Denver Regional Council of Governments

Metro Vision 2030 Plan

Adopted January 19, 2005

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ABSTRACT

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Abstract: Metro Vision 2030 is a long-range plan to manage growth within the Denver area. It addresses development, transportation needs and environmental quality. Bringing communities together to enhance the region's quality of life is the plan's most important goal.

REGIONAL PLAN CERTIFICATION

Pursuant to Sections 30-28-105 through 30-28-110, C.R.S., the Denver Regional Council of Governments (DRCOG) adopted by Resolution No. 1, 2005 (Jan. 19, 2005), this Metro Vision 2030 Plan for the area described in the plan. The plan is part of DRCOG's regional master plan for the Denver region. The plan, as so adopted, supersedes any regional master plan for said area previously adopted by DRCOG.

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INTRODUCTION

What is Metro Vision…and why does it matter?

Ten years ago, a group of local elected officials and business, environmental and civic leaders worked together to help develop a long-range plan for the growth and development of the Denver metropolitan area, known as Metro Vision. The goal of Metro Vision is very simple and of extraordinary importance – to protect the quality of life that makes our region such an attractive place to live and work, and to raise a family. More than 2.6 million people currently live in the nine-county Denver region. By 2030, our population is expected to increase again by nearly 50 percent, to almost 3.9 million.

As one of the nation's most rapidly growing metropolitan areas, the residents of metro Denver face some basic challenges:

- severe traffic congestion that can impede economic development and job creation,
- concerns about air quality, and water supply and quality,
- the burden on taxpayers of paying for the new facilities and services (such as roads, water and sewer, drainage, schools, and police and fire protection) that must accompany new growth, and
- the preservation of adequate parks and open space for current and future generations.

The Board members of the Denver Regional Council of Governments (DRCOG), representing 51 municipalities and counties, adopted the first Metro Vision plan in 1997. In 2001, an effort began to update Metro Vision to extend the planning period from 2020 to

2030. This draft Metro Vision 2030 plan outlines long-term goals for the region in three key areas: growth and development, transportation and the environment.

With an active commitment from political, business and civic leaders and residents throughout our region to *implement* Metro Vision, we can ensure that metropolitan Denver retains the very qualities that we cherish – natural beauty, economic vitality, cultural heritage, optimism and a sense of opportunity.

Key principles

Key principles guided both the development of the original Metro Vision plan and its update.

Metro Vision protects and enhances the region's quality of life.
The most basic purpose of Metro Vision is to safeguard for future generations the region's many desirable qualities, including beautiful landscapes, interesting and livable communities, cultural and entertainment facilities, and employment and educational opportunities.

What is Metro Vision 2030?
Metro Vision 2030 is a long-range plan to manage growth within the Denver area. It addresses development, transportation needs and ways to preserve environmental quality. Bringing communities together for regional cooperation is the plan's most important goal.

Metro Vision is long-range and regional in focus.
Metro Vision's planning period extends to 2030 to help the region address future concerns, but current issues are a priority too. The plan expresses a regional perspective.

Metro Vision provides direction.
Metro Vision is designed for use by local governments as they make decisions about land use planning and development. Metro Vision can also help local governments coordinate their efforts with one another and with other organizations.

Metro Vision respects local plans.
The region's local governments developed Metro Vision, working collaboratively through DRCOG. The plan doesn't replace the vision of any individual community; it's a framework for addressing common issues. Metro Vision is sensitive to the decisions local governments make in determining when and where growth will occur. Metro Vision also recognizes that each community is confronted by a variety of issues and has its own view of growth.

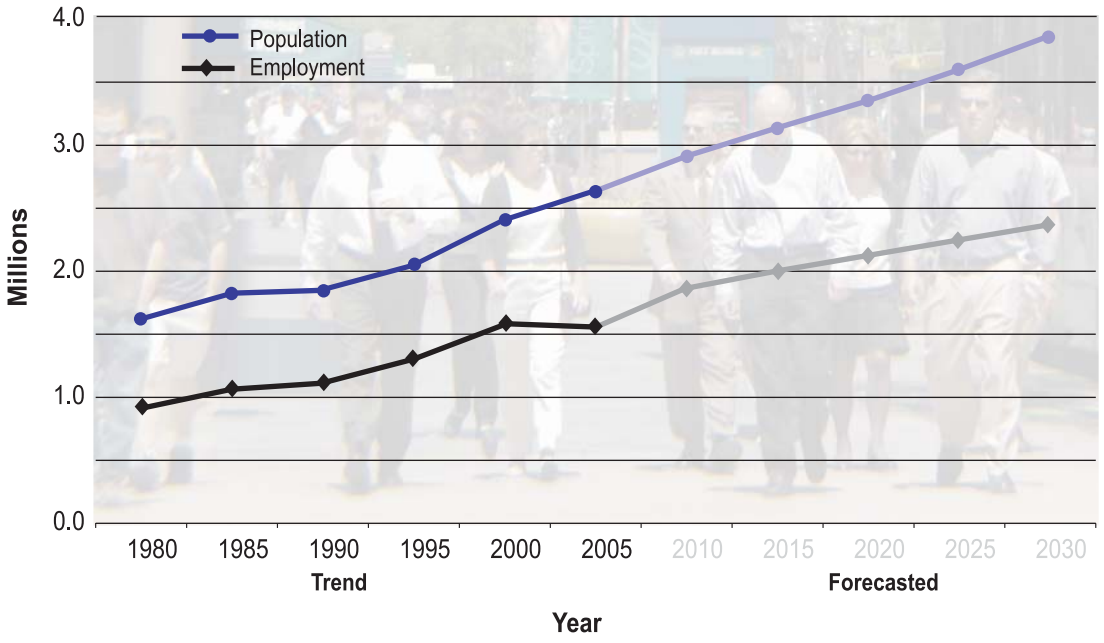
Metro Vision encourages communities to work together.
Because the impacts of growth don't recognize jurisdictional boundaries, it is important for jurisdictions to address growth collaboratively. Metro Vision provides the framework for doing that; DRCOG provides the forum.

Metro Vision is dynamic and flexible.
Metro Vision needs to be updated as conditions and priorities change. Minor revisions to the plan can be made annually while major updates occur every five years.

Where we are and what's ahead

Over the last 15 years, the Denver region has earned distinction as one of the nation's fastest-growing metropolitan areas. More than 2.5 million people currently live in the region. By 2030, DRCOG forecasts show nearly four million people will call the Denver region home and 800,000 new jobs will be created (Figure 1).

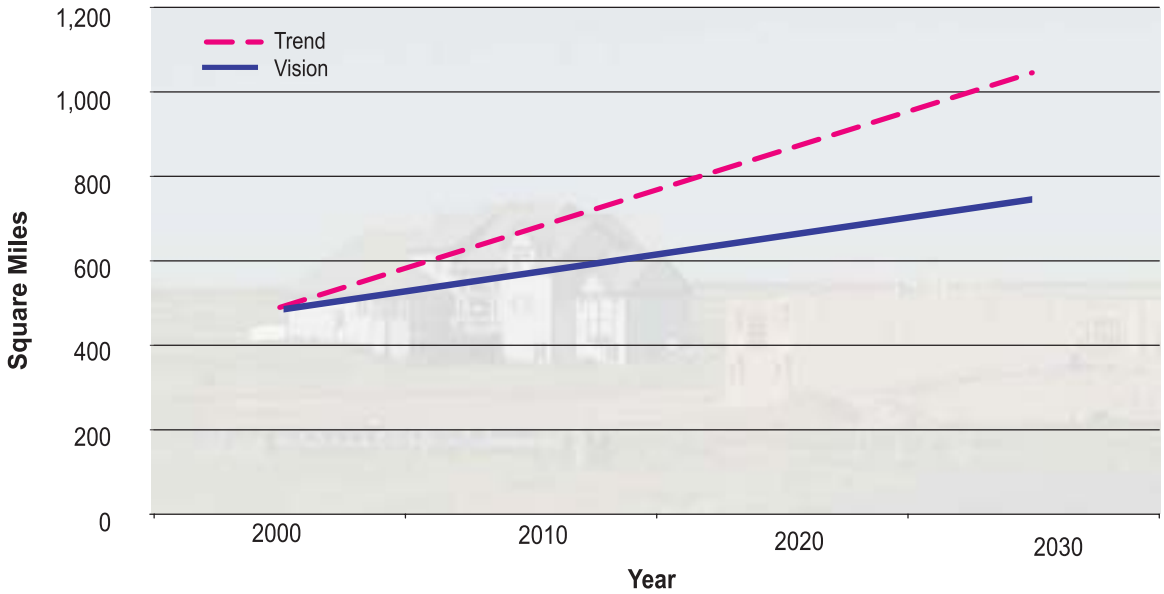
Figure 1
Population and Employment



Our population will age too. The number of metro residents who are 60 or older is expected to more than double over the next 25 years, comprising 25 percent of the population.

The region's increasing population has spread development outward (Figure 2). This development pattern requires people to travel farther and local governments and others to provide more

Figure 2
Expansion of the Urbanized Area



infrastructure. Between 1990 and 2000, the region's urban area grew from 410 square miles to 500 square miles. If that trend continued, the region would have almost 800 square miles of urban area in 2030. In fact, local comprehensive land use plans of the early 1990s showed that as much as 1,050 square miles of development was being planned! The Denver region can be proud that it has avoided a trend seen in other parts of the nation – consuming land faster than the population is increasing.

The region's development pattern has generally separated residential and employment land uses, though. Because of this, the number of vehicle miles each of us travels (VMT), commute times, and traffic congestion have increased. People travel more often – there are more two wage-earner households and more trips are made for purposes other than work. As a result, VMT increased faster (53 percent) than population growth (30 percent) in the 1990s (Figure 3). Most of us see the effects daily as we travel severely congested roads (Figure 4).

Figure 3

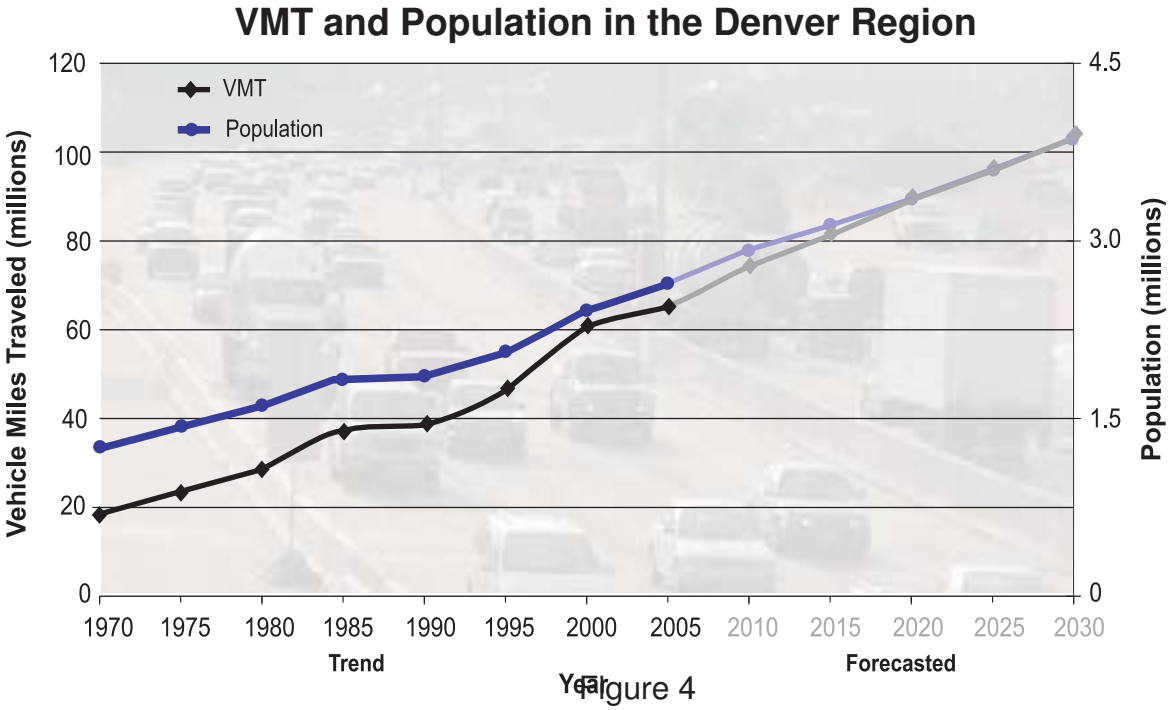
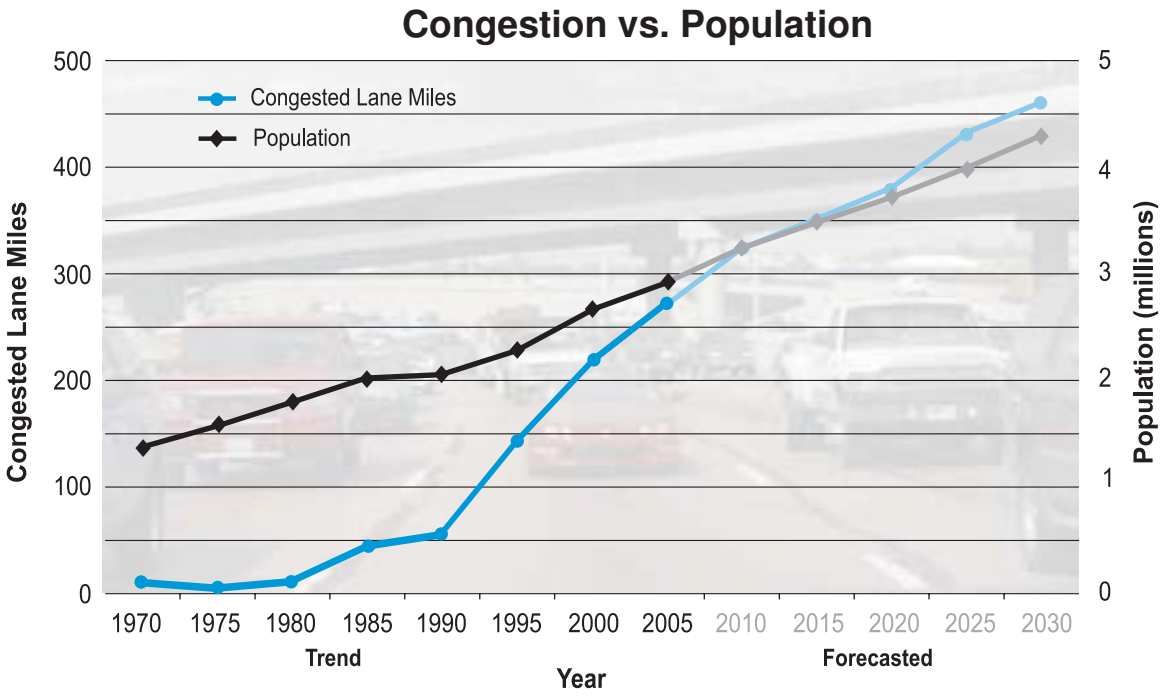


Figure 4



The picture doesn't appear any brighter either since there's not enough money for the transportation improvements we need. Most of the region's transportation dollars go toward maintenance and operational improvements, leaving limited dollars available to expand our transportation system. Plus, transportation funding has just not kept pace with our dramatic increase in travel.

Development has other costs too. The farther development spreads, the more it costs communities to provide new facilities and services, including roads, water and sewer, drainage, schools, police and fire protection, and public transit. This financial burden has been compounded recently by budget cutbacks and tax limitations, and there's little prospect of major federal or state funding increases.

Even with its rapid growth, the region has done well in protecting our environment. Overall, air quality has improved despite climbing automobile use. Implementation of wood-burning bans, enhanced auto inspection and pollution control maintenance programs, oxygenated fuel requirements during winter, reduced winter street sanding and increased street sweeping, and automotive technology improvements have all contributed to air quality improvements. Ozone, however, looms as a problem the region must face quickly. Although in 2004 the region did not violate the new, more stringent ozone standards set by the U.S. Environmental Protection Agency, it did violate the standards in 2003. With more growth ahead, the region needs to continue its air quality commitment and be vigilant in avoiding possible ozone violations.

What is the vision for the Denver region?

In 2030, the Denver region will be a dynamic mixture of distinct pedestrian-friendly urban and suburban communities within a limited area. It will be distinguished by a transportation system that includes sidewalks, bike paths, bus service, rail transit and roads; plentiful parks and open space; and clean air and water.

In the water quality area, wastewater treatment facilities continue to meet state and federal water quality standards and have cleaner discharges. More focus on stormwater runoff prevention and control is improving water quality. Nevertheless, many of the region's streams are still classified by the Colorado Water Quality Control Commission as impaired, limiting their various uses. In the years ahead, the region will face renewed water quality and water supply challenges.

With sustained population growth expected over the next 25 years, the region needs to continue its commitments to protect air and water quality.

How Metro Vision responds

Metro Vision presents a vision for the future that follows in Chapter 2. How the region can achieve that vision is addressed in three general areas:

- Growth and development
- Transportation
- Environmental quality

Each topic is discussed in a separate chapter; a final chapter takes a look at principles and specific actions the region can take to achieve Metro Vision's future. The chapters include the following.

Overview: Chapter 1 A Vision for the Denver Region

This chapter sets forth a vision for the Denver region in 2030, providing development goals. This chapter also discusses how the plan's integrated approach brings results.

Overview: Chapter 2 Growth and Development

Extent of Urban Development – defines a 750-square-mile urban growth boundary/area to guide development.

Semi-Urban Development – establishes policies to address development activity occurring outside the urban growth boundary/area.

Urban Centers – identifies guidelines for about 70 high-density, mixed-use, pedestrian–oriented activity nodes.

Freestanding Communities – focuses on four satellite communities beyond the larger urban area that can become self-sufficient.

Rural Town Centers – examines the role of about a dozen smaller, outlying communities in the region's rural areas.

Senior-Friendly Development – provides guidelines for meeting the housing, transportation and service needs of the region's older population.

Overview: Chapter 3 Transportation System

General – defines the transportation system, including roadways and rapid transit, and provides a policy statement regarding the bus system, bicycle and pedestrian facilities, and other elements; establishes policies to preserve and enhance the system.

Vision Concepts – describes several general categories of transportation facilities and conceptual themes.

Metro Vision Transportation System – details the specific elements of the region's preferred system.

Aviation – calls out the airports in the region and describes their functions.

Fiscally-Constrained Transportation Element – discusses the transportation system that the region can fund from reasonably expected revenues.

Overview: Chapter 4 Environmental Quality

Parks and Open Space – explains different types of open space, establishes policies for protecting open space and identifies areas on which to focus preservation efforts.
Water Quality – establishes general policies for managing wastewater treatment at the regional level, describes the Metro Vision Clean Water Plan and briefly discusses the relationship between water quality management and water supply.
Air Quality – establishes general policies for maintaining air quality standards.
Noise – outlines goals for minimizing exposure to excessive noise levels.

Overview: Chapter 5 Implementing Metro Vision

This chapter covers various strategies and actions needed to make Metro Vision a reality. Because Metro Vision is a dynamic document, it identifies additional topics to refine in the future.

Looking Ahead

In planning for the years ahead, the region's residents and policy makers face many questions.

- Where and how will people live and work?
- How will increased population affect travel patterns, road conditions and congestion levels?
- How much new infrastructure will be needed to accommodate growth and how will the region pay for it?
- What impact will development have on open space, air quality and water quality?
- How will changes in demographics, including a larger population of seniors, affect the region?

Metro Vision offers a vision for the future. Getting there will require commitment from all of us.

CHAPTER 1

A Vision for the Denver Region

In 2030, the Denver metropolitan area will be a dynamic region of almost four million people extending across 750 square miles. The overall development pattern will be relatively compact, with a clear distinction on the perimeter between urban and non-urban uses. Within the urban area, there will be diverse development types and housing options. There will be concentrations of urban density in some locations, and typical suburban densities elsewhere.

People and goods will move efficiently on an extensive transportation system, including roads, rapid transit and bus service. Many people will move about on an equally extensive network of bicycle and pedestrian pathways.

With downtown Denver at the center, a string of high-density, mixed-use urban centers will be prominent at various locations throughout the region, along the backbone of transportation corridors. These interesting and lively concentrations of development will be pedestrian-friendly – a mixture of retail, employment, civic and cultural uses located near moderate- to high-density residential uses.

There will also be an extensive parks and open space system within the urban area, linking communities and providing recreational opportunities. Outside the urban area, larger areas of open space will protect the mountain backdrop, river corridors, buffer areas and other important scenic and natural resources. Other open space will maintain a permanent physical separation between the larger urban area and the freestanding communities of Boulder, Brighton, Castle Rock and Longmont.

The benefits of intelligent land use planning and an improved transportation system will also be evident in air and water quality. The air will be clean and breathable, and the mountains and other dramatic vistas easily seen. Streams and lakes within the region, including many within the urbanized area, will be swimmable and fishable.

In 2030, these facilities and amenities will have improved the quality of life for the people living here. They will also have enhanced the reputation of the Denver metro area, reinforcing its stature as the economic and cultural center of the Rocky Mountain region and positioning it as one of the nation's most attractive and desirable metropolitan areas.

To fulfill this vision, many significant challenges must be addressed, including:

- severe traffic congestion that can impede economic development and job creation,
- concerns about air quality, water quality and water supply,
- the burden of paying for new facilities and services required to serve growth, and
- preserving open space for current and future generations.

Overcoming these challenges will require a concerted effort by the region's citizens and local governments, the state and other organizations. Planning ahead in a visionary manner lays the foundation for achieving the region's desired future.

Metro Vision – An integrated approach

Metro Vision is an integrated plan. In addition to accomplishing a primary goal, many individual plan elements either directly or indirectly contribute to advancing the goals associated with other plan elements. The individual elements complement and reinforce each other, create synergy, and collectively create a total benefit that is greater than the sum of the parts. A map visually integrating the major elements of the plan is shown in Figure 5 on page 11.

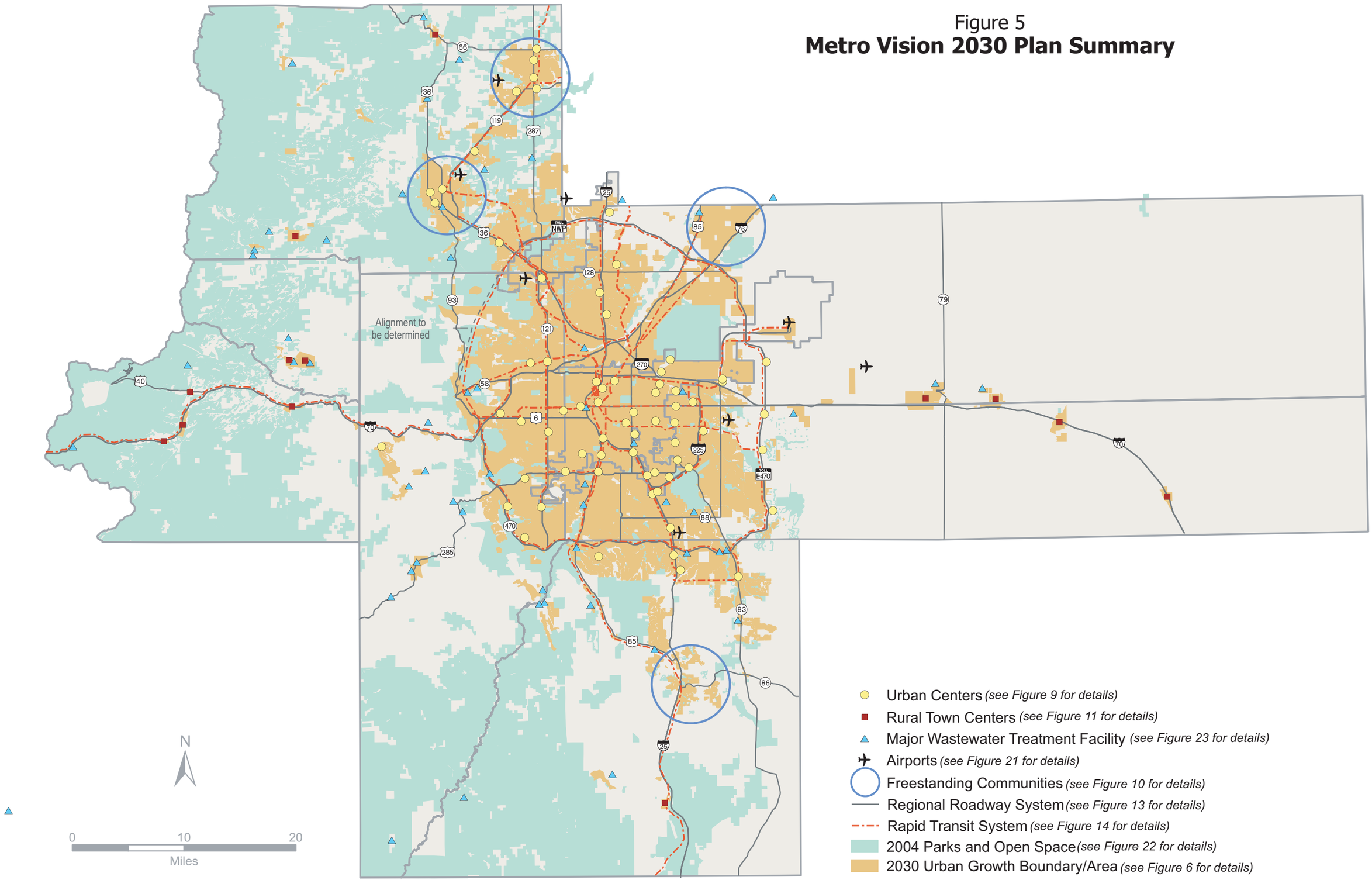
Chapter 2 of the plan establishes the fundamental growth and development policies that influence the shape of the urban area. The extent of urban development element, in particular, encourages more compact development within a defined urban growth boundary and conserves open space beyond the boundary. The urban centers that have been identified are intended to absorb population and employment growth and create nodes of concentrated development that, among other benefits, help to support transit. These guiding development concepts allow for more efficient provision of transportation and water quality infrastructure.

Chapter 3 of the plan establishes transportation policies that are designed to respond to these key land use element. Transportation facilities, of an urban nature, which have an important region-shaping influence in their own respect, are generally not extended beyond the urban growth boundary. Instead, Metro Vision focuses inward on improving the existing system and serving planned growth areas, including urban centers. The transportation element differentiates between various patterns of development, and encourages transportation improvements consistent with these types of development. It encourages the provision of transit services in support of the urban centers. It also supports the regional air quality plan.

Chapter 4 of the plan, focusing on environmental quality, interrelates with both the growth and development elements and the transportation element. Most significantly, it establishes that wastewater utility service areas, defining where facilities can be extended, must be consistent with the urban growth boundary. It also reinforces the strong ties between development, transportation facilities and air quality.

