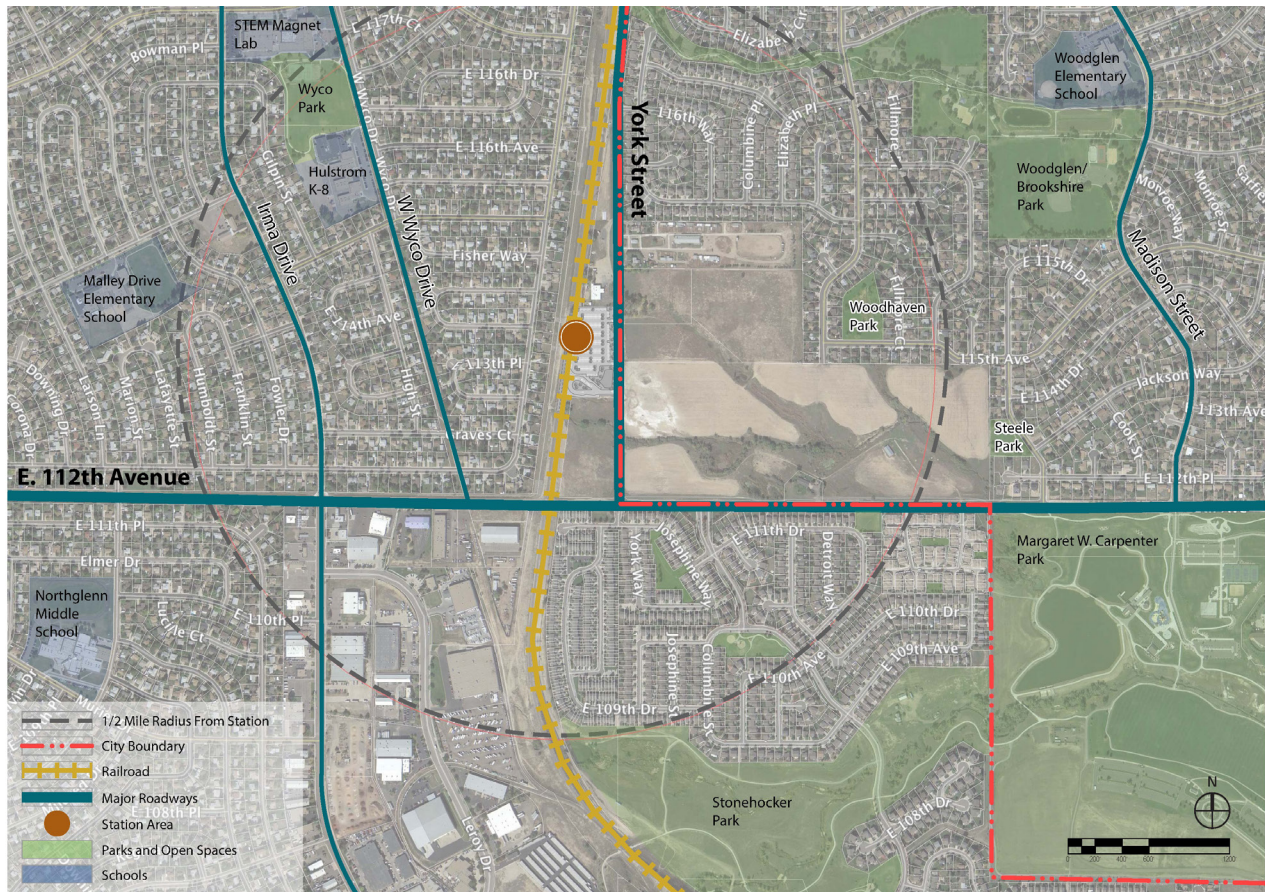


Source: City of Thornton

2.4 Key Station Area Data: Parks and Open Space/Schools

Figure 2-4 shows parks and open space in the station area. The figure shows that several schools are located within or near the station area, with Hulstrom K-8 School being the closest school to the station (to the northwest along the Wyco Trail). Several parks are located near the station site, with large regional parks such as Stonehocker and Margaret W. Carpenter Park and Open Space located on the fringes of the station area. All of these facilities represent important community investments that could impact – and benefit from – the rail station and its environs.

Figure 2-4: Parks and Schools In or Near the Station Area



Source: Project Team and Cities of Northglenn and Thornton

2.5 Market Analysis and Industrial Lands Study

Introduction

This section summarizes the key findings and conclusions of the project’s Market Analysis, the full text of which is included in Appendix 1.

Summary of Site Analysis

- There are almost 90 vacant acres near the station area owned by three parties. The relatively limited number of property owners is potentially helpful in coordinating planning, infrastructure, and financing for development at the station area.
- The station area is surrounded by predominantly residential land uses. The Northglenn Industrial Park is located southwest of the station.

Residential

Background – City and Market Area

- Between 2006 and 2014, the city of Thornton has seen an average of 465 units built annually with 14.6% of the units in a multifamily configuration. Because of the built-out nature of Northglenn, it has seen much less development than surrounding cities. The 228-unit Carrick Bend apartment complex was recently constructed near I-25 and Malley Dr. in Northglenn and has been successfully leasing up.
- Since 2000, the Primary Market Area (PMA) has added a significant number of dwelling units. While 44% of the units were single family detached units, the remaining units were townhomes, condos, and apartments.
- For-sale prices for single family detached homes have generally ranged between \$200,000 and \$400,000. Most of the sales occurred in the 2000’s. There have been a few recent sales over \$500,000. Townhomes at \$280,000 and condos at \$190,000 provide more affordable housing options. Average prices per square foot are \$134 for single family detached units; \$147 for townhomes and \$125 for condos.
- There are 940 multifamily and 3,190 single family detached residential units currently being planned for the next 10-15 years in the PMA, primarily in the city of Thornton (according to city staff).

Key Findings and Observations: Residential

- The station area can support between 400 and 1,300 new residential units (single-family and multifamily).
- The area closest to the station could support up to 40 dwelling units per acre.
- The area could support 185 to 220 assisted living/congregate care units.

Neighborhoods Closer to the Station

- There are a number of apartment communities in relatively close proximity to the Northglenn at 112th Station with average rents per square foot ranging from \$1.50 to in some cases \$2.00 per square foot. In comparison, unit rents in downtown Denver (with structured or underground parking) are \$2 to \$3 per square foot.

- In the immediate station area neighborhood, the residences range in age and size with older, smaller units west of the station, and units built in the 1980’s through the 2000’s to the east and south of the station.

Residential Observations and Conclusions

- While TODs typically focus on higher density multifamily units, in this instance, given the amount of land available and the need to buffer surrounding neighborhoods, the analysis is recommending single-family detached units adjacent to single-family detached neighborhoods surrounding the station.
- Approximately 400-1,300 new single family and multifamily units (townhomes, condos, and apartments) have the potential to be located on the vacant properties at the station area.
- Densities should step up from existing single family residential densities closer to existing neighborhoods up to 40 dwelling units per acre closest to the station. The apartments in the market area range from 13 to 25 dwelling units per acre.
- Prices at this point do not support structured parking, although consideration may be given to phasing structured parking over time should prices rise to support parking structures.
- In addition to market rate residential units, consideration should be given to senior housing and the continuum of care units. There is current demand for 185 to 220 assisted living / congregate care units and a large demand for senior independent units. While they could be included in a high density configuration, another option is to provide these services further from the station in an enclave.
- The city of Thornton conducted a housing needs assessment in 2014. In addition to recommending that more affordable senior continuum of housing services be provided, it identified a need for housing to accommodate low-income family households, persons with disabilities, and veterans.

Commercial

- Most of the PMA retail is located along 104th Ave. and 120th Ave. rather than 112th Ave.
- Retail is always an important activating component at station areas; however, 112th Ave. is relatively less travelled (15,000 vehicles per day) making retail or restaurant uses a challenge.
- To complement a gateway element at 112th Ave. and York St., a modest amount of commercial services can be located at this intersection to accommodate neighborhood oriented services, however, there should be site flexibility in case the market for neighborhood services (such as small-scale retail or offices) doesn’t materialize. There may be the potential, as the station evolves into a neighborhood hub, for limited (up to 15,000 square feet) neighborhood services in an office configuration to accommodate medical offices, insurance brokers, etc.

Key Findings and Observations: Commercial

- A modest amount of commercial development could occur at the “gateway” to the station at 112th Ave. and York St.
- The station area could accommodate up to 15,000 square feet of neighborhood-focused commercial development.

Industrial

- There are more than 4.5 million square feet of industrial and flex space in the PMA. There has been relatively little new space constructed in the market area in the last two years. During this time, the legalization of marijuana has had an impact on industrial space inventory throughout the Denver metro area. Large grow operations increasingly occupy this type of space, moving other users to suburban areas.
- The Northglenn Industrial Park accommodates 90 businesses on 36 properties in approximately 870,000 square feet. Automotive repair and construction contractors account for the majority of businesses. There are also businesses providing Professional, Scientific, and Technical Services, and some Fabricated Metal Product Manufacturing.
- Vacancies in the Northglenn Industrial Park are at or near 0%. Demand continues to be strong for this type of space although demand needs to be balanced with the needs of the neighborhoods and desire for residential and commercial mixed uses close to the station.
- At the same time, this land use provides jobs and serves an important niche in the Northern Denver industrial market.
- The priority for the industrial lands in the station area would be to infill with complementary industrial uses. Landscaping, signage, sidewalks and other gateway elements to the station should also be provided to help provide a more attractive gateway element to the station from the western entrance along 112th Ave.

Key Findings and Observations: Industrial

- The primary development in the industrial lands should be infill with complementary industrial uses.
- Landscape and other urban design features should be added to make the industrial area a more attractive gateway along 112th Ave.

2.6 Developer Panel Review of Initial Concepts

On February 16, 2016, seven developers met with the project team to review the overall project's data analysis and initial site planning ideas and make recommendations on future potential development. The meeting's entire summary is included in Appendix 2, and its major findings and conclusions are summarized below.

Summary of Key Findings and Recommendations

- Drainage and the flood plain issues are the key constraints that must be resolved in order to facilitate development of the station area. The drainage solution needs to be a global station area solution and address all of the drainage issues on all of the different properties at once.
- The Northglenn and Thornton city councils should consider addressing the drainage and road alignment issues until resolved and a financing and rezoning approach is agreed to. Cooperation will be needed to solve these and other issues and a process of education and consensus building will be required including workshops, planning sessions, additional public meetings and tours of other station areas
- Each city should consider developing financial incentives and appropriate zoning (commercial/mixed use at 112th Ave. and York St./Fox Run Pkwy., higher-density mixed-use adjacent to station transitioning to town homes and then single family) to be available in the next five to fifteen years when market conditions may be more conducive to development.
- The market today might support market-rate and affordable apartment development. The Market Study found that there are other recent market rate apartment communities that have been built in the immediate area and that these communities have leased-up and are considered to be successful.
- The industrial area should be treated as a gateway to the station but should be considered as a separate area from the Station Area Plan. Instead of creating planning options for residential and mixed-use on the industrial site, attention should be given to improving the appearance and increasing the connectivity between the industrial area and the 112th Station. The industrial site can be viewed as the west gateway to the station area, transitioning to retail, and then the station. The developers present at the forum did not feel that there was a significant market for "creative industrial or creative office space" at this time.

Key Findings and Observations: Developer Panel

- There is a major advantage to the site given that only three property owners own the majority of developable parcels.
- Drainage and floodplain issues need to be resolved.
- Develop financial incentives and appropriate zoning for the station area.
- The area could support market-rate and attainable residential development.
- The industrial area should be a gateway with urban design improvements.
- The realignment of York St. could improve the area's attractiveness to developers.

- One major asset of this Station Area is that just three property owners own the majority of developable parcels on the site. Significant outreach and coordination should continue between Northglenn, Thornton, the three property owners, the surrounding residential neighborhoods, and the light industrial area tenants.
- The realignment on York St. and the proposed intersection would enhance the development feasibility of the parcels on the north side of 112th Ave., and help to create a more dramatic gateway to the station area.

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CHAPTER THREE: LAND USE CONCEPTS AND PREFERRED ALTERNATIVE

3.1 Introduction

Based on an analysis of existing and future conditions, local development principles and guidelines, and the guidance of the developer panel and key stakeholders, the project team developed three initial land use concepts for consideration. These concepts focus primarily on vacant lands in the station area, but they also have been developed to complement and coordinate with established and stable neighborhoods in the station area.

3.2 Alternatives Considered

Alternative 1

This alternative (as shown in Figure 3-1) allows medium-to-high-density housing (8 to 40 dwelling units per acre) adjacent to the station to the east and south of the platform along York St., dropping to medium-to-low density (6 to 12 units per acre) adjacent to the existing neighborhoods to the north and east and along 112th Ave. east of York St., transitioning to low-density (4 to 8 units per acre) as a neighborhood buffer to the east. It includes a park within the core areas of the station, and a greenway (with pedestrian and bicycle trails) along the drainage channel. It also identifies options for pockets of neighborhood-serving commercial/retail at key points, primarily adjacent to the station (south of the platform and to the east of York St.) and at the intersection of York St. and 112th Ave. If commercial does not develop at these identified locations, the land use would instead be residential at the designated underlying density color.

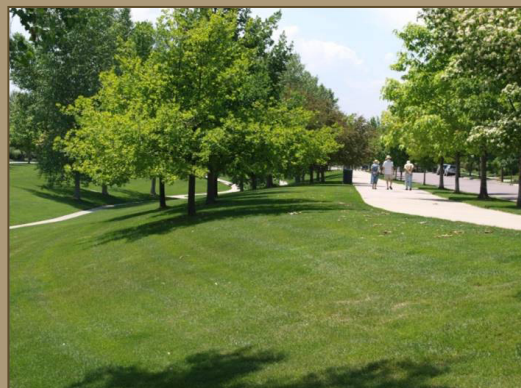
Alternative 1 Key Features



Example medium-to-high residential density closest to the station

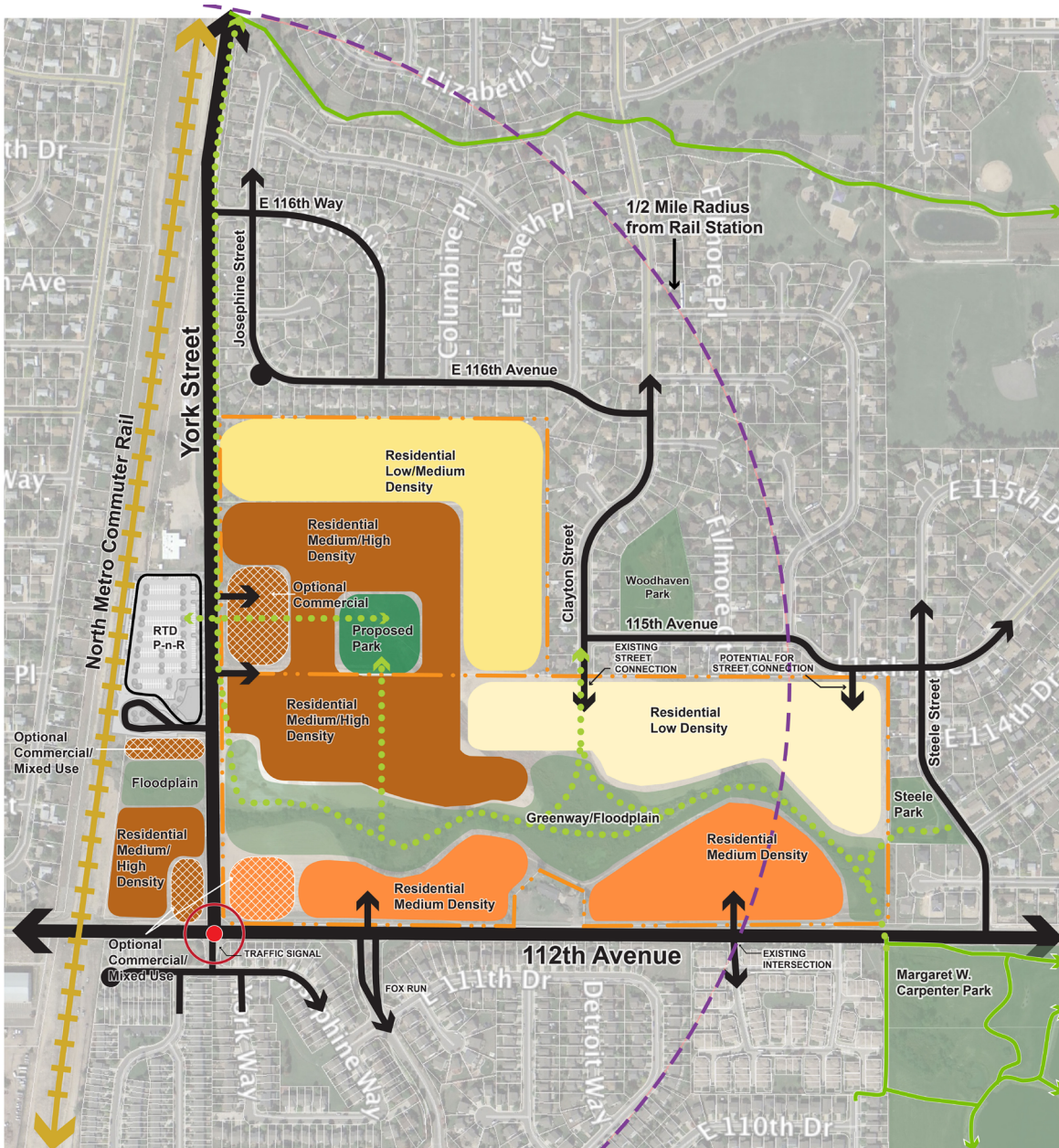


Example neighborhood-serving retail near station and at York St./112th Ave.



Example greenway in drainage channel

Figure 3-1: Land Use Concept Alternative 1



- | | | |
|----------------------------|---|--|
| Auto Throughways | Traffic Signal | Residential Medium/High Density 8-40 DU's/acre |
| 1/2 mile Station Radius | Property Lines | Residential Med. Density 8-18 DU's/acre |
| Commuter Rail Corridor | Proposed Parks | Residential Low/Medium Density 6-12 DU's/acre |
| Existing Ped Lanes & Paths | Existing Parks, Open Spaces and Flood Plain | Residential Low Density 4-8 DU's/acre |
| Proposed Ped Lanes & Paths | Optional Commercial | |



Alternative 1

Source: Project Team

Table 3-1 summarizes Alternative 1’s estimated land use acreage, densities, and commercial square footage.

Table 3-1: Estimated Land Uses and Densities for Alternative 1

Land Use	Density	Estimated Acres	Range of Dwelling Units	Commercial
Residential Medium/High Density	8-40 DUs/acre	18.2	134-672	
Residential Medium Density	8-18 DUs/acre	13.3	69-155	
Residential Low/Medium Density	6-12 DUs/acre	15	38-77	
Residential Low Density	4-8 DUs/acre	16	28-56	
Optional Commercial		4.6		15,000 square feet
Parks		2.6		
Drainageway/Open Space		13.8		
TOTALS		83.5	269-960	15,000 square feet

Source: Project Team

Alternative 2

This alternative (Figure 3-2) is similar to Alternative 1 but provides less flexibility in density near the transit core. Instead of allowing the possibility for lower density in the transit core area, it promotes slightly higher-density residential development (from 16 to 40 units per acre) immediately adjacent to the station to the east. It also allows medium-density (8 to 18 units per acre) in pockets to the east (north and south of a neighborhood park), along 112th Ave., and south of the platform. It transitions to low-density (4 to 8 units per acre) in most areas adjacent to the existing neighborhoods to the north and east. As with Alternative 1, it incorporates a greenway with pedestrian and bicycle trails along the drainage channel, and options for small pockets of neighborhood-serving commercial/retail at key locations (including immediately adjacent to the platform to the south and east and on 112th Ave. at York.

Alternative 2 Key Features



Example higher residential density closest to the station



Example moderate-to-low density residential as buffers to adjacent neighborhoods



Example interior park/open space

Figure 3-2: Land Use Concept Alternative 2



- | | | |
|----------------------------|---|---|
| Auto Throughways | Traffic Signal | Residential High Density
16-40 DU's/acre |
| 1/2 mile Station Radius | Property Lines | Residential Medium/High Density
8-40 DU's/acre |
| Commuter Rail Corridor | Proposed Parks | Residential Medium Density
8-18 DU's/acre |
| Existing Ped Lanes & Paths | Existing Parks, Open Spaces and Flood Plain | Residential Low Density
4-8 DU's/acre |
| Proposed Ped Lanes & Paths | Optional Commercial | |



Alternative 2

Source: Project Team

Table 3-2 summarizes Alternative 2's estimated land use acreage, densities, and commercial square footage.

Table 3-2: Estimated Land Uses and Densities for Alternative 2

Land Use	Density	Estimated Acres	Range of Dwelling Units	Commercial
Residential High Density	16-40 DUs/acre	12.9	96-240	
Residential Medium Density	8-18 DUs/acre	24.5	129-321	
Residential Low Density	4-8 DUs/acre	23.6	23-46	
Optional Commercial		5.1		15,000 square feet
Parks		2.6		
Drainageway/Open Space		14.8		
TOTALS		83.5	248-607	15,000 square feet

Source: Project Team

Alternative 3

This alternative (Figure 3-3) shows a proposed realignment of York St. over to Fox Run Pkwy. and the resulting changes to the land uses that result from the realignment. For example, it provides similar density levels of residential and commercial development as Alternative 1, but with different groupings of development as a result of the York St. realignment. In particular, it provides an opportunity (though not a requirement) for a developer to create a “unified” development parcel to the south of the rail platform, east and west along 112th Ave. west of the realigned York St. (More details on the potential realignment of York St. are included in Section 4.6.)

Alternative 3 Key Features

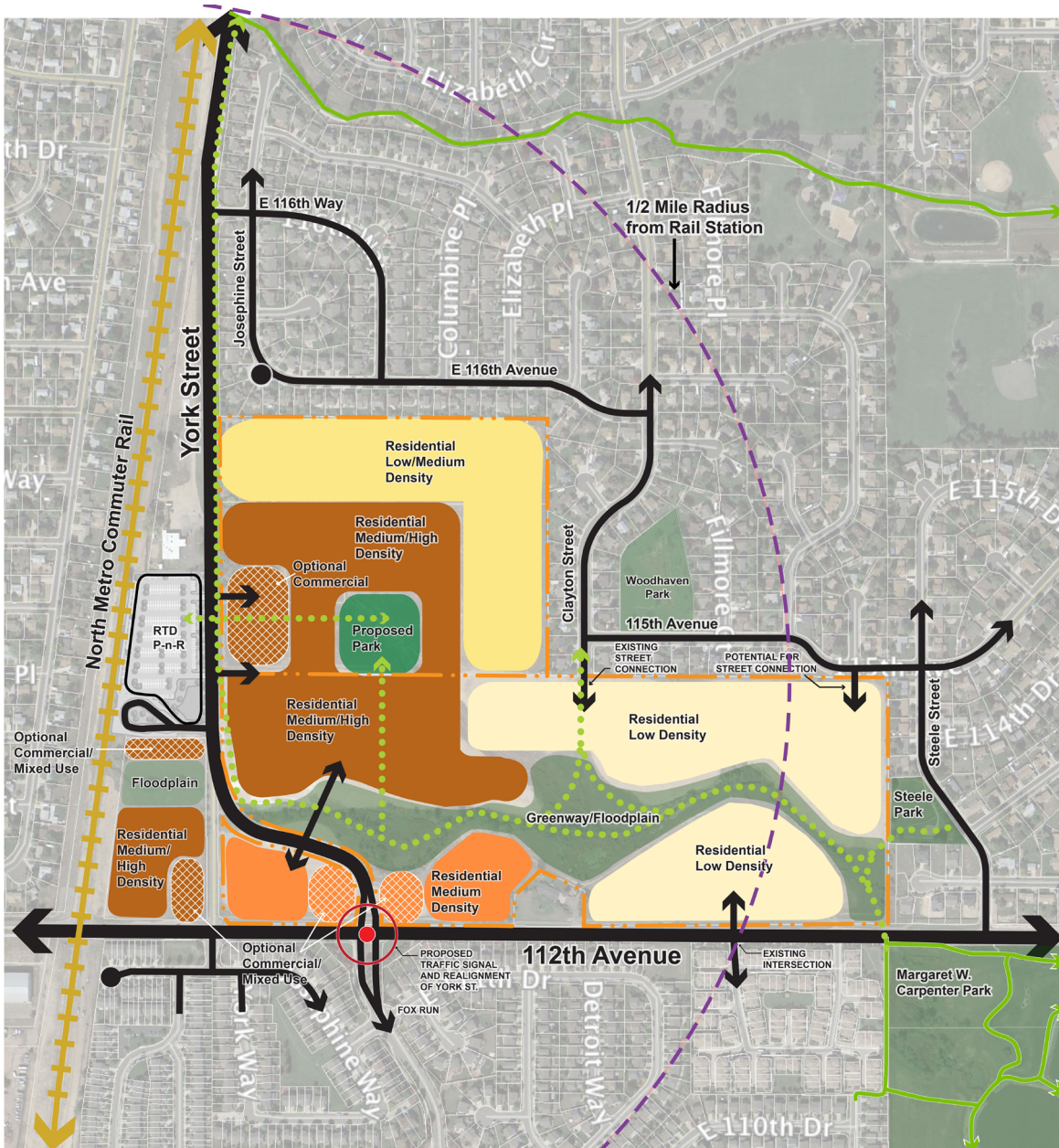


Example for realigned York St. with bicycle lanes



Example low density residential as buffer to adjacent neighborhoods

Figure 3-3: Land Use Concept Alternative 3



- | | | |
|----------------------------|---|--|
| Auto Throughways | Traffic Signal | Residential Medium/High Density 8-40 DU's/acre |
| 1/2 mile Station Radius | Property Lines | Residential Med. Density 8-18 DU's/acre |
| Commuter Rail Corridor | Proposed Parks | Residential Low/Medium Density 6-12 DU's/acre |
| Existing Ped Lanes & Paths | Existing Parks, Open Spaces and Flood Plain | Residential Low Density 4-8 DU's/acre |
| Proposed Ped Lanes & Paths | Optional Commercial | |



Alternative 3

Source: Project Team

Table 3-3 summarizes Alternative 3’s estimated land use acreage, densities, and commercial square footage.

Table 3-3: Estimated Land Uses and Densities for Alternative 3

Land Use	Density	Estimated Acres	Range of Dwelling Units	Commercial
Residential Medium/High Density	8-40 DUs/acre	18.7	134-672	
Residential Medium Density	8-18 DUs/acre	6.7	14-32	
Residential Low/Medium Density	6-12 DUs/acre	15	38-77	
Residential Low Density	4-8 DUs/acre	22.9	28-56	
Optional Commercial		5.5		15,000 square feet
Parks		2.6		
Drainageway/Open Space		12.2		
TOTALS		83.5	214-837	15,000 square feet

Source: Project Team

3.3 Preferred Alternative

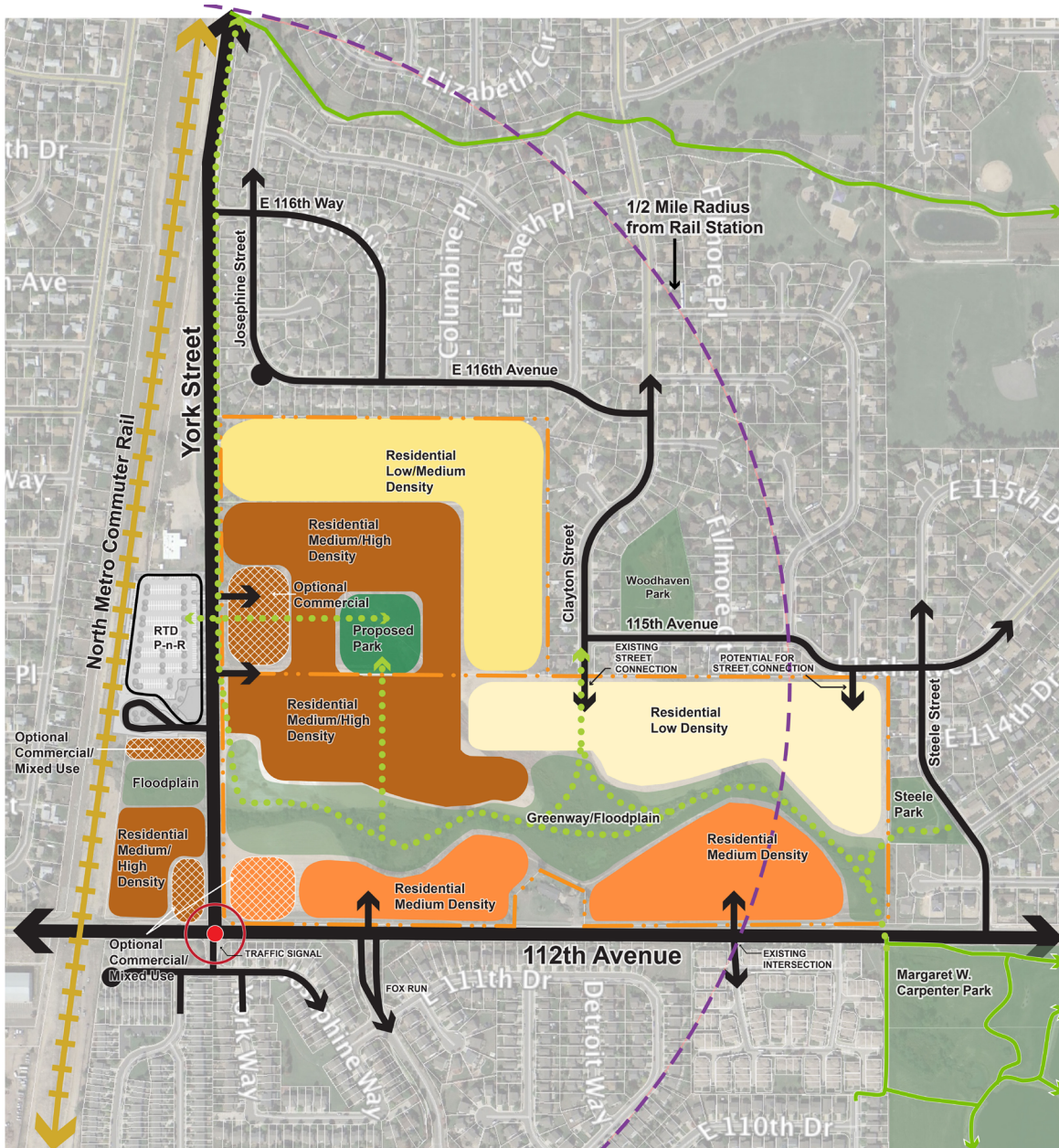
Figure 3-4a shows the Preferred Alternative for land use in the station area, which is Alternative 1 with the existing alignment of York St. This alternative is preferred because it provides options for higher residential density and commercial development near the station while still being flexible and feasible from a market perspective, and it provides a gradual land use transition between the existing neighborhoods and the station. This alternative also was chosen because it is based on the existing alignment of York St. and therefore is not dependent on an unfunded road improvement.

However, the cities also recognize the potential benefits of realigning York St. as shown in Alternative 3, and if the developer(s) chose to realign York St., the cities would support this option, as shown in Figure 3-4b, if all required development standards for the proposed development and road improvements were met. It is recognized that there is an added cost to development by realigning York St., but that there are distinct benefits to the realignment as described in more detail in Section 4.6. If the developer(s) chooses to realign York St., the development concept would then look like Alternative 3 in that the small amount of neighborhood retail would move to the intersection of York St. and 112th Ave. Final determination on the option to realign York St. will be made at the time of development application.

The Preferred Alternative meets the project’s overall guiding principles and goals in a number of ways:

- It provides a **diverse range of housing options and densities** to appeal to large segments of the residential market. It envisions providing newly emerging styles of housing not currently found in Northglenn and Thornton, and it leverages the Northglenn at 112th Station investment by focusing the most high-intensity residential development closest to the station platform.
- It promotes **neighborhood-serving retail** in amounts appropriate for the local market forecast. Options for retail development are identified directly adjacent to the station (to serve commuters) and at the intersection of 112th Ave. and York St., where it would have high visibility and access. This new retail element can serve not only the immediate development area around the station but also the adjacent neighborhoods and their residents.
- It provides a wide range of **transit-supportive development** aimed at ensuring usage of the RTD rail system and leveraging the communities’ investment in the RTD station.
- It aims to **create a sense of “place”** around the station by providing walkable, diverse neighborhoods, the potential for unique character and design (while remaining compatible with adjacent neighborhoods), and providing significant amounts of greenspace and open lands that can supplement development and provide major recreational opportunities. This can be implemented in conjunction with suggested transportation infrastructure improvements described in Chapter 4 and the recommended design guidelines included in the Northglenn at 112th Station TOD Public Space Design Guidelines developed as Appendix 5 as part of this report.

Figure 3-4a: Preferred Alternative



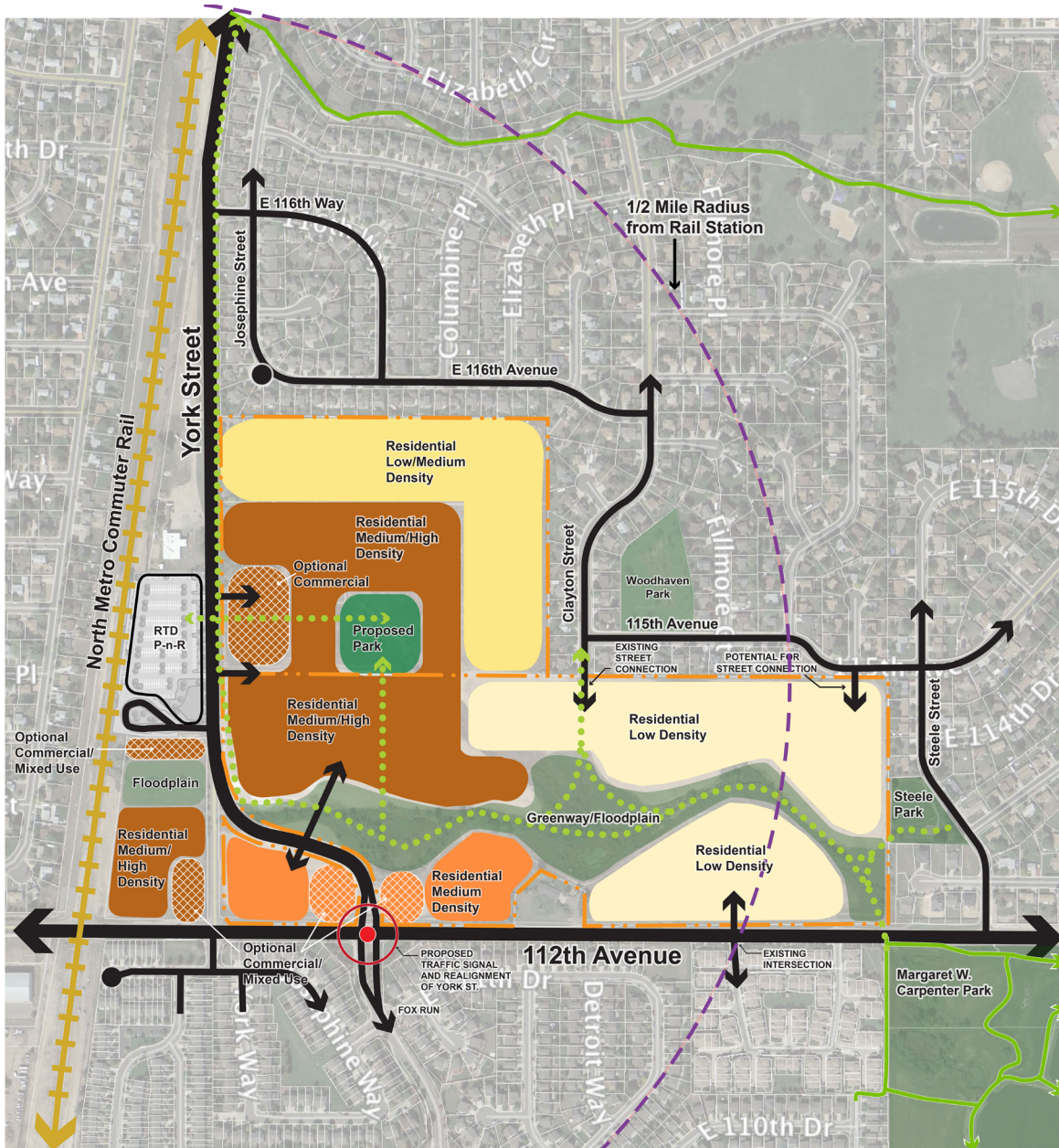
- | | | |
|----------------------------|---|--|
| Auto Throughways | Traffic Signal | Residential Medium/High Density 8-40 DU's/acre |
| 1/2 mile Station Radius | Property Lines | Residential Med. Density 8-18 DU's/acre |
| Commuter Rail Corridor | Proposed Parks | Residential Low/Medium Density 6-12 DU's/acre |
| Existing Ped Lanes & Paths | Existing Parks, Open Spaces and Flood Plain | Residential Low Density 4-8 DU's/acre |
| Proposed Ped Lanes & Paths | Optional Commercial | |



Preferred

Source: Project Team

Figure 3-4b: Option for York Street Realignment



- | | | |
|----------------------------|---|--|
| Auto Throughways | Traffic Signal | Residential Medium/High Density 8-40 DU's/acre |
| 1/2 mile Station Radius | Property Lines | Residential Med. Density 8-18 DU's/acre |
| Commuter Rail Corridor | Proposed Parks | Residential Low/Medium Density 6-12 DU's/acre |
| Existing Ped Lanes & Paths | Existing Parks, Open Spaces and Flood Plain | Residential Low Density 4-8 DU's/acre |
| Proposed Ped Lanes & Paths | Optional Commercial | |

Optional York Street Realignment



Source: Project Team

Table 3-4 summarizes the Preferred Alternative’s estimated land use acreage, densities, and commercial square footage.

Table 3-4: Estimated Land Uses and Densities for Preferred Alternative

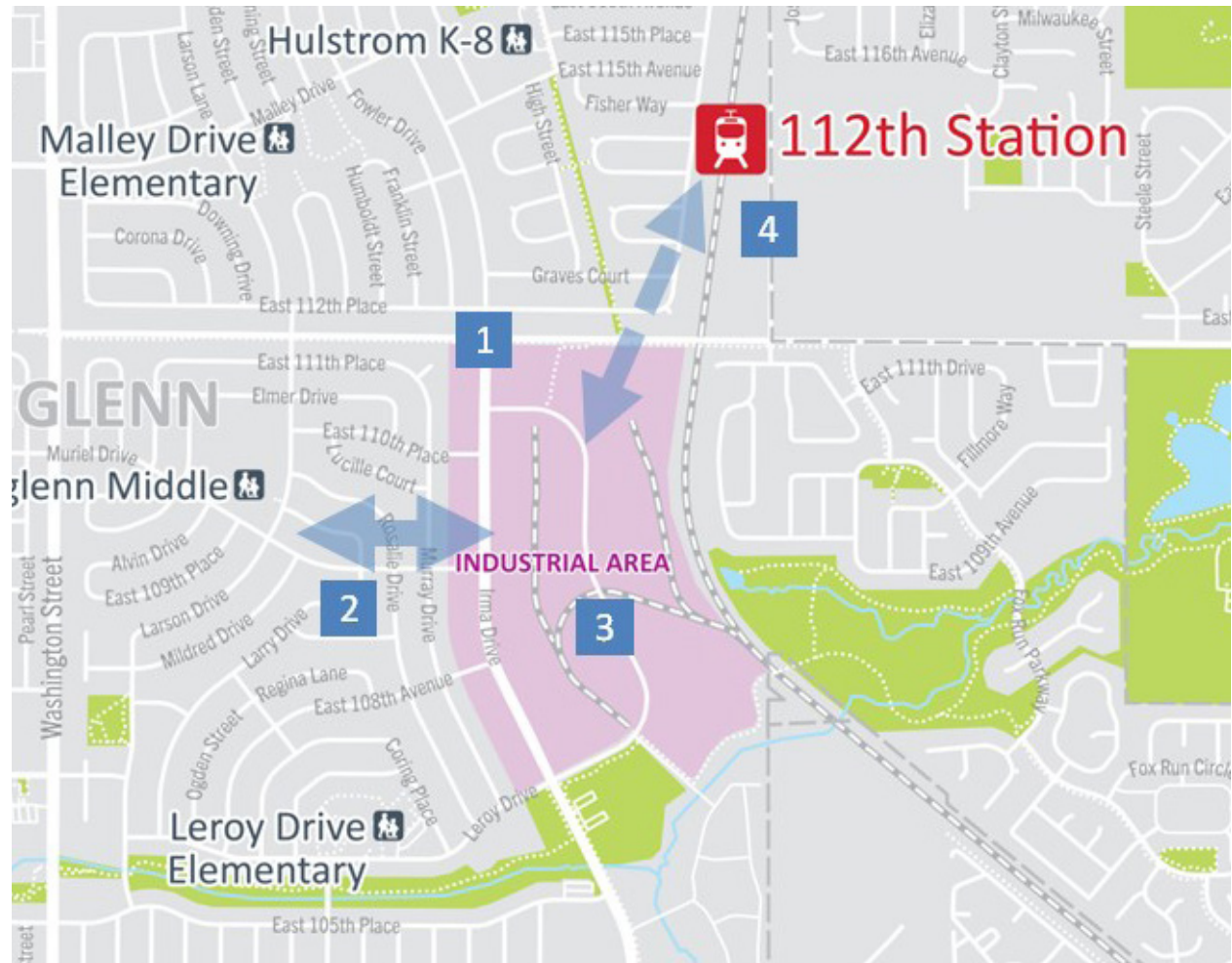
Land Use	Density	Estimated Acres	Range of Dwelling Units	Commercial
Residential Medium/High Density	8-40 DUs/acre	18.2	134-672	
Residential Medium Density	8-18 DUs/acre	13.3	69-155	
Residential Low/Medium Density	6-12 DUs/acre	15	38-77	
Residential Low Density	4-8 DUs/acre	16	28-56	
Optional Commercial		4.6		15,000 square feet
Parks		2.6		
Drainageway/Open Space		13.8		
TOTALS		83.5	269-960	15,000 square feet

Source: Project Team

3.4 Industrial Area Southwest of the Station

In addition to the focus on the primary station area north of 112th Ave., the project team developed land use and development strategies for the industrial area southwest of the station. Figure 3-5 illustrates some of the key issues and goals associated with that area.

Figure 3-5: Key Goals for Industrial Area Southwest of Station



Source: Project Team

Those goals (corresponding to the numbers on the figure) included:

1. Evaluate ways to increase the mix of uses along 112th Ave. to better respond to the TOD opportunity the station represents.
2. Create opportunities for the industrial park to utilize the city of Northglenn’s economic development incentives to invest in current businesses and employment opportunities.
3. Create opportunities for the industrial park to better serve the regional demands for industrial uses over the long term.
4. Create opportunities for industrial park employees to use transit to get to and from jobs.

Strategy Framework

Figure 3-6 illustrates some of the key issues related to a strategy framework for developing the industrial area, with additional details on these strategies described below.

- The priority for the industrial lands in the station area should be to provide infill development in appropriate locations with complementary industrial uses. This can be accomplished by the city of Northglenn through several actions, including:
 - Working with property owners to facilitate new tenants or owners for the vacant buildings/tenant spaces. This could include updating the industrial zoning performance standards to allow existing industrial buildings to be updated to meet new trends and adapt to new industries. It could also include looking for external organizations or grants that could provide opportunities for developing new industrial facilities in existing buildings, such as innovation districts, educational or medical-related uses, live-work spaces, or other newly developing options.
 - Working with the owner of the parcel immediately west of the railroad tracks and fronting on 112th Ave. (as shown in Figure 3-7) to develop the property or sell it to someone who would. Efforts in this direction are already ongoing through the city of Northglenn’s economic development programs and should be continued and supported.
 - Supporting the owners of the Rocky Mountain Soccer Center if they are interested in expanding or selling the facility.
 - Work with the Northglenn Urban Renewal Authority (NURA) to invest in infrastructure improvements, such as streetscape elements, landscaping, signage, sidewalks and other gateway elements to the station to provide a more attractive gateway experience to the station from the western entrance along 112th Ave. from Irma Street to the east side of the RTD right-of-way.

Key Policy Directions/Recommendations: Industrial Area

- Focus on infill development.
- Provide infrastructure and urban design improvements.
- Provide pedestrian access across 112th Ave. to the industrial area.
- Improve wayfinding throughout the area.
- Assist and encourage existing businesses.

