MEASURING PROGRESS



REGIONAL PERFORMANCE MEASURES AND INDICATORS

May 2008

GDVERNMENT

DENVER REGIONAL-COUNC

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REGIONAL PERFORMANCE MEASURES AND INDICATORS

DENVER REGIONAL COUNCIL OF GOVERNMENTS

Another Look at How Our Region is Doing

Metro Vision is the long-range plan for growth and development of the Denver metropolitan area. 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, work, play, and raise families.

Metro Vision contains goals and policies related to growth and development, transportation and the environment. Progress toward these goals will help maintain and improve our region's quality of life. The policies are for our region as a whole, as well as local governments and stakeholders, to undertake.

How do we know if our region is successfully implementing Metro Vision? Are we on track to meet regional goals? This report attempts to answer these questions by monitoring key indicators related to each goal.

Trends in these indicators can highlight successes. They can also focus attention on areas where additional effort is needed. Information on progress toward Metro Vision goals provides policy makers with useful feedback as they periodically update the plan.

The Denver Regional Council of Governments (DRCOG) published the first indicators report in 2005. A committee of local government staff and officials, DRCOG Board members and advisors developed the indicators in that report. This second report contains updated data that DRCOG collected and analyzed in 2007.

The report follows the major sections of Metro Vision, with indicators for growth and development, transportation and the environment. An additional section describes social and economic changes in our region.

Each of the 23 indicators focuses on a specific Metro Vision goal, although progress toward one goal may contribute to other goals. The goal of concentrating growth in urban centers, for example, may contribute to the related goals of reduced congestion and increased transit use.

Arrows next to each indicator provide a quick indication of how our region is doing.



An up arrow means the indicator is moving in a positive direction consistent with Metro Vision goals.



A sideways arrow indicates there is no major trend or the indicator is a baseline measurement only.



A down arrow means the indicator is moving in a negative direction away from Metro Vision goals. The discussion of each indicator summarizes the relevant Metro Vision goal and policy, describes the measure, and provides a list of action steps that can help our region move closer to the goal.



What does the report tell us about our region? Since 2005, the number of negative indicators decreased from six to four. Stable or neutral indicators increased from 11 to 13. Positive indicators remained constant at six. Although it is difficult to evaluate the relative importance of the different indicators, the decrease in negative indicators suggests our region is making progress toward Metro Vision goals and our quality of life is improving.

Growth and Development

2005 2008

U	U	Urban Area Consumption		
î	î	Urban Density		
		Large-Lot Development		
		Urban Centers		
		Freestanding Community Town Center Viability		
î		Freestanding Community Buffer		

Transportation

2005 2008

o the System

Environment

2005 2008

N	Parks and Open Space		
	Amount of Protected Regional Open Space Preservation Focus Areas		
U	Regional Biodiversity of Species and Significant Natural		
	Communities Status		
	Water Quality		
î	Wastewater Capacity		
	Water Supply and Demand		
	Air Quality		

Social and Economic

2005	2008	
U	î	Economic Activity
î	î	Population Demographics
	1	Housing
		Health
Ų		Community Life



A Look at Growth and Development in Our Region

Accommodating more than 1.5 million new people over the next 27 years challenges the Denver region to grow wisely. Metro Vision's growth and development goals and policies are designed with that in mind.

The Metro Vision 2035 plan establishes six growth and development goals.

- Ensure that urban development occurs within a defined urban growth boundary/area to promote an orderly, compact and efficient pattern of future development.
- Manage the extent of low-density, large-lot development occurring on the periphery of the urban area consistent with Metro Vision's stated policies.
- Encourage the development of higher-density, mixed-use, transit and pedestrian-oriented urban centers throughout the Denver region.
- Maintain Boulder, Brighton, Castle Rock and Longmont as distinct and self-sufficient communities, separate from the larger urban area.
- Recognize the small communities located in the rural and semi-urban areas of our region and more clearly define and support their regional role.
- Create senior-friendly communities by promoting development patterns and community design features that meet the needs of residents as they age.

To assess progress on growth and development goals, DRCOG measures six indicators:

- 1. Urban area consumption
- 2. Urban density increase
- 3. Large-lot development
- 4. Urban center household and employment growth
- 5. Freestanding community town center viability
- 6. Freestanding community buffer

Growth and Development Indicators: Highlights

- Urban land consumption still isn't showing signs of slowing. In fact, if our region continues using land at the current rate, the urbanized area will reach the targeted 2035 size well before 2035.
- Density continues to increase, thanks to infill and redevelopment activities. Our region is well on track to achieve the target 10 percent increase in density between 2000 and 2035. Density will have to increase even faster than current trends, however, to achieve our region's goal of limiting urban development to 921 square miles in 2035.
- Large-lot development represented 6 percent of our region's total land area and 3 percent of all regional households in 2006. These numbers reflect a new method for mapping development type and establish a new baseline for measuring future trends.
- Households and employment continue to grow within urban centers and freestanding community town centers, but still account for a relatively small proportion of the regional total.
- On average, 25 percent of the land surrounding the perimeters of freestanding communities is urban or semi-urban. None of the freestanding communities is completely separate from surrounding urban areas.

Urban Area Consumption

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

Policy: Accommodate our region's growth to 2035 within an urbanized area of no more than 921 square miles.