Figure 5

Metro Vision 2030 Plan Summary



CHAPTER 2

Growth and Development

In Metro Vision, growth and development refers to the region's extent and pattern of physical development. The term also refers to the planning activities that influence this pattern. Metro Vision does not address development activity occurring on specific parcels of land; that is the responsibility of local jurisdictions.

Metro Vision's goals and policies are designed to influence the shape, size and other characteristics of the region's built environment. Special emphasis is placed on reinforcing the interrelationships between development and transportation. The urban growth boundary/area, discussed in Chapter 2, is intended to direct development to areas where infrastructure can be provided more efficiently, stimulate infill and redevelopment activity, and increase overall regional density. Focusing development in this way makes it easier to use existing transportation infrastructure and reduces the need to build new infrastructure.

Urban centers, also discussed in Chapter 2, are another example of this important interrelationship. These concentrated areas of mixed–use development, many of which are located near future transit stations, contain significant population that can more easily use the rapid transit system. At the same time, transportation policies that focus investment in facilities serving urban centers create an attraction (i.e., access to transit) that can help stimulate the development of urban centers.

This chapter discusses and provides policy direction on six key types of development that will help the region accommodate anticipated population growth. Summarized in the introduction, they are described more fully here.

Extent of Urban Development

Vision:

A defined urban growth boundary/area (UGB/A) will promote a more orderly, compact, and efficient pattern of future development within the region. Containing development within the growth boundary/area will prevent the unnecessary and inefficient extension of roads, transit services, water and sewer. It will reduce regional vehicle travel, help achieve greater density, conserve open land outside the boundary/area and provide separation between communities. The urban growth boundary/area is shown in Figure 6.

Goal: Ensure that urban development occurs within a defined urban growth boundary/area to promote a more orderly, compact and efficient pattern of future development.

Policies

1. Growth Boundary/Area. The urban growth boundary/area defines where urban development will take place in the region over the next 25 years. The boundary/area contains 750 square miles of urban development, which is intended to achieve a 10 percent increase in the region's overall density between 2000 and 2030. The DRCOG Board has created a reserve of 20 additional square miles to be used, if needed. The UGB/A will not exceed a maximum of 770 square miles in 2030.

2. Growth Allocation. Each community will be allocated its own growth area, based on historical development trends and future projections. Each community will determine the specific geographic area for growth allocation.

3. Flexibility. Communities that wish to postpone committing their allocated urban growth area until after specific development plans are more clearly understood will have flexibility. These communities will be referred to as urban growth area (UGA) communities.

4. Compact Development. Metro Vision promotes smaller lot sizes and multifamily housing to achieve a more compact pattern of development. At the same time, it's recognized that density doesn't need to increase everywhere within the urban area and that there is a need to accommodate varied housing, such as multifamily and single-family detached residential.

5. Infill and Redevelopment. Metro Vision encourages the use of overlooked vacant parcels and under-developed parcels for infill and development. Infill and redevelopment can absorb significant population growth and more efficiently use existing infrastructure.

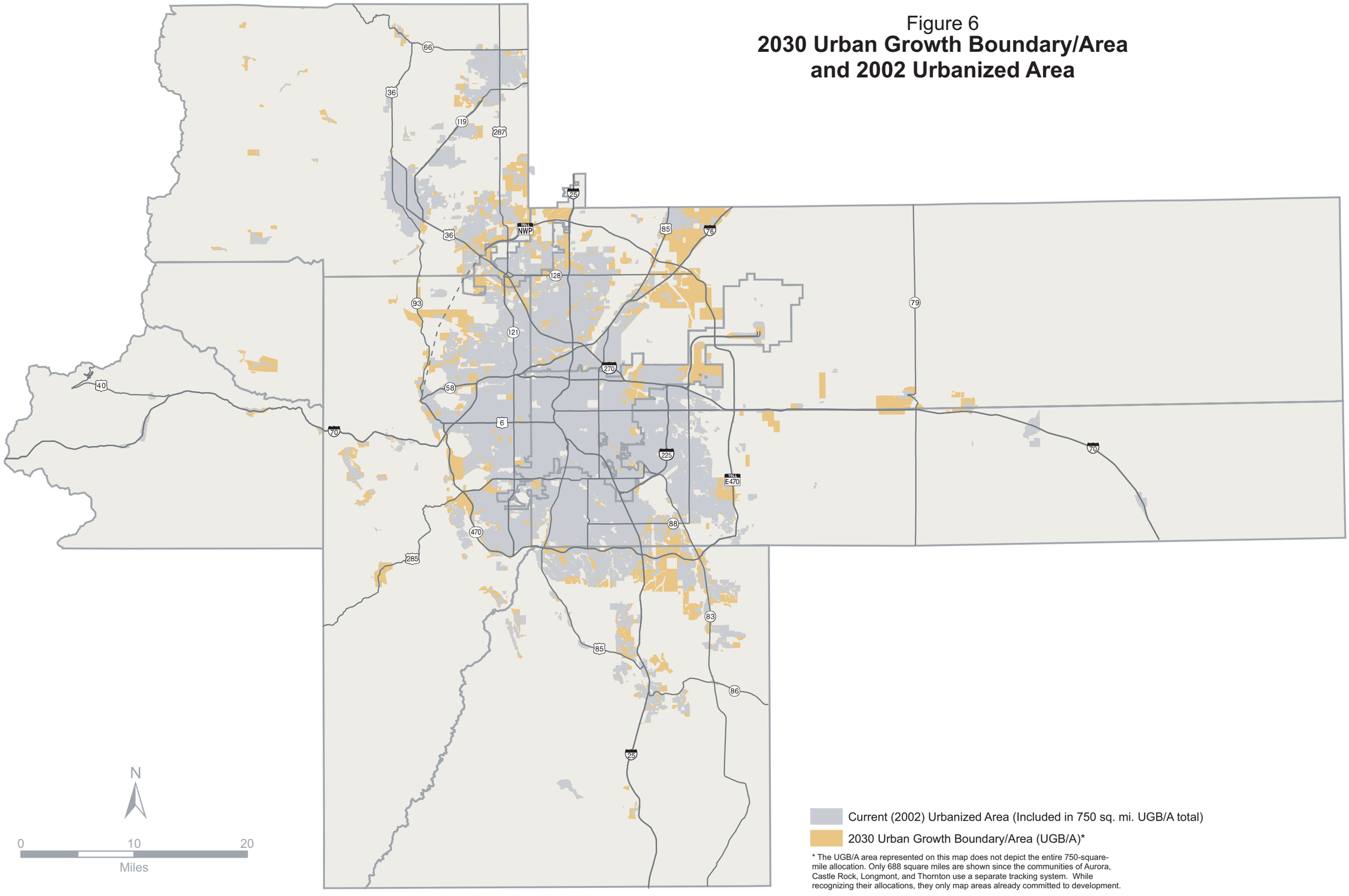
6. Outlying Areas. Growth will be strategically designated to conserve appropriate areas for urban development beyond 2030, maintain separation between the larger urban area and smaller outlying communities, and avoid open spaces and environmentally sensitive areas.

7. Infrastructure. In defining urban growth area and phasing development within the UGB/A, development will occur in areas where infrastructure already exists. In newly urbanized areas, development will be planned to provide infrastructure and services efficiently and cost-effectively. Regional transportation systems should be provided in a way that will most effectively encourage the desired future development.

8. Intergovernmental Coordination. Local governments are encouraged to establish intergovernmental agreements to address planning and service delivery issues in areas of mutual interest.

Figure 6

2030 Urban Growth Boundary/Area and 2002 Urbanized Area



9. Annexation. Metro Vision encourages the annexation of unincorporated areas within the UGB/A, consistent with local comprehensive plans and annexation procedures. Annexation should be a logical extension of a municipality's boundary so the local government can provide urban services to the annexed area at a level equal to what is provided to the existing municipality. In that way, annexation will not significantly affect the ability of surrounding jurisdictions to continue providing necessary services.

10. Regional Facilities. Facilities such as airports, solid waste disposal sites and major cultural facilities will be located to maximize their regional benefit and minimize their impact on existing and future development. Once these facilities are planned and constructed, however, future development should not occur if it conflicts with or could affect their sustainability.

11. Water Supply. Metro Vision calls for urban development only in areas where long-term water service can be established or where adequate service is available from an existing water supply system. Conservation of water resources through innovative design, reuse, landscaping and education will be encouraged and considered in making service provision decisions. Water conservation measures will be incorporated in specific service plans. Overall, the regional increase in water consumption should be proportionally less than the population increase.

12. Mining Activity. Development is discouraged in areas with commercially viable deposits of sand, gravel and quarry aggregate until these deposits are extracted or mining causes serious, adverse impacts on the environment or on existing development. The extraction of coal deposits will be allowed where mining will not have significant environmental impacts and where it will not be incompatible with surrounding land uses.

Why do we need Metro Vision?

By 2030, 1.2 million more people are expected to live in our region—enough people to make a new Denver, Aurora, Colorado Springs and Boulder combined. Cooperation between the area's cities and counties will prevent unplanned sprawl and environmental damage. Implementing Metro Vision will ensure that our region evolves in a way that promotes the economy, manages growth and preserves open space.

Issues and Challenges

Historically, development on the perimeter of urban areas throughout the nation has occurred in patterns that are uncoordinated and lower in density. Many communities and regions now realize that this pattern of development is undesirable for a number of reasons. Uncoordinated, low-density development is difficult to plan for, more expensive to provide services to, increases travel distance and consumes large amounts of land.

It is important to know where development will occur so infrastructure and services can be planned for and financed in advance. Development should also be reasonably compact. Low-density development is generally more expensive to serve because there are proportionally larger distances (per household served) to extend and maintain roadways, water and sewer lines, and other infrastructure. It is also more expensive to provide police and fire protection, schools, transportation and other services.

Low-density development also affects air and water quality. For example, increased travel distance means more vehicle emissions. Water quality is affected by contaminants from motor oil and brake linings that collect on roadway surfaces and run into nearby streams.

A large tract of land, currently beyond the existing urban growth boundary that has been discussed as having significant future development potential possibly within the 2030 planning period, is the Lowry Range property in eastern Arapahoe County. This property is approximately 40 square miles in size and is owned by the State Land Board. The potential development of this property creates opportunities for incorporating a mixture of land uses and other innovative planning features. Should this property be developed, the development should be consistent with Metro Vision goals and policies.

Urban Growth Boundaries

An urban growth boundary (UGB) is an innovative planning strategy used to address these concerns. A UGB defines the area within which urban development is intended to occur, and beyond which urban development is not intended to occur. (Metro Vision defines urban as more than one house per acre.)

A UGB provides predictability so that infrastructure can be planned in advance and constructed more cost-effectively. A UGB also encourages a more compact pattern of development by directing growth inward, stimulating infill and redevelopment activity and encouraging the use of existing infrastructure. Compact development also reduces the need for new infrastructure.

Finally, a UGB protects land beyond the boundary. In combination with semi-urban and open space policies, discussed elsewhere in this plan, a UGB helps conserve appropriate areas for future urban development and maintains separation between the larger urban area and smaller outlying communities.

The Metro Vision Urban Growth Boundary/Area

In the Denver region, the 2030 UGB/A encompasses a future urbanized area of 750 square miles. This target is based on an analysis of historical development and projections, modified slightly to achieve an increase in the density of the region's urbanized development.

The urbanized area in 2000 was approximately 500 square miles. The increase of 250 square miles between 2000 and 2030 represents an annual increase of 8.3 square miles. Note that the 2030 UGB/A (750 square miles) is the same as the 2020 UGB/A. After further analysis, it was determined that the 2020 UGB/A was sufficient to accommodate the 1.2 million additional people anticipated through 2030.

Although 750 square miles is expected to be sufficient to accommodate anticipated regional growth, some communities may need additional growth area. The DRCOG Board has established a 20-square mile reserve or "bank" for this purpose. Only 10 of the 20 square miles may be allocated before 2020, however, with the total allocation not to exceed 770 square miles.

Encouraging Density in Targeted Areas

The size of the UGB/A is designed to achieve a 10 percent increase in the region's overall density. It does not mean that density will increase everywhere in the region, or that housing options will be diminished. Metro Vision recognizes the need to accommodate a variety of development types, including multifamily as well as single-family detached residential.

Much of the anticipated population and employment increase is expected to be absorbed through infill and redevelopment of currently vacant or underused parcels within the existing urbanized area. Infill and redevelopment accommodate growth without consuming new land, and results in an overall increase in density. Significant growth is also expected in certain planned, higher-density activity areas called urban centers, discussed later in this chapter, and in multimodal corridors, discussed in Chapter 3.

A Flexible Approach

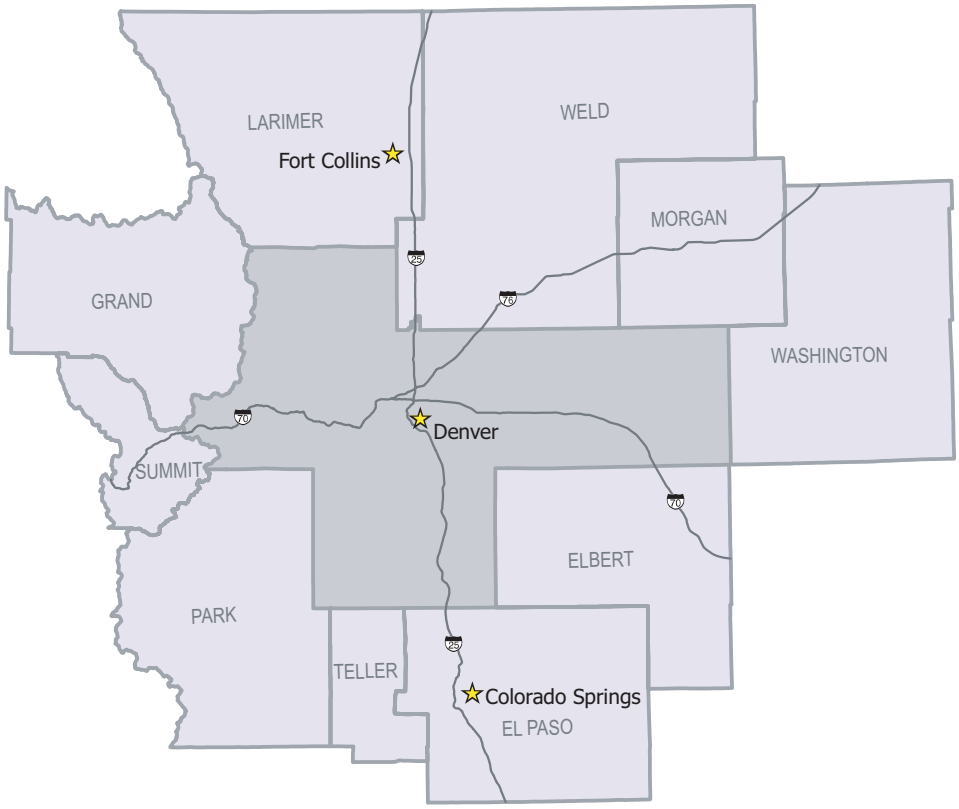
The UGB/A has been established collaboratively to accommodate the anticipated growth and development that will occur in each community. Each local jurisdiction is allocated its own growth area and has flexibility in determining when and where it will be used. This approach to administering an urban growth boundary is relatively unique to the Denver region.

Communities can postpone committing their allocated urban growth area until after specific development plans are more clearly understood. The growth area can also be reconfigured after it is committed, as long as there is no net increase in size. Recognizing that the boundary is not fixed in those communities that plan in terms of growth area, the Metro Vision UGB is more broadly referred to as an urban growth boundary/area, or UGB/A. Specific growth area allocations for each community are shown in Appendix A on page 88.

Coordinating with other Regions

Efforts to contain urban development within the UGB/A are complicated by development activity occurring outside the DRCOG region. Communities near the edge of the region are particularly affected by growth occurring in Weld, Elbert and Park counties. The DRCOG region as a whole is also affected by this growth, particularly in terms of air quality and roadway congestion. Efforts are underway to seek the cooperation of jurisdictions outside the DRCOG region in better coordinated planning efforts. (see Figure 7.)

Figure 7
Adjacent Counties



Semi-Urban Development

Vision:

A limited amount of low-density semi-urban development will continue to occur beyond the urban growth boundary/area, contributing to the region's diversity of land uses. Careful planning will minimize its financial, environmental and visual impacts. Special care will be taken to avoid developing in potential future open space or urban reserve areas. Semi-urban development will not interfere with the logical future expansion of the urban area beyond 2030.

Goal: Minimize the extent of low-density, large-lot development occurring on the periphery of the urban area.

Policies

1. Existing Parcels. Semi-urban development is encouraged to occur where parcels of one to 35 acres are already platted.

2. Urban Reserves. Cities and counties are encouraged to identify urban reserve areas where future contiguous urban development beyond 2030 will occur and where semi-urban development is inappropriate.

3. Open Space. Semi-urban development will avoid potential future open space areas as identified in the Regional Open Space Plan or in other sensitive environmental areas, unless mitigated through creative design.

4. Infrastructure Investment. Investment in transportation infrastructure and other service provision will be strategically targeted to areas where development consistent with Metro Vision is planned. Investment in identified semi-urban areas will be limited to providing a level of service appropriate for such development (i.e., rural or semi-urban, not urban).

5. Financial Accountability. Semi-urban development will not be financially subsidized by residents living in the urbanized area. Impact fees and other strategies are encouraged to ensure that all types of development pay their fair share of the cost of providing public services.

6. Water and Wastewater Provisions. While it is preferred that development occur in areas where central water and wastewater treatment can be provided, it's also recognized that semi-urban and rural areas are typically served by on-site systems. In areas where semi-urban development is planned, it must be ensured that adequate water supply and wastewater treatment, either centralized or on-site, can be provided.

7. Mining Claims. Limited development currently occurs on historic mining parcels, but these parcels represent a major inventory of the region's undeveloped land. Development should avoid mining claims that do not meet the development standards of the local jurisdiction, especially minimum lot size and access requirements.

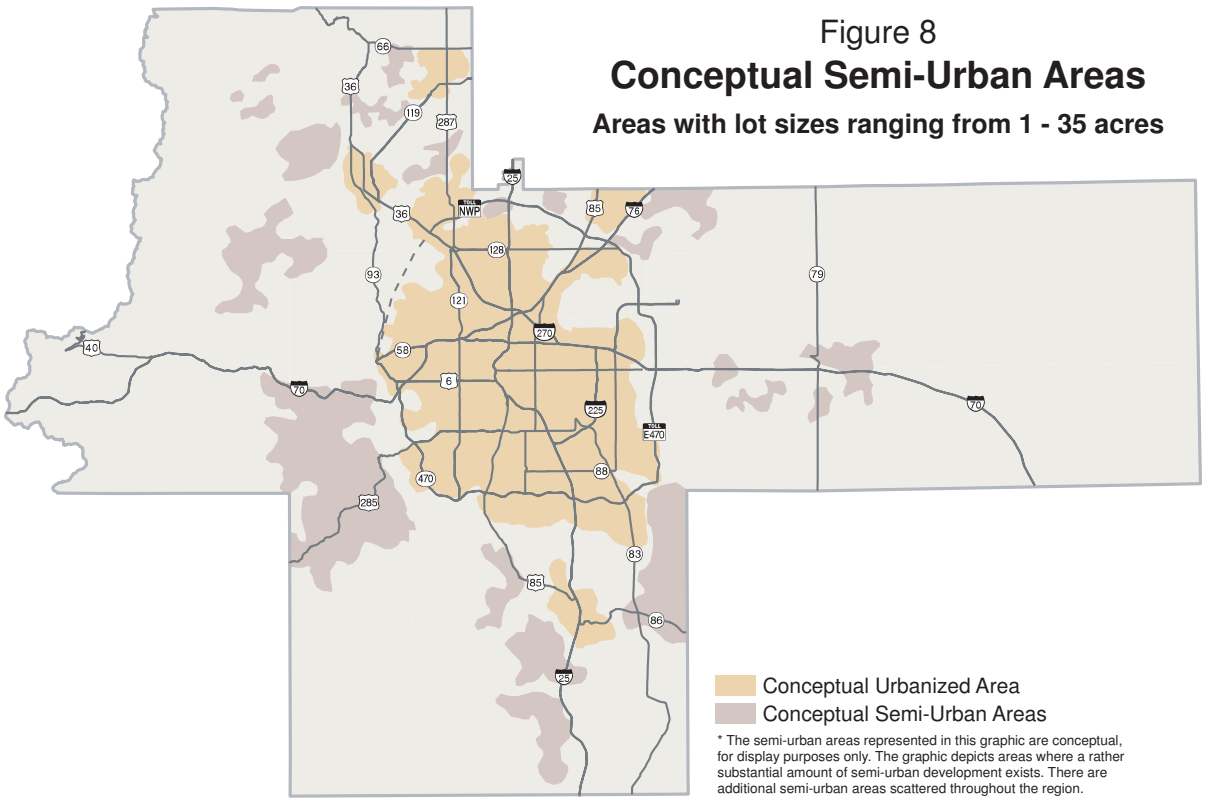
Issues and Challenges

Semi-urban development is residential development that occurs on parcels between one and 35 acres in size. Development on lots larger than 35 acres is considered rural. Semi-urban areas are typically located on the fringe of the urban area and have only limited commercial activity. They depend on the urban portion of the region for employment, shopping and services. Semi-urban lots are not large enough to support ranching and farming. Figure 8 shows the general areas having significant semi-urban development.

Figure 8

Conceptual Semi-Urban Areas

Areas with lot sizes ranging from 1 - 35 acres



Semi-urban development offers a low-density residential lifestyle. When creatively designed, low-density development can also provide a way to integrate residential uses in environmentally sensitive areas. Semi-urban development, however, can also adversely affect local governments and the region as a whole in several ways.

It is generally more expensive to provide infrastructure to semi-urban development because there are proportionally larger distances (per household served) to extend roadways and other utilities. It is also more expensive to provide emergency services, school bus service and animal control. Similar arguments were made earlier in discussing low-density urban development. With larger lot sizes, these issues are compounded.

In the plains area, semi-urban development consumes viable agricultural land. In mountainous areas, wildfire hazard makes semi-urban development a special burden to service providers and a risk to inhabitants. In addition, the gravel roadways that often serve semi-urban development are more expensive to maintain than paved roads.

Water and wastewater treatment can be provided on-site through the use of wells and septic systems. When properly designed, installed and maintained, these systems can provide adequate service. If not, however, groundwater quality and quantity may be adversely affected.

Semi-urban development also uses land inefficiently. In 1998, it occupied approximately 17 percent of the total area of the region, but contained only 8 percent of the households. As more efficient, higher-density urban development extends outward it is forced to "leapfrog" over existing semi-urban development. This results in non-contiguous urbanized areas, further complicating logical and cost-effective provision of infrastructure and services. It also increases the distances that commuters must travel to work, and that impacts regional air quality.

Finally, large-lot, semi-urban development can negatively affect potential future open space areas, including significant agricultural lands, geographic features/strategic scenic areas, river corridors and wildlife habitat. Rural development (larger than 35 acres) can contribute to the sense of open space within the region. Semi-urban development is not perceived visually in the same way. Unless semi-urban development is creatively designed (e.g., clustering buildings together), agricultural land, wildlife habitat and scenic values are diminished.

Developing a Strategy

Semi-urban development is a complicated subject that has not been discussed in the same detail as other Metro Vision elements. More refined policies and implementation strategies will be developed to better understand and manage the region's semi-urban development.

Urban Centers

Vision:

Urban centers, concentrated areas of development, more dense and mixed-in-use than surrounding areas, will be developed across the region. Urban centers will be active, pedestrian-friendly places, with employment, housing and services in close proximity to each other. Urban centers will be served by transit, either rapid transit or bus, and also will *support* transit by providing riders and pedestrian-oriented environments. Some people will even live and work within the same urban center, avoiding the need to use a car or transit entirely.

Goal: Encourage the development of higher-density, mixed-use, transit and pedestrian-oriented urban centers throughout the Denver region.

Policies

1. Location. Metro Vision encourages the development of urban centers throughout the metro area, while recognizing the unique significance of the Denver central business district (CBD).

2. Regional Growth. A significant portion of future regional population and employment growth will occur within recognized urban centers.

3. Infrastructure Investment. Metro Vision supports the development of urban centers by focusing infrastructure investment in related roadway, transit and pedestrian facilities.

4. Design. Innovative planning, zoning and urban design strategies are encouraged to promote mixed-use development and pedestrian activity within urban centers, increasing the likelihood that they will develop successfully and achieve other policy objectives.

Issues and Challenges

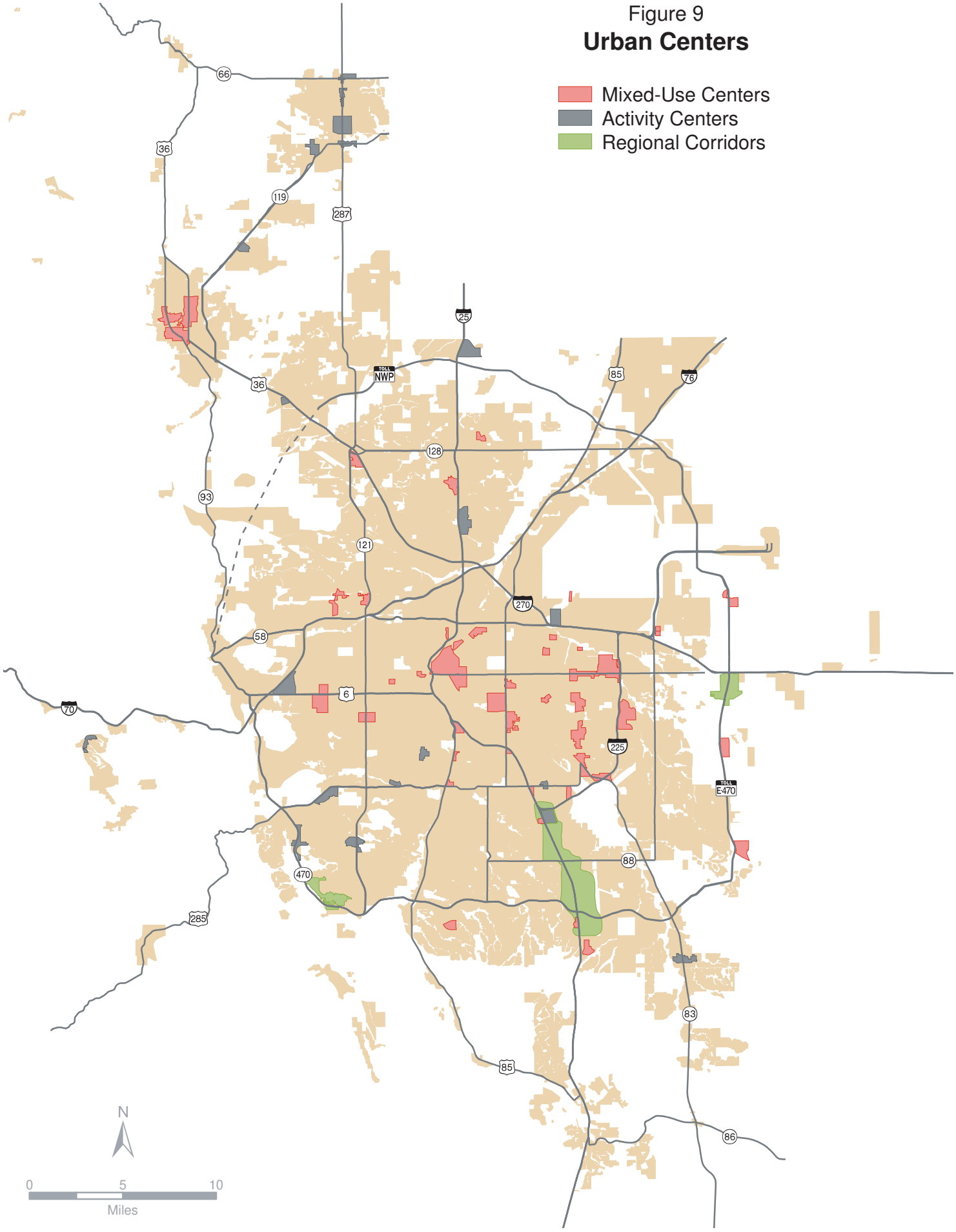
Many areas within the region have developed in a way that separates residential, employment and retail activities, relying on automobiles to provide connections. Dependence on cars has increased air pollution, traffic congestion, and commuting times and distances. It has also diminished opportunities for people to walk and stay physically active, an increasingly significant public health concern.