Figure 3-6: Strategy Framework for Industrial Area



Source: Project Team

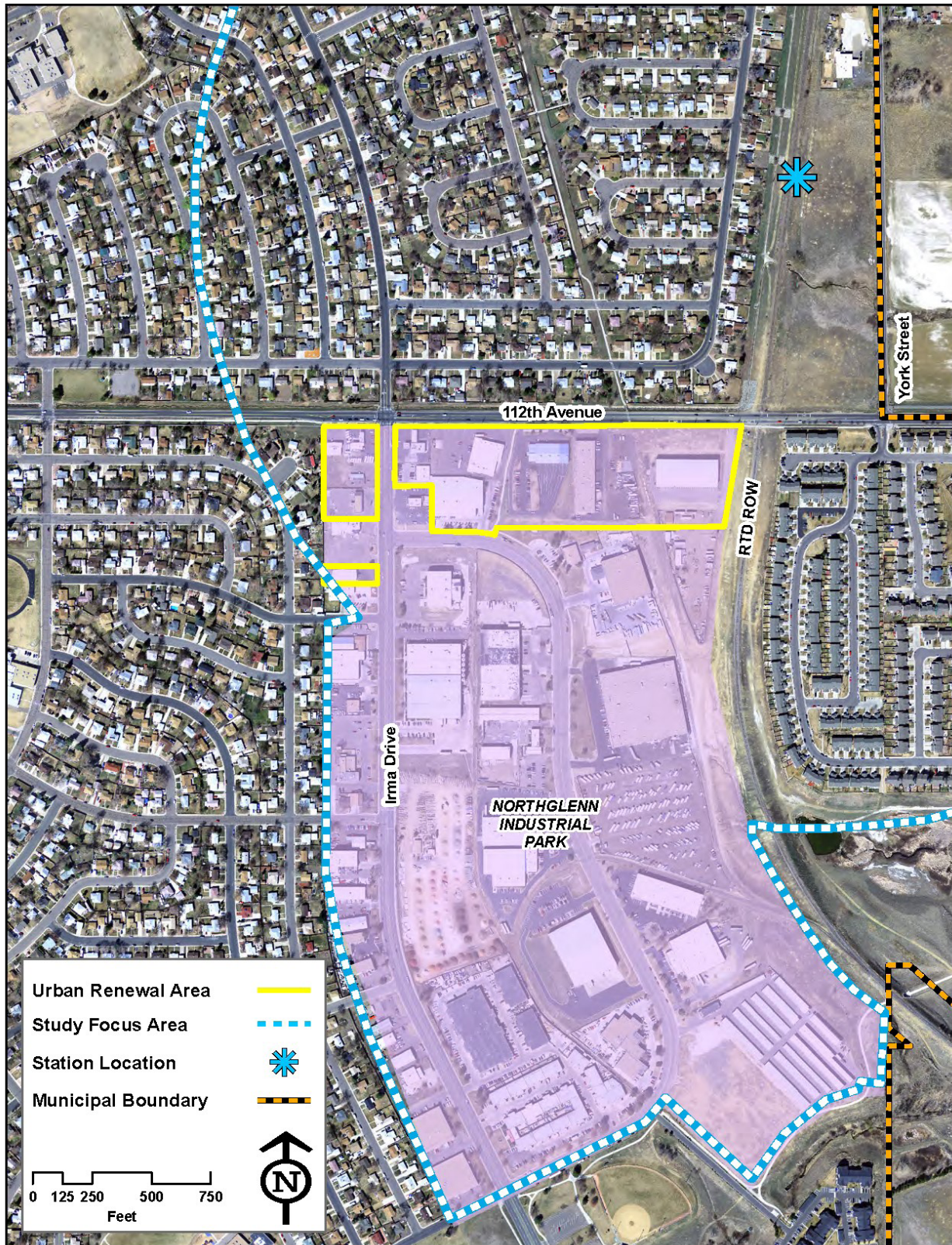
Figure 3-7: Vacant Parcel Fronting E. 112th Ave.



Source: Project Team

- Work with RTD and others to consider providing a pedestrian crossing across 112th Ave., either at the Wyco easement or at the RTD railroad crossing, and a pedestrian/bicycle trail connection to the North Fork Grange Hall Creek trail, either along the west side of the RTD right-of-way or within the Wyco right-of-way. This would include investment in safety improvements such as pedestrian-activated signals, raised pedestrian tables/crosswalks, and other high-visibility safety upgrades.
- Work with the Northglenn Arts and Humanities Foundation to install works of art as wayfinding as part of an area-wide system of wayfinding art/signage.
- Work with NURA on other business assistance programs to assist existing industrial businesses within the urban renewal area with their expansion needs. Figure 3-8 shows the properties in the station area within the NURA boundary.

Figure 3-8: Properties in Station Area Within NURA Boundary



Source: Project Team

3.5 Key Station Area Data: Utilities

This section summarizes the key findings of the utilities memo included in Appendix 3.

City of Northglenn

The city of Northglenn provides water, sanitary sewer, and storm sewer service to the area west of York St., and will be the service provider for the undeveloped area at the northwest corner of York St. and 112th Ave., south of the RTD station. The city of Northglenn also provides service to the Northglenn Industrial Park.

City of Thornton

The city of Thornton provides water, sanitary sewer, and storm sewer service to the area east of York St., and will be the service provider for the undeveloped area at the northeast corner of York St. and 112th Ave. Existing facilities are generally sized appropriately to accommodate future development. The major system lines are already in place, including a 24" water main in York St., 8" and 12" water lines in the surrounding residential areas, and 8" sanitary sewer lines in the surrounding residential areas.

Overall Assessment

Based on the area investigated for this utility evaluation and the criteria used to identify major utilities, additional water and sewer mains will need to be designed and constructed to serve future development needs. It is the responsibility of the local water and/or sewer agency to provide service to undeveloped parcels within the station area. It would be the developer's cost responsibility to install any necessary water and sewer lines within their development. These anticipated water and sewer infrastructure costs are considered within the realm of the standard and expected cost of development.

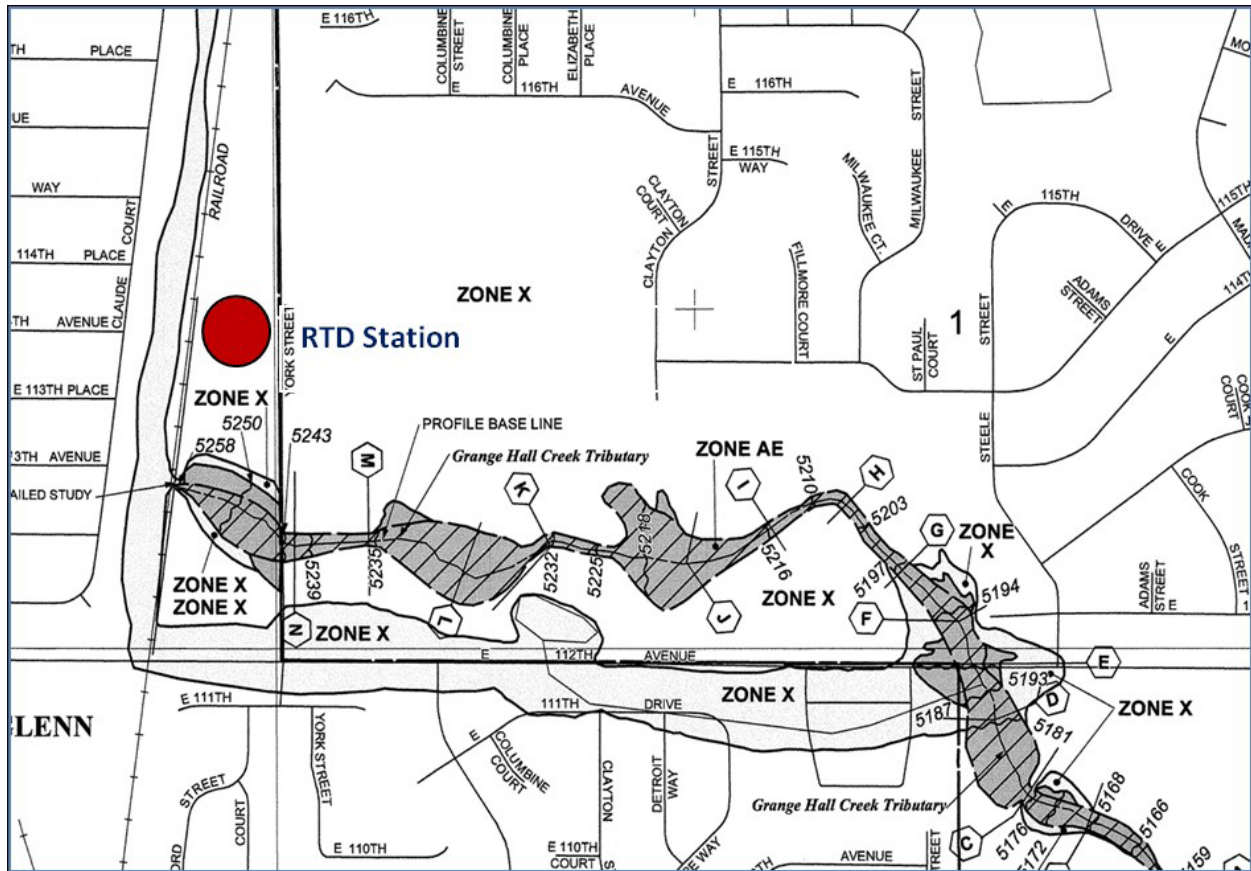
There appears to be sufficient water and sanitary sewer capacity in both the Northglenn and Thornton infrastructure to serve the future development of this project area. As development progresses, the cities of Northglenn and Thornton will need to monitor their existing infrastructure to ensure adequate capacity is available to accommodate growth.

Additional improvements to the drainage channel that runs through the station area (see Figure 3-9) will need to be addressed to maximize the development area. This includes upgraded drop structures and possible channel depth modifications. These drainage improvements will be consistent with recommendations made by Urban Drainage Flood Control District (UDFCD) in their final master plan update. Development within the drainage channel area will likely be prohibited unless and until improvements within the drainageway are made, either as part of new development that may occur around the station or as a separate project. In addition, for future development to occur (and for assistance from the UDFCD to be available), the drainageway will need to have adequate assurances as required by UDFCD.

Key Policy Directions/Recommendations: Utilities

- The cities will need to monitor development and make appropriate investments as needed.
- Additional drainage channel improvements will be needed to serve new developments, and it will need to be under public ownership.

Figure 3-9: Drainage Channel in Station Area



Source: Project Team (verify - looks like FEMA flood plain map - AS)

CHAPTER FOUR: STRATEGIC MOBILITY PLANNING

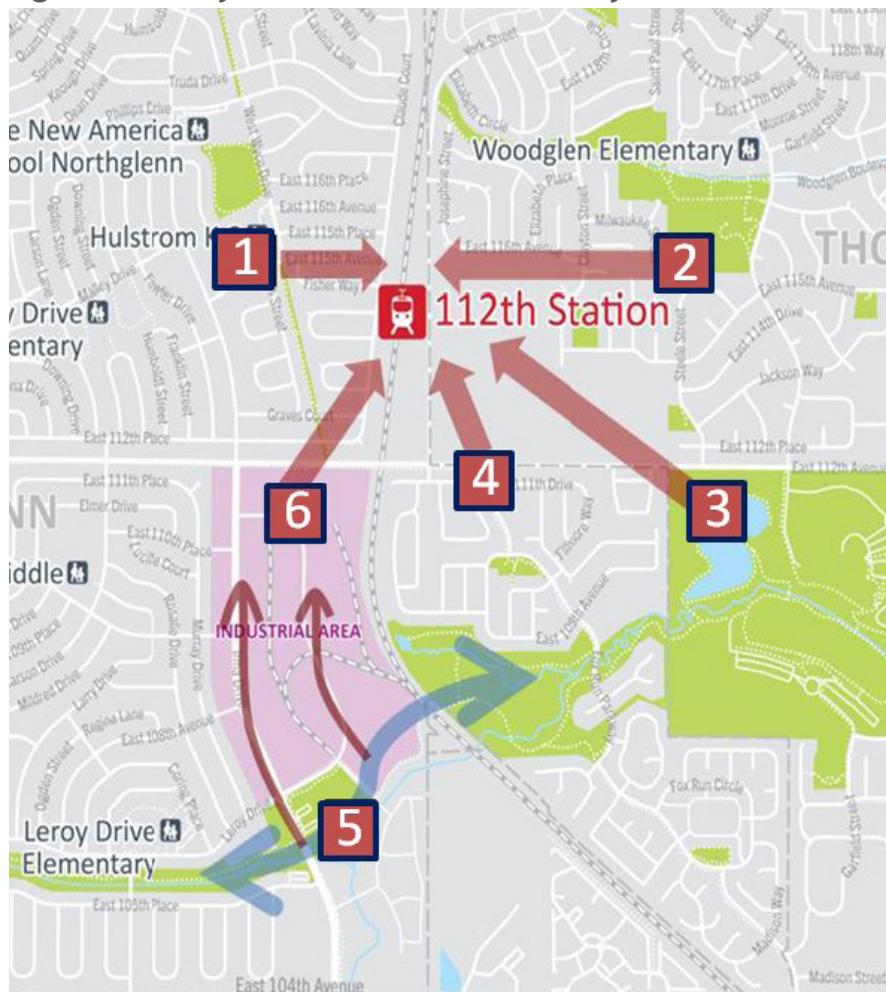
4.1 Introduction

This chapter summarizes the key mobility considerations related to the Northglenn at 112th Station and related development. It focuses on the street and roadway network, bicycle and pedestrian connections, and future potential transit connections and service options and strategies to improve access and mobility to and through the entire station area as related to the project's overall goals.

4.2 Overall Station Area Connectivity Goals

Connectivity within the site, to the station, and the network of streets beyond the development is imperative for the creation of a livable, walkable community. One of the project goals is to connect to the existing street network surrounding the development so that the project works within the existing street network of the area and sets a future framework for development. Figure 4-1 illustrates the key connectivity goals of the project, with more detailed descriptions provided below.

Figure 4-1: Key Station Area Connectivity Goals



Source: Project Team

As shown in the figure, the key connectivity goals for the station area include:

1. Access for the neighborhoods to the west of the railroad line and north of 112th Ave. to the station.
2. Access for the Thornton neighborhoods to the north and east of the station.
3. Connecting Margaret W. Carpenter Park and Open Space to the station and to future development areas north of 112th Ave.
4. Access from the Fox Run neighborhood to the station.
5. Connecting the open space pieces south of the industrial park to the station and other regional connections.
6. Access for the industrial park to the southwest to the station.

4.3 Key Station Area Data: Roadway Network

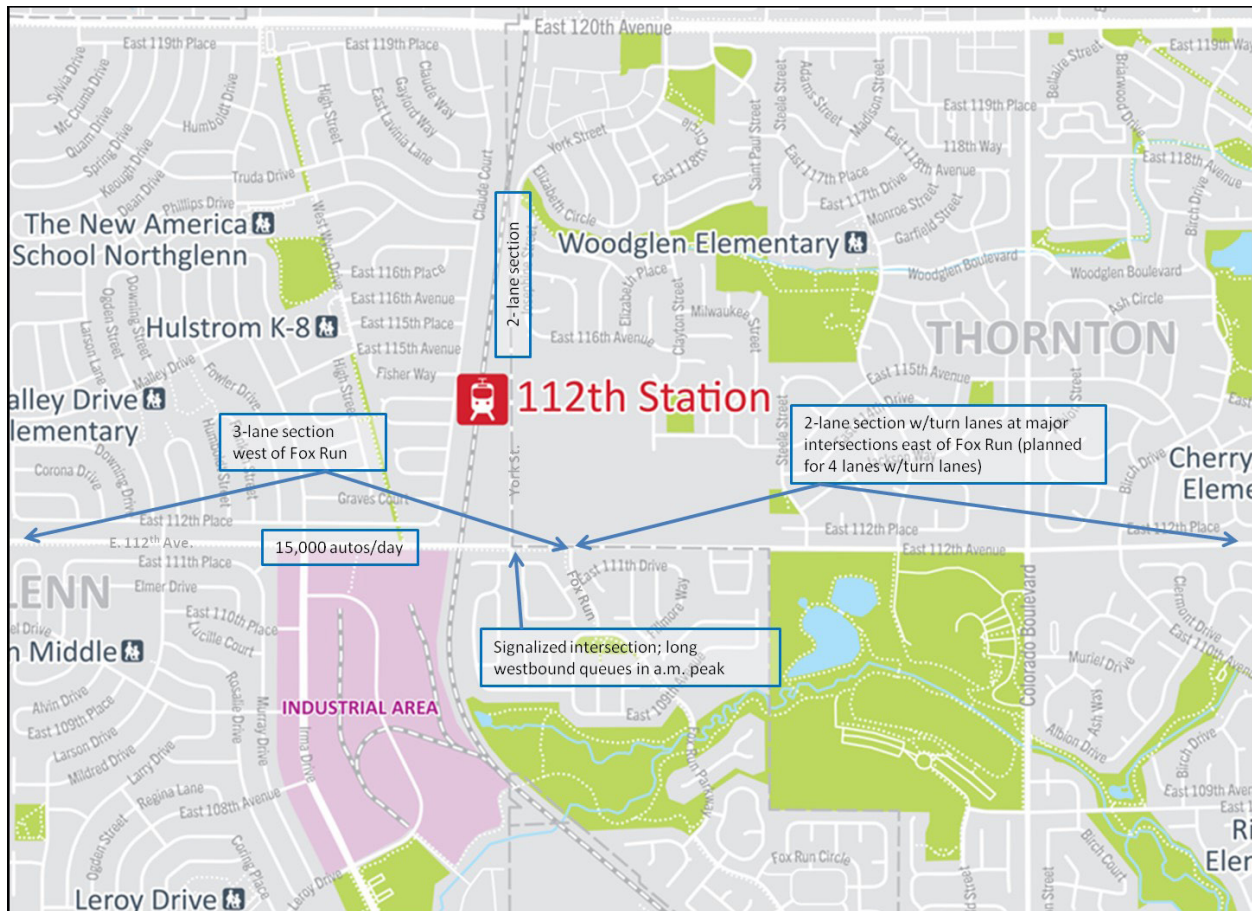
The primary roadways serving the station area are 112th Ave. and York St. 112th Ave. is an east-west minor arterial roadway with continuity from Washington St. on the west to Riverdale Road on the east. As illustrated in Figure 4-2, in the vicinity of the station, the roadway has a three-lane cross-section from west of York St. to approximately Fox Run Pkwy., and a two-lane cross-section east of Fox Run Pkwy. with turn lanes at major intersections. 112th Ave. currently carries approximately 15,000 vehicles per day west of York St. and 9,000-10,000 east of York St.

York St. is also a minor arterial roadway with limited continuity between 112th Ave. and 120th Ave., where it continues north as Steele St. The roadway has a narrow two-lane cross-section in the vicinity of the RTD station with no sidewalk facilities. The Fox Run subdivision is located south of 112th Ave. and its primary access is provided via Fox Run Pkwy., a two-lane collector roadway which intersects 112th Ave. approximately 500 feet east of York St.

The intersection of 112th Ave./York St. is currently signalized. Based on field observations during the weekday peak periods, the intersection experiences long queues in the westbound direction during the morning peak hour. The queues can extend far enough to the east to block the Fox Run Pkwy. intersection, which is northbound stop-controlled. This makes it difficult to execute northbound left-turn movements, which encourages traffic to shift to the south leg of the 112th Ave./York St. intersection by traversing internal roadways. However, the south leg at this intersection has a very short approach and therefore does not provide adequate storage distance.

The city of Thornton is proposing to widen 112th Ave. between York St. and Colorado Blvd. to a five-lane cross-section when funding becomes available, therefore providing two travel lanes in each direction. The city of Northglenn recently improved 112th Ave. between Washington St. and York St., although the number of through travel lanes remains at one in each direction. As a result, when the city of Thornton widens 112th Ave., the westbound outside travel lane is proposed to become a right-turn lane at York St. This should ease some of the existing congestion at the westbound approach, particularly during the morning peak hour.

Figure 4-2: Station Area Roadway Current Conditions



Source: Project Team

According to the North Metro Station Area Traffic Impact Statement – 112th Ave. Station prepared by David Evans and Associates, Inc, in December 2010, RTD is planning some improvements at the intersection of 112th Ave./York St. to improve access to the station by 2035. Specifically, the eastbound left-turn lane will be extended and a new southbound right-turn lane will be added. No improvements are planned at 112th Ave./Fox Run Pkwy. With these improvements, the intersection of 112th Ave./York St. is anticipated to operate at an acceptable Level of Service “D” during both the weekday morning and evening peak periods through the Year 2035. However, it is anticipated that the poor operations for the northbound left-turn movement at the Fox Run Pkwy. intersection will continue.

4.4 Key Station Area Data: Transit Network

Fixed-Route Service

RTD bus service currently is focused on the major arterials surrounding the station and station area, with no direct bus access to the station area itself being currently provided. Figure 4-3 shows current bus routes in the station area, and Table 1-1 describe the routes.

Figure 4-3: Current Bus Routes in the Station Area



Source: RTD

Table 4-1: RTD Fixed-Route Service in Station Area

Route	Description	Service Frequencies
AA	Wagon Road Park-n-Ride (I-25 and 120th Ave.) to Denver International Airport via 104th Ave.	Generally hourly, with short periods of 30-minute service.
12	Wagon Road Park-n-Ride to Englewood, primarily along Washington & Downing streets	30-minute service throughout most of the day.
39L	136th Ave. and Colorado Blvd. to downtown Denver, using 104th Ave. for east-west travel through the area.	Limited 30-minute service during peak hours.
92	East-west service from 136th Ave. and Colorado Blvd. to Westminster along 100th Ave.	30-minute service throughout most of the day.
120	Brighton to Broomfield along 120th Ave.	30-minute service throughout most of the day.

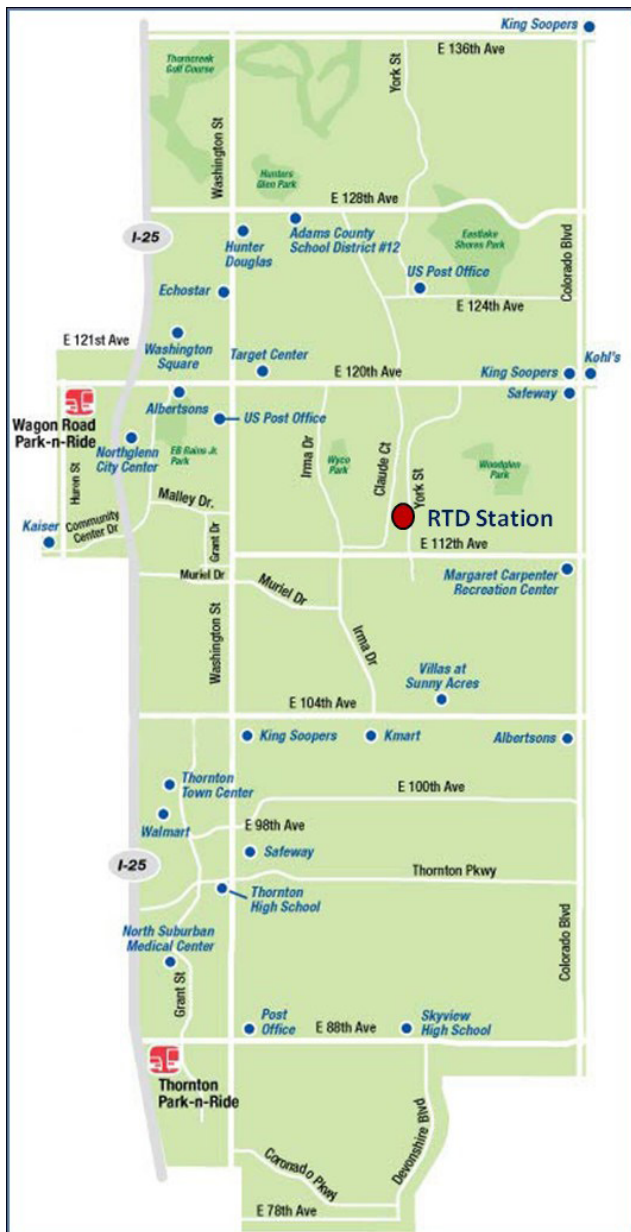
Source: RTD

It is likely that, once the Northglenn at 112th Station goes into service in 2018, RTD will reorient some of its bus service in the area to directly serve the new station. However, as of the preparation of this report, RTD has made no specific plans for those types of service changes. Traditionally, such changes are planned with local jurisdictions beginning roughly one year before implementation, so those discussions with Northglenn and Thornton can be anticipated as occurring beginning sometime in 2017.

Call-n-Ride Service

In addition to fixed-route service, the area is served by an RTD Call-n-Ride network. Call-n-Ride is a personalized door-to-door bus service that travels within select RTD service areas. Riders can make appointments for Call-n-Ride pickups by phone or online; appointments can be made from two hours to two weeks in advance of a trip, and subscription or recurring appointments are allowed. The Thornton Call-n-Ride zone (see Figure 4-4) serves the cities of Thornton and Northglenn, including the Wagon Road Park-n-Ride and the Thornton Park-n-Ride. Service extends north to 136th Ave., east to Colorado Blvd., south to 78th Ave., and west to I-25. Service hours are Monday through Friday from 5:30 a.m. to 7 p.m., with no weekend or holiday service.

Figure 4-4: Thornton RTD Call-n-Ride Zone

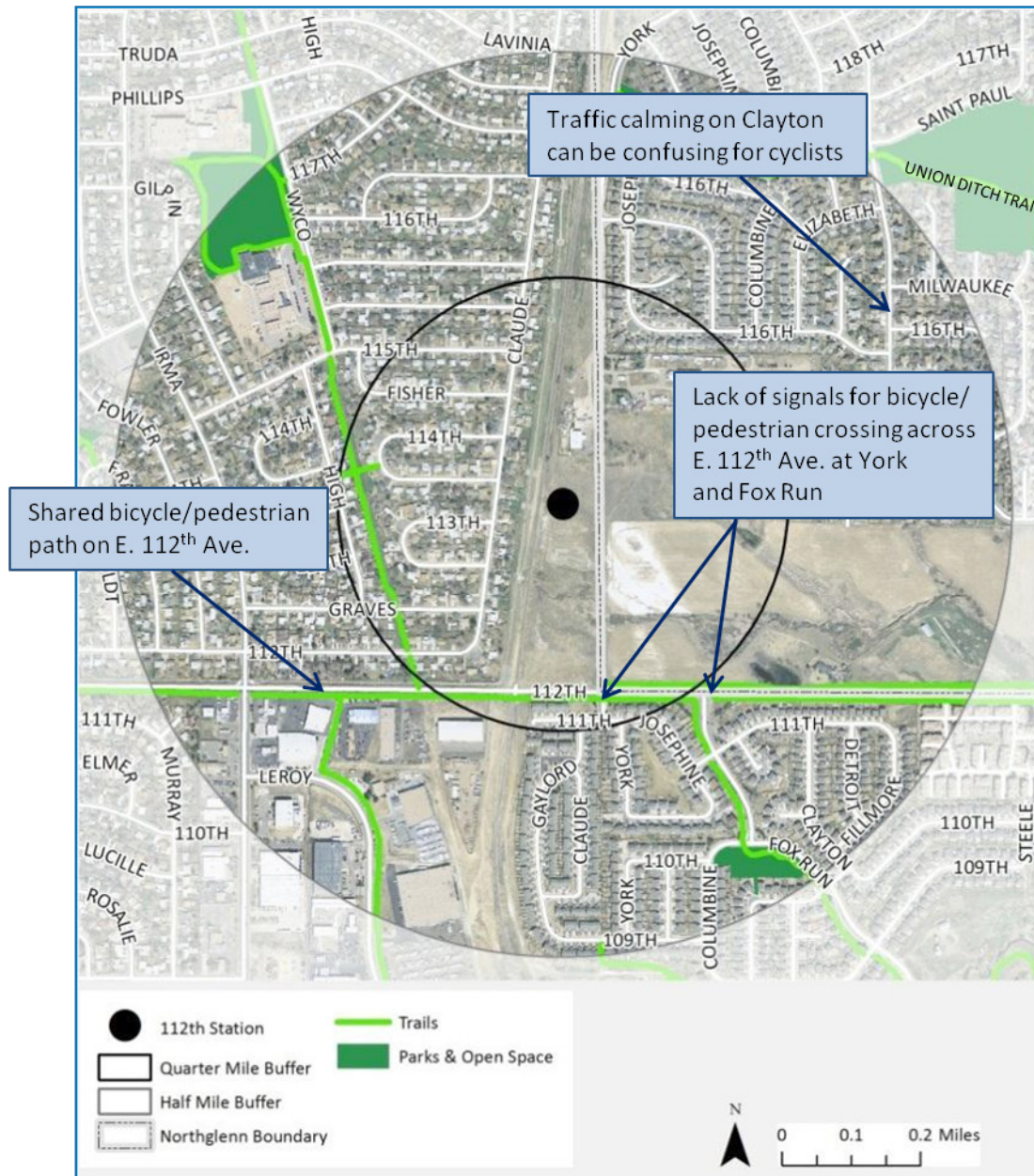


Source: RTD

4.5 Key Station Area Data: Bicycle/Pedestrian Infrastructure

All facilities for cyclists and pedestrians in the station area are off-street on paths and sidewalks. There are no on-street facilities for cyclists in the ½-mile radius surrounding the future station location. Figure 4-5 shows the current trails and paths in the station area, along with problem areas described in the following sections.

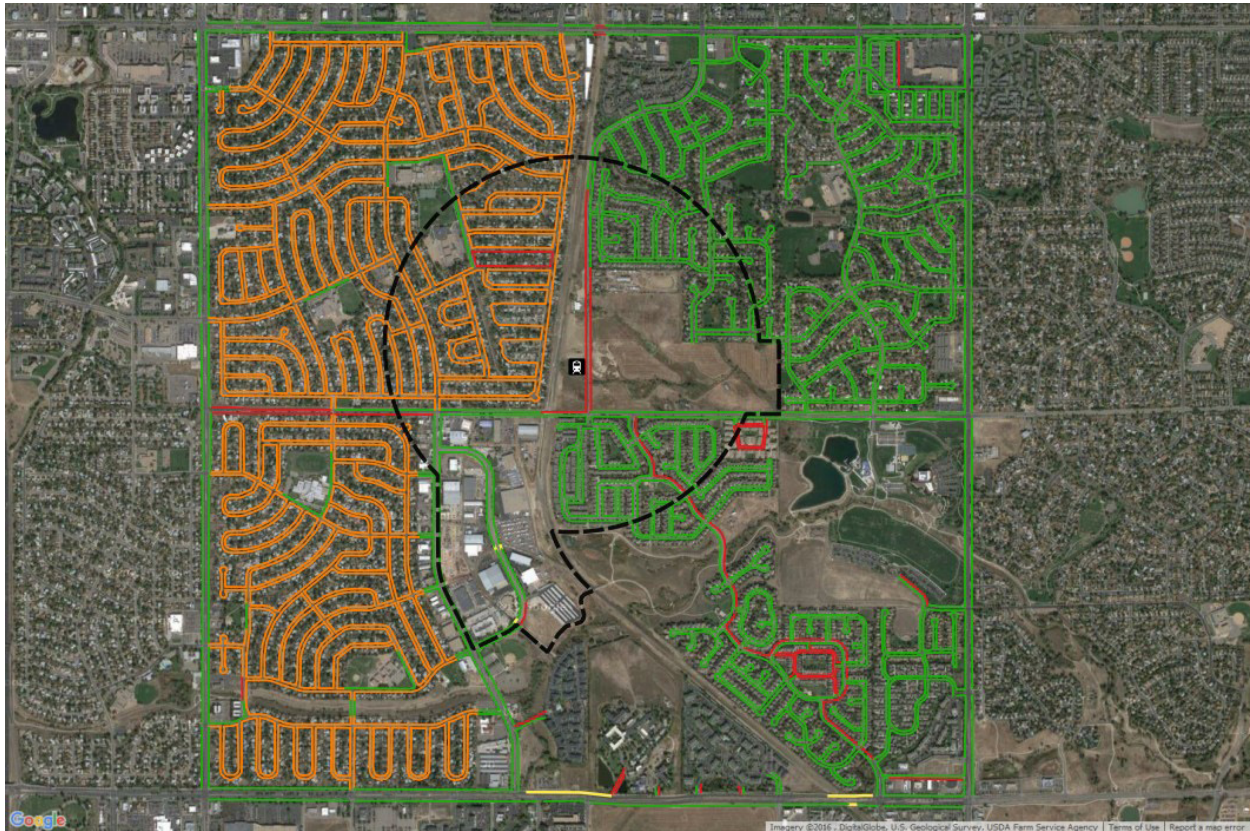
Figure 4-5: Current Trails in Station Area and Problem Areas



Source: Project Team and cities of Northglenn and Thornton

Figure 4-6 is an aerial photo from DRCOG showing the current state of sidewalks in the station area. Streets coded green are those with adequate sidewalks; orange signifies existing sidewalks that are deficient (such as extremely narrow and/or needing repair); and red signifies areas where sidewalks are missing entirely.

Figure 4-6: Current Sidewalks in Study Area



Source: DRCOG

The figure shows that most of the sidewalks in the Thornton portion of the station area are adequate and that most in the Northglenn side are deficient, with pockets of streets with no sidewalks at all (including York St. north of 112th Ave.).

Off-Street Paths

An off-street path currently connects Wyco Park/ Hulstrom K-8 School to 112th Ave. The north side of 112th Ave. also has a path that runs roughly from York St. to Steele St., just east of the station area. Two other paths exist south of 112th Ave. and give access to businesses along Leroy Dr. and through the Fox Run neighborhood, which provides connections south to Stonehocker Park and east to Margaret W. Carpenter Park and Open Space. Sidewalks are present all around the area, including the residential streets, except the north side of 112th Ave. between the railroad tracks and York St. as well as both directions of York St.

On-Street Facilities

While bicycles are allowed on station area streets, there are no dedicated cycle facilities, with many narrow streets and relatively high vehicle speeds often creating unsafe and uncomfortable conditions for cyclists. However, dedicated bicycle lanes are planned for both Claude Ct. and Fox Run Pkwy.

Two streets in particular provide a challenging environment for cyclists. Traffic calming measures on Clayton St. in Thornton slow traffic but also complicate the roadway for cyclists, with the combination of planters and parking creating an often-confusing environment for bicycle travel.

Even though 112th Ave. functions as a major connection for vehicles traveling east-west, cyclists will share an off-street path with pedestrians once improvements are made on that roadway. This gives access to the southern part of 112th Ave., but limits cyclists' ability to access areas north of 112th Ave. Potential conflicts could arise with cyclists and pedestrians on the off-street path given the different speeds and potential for high usage.

Problem areas for bicyclists and pedestrians...



Traffic calming on Clayton St. in Thornton can be confusing for cyclists...



Shared bicycle/pedestrian path on north side of 112th Ave. can create conflicts for both types of users....

Intersections

The intersection of 112th Ave. and Fox Run Pkwy. has stop signs instead of signals and does not have crossing markings. While cycling along Claude Ct. to 112th Pl. is a relatively comfortable ride, turning south on Irma Dr. can be difficult due to traffic coming from the north. Crossing 112th Ave. at York St. does not require a long wait, although no automatic detection system for cyclists is present. However, if on-street bicycle facilities are provided at this location, the current video detection system at 112th Ave. and York St. can be modified to provide bicycle detection. Given the turning movements at 112th Ave. and Fox Run Pkwy., continuing on the path on the south side of 112th Ave. requires attention and communication with vehicles to prevent conflicts.

Additional Conclusions and Observations: Northglenn HEAL Committee

The city of Northglenn’s Healthy Eating and Living (HEAL) Committee conducted walking audits of several neighborhoods in the Northglenn portion of the station area to determine their safety and walkability for pedestrians and bicyclists. Their major findings concur with the project team’s findings and provided additional insight on the overall walkability of the station area. Those findings and recommendations are in Appendix 4 and included:

- **Fox Run Neighborhood:** Using a walkability evaluation tool, this neighborhood scored 76 out of a possible 100 points for walkability. Comments included:
 - Fox Run Pkwy. is a very wide road, often with no markings or signs for pedestrian crossings.
 - Fox Run Pkwy. and other neighborhood streets have good shade from tree canopies in many places.
 - The intersection of Fox Run Pkwy. and 112th Ave. is a challenge for pedestrians due to lack of signalization and should be improved.
 - Sidewalks in the neighborhood are narrow in many places; they need to be improved throughout.
- **112th Ave.:** This road scored 48 out of 100 points for walkability. Key issues included:
 - Other than a pedestrian signal at 112th Ave. and York St., there are no designated crosswalks to the businesses on the south side of 112th Ave. between Irma Dr. and York St.; there is a need to add dedicated and/or signalized crosswalks at key locations.
 - Sidewalks are narrow, mostly attached to the street, and with little or no shade as 112th Ave. approaches the station; there is a need to improve and detach the sidewalks from the street.
 - The speed and volume of traffic on 112th Ave. makes walking unpleasant; an engineering study to determine the safest speeds for the road and a potential “road diet” to improve safety should be conducted .
 - The width of the road may offer the opportunity to add amenities such as bike lanes or landscaping to increase the distance from pedestrians to traffic.
- **Northwest Neighborhood:** The residential district to the north and west of the station scored 62 points on the walkability scale. Major issues included:
 - Neighborhood sidewalks are very narrow and usually attached to the road with no buffers. Wheelchairs would have a difficult time using the sidewalks. Where appropriate, the city should

provide separated and improved sidewalks.

- The route for pedestrians from the neighborhood to the station (primarily along the Wyco Trail) is indirect and should have better signage.
- Few pedestrian amenities exist in the neighborhood or along the trail; there is a need to add those amenities.
- The trail currently does not have lighting or shade; there is a need to add those amenities.

4.6 Proposed Street Network

The major elements of a proposed street network for the station area are shown in Figure 4-7, with more details provided below.

The conceptual network as shown includes:

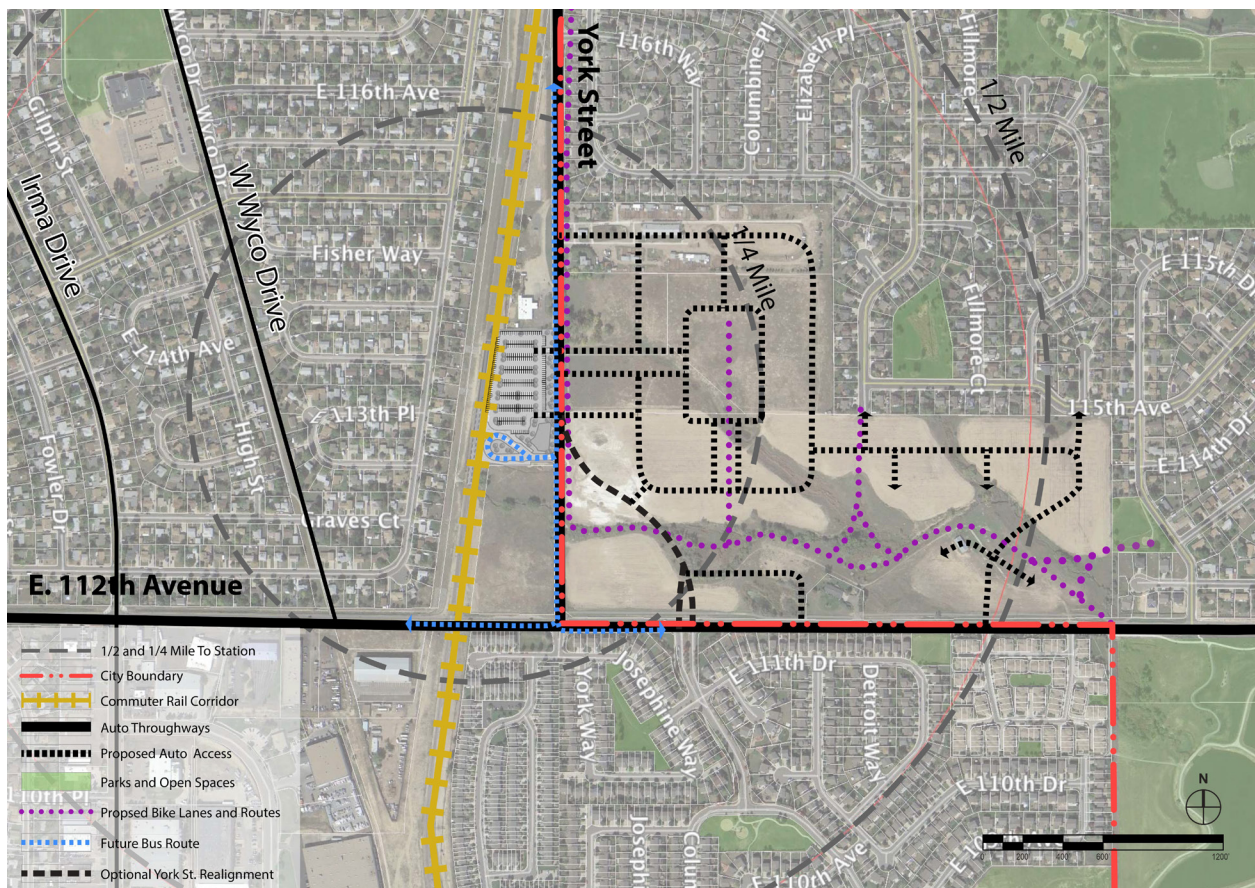
- Planned improvements to York St. and 112th Ave. as proposed by Northglenn and Thornton.
- A small-block street network within future development areas to encourage walkability, with all new roadways being “complete streets” and as bicycle and pedestrian friendly as possible.
- Where appropriate, continuation of existing streets from adjacent neighborhoods to promote good connectivity and access.

Key Policy Directions/Recommendations:

Street Network

- Develop a small-block street network within future development areas to promote walkability.
- Continue adjacent street patterns into new development areas.
- Conduct detailed traffic engineering analysis related to the potential realignment of York St.

Figure 4-7: Potential Street Network for Station Area



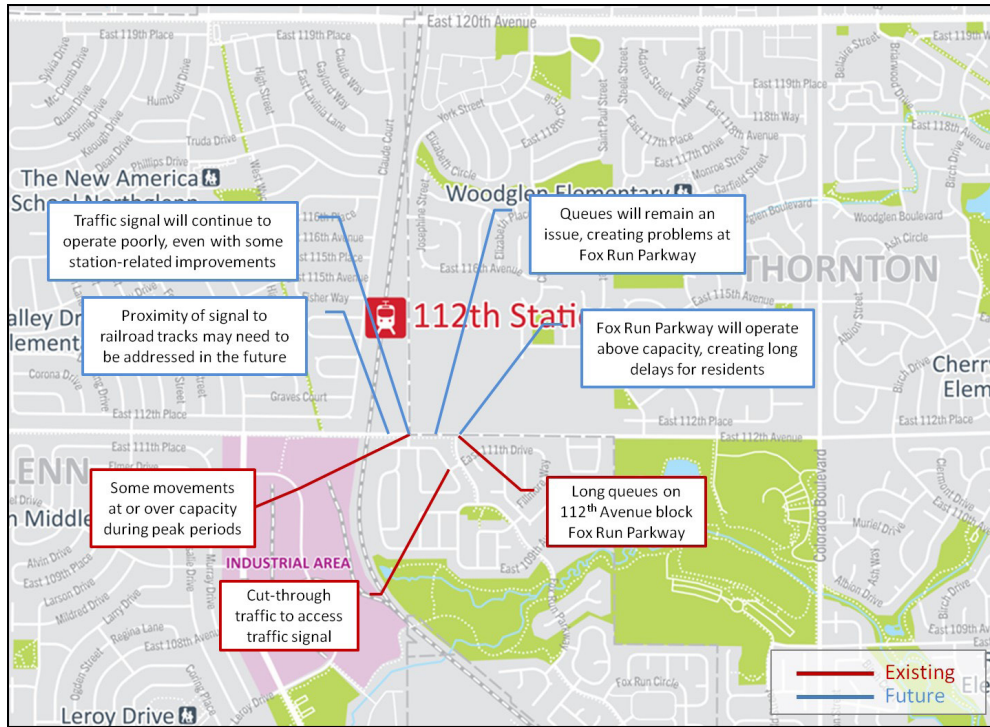
Source: Project Team

Even without the station area development, the adjacent roadway network will experience some operational issues. The intersection of E. 112th Ave./York St. will operate at an acceptable Level of Service “D” through the Year 2035, but the Fox Run Parkway approach to 112th Ave. will continue to experience long delays. As demand at this approach increases, a traffic signal may be necessary (and will likely be warranted) to correct the operational problems. This would result in two traffic signals within approximately 500 feet. Based on some potential densities associated with the development of the station area, an additional 2,500 to 6,100 daily trips could be generated in the station area, with approximately 230-490 additional trips in the morning peak period and 240-560 additional trips in the evening peak period. These estimates assume a slower increase in daily trips than would normally be seen for comparable traditional developments due to the nearby station and anticipated higher transit use. Since the intersection of 112th Ave./York St. is already anticipated to operate at Level of Service “D”, which typically suggest that the intersection is near capacity, the added trips due to the development of the station area would most likely require additional mitigation. However, additional study would be necessary once a more refined development plan is available to identify the specific mitigation that may be necessary.

York Street Realignment

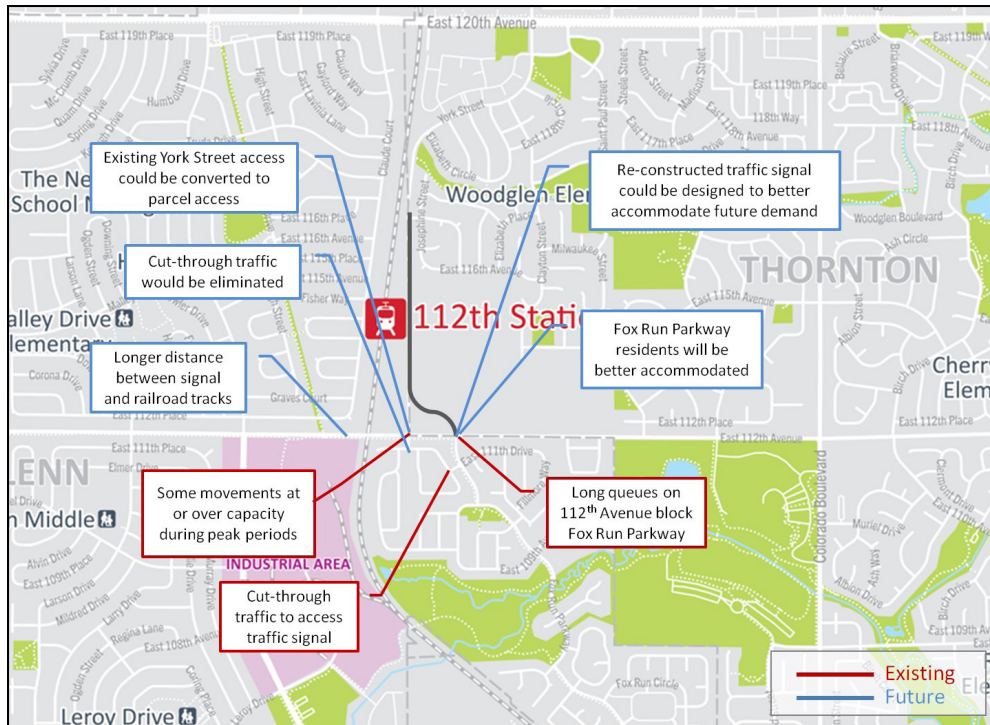
One potential strategy for improving roadway design and access to the station area is the realignment of York St. to intersect 112th Ave. at Fox Run Pkwy. This would result in the signalized intersection moving to this location and the old York St. alignment serving local neighborhood/development access. This would eliminate the need to install two signalized intersections within 500 feet of each other and create better separation between the signalized intersection and the North Metro rail line. The realignment would also relocate the primary access to the Fox Run subdivision to a more logical location and better serve the existing neighborhood. Finally, pedestrian and bicycle access would also be improved. Figure 4-8a illustrates the current configuration of York St. and the potential realignment.

Figure 4-8b: Key Issues/Challenges With Maintaining Current York St. Alignment



Source: Project Team

Figure 4-8c: Key Issues/Challenges With Realignment of York St.



Source: Project Team

4.7 Proposed Pedestrian and Bicycle Connectivity Improvements

Figure 4-9 shows a conceptual bicycle/ pedestrian facility network to provide additional local access to the rail station and to complement existing and planned facilities.

The major elements of the proposed network include:

- **Enhanced bicycle/pedestrian facilities (including shared facilities where necessary) along both sides of 112th Ave. and York St.** These improvements will be especially important for residents living west of the railroad alignment and north of 112th Ave. It is highly unlikely that any direct pedestrian connection can or will be made under or over the railroad tracks (due to grade issues, engineering challenges, or cost). Therefore, ensuring good connections that are as direct and convenient as possible for that neighborhood is essential, especially along the major roadways.
- **Designation of new bicycle routes on existing roadways throughout the station area, including in the Fox Run neighborhood, in and around the industrial park, and on roadways in the residential areas to the east and west of the station.** This assumes that the greenway improvements included in the development concepts as shown in Chapter 4 are implemented with major bicycle and pedestrian connections, providing connections to all local and regional bicycle/pedestrian facilities in the area.
- **Utilization of Wyco Trail south of 112th Ave. as a regional trail.** Currently, the Wyco right-of-way south of 112th Ave. is undeveloped, with potential equipment hazards located in the right-of-way. This right-of-way should be redesigned and improved (including improvements to avoid or potentially remove the equipment hazards) to provide a continuous connection from the trail north of 112th Ave. to the regional trails south of the industrial area.
- **The addition of bicycle/pedestrian signals at key points along 112th Ave.** to maximize bicycle and pedestrian access across the roadway to the station and other areas, and to improve safety. This can be done in conjunction with new auto signals depending on the exact alignment of north-south roadways in the station area.

Key Policy Directions/Recommendations:

Pedestrian and Bicycle Connectivity

- Provide enhanced facilities along York St.
- Designate new bicycle routes on existing streets throughout the study area.
- Upgrade the Wyco Trail south of 112th Ave. and make it a continuous connection to the north and south.
- Provide signalized bicycle/pedestrian crossing points at key locations along 112th Ave..
- Plan for bicycle facility needs for new developments in the station area, coordinating trail connections between the cities.
- Establish guidelines for a bike sharing program throughout the station area.

Figure 4-9: Proposed Bicycle and Pedestrian Facility Connections



Source: Project Team

- **Develop a comprehensive bicycle facility strategy.** Further improvement to existing and future facilities that support bicyclists will be important to help employees and residents shift away from single-occupant vehicles (SOVs). Advocating for and supporting the implementation of micro-mobility hubs the station and all new developments will help create a non-SOV commuter culture. Micro-employer mobility hubs could include bicycle racks and/or lockers, pumps, and basic bicycle tool kits. Access to showers and lockers is also an important amenity needed to support bicyclists and to encourage a shift in travel behavior. The two cities and/or the Smart Commute Metro North Transportation Management Association (or TMA) could provide incentives to any existing or future employers in the station area to invest in facilities that support bicyclists. Those incentives could include:

 - Purchase and/or installation of bike racks and/or lockers.
 - Distribution of bicycle tool kits to employers to support the micro-mobility hub concept.
 - Providing air pumps to employers to provide “peace of mind” for the casual cyclists.
 - Offering bicycle maintenance classes to increase confidence of cyclists.

- **Establish guidelines for a bike sharing program throughout the station area**, including potential vendors and sponsors, initial locations, and sharing mechanisms. This could include “micro mobility hubs” that focus on bicycle facilities but also provide information on other modes. It could also include one or more pilot programs to be implemented concurrently with the opening of the North Metro line and the station in 2018.

4.8 Transit and Transportation Demand Management (TDM) Enhancements

Future RTD Services

RTD bus service currently is focused on the major arterials surrounding the station and station area, with no direct bus access to the station area itself being currently provided. Once the Northglenn at 112th Station goes into service in 2018, RTD will reorient some of its bus service in the area, including potentially providing a new route to directly serve the new station. Northglenn and Thornton should continue to work with RTD to ensure maximum bus connectivity to the station based on potential demand to adequately provide good connections to surrounding neighborhoods.

Other Transit and Alternative Mode Options

In addition to fixed-route transit services, a variety of potential alternative mobility services can be considered for the station area in the future. The project team has developed a list of alternative mobility options that could potentially improve access to and from the station and throughout the surrounding station area.

- **Increase transit usage to the station (and correspondingly decrease the need to drive to the station).** The Smart Commute Metro North TMA (of which Northglenn and Thornton are members) promotes the RTD EcoPass program, which is available on an employer-by-employer basis; these passes provide employers with tax benefits but generally must be made available to all employees. RTD also provides a FlexPass program, which includes more flexibility in

Key Policy Directions/Recommendations:

Transit

- Continue to work with RTD to evaluate, revise, and upgrade potential fixed-route services for the station.
- Work with the Smart Commute Metro North TMA to develop or expand transit pass programs for local businesses.
- Work with the TMA to promote car sharing and vanpooling.
- Develop a comprehensive parking management strategy for the station area in Northglenn, coordinating when possible with Thornton’s existing parking management plan.
- Use the TMA to identify transit gaps and work with RTD and private providers to fill those gaps.
- Work with the TMA to develop innovative technology-driven transit solutions for the area.
- Implement a mobility hub program throughout the station area that focuses on car- and bike-sharing, wayfinding, and transit user information and access.
- Work with the TMA to develop a comprehensive Transportation Demand Management (TDM) strategy for the station area.

distribution and price, and also provides the opportunity for employers to set up transit pass sales or vouchers for their employees. The TMA and the two cities have a variety of options to expand usage of EcoPasses in the station area, including: expanding marketing of EcoPass options and benefits to all employers; and working with RTD to develop a new transit pass program just for the TMA area that provides additional flexibility for distribution and usage of passes. The cities of Northglenn and Thornton should work with the TMA to identify appropriate pass programs and cost sharing options.

- **Promote car sharing and vanpooling.** The Smart Commute Metro North TMA currently works with DRCOG to promote and provide carpools and vanpools for the station area but relies on that agency to administer the program. The TMA can assist with creating a closed network for ride-sharing specific to the station area region using DRCOG's Way to Go Program, or other programs and ride-sharing opportunities as they become available.
- **Develop a comprehensive parking management strategy for Northglenn.** One of the major concerns of residents of neighborhoods near the station is the uncertainty about the impacts of commuter parking associated with the opening of the North Metro line and the Northglenn at 112th Station. The city of Thornton has already completed a Parking Management study applicable to the station areas within Thornton's jurisdiction, and it is anticipated that the recommended strategies from this study will be applied to the Thornton portion of the 112th Station area area as needed and appropriate. As the station and its related development occurs in the next few years, Northglenn should also develop a parking management strategy for the Northglenn portion of the station area to alleviate area resident concerns and provide equitable parking solutions for residents, employees and visitors. Ideally, Northglenn could coordinate with Thornton on the parking strategies that Thornton will be implementing. Specific strategies that Northglenn might consider include:
 - **Establishment of a coordinated parking strategy for new developments in Northglenn** by reducing parking minimum requirements on a per-worker basis to gradually reduce free parking availability. This could also include establishing parking maximums (instead of minimums) to place a ceiling on parking spaces per workers, providing parking advantages for carpools and vanpools, unbundling parking from rent or sale prices of office or residential buildings.
 - **Shared parking facilities.** Future parking facilities (at the station or in adjacent Northglenn developments) should be studied for the potential of sharing those facilities with non-single-occupant vehicle (SOV) facilities, including first/last mile modes and programs and potentially mobility hubs to encourage alternative mode usage during the workday.
 - **Neighborhood parking management.** If commuter parking does become a problem in established neighborhoods, Northglenn should look into conducting a parking study to determine appropriate parking management strategies. For example, some cities have established parking permit programs to provide priority parking for local residents and discourage or prohibit commuter parking. Northglenn should determine if this or other strategies would be appropriate near this station.
- **Improve transit options and services.** The two cities and the TMA should work with RTD to identify gaps in existing transit service and the potential for filling them with enhanced RTD service. If

necessary, the cities or the TMA could explore grant opportunities to fund transit studies and services. An example is GO Boulder and the collaboration between the City of Boulder and RTD to subsidize local circulator services in that city such as the Hop, Skip, Jump, Bound, and other services. The two cities and the TMA should work with DRCOG or other local, regional, or national agencies or entities to study short-term and long-term circulation options near North Metro Line commuter stations and throughout the station area. These organizations should explore collaborative funding programs and incentive programs that could assist with a pilot project for local circulation to the station. In particular, the cities and the TMA should explore options available through the Federal Transit Administration, New Partners for Smart Growth, National Resources Defense Council (and its Urban Solutions Program), Urban Land Institute, or other entities to fund studies of enhanced station area circulation.

- **Explore new innovative transit solutions.** The station area should be a “living laboratory” for exploring, testing, and implementing new approaches to local transit circulation. Many transit systems around the country are exploring options to the traditional fixed-route transit service models, such as: flexible route services, where vehicles operate on fixed routes but are allowed to deviate from those routes (either all day or just in off-peak hours) to provide demand-response pick-ups; enhanced demand-response or call-and-ride services; and checkpoint services, where on-demand vehicles circulate through a service zone but make scheduled pickups at designated locations at established times throughout the day. In addition to those approaches undertaken by transit agencies, many areas are exploring entirely new service models that are private-sector driven. The most common recent example is from a company called Bridj, which operates completely with a mobile app for pickups and drop-offs in designated areas. The two cities or the TMA should partially or totally subsidize costs for this type of provider. The cities or the TMA could open its service needs to competition from private sector entities (and RTD if it chose to do so) to develop a pilot project for local circulation around the station. This could include establishing minimum service standards and objectives and letting the private sector propose an operating structure. This type of pilot project, if successful and cost-effective, could be expanded to other portions of the station area and could be a groundbreaking example of public/private sector collaboration to meet a specific transit need.
- **Explore implementing mobility hubs.** The mobility hub concept is a common-sense concept that attempts to integrate all activities in and around a transit facility in a way that maximizes its utility and benefit to transit users, local residents, employees, and visitors, including incorporating local transit, bike sharing, car sharing, and good wayfinding and user information. This effort could engage the private sector and future developers, if feasible, to establish appropriate minimum standards for mobility hubs based on potential demand at the station and in new developments and to agree on potential locations for pilot locations at key areas throughout the station area as it develops. As part of the mobility hub effort, the two cities or the TMA could explore a number of key elements:
 - **Develop a car sharing strategy:** Similar to the bike sharing strategy, the TMA should work with its partners to establish guidelines and service standards for a car sharing strategy that meets the specific needs of the station area.
 - **Develop a wayfinding/travel information strategy:** The cities or the TMA could solicit proposals

for development of a comprehensive wayfinding/signage strategy for implementation initially in selected areas and ultimately throughout the station area.

- **Develop initial locations for hubs:** The cities or the TMA should work with its public and private partners to develop initial pilot locations for mobility hubs along with a hierarchy of services to be provided at different locations. The initial focus should be on major activity centers (obviously including the rail station), with the goal of providing some type of hub at many key locations throughout the station area such as residential or commercial developments. Ultimately, the two cities and the TMA should decide on its long-range goal for mobility hub implementation. Depending on resources, one goal could be to ensure that no employee or resident in the station area is more than a quarter-mile from a mobility hub, where he or she would have access to all modes within no more than a five-minute walk.
- **Become a leader in Transportation Demand Management (TDM) Programming.** Working through the TMA, the two cities could establish Smart Commute Metro North as a pioneer in establishing TDM programs at the station area to promote alternative transportation. These activities could include:
 - Developing innovative comprehensive resident and employee information programs for all modes to promote trip planning. The TMA could develop a pilot program for “casual/dynamic” travel planning that uses a mobile app to provide up-to-date information to employees and residents on all modes. This could include the ability to provide instant ridesharing/ carpooling partners for drivers, up-to-date transit information (including next bus and next train information), and information on available bike and car sharing facilities and options.
 - Implement policies that promote alternative modes. The TMA could explore the potential of developing a comprehensive menu of programs that would promote alternative mode usage in new developments. This could include car and bike sharing for new developments. Another potential policy that could be explored for feasibility is the potential for an alternative mode facility tax or assessment district (that could potentially provide funding for local transit circulation, car/bike sharing programs, mobility hubs, and sidewalk/trail improvements), and other regulatory options.

4.9 Summary: Connectivity Goals

The mobility improvements recommended in this chapter are aimed at meeting the connectivity goals illustrated in Figure 4-1 in the following ways:

1. Access for the neighborhoods to the west of the railroad line and north of 112th Ave. to the station: Planned improvements to 112th Ave. along with recommended upgrades to pedestrian and bicycle facilities on 112th Ave and throughout the neighborhoods to the west of the rail station should improve overall access for those neighborhoods.
2. Access for the Thornton neighborhoods to the north and east to the station: Establishment of an inter-connected street grid in the new development area east of the rail station along with recommended multi-modal path upgrades throughout the area should improve access for the neighborhoods to the east of the station (including for Hulstrom K-8 School).
3. Connecting Margaret W. Carpenter Park and Open Space to the station and to future development areas north of 112th Ave.: Planned upgrades to 112th Ave. along with recommended enhancements to multi-modal facilities should improve access between new development areas and the Park.
4. Access from the Fox Run neighborhood to the station: Planned upgrades to 112th Ave. along with the potential realignment of York St. would significantly improve the access from the Fox Run neighborhood to the station.
5. Connecting the open space pieces south of the industrial park to the station and other regional connections: Recommended upgrades to the Wyco right-of-way in this area along with additional improvements to multi-modal facilities should improve access to the station from this area.
6. Access for the industrial park to the southwest to the station: Planned upgrades to 112th Ave. along with additional improvements to multi-modal connections should significantly improve access to this area from the station.

CHAPTER FIVE: OVERALL POLICY DIRECTION AND RECOMMENDATIONS FOR CITY OF NORTHGLENN

This plan is designed to establish a vision for the future of the Northglenn at 112th Station area. To achieve that vision – as conceptualized in the Preferred Alternative – the two cities and their partners will take many purposeful and focused steps over the course of several years. Some of these steps will be similar for both cities, while some steps will be unique to Northglenn or Thornton. These steps will require ongoing collaboration and strong partnerships between and among the cities, RTD, other public agencies, the private sector, and the local residents.

This chapter outlines recommendations for the city of Northglenn and includes a number of implementation strategies and policies; roles and responsibilities among city of Northglenn staff, Thornton City Council or other outside entities and agencies; and suggested timeframes for implementation. These strategies, used in combination with each other and with the *Northglenn at 112th Station TOD Public Space Design Guidelines* prepared as Appendix 5, are intended to ensure the full development potential of the station area is met as envisioned by the STAMP.

Implementation strategies are organized by the following categories:

- Land Use, Zoning, and Urban Design;
- Infrastructure and Utilities; and
- Mobility Planning

Table 5-1 identifies the implementation strategies for the city of Northglenn along with suggested roles and responsibilities and potential timeframes for implementation. Those strategies that should be implemented in the short-term are immediate actions that will be implemented within the next 1-2 years. Strategies with a medium-term timeframe will likely be implemented before and shortly after the opening of the commuter rail station and are expected to be put in place within 3-5 years. Strategies with a long-term timeframe are likely to occur in the in the 6+ year timeframe

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

Table 5-1: Recommended Implementation Strategies for the City of Northglenn

No.	Strategy	Responsibility	Timeframe
N1	Adopt the Northglenn at 112th Station Area Master Plan: Formally adopt the STAMP, emphasizing the Vision, Preferred Alternative, Guiding Principles and Implementation Strategies as the core Plan elements intended to guide public and private development and investment decisions related to land use, infrastructure, and mobility planning. The City will review future development proposals within the STAMP area for compliance with the core Plan elements.	City Council, City staff	
N2	Amend Comprehensive Plans and Zoning Codes: The city should amend its Comprehensive Plans and zoning codes to incorporate the elements of this STAMP as the first steps in developing a consistent strategy for plan implementation, with particular emphasis on the plan’s proposals for residential, commercial, and industrial development and redevelopment.	City Council, City staff	
N3	Amend Northglenn Development Code to Incorporate Plan Elements: As the city of Northglenn updates its Development Code, develop specific zoning recommendations to implement the plan’s proposals for land use and zoning.	City Council	
N4	Propose implementation strategies for annual consideration in City Council Work Plans: Prioritize implementation strategies for annual inclusion into the City Council Work Plan.	City Council, City staff	
N5	Dedicated TOD Staff: Create a staff position or combination of positions within the city of Northglenn dedicated solely to implementation and marketing of the station area master plans and TOD development along the North Metro line. Duties would include attracting and working with private sector interests to ensure new development and redevelopment meets the vision for each station area; proactive communication with property owners, developers and the surrounding community; pursuing planning and infrastructure funding opportunities; and serving as a single point of contact for all city department reviews and project implementation activities to ensure public and private sector actions are synchronized.	City staff	

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

No.	Strategy	Responsibility	Timeframe
N6	Approve Urban Design Guidelines: Using the Northglenn at 112th Station TOD Public Space Design Guidelines developed for this project, develop specific TOD-related design guidelines to ensure that new developments meet desired design standards.	City Council, City staff	Short-term
N7	Monitor Plan Progress: Conduct a periodic review of the STAMP to assess effectiveness and progress toward implementation. As needed and appropriate, recommended changes could include STAMP updates, amendments to governing regulations and/or consideration of new or modified financing strategies. Amendments to Chapter 5: Implementation Strategies, or changes to the land use designations within Northglenn’s jurisdiction in the Preferred Alternative or other aspects of this 112th Station Area Master Plan that would solely affect Northglenn and not Thornton may be approved by the city of Northglenn without need for approval by the city of Thornton.	City staff	Ongoing
N8	Develop a comprehensive urban art program: Working with RTD and the Northglenn Arts and Humanities Foundation, the city should establish and fund urban art programs for the station and the station area and its new developments. This should aim for a comprehensive, unified art program for the station and station area that focuses on functional art installations that (where appropriate) can also function as wayfinding for local residents, employees, and visitors.	City staff, Arts and Humanities Foundation	Medium-term
N9	Define and Update Infrastructure Needs: As the proposed land use concepts are better defined in the future, station area infrastructure needs will need to be better defined for capacity and costs, including the preparation of a design development level civil engineering drainage/infrastructure plan and a cost estimate for drainage and utility improvements, including the costs of water quality features, detention ponds, grade crossings, low water crossings, wet and dry utilities, lighting, streets, bike paths, pedestrian paths, trails, all forms of multi-modal connectivity, and open space.	City staff	Long-term

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

No.	Strategy	Responsibility	Timeframe
N10	<p>Explore financing strategies: The city should hire a consultant to explore the potential of – and ultimately help create - innovative financing mechanisms for development-supportive infrastructure around the station (such as Metro District or other assessment district).</p>	City staff	Medium-term
N11	<p>Develop joint standards for roadway design and development in the station area: The two cities should work together as appropriate to develop roadway design standards for improvements needed to York St. and 112th Ave. in the station area to promote walkability and improve overall mobility and safety. Those activities should include:</p> <ul style="list-style-type: none"> ▪ Developing design guidelines for a small-block street network within future development areas to promote walkability. ▪ Continuing adjacent street patterns into new development areas. ▪ Conducting a detailed traffic engineering analysis related to the potential realignment of York Street. ▪ Northglenn could study the potential implementation of a “road diet” for 112th Ave. in and around the station area. The speed and volume of traffic on 112th Ave. makes walking unpleasant and safe, and a “road diet” to calm traffic could result in significant upgrades to pedestrian and auto safety. 	Northglenn and Thornton staffs	Short-to-Medium-term

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

No.	Strategy	Responsibility	Timeframe
N12	<p>Develop standards for pedestrian and bicycle facility planning: Northglenn should implement a comprehensive pedestrian and bicycle analysis of the station area, using the HEAL analysis as a starting point for the Northglenn portion of the station area, to upgrade and enhance pedestrian and bicycle facilities throughout the station area. Those activities should include:</p> <ul style="list-style-type: none"> ▪ Conducting a comprehensive sidewalk inventory and developing a program to add them where absent and upgrade existing sidewalks (including detaching from the street wherever possible). ▪ Adding pedestrian signals at key locations along 112th Ave., including at Fox Run Pkwy., between York St. and Irma Dr., and other locations, to slow traffic and allow pedestrian and bicycle access across the roadway. ▪ The width of 112th Ave. in the station area offers the opportunity to add amenities such as bike lanes or landscaping to increase the distance from pedestrians and cyclists to traffic. ▪ Work with Thornton on aligning trail connections. ▪ Add amenities such as wayfinding, lighting, and other upgrades to existing trails and facilities as needed. ▪ Be open to the possibility of a bike sharing program throughout the station area. 	Northglenn and Thornton staffs, local bicycle and pedestrian advocacy groups	Short-to-Medium-term

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

No.	Strategy	Responsibility	Timeframe
N13	<p>Develop a comprehensive innovative station area transit planning strategy: Northglenn should develop innovative transit solutions for the area, including:</p> <ul style="list-style-type: none"> ▪ Continuing to work with RTD to evaluate, revise, and upgrade potential fixed-route services for the station. ▪ Working with the Smart Commute Metro North TMA to develop or expand transit pass programs for local businesses or wider areas. ▪ Working with the TMA to promote car sharing and vanpooling. ▪ Development of a comprehensive parking management strategy for the station area. ▪ Using the TMA to identify transit gaps and work with RTD and private providers to fill those gaps. ▪ Working with the TMA to develop innovative technology-driven transit solutions for the area. ▪ Implementing a mobility hub program throughout the station area that focuses on car- and bike-sharing, wayfinding, and transit user information and access. ▪ Working with the TMA to develop a comprehensive Transportation Demand Management (TDM) strategy for the station area. 	Northglenn and Thornton staffs, local bicycle and pedestrian advocacy groups	Medium-term

CHAPTER SIX: IMPLEMENTATION RECOMMENDATIONS FOR CITY OF THORNTON

This plan is designed to establish a vision for the future of the Northglenn at 112th Station area. To achieve that vision – as conceptualized in the Preferred Alternative – the cities of Northglenn and Thornton, along with their partners, will take many purposeful and focused steps over the course of several years. Some of these steps will be similar for both cities, while some steps will be unique to Thornton or Northglenn. These steps will require ongoing collaboration and strong partnerships between the cities, RTD, other public agencies, the private sector, and the local residents.

This chapter outlines recommendations for the city of Thornton, which include a number of implementation actions; roles and responsibilities among city of Thornton staff, Thornton City Council or other outside agencies or entities; and suggested timeframes for implementation. These actions, used in combination with each other, are intended to ensure the full development potential of the station area is met as envisioned by the STAMP.

The Implementation actions outlined in this chapter address the following planning issues:

- Land Use, Zoning, and Urban Design;
- Infrastructure and Utilities; and
- Mobility Planning

Table 6-1 identifies the implementation actions for Thornton along with suggested roles and responsibilities and potential timeframes for implementation. Those actions that should be implemented in the short-term are immediate actions that will be implemented within the next 1-2 years. Actions with a medium-term timeframe will likely be implemented shortly after the opening of the commuter rail station and are expected to be put in place within 3-5 years. Actions with a long-term timeframe are likely to occur in the in the 6+ year timeframe.

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

Table 6-1: Recommended Implementation Actions for City of Thornton

No.	Strategy	Responsibility	Timeframe
T1	Adopt the Northglenn at 112th Station Area Master Plan: Formally adopt the STAMP, emphasizing the Preferred Alternative, Northglenn at 112th Station TOD Public Space Design Guidelines, and Implementation Strategies for Thornton as the core Plan elements for Thornton intended to guide public and private development and investment decisions related to land use, infrastructure, and mobility planning. Thornton will review future development proposals within the STAMP area for compliance with the core Plan elements.	City Council, City Development	Short-term
T2	Support and encourage rezoning to reflect STAMP: City of Thornton staff should encourage and support developer proposals to rezone the property within the STAMP area to be consistent with the land uses and densities identified in the STAMP Preferred Alternative.	City Council, City Development	Short -medium-term (as needed)
T3	Support Comprehensive Plan Amendments that reflect STAMP: At the time that the Thornton Comprehensive Plan is updated, the land within Thornton that is identified within this study area should be amended on the Future Land Use Map to reflect the STAMP Preferred Alternative. If development is proposed prior to the Comprehensive Plan update, city of Thornton staff should support Comprehensive Plan amendments required to align a development proposal with the land uses and densities identified in the STAMP Preferred Alternative.	City Council, City Development	Short-term
T4	Propose implementation strategies for annual consideration in City Council Work Plans: Prioritize implementation strategies for annual inclusion into the City Council Work Plan.	City Development, City Manager’s Office, City Council	Ongoing
T5	Require Design Standards for development: Proposed development on the land within Thornton’s jurisdiction should include TOD-appropriate design standards, and Thornton staff should use the Northglenn at 112th Station TOD Public Space Design Guidelines (developed as Appendix 5 to this project), where applicable, to assist in evaluating the developer’s proposed standards.	City Development	Short -medium-term (as needed)

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

No.	Strategy	Responsibility	Timeframe
T6	<p>Monitor plan progress: Conduct a periodic review of the STAMP to assess effectiveness and progress toward implementation. As needed and appropriate, recommended changes could include STAMP updates, amendments to governing regulations and/or consideration of new or modified financing strategies. Amendments to Chapter 6: Implementation Strategies, or changes to the land use designations within Thornton’s jurisdiction in the Preferred Alternative or other aspects of this 112th Station Area Master Plan that would solely affect Thornton and not Northglenn may be approved by the city of Thornton without need for approval by the city of Northglenn.</p>	City Development	Ongoing
T7	<p>Continue support for public art programs: Continue to support the Thornton Arts, Sciences and Humanities Council (TASHCO) efforts to select public art for strategic locations in Thornton. Look for opportunities to fund art that complements or enhances wayfinding or creates unique identity in the Thornton development around the 112th Station Area.</p>	Community Services, Thornton Arts, Sciences and Humanities Council (TASHCO)	Medium-term
T8	<p>Consider financing strategies: The city should be open to considering financing mechanisms, such as special districts, grants, or Urban Drainage funding, to assist with the costs of drainage improvements, streets, trails or other critical infrastructure needed for new development in the study area.</p>	City Development	Short -medium-term (as needed)

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

No.	Strategy	Responsibility	Timeframe
T9	<p>Develop standards for roadway design and development in the station area: The two cities should work together as appropriate to develop roadway design standards for improvements needed to York St. and 112th Ave. for the development area to improve overall mobility and safety, and also to promote walkability. Those activities may include:</p> <ul style="list-style-type: none"> ▪ Developing design guidelines for a small-block street network within future development areas to promote walkability. ▪ Continuing adjacent street patterns into new development areas. ▪ Conducting a detailed traffic engineering analysis related to the potential realignment of York St. 	Infrastructure, City Development, City of Northglenn	Short -medium-term
T10	<p>Plan for pedestrian and bicycle infrastructure needs: Within the next Parks and Open Space Master Plan update, continue to assess bicycle and pedestrian infrastructure needs for this study area. Work with city of Northglenn on aligning trail connections between the two jurisdictions as needed. Assist Northglenn in adding pedestrian signals, if needed, at key locations. Consider complete streets concepts when developing 112th Ave. standards and specifications:</p> <ul style="list-style-type: none"> ▪ The width of 112th Ave. in the station area offers the opportunity to add amenities such as bike lanes or appropriate landscaping to increase the distance from pedestrians and cyclists to traffic. ▪ Add amenities such as wayfinding, lighting, and other upgrades to existing trails and facilities as needed. ▪ Be open to the possibility of a bike sharing program throughout the station area. 	Community Services, City Development, Infrastructure, City of Northglenn	Short -medium-term

Timeframe Key
 Short = 1-2 years
 Medium = 3-5 years
 Long = 6+ years

No.	Strategy	Responsibility	Timeframe
T11	<p>Assist city of Northglenn as needed on innovative transit strategies for the station area, including:</p> <ul style="list-style-type: none"> ▪ Continue to work with RTD to evaluate, revise, and upgrade potential fixed-route services for the station. ▪ Work with the Smart Commute Metro North Transportation Management Association, if feasible, to identify transit gaps and appropriate strategies such as working with RTD or private providers to fill gaps; developing or expanding transit pass programs for local businesses; promoting car sharing and vanpooling; implementing wayfinding. 	City Development, City of Northglenn, RTD, TMA, private providers	Medium-term

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APPENDICES

1. Northglenn at 112th Station Area Market Analysis
2. Developer Forum Summary and Conclusions
3. Infrastructure Assessment
4. H.E.A.L. Walkability Assessments
5. Northglenn at 112th Station TOD Public Space Design Guidelines



**APPENDIX 1: NORTHGLENN AT 112TH STATION AREA MARKET
ANALYSIS**



112th Avenue Station Area Market Analysis

Northglenn and Thornton, Colorado

May 24, 2016

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Table of Contents

	Page
Conclusions	3
Site Analysis	8
Economic / Demographic Framework	12
Psychographics	25
Residential Market	33
Retail Market	51
Office Market	56
Industrial Market	59

Conclusions

- The 112th Avenue Station is located along RTD's North Metro Commuter Rail corridor which is slated for completion in 2018. The broader station area is located in both the Cities of Northglenn and Thornton.
- **SITE ANALYSIS**
 - The immediate station area is on 112th Avenue which is a minor arterial. **Accessibility** to the station area needs improvement which the station area plan will help address. There is the need for **infrastructure upgrades**. The station area has decent visibility.
 - There are almost **90 vacant acres** near the station area owned by three parties. The relatively limited number of property owners is potentially helpful in coordinating planning, infrastructure, and financing for development at the station area.
 - The station area is surrounded by **predominantly residential** land uses to the north, south, and east. The Northglenn **Industrial Park** is **located southwest** of the station.
- **DEMOGRAPHICS**
 - The designated **Primary Market Area (PMA)** is bounded by 136th Avenue to the north, 96th Avenue to the south, just west of I-25 and to the current edge of development to the east in Northglenn / Thornton. It is an approximately 3 mile radius from the station area.
 - 2015 demographic estimates were compared across a number of different geographic boundaries including the ½ mile radius (for a better understanding of the immediate station area), the PMA, the Cities of Northglenn and Thornton, and Adams County.
 - **Northglenn** residents have a relatively **higher median age (34.4 years)** than the other areas examined. Thornton residents are comparatively younger (33.1 years). Both the City of Thornton and Adams County have a comparatively higher percentage of children (0-17 years at 25-30% of the population). **There is a concentration of seniors in central Northglenn.**
 - The ½ mile radius and the City of Northglenn have a **relatively higher percentage (17-20%) of millennials (25-34 years)** compared to the other areas examined.
 - Thornton residents have the highest estimated median household incomes of **over \$65,000** followed by residents in the ½ mile radius at \$64,000. The median household income in the City of Northglenn is **\$49,000**.
 - Most of the **forecast population growth** in the northern metro region is anticipated to take place along **the E-470 corridor**. **Employment** is also anticipated to grow near the **I-25 and E-470 interchange area**. The City of Northglenn is almost built out.
 - In 2014, the majority of Adams County jobs were in Construction, followed by Retail Trade, Health Care and Social Assistance, Wholesale Trade, Accommodation and Food Services, and Transportation and Warehousing. Between 2004 and 2014, the County added the most jobs in the Health Care and Social Assistance, Retail Trade, and Accommodation and Food Services sectors.

Conclusions

- **PSYCHOGRAPHICS**

- Psychographics is another way of describing demographic information and providing a broader picture of an area’s characteristics.
- In the ½ mile radius and in the PMA, the majority of the population, as described by *Business Decisions*, a private demographic data source, is “Sitting Pretty”. Residents tend to be in their **20’s and 30’s, with white collar jobs and college educated. Incomes are between \$50,000 to \$70,000. This group tends to have children, enjoy above average spending in many areas, including eating out at family restaurants, computer equipment and software, watching and participating in sports.**

- **RESIDENTIAL**

Background – City and Market Area

- Between 2006 and 2014, the City of Thornton has seen an average of **465 units built annually** with 14.6% of the units in a multifamily configuration. Because of the built-out nature of Northglenn, it has seen much less development than surrounding cities. The 228-unit Carrick Bend apartment complex was recently constructed near I-25 and 115th in Northglenn and has been successfully leasing up.
- **Since 2000, the PMA has added a significant number of dwelling units.** While 44% of the units were single family detached units, the remaining units were townhomes, condos, and apartments.
- For-sale prices for single family detached homes have generally ranged between \$200,000 and \$400,000. Most of the sales occurred in the 2000’s. There have been a few recent sales over \$500,000. Townhomes at \$280,000 and condos at \$190,000 provide more affordable housing options. Average prices per square foot are \$134 for single family detached units; \$147 for townhomes and \$125 for condos.
- There are 940 multifamily and 3,190 single family detached residential units within the planning pipeline, primarily in the City of Thornton.

Neighborhoods Closer to 112th Avenue Station

- There are a number of apartment communities in relatively close proximity to the 112th Avenue Station with average rents per square foot ranging up to \$1.50 per square foot. In comparison, unit rents in downtown Denver (with structured or underground parking) are \$2 to \$3 per square foot.
- In the immediate station area neighborhood, the residences range in age and size with older, smaller units west of the station, and units built in the 1980’s through the 2000’s to the east and south of the station.

	West	--Northeast--		--Southeast--	
		SFD	TH/Condo	SFD	TH
Ave. \$	\$190,000	\$210,000	\$140,000	\$230,000	\$180,000
Ave. \$ / SF	\$1,100	\$1,350	\$1,300	\$1,750	\$1,440
Ave. Yr Built	1965	1981	1976	1999	2001

Conclusions

Residential Recommendations

- While TODs typically focus on higher density multifamily units, in this instance, given the amount of land available and the need to buffer surrounding neighborhoods, the analysis is recommending single family detached units adjacent to single family detached neighborhoods surrounding the station.
 - Approximately 400-1,300 single family and multifamily units (townhomes, condos, and apartments) have the potential to be located on the vacant properties at the station area.
 - **Densities should step up from existing single family residential densities closer to existing neighborhoods up to 40 dwelling units per acre closest to the station.** The apartments in the market area range from 13 to 25 dwelling units per acre.
 - Prices at this point do not support structured parking, although consideration may be given to phasing structured parking in over time should prices rise to support parking structures.
 - In addition to market rate residential units, consideration should be given to **senior housing and the continuum of care**. There is current demand for 185 to 220 assisted living / congregate care units and a large demand for senior independent units. While they could be included in a high density configuration, another option is to provide these services further from the station in an enclave.
 - The City of Thornton conducted a housing needs assessment in 2014. In addition to recommending that more **affordable senior continuum of housing services** be provided, it identified a need for housing to accommodate **low-income family households, persons with disabilities, and veterans**.
- **COMMERCIAL SERVICES**
 - Most of the **PMA retail is located along 104th and 120th Avenues** rather than 112th Avenue.
 - Retail is always an important activating component at station areas, however, **112th Avenue is relatively less travelled (15,000 ADT)** making retail / restaurant uses a challenge.
 - The microbrewery near the industrial park is an example of the type of business that would be ideal for this station area because it has developed its own clientele and is a local destination.
 - In order to complement a gateway element at 112th Avenue and York Street, **a modest amount of commercial services** can be located at this intersection to accommodate neighborhood oriented services, however, there should be site flexibility in the case the market for neighborhood services doesn't materialize. There may be the potential, as the station evolves into a neighborhood hub, for limited **(up to 15,000 square feet) neighborhood services in an office configuration to accommodate medical offices, insurance brokers, etc.**

Conclusions

- **INDUSTRIAL**
 - There is over **4.5 million square feet of industrial and flex space in the PMA**. There has been relatively little new space constructed in the market area in the last 2 years. During this time, the legalization of marijuana has had an impact on industrial space inventory. Large grow operations increasingly occupy this type of space, moving other users to the periphery.
 - **The Northglenn Industrial Park accommodates 90 businesses on 36 properties in approximately 870,000 square feet.** Automotive repair and construction contractors account for the majority of businesses. There are also businesses providing Professional, Scientific, and Technical Services, and some Fabricated Metal Product Manufacturing.
 - **Vacancies in the Northglenn Industrial Park are 0%. Demand continues to be strong for this type of space although** demand needs to be balanced with the needs of the neighborhoods and desire for residential and commercial mixed uses close to the station.
 - At the same time, this land use provides jobs and serves an important niche in the Northern Denver industrial market.
 - The priority for the industrial lands in the station area would be to infill with complementary industrial uses. Landscaping, signage, sidewalks and other gateway elements to the station should also be provided to help provide a more attractive gateway element to the station from the western entrance along 112th Avenue.

Conclusions

- **SITE PLAN RECOMMENDATIONS**

- On the **Perlmutter, Reddy, and Carlson properties** close to the station (primarily in Thornton), **residential land uses are primarily recommended, increasing from densities mirroring the surrounding residential neighborhoods at the periphery up to 40 dwelling units per acre close to the station. Approximately 400-1,300 single and multifamily units (townhomes, condos, and apartments) have the potential to be located on the vacant properties at the station area.**
- **Single family residential units should be located on the outer boundaries of the station area to transition to and mirror the surrounding neighborhoods.**
- Residential uses should **incorporate some mixed income housing, family housing, senior housing, potentially the senior continuum of care, and potentially housing serving disabled and veteran residents.**
- In order to complement a gateway element at 112th Avenue and York Street, **a modest amount of commercial services** can be located at this intersection to accommodate neighborhood oriented services, however, there should be site flexibility in the case the market for neighborhood services doesn't materialize.
- The Reddy family has indicated a desire for commercial services on their property located directly east of the station platform off of York Street. While plans should depict this as an option, there should be site plan flexibility in case this land use doesn't materialize.

Site Analysis

Site Analysis

The site analysis presented on the following pages addresses a number of factors regarding the project's location that are likely to have an impact on any development program's potential for success:

- Access
- Visibility
- Traffic Volume
- Current Property Owners
- Surrounding Land Uses
- Scenic / Topographic Attributes
- Current Infrastructure
- Other Considerations

112th Avenue Station Area Master Plan - General Study Area - Exhibit 1



Site Analysis

Category	Comments	Summary (Current)
Access	While east-west accessibility is generally good, north-south access is more limited and circuitous. York Street south of 112 th Avenue dead-ends into a residential subdivision. While Irma Drive does not provide direct access to the site, it intersects with 112 th Avenue approximately six blocks to the west. There is limited direct access to the station from the neighborhoods surrounding the station.	Mixed: This station area planning effort will identify potential access points.
Visibility	Station area visibility is generally good from the surrounding neighborhoods. Access is likely to be the biggest hurdle.	Good
Traffic Volume	While traffic volumes on 112 th Avenue are high for a 2-lane minor arterial with approximately 15,000 daily vehicles, they may not be high enough to attract a significant amount of commercial activity, which would prefer to be on a more heavily trafficked corridor in the region. The City of Northglenn is currently widening the street to add a striped center median from Washington Street to York Street and dedicated turn lanes at Irma Drive.	Mixed: Traffic volumes are not high enough to attract a significant amount of commercial activity.
Current Property Owners	Unlike other station areas, which tend to have a large number of small property owners, the 112 th Avenue Station has fewer landowners who own more property. Fewer landowners to coordinate with may help to facilitate broader area redevelopment. The largest amounts of vacant land are located east of York Street and north of 112 th Avenue in the City of Thornton. The largest parcel east of York Street and North of 112 th Avenue totaling 53.94 acres, is owned by 112 th & York LLC (Carlson properties). To the north, the Reddy family owns 29.56 acres. The Jordan Perlmutter Company owns approximately 5 acres west of York Street and north of 112 th Avenue. There are a total of 88.9 vacant acres.	Good

Site Analysis

Category	Comments	Summary (Current)
Scenic & Topographic Attributes	The Margaret W. Carpenter Recreation Center, Carpenter and Stonehocker Parks, and adjacent open space and trails provide nearby recreational amenities.	Good
Surrounding Land Uses	The station area is surrounded by residential subdivisions. A 1990s subdivision is located directly north and to the east. To the south, a subdivision containing single family homes and duplexes was built in the early 2000s. Northglenn's industrial park is located to the south and west of the station.	Good: Stable residential neighborhoods
Infrastructure / Environmental	York Street is currently a 2-lane rural road that will need to be improved to allow for future development. Additionally, curb and gutter will need to be added to the north side of 112 th Avenue. Traffic signal upgrades will be needed at the intersection of 112 th Avenue and York Street. Water mains will also need to be extended up York Street. Storm drainage upgrades to the Northeast Grange Hall Creek tributary will be necessary in order to facilitate development.	Mixed: One of the primary obstacles to redevelopment is the challenge of addressing and financing infrastructure (particularly drainage).
Financing Considerations	Infrastructure and its financing may prove to be the primary obstacle to area redevelopment. Private developers typically use Title 32 Metropolitan Districts to address these types of issues. Because the storm drainage issues cut across municipal boundaries, there may be the potential for (for example) a cross-jurisdictional General Improvement District.	Mixed: While the storm drainage issues cut across several large properties, it may present the potential for a broader solution. However, cross-jurisdictional coordination will be necessary.