The relatively low urban density that accompanies this pattern of development has also increased land consumption on the perimeter of the urban area, resulting in the loss of agricultural lands and open space. Low-density development also makes it difficult for pedestrians to walk to destinations and to use transit.

In contrast, urban centers are concentrations of high-density, pedestrian-oriented, mixed-use activity. They are specifically intended to accommodate new population and employment growth within the urban area, thereby reducing land consumption and maximizing the use of existing infrastructure. They also help to support transit. Figure 9 illustrates urban centers in the region.

Figure 9

Urban Centers



Urban Centers

Within the urbanized area, there are strategic locations where it is desirable to encourage development that is more dense than the surrounding area. These locations are strategic primarily because they have good highway and transit accessibility. If these “nodes” are developed with a certain mix of land uses, especially residential and employment, opportunities are created for people to live near where they work. This could reduce the need for some people to commute at all.

Mixed-use transit-oriented development has many benefits. It can reduce land consumption and the amount of vehicle miles traveled (VMT) within the region as a whole. It improves the jobs/housing balance, both locally and within the region. It increases access to shopping and services, promotes pedestrian activity, and creates a sense of place and community identity. It also provides housing options for seniors. As the region’s senior population grows, this type of development may prove appealing to many seniors.

Metro Vision refers to such areas as “urban centers.” Urban center is a general term that encompasses mixed-use centers, activity centers and regional corridors. The three centers vary in degree, but are all envisioned as high-intensity, pedestrian-oriented, mixed-use locations providing a range of retail, business, civic, cultural and residential opportunities for surrounding trade areas.

The most prominent example of an existing urban center within the metropolitan area is the Denver central business district (CBD). Other examples include the Boulder CBD, the Englewood City Center, Glendale and the Denver Tech Center.

It is not intended that these other existing centers, or future developing centers, compete with the Denver CBD. As the region’s physical and cultural center, it is important that Denver maintain a strong downtown area for our overall economic stability.

Urban centers will develop at locations where transportation infrastructure and other market conditions can support more intense development activity. Many centers are still in the planning phase, depicted only on local zoning and comprehensive plan maps. Centers are complex, often requiring both public and private investment, and taking many years to fully develop. This is especially true of centers that involve redevelopment.

It is anticipated that the largest number of urban centers will develop in the region’s more urban and central suburban areas. The suburbs will continue to experience the highest growth, capturing at least 60 percent of all new households and employment in the region, but the urban and central suburban areas are more strategically located along major transportation corridors.

There is not currently an established target for accommodating a specific amount of population or employment growth within the identified urban centers. However, a significant amount of growth has been allocated to the centers in DRCOG's population and employment model.

Many of the characteristics and benefits of urban centers can also be found, and are encouraged, in smaller-scale development. Transit-oriented development, or TOD, is a general term describing almost any concentrated, mixed-use pedestrian-oriented development that supports and is supported by transit facilities and service. Some transit stations, for instance, along planned transit lines may not be developed as regional-scale urban centers. They may, however, be developed as smaller-scale TODs that stimulate significant transit and economic activity.

Three Types of Urban Centers

The three types of urban centers – mixed-use centers, activity centers and regional corridors – differ slightly in terms of shape, total area and specific function. Differences also exist in the mix of households and employment, associated densities and infrastructure support. Other characteristics are common to all three, especially the reliance on transit and other transportation connections to stimulate and focus development activity. Specific criteria have been established to distinguish the three centers and to identify where they'll be located within the region.

- **Mixed-use centers** are envisioned as high-intensity, pedestrian-oriented, mixed-use locations providing a range of retail, business, civic and residential opportunities for the surrounding trade area.

- **Activity centers** are similar, but focused mostly on employment. They may not contain the same mix of uses, particularly residential.

- **Regional corridors** have some residential component, but are distinguished by their larger size and linear characteristics. Regional corridors are similar to a series of connected centers. (Refer to Growth and Development Appendix.)

Freestanding Communities

Vision:

The outlying communities of Boulder, Brighton, Castle Rock and Longmont are distinguished by their historic town centers, their separation from the larger urban area, and their capacity to absorb future population and employment growth. These communities will continue to develop in a way that enhances their self-sufficiency. Each will remain separate from the larger urban area, surrounded by an open space or rural buffer, have an adequate mix of jobs and housing, have an internal transportation system with regional transportation connections, and have a town center at its core.

Goal: Maintain Boulder, Brighton, Castle Rock and Longmont as distinct and self-sufficient communities, separate from the larger urban area.

Policies

1. Regional Growth. Metro Vision encourages a significant portion of future regional population growth within recognized freestanding communities.

2. Self-sufficiency. Freestanding communities encourage a balance between employment and population so people can live and work in the same community. A diversity of housing types will be provided for a variety of income levels.

3. Physical Separation. Freestanding communities will establish a permanent open space or rural buffer to maintain physical separation from the larger urban area and retain a sense of community identity. Highway interchanges or transit stations will be located away from buffer areas to avoid development pressure.

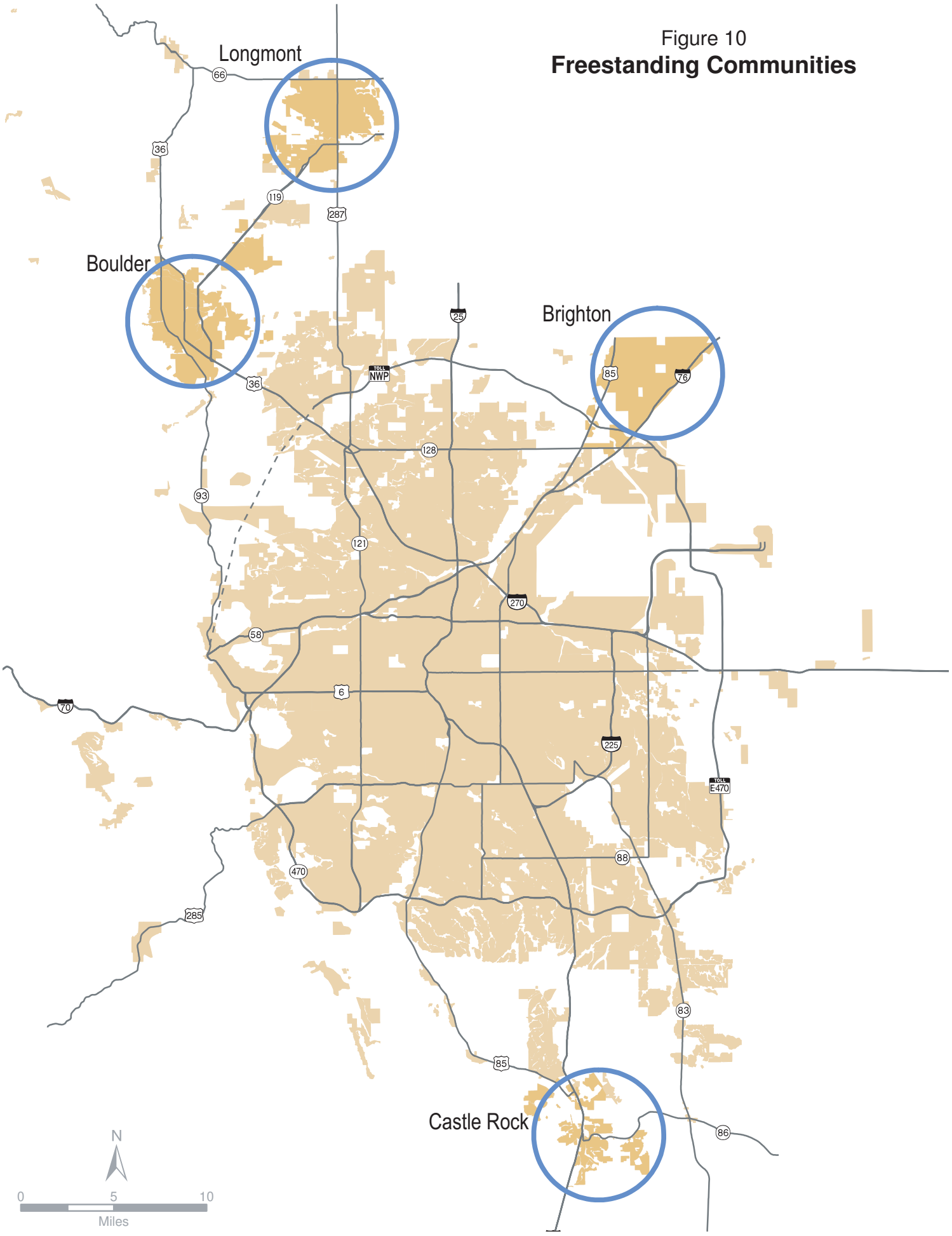
4. Town Centers. Each freestanding community will maintain a viable mixed-use town center to preserve community identity.

5. Transportation. Multimodal transportation systems will be developed in each freestanding community. These systems will include pedestrian and bicycle facilities, and internal and external transit services. Communities will be linked to the larger metropolitan area with rapid transit and highway facilities.

Issues and Challenges

The region has many communities that are separate from the larger urban area. Some of these communities primarily provide housing for workers who commute into the city. Others are more self-sufficient, providing employment and services for people who live there, as well as others from the surrounding area.

Figure 10
Freestanding Communities



Self-sufficiency is important from a regional perspective. If residents can work in the same community where they live, vehicle miles traveled within the region are reduced. This preserves air quality as well as reducing congestion and travel times for others. It's also beneficial in terms of reducing roadway maintenance costs, and avoiding the need to improve existing roadways or construct new ones.

The communities of Boulder, Brighton, Castle Rock and Longmont are identified in Metro Vision as "freestanding communities" because they either are already self-sufficient or are expected to become self-sufficient. Figure 10 shows the freestanding communities.

Achieving and maintaining self-sufficiency could be a challenge for all of these communities since a jobs/housing balance is difficult to achieve at the community level. These communities can absorb a significant amount of the region's expected population and employment growth. All are also still relatively separate from the larger urban area.

It should be noted that freestanding communities are urban places. As such, the policies previously described in the extent of urban development element also apply to the four freestanding communities. Average density within these communities will be greater than one dwelling unit per acre. However, because Metro Vision recognizes a diversity of development patterns, it is not necessarily expected that these communities be as densely developed as other places within the urban area.

Physical separation has aesthetic benefits. Maintaining some freestanding communities within the region provides relief from what would otherwise become a single, homogeneous urbanized area. This separation is becoming more difficult to maintain as the region continues to develop.

Capacity to Absorb New Residents

Current DRCOG forecasts indicate that the four communities will absorb approximately 13 percent of the region's population growth. This will help the region from extending the UGB/A far into undeveloped portions of the region. This benefits the region by reducing the need to extend infrastructure, and by protecting rural and open space areas.

Community Self-Sufficiency

When people work in the same community where they live, they don't need to commute into the larger urban area. This reduces the number of vehicle miles traveled within the region. Employment also helps a community maintain its economic viability. Employment, however, must match the labor skills of residents. Otherwise, a "reverse commute" phenomenon could occur, and vehicle miles traveled could actually increase. This could also happen if housing costs don't match workers' income levels.

Communities typically require a diverse workforce to meet the demands of a variety of employers. To achieve self-sufficiency, it is necessary to provide an equally wide variety of housing types. If a complementary mix of retail and service-oriented businesses is conveniently provided, a larger portion of consumer spending will stay in the community. Providing these options can reduce the number of regional trips, and provide convenience for residents.

DRCOG forecasts indicate that the four communities will absorb approximately 5 percent of the region's employment growth. Specific goals for each community have not been established.

Each freestanding community has a historic town center that defines its character and serves as the focus for a mix of civic, economic, residential and transportation activity. Town centers enhance community identity and can serve as a focus for local and regional transit services. Town centers can also be attractive places for seniors because they have a mix of uses in close proximity with good access.

Multimodal Transportation

Another important factor in achieving self-sufficiency is providing efficient transportation to people within the community. This includes both transit service and roadways, as well as bicycle and pedestrian pathways. Freestanding communities are also connected to the larger urban area with rapid transit and highway facilities. Transit stations and highway interchanges should not be located within the community's buffer area.

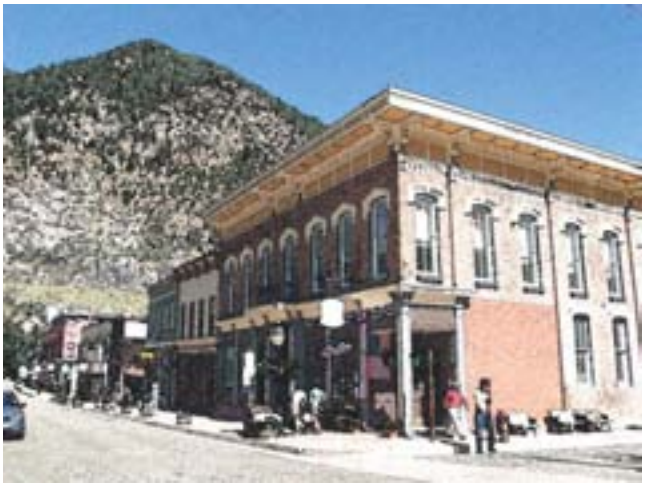
Open Space Buffer

The presence of an established open space or rural buffer is a defining characteristic of a freestanding community. Maintaining this buffer helps to preserve separation from the larger urban area and strengthens community character and identity. Proactive steps by the region to acquire and preserve open space will be necessary to achieve this vision.

Rural Town Centers

Vision:

Small, established towns and villages are found in rural places beyond the region's urban area. They will provide services, employment and entertainment for residents of the surrounding trade area, as well as tourists and travelers. Although they will serve the rural area, the communities themselves will be relatively compact, with a town center, small lots, and a street grid. They also will have the necessary infrastructure to accommodate population growth.



Goal: Recognize the small communities located in the rural and semi-urban areas of the region and more clearly define and support their regional role.

Policies

1. Regional Growth. New development in the rural portion of the region is encouraged to occur within rural town centers where necessary infrastructure, including central water and sewer, can be provided more efficiently.

2. Development Pattern. New development within rural town centers is encouraged to be compact, so the infrastructure necessary to serve the new development can be provided cost-effectively. Compact development also helps differentiate between developed and undeveloped areas, provides for pedestrian accessibility, and maintains community identity. Rural town centers are encouraged to promote infill and redevelopment activity within their existing boundaries for compact development and the use of existing infrastructure.

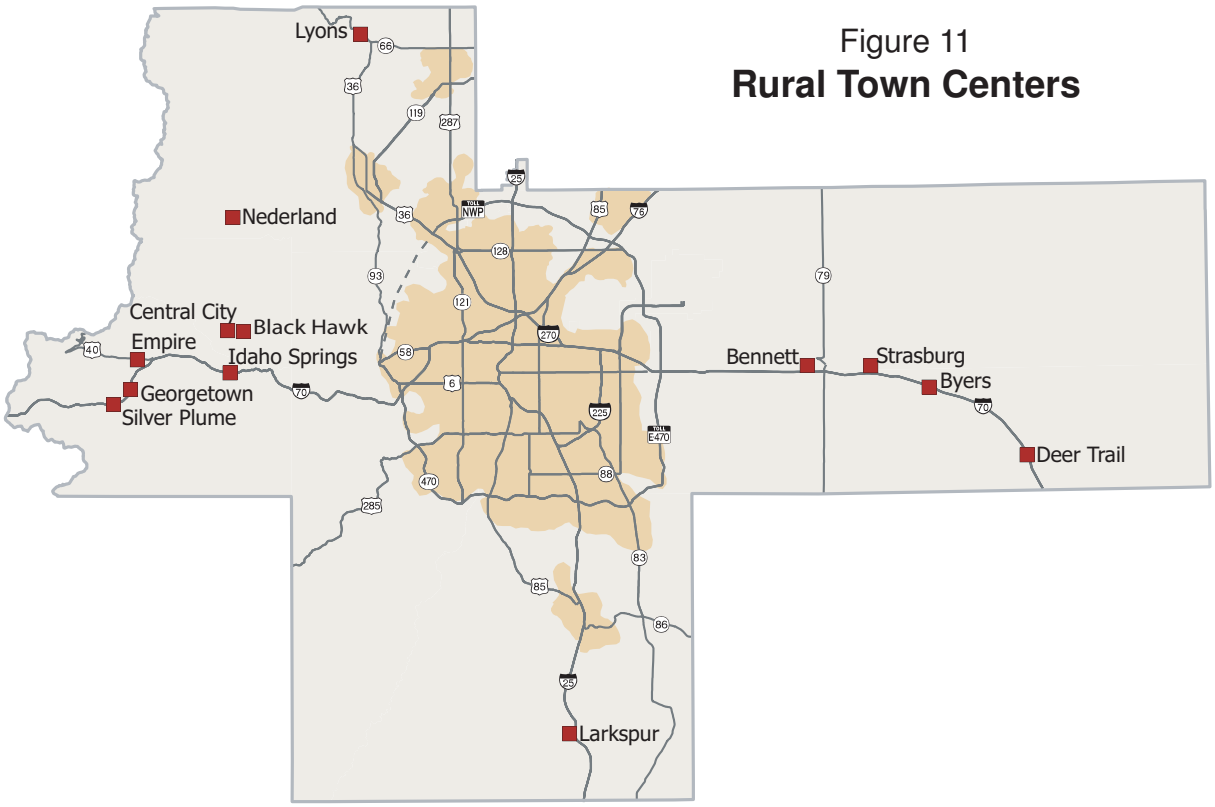
3. Self-sufficiency. Where appropriate, rural town centers will encourage economic development to improve the balance between employment and population. An appropriate mix of zoning designations will ensure that necessary services and employment generators are provided for, so the community can become more self-sufficient.

Issues and Challenges

A number of small communities located in the rural areas of the region provide services and act as cultural "focal points" for the surrounding area. At a smaller scale they share many of the characteristics of freestanding communities.

Depicted in Figure 11, these communities are locally and regionally significant because of the role they play in serving the region's rural and semi-urban areas. They provide options for individuals who want to live in a rural area, and can have the potential to absorb population growth. Recognition of rural town centers is consistent with the general approach of Metro Vision to address significant forms of development and provide the region with a more comprehensive plan for the future.

Figure 11
Rural Town Centers



These communities have the potential to absorb population growth, but the provision of necessary infrastructure is a major challenge. Many rural town centers are historic communities established before the turn of the century. Much of their public infrastructure, including water supply and wastewater treatment facilities, roads, sidewalks and trails, needs repair or replacement.

Identifying Rural Town Centers

An initial list of rural town centers has been developed by evaluating their existing physical characteristics, future development plans, location and trade area. Planning staff from local jurisdictions were also consulted.

Not all small communities that lie outside the larger contiguous urban area are considered rural town centers. Evergreen and Conifer, for instance, are considered non-contiguous extensions of the urban area. Being an incorporated municipality is also not an absolute criterion. Most of the identified rural town centers are incorporated, but several (Strasburg and Byers) are not.

Rural town center policies, definitions and criteria will continue to be refined as work to implement Metro Vision proceeds. The list of identified rural town centers may also be refined.

Senior-Friendly Development

Vision:

The housing, transportation, social, health, recreational and service needs of a growing senior population will be accommodated in the future by improved development patterns and urban design sensitivities. Local governments wanting to create communities that provide for their citizens throughout their lifespans will embrace these changes.

Goal: Create senior-friendly communities by promoting development patterns and urban design features that meet the needs of older adults.

Policies

1. Housing Types. Allow and encourage a diversity of housing types that range from single-family homes to apartments to assisted living facilities, and that include both ownership and rental opportunities.

2. Housing Location. Locate senior housing near social services, public facilities, and commercial areas to reduce feelings of isolation and to ensure access to employment, education and other activities.

3. Development Patterns. Consider the cognitive limitations of seniors in planning new development. A grid-based street pattern is easier to navigate than winding streets and cul-de-sacs.

4. Pedestrian Connections. Provide sidewalks, narrowed street crossings and trail systems to improve pedestrian access.

5. Transportation. Senior-friendly communities should provide transportation alternatives. Seniors may be able to drive but they may not always want to drive. Providing transit, bus shelters, on-street bicycle lanes and the pedestrian connections described previously, will minimize reliance on automobile travel.

6. Building Design. Buildings and other structures should be designed to be sensitive to individuals with physical and cognitive impairments. Specifically, encourage commercial and public building design that incorporates a variety of textures, colors and distinct architectural features to help seniors differentiate between buildings and improve navigation within buildings. Ensure that buildings comply with established accessibility requirements (e.g., hallway width, hand railings, hazard-free walking surfaces, etc.). Minimize the use of steps and provide larger elevators.

7. Parks. Design parks that are easier for seniors to use. Avoid abrupt elevation changes and make pathways hard-surfaced. Use easily identifiable signs and equipment, and provide street furniture, commodes and other facilities to ensure comfort and encourage interaction.

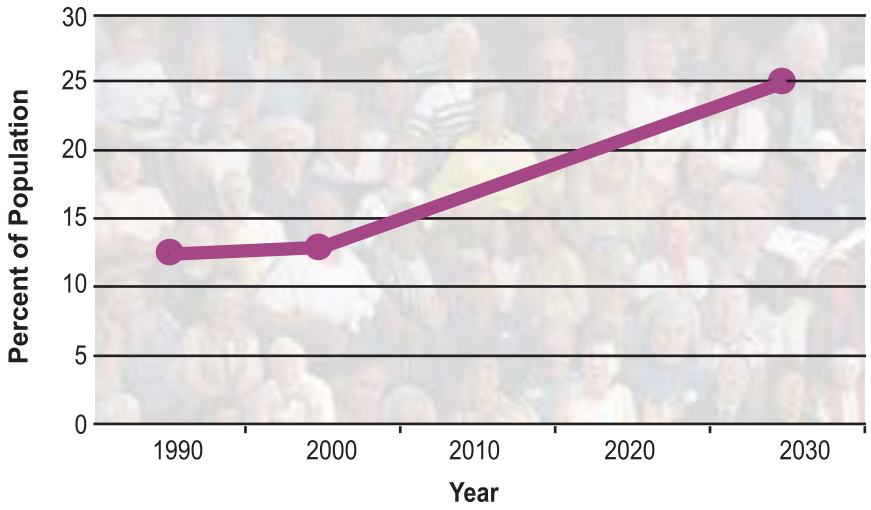
8. Lighting. Ensure that walkways and public spaces are well lit to enhance safety and security.

9. Signage. Directional and informational signs should be provided throughout the community. Use large letters with contrasting colors to improve readability.

Issues and Challenges

Approximately 12 percent of the region's current population is 60 years of age or older. This proportion is projected to increase dramatically to 25 percent by 2030, as Figure 12 shows. This demographic phenomenon will create challenges in terms of providing human services. It will also create challenges in accommodating changing housing, transportation and recreational needs.

Figure 12
The Graying of the Region



By 2030 the proportion of the population over the age of 60 will more than double.

"Baby Boomers" born between 1945 and 1964 are beginning to retire. As they do, some will leave their existing communities, looking for alternative housing or lifestyle options. Others will stay, wanting to preserve their existing lifestyle or explore new options. This generation represents a large portion of the population, so the movement and change has significant implications for local governments and private developers.

Today, there are more seniors, and they are living longer, due to medical advances and other factors. In fact, the number of people over the age of 100 is growing faster than any other population segment. More individuals are also working beyond the age of 65. Despite these advancements, seniors will continue to experience a higher incidence of cognitive and physical disabilities, be more susceptible to air pollution, and require significant services and resources.

Preparing for the Senior Boom

Communities in the Denver region can prepare for the aging of the population by considering development patterns and specific land uses being planned. The single-use, low-density, auto-oriented patterns of development prevalent in much of the region today may not adequately provide for the needs of seniors. It's

difficult to provide transit services to this type of development, physically isolating seniors from services and recreational opportunities.

More compact, mixed-use patterns of development – which Metro Vision encourages – may appeal to an aging population that wants alternative housing and transportation options. The architectural and design characteristics outlined in the policies at the beginning of this section can enhance the development of senior-friendly communities.

CHAPTER 3
Transportation System

The transportation system *serves* the growth and development elements of Metro Vision. Demands on the transportation system are also *affected* by growth and development activity. The system can also *influence* the location and type of development that occurs.

Vision:
A balanced multimodal transportation system will include rapid transit, a regional bus system, a regional roadway system, local streets, bicycle and pedestrian facilities, and associated system and travel demand management services. This system will provide reliable mobility choices to all of its users: residents and visitors of all ages, incomes and physical abilities, as well as businesses that provide services and produce or sell goods. Users will find it easy to access, and it will permit efficient state and nationwide connections for people and freight.

Goals: Provide safe, environmentally sensitive and efficient mobility choices for people and goods; and integrate with and support the social, economic, and physical land use development of the region and state.

To achieve these goals, the transportation system must be well-maintained and the region's agencies and governmental bodies must work cooperatively to develop strategies for obtaining sufficient funding.

Policies

1. System Preservation. Assure the preservation and maintenance of existing facilities.

2. Transit. Provide increased transit service and facilities that stimulate travel by means other than the single-occupant motor vehicle (SOV), encourage transit-oriented developments and provide mobility options.

3. Highways. Expand capacity of existing roadways in the most critically congested corridors and at key traffic bottlenecks and encourage access controls to maintain capacity.

4. Rights-of-way Preservation. Reserve rights-of-way in newly developing and redeveloping areas for pedestrian, bicycle, transit and roadway facilities.

5. Denver Central Business District. Improve and maintain transportation access to downtown Denver.

6. Safety. Develop a transportation system that promotes increased safety and security for all of its users.

7. Management and Operations. Make the best use of existing transportation facilities by implementing measures that actively manage and integrate systems, improve traffic operations and reduce the demand for single-occupant motor vehicle travel.

8. Bicycle and Pedestrian. Provide bicycle and pedestrian access through and between developments, and provide links to transit facilities.

9. Interconnections. Improve interconnection of the transportation system within modes, between different modes, and between the metropolitan area and the rest of the state and nation.

10. Efficient Housing and Business Developments. Design new developments to be accessible, to allow the efficient movement of pedestrians, bicyclists, buses and motor vehicles within and through the area.

11. Land Use Integration. Implement transportation system components that support Metro Vision's urban growth boundary/area, urban centers, open space and associated concepts.

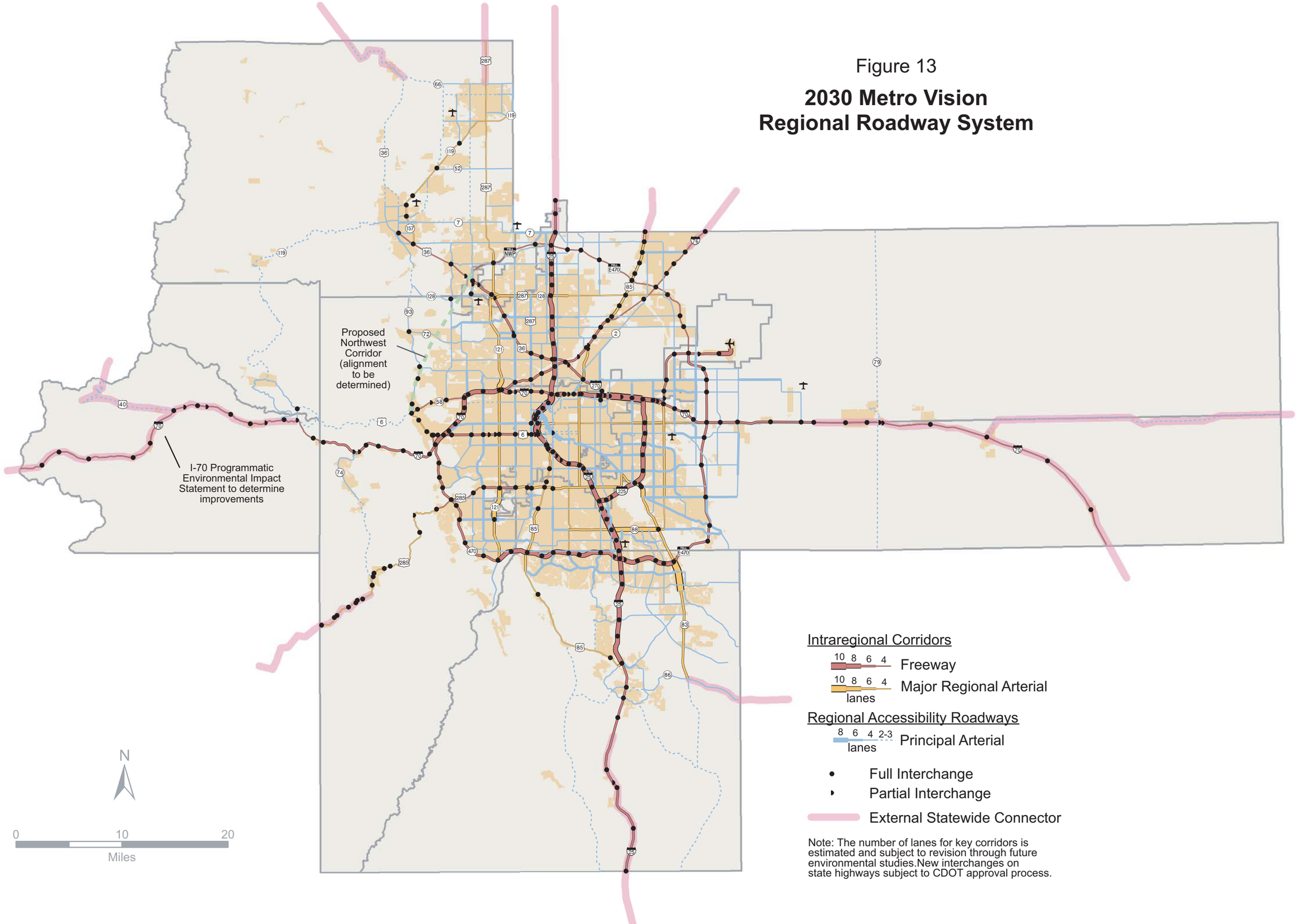
12. Transportation for the Disadvantaged. Provide a transportation system that considers the needs of and impacts on minority, low-income, elderly and disabled persons.

13. Air and Water Quality. Develop a transportation system that contributes to improved air quality and minimizes impacts on water quality.

The regional roadway and rapid transit systems will have a significant impact in shaping future development patterns (see figures 13 and 14). They also respond to the growth challenges facing the region. The regional roadway and rapid transit systems will support the development of urban center locations and help guide growth within the urban growth boundary/area. For these reasons, these transportation components will involve the highest level of capital investment. Chapter 3 of this plan outlines the needed transportation system for the year 2030 while its companion document, the 2030 Metro Vision Regional

Figure 13

2030 Metro Vision
Regional Roadway System



Intraregional Corridors

10 8 6 4 Freeway

10 8 6 4 lanes Major Regional Arterial

Regional Accessibility Roadways

8 6 4 2-3 lanes Principal Arterial

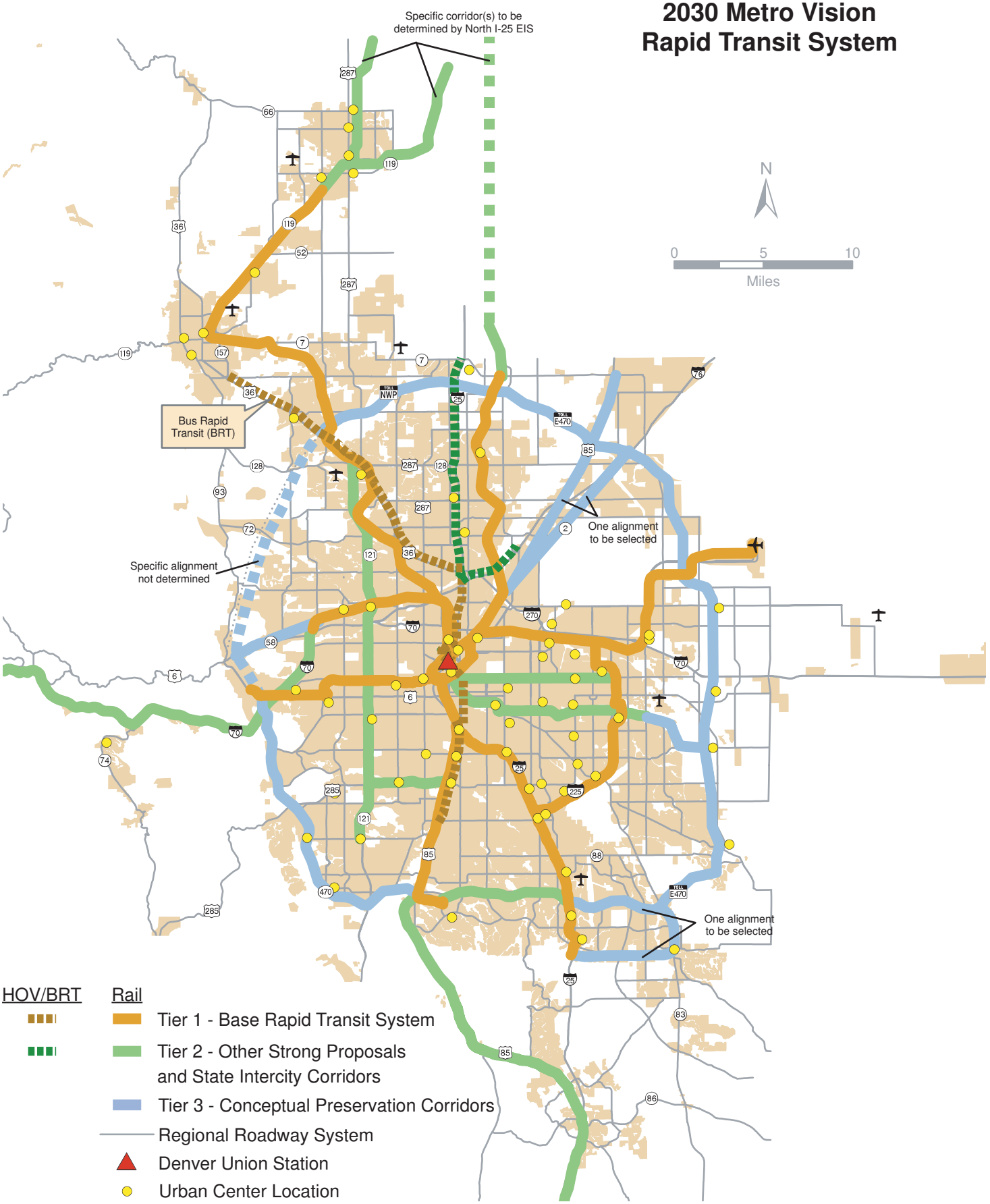
- Full Interchange
- Partial Interchange

External Statewide Connector

Note: The number of lanes for key corridors is estimated and subject to revision through future environmental studies.New interchanges on state highways subject to CDOT approval process.

Figure 14

2030 Metro Vision Rapid Transit System



Transportation Plan, lists the projects for which funding is expected to be available by 2030. The design of local neighborhoods and local streets, while not discussed in detail as part of the regional roadway system, influences traffic on the regional system. Designs that encourage alternative travel modes can help reduce travel demand on the regional system.

Issues and Challenges

With an additional 1.2 million people expected to be living in the region by 2030, greater demands will be placed on the transportation system, impacting the ease and efficiency of travel. Travel on the region's roadway system will increase but will be supported by an effective transit system, other alternative modes of travel, demand management strategies and efficient land use development. With the increases in population, particularly in the age group over 60, there will also be major increases in the demand for specialized transit services for the elderly and non-driving populations. Population and employment growth in neighboring counties outside the Denver region will adversely impact the regional system.

An effective, safe and well-maintained transportation system provides the mechanism for citizens and visitors to conduct business, interact with others, access different parts of the region and travel to other parts of Colorado and the nation. It unites the region as a community and provides the circulation system necessary for the region to participate and compete in national and global economies. It increases the quality of life and strengthens the regional economy.

People depend on transportation for access to jobs, health facilities, schools, shopping centers, recreation and cultural events. Businesses depend on transportation to bring in raw materials and goods in a timely manner, ship out finished products and bring in customers. And everyone depends on the delivery of coal from mines to power plants and gasoline from refineries to supply gas stations. The transportation system must provide mobility and accessibility to necessary goods and services for all the region's citizens, including all economic levels, ages, physical conditions, and racial and ethnic groups.

The interrelationship between transportation and land use will continue in the future. New transportation facilities will encourage more intense land use activity; that in turn will create a demand for more transportation. Therefore, it is important that the regional and local transportation systems are provided in a way that will most effectively influence the desired future development. Likewise, existing and future development patterns in certain locations will influence the types of transportation improvements that are feasible.

The lower-income segment of the population also needs access to jobs, health care and education through alternative modes to driving a car. This group should also not be unfairly burdened by the negative impacts of certain types of transportation facilities.

One of the most significant challenges is addressing roadway congestion. Construction of transportation facilities did not keep up with the growth of the 1990s. Presently, about 1,460 lane-miles of the regional roadway system are severely congested for more than three hours per day. This will grow to over 2,660 lane-miles by 2030 if funding for transportation is not increased. Congestion has been increasing not only in severity, but also in the duration of time that it occurs. If the highway that a commuter uses to get to work is congested for three hours today, it may be congested for more than five hours per day in 2030. The increase in the duration of congestion will negatively affect delivery and service vehicles, school trips and health care trips that previously were made in uncongested midday traffic. Additional consequences of severe congestion will be increased air pollution as well as increased noise along transportation corridors. Widening congested roadways is not always possible, especially in established urban core areas. Pedestrian, bicycle, transit service and operational improvements will be the focus of efforts along such roadways.

Businesses throughout the state will be increasingly dependent on reliable travel times in the Denver region for trucks, cargo vans and freight trains. Just-in-time deliveries of raw materials, packages and information via the region's transportation system are essential to the economic success of Colorado's companies.

Of course, the transit and roadway facilities that serve personal and business travel are of limited value if they are not maintained. Bridges, roadways and multipurpose trails throughout the region must be repaired or replaced to keep the system in adequate condition. Many major facilities in the area were constructed more than 30 years ago and are showing their age. Buses, trains and transit stations must also be maintained in good condition so that passengers are not discouraged from using public transit.

However, the most critical challenge faced in providing a transportation system to meet future needs is insufficient funding. Estimated transportation funding needs far exceed the expected revenues. Consequently, it will take many years to implement many of the important components of the system, some beyond 2030. This challenge must be addressed if the region is to provide the efficient transportation system required by its citizens and businesses.

Vision Concepts

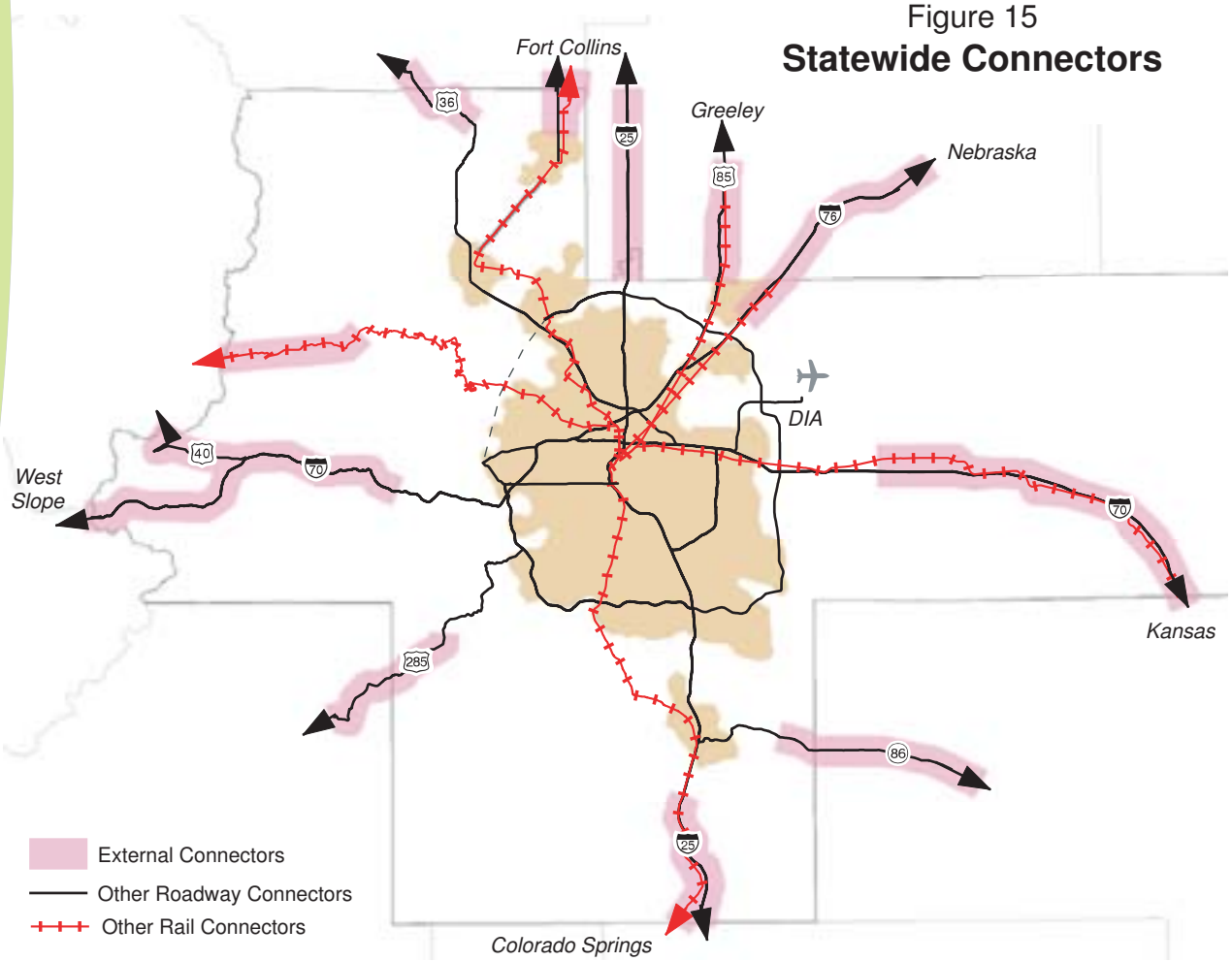
The Metro Vision transportation system is a balanced, multimodal system that includes physical facilities such as roadways, sidewalks, multipurpose trails and rapid transit lines, as well as the supporting services and activities to serve mobility needs. The following conceptual themes provide the foundation for the system.

Major Travel Corridors

Three types of travel corridors provide the foundation of the regional transportation system:
1) statewide connectors,
2) intraregional corridors and
3) regional accessibility roadways.

Figure 15 displays the relationship between the Denver region and the state, noting the key statewide roadway and rail connectors that help people and freight travel conveniently in and throughout the region, the rest of Colorado and the nation.

Figure 15
Statewide Connectors



Within the region, the majority of longer-distance trips are made on the backbone system of intraregional corridors. This backbone system includes rapid transit lines, freeways and major regional arterials (Figure 16). It carries the highest volumes of people and goods across the region and to the major employment and activity centers, such as the Denver central business district (CBD) and Denver International Airport (DIA).

In addition to providing connections to the region, the freeways and rail lines shown on Figure 15 facilitate travel through the Denver region. A significant amount of traffic on the highlighted segments begins or ends outside the Denver region, thus they are called external connectors. The non-highlighted roadways, while also serving a dual purpose as important routes for through traffic, primarily carry traffic that begins and ends within the region.

Figure 16
Intraregional Corridors

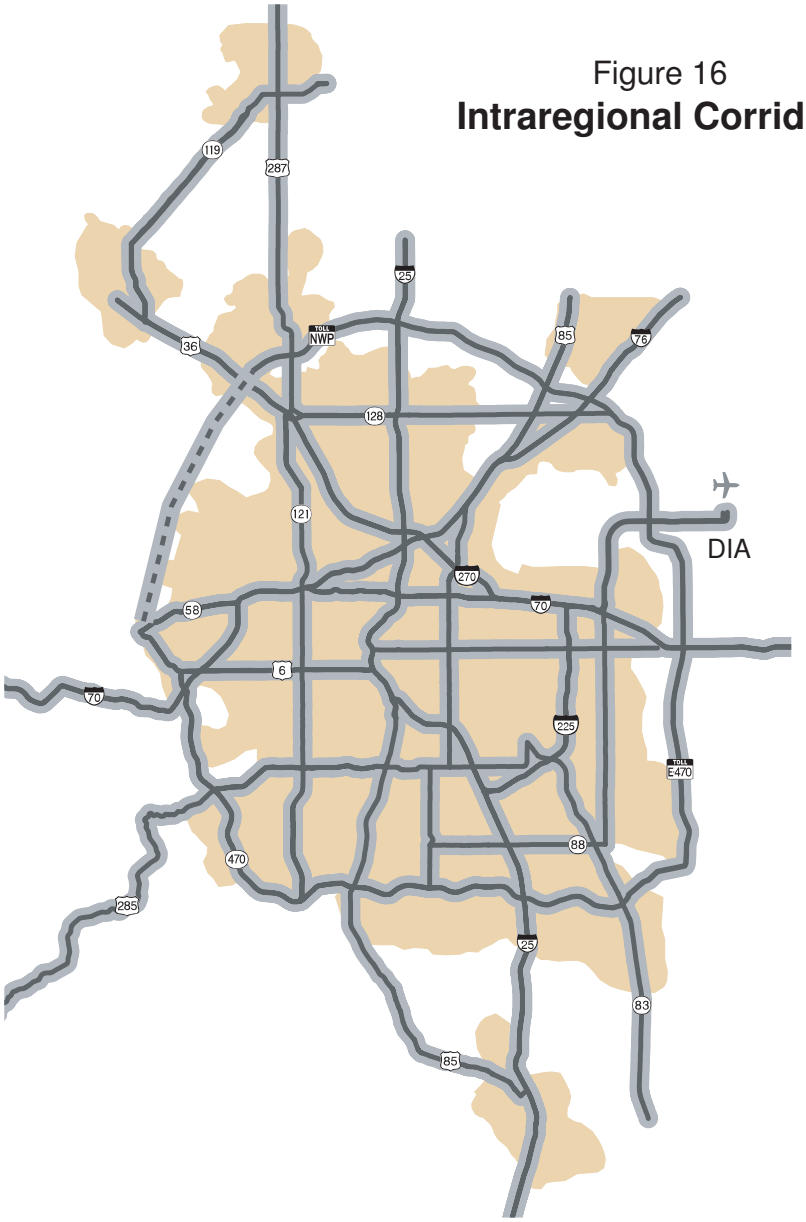
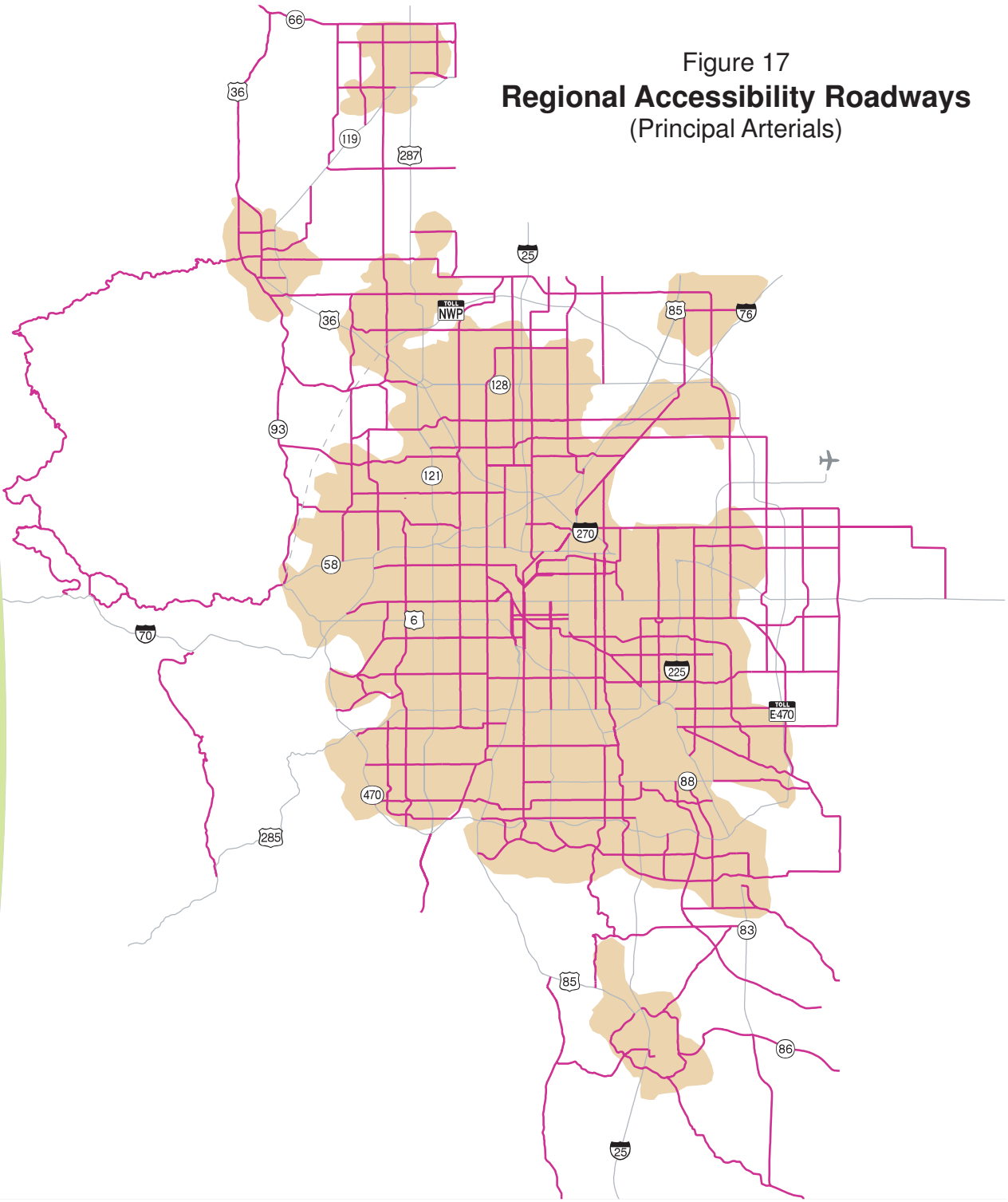


Figure 17
Regional Accessibility Roadways
(Principal Arterials)



A system of principal arterials provides further access to other key points throughout the region (see Figure 17).