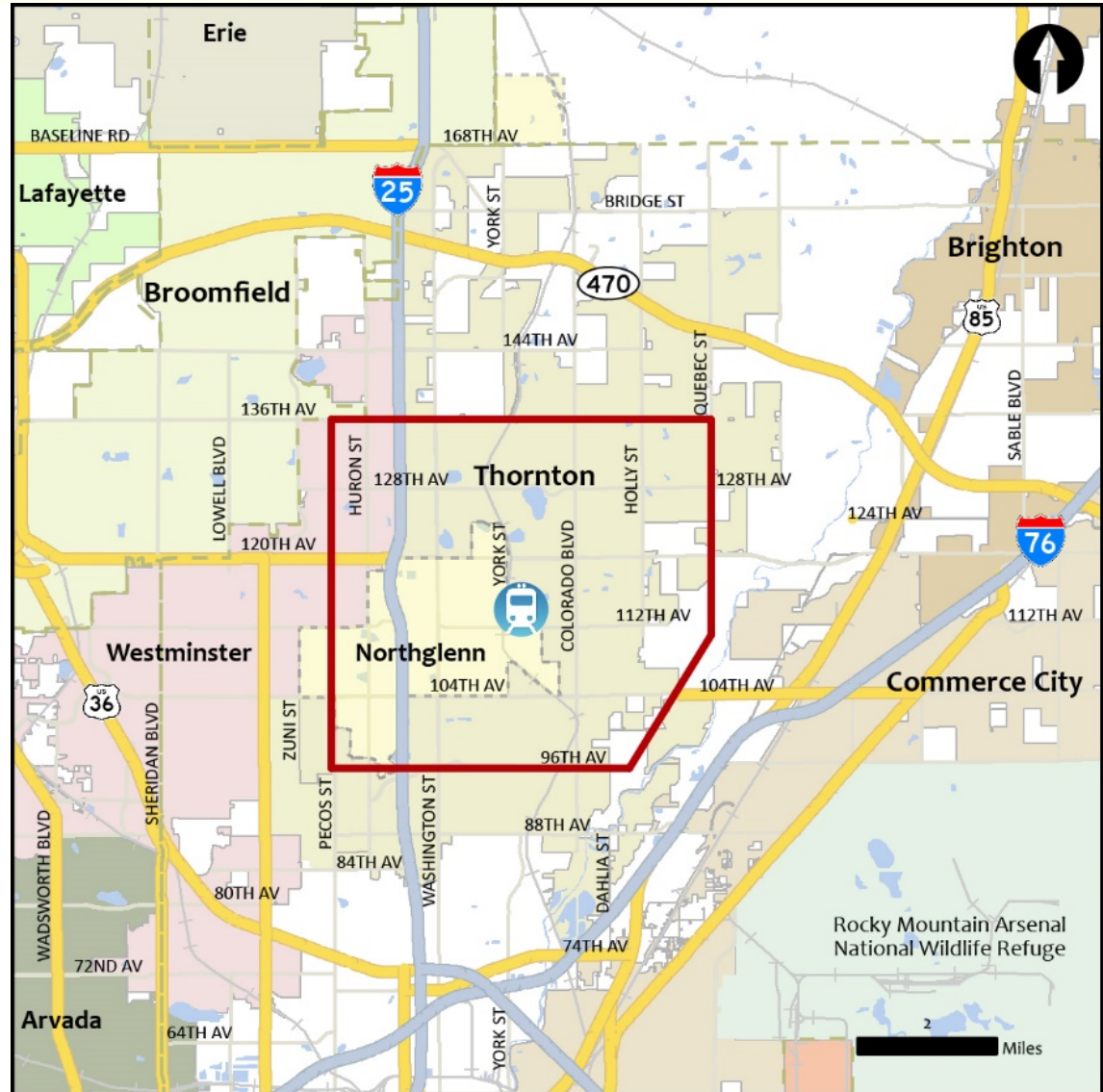
Economic / Demographic Framework

Market Area

The 112th Avenue Station Primary Market Area (PMA) is an area from which a project will draw the majority of its residents (housing), patrons (retail), employees (office, industrial, institutional) and visitors. These areas will also likely be a source of competition / demand. A real estate market area is an area with generally comparable population and household characteristics. In the case of residential projects, it is typically a 2 to 3 mile radius.

The boundaries of the PMA generally represent a 3 mile market area and extends just west of I-25, north to 136th Avenue, south to about 96th Avenue, and east to the current edge of development in Northglenn / Thornton.

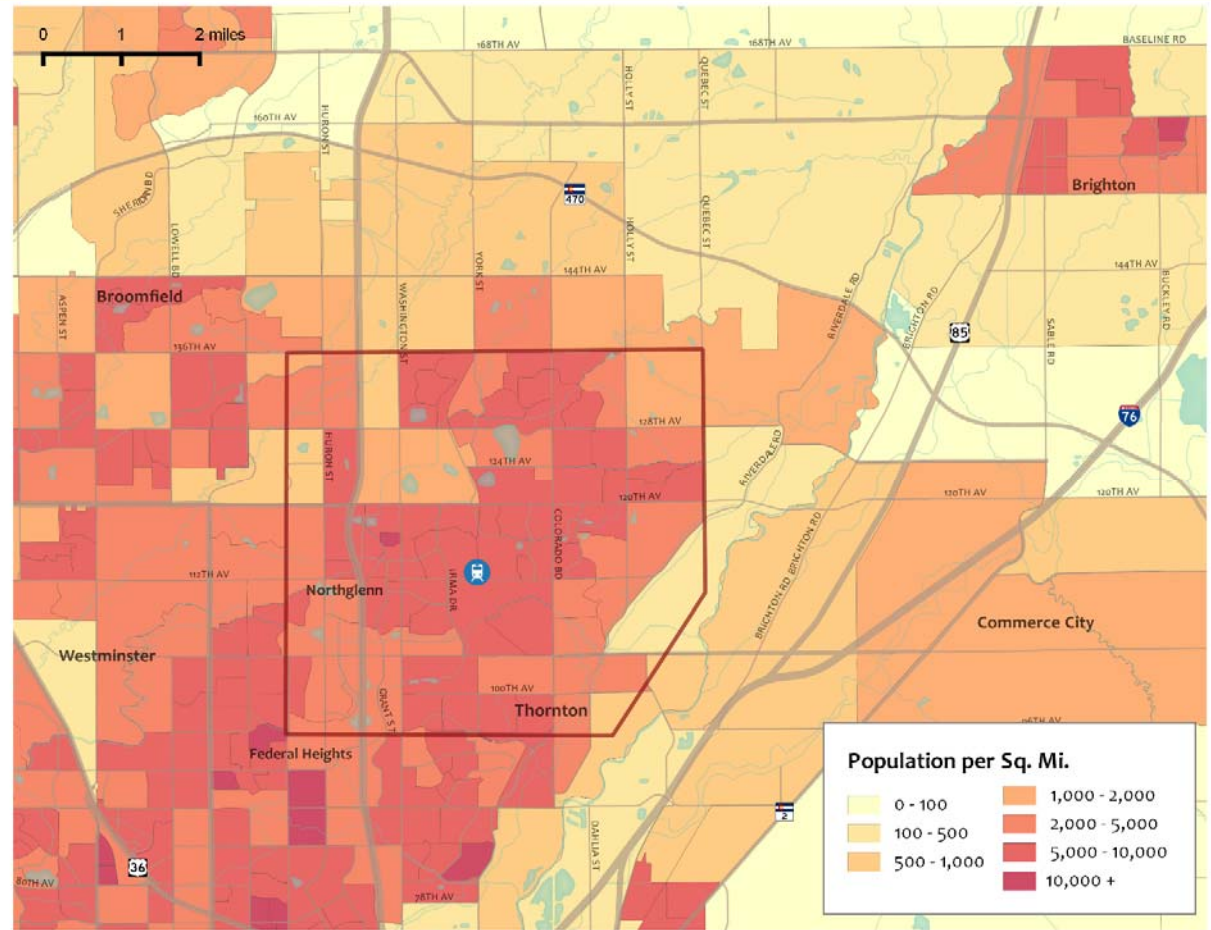
It is different from a transit market area which is related to the propensity to use public transit depending on location, ease of access, etc. In this case, the propensity to use the 112th Avenue Station may be related primarily to location. For example, a resident living near 120th Avenue (within the real estate market area) may be more inclined to use the Eastlake Station rather than the 112th Avenue Station. However when looking for a general residence in the area, that same resident would probably not be inclined to just look at residences near the 112th Avenue Station; s/he would be inclined to potentially look in the broader market area for a residence, given price point parameters, etc.



Population

The 112th Avenue Station is located approximately 9 miles north of Downtown Denver. The neighborhoods surrounding the station were built out during different times starting from the 1960's. The map shows the relative population concentrations in the market area. The station is located in the center of a population concentration. The population begins to thin out towards the east and to the north along E-470.

There are approximately 47,000 households in the PMA. Average household sizes in the PMA are about 2.75 persons per household. In the ½ mile radius, household sizes are slightly smaller at 2.69. The City of Northglenn had the smallest household sizes at 2.58 while the City of Thornton had the largest at 2.93 persons per household.



Source: ArLand, DRCOG, Claritas, US Census

2015 Estimates

	Persons	Households	Persons / Household
1/2 Mile Radius	3,400	1,262	2.69
Primary Market Area	129,825	47,217	2.75
City of Northglenn	37,016	14,349	2.58
City of Thornton	132,388	45,209	2.93
Adams County	481,372	166,988	2.88

Source: Claritas, ArLand

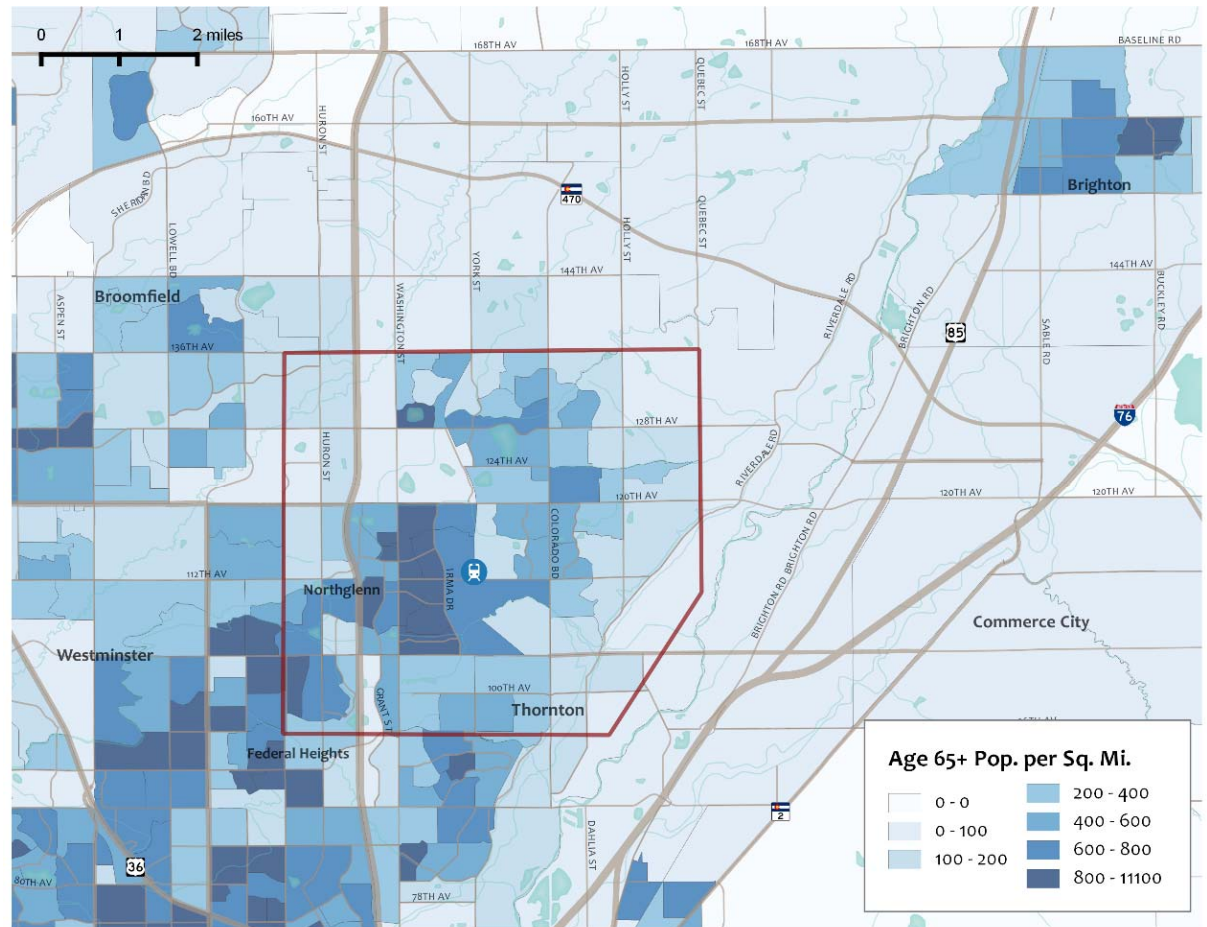
Seniors

The City of Northglenn has a relatively higher median age at 34.4 years compared to the other areas examined while the City of Thornton has a comparatively younger population.

There appears to be a concentration of the senior population between Irma Drive and Washington Streets south of 120th Avenue. There are a number of senior apartments, and other senior services located in this area which encompasses both Northglenn and Thornton.

	Median Age
1/2 Mile Radius	33.9
Primary Market Area	33.9
City of Northglenn	34.4
City of Thornton	33.1
Adams County	33.5

Source: Claritas, ArLand



Source: ArLand, DRCOG, Claritas, US Census

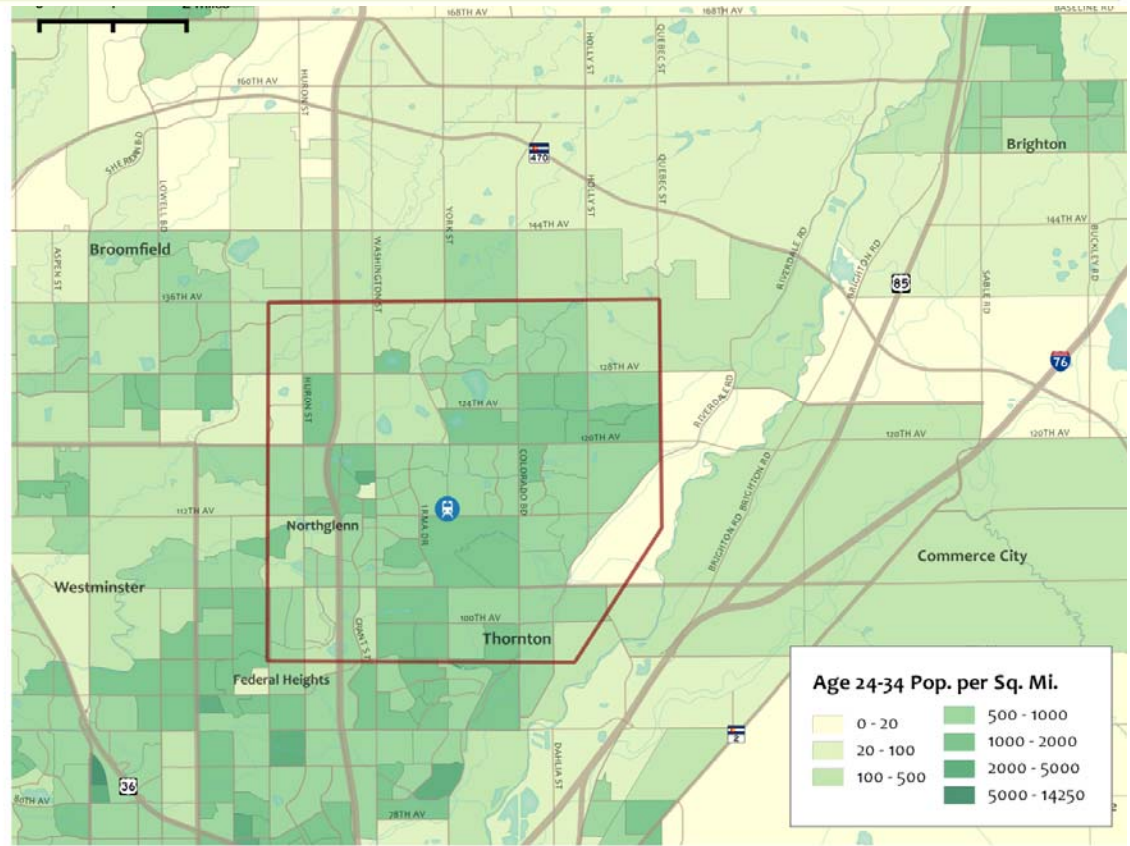
Millennials

The density of Millennials (ages 25-34) is greatest in downtown Denver, and other neighborhoods close to downtown. In the City of Northglenn, about 17% of the population falls into this key age range.

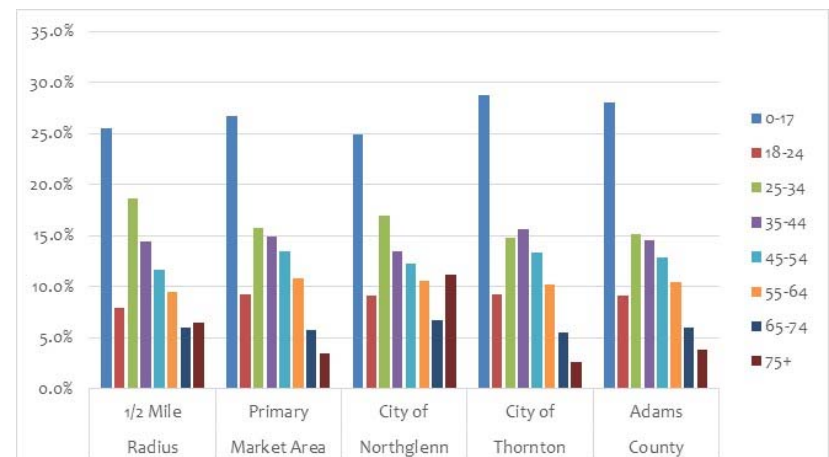
This is important for Northglenn because the City has a reputation as being primarily an older community. Marketers watch this age group closely primarily because of sheer numbers and potential influence on short and long term trends. This group has shown a preference for urban living and services.

The 1/2 mile radius has a higher proportion of households in this age group (18.6%) than the other geographic areas examined.

The City of Thornton and Adams County have a relatively higher percentage of children (0-17 years). In the Primary Market Area, 15.9% of the population is between the ages of 25-34.



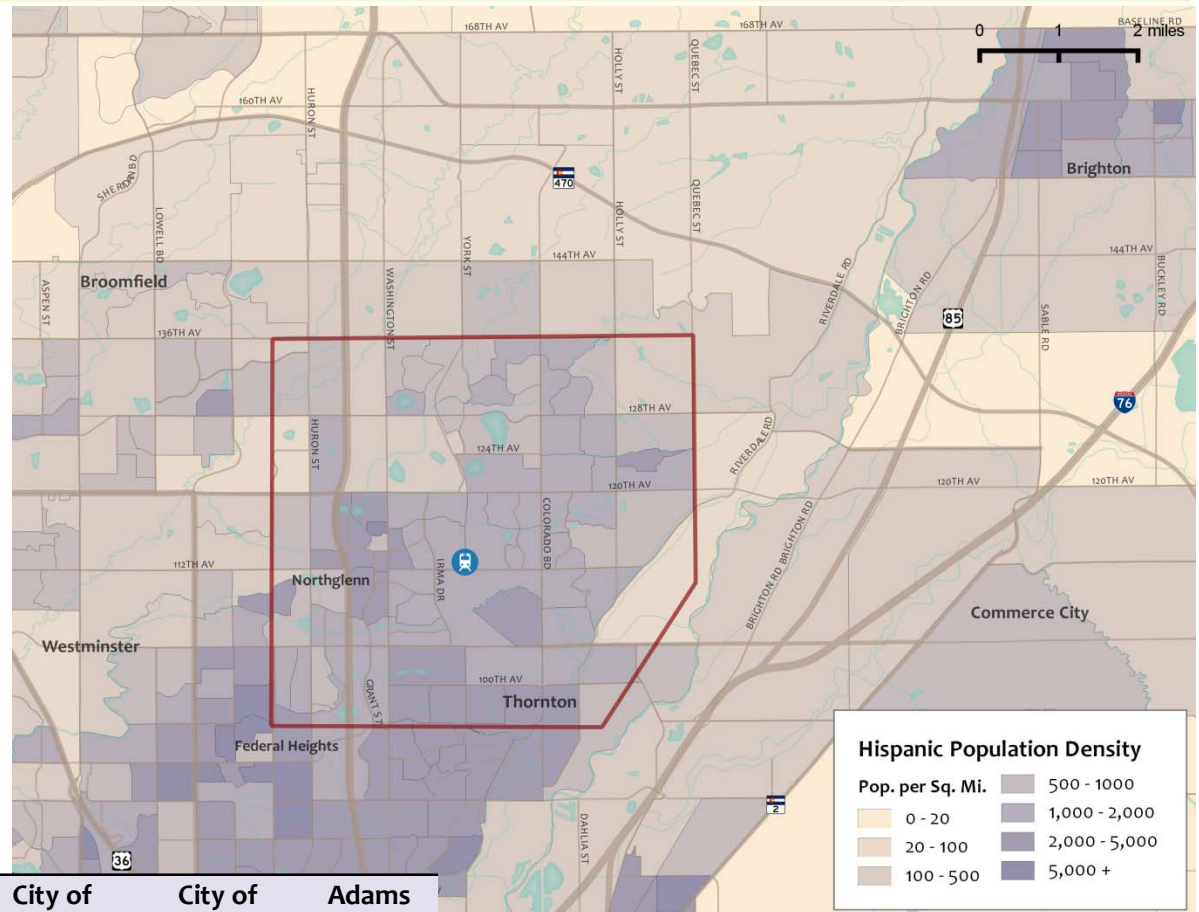
Source: ArLand, DRCOG, Claritas, US Census



Ethnicity

The Primary Market Area and the comparative areas are predominantly White, although a significant percentage of the population is of Hispanic origin.

Residents of Hispanic origin comprise 38.9% of the population in Adams County, followed by the City of Thornton and the City of Northglenn.



Race/Ethnicity	1/2 Mile Radius	Primary Market Area	City of Northglenn	City of Thornton	Adams County
White	74.9%	77.9%	74.8%	75.7%	72.3%
Black	2.2%	2.0%	2.4%	1.9%	3.1%
American Indian	1.9%	1.2%	1.5%	1.2%	1.4%
Asian/Pacific Islander	4.9%	4.8%	4.0%	5.2%	4.0%
Other / Two or more	16.1%	4.4%	17.2%	16.1%	19.2%
Hispanic Origin*	30.7%	27.6%	31.7%	33.5%	38.9%

Source: Claritas, ArLand

* can be of any race

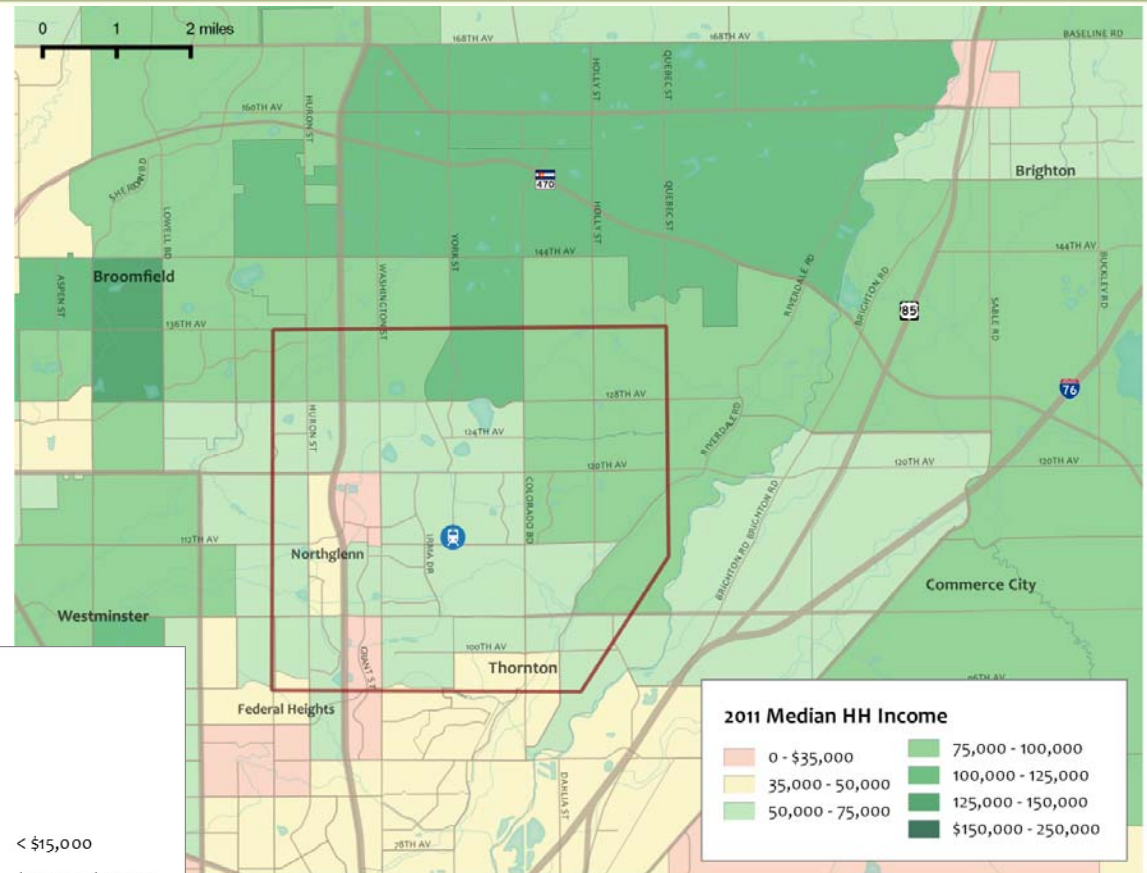
Source: ArLand, DRCOG, Claritas, US Census

Incomes

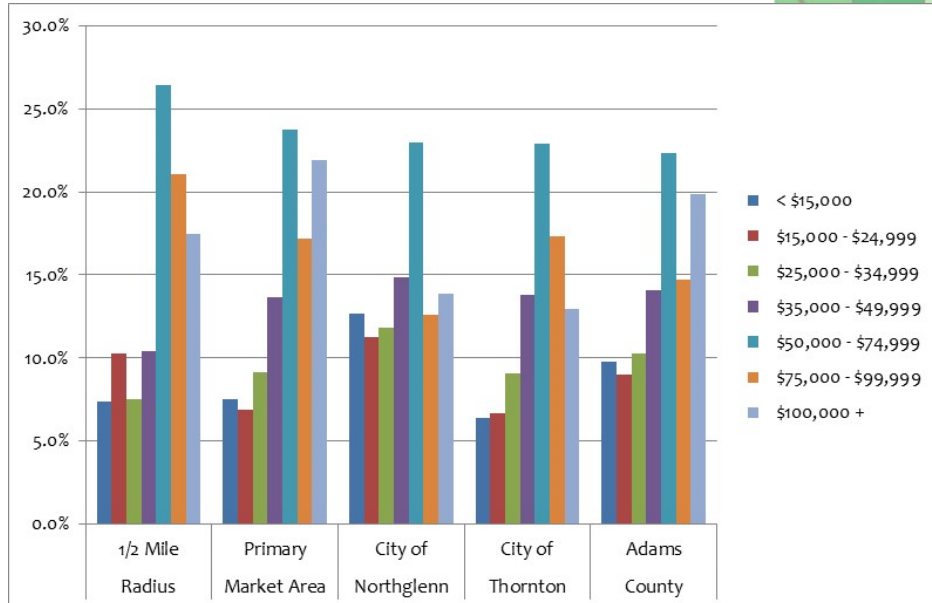
Thornton residents have the highest estimated median household incomes at \$65,000 (\$2015 estimates), followed by estimated household incomes in the 1/2 mile radius.

The figure below shows that the PMA and Adams County have a significant percentage of households with incomes over \$100,000.

Income levels provide direction for setting rent and sale price levels for residential units at station areas. They also provide an indication of the types of goods and services to potentially provide at station areas.



Source: ArLand, DRCOG, Claritas, US Census



2015 Estimates

	Median HH Income	Avg HH Income
1/2 Mile Radius	\$64,103	\$68,092
Primary Market Area	\$63,568	\$72,308
City of Northglenn	\$49,377	\$57,883
City of Thornton	\$65,437	\$75,386
Adams County	\$57,751	\$69,066

Source: Claritas, ArLand

DRCOG Household Growth Forecasts

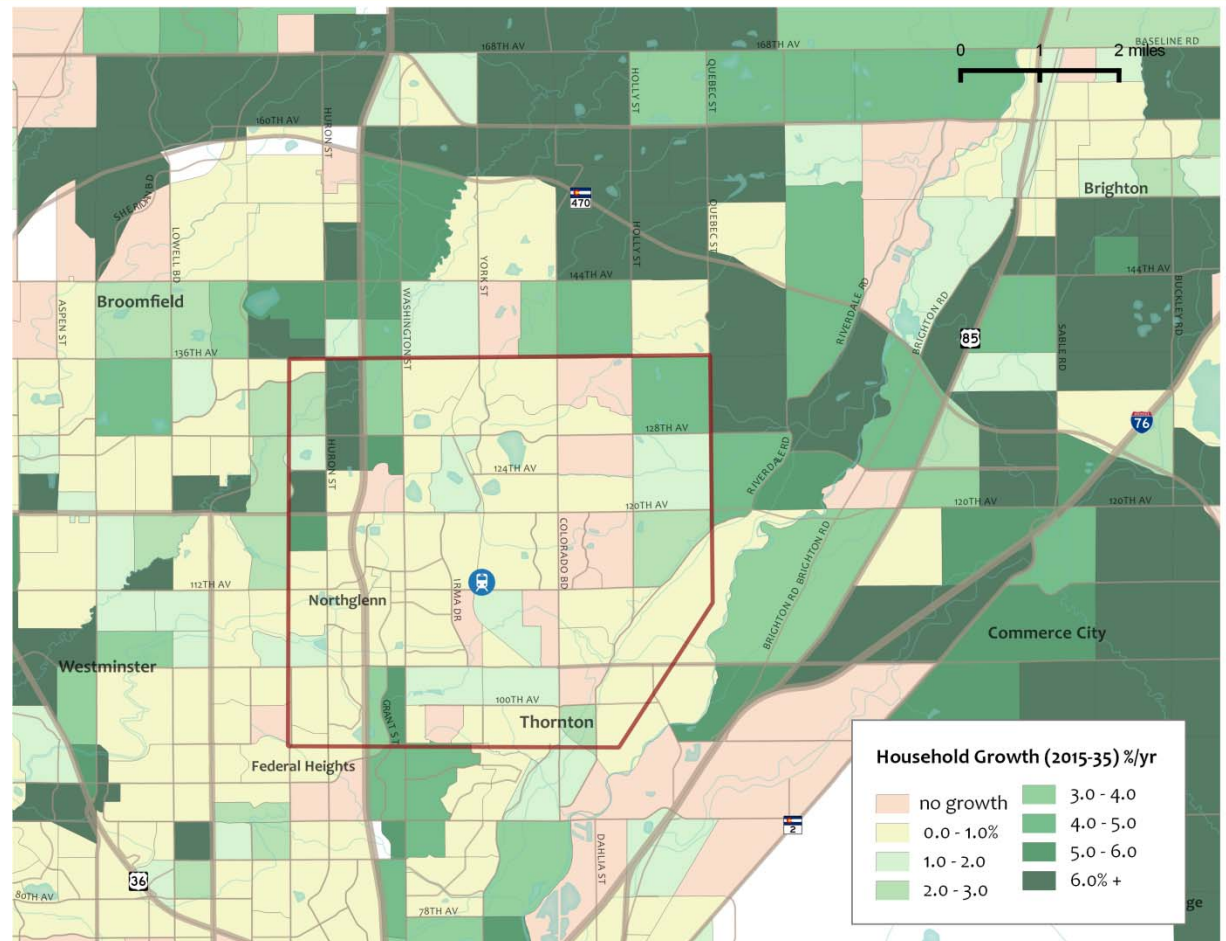
Household growth in the PMA is forecast at less than 0.5% per year through 2040, per DRCOG.

The greatest future household growth is forecast for the areas around E-470 to the north and east.

The lighter colored areas are those with forecast no or very minimal growth. They are areas that are predominantly built out (or open space).

Within the PMA there are forecast areas of growth west of I-25, and north of 120th Avenue.

The DRCOG numbers are one source for developing residential demand estimates. We also examine past residential trends in the PMA, which saw fairly significant growth, in order to develop residential forecasts for the 112th Avenue Station Area.



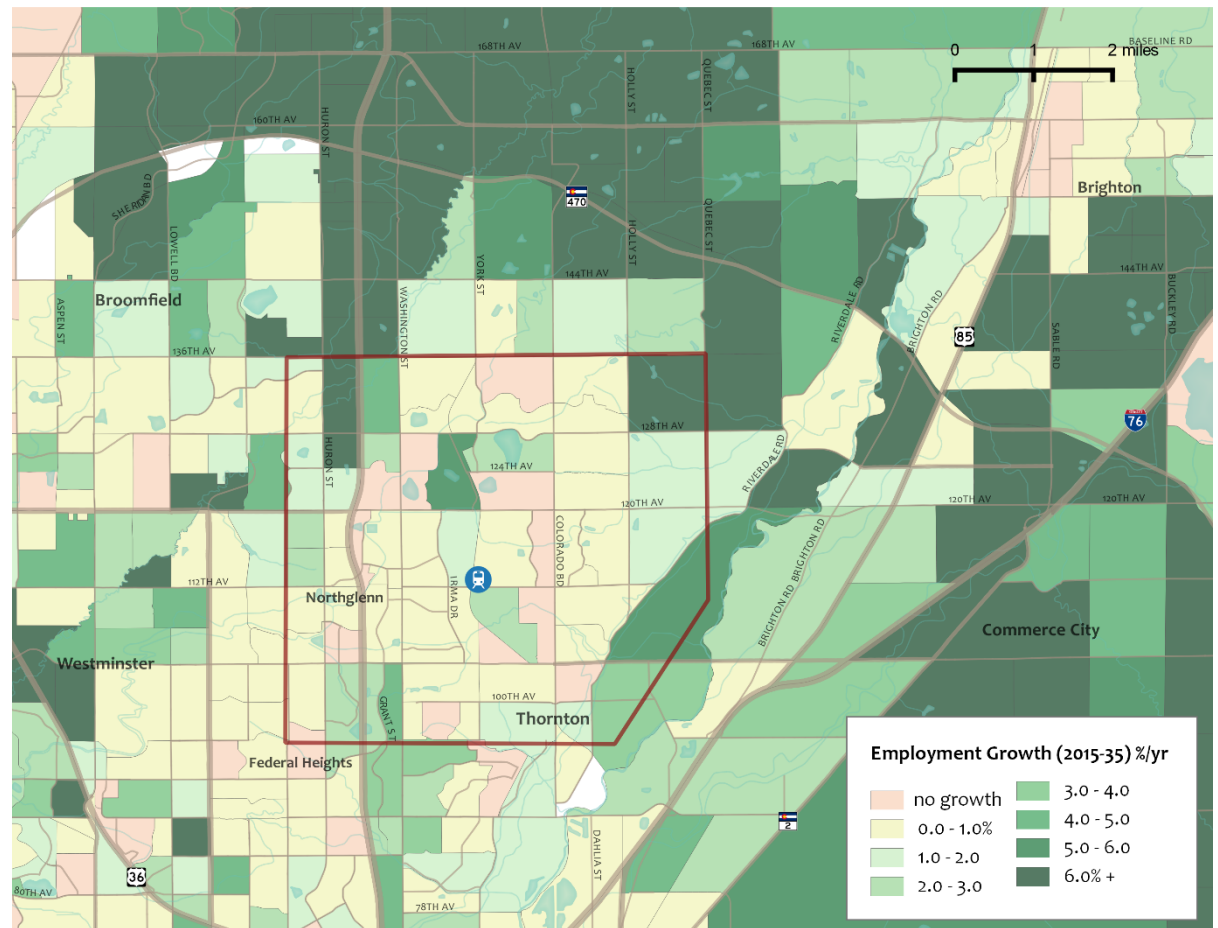
Source: ArLand, DRCOG, Claritas, US Census

DRCOG Employment Growth Forecasts

The forecast employment growth rate is slightly higher than the forecast household growth at an annual average rate of 0.7% per year through 2040.

Significant employment growth is forecast for the northern I-25 Corridor with a particular concentration at the E-470 and I-25 interchange area where new business parks are being planned.

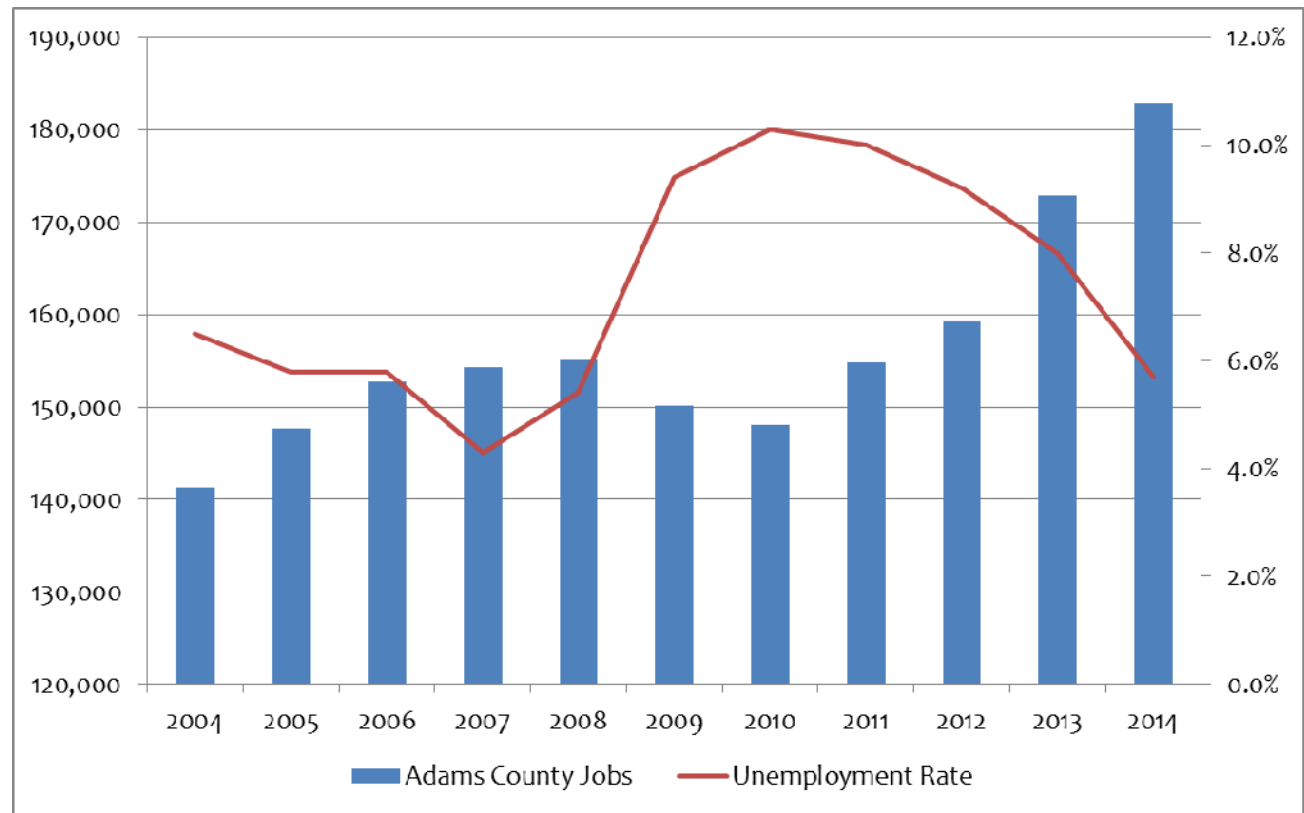
The DRCOG employment growth forecasts are the basis for developing our estimates of future office and industrial demand for the 112th Avenue Station Area.



Source: ArLand, DRCOG, Claritas, US Census

Adams County Employment

There were over 180,000 jobs in Adams County in 2014. Between 2004 and 2014, there has been an overall net gain of more than 41,000 jobs. Employment numbers reached a peak in 2008 and dropped sharply in 2009, due to the Great Recession. There has been steady employment growth since 2011.



Source: Colorado Department of Labor & Employment, BLS, ArLand

Adams County Employment

Industry	2004	2009	2014	Change 2004- CAGR 2004-	
				2014	2014
Agriculture, Forestry, Fishing and Hunting	987	1,069	1,138	151	1.6%
Mining	231	241	693	462	13.0%
Utilities	883	792	649	-234	-3.4%
Construction	17,509	15,056	19,257	1,748	1.1%
Manufacturing	13,345	10,803	13,110	-235	-0.2%
Wholesale Trade	13,185	13,425	15,077	1,892	1.5%
Retail Trade	15,037	16,667	19,028	3,991	2.7%
Transportation and Warehousing	14,965	13,972	13,936	-1,029	-0.8%
Information	1,749	2,296	2,501	752	4.1%
Finance and Insurance	3,332	2,838	3,062	-270	-0.9%
Real Estate and Rental and Leasing	2,718	2,691	2,812	94	0.4%
Professional, Scientific, and Technical Services	3,715	4,814	5,451	1,736	4.4%
Management of Companies and Enterprises	1,178	1,577	1,371	193	1.7%
Administrative and Support and Waste Management	8,992	9,390	11,082	2,090	2.3%
Educational Services	11,182	13,362	12,409	1,227	1.2%
Health Care and Social Assistance	9,092	15,446	17,027	7,935	7.2%
Arts, Entertainment, and Recreation	1,493	1,427	1,266	-227	-1.8%
Accommodation and Food Services	10,520	12,313	14,205	3,685	3.4%
Other Services (except Public Administration)	4,340	4,653	5,288	948	2.2%
Public Administration	6,859	7,320	7,483	624	1.0%
Total	141,313	150,160	182,843	41,530	2.9%

Source: Colorado Department of Labor & Employment, BLS, ArLand

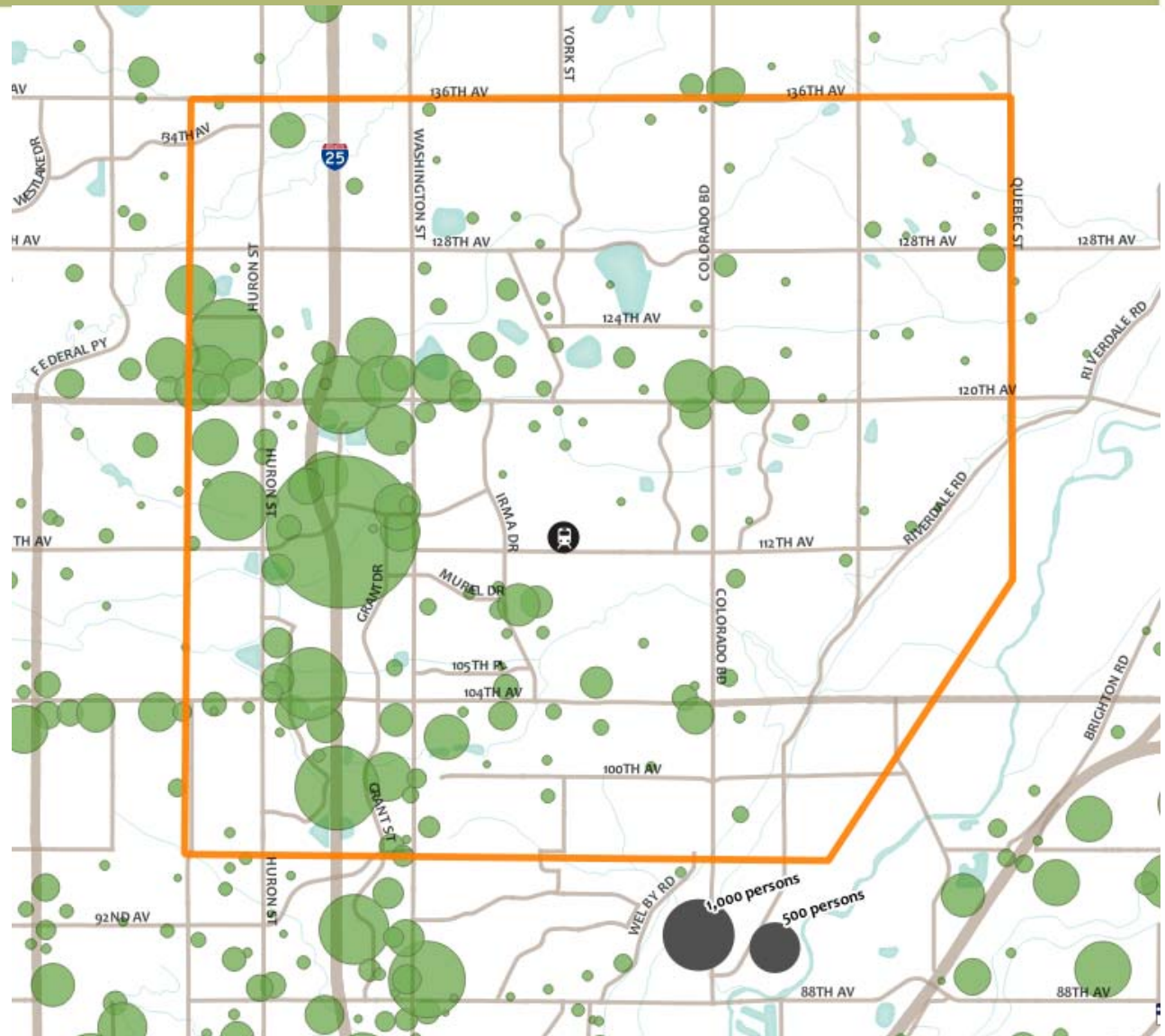
Adams County Employment

In 2014, most of the county's jobs were in Construction, followed by Retail Trade, Health Care and Social Assistance, Wholesale Trade, Accommodation and Food Services, and Transportation and Warehousing.

Most of the jobs growth in the past decade took place in the Health Care, Retail Trade, and Accommodation and Food Services industries. Government employment is also shown on the map.

Not surprisingly, most of the region's jobs are located along highways and major arterials.