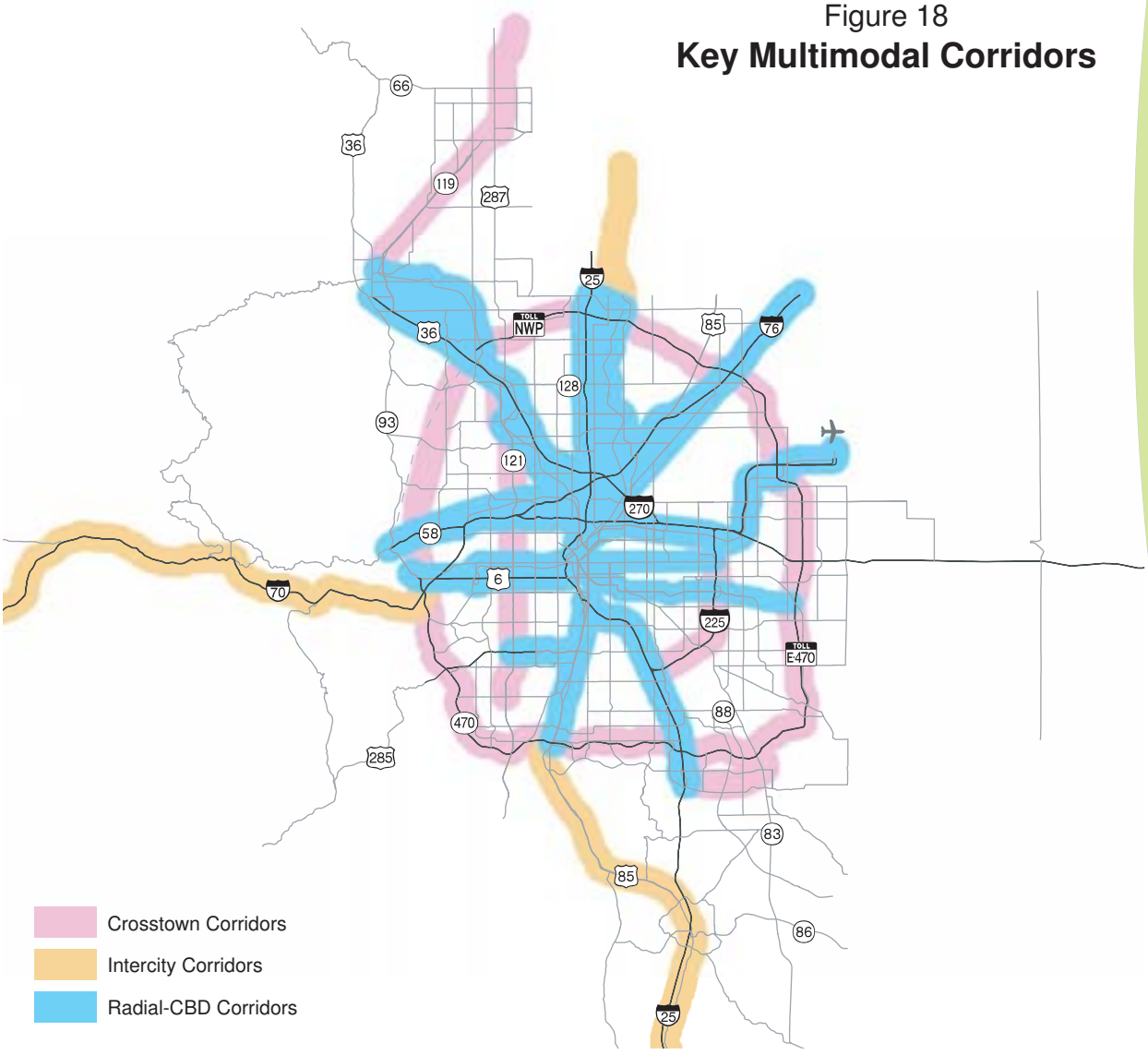
Key Multimodal Corridors

Several major multimodal integrated corridors will serve the region as illustrated in Figure 18. These corridors will exhibit closely related transportation and land use connections that have strong regional implications. The corridors will:

- Contain several interacting transportation facilities and modes – e.g. freeways, arterials, rapid transit, bus routes, bicycle corridors or freight railroads
- Stimulate higher density urban centers and development around transit stations
- Provide access to major freight facilities and airports

About 70 percent of jobs in the region and 55 percent of the population in 2030 are forecast to be within a mile of these corridors. The 2030 Metro Vision Regional Transportation Plan provides more detailed information about each corridor.

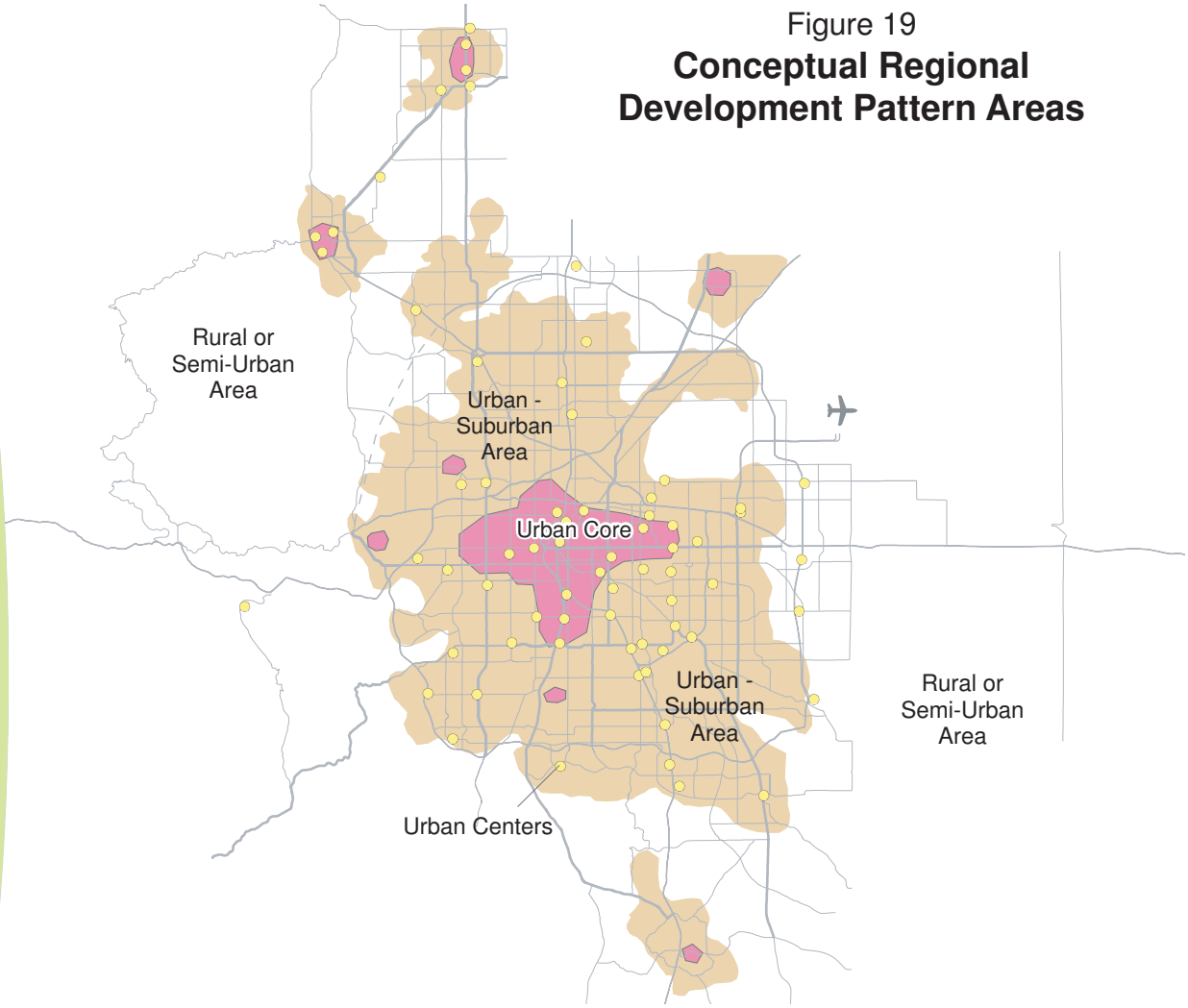
Figure 18
Key Multimodal Corridors



Defining Development Patterns and Transportation Facilities

Planned transportation improvements will be designed to fit in with the adjacent surroundings and have minimal negative impacts. The Denver region generally exhibits three types of development patterns as sketched in Figure 19 and described below.

Figure 19
Conceptual Regional Development Pattern Areas



Pre-World War II Urban Cores and Central Business Districts

These areas include the central business districts (CBDs) of cities such as Denver, Boulder, Longmont and other communities that formed before World War II. These are more densely developed areas with concentrations of mixed-use activities. Many arterials in these areas were streetcar lines in the early 1900s and still retain a strong pedestrian or transit focus. Examples include Colfax Avenue, Broadway (Denver and Boulder), and Main Street in Longmont.

Because widening such streets is cost-prohibitive, greater levels of congestion may be tolerated within these areas, with future transportation improvement efforts focused on pedestrian, transit, bicycle and street operational improvements. Likewise, it is challenging and very costly to widen freeways within the urban core.

Post-World War II Urban/Suburban Areas

In the 1950s, most new development started occurring in segregated land use patterns. Residential, commercial and office activities were rarely mixed. This post-war development is often oriented within a one-mile arterial grid system with commercial activity at the corners or along strips and the majority of residences located on curving streets away from arterials. Sidewalks were often provided. Widening some of these arterials is possible, and parallel, off-street and on-street bicycle facilities, increased transit service and operational improvements can often be added. At the most severely congested arterial intersections, grade-separated interchanges will be constructed, if feasible.

Many freeways within the urban and suburban areas of the Denver region are multilaned facilities that serve local residents and businesses as well as statewide travelers. I-25, I-70, and US-36 (Boulder Turnpike) were built from the 1950s through the 1970s, when social and environmental impacts received less consideration than today. Some existing congested suburban freeways may have adequate right-of-way to construct additional lanes or rapid transit lines. Operational and management improvements will also have a beneficial impact.

Rural and Semi-Urban Areas

These areas are characterized by low-density development, ranches, public lands and small rural communities. The roadways are still rural in nature, but they provide key connections between the built-up Denver urban area and outlying communities. Highways that provide connections between Denver and the four major freestanding communities (Boulder, Longmont, Brighton and Castle Rock) are often greatly affected by peak direction rush hour commuter traffic. Examples include SH-119 (Longmont Diagonal) and US-85 north of Castle Rock.

Roadways that pass through rural areas to other parts of the state are often affected by weekend recreational traffic that causes increased congestion and car crashes. Driver information and incident management systems will be very important because of the lack of adjacent alternative routes.

Highways and roads on the plains may be able to be widened to accommodate increasing traffic, while roads in the mountains have more physical constraints. Widening will be considered only in the most critical locations that provide connections to freestanding communities and the remainder of the state and will be done in an environmentally conscious way. Transit service improvements will be important to provide alternative modes of travel to and from the Denver area.

Metro Vision Transportation System

Regional Roadway System

The Metro Vision regional roadway system depicted in Figure 13 and Figure 14 reflects new roadways and interchanges, widened roadways and improvements to existing interchanges throughout the region. An increase from about 6,200 regional system lane-miles is desired by 2005 to about 8,300 lane miles in 2030. If the plan is implemented, most new roadways and freeway interchanges will be located in fast-growing suburban areas. Examples include the Northwest Corridor, I-70 East Corridor in Denver and Aurora, and the I-70 Mountain Corridor in Clear Creek and Jefferson counties.

Another important type of improvement is the elimination of selected at-grade railroad crossings on major roadways. These crossings presently cause significant delays and pose safety hazards. An example is the railroad crossing on Wadsworth Boulevard in Arvada, pictured below.

Source: City of Arvada KATV

Existing state statutes allow new roadways or added travel lanes on existing freeways to be funded by tolls. Currently E-470 and the Northwest Parkway are the only toll highways in the region. Tolls will be considered as an element of new "managed lanes" that are added to existing freeways, e.g. a free travel lane for buses and carpools, but tolls are collected for single-occupant vehicle (SOV) drivers. The amount of the toll would also vary by time of day, depending on the level of congestion. Managed lanes are currently being implemented along the North I-25 bus/HOV lane north of downtown Denver. Specific locations for future toll facilities have not yet been determined, but will be the subject of upcoming studies by the Colorado Tolling Enterprise.

Regional Rapid Transit Rail and State Intercity Corridors

The successful opening of the Southwest, Central and Central Platte Valley corridors showed that light-rail transit (LRT) is a viable and popular mode for travelers within the Denver region. The Southeast LRT line was approved by the voters in 1999 and is scheduled to be in full operation in 2006. The Metro Vision Plan identifies several additional sets of fixed-guideway rapid transit corridors (see Figure 14) in three system tiers:

Tier 1: Base Rapid Transit System – This system includes light rail, commuter rail and bus rapid transit (BRT) corridors and bus/HOV facilities that are currently operating or under construction, or that have been thoroughly studied in a recent major investment study (MIS), environmental impact statement (EIS) or the Regional Transportation District (RTD) FasTracks Plan. This system will serve the most densely developed parts of the region including at least 18 urban center locations. It will also improve transit service for persons

who do not have access to a private automobile. Implementation of this tier by 2030 would more than double the number of jobs located within one-half mile of a rapid transit station. The number of residents within a 45-minute transit trip of downtown Denver would also double.

The Denver Union Station is a major multimodal passenger hub and is envisioned to be a critical component of the base rapid transit system. Major improvements are planned to efficiently handle the thousands of daily passengers arriving, departing and transferring between lines and between modes of travel. Other rapid transit stations will stimulate the establishment of transit-oriented developments (TODs) and urban centers.

Tier 2: Strong Candidate Regional and Intercity Corridors – Several other corridors would traverse major developed areas within the region and/or provide service to and from other parts of the state. Detailed design or ridership studies have not been completed for the regional and intercity corridors, but consideration will be given to applicable corridors when designing adjacent roadway improvements so as not to prohibit future rapid transit construction.

Tier 3: Conceptual Preservation Corridors – These future rapid transit corridors are located along major roadways or freight railroad lines. Rights-of-way will be preserved to the extent possible in these corridors for potential rapid transit use in the future.

Bus and Other Transit Services

A variety of other transit services will be provided. In particular, there will be a greater need for alternative demand-responsive service for the growing elderly and disabled population. Categories of bus and other services include:

• **Fixed-Route Bus Service** – RTD plans to expand its fixed-route public bus service extensively. This service includes regional, express and local routes. Some of the current bus routes will be replaced by rail transit as those corridors are implemented. Many bus routes will be adjusted to serve as feeders to rapid transit stations. Suburb-to-suburb crosstown bus service will expand significantly.

• **Bus Rapid Transit (BRT)** – BRT typically refers to buses traveling in their own lanes set aside within a roadway right-of-way. Among the options will be dedicated bus/HOV lanes or bus stations with segregated access ramps. Additional management improvements will permit buses to travel more quickly and efficiently along the roadway. The US-36/I-25 Corridor will be among the first BRT offerings. BRT improvements will also be considered along regional system arterials such as Colfax Avenue or 28th Street in Boulder.

- **park-n-Ride Lots and Transfer Points** – Parking capacity at existing park-n-Ride lots will be expanded as appropriate and new lots will be established, particularly in newly developed areas. RTD will provide a system of timed transfer points known as FastConnects that will enable convenient bus-to-bus, bus-to-rail and rail-to-bus transfers.

- **call-n-Ride Service** – RTD will continue to provide call-n-Ride door-to-door transit service with smaller buses in suburban areas and freestanding communities that do not have sufficient demand to warrant fixed-route service.

- **Specialized Elderly and Disabled Transit Service** – RTD provides Americans With Disabilities Act service through its access-a-Ride program. All fixed-route buses are wheelchair lift-equipped and trains will be wheelchair accessible. Additional service will be provided by private non-profit agencies and local government sponsored providers. Senior centers and churches will also provide many trips.

- **Rural Service** – Service to areas outside the RTD boundaries will be available through specialized providers.

- **Private Service** – Private bus and van service will continue to be important for workers and visitors to the gaming establishments in Central City and Black Hawk as well as for skiers and visitors traveling between DIA and the mountain resort communities. Private intercity carriers such as Greyhound and the Texas, New Mexico and Oklahoma (TNM&O) bus company are anticipated to provide intercity passenger service and other companies also will provide service between Denver and Mexico.

Pedestrian and Bicycle Facilities

The continued construction of pedestrian and bicycle facilities--combined with efficient land development design--can reduce the growth of motor vehicle travel and lead to reductions in air pollutant emissions and energy consumption. Such facilities are key to implementing urban centers and improving access to transit stations. They can also help citizens incorporate healthy physical activities into their daily travel routines. The following types of facilities for non-motorized travel will be provided with a primary focus on travel for work, personal trips, business and shopping:

- Sidewalks
- Crosswalks including street markings, pedestrian signal indicators, signal actuation and road narrowing techniques
- Multipurpose trails (off-street “bike paths”)
- Cul-de-sac cut-through paths
- Bicycle lanes--exclusive on-street and bicycle signal actuation
- Paved shoulders and wide curb lanes
- Overpasses and underpasses

A system of regional bicycle corridors is detailed in the Pedestrian and Bicycle Element of the Regional Transportation Plan, also identifying specific policies adopted by DRCOG. It is important that bicycle and pedestrian networks, urban centers and major transit facilities be connected. Supporting amenities such as bicycle racks on buses, parking racks and lockers, and trail and route guide signs will help encourage greater bicycle use.

Multimodal Passenger Facilities

The regional transportation system is composed of a number of parts (different modes, passenger and commercial facilities, surface and air transportation, etc.) that together make up a system serving the Denver region and connecting it to other parts of the state and the world. Denver International Airport (DIA) will be the most important transfer point in the state for air passenger traffic, providing connections to national and international destinations. Ground connections between DIA and the Denver region and state are also important.

The Denver Union Station is envisioned to become a major intermodal passenger terminal serving as the hub for the Denver region as well as intercity, and national rail and bus service. Commuter rail, light rail, intercity rail, Amtrak, RTD buses, intercity buses, cars, taxis, trucks, bicyclists and pedestrians will all converge at Denver Union Station. As previously mentioned, there will be numerous transit stations and park-n-Ride lots for people to reach RTD trains and buses via their personal vehicles, by bicycle or on foot. Carpool lots such as the one currently at I-70 and Hogback Road will allow people to park a vehicle and carpool to and from work, activities or trips to the mountain resorts.

Metro Vision 2030 will improve our region's quality of life.
Metro Vision 2030 will encourage economic growth and job creation by planning for a state-of-the-art transportation system while preserving and creating open space and protecting our air and water. These benefits make the region desirable to new or relocating businesses while encouraging local businesses to stay and reinvest in their communities.

Intermodal Freight Facilities

The movement of freight, goods and packages to, from and within the Denver region is extremely important to Colorado's economic vitality. Major intermodal freight terminals transfer large amounts of cargo between rail cars and trucks at the Union Pacific Railroad and Burlington Northern & Santa Fe Railroad intermodal terminals in Denver. Additionally, many new automobiles arrive in Colorado via train and are transferred to trucks at intermodal terminals in Commerce City. Air cargo terminals near DIA transfer thousands of packages and containers daily between airplanes and delivery trucks and vans. In addition to DIA, Front Range Airport is envisioned to become a major freight terminal.

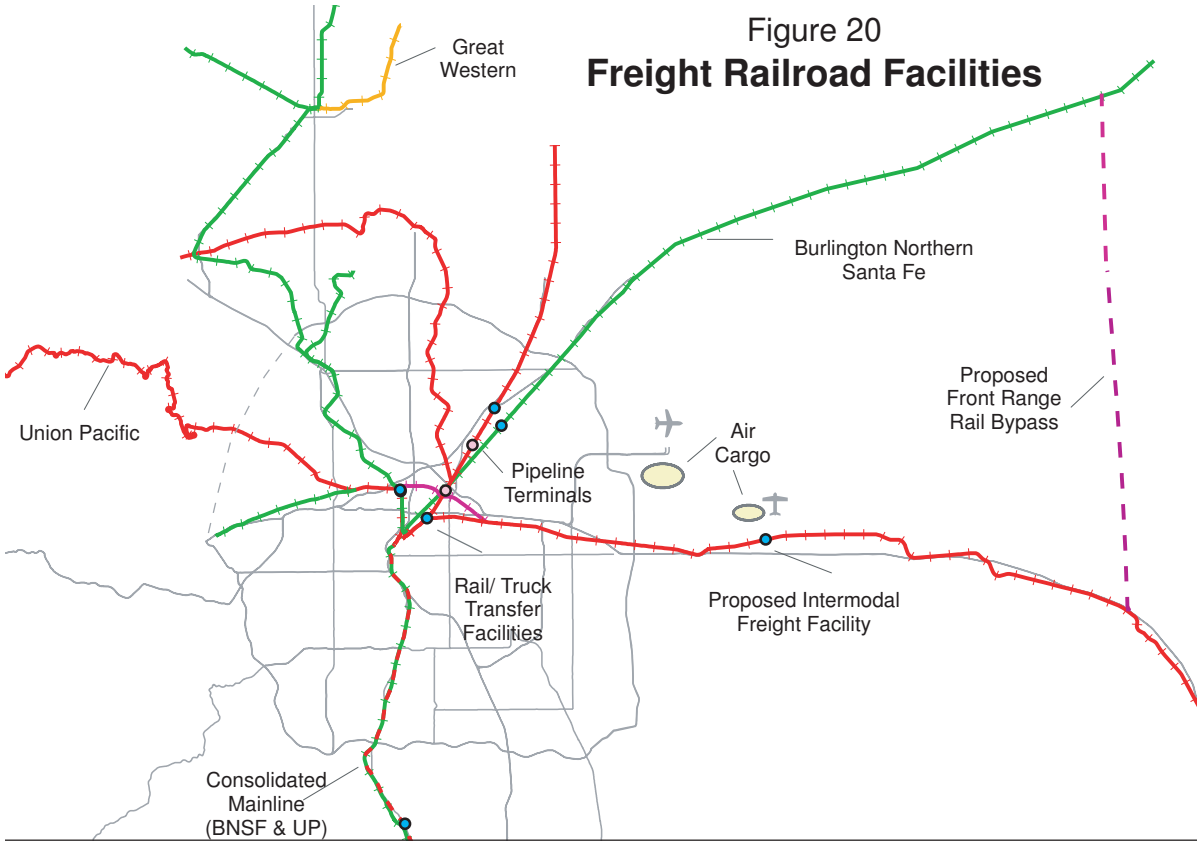
The relocation of the two largest rail-truck intermodal facilities from the central urban core to east of E-470 near Front Range Airport and to 88th Avenue and SH-2 has been proposed. Several identified major roadway projects would improve the connections from publicly-funded highways to the privately-operated freight terminals.

Freight Railroads

Historically, the Denver region grew up in the late 1800s around the railroad lines. Though there are now only two major railroad companies serving Colorado, they carry an enormous amount of freight to, from and through the Denver region. Several dozen freight trains serve or pass through the region daily. There are major concerns about safety and traffic congestion at train crossings. Additional railroad grade-separations (bridges) will be constructed in the future. Some freight rail lines may be used for commuter passenger rail service in the future.

The construction of a new freight railroad line to the east of Denver is envisioned that would divert a significant number of north-south trains out of communities such as Castle Rock, Littleton, Denver, Commerce City and Brighton. This concept is in the very early planning stages, but there is strong interest from CDOT, RTD, freight railroads and local communities in pursuing this idea. Combined with this effort would be the relocation of intermodal facilities out of the urban core and railroad track realignments to improve efficiency through Denver (see Figure 20).

Figure 20
Freight Railroad Facilities



System Management and Operations

Actions to actively manage the transportation system and improve efficiency are especially important as congestion worsens. Significant benefits to traffic and transit operations will be achieved with technology and commitment of personnel to operate, troubleshoot and monitor the devices to make real-time system changes and disseminate information to the public. These actions and systems are a part of the Regional Intelligent Traffic Systems Strategic Plan. Example actions include:

- Traffic signal system improvements

- Site-specific operational improvements (e.g. intersection turn lanes, acceleration/deceleration lanes, and slow-moving vehicle lanes)
- Bus operation improvements and passenger information systems (signs announcing bus arrival times)
- Driver information systems such as variable message signs
- Incident management such as courtesy patrols and highway shoulders for disabled vehicles
- Intelligent Transportation System (ITS) improvements
- Access management on major regional and principal arterials, i.e. ramp metering

Travel Demand Management

The goal of travel demand management (TDM) is to reduce the demand for single-occupant vehicle (SOV) travel, either by eliminating trips, shortening trips, changing the mode of travel or changing the time of day the trip is made. Such travel reductions aid in improving air quality and reducing congestion. Example TDM activities include:

- Enhanced and geographically focused carpool/vanpool and schoolpool marketing and facilitation
- Encouragement of teleworking
- Efforts to encourage employers to shift to variable work schedules
- Promotion of and availability of alternative travel modes (walking, bicycling, transit)
- Promotion of development design principles that encourage alternative travel modes.

System Preservation

It is extremely important for the region to preserve and maintain the existing system of major capital facilities such as sidewalks, bicycle facilities, rapid transit guideways, transit vehicles, roadways, bridges and other facilities. Maintaining systems management infrastructure such as traffic signals, traveler information systems, pavement markings and signs is equally important. As new transportation facilities are proposed for construction, the cost for future maintenance will be considered.

Safety and Security

More than 250 people die and about 20,000 are injured in more than 75,000 traffic crashes in the Denver region each year. Motor vehicle crashes are the number one cause of death for persons aged 1-35. These events dramatically impact the region's quality of life. Related impacts of crashes such as traffic congestion also have an economic impact on citizens and businesses. Planning, traffic engineering, and vehicle designs will not eliminate all crashes since human behavior is the primary cause of 80 percent of crashes. However, these efforts can potentially reduce the likelihood of a crash occurring or can reduce the severity of crashes at certain locations. Safety issues will be strongly considered when specific projects are evaluated, programmed, designed and constructed. Support will be given to legislation that aims to cost-effectively improve the safety of all transportation users.