Note: Establishments with fewer than 10 employees are not depicted on the map



Source: ArLand, DRCOG, Claritas

Psychographics

Psychographics

Psychographics is a term used to describe the characteristics of people and neighborhoods which, instead of being purely demographic, speak more to attitudes, interests, opinions and lifestyles.

Commercial retail developers are interested in understanding a community's psychographic profile, as this is an indication of its resident's propensity to spend across select retail categories. Residential developers are also interested in understanding this profile as it tends to suggest preferences for certain housing product types.

The segments and neighborhood groups for residents in the ½ mile radius and PMA are described on the following pages. There is a general group description and then a description of the top segments within each of these groups.

Top Neighborhood Groups

Group	% in ½ mile radius	% in Market Area
Urban Cliff Climbers	69.8%	36.9%
Going it Alone	27.5%	4.8%
Single in the Suburbs	0%	20.5%
Married in the Suburbs	0%	9.5%
Urban Cliff Dwellers	2.7%	8.2%

Psychographics Preferences by Group

Neighborhood Group	Preference Overview
Urban Cliff Climbers	While Urban Cliff Climbers share several demographic similarities, their differences are glaringly obvious once you start looking at their purchasing patterns. This six-segment category is divided evenly into two consumer types: the high-purchase-high-activity group and the low-purchase-low-activity group. The first group includes: Charmed Life (the biggest spenders), Sitting Pretty, and Kindred Spirits. The second group includes: Middle of the Road, White-Collar Status, and Blue-Collar Starts.
Going it Alone	Like Thriving Alone segments, Going it Alone segments are single. But unlike Thriving Alone residents, Going it Alone singles are living modest lives with only a few luxuries. In fact, the common characteristic of Going it Alone segments is their propensity to live as well as possible despite their means. These residents are a true testament to finding opportunities for comfort and enjoyment no matter what their economic, education, age, and family status — whether it’s through domestic travel, premium beer, rock concerts, or the occasional fast-food treat.
Single in the Suburbs	Most of the households in these areas have children, with a much higher-than-average rate of single-parent households. Presumably they could be viewed as “starter suburbanites” who may move up to better suburban environs as they mature. In this category, you’ll find a cross-section of single lifestyles in the suburbs. They include active consumers, minimally active consumers, and minimalists. The most active consumers are the Educated Earners, whose higher incomes afford them the opportunity to pursue a wide range of interests. The minimally active consumers in this category are Suburban Singles, whose smaller incomes require more conservative spending.

Psychographics Preferences by Group

Neighborhood Group	Preference Overview
Married in the Suburbs	The Married in the Suburbs segments are populated by well-educated, white-collar workers. Everyone has a high-school degree and the vast majority of residents are college-educated. While not wealthy, Married in the Suburbs residents do very well at earning enough to support comfortable and active family-centered lifestyles.
Urban Cliff Dwellers	“Exceptionally ordinary” is the best way to describe Urban Cliff Dweller segments. Just as they are average in income, education, and occupations, they are also average in spending on and participating in everything from computer purchases, to groceries, to leisure activities. Most likely these neighborhoods do not rank above-average in most purchasing areas predominantly due to their lower income levels. In other words, they simply don’t have the money for extra spending after paying the mortgage or rent, utilities, and the car payment (most likely a small domestic make and model).

Source: Business Decisions, ArLand

Top Dominant Segments within the Groups

Within each of the groups listed above, there are more detailed segments within each of these groups that is applicable to the areas that we are examining. For example, “Single in the Suburbs” is a group listed above. Within that group, “Sitting Pretty” is a dominant segment found in the 112th Avenue market areas.

Segment	% in ½ mile radius	% in PMA
Urban Cliff Climbers: Sitting Pretty	69.8%	25.7%
Going it Alone: Solo Acts	24.9%	0%
Single in the Suburbs: Educated Earners	0%	9.5%
Single in the Suburbs: Suburban Singles	0%	7.4%
Going it Alone: Urban Moms	0%	4.1%
Married in the Suburbs: Couples with Capital	0%	4.0%

Source: Business Decisions, ArLand

Resident Segment Profile Summary

½ Mile Radius

Sitting Pretty (69.8%)	
Median Age	20s/low 30s
Family Status	Married
HH Income	\$50-\$60K
Urbanization	Urban
Education	College
Occupation	White Collar
Group	Urban Cliff Climbers (see previous description)
Notes	Have children. Enjoy above average spending in many areas including eating out at family restaurants, computer equipment and software, watching and participating in sports.

Solo Acts (24.9%)	
Median Age	20s/low 30s
Family Status	Married & Single
HH Income	\$30k - \$50k
Urbanization	Urban
Education	High School
Occupation	White Collar
Group	Going it Alone (see previous description)
Notes	Many have children. Modest activities of domestic travel and media selections.

Resident Segment Profile Summary

PMA

Sitting Pretty (25.7%)	
Median Age	20s/low 30s
Family Status	Married
HH Income	\$50k - \$60k
Urbanization	Urban
Education	Some College
Occupation	White Collar
Group	Urban Cliff Climber

Educated Earners (9.5%)	
Median Age	20s/low 30s
Family Status	Single
HH Income	\$30k - \$50k
Urbanization	Suburban
Education	College
Occupation	White Collar
Group	Single in Suburbs

Suburban Singles (7.4%)	
Median Age	20s/low 30s
Family Status	Married & Single
HH Income	\$30k - \$50k
Urbanization	Suburban
Education	High School
Occupation	White Collar
Group	Single in Suburbs

Urban Moms (4.1%)	
Median Age	20s/low 30s
Family Status	Single
HH Income	\$30k or less
Urbanization	Urban
Education	High School
Occupation	Blue Collar
Group	Struggling Alone

Couples with Capital (4.0%)	
Median Age	30s
Family Status	Married
HH Income	\$70k - \$90k
Urbanization	Suburban
Education	College
Occupation	White Collar
Group	Married in Suburbs

Summary

- **DEMOGRAPHICS**

- The designated **Primary Market Area (PMA)** is bounded by 136th Avenue to the north, 96th Avenue to the south, just west of I-25 and to the current edge of development to the east in Northglenn / Thornton. It is an approximately 3 mile radius from the station area.
- 2015 demographic estimates were compared across a number of different geographic boundaries including the ½ mile radius (for a better understanding of the immediate station area), the PMA, the Cities of Northglenn and Thornton, and Adams County.
- **Northglenn** residents have a relatively **higher median age (34.4 years)** than the other areas examined. Thornton residents are comparatively younger (33.1 years). Both the City of Thornton and Adams County have a comparatively higher percentage of children (0-17 years at 25-30% of the population). **There is a concentration of seniors in central Northglenn.**
- The ½ mile radius and the City of Northglenn have a **relatively higher percentage (17-20%) of millennials (25-34 years)** compared to the other areas examined.
- Thornton residents have the highest estimated median household incomes of **over \$65,000** followed by residents in the ½ mile radius at \$64,000. The median household income in the City of Northglenn is **\$49,000**.
- Most of the **forecast population growth** in the northern metro region is anticipated to take place along **the E-470 corridor**. **Employment** is also anticipated to grow near the **I-25 and E-470 interchange area**. The City of Northglenn is almost built out.
- In 2014, the majority of Adams County jobs were in Construction, followed by Retail Trade, Health Care and Social Assistance, Wholesale Trade, Accommodation and Food Services, and Transportation and Warehousing. Between 2004 and 2014, the County added the most jobs in the Health Care and Social Assistance, Retail Trade, and Accommodation and Food Services sectors.

- **PSYCHOGRAPHICS**

- Psychographics is another way of describing demographic information and providing a broader picture of an area's characteristics.
- In the ½ mile radius and in the PMA, the majority of the population, as described by *Business Decisions*, a private demographic data source, is "Sitting Pretty". Residents tend to be in their **20's and 30's, with white collar jobs and college educated**. **Incomes are between \$50,000 to \$70,000. This group tends to have children, enjoy above average spending in many areas, including eating out at family restaurants, computer equipment and software, watching and participating in sports.**

Residential Market

Residential Building Permits

City	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	Avg	% 5+ Units MF
Broomfield	1,082	1,060	827	160	232	229	2,010	896	820	7,316	813	55.1%
Thornton	1,045	826	344	240	260	260	527	309	376	4,187	465	14.6%
Commerce City	818	480	248	132	240	116	192	384	354	2,964	329	2.2%
Westminster	320	168	88	44	48	96	148	32	34	978	109	8.1%
Federal Heights	2	20	5	3	5	3	4	2	12	56	6	0.0%
Northglenn	1	0	0	0	0	0	0	228	0	230	26	99.0%

Source: ArLand, HUD SOCDs

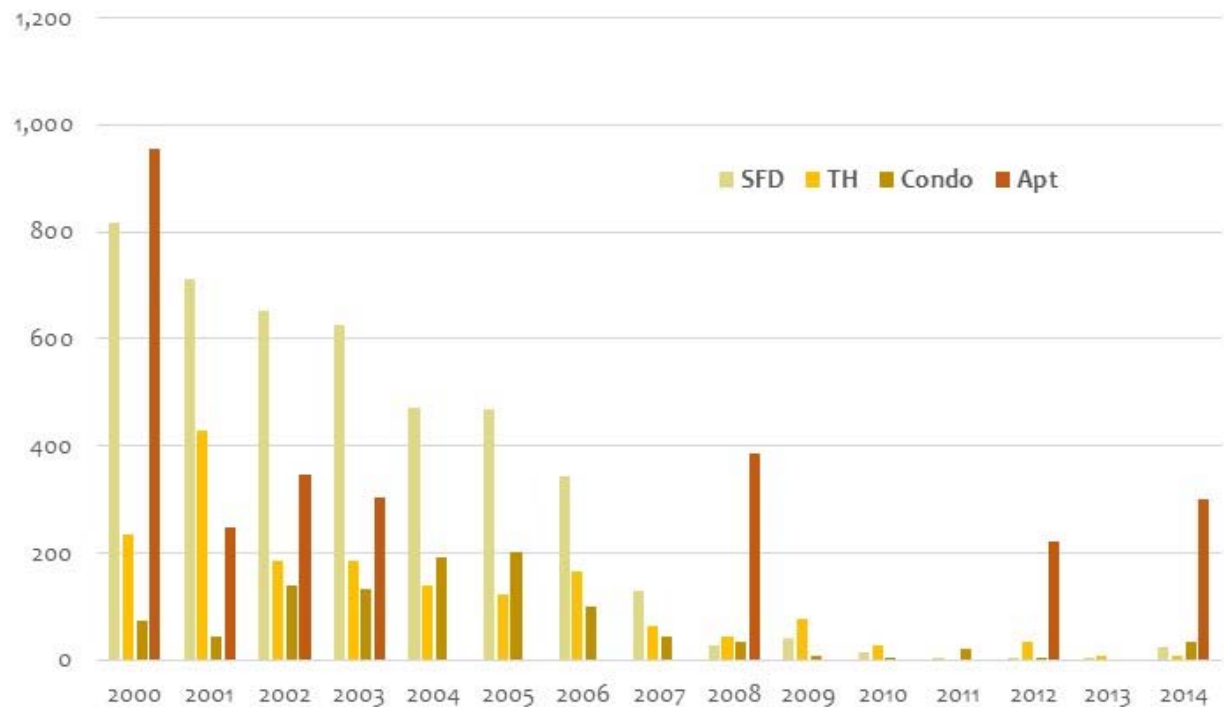
Since 2006, there have been 2 single family residences and the 228 unit Carrick Bend on Community Center Drive built in Northglenn. In Thornton, there has been an average of 465 units built annually between 2006 and 2014, mostly in the northern edges of the City. Nearly 15% of the units built have been in a multifamily configuration. In the larger region, Broomfield has also seen significant growth with 813 units built annually between 2006-2014. Over half of the units built have been in a multifamily configuration of 5 or more units.

Market Area Residential Conditions

There is a history of townhomes, apartments, and condominiums built in the PMA in the recent past. The PMA was particularly active in the early 2000's.

Between 2000 and 2014, 44% of the units built were single family detached. However, the market area also saw significant apartments, townhome, and condominium development indicating a potential market for these types of housing units at the 112th Avenue Station.

Market Area Residential Unit Types by Year Built



Unit Type by Year Built: 2000-2014

	Units	Percent of Total
Single Family Detached	4,336	44.1%
Townhouses	1,716	17.5%
Condos	1,016	10.3%
Apartments	2,761	28.1%
Total	9,829	100.0%

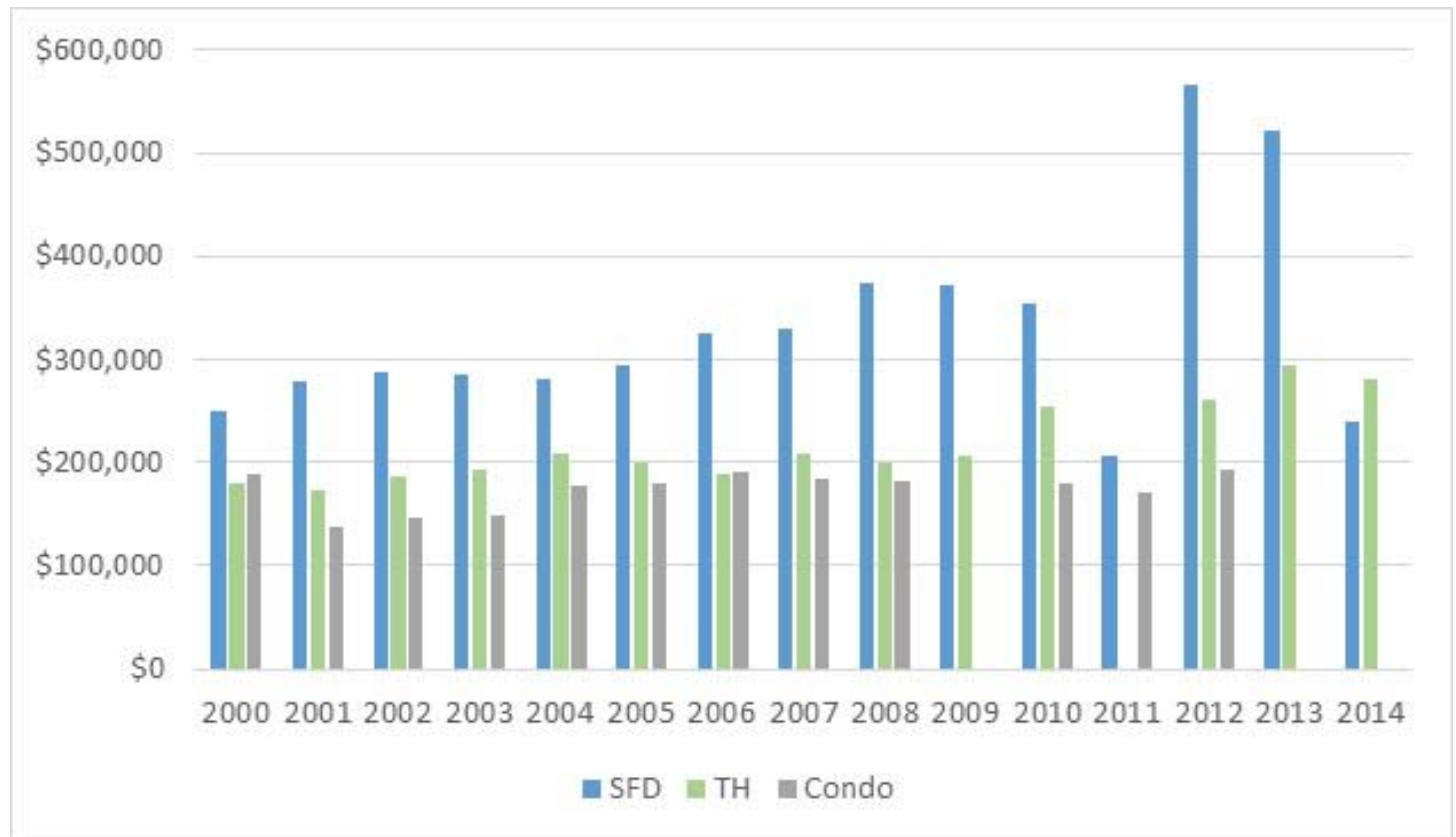
Source: Adams County Assessors Office, ArLand

Market Area Residential Conditions – For Sale

Sales prices of single family detached residences in the market area have generally ranged between \$200,000 and \$400,000, although there were recent spikes in sales prices due to a few, relatively higher priced units.

Townhome and condo prices have steadily increased, although they still continue to provide affordable ownership or investment options in the market area. Townhome prices are currently about \$280,000 while condo prices have increased to approximately \$190,000.

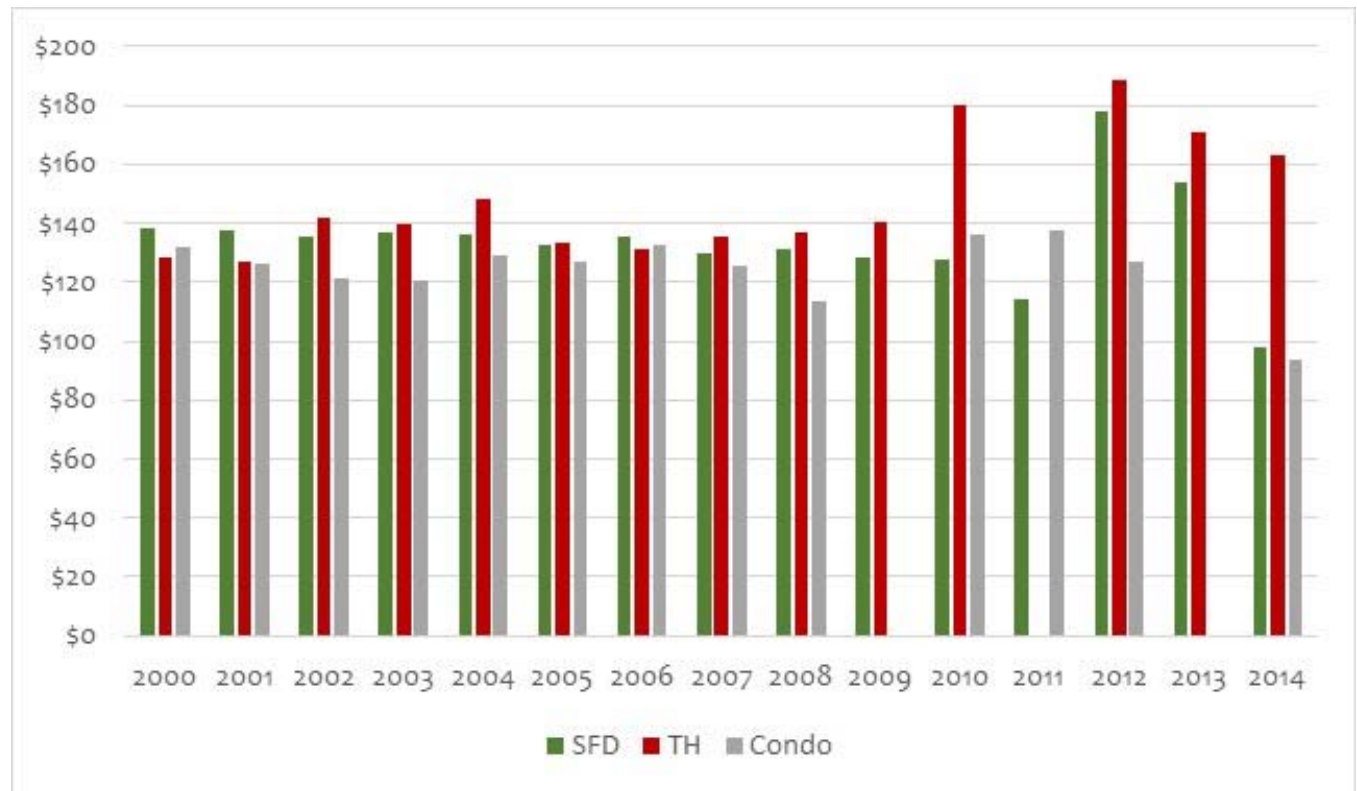
In May, 2016, according to the Denver Metro Association of Realtors, median sales prices for metro area single family detached homes were \$385,000 and \$240,000 for condos/townhomes.



Market Area Residential Conditions – For Sale

Sales prices per square foot stayed relatively constant at about \$140 per square foot through 2010. Since then, there have been more dramatic fluctuations (but also fewer units built during this time period compared to the early 2000s).

Single family detached units average 2,443 square feet at an average of \$134 per square foot. Townhomes and condos are at least 1,000 square feet smaller. However, consistent with other parts of the metro area market, townhome prices per square foot are higher / comparable to single family detached prices per square foot.

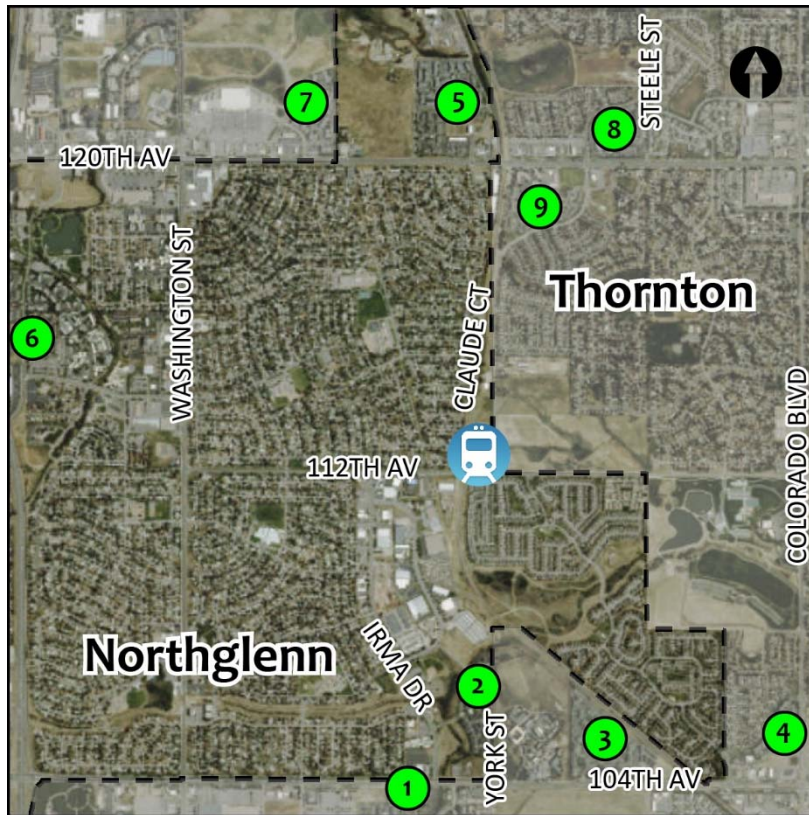


Note: no townhome data was available for 2011.

	Price Per Square Foot		Average Unit Size
	Range	Average	
Single Family Detached	\$114-\$178	\$134	2,443
Townhomes	\$127-\$189	\$147	1,446
Condos	\$93-\$138	\$125	1,380

Source: Adams County Assessor's Office, ArLand

Market Area Housing Conditions - Rental



There are a number of apartment communities in relatively close proximity to the 112th Avenue Station. Average rents per square foot range from \$1.20 to \$1.50 per square foot. Two communities of note include Griffis North Metro near the future Eastlake Station. Its rents are relatively higher than other communities. Carrick Bend was recently built in Northglenn with slightly higher densities and lower parking ratios reflecting potentials for future communities. All of the communities are surface-parked.

Key	Name	Units	Year Built	DU's /Acre
1	Avena	385	2008	14.6
2	Regatta	352	2000	15.4
3	Champions Park	480	2001	16.9
4	Covington Ridge	216	1996	19.3
5	Griffis N. Metro	562	2001	23.2
6	Carrick Bend	228	2014	25.3
7	Red Hawk Ranch	384	2001	17.1
8	Waterford Place	336	1998	17.9
9	Hawthorne Hill	336	2001	13.3

Key	Name	\$/SF	Vacancy	Parking per unit
1	Avena	\$1.41	4%	2.08
2	Regatta	\$1.53	6%	2.03
3	Champions Park	\$1.18	7%	2.14
4	Covington Ridge	\$1.40	5%	2.06
5	Griffis N. Metro	\$1.48	3%	2.06
6	Carrick Bend	\$1.47	4%	1.84
7	Red Hawk Ranch	\$1.41	5%	2.01
8	Waterford Place	\$1.44	4%	1.95
9	Hawthorne Hill	\$1.32	5%	2.05

Source: Colorado Apartment Insights, ArLand

Neighborhood Market Conditions

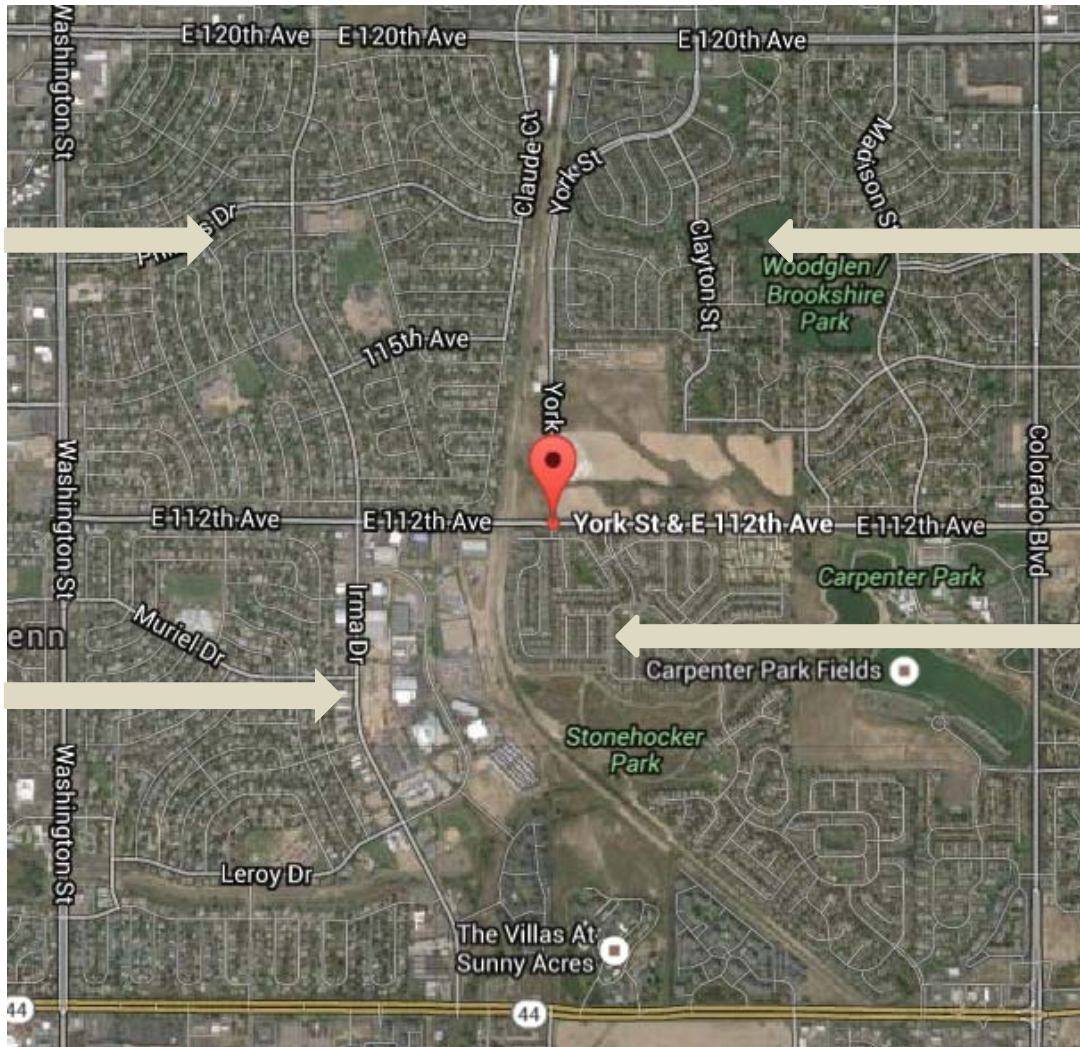
Northwest of the station area

Total Units 2,111
 Avg. Yr Blt 1965
 Avg. \$ \$188K
 Avg. SF 1,081

Very little turnover. Houses in this area tend to be older and smaller.

Industrial Park

Very stable with 0% vacancy rates. Approximately 90 businesses in 870,000 square feet on 56 properties.



Northeast of the station area

	SFD	TH	Apt
Total Units	1,431	752	328
Avg. Yr Blt	1981	1976	2000
Avg. \$	\$211K	\$141K	\$110K
Avg. SF	1,345	1,264	1,071

Very stable neighborhood and little turnover. The apartments were built in 2000.

Fox Run

	SFD	TH
Total Units	888	1,496
Avg. Yr Blt	1999	2001
Avg. \$	\$233K	\$183
Avg. SF	1,752	1,442

Newer neighborhood with units built in the early 2000s.

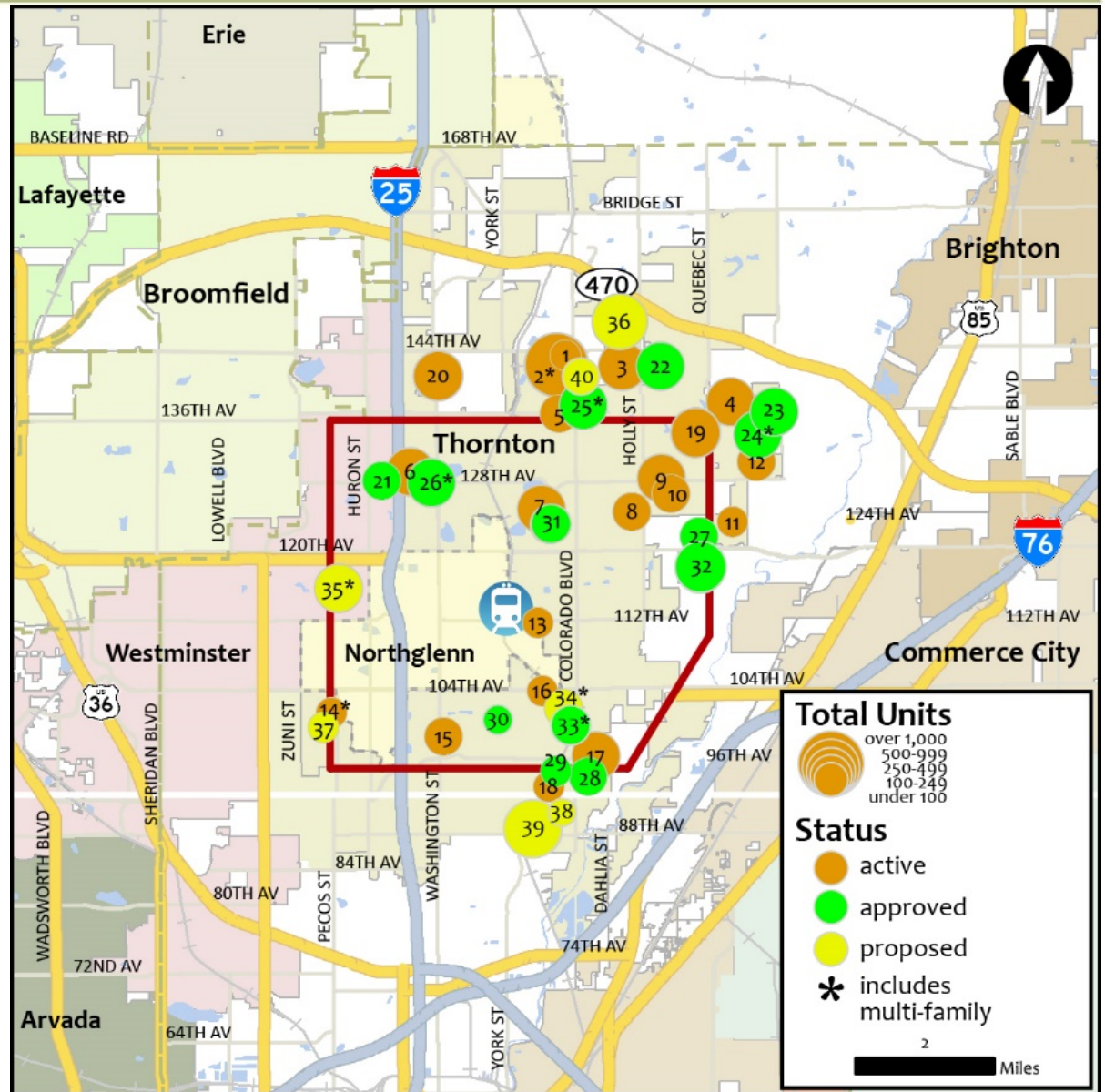
Source: Adams County Assessors Office, ArLand

Planned Residential

In the PMA, there are a total of 940 multi-family units and 3,187 single family units proposed in the market area.

There are a total of 2,526 multi-family units and 6,576 single family units in the development pipeline shown in the attached map, including projects outside of the market area. The map indicates that the population in the PMA is forecast to grow significantly.

A number of these projects, particularly those closer to E-470, are larger and will take a number of years to materialize.



Source: ArLand, Municipalities in market area

Planned Residential



Map ID	Project Name	Total Units	Single Family	Multi-Family
ACTIVE PROJECTS				
5	Cherrywood Park To	183	183	
6	Thorncreek Village	270	270	
7	Terra Lago	360	360	
8	Bramming Farm	128	128	
9	Riverdale Park	252	252	
10	Ash Meadow	111	111	
13	Woodglen	10	10	
14	Quivas Condos	52		52
15	Sundance Condos	176	176	
16	Sage Valley	72	72	
17	River Valley Village	475	475	
Total Active		2,089	2,037	52
APPROVED PROJECTS				
19	Tanglewood Creek	210	210	
22	Amber Creek	341	341	
25	Villages at Thorncree	283		283
26	Crestview Park	135	135	
29	Villages North #7	38	38	
Total Approved		1,007	724	283
PROPOSED PROJECTS				
30	Lucent Technologies	320		320
32	The Oaks at Eastlake	140	140	
33	Mayfield	276	276	
34	Settler's Chase	165		165
35	Presidential Ridge	120		120
36	Parkside	10	10	
Total Proposed		1,031	426	605
GRAND TOTAL		4,127	3,187	940

Market Area Residential Demand

DRCOG forecasts for the PMA indicate the addition of 6,727 new households in the market area by 2040 broken down as follows.

- 1) 2,203 multifamily rental
- 2) 4,224 single family detached units
- 3) 745 multifamily owner units

Market Area Households 2015	44,595
Market Area Households 2040	51,322
HH Growth (15-40)	6,727
Vacancy Rate	5.00%
Demolition Rate/yr.	5.00%
Total Unit Requirement	7,417
Pct. Renters [1]	33%
Pct. Owners [2]	67%
Market Area Rental Need	2,447
Market Area Rental Multifamily (80%)	2,203
Market Area Owner Need	4,969
Market Area Owner Single Family Detached	4,224
Market Area Owner Multifamily (15%)	745

Source: Claritas, DRCOG, ArLand

Single Family Residential Demand

In addition to DRCOG projections for growth, past trends in the market area are examined. Within the market area, approximately 4,336 single family detached units have been developed with an overall average of 310 units built annually.

The 80-400 single family detached units recommended for the station area should primarily be located on the periphery of the station areas adjacent to single family detached residential neighborhoods to provide a buffer. Residential development would transition to higher density closer to the station.

Market Area Residential Forecast through 2040

SINGLE FAMILY DETACHED

DRCOG Projections

Supportable For-Sale Single Family Units	4,224
Future Average Annual Single Family Absorption through 2040	169

Past Trends in Market Area

Single Family Detached Units Built (2000-2014)	4,336
Past Average Annual Single Family Absorption	310

Forecast Single Family Detached Units (2015-2040)[1]	5,103
Single Family Detached Units in Pipeline	3,187
Supportable Single Family Detached Units in Market Area	1,916

Supportable Single Family Detached Units at 112th Avenue Station [2]	80-400
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Source: DRCOG, Adams County Assessor's, ArLand

[1] Forecasts based on DRCOG projections and past absorption in the single family detached market sector weighted towards the DRCOG projections due to market area build out.

The forecasts are approximately 20% above DRCOG projections for the area due to past high rate of absorption and the available land left to build out in the market area.

[2] 80-400 units assumes that the station area is competitive for 4 to 20% of regional single family detached demand.

Multifamily Residential Demand

In addition to DRCOG projections for growth, past trends in the market area are examined. Within the market area, approximately 5,493 units have been developed with an overall average of 220 units built annually.

320-900 recommended multifamily units can primarily be located on the vacant properties adjacent to the station area. Based on past trends, townhomes can represent 20% of the multifamily total with condos and apartments representing the rest.

This assumes that legislation is passed to address the construction defects issue which has inhibited significant multifamily ownership development in the past few years.

Densities vary and should step up from existing single family residential densities closer to existing neighborhoods up to 40 dwelling units per acre closest to the station.

Structured parking is not supportable at current and near term prices. However, this should be monitored over time.

The total number of supportable residential units ranges from 400 to 1,300 single family detached and multifamily units.

Market Area Residential Forecast through 2040

MULTIFAMILY OWNERSHIP AND RENTAL

DRCOG Projections

Supportable Multifamily Rental Units (Apartments)	2,203
Supportable For-Sale Multifamily Units (Townhomes and Condos)	745
Total Multifamily Units	2,948
Future annual average multifamily units built	118

Past Trends in Market Area

Townhomes Built (2000-2014)	1,716
Condos Built (2000-2014)	1,016
Apartments Built (2000-2014)	2,761

Total Multifamily Units **5,493**

Past average annual multifamily units 220

Forecast Multifamily Units (2015-2040)[1] 5,239

Multifamily Units in Pipeline 940

Supportable Multifamily Units in Market Area **4,299**

Supportable Multifamily Units at 112th Avenue Station [2] **320-900**

Source: DRCOG, Adams County Assessor's, ArLand

[1] Forecasts based on DRCOG projections and past absorption in the multifamily market weighted towards the past trends given that there has been a significant amount of attached products built in the last 14 years.

[2] 320-900 units is based on an estimate that the station area is competitive for 8% to 20% station area, because of the train's presence . The market area is built out and the station area should be very competitive.

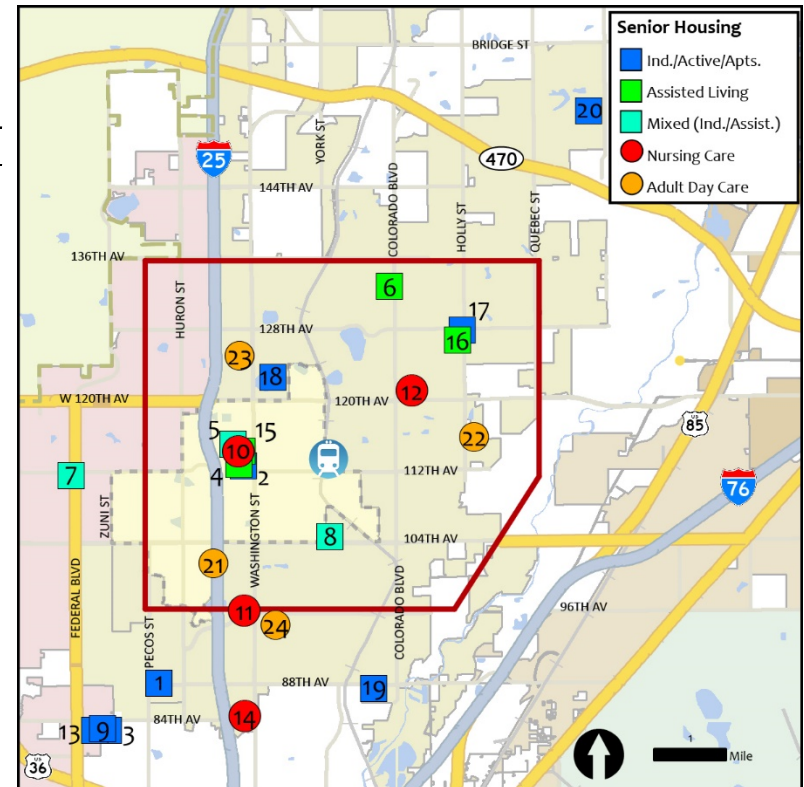
Senior Housing & Services

Key	Name	Units / Beds	Notes [1]
1	Orchard Hill Senior Apartments	88	Sr Apts
2	Squire Village Apts	50	Sr Apts
3	Clare of Assissi Place	59	Sr Apts
4	Crossroads Assisted Living	68	AL
5	Northglenn Heights	144	122 AL, 22 ALZ
6	Angels Abode	8	AL
7	Keystone Place at Legacy Ridge	237	AL66, 160 IL, 11 ALZ
8	Villas at Sunny Acres	335	299 IL, 35 AL
9	Cottages at Panorama Pt	50	IL
10	Kindred Transitional Care and Rehab	162	SNF
11	Alpine Living Center	110	SNF
12	Elms Haven Care and Rehabilitation Center	242	SNF
13	Panorama Pointe	72	Sr Apts
14	Vista View Care Center	25	SNF
15	Sunnyslope Estate	32	AL
16	Park Regency Assisted Living	114	AL
17	Total Long Term Care	72	Sr Apts
18	InnovAge - Senior Living	72	Sr Apts
19	Thornton Estates Manufactured Homes	208	Manufactured Homes
20	Heritage Todd Creek	1,300	Active adult community
21	Senior Hub Adult Day Care	NA	Adult Day Care
22	Blue Sky Adult Day Care	NA	Adult Day Care
23	InnovAge - Total Longterm Care	NA	Adult Day Care
24	Thornton Senior Center	NA	Adult Day Care

Source: ArLand

[1] AL is Assisted Living; IL is Independent Living; ALZ is Alzheimer's Care

SNF is Skilled Nursing Facility



There are a variety of senior services provided in the PMA, as described below.

- Adult day care is for activities for adults during weekday hours.
- Senior apartments are age restricted with limited services.
- Independent Living provides meals, transportation, activities.
- Assisted living will provide help with Activities of Daily Living like bathing. in addition to meals, transportation, activities.
- Alzheimer's care is focused on memory care.
- SNF (Skilled Nursing Facilities) provide nursing home care.

Senior Congregate and Assisted Living Demand

Congregate Care and Assisted Living Demand

	2015	2020	2015-2020
Number of Age Qualified Persons	3,251	4,092	841
Number of Age and Income Qualified Persons	2,046	2,666	620
Percent Requiring Assistance	28%	28%	
Percent Living Alone	50%	50%	
Estimate Number of Age-Qualified Individuals	455	573	
Estimate Number of Age and Income Qualified Persons	286	373	87
5% of Caregiver Aged Population	577	697	120
Number of Existing Competitive IL and AL Units	678	678	
Number of Market Area Planned Units	--	--	
Potential Demand	185	392	

Source: Dixon-Hughes, US Census; Claritas, ArLand



As the previous map depicted, there are a number of senior services in the market area. However, based on an estimate of current and future demand, there is current demand for 185 congregate care / assisted living units increasing to 392 units by 2020 in the 112th Avenue Station Market Area.

In the suburbs, many of these services tend to be arranged in a campus like orientation. While these services can be provided in high density configurations, another option is to provide these services further from the station in an enclave.

it is also important to remember the need to balance market demand with site activation so the demand for skilled nursing facilities was not examined.

Thornton's 2014 Housing Needs Assessment acknowledged the demand for these services particularly at a lower price point than currently provided in many of the market rate facilities.

Other Housing Needs

In the metro area, demand for age restricted independent senior units is forecast to growth in the future. A portion of the market area demand at 83 to 114 units could be accommodated at the station area.

In the market area (as well as the entire metro area), there is always strong rent-restricted age restricted demand, particularly at newer facilities.

Data from HUD indicates that there are 1,575 frail, elderly people living in Thornton who pay more than 30% of their monthly living expense on housing costs. While estimates are unavailable for Northglenn, given the demographic similarities between the 2 cities, it could be assumed that there are frail, elderly Northglenn residents who pay more than 30% of their monthly living expenses on housing.



Senior Housing Demand

	2015	2020
Number of Age Qualified Persons	3,251	4,092
Number of Age and Income Qualified Persons	2,046	2,666
Percent Living Alone	50%	50%
Number of Existing Age Restricted Senior Units [1]	194	194
Market Area Demand	829	1,139
Demand at the 112th Avenue Station	83	114

Source: Dixon-Hughes, US Census; Claritas, ArLand

[1] includes Thornton Estates Manufactured Homes which provides affordable housing options for seniors



Affordable Housing Needs

Although the North Metro economy has recovered from the recession, properties values and prices have been increasing, much like the rest of the metro area. Rental vacancies are low and rental prices are rising,

The City of Thornton's 2014 Housing Needs assessment estimates that 18% of Thornton renters live below the poverty line, where 4% of homeowners live in poverty. There are few for-sale units available at prices attainable for low income households in Thornton. It is assumed that given the close proximity of Northglenn and similar demographic characteristics, that similar statistics can be seen in Northglenn.

Particularly vulnerable populations, whose population appears to be increasing rapidly in the area includes resident with some type of disability as well as veterans. The disabled population has grown rapidly (by 15%) since the last assessment. Although veterans are less likely to live below the poverty line, they are more than twice as likely to have a disability.

The Housing Needs Assessment estimates for all current residents to pay no more than 30% of their monthly income on housing, Thornton would need 3,100 more rental units for extremely low-income residents. Additionally, housing vouchers for extremely low income households are accepted at some area apartments and are distributed by lottery. There is a waiting list for the vouchers. Family households, another particularly vulnerable group, make up most of the local waiting list.



Residential Summary

- RESIDENTIAL

Background – City and Market Area

- Between 2006 and 2014, the City of Thornton has seen an average of **465 units built annually** with 14.6% of the units in a multifamily configuration. Because of the built-out nature of Northglenn, it has seen much less development than surrounding cities. The 228-unit Carrick Bend apartment complex was recently constructed near I-25 and 115th in Northglenn and has been successfully leasing up.
- Since 2000, the PMA has added a significant number of dwelling units.** While 44% of the units were single family detached units, the remaining units were townhomes, condos, and apartments.
- For-sale prices for single family detached homes have generally ranged between \$200,000 and \$400,000. Most of the sales occurred in the 2000's. There have been a few recent sales over \$500,000. Townhomes at \$280,000 and condos at \$190,000 provide more affordable housing options. Average prices per square foot are \$134 for single family detached units; \$147 for townhomes and \$125 for condos.
- There are 940 multifamily and 3,190 single family detached residential units within the planning pipeline, primarily in the City of Thornton.

Neighborhoods Closer to 112th Avenue Station

- There are a number of apartment communities in relatively close proximity to the 112th Avenue Station with average rents per square foot ranging up to \$1.50 per square foot. In comparison, unit rents in downtown Denver (with structured or underground parking) are \$2 to \$3 per square foot.
- In the immediate station area neighborhood, the residences range in age and size with older, smaller units west of the station, and units built in the 1980's through the 2000's to the east and south of the station.

	West	--Northeast--		--Southeast--	
		SFD	TH/Condo	SFD	TH
Ave. \$	\$190,000	\$210,000	\$140,000	\$230,000	\$180,000
Ave. \$ / SF	\$1,100	\$1,350	\$1,300	\$1,750	\$1,440
Ave. Yr Built	1965	1981	1976	1999	2001

Residential Summary

Residential Recommendations

- While TODs typically focus on higher density multifamily units, in this instance, given the amount of land available and the need to buffer surrounding neighborhoods, the analysis is recommending single family detached units adjacent to single family detached neighborhoods surrounding the station.
- Approximately 400-1,300 single family and multifamily units (townhomes, condos, and apartments) have the potential to be located on the vacant properties at the station area.
- **Densities should step up from existing single family residential densities closer to existing neighborhoods up to 40 dwelling units per acre closest to the station.** The apartments in the market area range from 13 to 25 dwelling units per acre.
- Prices at this point do not support structured parking, although consideration may be given to phasing structured parking in over time should prices rise to support parking structures.
- In addition to market rate residential units, consideration should be given to **senior housing and the continuum of care.** There is current demand for 185 to 220 assisted living / congregate care units and a large demand for senior independent units. While they could be included in a high density configuration, another option is to provide these services further from the station in an enclave.
- The City of Thornton conducted a housing needs assessment in 2014. In addition to recommending that more **affordable senior continuum of housing services** be provided, it identified a need for housing to accommodate **low-income family households, persons with disabilities, and veterans.**

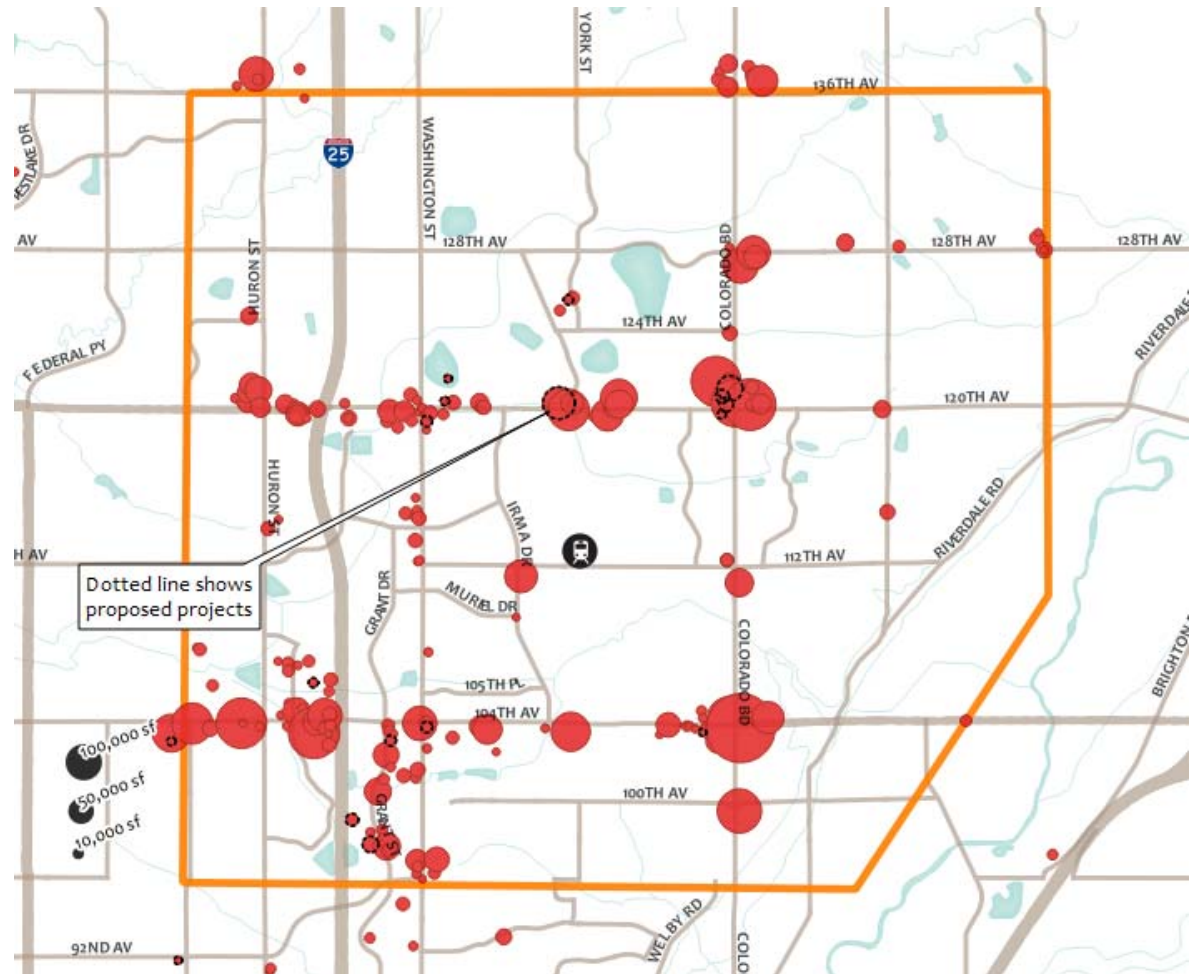
Retail Market Conditions

Retail Centers

The map depicts retail centers with major tenants in the regional market area. 120th Avenue, Washington Street, I-25, and 104th Avenue are all heavily travelled and are the preferred locations of major retail, restaurant, and service establishments in the market area.

Although the station will bring in more traffic, retailers will tend to look at traffic counts and household population during the day, not just during rush hours. 112th Avenue's traffic counts are relatively lower at 15,000 ADT[1] in comparison to 104th Avenue near Washington Boulevard at 40,000 ADT and 120th Avenue near Washington Boulevard at 47,000 ADT. This is not forecast to change significantly.

[1] ADT is Average Daily Traffic



Any major retailer will need easy access and would prefer to be on corners or directly on major arterials in a highly trafficked (foot or car) area.

Retail Demand

Retail demand is calculated by:

- Estimating households and incomes in the market area in order to derive total incomes potentially available for retail expenditures;
- In the PMA, average household incomes in 2015 are estimated at \$72,300. Total household incomes are over \$3 billion.
- By 2040, forecasts indicate an increase in the number of households in the PMA with a resulting increase in household incomes, a portion of which is available for retail expenditures.
- Based on current expenditure patterns, the income percentage spent in retail categories by residents within the PMA is calculated (see table on next page). This results in estimated demand by retail category.
- Households in the market area spend approximately 37% of their incomes on retail items in the categories listed.
- Demand is compared to supply (sales) and divided by average sales per square feet to derive demand by category.
- Demand is adjusted upwards corresponding to the forecast increase in households.

	2015
Primary Market Area Households	44,595
Average Household Incomes	\$72,308
Total Household Income (\$000s)	\$3,224,575,260
	2040
Primary Market Area Households	50,261
Average Household Incomes	\$72,308
Total Household Income (\$000s)	\$3,634,272,388
	2015-2040
Change in Households	5,666
Change in Incomes	\$409,697,128
CAGR	0.5%

Source: DRCOG, Claritas, ArLand

Retail Demand

Category	% Retail Expenditures [1]	Demand (retail potential)	Est. Sales	Current Retail Void (\$)	Est. Sales / s.f. [2]	Current Retail Void (s.f.)	Additional Demand from Household Growth (s.f.) (25-yr)	Total Demand 2040
<i>Convenience Goods</i>								
Grocery Stores	6.32%	\$203,785,559	\$114,541,180	\$89,244,379	\$500	178,489	51,784	230,273
Specialty Food Stores	0.45%	\$14,577,924	\$6,032,917	\$8,545,007	\$400	21,363	4,630	25,993
Beer, Wine, and Liquor Stores	0.58%	\$18,753,161	\$11,976,547	\$6,776,614	\$250	27,106	9,531	36,637
Health & Personal Care Stores	2.58%	\$83,186,707	\$37,345,059	\$45,841,648	\$400	114,604	26,423	141,027
<i>Shopper's Goods</i>								
General Merchandise Stores	7.29%	\$235,049,187	\$107,367,637	\$127,681,550	\$500	255,363	59,728	315,091
Furniture & Home Furnishings Stores	1.24%	\$39,915,692	\$16,392,885	\$23,522,807	\$400	58,807	12,679	71,486
Clothing and Clothing Accessories	2.62%	\$84,472,716	\$8,294,775	\$76,177,941	\$300	253,926	35,775	289,702
Sport. Goods, Hobby, Book, & Music	1.17%	\$37,779,261	\$20,652,424	\$17,126,837	\$250	68,507	19,200	87,707
Miscellaneous Store Retailers	1.47%	\$47,538,750	\$65,722,783	-\$18,184,033	\$250	--	24,160	--
<i>Food Services & Drinking Places</i>								
Full-Service Restaurants	2.80%	\$90,138,011	\$67,377,014	\$22,760,997	\$275	82,767	41,645	124,413
Limited-Service Eating Places	2.45%	\$78,859,255	\$106,983,780	-\$28,124,525	\$350	--	28,627	--
Special Food Services	0.46%	\$14,869,318	\$17,517,593	-\$2,648,275	\$250	--	7,557	--
Drinking Places (Alcoholic Bevs.)	0.28%	\$9,044,710	\$3,156,776	\$5,887,934	\$250	23,552	4,597	28,148
<i>Durable Goods</i>								
Auto Parts, Accessories, and Tires	0.85%	\$27,382,740	\$30,526,385	-\$3,143,645	\$500	--	6,958	--
Bldg Mater., Garden Equip. & Supply	5.11%	\$164,825,251	\$66,740,685	\$98,084,566	\$500	196,169	41,884	238,053
Electronics & Appliance Stores	1.21%	\$39,140,234	\$22,119,856	\$17,020,378	\$500	34,041	9,946	43,987
	36.88%	\$1,189,318,476	\$702,748,296	\$486,570,180		1,314,695	385,124	1,632,517

Retail Demand

- There is retail demand of 1.3 million to 1.6 million square feet based on growth in households in the PMA.
- The challenge is that not all retail categories are appropriate for station area locations. For example, furniture stores would likely prefer an I-25 location to appeal to as many customers as possible.
- Given that major retailers tend to be on other more heavily travelled corridors, the potential niche for any retailer at the 112th Avenue Station Area is going to be either unique destination retail, restaurants, and some neighborhood services.
- One of the challenges for retailers is that station areas tend to be most active during the early morning and late afternoon rush hours and relatively quiet otherwise.
- The microbrewery near the industrial park is an example of the type of business that would be a potential for the station area. Although it struggled initially, it has created its own customer base over time and is a local destination.
- In order for retail to be successful, it will need to appeal to multiple audiences including households in the surrounding neighborhoods, future households on the vacant parcels, transit riders, and others looking for a unique retail and restaurant experience.



While there is demand for retail and restaurants in the Primary Market Area, the 112th Avenue corridor is not currently a major retail or restaurant corridor. Since stations have the potential to become neighborhood hubs, the area may have the potential to house a very modest amount of some neighborhood and transit-oriented services along 112th Avenue centered on either side of York Street, or along parts of the 112th Avenue Corridor.

There should be land use flexibility in case this land use doesn't materialize.

The Reddy family has also indicated a desire for retail services on the east side of York Street close to the station platform. While this is not a traditional commercial location, the land use plan should allow some flexibility for this use to be accommodated or transition to residential uses as necessary.

Office Market

Office Market

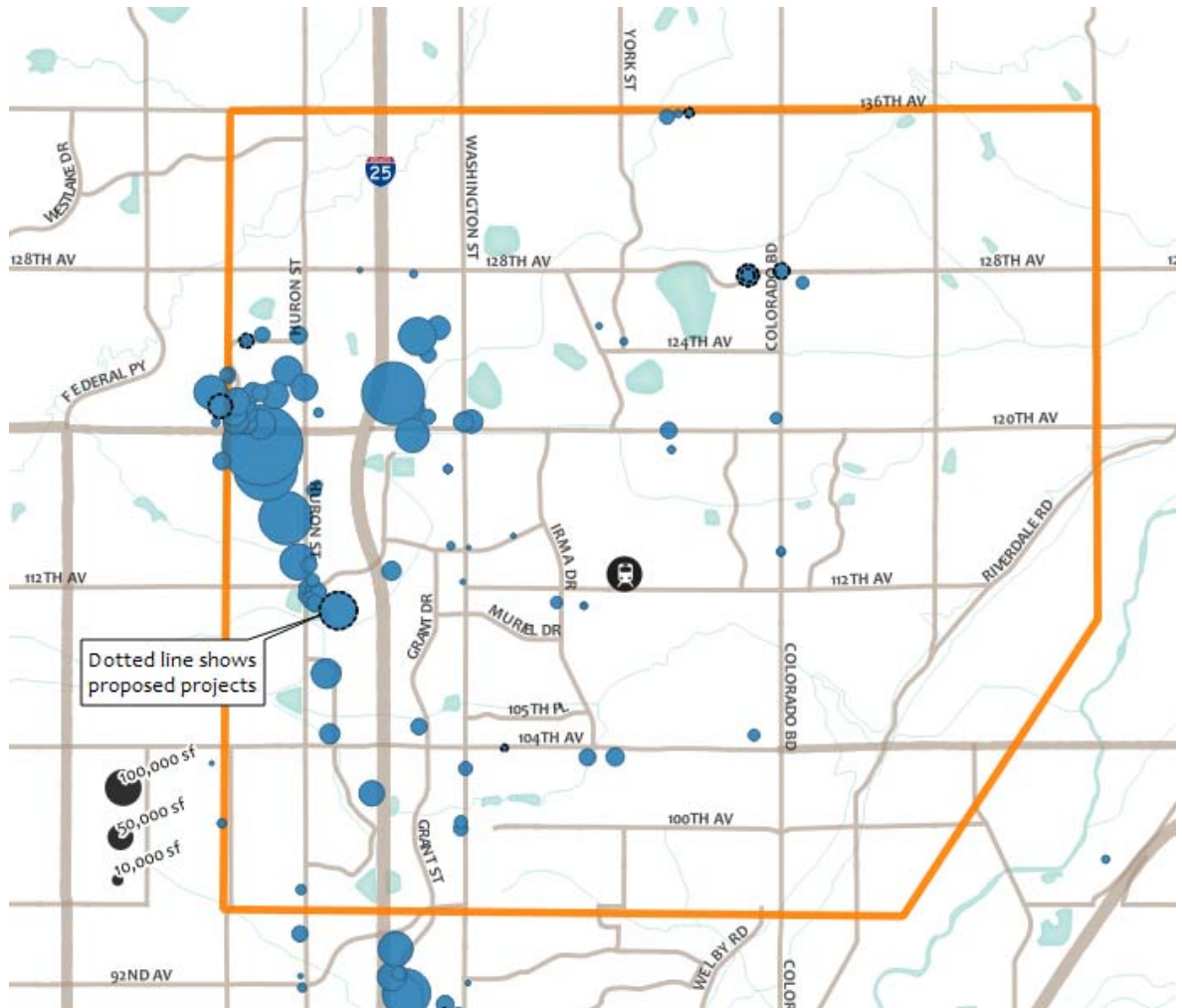
In the market area, there are 109 office properties in 3.7 million square feet. The current vacancy rate is close to 7% while the average full service lease rate is \$19.31.

Office prefers locations accessible and visible to major highways and arterials. Most of the market area's office buildings are along the I-25 corridor or are very close to it.

There are very few offices along the east-west corridors in this part of the market area.

Anecdotally, some of the space available which tends to be in large floor plate offices, doesn't match demand which tends to want smaller office configurations.

Future office demand will continue to be focused on I-25 and major arterials. However, as the station evolves into a neighborhood hub, there may be the potential for limited neighborhood services in an office configuration, like medical offices, insurance, real estate, etc.



Office Demand

There is potential demand for a very modest amount of office space (up to 15,000 square feet) oriented to personal services, such as medical, insurance, legal, etc. in conjunction with retail and restaurant services as the station area becomes a neighborhood hub.

Industry	Market Area		% of Total			Market Area Office Space Needs	112th Office Space (2015-2040)[2]
	Jobs	% Jobs	Estimated to be Office	New Regional Market Area Jobs	Office Jobs		
Agriculture, Forestry, Fishing and Hunting	230	0.6%	20%	43	9	2,164	43
Mining	140	0.4%	45%	26	12	2,965	59
Utilities	131	0.4%	30%	25	7	1,851	37
Construction	3,885	10.5%	10%	732	73	18,307	366
Manufacturing	2,645	7.2%	20%	499	100	24,927	499
Wholesale Trade	3,042	8.2%	20%	573	115	28,667	573
Retail Trade	3,839	10.4%	35%	724	253	63,313	1,266
Transportation and Warehousing	2,812	7.6%	20%	530	106	26,497	530
Information	505	1.4%	70%	95	67	16,644	333
Finance and Insurance	618	1.7%	95%	116	111	27,654	553
Real Estate and Rental and Leasing	567	1.5%	95%	107	102	25,396	508
Professional, Scientific, and Technical Services	1,100	3.0%	95%	207	197	49,230	985
Management of Companies and Enterprises	277	0.7%	95%	52	50	12,382	248
Administrative and Support and Waste Management	2,236	6.1%	30%	421	126	31,606	632
Educational Services	2,504	6.8%	25%	472	118	29,492	590
Health Care and Social Assistance	3,435	9.3%	95%	647	615	153,779	3,076
Arts, Entertainment, and Recreation	255	0.7%	50%	48	24	6,018	120
Accommodation and Food Services	2,866	7.8%	20%	540	108	27,009	540
Other Services (except Public Administration)	1,067	2.9%	75%	201	151	37,704	754
Public Administration	1,510	4.1%	75%	285	213	53,354	1,067
Unclassified	5	0.0%	0%	1	0	0	0
Total	36,889	100.0%		6,953	0	638,960	12,779

Source: Bureau of Labor Statistics, DRCOG, CoStar, ArLand

[1] CoStar estimates 250 square foot per office job

[2] 112th Avenue Station market share estimated at 2% of the market

Industrial Market

Industrial Conditions

Most of the market area industrial and flex properties are located north of 120th Avenue along Huron and Washington Streets. There is over 4 million square feet of industrial and flex space in the PMA.

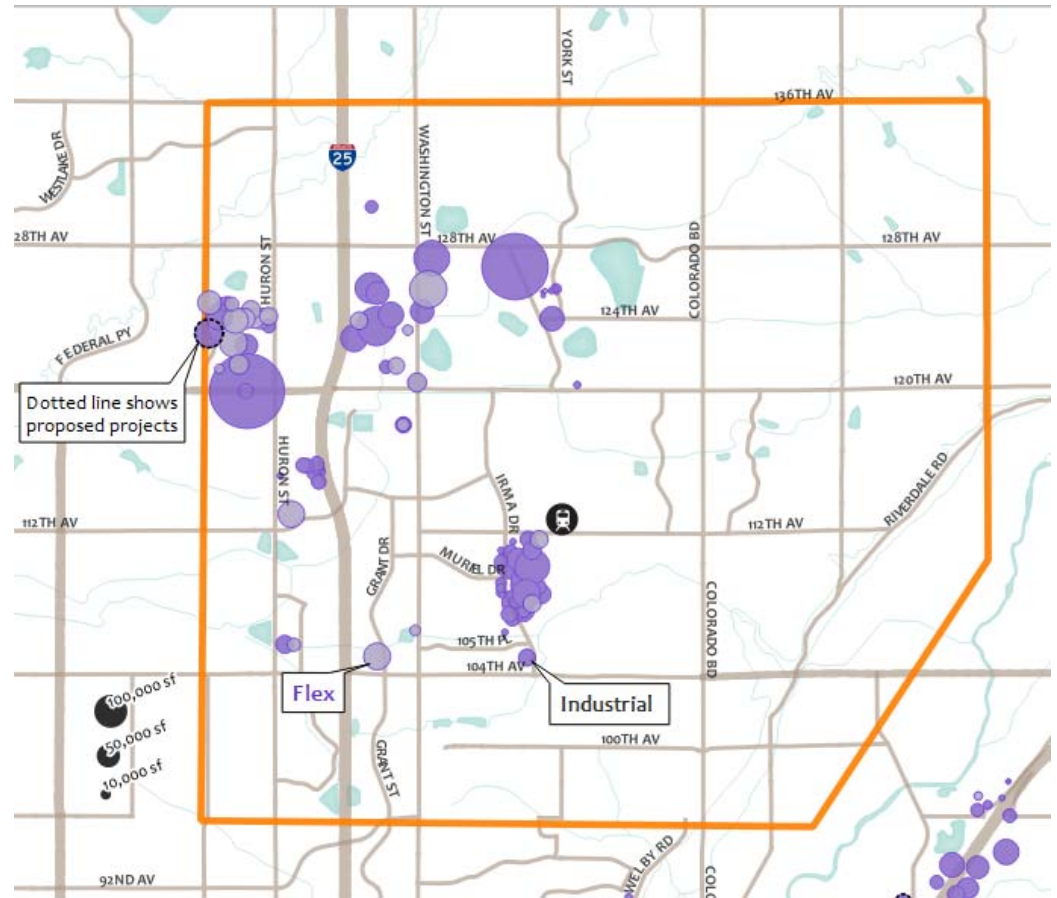
Between 2013 and 2015, there has been only 4,500 square feet of industrial space constructed in the PMA. There has been no construction of flex space.

The Denver metro industrial market has been affected by the legalization of marijuana. Large grow operations are occupying large industrial warehouse space along I-70 and other parts of the metro area, pushing up demand and leading to a relatively constrained supply.

Industrial and Flex Space

Indicator	Industrial	Flex
Inventory sf (4Q 2015)	3,671,242	911,995
Net Absorption sf (2013-2015)	443,895	46,204
New Construction sf (2013-2015)	4,309	0
Rent (\$2015 nnn)	\$7.22	\$9.44
Vacancies (4Q 2015)	4.0%	6.6%

Source: CoStar, City of Northglenn, ArLand



Northglenn Industrial Park

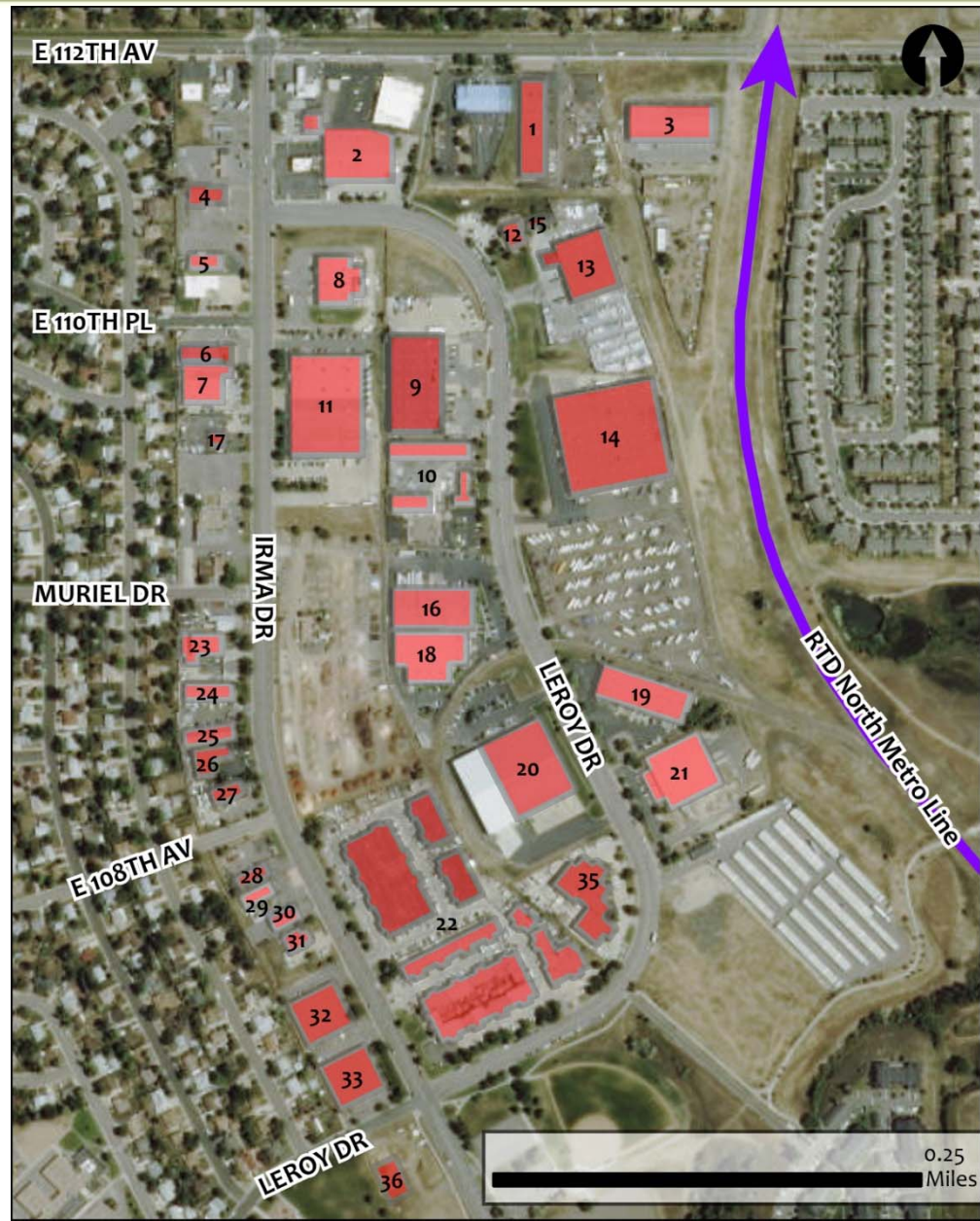
The Northglenn Industrial Park is located southwest of the 112th Avenue Station. It is roughly bounded by 112th Avenue to the north, Irma Drive on the west, 104th Avenue to the south, and railroad tracks on the east.

There are 90 businesses in 36 properties within the industrial area in approximately 870,000 square feet. There are no vacancies. Rents are approximately \$6.00 per square foot, triple net. [1]

Automotive repair and maintenance shops account for 36% of businesses in the area. This is followed by specialty trade contractors (10%), professional, scientific, and technical services (10%), and fabricated metal product manufacturing (9%).

[1] A net lease requires the tenant to pay, in addition to rent, some of the property expenses that normally would be paid to the landlord. Expenses include real estate taxes, insurance, maintenance, repairs, utilities, and other items.

* The key to the businesses is found beginning on page 60.



Industrial Demand

There is strong demand for industrial space in the PMA. The industrial space at the Northglenn Industrial Park comprises a significant share -- 20% of market area flex and industrial space. Future demand at the Northglenn Industrial Park --at 5% to 10% of forecast growth in industrial demand in the PMA -- is estimated at 48,000 to 95,000 square feet.

Industry	Market Area		% of Total Jobs Estimated to be in Industrial Space	New Regional Market Area Jobs 2015-2040	Industrial Jobs	Market Area Industrial Space Needs ^[1]	Industrial Potential Capture (low)	Industrial Potential Capture (High)
	Jobs	% Jobs						
Agriculture, Forestry, Fishing and Hunting	230	0.6%	25%	43	11	5,950	298	595
Mining	140	0.4%	5%	26	1	725	36	72
Utilities	131	0.4%	15%	25	4	2,036	102	204
Construction	3,885	10.5%	15%	732	110	60,414	3,021	6,041
Manufacturing	2,645	7.2%	80%	499	399	219,356	10,968	21,936
Wholesale Trade	3,042	8.2%	80%	573	459	252,268	12,613	25,227
Retail Trade	3,839	10.4%	5%	724	36	19,898	995	1,990
Transportation and Warehousing	2,812	7.6%	80%	530	424	233,176	11,659	23,318
Information	505	1.4%	10%	95	10	5,231	262	523
Finance and Insurance	618	1.7%	1%	116	1	640	32	64
Real Estate and Rental and Leasing	567	1.5%	1%	107	1	588	29	59
Professional, Scientific, and Technical Services	1,100	3.0%	1%	207	2	1,140	57	114
Management of Companies and Enterprises	277	0.7%	1%	52	1	287	14	29
Administrative and Support and Waste Management	2,236	6.1%	35%	421	147	81,123	4,056	8,112
Educational Services	2,504	6.8%	5%	472	24	12,977	649	1,298
Health Care and Social Assistance	3,435	9.3%	5%	647	32	17,806	890	1,781
Arts, Entertainment, and Recreation	255	0.7%	3%	48	1	794	40	79
Accommodation and Food Services	2,866	7.8%	3%	540	16	8,913	446	891
Other Services (except Public Administration)	1,067	2.9%	10%	201	20	11,060	553	1,106
Public Administration	1,510	4.1%	10%	285	28	15,651	783	1,565
Unclassified	5	0.0%	0%	1	0	0	0	0
Total	36,889	100.0%	25%	6,953	1,727	950,033	47,502	95,003

Source: Bureau of Labor Statistics, DRCOG, CoStar, ArLand

[1] Square foot per job estimates vary from 450 to 1,200 sf depending on industry

Industrial

- The map on page 60 shows the relative lack of industrial space in the northern metro market, particularly well-located space (close to downtown and major thoroughfares).
- The consultant team explored the potential of “creative industrial space” with the developer forum at Northglenn’s Industrial Park. Creative Industrial space would be nontraditional industrial space. Often the space is shared; there may be a live-work element to it, or an artistic / creative element.
- Upon further discussion with the developer forum, it was determined that the Northglenn Industrial Park, which is a traditional industrial park serves an important purpose in the local Northglenn economy, as well as the broader Northern Metro market, and the focus of the Northglenn Industrial Park should remain more traditional.
- There are a variety of different jobs and businesses in the industrial park. An estimate of employment is shown to the right
- While many of the jobs serve the local construction industry, there are also primary jobs, including those categorized in the Manufacturing category, and Professional, Scientific, and Technical Services.
- It is estimated that over 45% of the jobs pay over \$40,000 per year.
- All of these jobs have multiplier impacts. The businesses buy resources in the local economy and employees spend money locally as well.
- Since the industrial park is located at Northglenn’s western gateway to the station area, infill development, landscaping, sidewalks are appropriate treatments to make the industrial parkway an attractive gateway to the station.



Estimated Jobs at the Northglenn Industrial Park

	Count	Share
Manufacturing	371	40.0%
Construction	201	21.7%
Other Services (excluding Public Administration)	88	9.5%
Wholesale Trade	63	6.8%
Professional, Scientific, and Technical Services	55	5.9%
Educational Services	31	3.3%
Accommodation and Food Services	27	2.9%
Administration & Support, Waste Management and Remediation	23	2.5%
Retail Trade	21	2.3%
Arts, Entertainment, and Recreation	16	1.7%
Agriculture, Forestry, Fishing and Hunting	14	1.5%
Health Care and Social Assistance	11	1.2%
Public Administration	5	0.5%
Information	1	0.1%
Real Estate and Rental and Leasing	1	0.1%
Total	928	100.0%

Source: U.S. Census, LEHD, ArLand

Retail, Office and Industrial Summary

- **COMMERCIAL SERVICES**

- Most of the **PMA retail is located along 104th and 120th Avenues** rather than 112th Avenue.
- Retail is always an important activating component at station areas, however, **112th Avenue is relatively less travelled (15,000 ADT)** making retail / restaurant uses a challenge.
- The microbrewery near the industrial park is an example of the type of business that would be ideal for this station area because it has developed its own clientele and is a local destination.
- In order to complement a gateway element at 112th Avenue and York Street, **a modest amount of commercial services** can be located at this intersection to accommodate neighborhood oriented services, however, there should be site flexibility in the case the market for neighborhood services doesn't materialize. There may be the potential, as the station evolves into a neighborhood hub, for limited **(up to 15,000 square feet) neighborhood services in an office configuration to accommodate medical offices, insurance brokers, etc.**

- **INDUSTRIAL**

- There is over **4.5 million square feet of industrial and flex space in the PMA**. There has been relatively little new space constructed in the market area in the last 2 years. During this time, the legalization of marijuana has had an impact on industrial space inventory. Large grow operations increasingly occupy this type of space, moving other users to the periphery.
- **The Northglenn Industrial Park accommodates 90 businesses on 36 properties in approximately 870,000 square feet.** Automotive repair and construction contractors account for the majority of businesses. There are also businesses providing Professional, Scientific, and Technical Services, and some Fabricated Metal Product Manufacturing.
- **Vacancies in the Northglenn Industrial Park are 0%. Demand continues to be strong for this type of space although** demand needs to be balanced with the needs of the neighborhoods and desire for residential and commercial mixed uses close to the station.
- At the same time, this land use provides jobs and serves an important niche in the Northern Denver industrial market.
- The priority for the industrial lands in the station area would be to infill with complementary industrial uses. Landscaping, signage, sidewalks and other gateway elements to the station should also be provided to help provide a more attractive gateway element to the station from the western entrance along 112th Avenue.

Industrial Park Businesses

Map ID	Building Address	Business Name	NAICS Code	NAICS Category
1	2100 E 112th Ave	Beer By Design Brewery	312	Beverage and tobacco product manufacturing
		Fit Soldiers	713	Amusement, gambling, and recreational industries
		Dodge Sign Company	339	Miscellaneous manufacturing
		Friends Trading Company	311	Food manufacturing
		Physician Preferred Products	446	Pharmacies and drug stores
2	11170 Irma Dr	Danke Rosales Custom Cabinets	337	Furniture and related product manufacturing
3	2180 E 112th Ave	Rocky Mountain Sports Center	713	Amusement, gambling, and recreational industries
4	11141 Irma Dr	Islam Center	813	Religious organizations
5	11091 Irma Dr	Door Installations Inc	238	Specialty trade contractors
6	11071 Irma Dr	Front Range Plumbing Co Inc	238	Specialty trade contractors
7	11045 Irma Dr	CarStar	811	Automotive repair and maintenance
8	11080 Irma Dr	Banks School Supply	453	Miscellaneous store retailers
9	11055 Leroy Dr	O'meara Collision Center	811	Automotive repair and maintenance
10	10983 Leroy Dr	Nexus Corporation	111	Crop production
11	11060 Irma Dr	Precision Metal Manufacturing Inc	332	Fabricated metal product manufacturing
12	11084 Leroy Dr	D&E Steel	332	Fabricated metal product manufacturing
13	11060 Leroy Dr	Gulfeagle Supply	324	Petroleum and coal products manufacturing
14	11020 Leroy Dr	Atlas	324	Petroleum and coal products manufacturing
15	11084 Leroy Dr	D&E Steel	332	Fabricated metal product manufacturing
16	10963 Leroy Dr	B&B Blending	423	Merchant wholesalers, durable goods
17	10977 Irma Dr	Northglenn Heating & AC	238	Specialty trade contractors
18	10943 Leroy Dr	Die Cut Technologies	332	Fabricated metal product manufacturing
19	10880 Leroy Dr	Action Packaging	423	Merchant wholesalers, durable goods
20	10923 Leroy Dr	Nationwide Fabrication Inc	332	Fabricated metal product manufacturing
21	10854 Leroy Dr	Packaging Corporation of America	423	Merchant wholesalers, durable goods

Industrial Park Businesses (cont'd)

Map ID	Building Address	Business Name	NAICS Code	NAICS Category
22	10750/10650 Irma Dr	Diesel Day Dreams	811	Automotive repair and maintenance
		Maranello Motorworks	811	Automotive repair and maintenance
		High Class Auto Glass	811	Automotive repair and maintenance
		EH Design Inc	541	Professional, scientific, and technical services
		Creative Visions	811	Automotive repair and maintenance
		A Good Shop	811	Automotive repair and maintenance
		Livingston Systems	323	Printing and related support activities
		GT Industrial Products	335	Electrical equipment and component manufacturing
		El Dorado Mexican Distribution	424	Merchant wholesalers, non-durable goods
		Old School Garage	811	Automotive repair and maintenance
		American Auto	811	Automotive repair and maintenance
		C&D Metal Products	332	Fabricated metal product manufacturing
		Atlas Autobody	811	Automotive repair and maintenance
		C&H Group Inc Insurance Roofers	238	Specialty trade contractors
		Absolute Pool Management	238	Specialty trade contractors
		Transmission Superstar	811	Automotive repair and maintenance
		Boston Barricade	423	Merchant wholesalers, durable goods
		D Speed Diesel Emissions	811	Automotive repair and maintenance
		Xhaust Pipes	811	Automotive repair and maintenance
		The Finishing Touch/Frank's Upholstery	561	Administrative and support services
		Innovative Mechanical Systems	238	Specialty trade contractors
		The Glove Wagon Safety Products	423	Merchant wholesalers, durable goods
		Elevation Lighting	335	Electrical equipment and component manufacturing
		Westview Autos	811	Automotive repair and maintenance
		Teckshop Inc	811	Automotive repair and maintenance

Industrial Park Businesses (cont'd)

Map ID	Building Address	Business Name	NAICS Code	NAICS Category
		Joyful Journeys Community Enrichment	813	Religious/charitable organizations
		Premier Auto Repair	811	Automotive repair and maintenance
		Perfect Solutions Concrete	327	Nonmetallic mineral product manufacturing
		Shadows	424	Mechant wholesalers, non-durable goods
		Charter Drywall Denver	327	Nonmetallic mineral product manufacturing
		Tito's Tints	811	Automotive repair and maintenance
		Toytec Lifts	811	Automotive repair and maintenance
		Smooth Ride Auto Repair	811	Automotive repair and maintenance
		Erive's Heating & Air	238	Specialty trade contractors
		Studio 27	541	Professional, scientific, and technical services
		A&G Motors	811	Automotive repair and maintenance
		Patrick Mangan	541	Professional, scientific, and technical services
		Law Office of Peter Loyd Weber	541	Professional, scientific, and technical services
		Brick Imaging	238	Specialty trade contractors
		Ducted Comfort	238	Specialty trade contractors
23	10909 Irma Dr	Jackson's Auto Service	811	Automotive repair and maintenance
24	10901 Irma Dr	Automotive Transmission Engineering	811	Automotive repair and maintenance
25	10901 Irma Dr	Hail Repair & Estimates	811	Automotive repair and maintenance
26	10855 Irma Dr	F Motors	811	Automotive repair and maintenance
		Branded Image Apparel	541	Professional, scientific, and technical services
		E&E Printing/Labeling	541	Professional, scientific, and technical services
		Teamed Therapy	541	Professional, scientific, and technical services
27	10825 Irma Dr	Northwestern Electrical	335	Electrical equipment and component manufacturing
28	10795 Irma Dr	Ram's Transmission	811	Automotive repair and maintenance
29	10789 Irma Dr	KMX Powersports	441	Motor vehicle and parts dealers

Industrial Park Businesses (cont'd)

Map ID	Building Address	Business Name	NAICS Code	NAICS Category
30	10783 Irma Dr	Lee's Truck & Auto	811	Automotive repair and maintenance
31	10775 Irma Dr	G&N Machining & Manufacturing Corp	332	Fabricated metal product manufacturing
32	10651 Irma Dr	Accurate Automotive	811	Automotive repair and maintenance
		Competition's Choice	811	Automotive repair and maintenance
33	10621 Irma Dr	Toro Small Engine Repair	811	Automotive repair and maintenance
		Crossfit Surge	713	Amusement, gambling, and recreational industries
		Impressions Printing	541	Professional, scientific, and technical services
		Holly Ridge Baptist Church	813	Religious/charitable organizations
		Event Center	721	Accommodation
34	10475 Irma Dr	Creative Laser Designs	332	Fabricated metal product manufacturing
		Plotter Supplies Inc Digital Imaging Solutions	541	Professional, scientific, and technical services
35	1901 Leroy Dr	Northglenn Auto Repair	811	Automotive repair and maintenance
		Maaco Auto Painting	811	Automotive repair and maintenance
36	1710 Leroy Dr	TH Automotive	811	Automotive repair and maintenance

Source: CoStar, ArLand

APPENDIX 2: DEVELOPER FORUM PRESENTATION AND CONCLUSIONS

SUMMARY OF CONCLUSIONS FROM THE NORTHGLEN DEVELOPER FORUM: 2/16/16

The most significant conclusions from the February 16, 2016 Developer Forum may be summarized as follows:

GENERAL CONCLUSIONS

1. Drainage and the flood plain issues are the key constraints that must be resolved in order to facilitate development of the station area. The drainage solution needs to be a global station area solution and address all of the drainage issues on all of the different properties at once.
2. The most important step to address this problem is that Northglenn and Thornton should cooperate to immediately hire a civil engineering consultant to work with their Public Works staff to analyze the drainage needs of the station area (all properties), prepare a design development level civil engineering drainage/infrastructure plan and to prepare a cost estimate of what the drainage improvements will cost, including the costs of water quality features, detention ponds, grade crossings, low water crossings, utilities, lighting, streets, realignment of York and Fox Run, bike paths, pedestrian paths, trails, all forms of multi-modal connectivity and open space. Eventually, these drainage and infrastructure costs will need to be shared between Northglenn, Thornton, other governmental districts such as UDFCD and DRCOG, the developer(s), future residents and businesses (Metro District) etc. If the past has any lessons to offer, it is that the developers of the Thornton properties may want to move ahead on their development without thinking about a multijurisdictional infrastructure solution that will enable development on the Northglenn properties. This type of incremental or short-range approach is less likely than a comprehensive, cooperative approach to maximize the value of the site for anyone, including Thornton, Northglenn, RTD or present and future developers and property owners.
3. The Cities should also prepare a CLOMR that would remove some of the development from the flood plain and create more developable land (CANNOT MOVE CHANNEL BUT COULD NARROW IT). At the same time, the open space network and future parks and trails should be identified.
4. Once the cost estimate is complete, Northglenn and Thornton should explore financing mechanisms like a Metro District to finance the drainage, open space and other infrastructure improvements necessary to facilitate development of the station area. A variety of sources need to be explored including the Urban Drainage and Flood Control District Funds, Transit Funds (RTD?), Metro Districts, others. However, a Metro District alone will not provide upfront money for

infrastructure. There needs to be a fairly certain and predictable tax base identified or in place in order to issue the Metro District Bonds.

5. Northglenn and Thornton City Councils should continue to address the drainage and road alignment issues until resolved and a financing and rezoning approach is agreed to. Cooperation will be needed to solve these and other issues and a process of education and consensus building will be required including workshops, planning sessions, additional public meetings and tours of other station areas
6. One participant expressed the view that the current market does not seem to support any type of new development on the site, at this time. Existing single-family in the neighborhood is selling at approximately \$130/sf, and new single-family may not be able to compete at this price. Town home, condo, retail and medical (local not national) demand may come later. However it is important to note that when Highlands Garden Village was developed, the housing in the surrounding neighborhood was selling for \$75,000 per unit (\$75/sf) and houses in Highlands Garden Village were selling at \$250,000 (\$170/sf). They sold out within 2 years. The market demand was a result of good design, small lots and a price that was competitive in the overall housing market.
7. The question is, what can the Cities put in place in terms of financial incentives and zoning (commercial/ mixed use at 112th and York/Fox Run, Higher density mixed use adjacent to station transition to town homes and then single family) to be available in the next 5 to 15 years when market conditions may be more conducive to development.
8. The market today might support market rate and affordable apartment development. The Market Study found that there are other recent market rate apartment communities that have been built in the immediate area and that these communities have leased-up and are considered to be successful. On the other hand, some of the developers argued that, until the station is built, traffic counts on neither York nor 112th are sufficient to support apartment development. In addition, affordable apartments might be used to act as a catalyst to higher density development after the transit station opens. That is, 9% or 4% Low Income Tax Credit Apartments could be built as soon as the station opens as a catalyst to other multi-story, multi-family development adjacent to the station.
9. The industrial area should be treated as a gateway to the station but should be considered as a separate area from the Station Area Plan. Instead of creating planning options for residential and mixed-use on the industrial site, attention should be given to improving the appearance and increasing the connectivity between the industrial area and the 112th Station. The industrial site can be

viewed as the West gateway to the station area, transitioning to retail, and then the station. The developers present at the forum did not feel that there was a significant market for “creative industrial or creative office space” at this time. There was general consensus that the existing industrial uses and their supporting retail (like the Brewery) were doing well (0% Vacancy) and perhaps additional similar light industrial uses might be the most likely types of businesses to locate into this area in the near future. It would be helpful if some of the landscaping businesses or storage lots would be replaced by less land intensive and higher job producing uses (i.e. auto, mechanical, electrical, printing, design) or higher activity producing uses like Rocky Mountain Sports Center, Beer by Design Brewery etc. State Enterprise fund incentives might be used to attract these types of businesses. TIF funds could be used to make gateway improvements, streetscape improvements, connectivity improvements, to and from the Station Area, or façade improvements that would make the light industrial area more attractive and make it feel more connected to the station area.