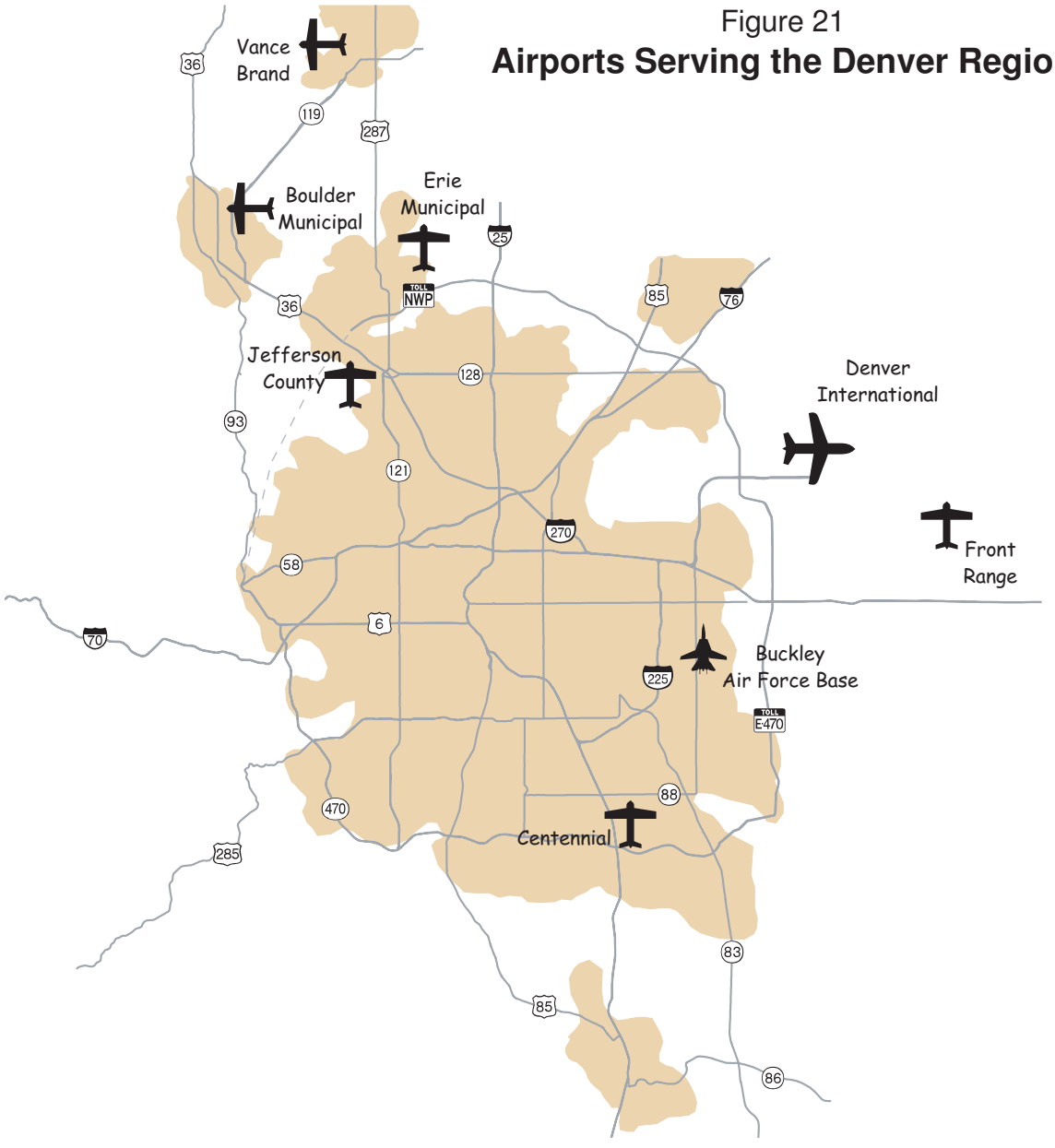
In the Denver region, all airports have established strict security measures for passengers and freight and are expected to continue these measures in the future. Safety measures such as fencing along railroad and light rail lines will be considered where the need for pedestrian safety exists.

Aviation

Air transportation is an important element of the regional transportation system, sustaining a significant portion of the area economy. The existing airports - Denver International, Boulder, Centennial, Front Range, Jefferson County, Erie Municipal and Vance Brand - are expected to serve the region into the future (Figure 21). No additional airports are envisioned. In addition to these facilities, Buckley Air Force Base in Aurora is included in the region's aviation system for air traffic control and to ensure cooperation with the impacted local governments.

The function of each airport will ensure that all general aviation needs are addressed. Denver International Airport will serve as the region's air passenger carrier airport. Boulder, Vance Brand and Erie Municipal airports are basic general aviation airports. They will primarily serve smaller aircraft for recreational and business purposes. Centennial, Jefferson County and Front Range airports are general aviation facilities that will serve high volumes of business aircraft. Front Range Airport is envisioned to become a major air cargo facility. Responsible land use and good access will be provided.

Figure 21
Airports Serving the Denver Region



Fiscally Constrained Transportation Element

The total cost to implement, operate and maintain the entire Metro Vision 2030 transportation system, as presented in this plan, is estimated to be about $88 billion. However, the current estimate of reasonably expected revenues through 2030 is only $63 billion. This includes approximately $4 billion approved by voters for RTD to implement the FasTracks transit plan. DRCOG is required by federal law to prepare a fiscally constrained transportation plan that assumes only reasonably expected revenues. It must be shown to conform with the State Implementation Plan for air quality, and also pass regional budget tests for the emission of pollutants from motor vehicle sources. The Fiscally Constrained Regional Transportation Plan is described in the 2030 Metro Vision Regional Transportation Plan.

CHAPTER 4

Environmental Quality

The Denver region's environmental setting is one of its greatest assets. The climate, the location at the foot of the Rocky Mountains and the proximity of the South Platte River have attracted human activity for centuries.

Metro Vision acknowledges the effect that human development has on the environment but believes many of those effects can be mitigated and avoided. Protection of the region's natural resources through the Regional Open Space Plan, the region's water resources through the Clean Water Plan and the region's air through the work of the Regional Air Quality Council maintains environmental quality citizens expect.

The previous two chapters described the visions for development and transportation. This chapter focuses specifically on the region's environmental vision. Goals and objectives for open space, water quality, air quality and noise are set forth and policies for achieving those goals are defined.

Parks and Open Space

Vision:

By 2030, the region will have protected its major natural resource areas, including the mountain backdrop, riparian corridors, and other key open space and wildlife habitat. Several key working farms and ranches adjacent to the urban area will be preserved. Recreational areas in both developed parks and passive open space will be readily available and accessible to the region's residents. The region's open space will help define the urban area and separate communities.

Goal: Establish an integrated, linked, permanent parks and open space system. This system will include a variety of open space and make appropriate open space accessible to all of the region's population.

Policies

1. Focus Areas. Metro Vision encourages preserving open space in key focus areas, as shown in Figure 22.

2. Agriculture. Agricultural resources of state or national significance and ranches and grazing lands of local or regional importance should be preserved. They're integral to the region's heritage, and economic and cultural diversity.

3. Natural Resources. Natural resource areas will be conserved and protected for future generations. Important natural resources include surface waters, riparian areas, wetlands, forests and woodlands, prairie grasslands, wildlife and wildlife habitat, other environmentally sensitive lands and commercial mineral deposits.

4. Hazard Areas. Where practical, natural (geophysical) and human-made environmental hazard areas will be used and managed to contribute to a regional open space system in the region. Public rights-of-way, such as utility corridors and other places where land development is constrained, should also be used to augment open space.

5. Recreation. The physical and aesthetic enjoyment of the out-of-doors will be provided for in an integrated regional parks and open space system.

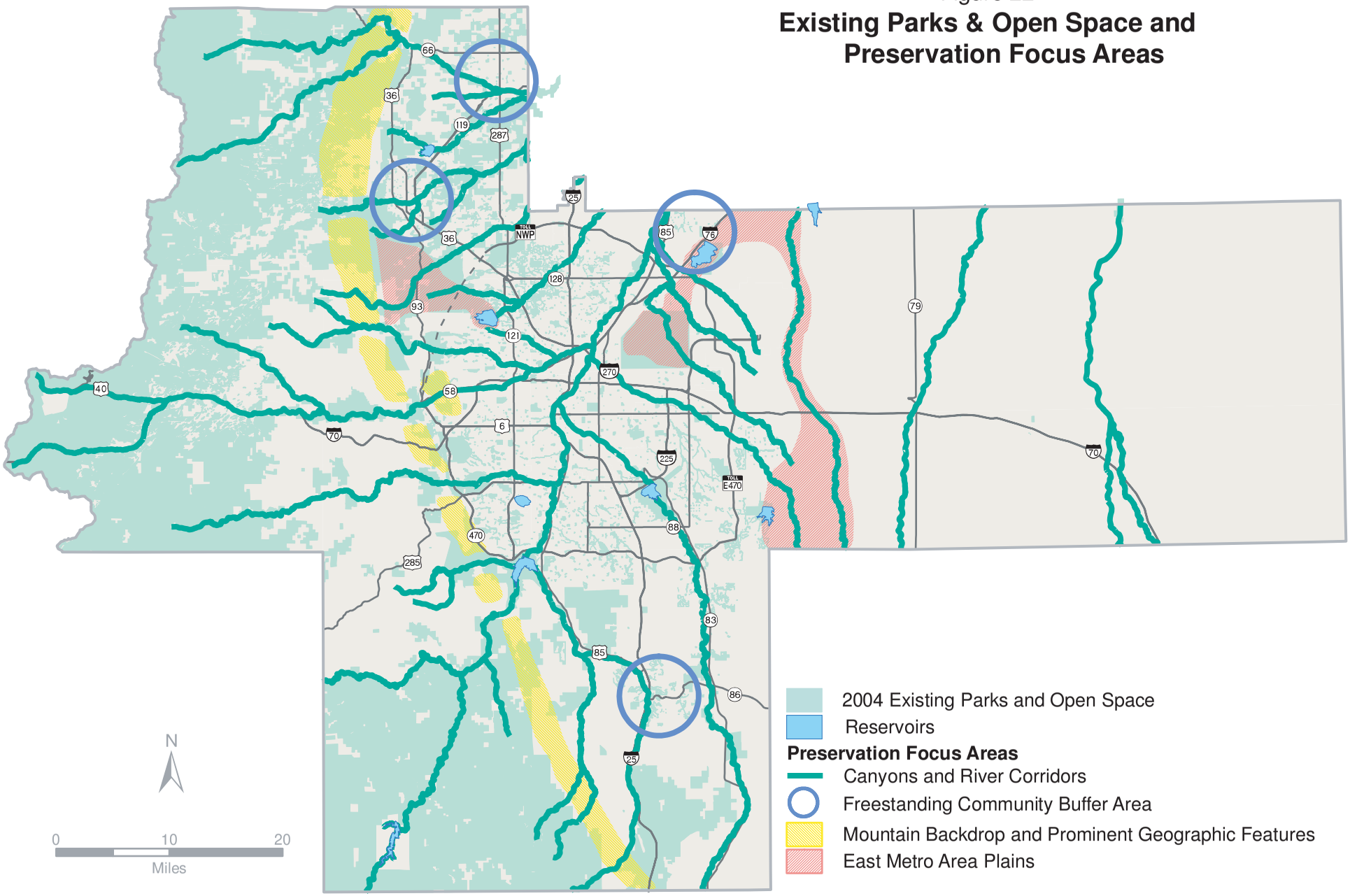
6. Urban Shaping. Protected open space lands will help shape future urban growth and land development, and encourage communities to be compact.

7. Prominent Features. The region will preserve prominent geologic and geographic features and important cultural resources for their visual, historic and educational values.

8. Trails Network. Metro Vision calls for an areawide trails network to be developed to link open space and provide access. This network should take full advantage of all potential connections, including road and railroad rights-of-way, floodplains, ditch service roads and utility corridors.

Figure 22

Existing Parks & Open Space and Preservation Focus Areas



Issues and Challenges

Open space is a limited, natural resource of great importance to the region. As the gateway to the Colorado Rockies, the Denver region is known for its outdoor activities, spectacular natural setting and open spaces. Residents and visitors to the region alike find the recreational opportunities and quality of life these open spaces provide to be major attractions. The environmental, visual and agricultural values of these areas are an important component of a healthy urban area.

The Denver region is fortunate to have an extensive and growing parks and open space system. As the region continues to grow, however, unprotected open lands are being developed that could have value for other uses such as regional parks, open space and natural resource conservation. To help inform local elected officials as they make difficult land use decisions affecting the region's future, it's desirable to identify the "last best places" or "crown jewels" that are particularly important and worth protecting. It is also important to view these places from a regional perspective to plan future open space preservation.

In July 1999, the DRCOG Board of Directors adopted the Regional Open Space Plan to define the existing status of regional open space, to identify the issues confronting open space, and to set regional goals and strategies. The Open Space Plan sets a goal of protecting at least 100 square miles of additional open space before the year 2020 and identifies more than 600 square miles of key open space areas that need protection. The 100-square-mile goal would result in maintaining the region's 1997 ratio of acres of open space per 1,000 people. Assuming that same ratio was used for 2030 would require an additional 76 square miles of open space between 2020 and 2030. It may be appropriate, however, to revisit the open space per capita ratio based upon more current open space inventory information.

An important tract of land that could enhance the region's inventory of protected open space is the Lowry Range property in eastern Arapahoe County, which is owned by the State Land Board. A significant portion of this 40-square-mile property may be planned for open space.

Regional Open Space Plan

The Regional Open Space Plan provides a regional vision for a system of linked and integrated parks and open space, establishes a strategic framework of goals and action strategies for local, regional and state open space protection, and provides current information (maps, data and tools) about open space resources and opportunities for their protection. The plan groups potential open space areas into six broad resource land categories:

1. natural resources
2. environmental hazard and development constraint areas
3. outdoor recreation
4. agricultural resources
5. prominent geologic and geographic features, and
6. urban growth shaping.

In addition to the open space preservation focus area map (Figure 22), the plan contains more detailed maps to identify open space opportunities.

The preservation focus area map consolidates several individual opportunities maps and includes information from state and local open space plans to identify the region's priorities for open space preservation. It establishes an open space protection strategy within five regional focus areas:

- canyons and river corridors,
- the mountain backdrop,
- prominent geographic features,
- east metro area plains preserve, and
- open space community buffers surrounding each of the four freestanding communities in the region.

These preservation focus areas generally identify areas that possess unique natural characteristics that are considered to enhance quality of life in the region. More detailed planning at the local level will be required to refine the specific tracts of land that should be preserved as open space.

Water Quality

Vision:

As a semi-arid region, the Denver area values its water resources. To the extent possible, every stream, lake and reservoir will be fishable and swimmable. The Colorado Water Quality Control Commission identifies standards for the anticipated uses of water resources in the state. These standards will be achieved to protect water quality.

The Clean Water Plan provides the forum for discussing water quality goals. Interested parties within the region have different interpretations of the meaning of "clean" water. By coordinating water quality planning at the regional level, DRCOG will balance divergent community interests.

Matching need for wastewater facilities with expected urban growth will save on infrastructure costs. New facilities will be sized to correctly match demand and will be built as needed. The planning will also ensure that potential conflicts between different providers are avoided. The best management practices for addressing nonpoint pollution will also allow urban development to take place with the least impact on water quality.

Goal: Restore and maintain the chemical and physical integrity of the region's waters to ensure clean water for residents and a balanced, healthy, ecological community.

Policies

1. Wastewater Treatment. Metro Vision calls for identifying an effective regional system of wastewater treatment facilities that meets federal and state standards (Figure 23). Wastewater management strategies will be implemented locally.

2. Wastewater Service. Development should only be allowed in areas where sewer service is already available, where new wastewater facilities can be established consistent with state-adopted stream standards and the Clean Water Plan, or in areas where on-site or individual sewage disposal systems (ISDS) are deemed appropriate.

3. Nonpoint Sources. Local actions will reduce pollution from stormwater and other nonpoint sources. All development in the region should follow adopted grading, erosion and sediment control ordinances to minimize how much sediment and other pollutants from urban runoff go into the region's waters.

4. Ecological Community. Water quality protection and water resource management initiatives will achieve a locally defined, balanced community of fish and other aquatic life. These activities should take into account the needs of both the natural environment and other resource uses, such as water supply.

5. Watersheds. Water quality planning will be coordinated through a bottom-up, watershed-based process. Watershed management strategies will be identified.

6. Water Supply. Integrated resource management programs should be developed that deal effectively with the relationships between water quality management and water supply.

7. Aquifers. To avoid groundwater contamination, land uses such as waste injection wells and sanitary landfills should not be permitted over alluvial aquifers or above recharge areas to bedrock aquifers. Development over areas with permanently high groundwater levels should use appropriate mitigation measures.

Figure 23

Regional Watersheds with Existing and Planned Wastewater Treatment Facilities

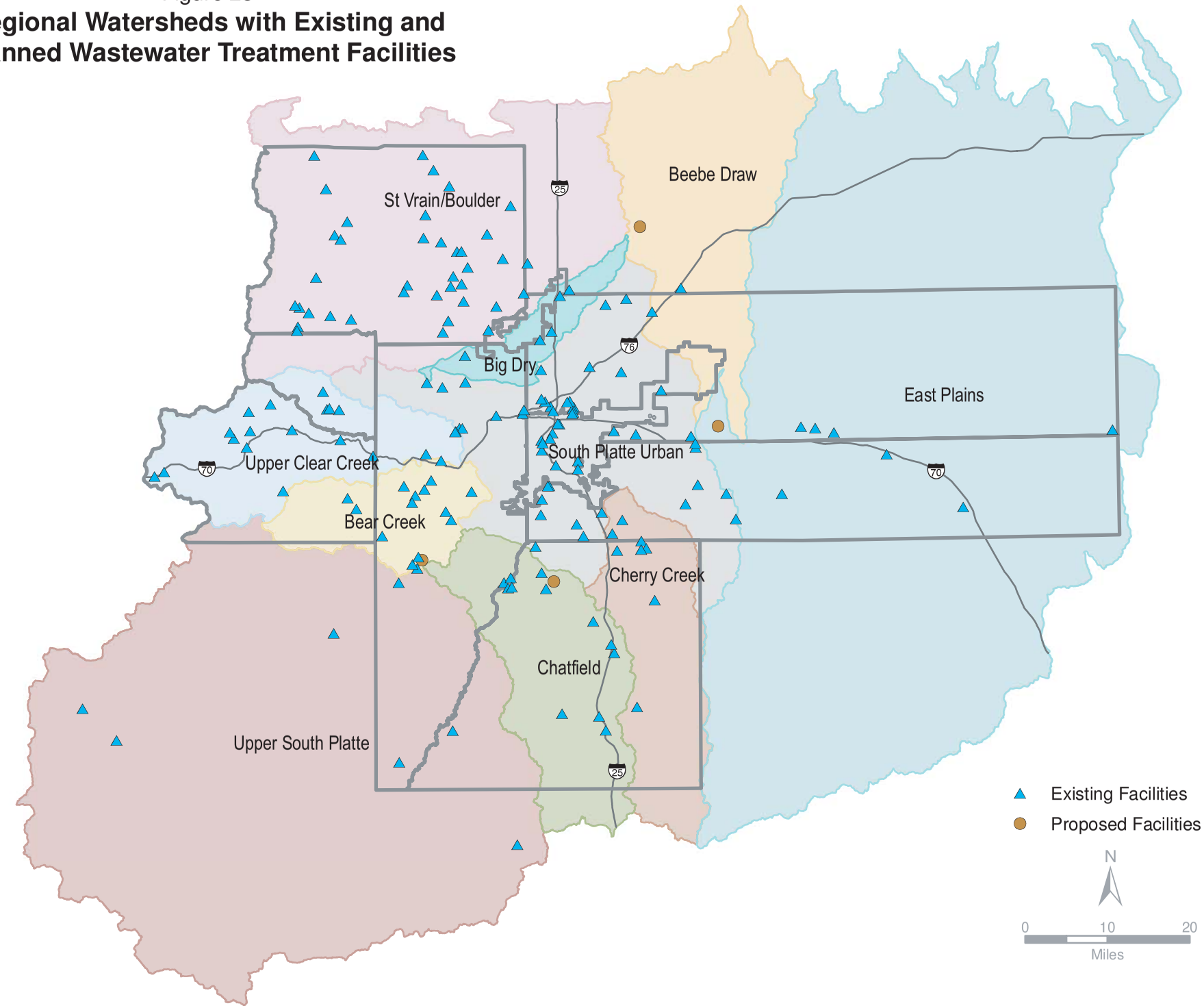
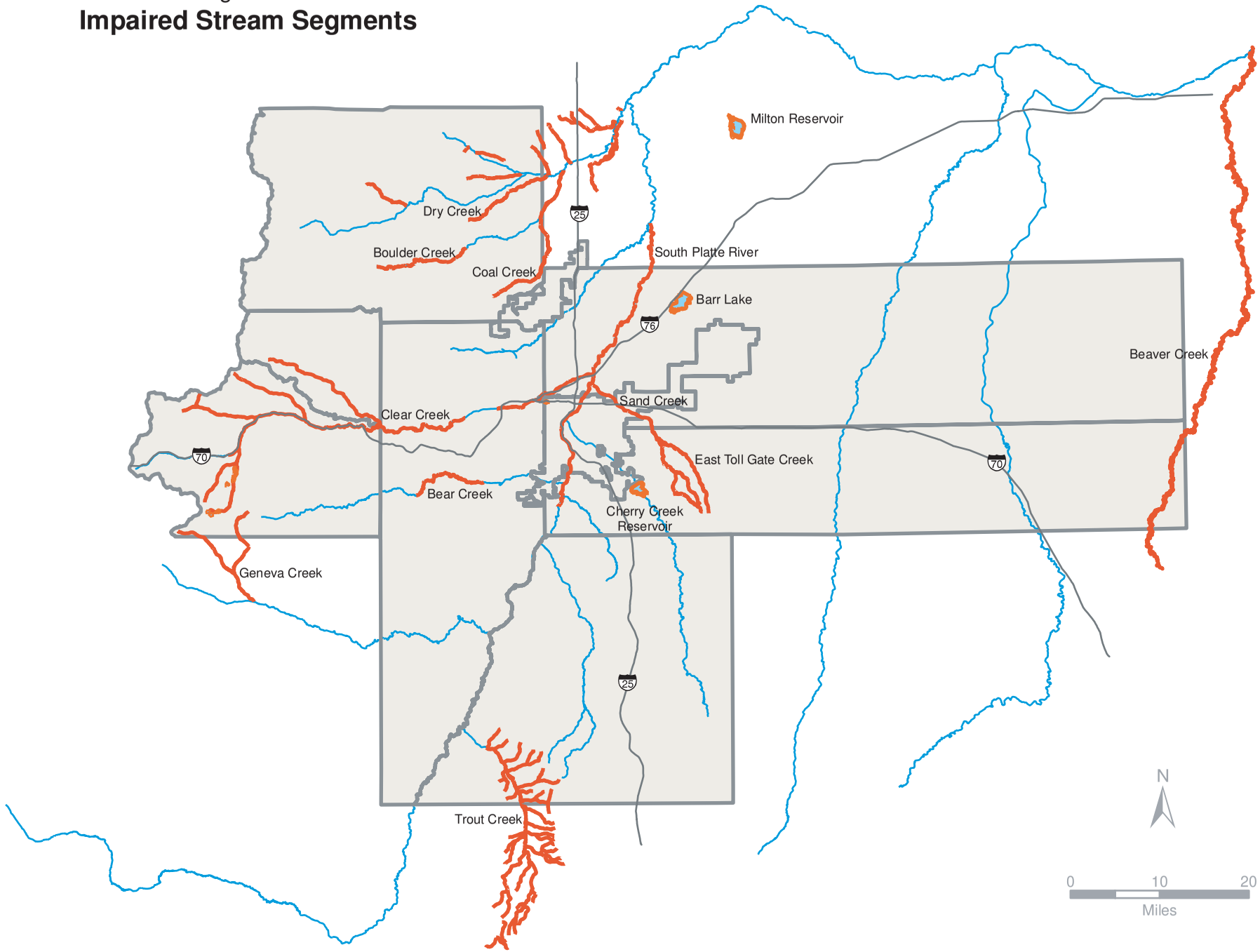


Figure 24

Impaired Stream Segments

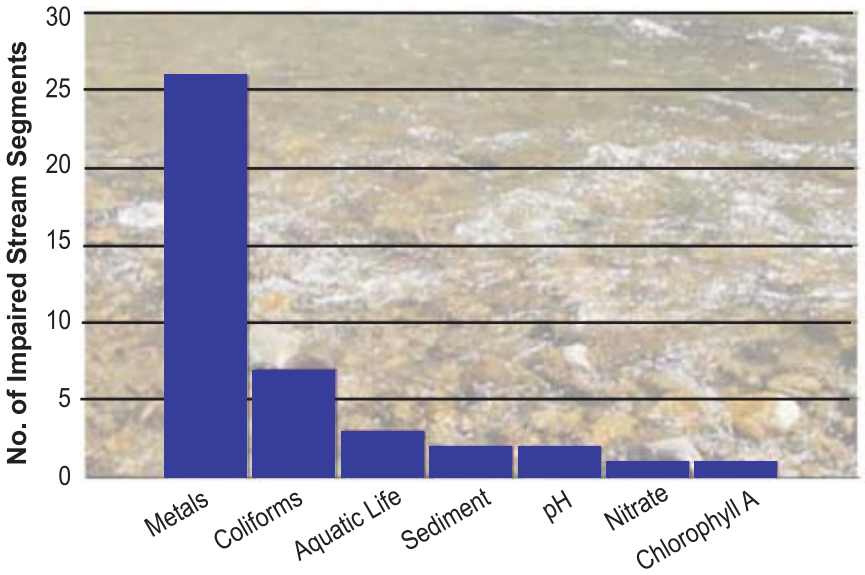


Issues and Challenges

In 1970, more than 60 percent of all waters in Colorado had quality problems, and the associated environment was damaged. By 2003, more than 90 percent of these waters met or exceeded their water quality goals. Much effort has been made to improve water quality, but the number of impaired stream segments in the DRCOG region is still high (see Figure 24). The Clean Water Plan addresses watersheds that extend beyond the DRCOG region through cooperative agreements with adjacent planning regions.

Figure 25

Impaired Streams in the Region by Identified Potential Pollutants



The pollutants that affect water quality are shown in Figure 25. Seven different metals affect portions of the region, primarily from abandoned mining activities. Coliforms indicate bacterial contamination and can be caused by inadequate wastewater treatment or from animal activity in a watershed. Three segments have low levels of fish or other aquatic life but the particular pollutant causing this has not been identified. Low pH (or acidic conditions) in two reservoirs and high algal levels (chlorophyll a) in another reservoir have affected use of these important assets. High nitrate levels, affecting both fish and humans, can be caused by urban and agricultural sources.

Federal and state laws allow the continued use of these water resources while requiring restoration and protection from further degradation. Any use of a resource can cause problems; the best solution is to find an acceptable level of change that keeps the environment healthy without sacrificing the uses (water supply, agricultural irrigation, aquatic life and recreation) that are important to the region. In addition to reducing pollutants entering streams, sufficient in-stream flows can maintain healthy fish and wildlife populations, and support recreational uses.

The region's expected 1.2 million additional residents by the year 2030 will contribute 120 million gallons per day of wastewater, nearly equal to the existing flow at the region's largest wastewater facility, the central plant of the Metro Wastewater Reclamation District. Most of the region's 110 major wastewater facilities will need to expand to accommodate this growth. A few new treatment plants also will be built by 2030 (see Figure 23).

In addition to wastewater, the region's existing 500 square miles of development and the 250 square miles of new urban development by 2030 will result in additional impervious area (i.e., hard surface), producing increased urban stormwater runoff, known as nonpoint pollution. Each watershed will need to define strategies to deal with nonpoint source pollution.