10. One major asset of this Station Area is that just three property owners own the majority of the site. Significant outreach and coordination should continue between Northglenn, Thornton, the three property owners, the surrounding residential neighborhoods, and the light industrial area tenants.

POSSIBLE CHANGES TO THE SITE PLAN

1. The area devoted to and the amount of small-lot single-family housing on the edges might be increased so that there are double loaded alleys on each of the single-family neighborhood edges. From a surrounding neighborhood perspective, this will create edge conditions similar to the surrounding neighborhood and may help to garner neighborhood support or, at least, reduce neighborhood resistance to the plan. In addition, this will increase the number of single-family units proposed for the development (8-12 du per acre on 30' x 100' lots). If the future market is like today's market, the single-family homes will probably be the first type of product to sell. Development will probably occur from the eastern edges of the site toward the transit station. From a physical infrastructure perspective, this will mean that all of the drainage improvements will need to be made before any development will begin. From a sales and market perspective, some of the developers have found that selling the single-family first acts as a catalyst. Then, as the single-family homes begin to sell the developer can offer town homes as a lower cost alternative and eventually offer condominiums closer to the transit station. Also special attention should be paid to the connectivity of these single-family/town home neighborhoods to the station. In essence, this approach allows the developer to increase density as the development moves closer to the transit station.

Conclusion: the site plan should be changed to show more small-lot single-family homes on edges, transitioning to town homes in the next few blocks (surrounding parks and open space) and then transitioning to 3 to 5 story apartment and condo's adjacent to the station, and a retail/mixed use gateway on the Perlmutter property.

2. The developers who attended the Developer's Forum all agreed that the realignment on York Street and the proposed intersection would enhance the development feasibility of the parcels on the north side of 112th Avenue, and help to create a more dramatic gateway to the station area.

APPENDIX 3: INFRASTRUCTURE ASSESSMENT

TECHNICAL MEMORANDUM

TO: Becky Smith, City of Northglenn

FROM: Dana Bijold, Goodbee and Associates, Inc.

DATE: July 2016

SUBJECT: Utility Infrastructure Evaluation
112th Station Area Planning Study

1. EXECUTIVE SUMMARY

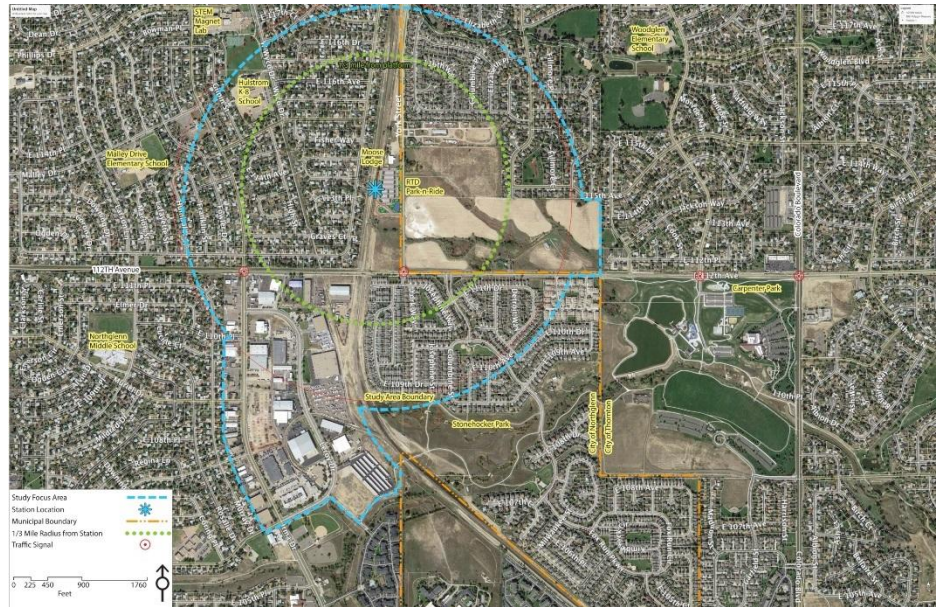
This Utility Infrastructure Evaluation encompasses water, sanitary sewer, and storm sewer facilities throughout the study area identified in Leese and Associates 112th Station Area Planning Study. Based on the area investigated for this utility evaluation and the criteria used to identify major utilities, there will need to be additional water and sewer mains designed and constructed to serve future development needs. It is the responsibility of the local water and/or sewer agency to provide service to undeveloped parcels within the study area. It is the developer's cost responsibility to install any necessary water and sewer lines to service their development. These anticipated water and sewer infrastructure costs are considered within the realm of the standard and expected cost of development.

There appears to be sufficient water and sanitary sewer capacity in both the Northglenn and Thornton infrastructure to serve the future development of this project area. As development progresses, the Cities of Northglenn and Thornton will need to monitor their existing infrastructure to ensure adequate capacity is available to accommodate growth.

Additional drainage channel improvements will need to be addressed to maximize the development area. This includes upgraded drop structures and possible channel depth modifications. These drainage improvements will be consistent with recommendations made by Urban Drainage Flood Control District (UDFCD) in their final master plan update.

2. INTRODUCTION

This technical memorandum documents Goodbee & Associates' evaluation of waterline, sanitary sewer and storm sewer for the City of Northglenn's 112th Station Area Planning Study. The purpose of this work is to provide the Cities of Northglenn and Thornton with an evaluation of existing and planned major utility facilities within the study area and identify discrepancies between current capacities and growth projections.



a. Project Area

The primary project study area is located on the vacant property at the northeast corner of 112th Avenue and York Street, bound by residential development to the north and east. The study area also includes a small parcel of land at the northwest corner of 112th Avenue and York Street, bound by the RTD light rail station to the north and the railroad tracks to the west., and the Northglenn Industrial Park, located at the southwest corner of 112th Avenue and the existing railroad crossing. The project study limits are illustrated as the blue area boundary shown on the map above.

b. Methodology

Goodbee & Associates coordinated with utility providers within the study area to determine the location and capacity of major utilities within the project area. The expansion of or need to upgrade utility infrastructure is a component that should be factored in to the cost of new development or redevelopment. As such, Goodbee & Associates focused on major public utilities that may need to be upgraded or added to accommodate projected growth identified in this study. Major utilities are defined as:

- waterlines at least 20 inches in diameter;
- asbestos cement water lines;
- sanitary sewers at least 18 inches in diameter;
- vitrified clay pipe sewer lines;
- sewer and water pump stations;
- force main sanitary sewers;
- major drainageways; and
- all water, sewer, and storm required to expand into undeveloped parcels.

To identify owners of major utilities in the project area, Goodbee & Associates conducted a search of the Utility Notification Center of Colorado (UNCC) database. Utility owners/providers were contacted to confirm the presence or absence of major utility facilities in the project area and to obtain key maps.

Goodbee & Associates interviewed key utility owners to verify existing utility capacity as well as the potential need and cost for expansion. The proposed land use layout created by Leese & Associates, Inc. was used for reference when coordinating with utility companies to determine what level of infrastructure would need to be modified to meet the projected growth and associated utility demands. Results of these data collection interviews are summarized in the following section and details provided in Appendix A. It should be noted that several assumptions were made for this work effort:

- Information received from utility owners was assumed to be accurate and complete.
- Existing buried utility locations were estimated based on schematic maps that were provided.
- Existing capacity is sufficient to serve current development.
- Utility provided cost data and/or CDOT cost data was utilized in order to determine cost ranges for new or upgraded infrastructure.

Future infrastructure requirements have been determined and are discussed below.

3. FINDINGS

The UNCC database identified utility owners with facilities in or near the project corridors. Several were eliminated as not having relevant facilities in the primary project development area. Utility providers within the project development area are as follows:

- City of Northglenn – water, sanitary, and storm
- City of Thornton – water, sanitary, and storm

a. Major Utility Providers within the Project Area

Two utility owners provide water, sanitary, and storm in the project area, which provides the basis of this evaluation. A brief discussion of these major providers is summarized below.

City of Northglenn

The City of Northglenn provides water, sanitary sewer, and storm sewer service to the area west of York Street, and will be the service provider for the undeveloped area at the northwest corner of York Street and 112th Avenue, south of the 112th Avenue RTD station. In a recent study done by Matrix Design Group for the development of this area, existing facilities are generally sized appropriately to accommodate future development. This study was for the development of an apartment complex, which is generally in line with future development concepts developed by Leese and Associates. The major system lines are already in place, including a 27" sanitary force main in York Street.

The City of Northglenn is working with the City of Thornton to address the drainage challenges that are present across the primary project study area. Urban Drainage and Flood Control District (UDFCD) is currently in the process of updating their *Grange Hall Creek Major Drainageway Plan – Hydrology Report*, which will include recommendations to address the drainage challenges presented in this project area.

City of Thornton

The City of Thornton provides water, sanitary sewer, and storm sewer service to the area east of York Street, and will be the service provider for the undeveloped area at the northeast corner of York Street and 112th Avenue. Existing facilities are generally sized appropriately to accommodate future development. The major system lines are already in place, including a 24" water main in York Street, 8" and 12" water lines in the surrounding residential areas, and 8" sanitary sewer lines in the surrounding residential areas.

b. Utility Assessment

The study area correlates with the 112th Avenue RTD light rail station currently being constructed as part of the North Metro Rail Line.

112th Avenue Planned Development

The study area is being evaluated as a master planned development jointly with the cities of Northglenn and Thornton. This approximately 80-acre development includes the vacant parcels on both the east and west side of York Street, north of 112th Avenue. Ultimate density estimations are generally consistent with those modeled in these various existing studies for the water and sanitation needs in this area.

City of Northglenn:

Water Main Facilities: Based on information from the City of Northglenn, major utilities in this area include:

- An existing 10" and 12" water line on the south side of 112th Avenue.
- The undeveloped parcel at the northwest corner of 112th Avenue and York Street is currently not served.

Sanitary Sewer Main Facilities: Based on information from the City of Northglenn, major utilities in this area include:

- An existing 27" sanitary force main in York Street.

Storm Sewer Facilities: Based on information from the City of Northglenn, major utilities in this area include:

- There is an existing drainage channel across the undeveloped property that serves as the outlet channel for the neighborhood to the west of the study area. This drainage channel is being evaluated in the UDFCD master plan updates.

The Leese and Associates study identifies this area as medium to high density residential development.

- Existing major water mains in 112th Avenue are sufficient to accommodate development projections. Therefore, major infrastructure costs would be negligible, as no upsizing of existing mains would be required for the projected land use identified.
- Additional minor infrastructure will be the cost of the developer, including 6" to 12" water supply lines needed to provide water to future development.
- Existing sewer mains in the project area sufficient to accommodate development projections, however should be monitored by the City of Northglenn as development plans progress to ensure adequate service.
- Infrastructure costs include additional 8" to 15" sanitary sewer lines needed to provide service to future development.
- Drainage improvements through this portion of the study area include channel improvements and drop structure improvements.

City of Thornton:

Water Main Facilities: Based on information from the City of Thornton, major utilities in this area include:

- An existing 24" water line in York Street.
- The undeveloped parcel at the northeast corner of 112th Avenue and York Street is currently not served. Existing water mains are located in the residential developments to the north and east of the study area.

Sanitary Sewer Main Facilities: Based on information from the City of Thornton, major utilities in this area include:

- No sanitary sewer infrastructure exists within this study area. Existing sanitary sewer mains are located in the residential developments to the north and east of the study area.

Storm Sewer Facilities: Based on information from the City of Thornton, major utilities in this area include:

- There is an existing drainage channel across the undeveloped property that serves as the outlet channel for the neighborhood to the west of the study area. This drainage channel is being evaluated in the UDFCD master plan updates.

The Leese and Associates study identifies this area as transitioning from low to high density residential development.

- Existing major water mains in York Street and the surrounding residential developments are sufficient to accommodate development projections. Therefore, major infrastructure costs would be negligible, as no upsizing of existing mains would be required for the projected land use identified.
- Additional minor infrastructure will be the cost of the developer, including 6" to 12" water supply lines needed to provide water to future development.
- Infrastructure costs include additional 8" to 15" sanitary sewer lines needed to provide service to future development.
- Drainage improvements through this portion of the study area include channel improvements and drop structure improvements.

4. CONCLUSIONS AND RECOMMENDATIONS

Based on the subareas investigated for this utility evaluation and the above-listed criteria used to identify major utilities, there will need to be additional water and sewer mains constructed to accommodate future growth and development in this project area. Approximate developer related costs for these improvements are shown below in Table 1:

Table 1: Estimated Range of Utility Improvement Costs (in \$ millions)

Utility	Estimated Cost
Water	\$3.6
Sanitary Sewer	\$3.6
Storm	\$4.0
Est. Total Cost to developer for expanded or upgraded utilities	\$11.2

Note: Costs shown are in millions of dollars, are based on 2016 dollars with 2016 land use zoning classifications, and are not associated with any modeling done specifically for this evaluation. The development costs were determined by examining conceptual land use plans and related existing infrastructure.

The project study area, representing approximate 80 acres, will need to have water supply, storm sewer, and sanitary sewer service systems designed and constructed to serve the development needs. Additional drainage channel improvements will need to be addressed to maximize the development area. This will include upgraded drop structures and possible channel depth modifications. These drainage improvements will be consistent with recommendations made by UDFCD in their final master plan update.

As outlined above, and in reference to the Leese and Associates study outlining residential and commercial conceptual development plans, the above statements are a guideline for use in modeling projections. As forecasts are modified and additional infrastructure is added within the study area, utility needs and capacities should be revisited and reassessed in order to best serve development needs.

References:

- City of Northglenn. City of Northglenn Standards and Specifications.
- City of Thornton. October 2012. Standards and Specifications for the Design and Construction of Public and Private Improvements.
- EST. June 2015. *120th Avenue Corridor Study Washington Street to Claude Court*. Prepared for: City of Northglenn.
- Matrix Design Group. November 10, 2014. *112th and York – Proposed Apartment Project Infrastructure Analysis*. Prepared for: Adams County Housing Authority.
- Regional Rail Partners. May 14, 2015. *Northglenn at 112th Avenue Station, 90% Design Submittal Drainage Report*. Prepared for: RTD North Metro Rail Line Project.
- RESPEC. July 2015. *Grange Hall Creek Major Drainageway Plan – Hydrology Report*. Prepared for: Urban Drainage Flood Control District et. al.
- Urban Drainage Flood Control District. 2016. *Urban Storm Drainage Criteria Manual – Volumes 1 and 2*.

APPENDIX 4: H.E.A.L. WALKABILITY ASSESSMENTS

The City of Northglenn Healthy Eating Active Living (HEAL) Committee seeks to identify and influence policy areas that will contribute to overall health in the Northglenn community. The Committee plans to accomplish this by engaging the community and making recommendations to decision makers for further carrying Northglenn's commitment improving access to healthy foods and active living by influencing the built environment through these policies.

A primary goal of the HEAL Committee is to identify and influence policy areas that will contribute to overall health in the Northglenn community. This STAMP process provides the committee an opportunity to weigh in on issues such as ease of access, amenities surrounding the station, connections for pedestrians and cyclists to the station, and surrounding land uses that encourage activity or healthy eating.

To fully understand the context of the existing environment around the station, the HEAL Committee completed a 'Walking Audit' using the Walkability Audit Tool provided by the U.S Department of Health and Human Services Centers for Disease Control and Prevention. The Committee conducted the audit in three areas, the 112th Corridor, Fox Run neighborhood and the neighborhood to the northwest of the station. The Walking Audit scored walkability based on the following:

- Pedestrian Facilities
- Pedestrian Conflicts
- Crosswalks
- Maintenance
- Path Size
- Buffer
- Universal Accessibility
- Aesthetics
- Shade

The Committee discussed the scores and key observations from the audit. Based on the discussion the Committee has provided recommendations for each of the areas walked.

112th Avenue – Walking Score of 48/100

Key Observations:

- There are no designated crosswalks to the businesses on the south side of 112th between Irma Dr. and York St.
- Sidewalks are narrow, mostly attached to the street, and there is little to no shade.
- Speed and volume of traffic make walking along it unpleasant. Design speed is faster than the posted speed.
- The width of the road offers opportunity to add amenities such as bike lanes, or landscaping to increase distance of pedestrians to traffic.

Recommendation: Create buffers between sidewalk and street ways.

Short-term, implement traffic calming measures such as pedestrian islands, bicycle lanes, or sidewalk treatments to create a perceived separation from traffic.

Long-term, consider putting in more permanent infrastructure that will buffer pedestrians on the sidewalk from the vehicular traffic, i.e. tree buffers, grass buffers, planters, bollards, etc.

Recommendation: Promote safe roadway crossing through use of small block sizes, pedestrian refuge islands, and enhanced crosswalks.

Establish safe pedestrian crossings via signalized connections or an underpass. This will encourage pedestrian flow between the Industrial Park and Fox Run Pkwy to the Station. It will also improve flow along other key amenities, including the City Trail and Parks systems.

If crosswalks are installed, they should be raised crosswalks slightly above grade, using a contrasting material such as brick or colored concrete. Also consider creating “bulb-outs” on either side of the street where pedestrians cross further calm traffic and reduce the distance that pedestrians are exposed to traffic, and installing pedestrian signals to alert oncoming drivers of pedestrians and bicycles crossing the streets.

Recommendation: Provide pedestrian countdown signals to indicate how many seconds are left in the walk phase.

Pedestrian countdown signals increase safety for pedestrians of all levels of ability. Countdown signals that implement sounds allow for a greater portion of the pedestrian population to cross safely. Additional crossing time should also be considered to provide enough time for all ages and abilities to safely cross.

Recommendation: Provide streetscape amenities such as benches, landscaping, lighting, shade structures, and public art.

Walkable, aesthetically pleasing streets encourage people to walk to their destinations and create places that people want to spend time, becoming destinations themselves. The focus should be on main pedestrian thoroughfares to the station, especially 112th and York. Introduce a shade structure program on these streets to encourage walking throughout the city in the hot summer months. Shade structures can include trees, transit shelters, and anything else that casts shade on the sidewalks.

Amenities such as benches are important to those who may not be able to walk long distances without sitting, and lighting is important for pedestrians to feel a sense of safety as far as seeing and being seen.

Recommendation: Incorporate retail establishments within close proximity of its residences.

Evidence shows that this type of development pattern increases active transportation rates, decreases automobile use, and is directly correlated to reduced levels of obesity, chronic disease and stress.

Recommendation: Provide secure bicycle parking at or near the Northglenn 112th Avenue Station and at surrounding businesses.

A key to increasing bicycle traffic is providing places to securely park bicycles. The provision of bicycle storage facilities have been shown to encourage active transportation as a substitute for automobile use for commuting trips. The increased use of active transportation will lead to improved health outcomes

while reduced automobile use will lead to improvements in regional and local air quality. To encourage the provision of bicycle and pedestrian improvements, financial incentives could be provided to local businesses.

Recommendation: Explore the possibility of bike sharing/B-Cycle stations at the Station and key areas near the station (such as schools, industrial park, civic campus, and commercial centers) to encourage ridership between the amenities.

Fox Run – Walking Score of 76/100

Key Observations:

- Fox Run Parkway is a very wide road, often with no markings or signs for pedestrian crossings.
- Fox Run Parkway and other neighborhood streets have good shade from tree canopies in many places, and some are detached from the street.
- The intersection of Fox Run at 112th is a challenge for pedestrians due to lack of signalization.
- Sidewalks in the neighborhood are narrow at places.

Recommendation: Place bike lanes in both directions on Fox Run Pkwy from 104th Avenue to 112th Avenue.

This will allow north/south bicycle connections from residences to the 112th and 104th Stations. It would also connect residents to regional trail systems that connect to other city amenities.

Recommendation: Encourage way-finding with signs, maps, and landscape cues to direct pedestrians to the most direct route.

Provide signage indicating the bicycle routes and local destinations for the Station, local business and other bicycle route intersections.

***Wayfinding:** encompasses all of the ways in which people orient themselves in physical space and navigate from place to place.*

A way-finding program should be introduced to help residents, employees and visitors navigate their way to all of the amenities surrounding the Station. Wayfinding is a critical tool for directing pedestrian and bicycle traffic to the fastest, easiest and safest route to their destination. Northglenn could implement a wayfinding program that encourages walking and biking by making it safe and convenient. Wayfinding can be accomplished in many ways including signage, changes in sidewalk patterns or audible signals.

Recommendation: Signalize the intersection of Fox Run Parkway and 112th.

Recommendation: Provide pedestrian amenities (benches, trash cans, etc.) along the designated route from Fox Run to the station.

NW Neighborhood – Walking Score of 62/100

Key Observations:

- Neighborhood sidewalks are very narrow and attached to the road. Wheelchairs would have a difficult time using the sidewalks.
- Route for pedestrians to the station is indirect (Wyco Trail) and should be identified.
- Few pedestrian amenities exist in the neighborhood or along the trail.
- The trail currently does not have lighting or shade.

Recommendation: As neighborhood Capital Improvement Plan projects are identified, sidewalks should be prioritized to be widened and detached when roads are repaved.

The right-of-way width of the neighborhood streets is enough to accommodate significant sidewalk improvements. In addition to creating a safe place for pedestrians to walk; narrowing the roads by increasing the width of the sidewalks will also calm traffic and make the streets safer for crossing.

Recommendation: Implement wayfinding that directs pedestrians and cyclists to the Wyco Trail and the station. Consider using “art” as “wayfinding”.

Information Kiosks stations could be put in at major intersections of the neighborhood to Wyco trail. These stations should have a map of the City that shows the location of the Station and other public amenities in the area and the most direct route to get there. The way-finding program should include street direction signs to let pedestrians and cyclists know they are traveling in the right direction.

Recommendation: Add benches, trash cans, fountains, or elements of interest along the Wyco Trail.

The trail is not a direct route to the station, so adding elements of interest may encourage pedestrian activity and more residents to travel to the station via walking or biking.

Recommendation: Improve the Wyco Trail with lighting and trees.

Consider working with the Northglenn Arts and Humanities Foundation to This could be done as art that leads pedestrians and cyclist to the station.

**APPENDIX 5: NORTHGLENN AT 112TH STATION TOD PUBLIC SPACE
DESIGN GUIDELINES**

CONTENTS

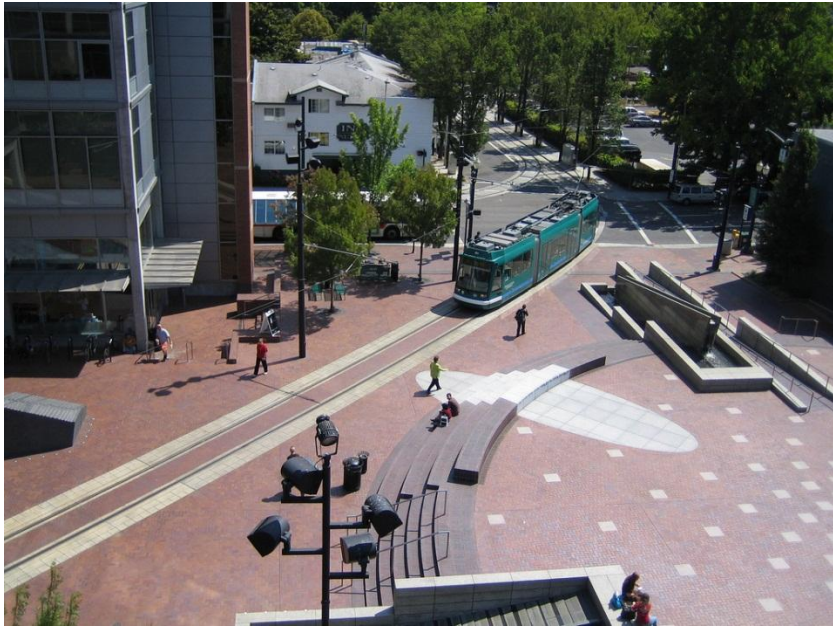
GREAT PLACES, GREAT SPACES: INTRODUCTION	1
KEY DESIGN PRINCIPLES	3
Key Urban Realm and TOD Design Principles.....	3
Key Categories of Guidelines	6
COMMUNITY	7
placemaking	8
usability.....	24
MOBILITY	35
circulation	36
parking.....	40
TDM.....	43
efficiency	45
SUSTAINABILITY	47
environmental sustainability	48
fiscal sustainability	55

great places, great spaces: introduction

The purpose of this document is to provide the City of Northglenn with guidelines and recommendations related to the design of the “urban realm” around the 112th Avenue Station area. Although many of the opportunities identified in this document are for the immediate RTD station area located within Northglenn’s jurisdiction, these guidelines can also be considered by the City of Thornton where appropriate and feasible within the station area. The “urban realm” can be defined as exterior places, connections, and buildings in and around the station that are accessible – both physically and visually – to the public. Urban realm elements can include streets, sidewalks, pedestrian and bicycle paths, bridges, plazas, transportation facilities, natural features, parks and open space, building accesses, and even view corridors. This document is a supplement to the 112th Avenue Station Area Master Plan, which established conceptual plans for the redevelopment of the station area.

This document contains suggestions and examples for good design for both the proposed RTD commuter rail station at 112th Avenue as well as the larger public domain surrounding the station. However, not all of these suggestions will be appropriate for both Cities and, therefore, any given “opportunity” suggested in this document will need to be further analyzed for feasibility by each City and considered within the context of each City’s plans, policies, and regulations. The station will be a regional hub designed to provide convenient and safe transit connections and to help make transit a vital and visible presence in the 112th Avenue area.

In addition, the guidelines apply to the Transit-Oriented Development (TOD) planned for the area around the station. The overall aim of this urban realm plan is to help make the 112th Avenue Station area a **“Transit Oriented Community”** – a place that allows people to drive less and walk, cycle, and use transit more if they so choose.



key design principles

The aim of these urban realm guidelines is to help establish good urban realm design principles for both proposed transit facilities and transit-oriented development (TOD) around the 112th Avenue Station. TOD and good urban realm design should result in the creation of authentic and complete neighborhoods. Those neighborhoods should include a variety of ‘value added’ amenities for local residents and employees, including stores, parks, schools, landscaping, and engaging urban design and streetscapes. TOD should include a focal point, such as a village center or other activity center, along with residential neighborhoods. Those elements are vital to help create a signature ‘place’ that has long-lasting value, reflects local character, and provides a high level of activity throughout the day. In well-designed projects, higher densities are successfully integrated into the context of an activity center by ensuring good design. Successful TOD and related urban realm design preserve and build on an area’s strengths while positioning it for a vital future.

A starting point in the development of urban realm design guidelines is a review of key design principles for TODs and related development. These principles provide a broad background for the development of more specific urban realm design principles that apply to the Northglenn at 112th Station area.

Key Urban Realm and TOD Design Principles

A Mix of Uses

New TOD and new infill redevelopment should support a goal of higher-density mixed use and incorporate the types of uses that people want and need, including housing, retail (with an emphasis on locally owned businesses), restaurants, civic uses, offices, entertainment, and other amenities such as community facilities, hotels, and educational facilities where appropriate. A diverse mix of uses helps ensure activity beyond normal or traditional business hours.



key design principles



Compact form

Essential land uses and projects should be established within a quarter-mile radius of the development core (usually a transit center), promoting a compact, walkable village. For good interconnectedness and variety, the blocks composing the village should be no more than a five-minute walk around their perimeters (about 1,320 feet). The increased density is an efficient use of land and infrastructure, and provides a more social environment while supporting local businesses.



Pedestrian and Bicycle Orientation

New communities should be walkable and bikable, with safe connections both within the community and to surrounding areas. Generally, the pedestrian walking focus should be between $\frac{1}{4}$ and $\frac{1}{2}$ mile from the core of the development – usually a transit station or connection. The walking and biking experience should be designed for enjoyment, health, and safety. Block size and layout, sidewalk and crosswalk design, shade, weather protection, wayfinding, amenities, and public spaces should be conceived and designed to make walking or biking safe, comfortable, efficient, and pleasurable to the degree that patrons happily ‘park once’ and enjoy walking to multiple destinations within an activity center.



Manage Parking and Access

Parking should be on-street and/or at the center of blocks, using liner buildings to mask the lots or structures. When it is not possible to mask surface lot parking, lots should be behind or to the side of buildings to minimize disruption of the street wall. There also should be ease of access from nearby major roadways, efficient use of spaces, and where needed, parking management programs to minimize negative impacts on nearby neighborhoods. There should also be a focus, where possible, on shared parking to allow transit users parking where needed during peak commuting times but freeing up those spaces in non-peak hours for use by others.



Public Spaces

TOD and its urban realm should establish a primary public space to serve as the symbolic heart of the project. It should be augmented with a diverse offering of secondary public spaces – small greens, plazas, pocket parks, and pedestrian ways that are linked by walkable streets and furnished with amenities that support and encourage activity in the public realm.

key design principles

Great Streets

Street design should reflect a dual concept of the street as both a vehicular thoroughfare and civic space. Attributes such as design speed, travel direction (one-way or two-way), lane widths, corner radii, on-street parking, sidewalks, pedestrian crossings, streets trees, and amenities should be conceived in a comprehensive fashion to achieve a balance of the needs of drivers, transit users, bicyclists, and pedestrians, and to offer real choice of mobility options.



“Third Places”

TOD and its urban realm should encourage the establishment of ‘third places’ distinct from home and work – coffee shops, internet cafes, alfresco dining areas, pubs, bookstores and the like – that foster a culture of informal gathering, socializing, conversing, and the exchange of ideas. The best third places are adjacent to sidewalks and public spaces; each benefits greatly through association with the other.



Focus on Good Design

Great places engage both the senses and intellect with diverse and detailed architectural facades, preservation of key views, engaging signage, attractive furnishings, colorful plantings, sidewalk commerce, public art, and many other points of detail. The city’s regulatory framework should be flexible enough to allow the unfolding of a diverse and stimulus-rich environment over time.



key design principles



Be Successful Without Transit

Transit improvements can help focus and accelerate development, but overall a new development should be able to succeed - `pencil out` for developers – on its own. The principles for development with or without transit are the same: it must fulfill a market need; it must have good regional access; it must be well-designed and constructed; and it must be pedestrian-oriented and bike-friendly.

Key Categories of Guidelines

With those principles in mind, these urban realm guidelines are focused around three key categories or factors around which all design guidelines are organized:

- **Community**, focused on the people who live, work, and move in and through the station area, with the aim of providing good placemaking and maximum convenience and usability.
- **Mobility**, aimed at ensuring maximum connectivity within the station area and to and from the surrounding neighborhoods and that make it easy and comfortable to get around on foot, by bicycle, or on transit. Multi-modal activities are efficiently designed and operated for the benefit of both passengers and the transportation provider by ensuring reliable travel times and operating efficiencies. Good urban realm design should provide a multi-modal transportation network that is seamless, efficient, convenient for users, and cost-effective for users and providers.
- **Sustainability**, focused on environmental, social, and financial sustainability of transit investments and the surrounding station area and related development both short-term and long-term. Environmentally responsible design helps contribute to the long-term health and well-being of transit users and those who live and work in the station area. In addition, good urban realm design provides good value for public and private funds. Fiscally responsible design considers both short-term and long-term operations and maintenance, integrates opportunities for revenue generation, and helps realize broader social, economic, and environmental benefits without compromising efficiency, convenience, or the user's experience.

community

Community aspects of urban realm design focus on the people who live, work, and move in and through the station area, with the aim of providing good placemaking and maximum convenience and usability. Transit and its surrounding urban realm are vital civic resources and focal points for community activity. When well designed, transit's urban realm can help create 'great places' with a strong sense of place and identity, attractive public spaces that encourage their use, and a mix of activities by a wide variety of people. In addition, the urban realm around transit exists for its users, so its design should prioritize user needs by providing safe, secure, and accessible spaces and places.

Guidelines for community are organized under two broad design strategies: **placemaking** and **usability**.



placemaking

make it a community asset

The planning and design of the transit-related urban realm require the consideration of issues beyond the transit facility and development itself. The urban realm is a community asset only if it reflects community needs in a way that maximizes its use and value.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Use the stakeholder database developed as part of the 112TH Avenue Station Area Master Plan as a starting point for an ongoing stakeholder involvement program.
- Work with local businesses and interest groups to form working groups to focus on specific design areas of interest.
- Partner with local public school districts to develop a student-focused program to participate in the review and discussion of design elements in the station area. This will help educate local youths on the station area and its related transit potential.

INVOLVE THE COMMUNITY

- Engage with local communities and stakeholders at the beginning of a development project to ensure alignment of goals, interests and opportunities.
- Establish the requirements for the transit-related urban realm to be in accord with the social, physical, economic, and functional interests of the community while also meeting the needs of the development community and the transit investment.
- Plan the urban realm in collaboration with local stakeholders to ensure amenities and activities appropriate to the neighborhood context and the role of the area in the wider community.
- Identify opportunities for collaborating with local schools, arts organizations, and other private and public groups to create and maintain public art in the urban realm and promote arts activity through shuttles or other forms of access.
- Identify opportunities for partnerships with local community organizations to sponsor and maintain shared public amenities or spaces.

create people-oriented places

The transit-related urban realm should be incorporated into the local context in a way that respects and enhances the existing character of the community, with open spaces, streetscaping, and landscaping integrated as part of the entire urban realm to create attractive environments with clear identities and structures.

CREATE GREAT PUBLIC SPACES

- Locate important public spaces along key pedestrian, bicycle, and transit routes.
- Incorporate the heritage and cultural diversity of the local community (including public art) in all aspects of urban realm design to help create a positive identity for both transit and the surrounding area and to help foster community pride.
- Provide for an integrated mix of ancillary activities both within the transit facility and throughout the transit-related urban realm to meet the needs and desires of the community, such as farmers’ markets, music performances, and temporary art installations to animate public spaces on evenings and weekends.
- Frame public spaces and pedestrian access routes with active uses and frontages, including windows, storefronts, and residential entrances, to support activities and hours of use that are compatible and complementary to those of the transit facility and the surrounding urban realm.
- Provide safe and comfortable seating areas, incorporating weather protection.
- Provide pedestrian-scale lighting throughout the urban realm to extend the active use of public spaces.
- Incorporate safety features or special lighting where appropriate to enhance security and a sense of place.
- Locate parking lot and garage entrances away from pedestrian routes where possible to promote safety, and minimize parking entry widths to promote traffic calming.
- Provide appropriate security cameras and other security measures and integrate them into the overall design.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with local business and interest groups to sponsor special events in the station area to increase visibility.
- Support the creation of a special committee of local interest group representatives that can develop programs and events in the station area.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Develop a community placemaking committee as a sounding board for architectural styles in the station area within the jurisdiction(s) where the committee is formed.
- Work with RTD to incorporate context-sensitive design features into the commuter rail station that integrate local design themes while providing a unique transit-focused identity for the center.

PROVIDE DISTINCTIVE ARCHITECTURE

- Design transit facilities and the transit-related urban realm to foster a distinctive identity while respecting the local context.
- Consider modern, innovative design that complements local architectural styles through scale, massing, siting, and color, rather than replicating existing building forms.

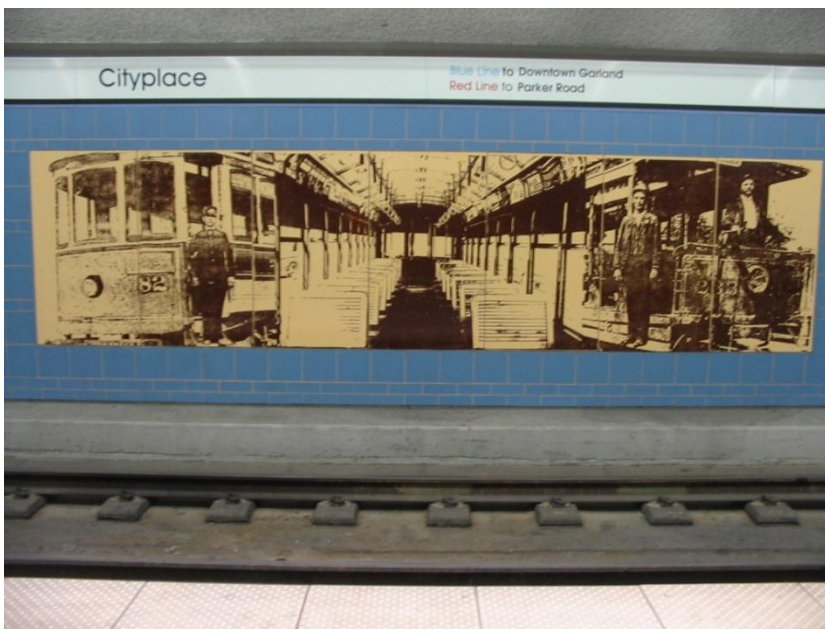


INCORPORATE PUBLIC ART

- Consider public art opportunities at the beginning of a project to ensure integration and a sense of participation by the local arts community.
- Engage with local community and cultural groups to identify public art opportunities.
- Pursue a number of major art commissions of high quality, innovation, and creativity.
- Use a transparent and fair artist selection process.
- Provide a balance of opportunities for temporary and permanent art installations appropriate to the location, context, and scale of each area.
- Integrate art into the design of the transit facility itself to complement the design and attractiveness of the facility.
- Use art as part of a transit facility and urban realm wayfinding system.
- Specify appropriate types and materials for public art projects so that they are durable, safe, attractive, and consistent with maintenance requirements and costs.
- Provide good information about art installations to the public through effective signage or other informational media.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a community arts working group in Thornton, and work with the Northglenn Arts and Humanities Foundation to review the potential for art integration into the station area.
- Establish a community placemaking committee to establish an arts competition process for the area.
- Work with developers as they begin redevelopment to ensure integration of art into the urban realm.
- Consider amending local zoning codes to require art integration in all new developments.
- Work with RTD to integrate art into the regional transportation center design.



OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with the local bicycle advocacy community to ensure good design and access of bicycle facilities in the public realm.
- Ensure local regulations and policies allow food carts, kiosks, and other mobile retail outlets for use at or near the station and station area.

CREATE HUMAN SCALE DESIGN

- Design public spaces to ensure that they fit the people and the functions they will serve.
- Include amenities throughout public spaces, such as benches, low walls, bicycle racks, and landscaping to meet user needs and create enclosures and pathways.
- Include a variety of retail elements such as cafes, kiosks, food carts, and market stalls to ensure a range of activities and use throughout the day.
- Use a variety of surface materials and textures to break up larger spaces and provide designated activity zones.
- Place moderately sized buildings at the street edge, with taller buildings behind or set back to enable higher-density development that maintains a human scale frontage for pedestrians.



create seamless integration

The transit-related urban realm should be integrated into its surroundings and serve its users' everyday needs. A context sensitive urban realm will deliberately shape and animate the local development area and its transit facilities.

INTEGRATE WITH CONTEXT

- Design the urban realm and its related transit facilities to respect the local context, respond to community objectives, and be appropriate to the character and topography of the site.
- Consider issues of layout, scale, proportion and massing, natural features, and hard and soft landscaping.
- Design amenities and spaces to be fully integrated with the surrounding development and buildings and to be adaptable, comfortable, universally accessible, and safe and easy to use.
- Orient buildings and maintain sightlines to key local landmarks or natural features to help in passenger orientation and wayfinding.
- Integrate public spaces and activities into existing circulation routes, open space, and natural and ecological features.
- Coordinate the use of materials and surfaces to be consistent, where appropriate, with those of their context.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Orient buildings and public spaces to take advantage of desirable sightlines and features, such as local drainage ways and the mountains.



community placemaking

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider street classifications to promote more pedestrian-friendly roadways in the station area.
- Work with the local bicycle advocacy community and with other governments such as Adams County to optimize connections to local and regional bicycle facilities.
- Establish a task force of local businesses to discuss service delivery requirements and, if needed, develop new standards for the station area.
- Coordinate with local fire and police departments to accommodate emergency access while still promoting pedestrian-friendly street design.

CREATE AN INTERCONNECTED STREET NETWORK

- Prioritize and balance access by mode, giving top priority to pedestrians and cyclists.
- Design access for pedestrians with high-quality sidewalks, direct connections, and sightlines to the transit facility and key public spaces.
- Prioritize pedestrian movements in and around transit facilities and public spaces by providing continuity between buildings and adjacent sidewalks and by incorporating traffic-calming measures such as widening pedestrian 'bulges' at intersections.
- Design access for cyclists with direct connections to surrounding bicycle routes and convenient location of bicycle parking, both near the transit facility and throughout the development.
- Design service and delivery access for facilities to be consistent with adjacent developments, including deliveries to transit facilities and adjacent retailers and offices.



INCORPORATE A MIX OF PEDESTRIAN-FRIENDLY LAND USES

- Identify building types, forms, and densities that accommodate a range of transit-supportive uses and activities, including residential, commercial, office, and ground-level retail shops and services that support surrounding neighborhood needs.
- Design transit facility building or landmark height (if appropriate) to increase transit visibility from the surrounding neighborhoods and major roadways to mark the location as a focus of activity.
- Design the transit facility and its surrounding public realm to provide a high level of pedestrian comfort on all adjacent streets, considering sidewalk capacity, frontage definition, furnishings, and sidewalk edge zones, as well as buffers from vehicle traffic through the use of on-street parking or a continuous landscaping strip.
- Provide for high-quality landscaping throughout the transit facility and adjacent urban realm, including lighting and weather protection throughout, and integrating transit and street infrastructure where possible and appropriate to minimize clutter.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider amending zoning, if necessary, to accommodate taller buildings where appropriate in new development around the station.
- Work with RTD to ensure incorporation of a signature “landmark” design element or structure in the regional transportation center to maximize transit visibility in the area.
- Review and, if needed, consider amending and strengthening landscaping requirements for new development.



OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Periodically review and, if appropriate, modify or update local zoning ordinances to accommodate new development trends and standards.
- Work with developers to optimize TOD street layout to maximize connectivity between developments and the RTD station.

CREATE APPROPRIATE BUILDING FORM AND ORIENTATION

- Use building setbacks to define a comfortable public realm.
- Place moderately sized buildings at the street edge, with taller buildings behind or set back to enable higher-density development that maintains a human scale frontage for pedestrians.
- Design buildings with setbacks, articulation, and materials to minimize massing and break down the scale of buildings to a pedestrian level while providing visual interest from the street.
- Orient buildings toward the street and maintain sightlines toward local landmarks and public spaces to reinforce identity and help with wayfinding.
- Place off-street parking out of sight from the street or wrapped in appropriate active uses.
- Encourage mixed-use with commercial space on the ground floor with residential above to support pedestrian activity and create a lively streetscape.
- Encourage windows and transparency in storefronts to create visual interest for pedestrians.
- Create frequent entry points to buildings so that pedestrians have numerous opportunities to enter and exit.
- Minimize curb cuts and parking garage portals, and locate parking entrances to the rear or sides of buildings.



other strategies to increase density

Building height, mass, and form are not the only ways to increase density. Other strategies for increasing density involve the more efficient use of land near transit facilities.

USE LAND EFFICIENTLY

- Design road widths only as needed to meet vehicle and transit circulation needs and instead leave as much developable land – and land devoted to pedestrian and bicycle facilities – as possible.
- Use parking management and other Transportation Demand Management (TDM) measures to reduce auto demand, thereby reducing the need for wide road cross-sections.
- Promote shared parking for joint residential-commercial use to reduce the land needed for parking facilities.
- Manage off-street parking efficiently to provide additional land and floor space for a good land use mix.
- Focus smaller housing units near transit facilities or frequent transit routes to encourage higher densities and increase housing affordability near transit.
- Focus affordable housing development near transit facilities and frequent transit routes to increase both mobility for those residents and overall transit ridership.
- Explore joint development opportunities in parking lots or other transit investments to increase density near transit facilities.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider development of a comprehensive parking management policy and program in Northglenn and apply the recommended parking strategies of Thornton’s Parking Management Study to the Thornton portion of the station area.
- Work with local fire and police departments to ensure emergency vehicle access while maintaining pedestrian-friendly roadway design.
- Work with RTD to explore, if appropriate, joint development opportunities at the regional transportation center.
- Work with local affordable housing agencies to integrate affordable housing into the station area redevelopment at appropriate levels.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with RTD, DRCOG, non-profits, and the development community to develop partnerships for land banking or other advanced land acquisition programs.
- Identify vacant or underutilized parcels that could be marketed to developers.