The region is also expected to face an unmet demand for more than 90,000-acre-feet of water by 2020. (Planning in 2005 will update this forecast to 2030.) Solving the water supply dilemma without causing new water quality problems will require coordination and cooperation between water providers and water quality management groups. An effective watershed program that considers available water supply and quality of the water resource can be used to develop long-term supply strategies integrated with water quality management.

Conservation and wastewater reuse programs are essential strategies that will help meet future unmet water supply demand. These programs have the potential to alter (for better or worse) surface water and groundwater quality. Quality of return flows to either streams and lakes or groundwater sources concerns many communities in the metropolitan region. The Clean Water Plan identifies ways to maximize the reuse of available water without damaging existing uses.

Water Resources Management

The water quality management planning process is designed to maintain water quality standards, address water quality and related environmental issues associated with regional growth and recommend implementation strategies to restore impaired water resources. It's recognized that water quality and availability of water supplies influence and are influenced by development patterns. Solving water resource issues through an integrated process will require innovative, cooperative and affordable solutions.

Over the last few years, interest has grown in Colorado to develop a more integrated approach to environmental and natural resource management. Solving water resources problems through watershed management can result in better long-term solutions, be more cost-effective and involve all interested communities. The Metro Vision Clean Water Plan is organized by watersheds (Fig. 23) and includes locally recommended solutions and strategies.

In each watershed, DRCOG has identified the classifications and standards for bodies of water as adopted by the Colorado Water Quality Control Commission. The plan describes steps needed to address problems reaching those standards and the wastewater treatment needs of the watershed, based on expected growth.

The definition of acceptable levels of change in water quality is basic to all water resource management planning. Since local funding and resources will be required to maintain balanced communities, locally developed criteria should be used to identify acceptable levels. Through its Clean Water Plan, DRCOG involves local entities in establishing acceptable levels. As a result, one key plan element establishes "acceptable" communities in aquatic environments that continue to promote beneficial uses of regional water resources, while balancing conflicting interests.

Key features of the water quality plan

The Metro Vision Clean Water Plan addresses the following issues:

- integrated approach for all 10 watersheds in the region;
- stormwater, construction and urban runoff assessment and management;
- nonpoint source pollution and best management practices;
- system of wastewater treatment works or facilities needed through 2020;
- biosolids management;

- wasteload allocations and the total maximum daily load;
- groundwater quality and protection;
- water quality-based standards, biological and physical criteria and classifications of bodies of water;
- restoration of beneficial uses;
- water quality monitoring; and
- regionally significant wetlands.

Wastewater Management

Federal and state law requires that wastewater be treated. Many streams now flow year-round because of treated wastewater. The location, type of treatment, quality of the discharge and total number of treatment plants can affect the water quality in this region and beyond. The plan identifies more than 110 treatment plants needed to meet the current needs and handle expected growth in wastewater flow. These facilities discharge into hundreds of miles of streams, causing a cumulative water quality impact. Management strategies are designed to minimize impacts from specific pollutants. Since many portions of wastewater treatment systems are built to last more than 20 years, careful long-term planning is needed to keep these systems cost-effective.

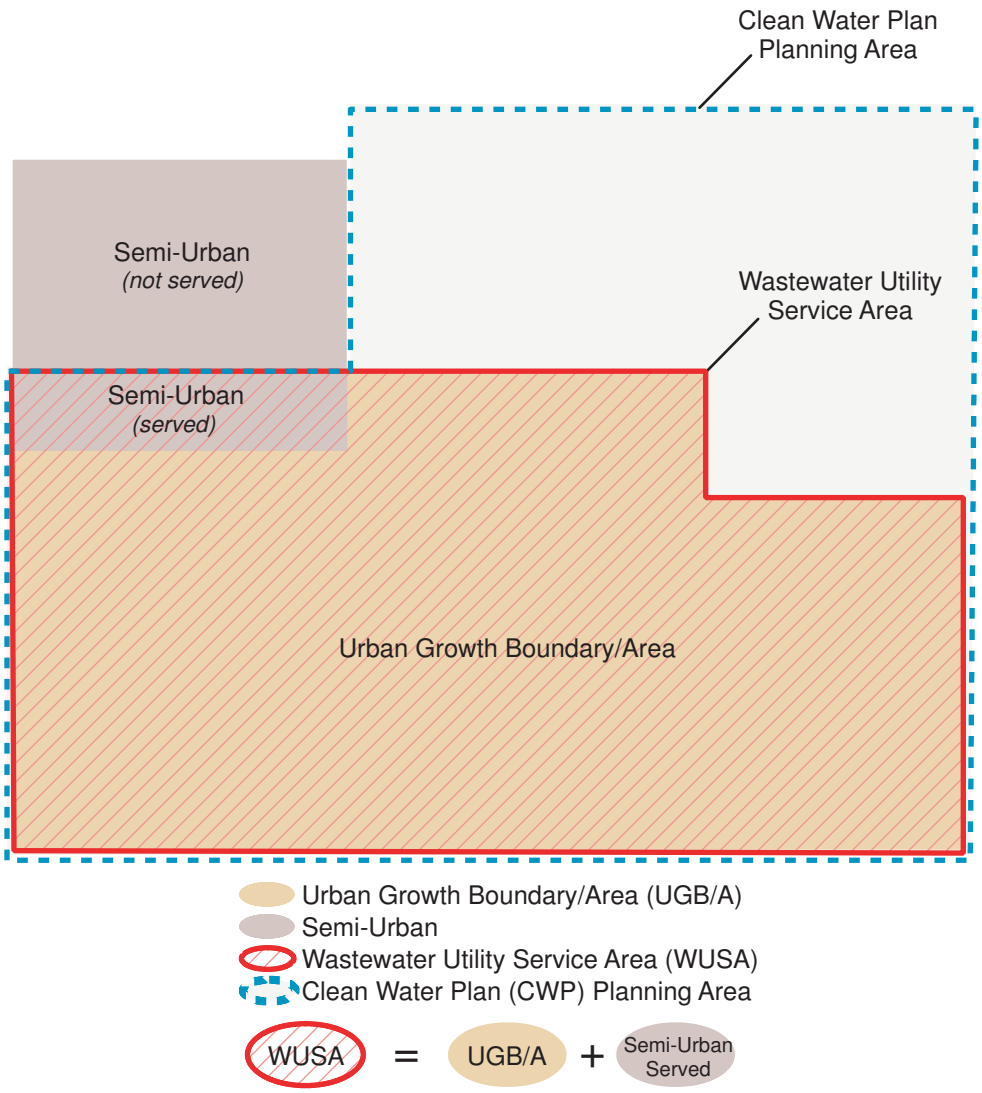
DRCOG asks each facility to prepare a utility plan that identifies actions needed to provide service over the next 20 years. Wastewater infrastructure is matched with growth expectations to more efficiently use the region's limited public dollars. Within the utility plan, a wastewater utility service area is defined, consistent with the urban growth boundary/area, and the facility is sized to match regional forecasts of population and employment. (Refer to Figure 26.) Alternative treatment methods are assessed and a 20-year plan for the facility is described that ensures the facility can meet its treatment requirements and protect affected bodies of water. This relationship furthers the implementation of Metro Vision because it ties the urban growth boundary/area, a planning tool, to the Clean Water Plan, a document with regulatory authority.

The Metro Vision 2020 Clean Water Plan (CWP) includes policy direction to manage the potential water quality impacts associated with individual sewage disposal systems (ISDS). Such systems provide appropriate treatment if they are designed, located and maintained properly. Poorly designed or failing systems, however, contribute nonpoint source pollution that can degrade the watershed.

The CWP considers watersheds and localized areas within watersheds that contain a large number of on-site systems to be a potential regional water quality concern. Management strategies focus first on assessing the significance of the concern and then, if a problem is identified, developing a management plan. Management plans typically involve enhanced inspection and maintenance requirements and are administered by the local environmental health department.

DRCOG also addresses water quality impacts from other sources. Runoff from urban areas during storms and other events is called nonpoint source pollution because it's generally not carried in a pipe. Nonpoint source pollution causes water quality problems in the region. Stormwater runoff in the region's large cities is now regulated and most cities in the region will be required to obtain stormwater permits. Treatment of runoff at the end of drainage pipes or channels of stormwater runoff can be technically challenging and cost-prohibitive. The preferred approach is local, through implementation programs that use common sense to

Figure 26
WUSA and UGB/A Planning Areas



improve runoff quality. Each watershed defines the appropriate program for its conditions; these are described in the Clean Water Plan.

Nonpoint sources besides stormwater include mine water discharges, agricultural return flows and water changed by diversions or impoundments. Local control (e.g., zoning regulations, subdivision ordinances, building permits, development code) and implementation of best management practices are the most effective and least expensive ways to prevent runoff pollution. The Clean Water Plan documents local implementation processes, lists appropriate best management practices for this region and prioritizes watershed programs.

Air Quality

Vision:

Growth, land development and regional transportation have a significant effect on the region's air quality. The region will develop in a way that reduces growth in transportation-related air pollution. Metro Vision's development pattern will reduce growth in vehicle trips and miles of travel. Slowing the expansion of the urban area, supporting mixed, higher-intensity land uses, and increasing density around mass transit will be key urban development strategies to increase transit usage. Helping freestanding communities become more self-sufficient will also help contain the growth of vehicle trips and miles of travel. Because regional air quality is closely linked to automobile emissions, it will be critical to provide alternatives to the private passenger vehicle, as proposed in the regional transportation plan.

Goal: Protect human health and environmental quality by achieving and maintaining ambient air quality standards.

Policies

1. Mobile Sources. Metro Vision calls for reducing growth in mobile source air pollution emissions by providing travel alternatives, improving the efficiency of the regional transportation network, and by changing key features of the development pattern. Changing the land development pattern will help achieve national, state and regional air quality objectives.

2. Stationary Sources. Growth in stationary source emissions will be reduced.

3. Wind Erosion. Local governments will be encouraged to review and modify their development regulations to include controls for wind erosion that results from grading, construction, recreation or poor land management practices, such as overgrazing.

4. Accessibility. Modifying local comprehensive plans and zoning ordinances will provide greater community accessibility and pedestrian, bicycle and transit travel opportunity.

Issues and Challenges

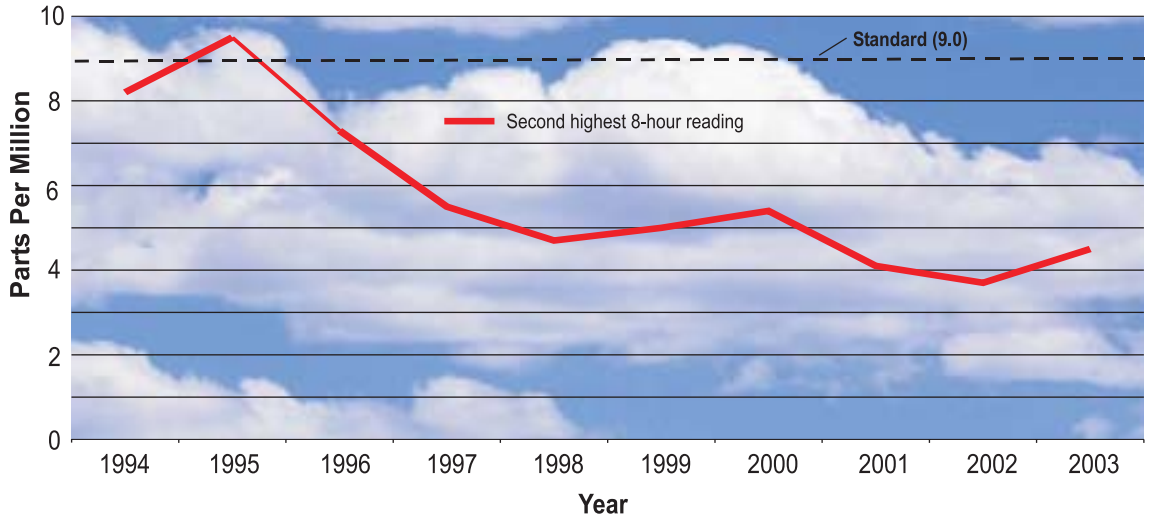
Emissions of carbon monoxide (CO), small particulate matter (PM_{10} and $PM_{2.5}$), nitrogen oxides (NOx), and volatile organic compounds (VOCs) are monitored by the Colorado Department of Public Health and Environment (CDPHE) and regulated by the Colorado Air Quality Control Commission (AQCC). The Regional Air Quality Council (RAQC) prepares State Implementation Plans (SIPs) to control each pollutant in the metro area. There are three categories of air pollution sources:

- mobile sources (primarily vehicle-related exhaust, evaporative emissions and sand and dust on paved roads);
- stationary sources (large, fixed sources of emissions such as power plants; chemical and processing plants; and oil and gas facilities); and
- area sources (small stationary and non-transportation sources such as space heating, woodburning stoves, consumer and commercial products, and windborne dust).

Regional air quality has improved dramatically in the last 20 years. Figure 27 shows the continuing positive trend for carbon monoxide reduction. Implementation of periodic wood-burning bans, improved street sanding

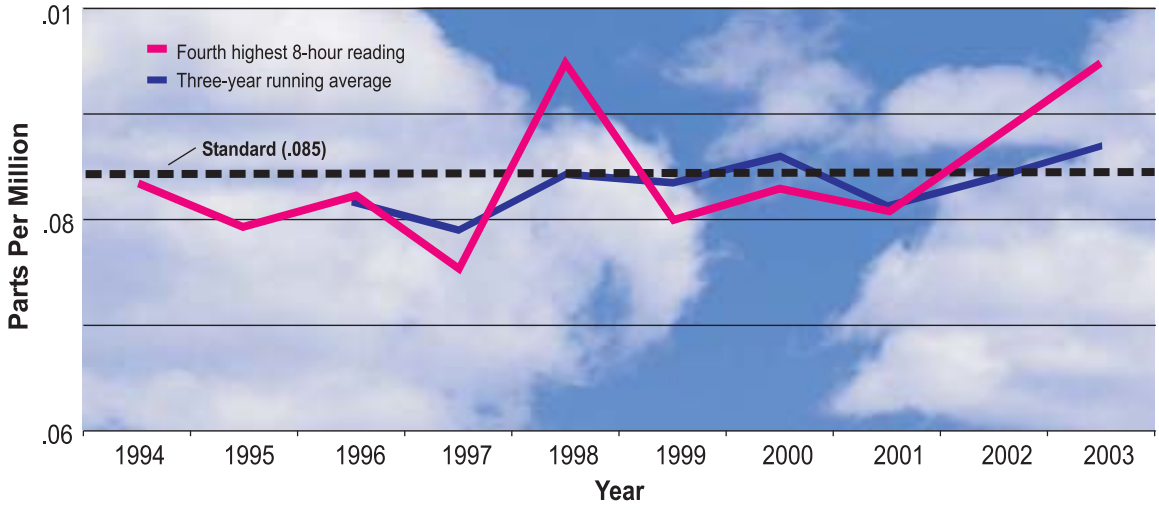
and sweeping practices, enhanced auto inspection and pollution control maintenance programs, winter month oxygenated fuel requirements, and manufacturing improvements to new automobiles have all contributed. These laws and programs have significantly reduced tailpipe emissions and paved road and sand emissions.

Figure 27
Carbon Monoxide Trend



With future increases in vehicle miles of travel expected, however, more travel options, land use planning, and technological improvements will become even more essential to maintain air quality. In addition, stricter federal standards and state efforts to address the "brown cloud" will require a continuing effort to reduce growth in vehicle miles of travel. Figure 28 illustrates the effect of the new federal ozone standard on the region. In 2003, the region exceeded the new standard. The U.S. Environmental Protection Agency did not list the region as a non-attainment area since an Ozone Action Plan has been prepared to prevent future problems. In 2004, the standard was not violated. Nonetheless, efforts need to be made to assure continued attainment of the standard.

Figure 28
Regional Ozone Trend



Metro Vision focuses on regional air quality because it's linked to the region's quality of life. Population growth, the urban development pattern, the transportation system and corresponding travel activity all affect air quality. Mobile sources--cars, buses, motorcycles and trucks--contribute significantly to regional air pollution, emitting hundreds of tons per day of air contaminants. Stationary and area sources are related to

the urban development pattern since the location of a power plant and the density of boilers from apartment complexes affect air quality. Even simple everyday household products and equipment like oven cleaners and lawnmowers affect air quality.

Figure 29 indicates the daily amount of air pollutants expected to be emitted in future years based on the transportation network described in the Fiscally Constrained 2030 RTP. These estimates were made as part of air quality conformity analysis.

Figure 29

2030 Regional Air Pollutant Emissions Estimates

Area	Pollutant	2005	2015	2030
		Tons/day	Tons/day	Tons/day
Denver CO Attainment Area	Carbon Monoxide (CO)	1602	1190	1207
Denver PM_{10} modeling domain	Nitrogen Oxides (NO_X)	111	51	29
	Total PM_{10}	33.2	39.4	49.2
Denver (8-hr O_3) Ozone Attainment Area	Volatile Organic Compounds (VOC)	101	58	45
	NO_X	121	55	33
Denver (1-hr O_3) Ozone Attainment Area	Volatile Organic Compounds (VOC)	91	53	42
	NO_X	119	54	32
Longmont CO Attainment Area	Carbon Monoxide (CO)	42	29	30

Regional Air Quality Planning

It is important that air quality planning be linked to both development and transportation planning. Metro Vision plays an important role in the RAQC's State Implementation Plan (SIP) by providing assumptions about location and amount of growth and estimating resulting future travel demand. Through a process known as "air quality conformity," DRCOG must also show that the emissions generated by the region's transportation plan and programs meet SIP attainment goals and maintain federal air quality standards.

Since the late 1990s, the RAQC has focused on achieving its planning goals by developing maintenance plans for carbon monoxide, 1-hour ozone and PM_{10}; reports on smoking and high-emitting vehicles; reforming the inspection/maintenance program; and reducing emissions from diesel vehicles. The RAQC also has focused on voluntary programs to improve motor fuels, repair high-emitting vehicles, lower diesel emissions from school buses and on-road and off-road vehicles, replace faulty gas caps, trade out lawnmowers and gas cans, and outreach programs that promote car care and maintenance, and activities to reduce ozone.

The region was formally re-designated by the Environmental Protection Agency (EPA) to be in attainment-maintenance status for 1-hour ozone and carbon monoxide in 2001, and PM_{10} in 2002. To meet and maintain the PM_{10} standard, organizations that perform street sweeping operations have committed to continue and not reduce street sweeping activities.

In 1997, EPA introduced a new, more stringent 8-hour ozone standard and a fine particulate ($PM_{2.5}$) standard. Monitoring indicates that the metro area has little or no margin of safety in terms of meeting the 8-hour ozone standard. In the summer of 2003, the Denver region violated the 8-hour ozone standard.

State and local agencies in the Denver area entered into an Ozone Early Action Compact (EAC) with EPA in 2003. The compact is a memorandum of agreement between the RAQC, CDPHE, AQCC, DRCOG, CDOT and EPA. Larimer and Weld counties have recently been added to the agreement. The compact will lead to development of an Ozone Action Plan in return for deferring any potential non-attainment designation for the EPA's 8-hour ozone standard. The EAC outlines several planning milestones that must be met, culminating in attainment of the 8-hour standard by December 2007.

The region has a very good margin of safety in terms of meeting the current $PM_{2.5}$ standard. The region has experienced some visibility improvement since monitoring began in the early 1990s.

Noise

Excessive noise is a nuisance and a potential public health concern. It can also impact property values and destabilize neighborhoods. Residents of the Denver region will have minimal exposure to excessive noise levels associated with roadways, trains, aviation, commercial and industrial land uses, special events and temporary construction activity. Minimizing this exposure will help preserve the quality of life in the region.

Goal: Minimize exposure to excessive noise levels associated with land use and transportation activities.

Policies

1. Location and Mitigation. Ensure that new or expanded regional transportation facilities are located and designed to maintain acceptable noise levels. Consider adjacent land uses and utilize appropriate mitigation measures -- including landscaping, noise barriers, traffic control and other noise-attenuating techniques.

2. Retrofit. Where practical, retrofit existing facilities to mitigate noise impacts on adjacent, noise-sensitive land uses.

3. Airport Noise. Minimize noise exposure around airports, consistent with Federal Aviation Administration (FAA) policies and local airport noise standards.

4. Local Noise Standards. Support local development regulations that establish noise and land use compatibility standards. Key features may include use restrictions, buffering and limitations on hours of operation.

5. New Development. Locate new noise-sensitive development away from planned or existing major noise sources such as airports and freeways.

Issues and Challenges

Communities in the region are affected by many sources of noise. Noise is a normal part of life in an urban area. Excessive noise, however, can adversely affect the environment and diminish the quality of life.

Motor vehicle noise is the most common and widely dispersed continuous noise source in the Denver region.

The roadways that generate the most noise are those with the highest traffic volumes such as freeways and major regional arterials. Transit facilities such as light rail also generate noise that can impact communities.

Noise can also be associated with certain land use activities. The most dramatic examples are mining operations, certain types of manufacturing and airports. Commercial activity can also create a significant amount of noise.

Mitigating the impact of noise is complicated. Ideally, transportation facilities and land uses that generate noise should be separated from noise-sensitive land uses such as residential areas. This is not always possible, though. Many facilities and neighborhoods were built years ago, without considering noise impacts. Even today, with better planning and design, it is challenging because transportation facilities still need to be close to the land uses they serve.

Regulating noise is also complicated. There are separate but sometimes overlapping federal, state and local standards that may apply, depending on the activity.

This element of Metro Vision provides general policy direction to help ensure that the impact of noise on communities and individuals within the region is minimized and within acceptable levels.

Aviation

Aviation is a special category of noise generator. Noise generated within the flight paths of commercial and private aircraft, including emergency and traffic-monitoring helicopters, is a substantial issue for affected communities. Local airports are subject to the noise requirements of the Federal Aviation Administration. The Federal Aviation Act, however, prevents local regulations from controlling noise at the airport itself, or from limiting the arrival and departure times of jet aircraft flights.

DRCOG has developed guidelines for land use planning around airports. These guidelines are designed to protect sensitive land uses from aircraft noise. They are also intended to protect the investment that has been made in the airport facilities that serve the region's commercial and private aviation needs.

CHAPTER 5

Implementing Metro Vision

Metro Vision is the result of a collective effort by DRCOG's member governments to come together in the spirit of cooperation to proactively influence the region's future. This voluntary approach creates both opportunities and challenges in terms of implementing Metro Vision.

Relying on voluntary participation allows the plan to be implemented without the formality and resources required within a more traditional regulatory framework. Without full participation by all jurisdictions, though, the goals contained in Metro Vision cannot be achieved.

Metro Vision's underlying theme is to ensure that local jurisdictions retain control over the specific decisions that ultimately determine when, where and what type of development will occur in their own communities. Self-determination is important.

To achieve the goals of the plan will also require the active participation of the private development community. Creating urban centers, increasing the density of greenfield development, avoiding priority open space areas and incorporating non-motorized transportation facilities are all examples of Metro Vision goals that can be embraced and implemented by private developers.

This chapter outlines various strategies and actions identified to further Metro Vision goals and policies. Some require action on the part of DRCOG as an organization; many require action on the part of local governments and others.

Implementation Tenets

The following tenets, or general principles, have been established to implement Metro Vision.

1. Voluntary. Participation in Metro Vision is voluntary. Communities that commit to participate understand that they'll adapt their local plans to be consistent with Metro Vision and participate in developing and applying other strategies to implement the plan.

2. Flexible. Metro Vision provides flexibility to accommodate communities that may not have the same goals or be developing in identical ways. If it is determined that implementing any particular policy in Metro Vision is not effective or practical, provisions should be made to review the plan and make appropriate modifications.

3. Collaborative. Metro Vision is collaborative and input will be obtained from DRCOG members so that as many individual needs and concerns as possible can be addressed.

4. Effective. Local strategies should advance Metro Vision's goals and policies and have an identifiable impact in influencing the region's growth and development. Strategies should also be realistic and reasonably attainable by local governments.

Why is regionalism important?

Local elected officials promote the idea of regional cooperation because it makes economic sense. Supporters of Metro Vision 2030 understand that transportation, clean air and clean water issues don't stop at city and county lines. Metro Vision tackles these difficult issues by transcending jurisdictional boundaries while preserving control at the local level.

Implementation Actions -- General

Several tools have been established to further Metro Vision goals. These include the Mile High Compact, the Plan Consistency Process and the Plan Assessment Process Other less formal and longer-term strategies have also been identified. These tools are summarized on the following pages.

Mile High Compact

On Aug. 10, 2000, five counties and 25 municipalities came together to sign the Mile High Compact, a landmark intergovernmental agreement that binds these cities and counties to a comprehensive growth strategy based on the Metro Vision 2020 plan. The Mile High Compact signing ceremony is shown below. The Mile High Compact commits members to work together to manage and direct growth throughout the Denver metropolitan area. The list of participants has grown since 2000; cities

Mile High Compact signing ceremony -- Aug. 10, 2000.

and counties that have now signed the compact represent more than 80 percent of the region's population. Created under the auspices of DRCOG and the Metro Mayors Caucus (representing 31 mayors from the region), the Mile High Compact was the first agreement of its kind in the nation, voluntarily initiated by the region's local governments rather than being mandated by state legislation. The binding agreement commits communities to:

- adopt a comprehensive land use plan that includes a common set of elements;
- use growth management tools such as zoning regulations, urban growth boundaries, and development codes;
- link their comprehensive plans to Metro Vision 2020, which outlines regional growth management; and
- work collaboratively to guide growth and ensure planning consistency.

Plan Consistency Process

Adopted by the DRCOG Board in 1998, the Plan Consistency Process helps local jurisdictions incorporate the goals and policies embodied in Metro Vision into their local plans and regulations. A plan consistency checklist enables local planning departments to compare their policies with Metro Vision policies. After completing the checklist, communities submit it to DRCOG to certify that their plans are consistent with Metro

Vision. The Plan Consistency Process provides opportunities for local governments to propose changes to Metro Vision to improve its consistency with local plans. Before the next plan update, the DRCOG Board will review the appropriate role for DRCOG in assessing local plans in implementing Metro Vision in general.

Plan Assessment Process

Also adopted by the DRCOG Board in 1998, the annual Plan Assessment Process is an opportunity to review and amend any of DRCOG's regional plans, including Metro Vision. Amendments may be initiated by local jurisdictions, DRCOG, or by various DRCOG policy advisory committees. An amendment may be needed to incorporate new data, adjust the UGB/A, add new urban centers, address new or unresolved issues, or accommodate other changes in circumstances. The process can also be used simply to assess regional planning efforts and identify new issues for further study.