FIND OPPORTUNITY SITES

- Explore land banking or early purchase or acquisition of available parcels near transit facilities to prevent speculative price escalation and allow resale at cost to developers.
- Identify vacant and underutilized parcels near transit facilities or along frequent transit routes that are appropriate for development and work with the developer community to preserve them for future high-density development.
- Identify and acquire existing surface parking lots near transit facilities or along high-frequency transit routes that could be redeveloped, reducing parking supply and promoting more transit use.



create appropriate densities and land use mixes

CREATE DENSITY THAT SUPPORTS COMMUNITY CHARACTER AND PROMOTES COMMUNITY VALUES

As new development occurs near transit facilities, it should be well integrated into the existing character of the community and meet key community needs.

- Design buildings to be compatible with existing structures and architectural and historical themes.
- Prioritize the highest density close to the transit facility or high-frequency transit corridors.
- Locate housing and other services for seniors and persons with disabilities as close to transit facilities as possible.
- Utilize a mix of land uses to reflect the character of the area while also encouraging uses that support two-way transit demand.
- Promote density near transit facilities and high-frequency transit corridors that is focused on family needs, including larger units in multi-family housing and mixed-use development that includes child-care facilities, parks and open space, and schools.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a community placemaking committee to develop and periodically review design elements for the station area within the jurisdiction(s) where the committee is formed.
- Work with local affordable housing agencies to locate housing for seniors and persons with disabilities near the station and near other key elements of the urban realm.



OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Ensure local codes and regulations allow for expanded streetside dining at restaurants (such as 'community patios' in parking spaces).
- Consider marketing the station area for a new small-footprint grocery store to provide local amenities for current and future residents and workers and to further increase visibility of the station area.

ENCOURAGE AN APPROPRIATE LAND USE MIX ADJACENT TO TRANSIT

Providing essential retail and other community services near transit facilities or along high-frequency transit corridors can promote local business opportunities and can help create a lively street environment and a safe and secure public realm.

- Encourage the development of retail and other service uses close to transit facilities and corridors to ensure that the daily needs of life for transit users are met.
- Encourage active uses such as restaurants and retail on the ground floor facing the street to promote a safe and lively environment for transit users.
- Encourage a diverse mix of land uses that are active at different times of day to encourage a vibrant pedestrian environment and to maintain informal surveillance and security at all hours.
- Encourage the location of grocery stores – large or small – near transit facilities or near major transit corridors or nodes to promote combined transit-shopping trips and walkability.



CREATE COMPLETE NEIGHBORHOODS BY ENCOURAGING A MIX OF USES NEAR TRANSIT

Throughout the TOD influence area (roughly ¼ to ½ mile from the transit facility), encouraging a diverse mix of land uses – including residential, commercial, recreational, and civic – can help create complete neighborhoods where all activities – home, work, shopping, recreation, and transit – are within walking distance. This focus helps increase transit ridership and reduce vehicle miles traveled and related greenhouse gases.

- Encourage a good mix of housing and employment types in transit neighborhoods to reduce or eliminate commuting for local residents.
- Encourage a mix of retail and commercial uses to allow residents, local employees, and visitors to have access to services within walking distance of transit.
- Encourage higher density office uses as close to transit facilities or high-frequency transit corridors as possible to increase transit ridership.
- Locate schools (including community colleges and universities) as close to transit facilities or high-frequency transit corridors as possible to provide convenient access for students.
- Invest in a high-quality urban realm and public spaces within walking distance of transit to provide access to open and green space and recreational opportunities for residents, employees, and visitors.
- Orient ground-floor uses toward transit facilities or high-frequency transit corridors to reduce walking distances between transit and those uses.
- Discourage lower-density and/or auto-oriented uses (including gas stations, warehouses, storage facilities, auto repair shops, and drive-through facilities) near transit facilities, corridors, or nodes.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Focus on office development or other employment-based development (if feasible and supported by market conditions) to ensure that the station area is a ‘destination’ and not just an ‘origin.’
- Work with the development community to attract medium-to-large-scale employer campus-type developments such as educational institutions or health care facilities to the station area (if feasible and supported by market conditions).
- Encourage existing businesses in the study area to stay where appropriate and provide opportunities to integrate them into the new developments.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with the local development community to find opportunities for locating visitor attractions near major nodes and travel corridors.

PROVIDE A MIX OF USES ALONG TRANSIT CORRIDORS TO REDUCE PEAK HOUR CONGESTION AND SPREAD TRAVEL DEMAND

A diversity of land use mixes in high-frequency transit corridors can help balance the timing and directionality of transit demand, allowing more effective utilization of transit capacity and operations.

- Encourage a good mix of residential and employment uses at various points along a corridor (focused primarily on key transit stops) to encourage bi-directional travel demand, especially during peak periods.
- Encourage a mix of land uses including retail, entertainment, and visitor attractions at multiple locations along transit corridors to serve and encourage mid-day and weekend transit usage.
- Locate major trip generating activities (such as shopping centers) at either end of frequent transit corridors to act as anchors and promote transit ridership throughout the day.



PROVIDE A MIX OF HOUSING TO CREATE INCLUSIVE COMMUNITIES NEAR TRANSIT FACILITIES AND CORRIDORS

A mix of housing types near transit facilities and along transit corridors that is focused on providing a variety of affordability levels can help promote access for the transit-dependent. An appropriate housing mix also can help provide residential development to serve people at all stages of their lives, including students, single adults, couples with or without children, and seniors aging in place. Diverse residential populations support good transit use and provide activity around transit facilities and along corridors at all times of day.

- Encourage a mix of affordable housing close to transit facilities and corridors.
- Encourage a mix of residential unit sizes and pricing levels to encourage a diversity of residents near transit.
- Encourage a mix of for-sale and rental housing near transit to promote diversity.
- Encourage the placement of affordable and senior housing near transit to provide transit access for those residents.
- Increase the amount of residential development near transit facilities and corridors to allow more families and individuals to live near transit and lessen the need for a private auto.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with local affordable housing agencies to integrate affordable housing into the station area as close to the station as possible.
- Work with the development community to determine the proper mix of housing types at targeted locations throughout the station area.



usability

make it easy

The design of internal and external spaces in the transit-related public realm should be legible and intuitive, with direct and convenient routes located along natural desire lines. An integrated and coordinated system of signage, user information, lighting, and identity will create easily understood environments that prioritize user needs.

ENCOURAGE EASY MOVEMENT AND CAPACITY

A transit facility and its related urban realm are dynamic environments, involving movement and potential conflicts between all users. Spaces should be logical and optimally designed to minimize conflict now and in the future.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a community placemaking committee or other appropriate body to conduct a high-level analysis of user movement throughout the station area as it develops, identifying key pedestrian travel patterns and potential conflicts.
- Work with RTD to maximize user convenience throughout the design of the station.
- Work with the local bicycle advocacy community to optimize bicycle flow and access throughout the station area.

- Establish the capacity, configuration, and sequence of spaces at transit facilities and the related urban realm to support predicted user movements by all modes.
- Identify internal and external origins and destinations and levels of demand.
- Provide sufficient space and capacity to avoid bottlenecks and to enable pedestrians to move against the predominant flow at peak times.
- Provide separate passageways or routes for pedestrians if needed to accommodate peak loads.
- Locate and size transit facility fare machines and passenger information and waiting areas to minimize conflict for arriving and departing users and to provide logical accessibility (for example, provide ticket vending and validation machines at multiple key entrance locations).
- Locate transit access locations (including neighborhood bus stops) to prevent conflicts with other pedestrians and bicyclists by avoiding insufficient waiting or queuing space or restricted sightlines.
- Locate bicycle parking, kiss-and-ride, and other mode access points (such as taxi stalls) on desire lines as close as possible to transit passenger facility entrances, but not in locations that obstruct pedestrian movements.

- Provide convenient and clearly marked paths between bicycle parking and bicycle access points at the perimeter of transit facilities or public spaces.

CREATE LEGIBLE AND INTUITIVE SPACES

Legible spaces are those where navigation and movement are intuitive, allowing users to orient themselves and reach their destinations without the need for excessive directional signage. Legible spaces help to make movement easy and reduce anxiety in users caused by uncertainty in complex or unfamiliar environments.

- Orient primary entrances and exits of facilities or public spaces towards intermodal connections.
- Minimize visual obstructions to provide easy access and movement through the physical layout of transit facilities and public spaces and their surrounding streets and pathways.
- Optimize sightlines within transit facilities and public spaces of their surrounding context, especially at intermodal connection areas, through good architectural design and maximum use of transparent materials.
- Identify opportunities to integrate transit and urban realm infrastructure to coordinate street furnishings, assisting in legibility and security while enhancing the sense of place and minimizing clutter.
- Adopt a consistent and integrated palette of colors, materials, and surface treatments to create coherence within the transit facility and public spaces in the urban realm and to foster a distinctive sense of identity.
- Design transit facility and public space elements (such as canopies and entrances) to integrate vegetation and landscaping to define legible and memorable spaces within and around the facility or space.
- Establish clearly defined edges and transitions within and around transit facilities and public spaces through the use of distinct materials, finishes, and landscape elements.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with RTD to integrate user furnishing designs with that of the surrounding urban realm.
- Work with RTD to maximize public space elements in the design of the station.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a community placemaking committee or other appropriate body to develop wayfinding standards for the station and its adjacent public realm within the jurisdiction(s) where the committee is formed.
- Conduct a 'best practices' analysis of wayfinding programs used in other cities.
- Modify local ordinances as needed to enhance wayfinding requirements.

Key wayfinding principles:

- Provide seamless information
- Understand complex trips and trip combinations
- Be predictable
- Name the places
- Utilize consistent terminology
- Progressively disclose information
- Don't make the user think too much
- Provide just the right amount of information
- Ensure accuracy of information
- Help users to learn
- Use an appropriate tone of language

DEVELOP LEGIBLE AND CONSISTENT WAYFINDING AND USER INFORMATION

Wayfinding is more than merely signage. It is a system of information elements that support movement at all stages of a journey. Effective wayfinding information will help users to have a positive, stress-free experience. Successful wayfinding strategies integrate and utilize signage, spatial planning, lighting, structural elements, and surface finishes alongside other building elements to create a coherent whole, thereby communicating clear and consistent messages and directions throughout the urban realm.

- Closely integrate wayfinding and user information needs with transit facility and urban realm design during the earliest stages of development
- Consider the requirement for the preparation of Wayfinding Plans as part of any development review process. Those plans should identify a movement strategy (showing how information is disclosed through various zones of a transit facility or public space), a signage typology, and a location plan.
- Integrate design and placement of wayfinding with lighting design and placement and surface material selection.
- Effectively use both static and real-time wayfinding and signage as appropriate.
- Consider the establishment of a community working group to examine wayfinding and signage needs and to ensure effective and convenient connections to surrounding neighborhoods and recreational facilities.



make it universally accessible

The transit-related urban realm should be designed to provide convenient mobility and to minimize inconvenience and discrimination for all users, including those with reduced mobility. Universal accessibility allows all people – including the elderly, the visually or mobility impaired, people with strollers or young children, or those with heavy or bulk luggage, shopping carts, or bicycles - to enjoy convenient and barrier-free access to public transit and public spaces. Obviously, Americans with Disability Act (ADA) requirements must be followed, but additional measures can be taken to improve accessibility.

PROVIDE PHYSICAL ACCESSIBILITY

- Design transit facilities and public spaces with the minimum number of levels possible; where grade change is unavoidable, provide escalators, elevators, or ramps as appropriate.
- Provide step-free and obstacle-free access to transit and other intermodal vehicles.
- Provide effective wayfinding to clearly distinguish step-free routes from the main pedestrian flow.
- Provide dropped curbs and tactile surfacing at all street or guideway crossings, consistent with municipal street design standards.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with RTD to ensure that consideration of the needs of persons with disabilities are taken into account at all stages of design, including integration with the adjacent public realm.
- Work with developers to ensure maximum consideration of design standards for persons with disabilities throughout the urban realm.
- Periodically review local standards and policies from a strategic viewpoint to ensure maximum consideration and implementation of design standards for universal access.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a community placemaking committee or other appropriate body to develop wayfinding standards for the station and its adjacent public realm within the jurisdiction(s) where the committee is formed, with a major focus on maximizing universal access.
- Modify local policies or standards as appropriate to maximize universal access design and related wayfinding.

PROVIDE ACCESSIBLE INFORMATION

- Provide real-time transit user or public space user information on both audio and visual formats.
- Provide customer help telephones throughout the transit facility and public space with clear and legible signage.
- Use large fonts and high-contrast colors on signage and wayfinding.
- Develop signage and wayfinding that considers appropriate cultural and language differences, and cognitive, visual, and mobility impairments.
- Use symbols, color coding, and other elements of non-language-based intuitive design where possible.



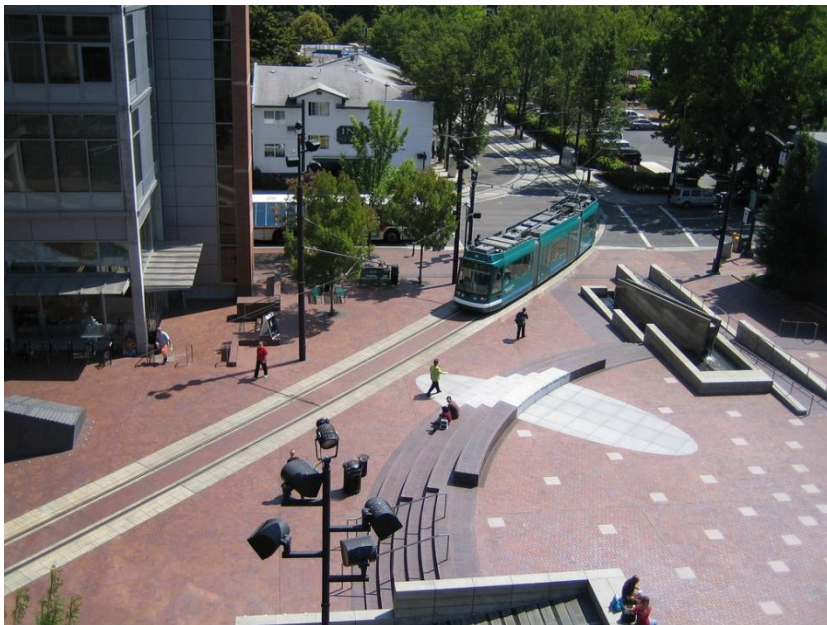
make it safe and secure

DESIGN A SAFE ENVIRONMENT

- Design roadways and pathways to minimize conflicts and crossing flows between and among pedestrians and transit vehicles, autos, and bicycles.
- Carefully locate all street furniture and other amenities and infrastructure – including temporary signs, public art, retail kiosks, and newspaper vending machines – to minimize obstruction and maximize the use of available space.
- Use anti-slip textures in pedestrian pathways consistent with local design standards.
- Use high-contrast finishes to identify hazards such as ramps, platform edges, and changes of grade.
- Design for low speed limits for vehicles in areas where the potential for conflicts with pedestrians and bicyclists are highest.
- Design spaces to enable safe pedestrian and bicyclist movement without the need for barriers or fences.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Develop a strategic mobility and access plan to coordinate roadway design around the station and throughout the station area to promote maximum pedestrian access and safety.
- Establish a community placemaking committee or other local entity to periodically review roadway design standards within the jurisdiction(s) where the committee is formed to maximize user safety throughout the urban realm.



OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a community placemaking committee or other appropriate local body to periodically review design standards within the jurisdiction(s) where the committee is formed to ensure maximum public-safety-focused design.
- Work with RTD to develop a strategic approach to public safety within and around the station.
- Work with local police departments to consider placement of a police facility within the development area if appropriate and to ensure appropriate patrolling of the neighborhoods around the station.

DESIGN A SECURE ENVIRONMENT

Good transit facilities and public spaces can help deter crime through the increase of activity – more people means more ‘eyes on the street.’

- Coordinate with local law enforcement personnel to develop and review effective secure design principles.
- Maximize visibility and views to and from passenger facilities and other public spaces and their surroundings.
- Design high-quality streetscapes with wide sidewalks adjacent to transit facilities and public spaces to encourage active use.
- Orient doors and windows of surrounding buildings towards transit facilities and public spaces to encourage natural surveillance.
- Avoid locating transit facilities and public spaces to the rear of surrounding developments so that transit users do not feel isolated from the rest of the local community.
- Use transparent materials where possible and avoid designing blind corners, recesses, and other places where people are unobserved.
- Locate staff facilities, information kiosks, ticket machines, and other key public access points in high visibility areas.
- Design and locate elevator lobbies, stairway or ramp landings, and passenger and user waiting areas in central, high visibility locations to enable natural surveillance.
- Clearly identify Designated Waiting Areas, emergency telephones, and other help points.
- Provide uniform lighting that eliminates dark areas, with entrances well-lit at all times.
- Vary staffing of facilities throughout the day to offer the greatest amount of coverage.
- Use visible crime prevention elements such as posting information on security cameras and emergency telephones.
- Consider locating public safety branch offices or facilities within the transit facility or public space.
- Place security cameras to allow clear, uninterrupted views of all public areas (internal and external to transit facilities and public spaces).
- Incorporate security camera location points in the design of the facility and public space, both to give the user a feeling of security and also to avoid obstructing sightlines to user information and signage.

PROVIDE HIGH-QUALITY LIGHTING

Lighting plays a key role in creating safe and pleasant environments for users of transit facilities and public spaces. Lighting that is appropriate to location and function will result in increased safety, legibility, accessibility, ambience, and overall public satisfaction. Carefully planned lighting will make orientation intuitive and the urban realm easy to use and navigate.

- Develop a coordinated lighting strategy early in the design process.
- Maintain lighting consistency throughout transit facilities and public spaces to prevent potential dark corners and prevent vandalism.
- Consider the use of motion sensors, automated time controls, photocells, and other devices to manage light levels and reduce energy consumption and operating costs.
- Include feature lighting in the transit facility and public spaces to enhance the sense of place and add enjoyment to the use of the areas.
- Develop ‘daylighting’ strategies at the planning and design stage to orient windows and buildings, assist with location of windows, and to integrate natural light where possible to maximize energy savings.
- Design transition zones and other areas with significantly different lighting levels and needs to facilitate the use of both natural and electric lighting.
- Use high light-reflective materials to improve brightness and diffusion and to minimize light absorption to reduce the amount of lighting and energy required.
- Design building exterior lighting according to its local context, with light levels appropriate to the needs of the facility or public space.
- Establish a lighting strategy to reduce non-essential exterior lighting after hours to reduce energy consumption and costs.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a local placemaking committee or other local entity to periodically review lighting design standards throughout the urban realm of the jurisdiction(s) where the committee is formed.
- Work with RTD to coordinate design and placement of lighting in the station with that of the surrounding urban realm.

make it comfortable

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a local placemaking committee or other appropriate local body to develop a strategic plan for ensuring weather protection elements in urban realm design for the jurisdiction(s) where the committee is formed.
- Work with RTD to coordinate the design of weather protection measures in the station with those of the surrounding urban realm.

DESIGN FOR WEATHER AND SENSORY PROTECTION

Users of transit facilities and public spaces should feel comfortable in all environments, indoors and outdoors. All-weather protection should be combined with appropriate lighting, heating, and ventilation.

- Design transit facilities and public spaces to ensure that users have the opportunity for protection from the full range of weather conditions.
- Provide as much continuous coverage from the elements as possible for transit users connecting between modes and services.
- Design indoor and outdoor spaces to maximize the thermal comfort of users through the integrated use of canopies, overhangs, awnings, and landscape elements in all designs.
- Use passive cooling and heating design strategies to maximize the comfort of users.
- Apply noise reduction techniques to minimize ambient noise, provide for comfortable conversations, and allow for transit facility announcements.



PROVIDE USER AMENITIES

Amenities are features that enhance user comfort, convenience, and pleasure in the urban realm environment. Amenities in transit facilities and public spaces will encourage activities at all hours, providing informal surveillance and security.

- Incorporate the inclusion of amenities early in the planning and design process.
- Consider public art opportunities and integrate art in the design and construction process.
- Design amenities and related activities and spaces to be sustainable, coordinated, and shared between the transit facility and public spaces.
- Provide for a mix of ancillary activities and features that will animate spaces at all hours.
- Use street trees and landscaping to provide shade, improve air quality, alleviate heat island effects, provide natural stormwater management, and provide wildlife habitat.
- Use street trees and landscaping to create a visual buffer between roadways and sidewalks and provide a sense of enclosure and comfort for pedestrians.
- Use landscaping to delineate edges and boundaries of uses.
- Use heat- and drought-tolerant landscaping to reduce landscaping costs.
- Select and locate street trees to minimize sidewalk maintenance and root damage.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Establish a community placemaking committee or other local entity to develop a strategic approach to creating standards for user amenities in the urban realm within the jurisdiction(s) where the committee is formed.
- Work with RTD to coordinate design elements of amenities in the station with the adjacent urban realm.

Examples of amenities for transit facilities and public spaces:

- Public art
- Retail, food, and leisure amenities (including kiosks or food carts)
- Clocks
- Telephones
- Waste and recycling bins
- Seating
- Cash machines
- Landscaping
- Information stations and kiosks
- Lighting



mobility

The transit-related urban realm focuses on the mobility needs of its internal users (residents, employees, visitors) and its external users (those who pass through the urban realm on their way to other neighborhoods or destinations). It provides maximum opportunity for accessing all transportation modes, creates friendly environments for pedestrians and bicyclists, provides maximum access to transit, and manages parking. It also works in concert with the transit providers to thoroughly integrate transit with all aspects of urban design to provide convenient connections to the rest of Northglenn and Thornton and the entire region.

Mobility guidelines are divided into two categories: **circulation** and **efficiency**.



circulation

provide well-connected streets

A well-designed transit-focused urban realm benefits from a dense, understandable, and walkable network of streets, sidewalks, and paths. That pattern of relatively small blocks and well-connected streets provides direct routes for pedestrians and bicyclists and extends the reach of transit and other alternative modes. A good street network helps close the gap between destinations and brings origins and destinations closer to everyday activities.

PROVIDE A FINE-GRAINED STREET NETWORK

- Design blocks to create a connected street grid that minimizes travel distances.
- Ensure that new internal streets are well-connected to the existing street network.
- Avoid cul-de-sacs or dead ends.
- Ensure that new streets meet the needs of all users, including bicycles, pedestrians, autos, transit vehicles, delivery trucks, and emergency vehicles.
- Provide new multi-use paths to add permeability and access to existing streets and long blocks.
- Consider breaking up large blocks into smaller, more walkable blocks by adding alleys or new streets mid-block.
- Where appropriate, designate a network of arterial streets in new developments to connect major destinations and provide direct paths of travel for transit, autos, bicycles, and pedestrians.
- Provide multiple, well-spaced, and well-connected arterial streets to avoid concentrating vehicular traffic on only a few main streets.
- Consider development of a new street hierarchy that prioritizes multi-modal uses instead of traditional street classifications.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider re-evaluation of local street hierarchies to ensure the ability to implement pedestrian-friendly roadways in the station area.
- Work with local fire and police departments to ensure emergency vehicle access while maintaining a pedestrian-friendly roadway network.

PROVIDE DIRECT ACCESS TO TRANSIT FOR BICYCLISTS AND PEDESTRIANS

- Provide direct, safe, well-designed pedestrian and bicycle facilities to and from transit facilities.
- Add new transit stops within new development in the most convenient, user-friendly locations possible.
- Provide the highest residential and employment densities along frequent transit routes to minimize transit user access distances.
- Locate transit passenger facilities and stops at intersecting transit routes as close as possible to minimize walking distances for users.
- Provide safe pedestrian crossings – using traffic controls where needed – near transit stops.
- Work with developers to use building orientation or other architectural strategies to integrate transit and bicycle access or stops into building design, improve the visibility and legibility of access to transit stops, and use distinctive wayfinding and other tools to improve access to transit.
- Provide bicycle parking facilities at key locations in and around transit facilities, and provide for expandability as needed.
- Locate bicycle parking as close as possible to transit facilities and stops and buildings in the urban realm to promote safety and security, without obstructing pedestrian flow.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with the local bicycle advocacy community to strategically re-evaluate bicycle connectivity in the station area.
- Work with RTD to strategically re-evaluate transit stops within the station area as it redevelops.
- Work with the development community to ensure integration of transit and bicycle facilities into building design and the design of the adjacent urban realm.



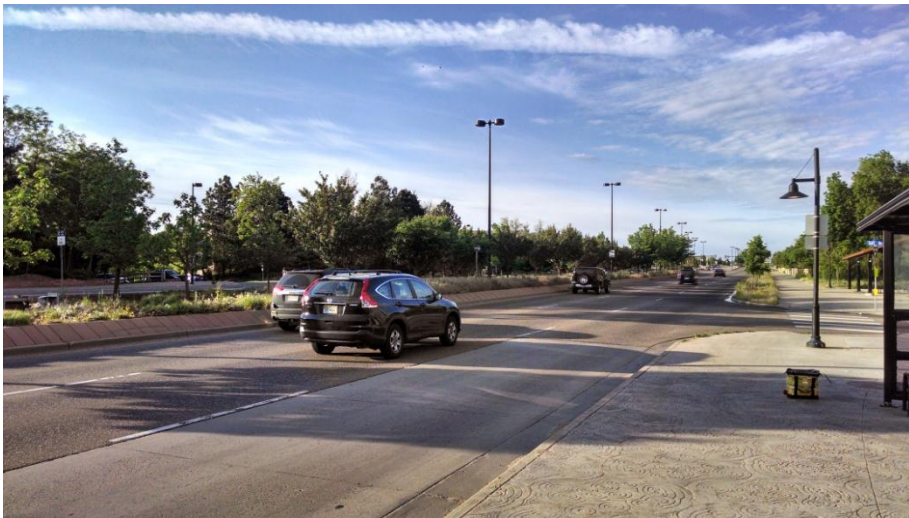
OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider re-evaluation of local street hierarchies to ensure the ability to implement pedestrian-friendly roadways in the station area.
- Work with local fire and police departments to ensure emergency vehicle access while maintaining a pedestrian-friendly roadway network.
- Work with the local bicycle advocacy community to periodically undertake a strategic re-evaluation of bicycle facilities and access throughout the station area.

PROVIDE COMPLETE STREETS

- Designate a well-connected network of bicycle lanes, paths, and connections that provide direct connections to transit and other public spaces in the urban realm and that provide convenient and direct connections to other regional facilities.
- On streets with low auto traffic volumes, consider designating bicycle priority streets, bicycle boulevards, or neighborhood bicycle greenways.
- Provide a network of off-street bicycle and pedestrian pathways throughout the urban realm. Where high volumes of both bicycles and pedestrians are anticipated, consider providing separate designated 'lanes' for each to increase safety.
- Where bicycle lanes are on streets, provide separate buffered bicycle lanes where appropriate, especially in high-volume traffic areas. Use raised curbs, bollards, landscaping, or planters to designate the bicycle lanes. Ensure sufficient width for either one-way or two-way bicycle lanes.
- Where separate bicycle facilities are not appropriate, use on-road markings to designate a bicycle lane or a shared road facility. If separate lanes are provided, use solid-colored pavement to distinguish the lanes from auto lanes.
- If head-in parking is allowed adjacent to bicycle lanes, stripe it for angled parking to increase bicycle visibility for autos.
- Where appropriate, provide 'bike boxes' at high volume intersections to improve bicycle safety.
- Where appropriate, provide separate traffic control cycles for bicycles at high-volume intersections or crossings.
- Provide bicycle parking facilities throughout the urban realm, and provide for expandability as needed.
- Consider reducing auto parking ratios in exchange for increases in bicycle parking in the urban realm.
- Where appropriate, expand pedestrian crossing areas by extending sidewalks or extending curbs into parking lanes at intersections, transit stops, or mid-block crossings to improve pedestrian safety.
- Where appropriate, use chicanes (alternating mid-block curb extensions) on local, low-volume streets to slow traffic.
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- Provide closely-spaced pedestrian crossings (including mid-block crossings where appropriate) to promote walkability and traffic calming.
- Provide traffic controls where necessary to allow safe pedestrian and bicycle crossings.
- Consider providing head-start pedestrian signals at intersections with high volumes of turning traffic
- On high-volume streets, consider providing medians and pedestrian refuge islands for safety.
- Add landscaping to medians and refuges where appropriate to improve the urban realm while still allowing sightlines for pedestrians.



parking

The effective management of parking is one of the best tools available to encourage a shift away from single-occupant autos and toward transit, bicycling, and walking.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider periodic re-evaluation of local parking standards to more effectively manage parking in the development area.
- Work local interest and business groups to strategically examine parking management in the development area.
- Apply the findings and recommended parking strategies of Thornton’s Parking Management Study to the portion of the station area in Thornton.

ON-STREET PARKING

- Where appropriate, locate on-street parking to help buffer pedestrians from traffic and create a more pleasant pedestrian environment.
- Ensure that on-street parking does not block bicycle, pedestrian, or motor vehicle sightlines and that it does not interfere with transit operations.
- Consider ‘re-purposing’ some on-street parking by converting spaces to additional space for restaurant/café seating, bicycle parking, landscaping, stormwater management, and traffic calming.
- If possible, utilize off-street commercial loading (on low-volume side streets or in alleys) to reduce the demand for curbside commercial loading.



OFF-STREET PARKING

- Consider reducing or eliminating minimum parking requirements for new developments with good transit access.
- Provide shared parking facilities for uses with different peak demand periods.
- Place off-street parking out of sight from the street or wrapped in appropriate active uses.
- Consider screening at-grade parking lots with landscaping or other architectural elements to reduce their visual impact, while also ensuring that the screening does not create a safety hazard.
- Establish maximum driveway widths to minimize impacts on sidewalks, slow traffic, and improve pedestrian safety.
- Orient parking garage access to side streets or alleys to reduce the potential for pedestrian-auto conflicts.
- Break up large areas of surface parking through landscaping and other means to promote visual interest and improve the pedestrian experience.
- Break up large areas of surface transit parking into smaller decentralized 'pods' to provide more visual interest and free up land for development near transit.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with RTD to examine the potential for future shared parking as parking needs increase.
- Work with the development community to ensure the use of best practices for off-street parking.



OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with local business groups to develop a coordinated parking strategy in conjunction with the remainder of the area.
- Work with developers to determine the potential for ‘unbundling’ parking costs in new developments.
- Apply the findings and recommended parking strategies of Thornton’s Parking Management Study to the portion of the station area in Thornton.

PARKING MANAGEMENT

- Consider implementing market-based parking pricing strategies to help ensure an appropriate rate of on-street parking vacancies per block.
- Manage overflow parking at transit facilities and other major destinations through parking restrictions and pricing mechanisms.
- Consider reducing auto parking ratios in exchange for increases in bicycle parking in the urban realm.
- If needed, consider using residential permit parking programs to discourage spillover transit parking into adjacent neighborhoods.
- Use time-limited parking in lower-demand commercial zones to encourage parking space turnover.
- Encourage the establishment of hourly or daily parking rates for paid parking lots or structures instead of allowing monthly or annual passes.
- Consider providing transit passes to local employees to reduce parking demand in new development areas.
- Consider providing incentives to developers including reduced development fees or an expedited approval process for proposed developments that may include reduced parking or that encourage use of TDM measures.
- Consider requiring developers and property managers to ‘unbundle’ (or separate) the cost of parking from residential properties, rental housing, and commercial leases to give residents the option to not pay for a parking space and encourage the use of transit or other modes.

TDM

If designed and implemented well, Transportation Demand Management (TDM) measures can encourage the use of transit and alternative modes for local employees and residents. Northglenn and Thornton are both members of the Smart Commute Metro North (SCMN) Transportation Management Association (TMA) that could establish TDM strategies for the Northglenn at 112th Station area. Northglenn and Thornton could utilize SCMN to examine many of the following TDM options.

PROVIDE INFORMATION AND INCENTIVES

- Encourage employers to provide free transit passes.
- Consider using parking fees to help fund incentives for using alternative modes such as transit passes.
- Encourage employers to provide prizes and rewards to employees who use alternative modes.
- Work with employers to establish ride-share programs.
- Encourage developers and employers to provide priority parking and reduced parking fees for carpools.
- Encourage employers to offer flexible work hours, compressed work weeks, or telecommuting to reduce single-occupant auto demand in new developments.
- Encourage employers and developers to provide on-site employee amenities such as day care, drugstores, coffee shops, fitness centers, dry cleaners, post offices, and other facilities to reduce the need for mid-day vehicle trips.
- Promote and subsidize the implementation of car-sharing programs near residential and employment developments by providing car-sharing companies with reduced off-street parking costs, reserving a number of on-street parking spaces for car-sharing, and reducing development fees or minimum parking requirements for new developments that provide car-sharing facilities on-site.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- As member governments of the Smart Commute Metro North (SCMN) TMA, encourage SCMN to work with local business and community groups to develop a comprehensive and coordinated TDM strategy for the station area.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider amending local ordinances to require some form of transit pass requirement for new developers.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider requiring bicycle design integration in new developments in the station area.
- Be open to proposals for the development of a comprehensive bicycle sharing program that serves the station area.

ENCOURAGE TRANSIT USE

- Require or encourage employers to work with RTD to provide Eco-Passes for all employees.
- Encourage employers to provide transit information (including maps and schedules) as well as information on alternative modes to all employees.
- Encourage developers to provide transit passes for new residents.

ENCOURAGE ALTERNATIVE MODE USE

- Require new residential and employment development to provide secure long-term and short-term bicycle parking.
- Require developers to provide safe and convenient walking and bicycle paths to and from transit facilities and employment and residential development.
- Implement safe routes to schools programs in all new residential developments.
- Promote and consider subsidizing bicycle-sharing programs and facilities near transit and near all major residential and employment developments.



efficiency

facilitate transit operations

IMPROVE TRANSIT FLOW

- Where appropriate, designate transit priority streets or transit-only lanes where appropriate on major arterials to facilitate transit movement through the area.
- Provide signal priority for transit vehicles where appropriate.
- On streets where transit vehicles are operating in mixed-flow traffic adjacent to a parking lane, consider providing sidewalk curb extensions (or bus bulges) to eliminate the need for transit vehicles to pull out of and back into traffic.

IMPROVE TRANSIT OPERATIONS

- Work with RTD to plan transit travel paths to minimize potential conflicts with other road users and pedestrians and cyclists.
- Work with RTD to develop efficient and safe passenger loading areas on new streets throughout the development area.
- Work with RTD to develop appropriate layover areas for transit vehicles while minimizing distances to avoid added travel time and operating costs.
- Require new developers to work with RTD to locate safe, convenient, and efficient transit stop locations.
- Consider providing parking or layover space for transit vehicles as part of a multi-purpose or shared space within the urban realm to promote cost savings and operational efficiency.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with RTD to develop a comprehensive and strategic transit circulation plan to provide both cost-effective transit circulation while maintaining a pedestrian-friendly environment in the station area.



sustainability

Transit facilities and their related urban realm should be designed and constructed to reflect the local community's commitment to environmental and fiscal sustainability. Beyond realizing operational cost savings over the life of an investment, environmentally and fiscally responsible design contributes to the long term economic and physical health and well-being of the local community and its residents, workers, and visitors.

Sustainability guidelines are divided into two categories: **environmental** and **fiscal**.



environmental sustainability

minimize negative environmental impacts

Using environmentally sustainable design and construction practices in the construction and renovation of transit facilities and the urban realm focuses on the long term, from pre-construction through operations and end-of-life-cycle re-use and recycling.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider amending local ordinances to require use of responsible building materials wherever possible in new developments and the related urban realm.
- Work with RTD to integrate the use of responsible building materials in the design and construction of the station wherever possible.

USE MATERIALS RESPONSIBLY

- Use materials that minimize energy, carbon, and water used in the manufacturing process.
- Select locally sourced and manufactured materials, where possible, to reduce transportation-related carbon emissions.
- Use materials that are responsibly extracted or harvested.
- Re-use or salvage demolition-related materials where possible.
- Prioritize post-consumer, recycled materials where possible.
- Avoid use of toxic materials, especially those containing volatile organic compounds.
- Avoid using materials with complicated repair, removal, and disposal requirements.
- Use materials that are weather resistant.
- Consider opportunities to re-use existing structures and site components to reduce demolition waste where feasible.
- Consider modular design and off-site fabrication to further reduce construction waste through more efficient production techniques.
- Use building materials that can be recycled or re-used at the end of their lifespans.
- Design building components to be salvageable or capable of disassembly and recycling to the greatest extent possible.

EXPLORE INNOVATIVE DESIGN AND CONSTRUCTION PRACTICES

- Employ modular and prefabrication methods, where appropriate, to minimize construction waste.
- Optimize the use and adaptation of existing infrastructure and facilities and/or components.
- Size facilities and urban spaces to accommodate changes in capacity needs over time.
- Utilize materials excavated on-site, where possible, instead of transporting them off-site.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with local business and community groups to identify existing buildings and infrastructure that could be integrated into new development and the urban realm.



reduce energy consumption

Transit facilities and their related urban realm should be designed and constructed to minimize energy consumption and prioritize usage of renewable energy sources, reducing their overall environmental impact and greenhouse gas emissions.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Consider amending local ordinances to require use of energy efficient design and alternative energy sources wherever possible in new developments and the related urban realm.
- Work with RTD to maximize the energy efficiency of the design of the station.

MAXIMIZE ENERGY EFFICIENCY

- Plan the size and orientation of facilities and spaces to optimize energy consumption without compromising operational efficiency or the experience of the user.
- Maximize use of building design techniques to harness and re-use solar, wind, and other renewable energy sources wherever possible.
- Use passive heating and cooling strategies, including solar shading and window treatments, to minimize cooling loads where applicable.
- Use intelligent control systems (such as daylighting controls to integrate with electric lighting, and motion sensors for meeting rooms and elevators) to optimize energy use where appropriate.
- Identify prevailing wind patterns during design and explore opportunities to use natural ventilation to replace mechanical cooling or heating indoors.
- Optimize daylighting opportunities to minimize the need for electric light.
- Use only high-energy-efficiency lighting fixtures throughout that are properly shielded to minimize glare. Also consider using yellow or amber lighting that is specified for human and animal nocturnal health.
- Minimize building energy waste through maximum use of insulation, and consider the use of green roofs where possible.
- Use high-reflective surfaces to reduce lighting requirements and energy consumption.

USE RENEWABLE ENERGY THROUGHOUT

- Identify and develop opportunities for on-site solar and wind power generation.
- Identify and develop opportunities to partner with neighboring buildings or facilities to exchange waste heat recovery.
- Provide electric vehicle connections at key locations both at the transit facility and in the urban realm.
- Develop partnerships with local power utility companies to deliver renewable and on-site energy generation.
- Investigate the use of other renewable energy sources, such as ground source heating or cooling and co-generation.



design environmentally healthy sites

Transit facilities and related urban spaces are linked to the local ecosystem and have a responsibility for the well-being of regional watersheds, microclimates, and biological diversity. Disruptions to the health of the air, soil, water and ecosystems within construction sites can have compound effects on the larger ecological network. Well-designed spaces can mitigate those negative impacts and contribute to the overall enhancement of the local ecology.

AVOID URBAN HEAT ISLANDS

- Use high solar reflective materials or green (vegetative) roofing where appropriate.
- Use high solar reflective materials and consider open-grid pavement for paved areas of the site if maintenance such as snow removal is not impacted.
- Maximize site vegetation and shading without compromising visibility, surveillance, or operations and maintenance.



OPTIMIZE WATER USE AND WATER QUALITY

- Design to protect site water quality from contamination during construction and operations.
- Use integrated building and landscape design strategies to manage stormwater on-site, minimizing impervious surfaces and maximizing the natural permeability and filtration of contaminants.
- Explore opportunities to re-use rain water and snow melt for irrigation and non-potable uses on-site.
- Integrate wastewater reclamation systems within site designs.
- Design buildings, infrastructure, and landscape to use on-site stormwater management techniques, including pervious pavements for parking lots and open public surfaces, rain gardens, vegetated roofs, and landscaped filtration areas.
- Design landscapes with appropriate site vegetation and contours to control soil erosion and minimize the need for irrigation.

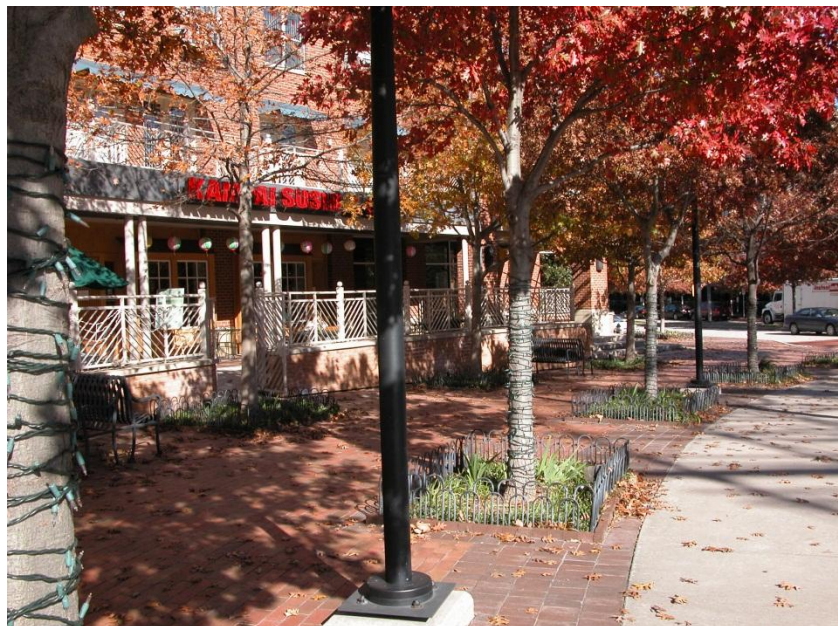
OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Encourage developers to utilize appropriate water-efficient measures in all new developments and the related urban realm.
- Work with RTD to maximize the use of water-efficient design measures in the station.



FOCUS ON SITE ECOLOGY

- Locate new facilities where possible on brownfield sites (if they are found to exist in the station area) to avoid disruption of additional sensitive ecosystems.
- Optimize building, facility, and public space footprints to reduce site impact and protect important environmental sites without compromising operations and maintenance needs.
- Design to control and manage soil erosion during construction and operations.
- Maximize protection of existing vegetation by using water-wise vegetation to enhance the local ecology.
- Design interior and exterior lighting to minimize light pollution on adjacent properties and nocturnal ecosystems. Yellow/amber lighting is better for nocturnal ecosystems than blue/white lighting.



fiscal sustainability

design with whole life costs in mind

Lifetime operating expenses for public investments often exceed the initial costs of construction, and total life-cycle costs can vary greatly depending on the design approach adopted. In many cases, high-quality design and upfront investment can provide future value in the form of operational savings or can add long-term social, commercial, and environmental value.

FOCUS ON LIFE-CYCLE COSTS

- Design for efficient facility planning decisions that allow for future growth but that also optimize future land acquisition costs.
- Site, orient, and design facilities to optimize energy consumption without compromising operational efficiency or the experience of the user.
- Conduct a life-cycle cost analysis to help assess the relative merits of design options, including their long-term social, commercial, and environmental value.
- Minimize site disturbance and associated costs by working with existing site configurations to the greatest extent possible.
- Consider strategies for material re-use and recycling in the design, construction, and future disassembly of facilities.
- Budget for future maintenance and eventual replacement costs.

design for efficiency

The design of transit facilities and related urban realm should aim to minimize ongoing maintenance and operations costs as well as consumption of natural and energy resources. Designing with operating costs in mind can yield significant cost and energy savings over a facility's whole life cycle.

DESIGN TO MINIMIZE OPERATING AND MAINTENANCE COSTS

- Plan and design facility configuration and specify materials and equipment to minimize operating costs and facilitate maintenance without loss or reduction of user services.
- Minimize energy consumption and costs through use of passive environmental design strategies as appropriate.
- Use materials and systems with life spans appropriate to their function and application.
- Design for ease of access for cleaning, repair, or replacement of building fixtures and components.
- Design for preventive maintenance for minimal impact to users.
- Use materials and finishes that are vandal- and graffiti-resistant and difficult to deface, damage, or remove.



design for the future

Transit-related urban realm design should consider long-term requirements, anticipating the need for change to minimize the cost of any future expansion, resizing, or reconfiguration that may be needed.

FOCUS ON FUTURE READINESS

- Design the urban realm and its public spaces based on anticipated future use, including spatial requirements for pedestrian and bicycle movement.
- Design for flexibility in relation to adjacent facility expansion and potential alternative uses.
- Design to provide easy access to existing and future external destinations and connections, adjacent development, and other public spaces through forward-thinking urban design and planning, including planning for adapting to new technologies and mobility service delivery methods.

OPPORTUNITIES FOR THE 112TH AVENUE STATION AREA:

- Work with RTD to plan for future station expansion in a way that best utilizes the existing urban realm and minimizes construction disruption.