Coordinating with Other Regions

Communities such as Erie, Broomfield, Brighton, Thornton, Longmont and Parker are affected by growth occurring on their perimeters that is outside the nine-county DRCOG planning area. The entire region is affected by this growth, particularly in terms of air quality and roadway congestion. Efforts are underway to better coordinate planning efforts with adjacent counties in other planning regions.

Coordination with Other Planning Documents

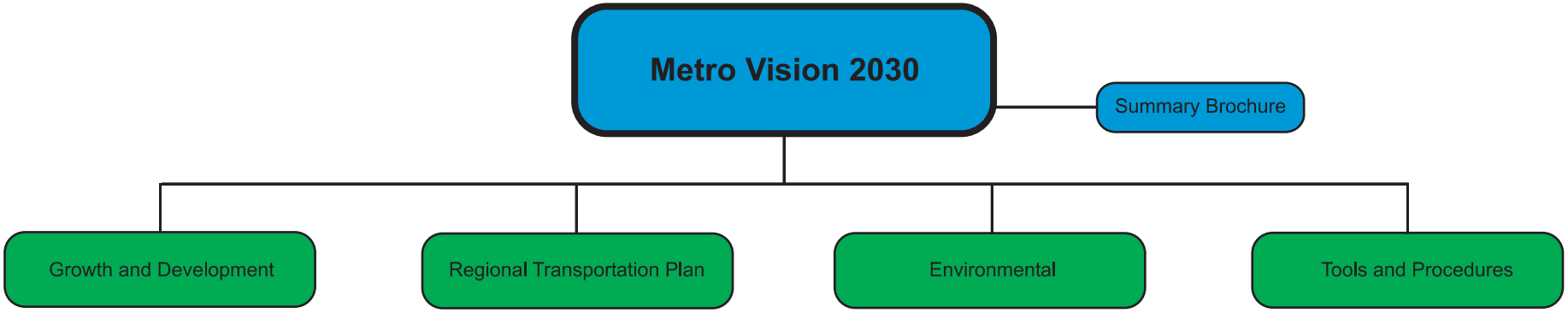
Metro Vision is a broad policy document that outlines basic concepts and provides general direction for more specific plan elements. Additional policy direction and technical information can be found in various plan supplements and other related planning documents. These documents are designed to extend Metro Vision into specific areas of planning activity and either directly or indirectly further its implementation. A chart showing the interrelationship between these follows as Figure 30. References to several of these documents are noted at various locations in Metro Vision.

Tax Policy and Revenue Sharing

The current tax structure in the State of Colorado requires municipalities to rely on sales tax revenues to fund facilities and services. This plays a significant role in influencing local land use decisions and creates competition for sales tax revenues among jurisdictions within the region. This competition works against regional cooperation and results in patterns of development that may not be consistent with Metro Vision goals and policies. The DRCOG Board supports exploring new approaches to regional tax policy that enable jurisdictions to adequately fund necessary services without compromising regional planning goals.

Figure 30

Relationship Between Planning Documents



UGB/A Flexibility Provisions
UGB / WUSA Relationship
Urban Forms Criteria
Rural Town Centers Criteria
Senior-Friendly Development
Glossary of Terms

Transportation Demand Management
Intelligent Transportation Systems (ITS)
Mountains and Plains Element
Transit Element
Pedestrian and Bicycle Element
Fiscally Constrained Network
Freight
Action Strategies

Regional Open Space Plan
Natural Hazard Mitigation Plan
Clean Water Plan

Plan Assessment Process
Plan Consistency Process
Mile High Compact
Performance Measures
Infill and Redevelopment Strategies
Wastewater Utility Guidance
Prosepectus, ITS Plan
Transportation Improvement Program
Legislative Action Strategy
Modeling

Implementation Actions – Specific Elements

The previous section described various general implementation actions and strategies. More specific implementation actions associated with specific plan elements are listed in the order they appear in chapters 2, 3 and 4. Some actions are already being implemented, either by DRCOG, local jurisdictions, or others. Other actions are conceptual.

Extent of Urban Development

- Review the UGB/A allocations at least every five years to monitor current market conditions (i.e., supply and demand for land) and to assess the effects of growth in relation to Metro Vision goals and policies. Before the next plan update, review the methodology used to define the UGB/A to ensure it is practical to administer and that it adequately identifies the future growth area for each community.

- Review changes to local land use plans to ensure that significant proposed land development activity is adequately considered in defining urban growth areas. As development plans for the Lowry Range property evolve, advocate for the consideration of Metro Vision goals and planning principles.

- Include the UGB/A in decisions concerning transportation and regional wastewater treatment facilities. Require that wastewater utility service areas (WUSA) be consistent with the UGB/A, which means wastewater utilities cannot be extended beyond the UGB/A. It should be noted that major interceptors may extend beyond the UGB/A if they serve areas within the UGB/A. Review these policies before the next plan update to ensure they are reasonable and that the resulting development patterns are consistent with Metro Vision.

Metro Vision will be accountable.
Metro Vision 2030 includes new performance measures to evaluate its success. For the first time, citizens will be able to decide for themselves if the plan is valuable and effective for the region.

- Coordinate with other regional service providers. Encourage them to incorporate the UGB/A into their planning and investment decisions.

- Encourage local governments to consider planning for more compact types of development and taking advantage of infill and redevelopment opportunities.

- Develop a process to allow the UGB/A to be reallocated between communities.

- As part of the next plan update, clarify what is meant by socially, economically and physically sustainable development and consider incorporating some discussion in the plan.

- As part of the next plan update, include a more detailed description of water supply issues. Also consider establishing appropriate regional policies.

Semi-Urban Development

- Analyze the policies of local jurisdictions and existing patterns of parcelization to better understand where and how much semi-urban development exists and is likely to occur, given current trends and policies.

- Working with local governments, identify the areas within the region most suitable for future semi-urban development, regardless of existing trends and policies.

- Establish a policy identifying the desirable number of households and square miles of semi-urban development, possibly less than what the current trend projected over time would be. Encourage local jurisdictions to modify their plans and policies to achieve the desired outcome.

- Encourage regional service providers to observe the urban growth boundary/area and associated policies.

Urban Centers

- Monitor the performance of identified urban centers to determine if they're achieving projected employment and population densities.

- Continue to identify additional locations where urban centers can be developed.

- Coordinate transportation planning activities and the funding of specific transportation improvements to support development of urban centers and transit-oriented development.

- Encourage regional service providers to support urban center development.

- Research and discuss the appropriateness of identifying additional types of urban centers, including neighborhood centers and commercial corridors.

- Support private-sector actions that implement urban center goals.

Freestanding Communities

- Encourage freestanding communities to cooperate with the surrounding counties to protect open space around their perimeters.

- Help obtain Great Outdoor Colorado funds to acquire open space to protect freestanding communities.

- Encourage economic development within freestanding communities and the preservation of their historic town centers.

- Encourage regional service providers, including CDOT and RTD, to ensure that their plans and policies are consistent with Metro Vision policies on freestanding communities, particularly in locating highway interchanges, and providing bus and transit service.

Rural Town Centers

- Provide planning and other technical assistance to rural town centers through the small community technical assistance program, administered by DRCOG on behalf of the Colorado Department of Local Affairs.

- Use DRCOG's water quality program to help maintain wastewater treatment facilities.

- Encourage the development of travel and tourist services within and serving rural town centers.

- Continue to define the role of rural town centers within the region, especially how they relate to semiurban and rural patterns of development. Continue to refine this discussion within the plan. Consider combining rural town centers with the semi-urban discussion into a broader rural element.

Senior-Friendly Development

- Develop partnerships with public and private stakeholders and identify incentives to encourage senior-friendly development.

- Consider further enhancements to the Senior-Friendly Development element of the Metro Vision plan.

The 2030 Metro Vision Regional Transportation Plan

The 2030 Metro Vision Regional Transportation Plan (2030 MVRTP), which includes the fiscally constrained transportation plan, is the primary way policies contained in Metro Vision's transportation element are implemented. Before a regionally significant transportation project can be included in the Transportation Improvement Program to receive regional funds or be constructed, it must first be recognized in the 2030 MVRTP Fiscally Constrained Plan and demonstrate that it conforms to all air quality standards as contained in the State Implementation Plan for air quality. To be recognized, the project must meet certain criteria that reflect Metro Vision policies. It must also compete with many other projects that seek regional transportation funds. Pools of funds for non-regionally significant projects such as reconstruction, highway operations and bicycle facilities are also identified in the 2030 MVRTP, but individual projects are not identified until specific funds are actually programmed.

Transportation Improvement Program (TIP)

Projects using federal funds must be identified in a Transportation Improvement Program (TIP) that is in conformance with the State Implementation Plan for air quality. The TIP is developed every two years to determine projects to receive federal funding over the following six-year period. Projects proposed by local jurisdictions, CDOT, RTD and other agencies are scored to determine funding priority. Scores are based on how well the project satisfies certain criteria that reflect Metro Vision transportation policies related to congestion, air quality, safety, system preservation and alternative travel modes. Some criteria also reflect Metro Vision growth and development policies. These policies shall be reviewed each TIP cycle to ensure they are reasonable and that the resulting transportation investment is consistent with Metro Vision.

Projects funded solely with locally derived revenues do not have to be programmed in the TIP. However, regionally significant projects must be identified in the TIP and reflected in the air quality conformity documentation. TIP project selection criteria to further the implementation of Metro Vision will be reviewed and revised as appropriate.

Project Implementation and Construction

Examples of projects implemented through the TIP by state, regional or local agencies include: regional highway improvements, rapid transit lines and stations, major reconstruction and widening projects, major bicycle and pedestrian projects, and regional travel demand management services.

Examples of projects implemented at the local level include: local street improvements, subdivision designs and layouts, bicycle facilities (on-street or shared-use paths), sidewalks, paths and local street access controls. Local governments also assure compliance with the Americans With Disabilities Act (ADA).

Projects using federal funds must ensure that proper environmental approvals are obtained. Public involvement is encouraged throughout the planning and design process for all projects, with special emphasis placed on receiving input from underrepresented population groups.

Transportation Evaluation and Measurement Efforts

Efforts will be undertaken in future work programs to perform system level evaluations, monitor performance measures and identify new transportation facility categories. Such efforts may include the following:

- Continue the monitoring of key indicators and performance measures,
- Explore benchmarks for transportation measures related to such items as vehicle miles traveled and alternative travel mode use,
- Develop a refined congestion management system to measure congestion and associated impacts and define strategies to reduce congestion,
- Evaluate alternative vehicle miles of travel/transportation system/land development scenarios, and
- Consider designation of new roadway categories such as multimodal streets.

Alternative Transportation Funding Resources

Sufficient resources don't exist to fund all of the projects identified in the Metro Vision transportation system. Strategies for increasing funding include the following:

- Encourage local and private funding of private development access needs,
- Negotiate for a more equitable distribution of federal and state funds to the region,

- Support efforts to increase regional transportation revenues, including tolling, and

- Promote cooperation among elected officials, the business community, citizen groups, CDOT, and RTD in seeking new funding sources.

Parks and Open Space

- Review previously established quantitative goals for protecting regional open space.

- Update and refine established focus area policies, criteria and maps contained in the regional open space plan to reflect current local and regional open space priorities.

- Develop an agreement with Great Outdoors Colorado to implement the regional open space plan. This may include a methodology and a planning process to create a regional priority list for Great Outdoors Colorado project selection in the region.

- Maintain an inventory of local park and open space maps of sufficient detail to develop Metro Vision parks and open space policies, priorities and maps.

Water Quality

Regional water quality goals are implemented through two major programs, governed by the Clean Water Plan. One addresses watershed level concerns; the other addresses wastewater conveyance and treatment facilities.

- At the watershed level, develop management plans for each individual watershed, addressing both point and nonpoint sources of pollution. Recommend or designate a responsible agency or agencies to carry out the plan.

- For wastewater facilities, develop a utility plan for each that includes the definition of a wastewater utility service area (WUSA). The utility plan identifies the facilities that will be required to accommodate the anticipated growth within the service area over a 20-year period. Metro Vision policies require wastewater utility service areas to be geographically consistent with the UGB/A.

Air Quality

- In updating or amending the Metro Vision Regional Transportation Plan or the Transportation Improvement Program, conduct a conformity analysis to demonstrate that the plan or program will not adversely affect air quality standards as defined in the Regional Air Quality Plan, administered by the Regional Air Quality Council (RAQC).

- Use DRCOG population and employment forecasts as inputs into the regional air quality model (administered by RAQC). These forecasts, which provide a subarea level of detail, reflect changes in development patterns resulting from Metro Vision policies.

- Local government development actions that are consistent with Metro Vision goals and policies will also be consistent with the air quality plan.

APPENDIX A

APPENDIX A

Appendix A
Urban Growth Boundary/Area Allocation
(Square Miles)

Community	2002 Urbanized Area	2030 UGB/A	2002 - 2030 Change	Annual Percent Change
Adams County	15.97	22.24	6.27	1.19%
Arapahoe County	18.00	26.75	8.75	1.42%
Arvada	23.21	32.19	8.98	1.17%
Aurora	48.46	83.90	35.44	1.98%
Bennett	0.51	5.84	5.33	9.10%
Black Hawk	0.10	1.85	1.75	10.98%
Boulder	22.59	23.74	1.15	0.18%
Boulder County	5.45	7.12	1.67	0.96%
Bow Mar	0.60	0.60	0.00	0.00%
Brighton	4.97	19.06	14.09	4.92%
Broomfield	9.84	17.98	8.14	2.18%
Castle Rock	6.56	21.59	15.03	4.35%
Centennial	16.48	17.58	1.10	0.23%
Central City	0.13	1.03	0.90	7.67%
Cherry Hills Village	5.80	5.80	0.00	0.00%
Clear Creek County	0.06	0.23	0.17	4.92%
Columbine Valley	0.55	0.62	0.07	0.43%
Commerce City	12.20	28.09	15.89	3.02%
Deer Trail	0.98	0.98	0.00	0.00%
Denver	95.53	108.66	13.13	0.46%
Douglas County	28.36	45.72	17.36	1.72%
Edgewater	0.69	0.69	0.00	0.00%
Empire	0.25	0.25	0.00	0.00%
Englewood	6.73	6.73	0.00	0.00%
Erie	1.69	6.23	4.54	4.77%
Federal Heights	1.59	1.76	0.17	0.36%
Foxfield	0.00	0.00	0.00	0.00%
Georgetown	0.85	0.92	0.07	0.28%
Glendale	0.56	0.56	0.00	0.00%
Golden	10.08	13.92	3.84	1.16%

Appendix A (Continued)
Urban Growth Boundary/Area Allocation
(Square Miles)

Community	2002 Urbanized Area	2030 UGB/A	2002 - 2030 Change	Annual Percent Change
Greenwood Village	7.47	7.63	0.16	0.08%
Idaho Springs	0.44	0.90	0.46	2.59%
Jamestown	0.04	0.54	0.50	9.74%
Jefferson County	24.74	34.24	9.50	1.17%
Lafayette	5.29	11.84	6.55	2.92%
Lakeside	0.18	0.18	0.00	0.00%
Lakewood	38.44	45.27	6.83	0.59%
Larkspur	0.11	0.45	0.34	5.16%
Littleton	10.18	11.26	1.08	0.36%
Lone Tree	2.51	6.91	4.40	3.68%
Longmont	16.11	22.87	6.76	1.26%
Louisville	5.10	8.41	3.31	1.80%
Lyons	0.45	1.10	0.65	3.24%
Morrison	0.14	1.30	1.16	8.28%
Mountain View	0.09	0.09	0.00	0.00%
Nederland	1.00	1.39	0.39	1.18%
Northglenn	5.90	6.13	0.23	0.14%
Parker	5.53	11.90	6.37	2.77%
Sheridan	2.12	2.12	0.00	0.00%
Silver Plume	0.26	0.26	0.00	0.00%
Superior	1.81	3.41	1.60	2.29%
Thornton	15.18	29.70	14.52	2.43%
Ward	0.04	0.51	0.47	9.52%
Watkins	0.26	0.60	0.34	3.03%
Westminster	18.17	27.66	9.49	1.51%
Wheat Ridge	9.71	11.19	1.48	0.51%
Total	**510.09**	**750.52**	**240.43**	**1.39%**

Notes:

1. The areas listed in this table are not the incorporated area of the community. They represent the existing amount of urbanized area (as of 2002) and the expected area to be urbanized by 2030.

2. Foxfield is entirely large-lot development (i.e., > 1ac.) and consequently does not require an urban growth allocation.

APPENDIX B

APPENDIX B

Appendix B
Glossary of Terms

Activity Center	A type of urban center, focused primarily on employment.
ADA	Americans With Disabilities Act
Air Quality	The composition of air with respect to quantities of pollution as compared to "standards" of maximum acceptable pollutant concentrations
Annexation	The incorporation of land into an existing community that changes the community's boundary
AQCC	Air Quality Control Commission
Biosolids	Solid organic matter recovered from a sewage treatment process
BRT	Bus Rapid Transit - typically refers to buses traveling in their own lanes set aside within or adjacent to a roadway right-of -way
CBD	Central Business District
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Health and Environment
Coliforms	Rod-shaped bacteria usually found in the intestinal tracts of animals, including humans, that are contracted from contaminated water.
Committed area	Areas that will be developed, based on some form of commitment by either a local jurisdiction or developer (e.g., a platted subdivision).
Conformity analysis	Assuring the fiscally constrained regional transportation plan (RTP) and transportation improvement program (TIP) conform to the State Implementation Plan (SIP) for air quality
CWP	Clean Water Plan
Demographics	The characteristics of a population (e.g., sex, race, age, geographic location)

Appendix B (Continued)
Glossary of Terms

Density	The relative number of people, jobs, or some other attribute per unit of measure (e.g., dwelling units per acre).
Denver Union Station	Regional and statewide multimodal transportation center located in downtown Denver
DIA	Denver International Airport
DOLA	Department of Local Affairs
DRCOG	Denver Regional Council of Governments
EA	Environmental Assessment
EAC	Ozone Early Action Compact
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FasTracks Plan	Comprehensive transit plan of the Regional Transportation District. Primary funding mechanism approved by voters in November 2004.
Focus Areas	Key, priority open space areas identified for protection
Forecasts	An estimate of future population, employment, or traffic characteristics, typically based on an analytical model.
Freestanding communities	The four communities of Boulder, Brighton, Castle Rock, and Longmont that are separated from the Metro Area.
GOCO	Great Outdoors Colorado
Growth Allocation	Portion of regional urban growth allotted to each community
HOV	High-Occupancy Vehicle. Typically more than one passenger per vehicle.
IGA	Intergovernmental Agreement
Impervious	Hard surfaces that do not allow water to infiltrate into the ground but instead increase the amount of surface runoff. Typically refers to roadways and parking lots. Also refers to rooftops, patios, and other hard surfaces.
Infill	The process of developing vacant parcels within urban areas that are already developed

Appendix B (Continued)
Glossary of Terms

Infrastructure	Roadways, transit facilities, water and wastewater treatment facilities, storm drainage facilities, and other utilities. May also include schools, police and fire stations, parks, and other civic facilities, either publicly or privately owned.
ISDS	Individual Sewage Disposal Systems, also know as on-site sewage disposal systems, or septic systems.
Leapfrog development	A disconnected pattern of urbanization where developed lands are separated from each other and from the larger urbanized area, typically by lower-density development.
LRT	Light-Rail Transit
Managed lanes	A travel lane with tolls that may vary by time of day, the type of vehicle or the number of vehicle occupants.
Metro Vision 2020	Originally adopted in 1997, Metro Vision 2020 is the Denver regions plan for addressing the future growth of the region through 2020. The plan outlines strategies and implementation steps to preserve the region's quality of life while also positioning it to benefit from growth. The plan is organized around six core elements: extent of development, balanced multimodal transportation, urban centers, freestanding communities, open space, and environmental quality.
Metro Vision 2030	Building off the policies and principles included in Metro Vision 2020, Metro Vision 2030 is the Denver region's plan for addressing the future growth in the region through the year 2030. The plan establishes important policies, having broad implications to the region. The plan influences development patterns, investment in transportation infrastructure, open space acquisition, and air and water quality for the entire Denver metro area.

Appendix B (Continued)
Glossary of Terms

Mile High Compact	A landmark voluntary agreement among Denver metro area cities and counties to manage growth. Participants made a legally binding agreement to work with each other to plan for growth by sticking to updated master plans, coordinating development with neighboring jurisdictions and keeping development within boundaries.
MIS	Major Investment Study. A preliminary transportation corridor assessment previously required by the federal government.
Mixed use	A variety of uses within an individual building (vertical mix) or within a general area of a community or a neighborhood (horizontal mix)
Mixed-use Center	A specific type of urban center with special emphasis on mixed-use development and pedestrian-orientation.
Mobile Sources	Contributors to regional air pollution, including cars, buses, motorcycles, and trucks
Modes	Means of transport
MPO	Metropolitan Planning Organization. DRCOG is the MPO for the Denver region.
Multimodal	More than one transportation mode
National ambient air quality standards	Standards established by the US Environmental Protection Agency limiting pollutants permitted in the atmosphere
Nodes	Strategic locations within the urbanized area where development is encouraged because of good highway and transit accessibility - OR - Primary activity focus of an area
Non-point Sources	Runoff that is from diffuse sources (generally not carried in a pipe) and may contribute to water quality problems. Non-point sources include: stormwater runoff, mine water discharge, agricultural return flows, and water changed by diversions or impoundments.

Appendix B (Continued)
Glossary of Terms

Open Space	Public and private lands acquired or preserved in the public interest to conserve and protect natural resources, provide aesthetic enjoyment of the out-of-doors, shape the regional pattern of growth and development, preserve agricultural resources, and protect prominent geographical, geological, and cultural features and resources
Park	Small recreational and open space areas within the urbanized area.
Pedestrian-friendly	Places and roadways designed to accommodate pedestrian activity in a safe, convenient, and comfortable manner.
Pedestrian-oriented	Similar to pedestrian-friendly but with greater emphasis on actually encouraging pedestrian activity. Examples include development that is constructed at a human scale to foster interaction with others, and bicycle/walking paths that can be used both for recreation and as a mode of transportation.
Plan Assessment Process	Annual assessment conducted to review and potentially amend any of DRCOG's regional plans, including Metro Vision
Plan Consistency Process	A process that helps local jurisdictions incorporate the goals and policies of Metro Vision into local plans and regulations.
Platted	Division and recording of land into lots for development
RAQC	Regional Air Quality Council
Redevelopment	The creative recycling of underutilized lands within already urbanized areas
Regional Corridor	Large, linear urban centers having a strong employment focus complemented by a residential component
RTD	Regional Transportation District

Appendix B (Continued)
Glossary of Terms

RTP	Regional Transportation Plan
Rural Development	Development on lots larger than 35 acres
Rural town centers	Small, established towns and villages outside the primary urbanized area that serve rural residents and travelers
Self-sufficiency	In the context of freestanding communities, balance between employment, housing and population in a given area.
Semi-Urban Development	Residential development occurring on parcels between 1 and 35 acres in size.
Senior-Friendly Development	Development patterns and urban design features that meet a variety of needs for a growing senior population
SIP	State Implementation Plan for air quality.
SOV	Single-Occupant Vehicle
Stationary Sources	Large, fixed sources of air pollution emissions such as power plants, chemical and processing plans, and oil and gas facilities
TDM	Travel Demand Management. A set of strategies for reducing motor vehicle travel. Examples include: carpooling, flexible work schedules, telecommuting (from home), and promotion of alternative travel modes.
TIP	Transportation Improvement Program
TOD	Transit-Oriented Development is a general term describing almost any concentrated, mixed-use, pedestrian-oriented development that supports and is supported by transit facilities and services
Trend	Direction or course demonstrated through observation of data and/or indicators over time. Or, a pattern a that is evident from past data or events
UGA	Urban Growth Area
UGB	Urban Growth Boundary

Appendix B (Continued)
Glossary of Terms

UGB/A Bank	A 20 square-mile reserve of future growth area
Urban centers	Areas of concentrated development that are mixed-use, pedestrian-friendly, and accessible to a wide variety of transportation modes
Urban Development	Land that is predominantly covered by structures and public facilities, including residential uses with a density of more than 1 unit per acre, and commercial, office, and industrial uses.
Urban reserve areas	Identified areas where future contiguous urban development may occur beyond 2030
Urban Area	Land that is currently developed at urban densities.
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
Waste injection well	A well used to inject wastewater, or stormwater, into the ground. Regulated by the EPA.
Water Quality	The physical, chemical, and biological characteristics of water that affect its ability to be used for a particular use.
Wind Erosion	Results from grading, construction, recreation, or poor land management practices
WQCC	Water Quality Control Commission
WUSA	Wastewater Utility Service Area

APPENDIX C

APPENDIX C

Appendix C
Public Involvement

The development of Metro Vision 2030 included an extensive public information and involvement process. Strategies included conducting a series of public forums, producing a Metro Vision video and brochures for broad distribution, and meeting with a number of individual communities. The following is a list of those communities and organizations that held discussions about Metro Vision with Board members and DRCOG staff.

Adams County
Douglas County
Gilpin County
Jefferson County
City of Arvada
City of Aurora
City of Boulder
City of Brighton
City and County of Broomfield
City and County of Denver
City of Castle Rock
City of Commerce City
City of Edgewater
City of Englewood
Town of Erie
City of Federal Heights
Town of Georgetown
City of Golden
City of Greenwood Village
City of Lakewood
City of Littleton
City of Longmont
City of Louisville
Town of Lyons
City of Northglenn
Town of Parker
City of Sheridan
City of Westminster
City of Wheat Ridge
DRCOG Planning Directors Forum
DRCOG Regional Transportation Committee (RTC)
DRCOG Water and Environmental Planning Committee (WEPC)
Regional Air Quality Council (RAQC)
Colorado Environmental Coalition
Metro Denver City & County Management Association
Metro Mayors Caucus

ACKNOWLEDGMENTS

Metro Vision 2030 brings the cities and counties of the Denver metro area together to build a better community. Local governments and others from around the region have been involved in the development of Metro Vision 2030.

While it would be impossible to list everyone who has contributed to Metro Vision 2030, the following groups were instrumental in preparing the plan.

- Metro Vision Issues Committee
- Updating Metro Vision Ad Hoc Committee
- Urban Centers Work Group
- Freestanding Communities Work Group
- UGB/A Definition and Mapping Work Group
- UGB/A Criteria Ad Hoc Committee
- DRCOG Transportation Advisory Committee
- DRCOG Regional Transportation Committee

The Denver Regional Council of Governments (DRCOG) wishes to thank and acknowledge the hard work, commitment and energy of many individuals and groups in moving Metro Vision 2030 forward.

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