Measure: Expansion of the urbanized area. The numbers below reflect DRCOG's new method of mapping the urban area and therefore are not directly comparable to the previous indicators report.

Conclusions: In 2006, the urban area was 717 square miles. To meet the 921-square mile goal in 2035, our region must develop an average of no more than seven square miles of urban land per year. Between 2000 and 2006, however, our region added 82 square miles of urban development, an average of nearly 14 square miles per year.



If this trend continues, the urbanized area will exceed the 921-square-mile goal by 2022, and reach 1,106 square miles by 2035.

Action Steps: To meet the goal for urban area consumption, our region can take the following actions:

- Avoid urban development outside the region's UGB/A.
- Provide only transportation facilities and services consistent with the UGB/A.
- Provide only water and wastewater services consistent with the UGB/A.

Urban Density

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

Policy: Promote smaller lot sizes, infill development, and multifamily housing to achieve at least a 10 percent increase in density between 2000 and 2035.

Measure: Gross urban housing unit density (housing units per square mile of urban land).

Conclusions: In 2006, our region's urban density was 1,429 housing units per square mile. To achieve a 10 percent increase between 2000 and 2035, density must increase an average of 0.3 percent per year. Between 2000 and 2006, density increased 3.6 percent, an average of 0.6 percent per year.

This trend, reflecting both infill and new development on the urban fringe, puts our region well on track to meet the 10 percent goal. To stay within the 921-square-mile UGB/A, however, density must increase at an even faster rate of 0.8 percent per year.



Urban Density (Households per Square Mile)

Action Steps: To help meet the density goal, our region can take the following actions:

- Establish higher densities for new development.
- Support continued infill activities.
- Implement urban centers.
- Encourage transit-oriented development.

Goal: Manage the extent of low-density, large-lot development occurring on the periphery of the urban area consistent with Metro Vision's stated policies. Policy: Limit the total amount of large-lot development in the future to the 2006 proportion of approximately 3 percent of all households in our region. Large-lot development is of concern because it consumes land at a rapid rate. Providing public services to low-den-Measure: The percent of our region's land area and households represented by large-lot

Conclusions: In the previous report, DRCOG estimated that large-lot development represented 17 percent of our region's land area and 8 percent of our region's households in 1998.

Large-Lot Development

sity development can be difficult and expensive.

development (average lot size between one and 35 acres).

Since that time, DRCOG significantly improved its mapping method and now estimates that large-lot development represented 6 percent of our region's land area and 3 percent of the households in 2006. By comparison, urban development represented 14 percent of our region's land and 96 percent of the households. Other land uses include agriculture, forests, federal lands and open space.



2006 Development Type

Because of the change in methodology, the 2006 estimates are not directly comparable to the 1998 estimates. The more recent estimates therefore serve as a new benchmark for measuring subsequent trends.

Action Steps: To minimize the future growth of large-lot development, our region can take the following actions:

- Limit large-lot development to lots already platted.
- Target investment in transportation infrastructure and other services to areas within the UGB/A.
- Work together on improved methods for tracking large-lot development in our region.

Urban Centers

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

Policy: A significant portion of future regional population and employment growth will occur within recognized urban centers.

Measure: Housing and employment change within the urban centers identified in Metro Vision.

Conclusion: The continued success of urban centers depends on significant growth in both housing and employment. Although urban center employment declined between 2000 and 2002, both employment and households increased between 2002 and 2005. In 2005, urban centers contained 27 percent of total regional employment but only 6 percent of total regional housing units.

Action Steps: To promote the development of urban centers, our region can take the following actions:

- Support job-producing economic development at urban centers.
- Re-evaluate urban centers periodically to determine if they are developing as expected.
- Explore regional incentives to guide jobs into planned centers.
- Provide appropriate capacity to serve the travel demand at the urban centers.

Urban Center Employment (Thousands)



Urban Center Housing Units (Thousands)



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Freestanding Community Town Center Viability

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

Policy: Each freestanding community will maintain a viable mixed-use town center to preserve community identity. A truly mixed-use town center allows a freestanding community to act more independently. The ideal mix, which is different for each community, requires absorption of both jobs and population.

Measure: Housing and employment growth in each freestanding community's town center.

Conclusion: Like urban centers, employment in freestanding community town centers increased between 2002 and 2005 after a decrease between 2000 and 2002. Housing units increased throughout the entire time period. In 2005, however, freestanding community town centers still account for only 2 percent of total regional employment and 1 percent of total regional housing units.

Action Steps: To ensure the continued viability of their town centers, freestanding communities can take the following actions:

- Review development plans to ensure the further mixing of uses in town centers.
- Strive for economic stability and unique identity through increased and balanced job and housing growth.





Freestanding Community Town Center Housing Units (Thousands)



Freestanding Community Buffer

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

Policy: 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.

Measure: Percent of the land area around each freestanding community's perimeter that is urban (average lot size of <1 acre/dwelling unit), semi-urban (1-9.9 acres/per dwelling unit), semi-rural (10-34.9 acres/per dwelling unit), rural (>35 acres/per dwelling unit), and open space.

Conclusions: In the previous report, DRCOG estimated that an average of 1 percent of the land around the freestanding communities' perimeters was urban in 2004. Since that time, DRCOG has significantly improved its mapping method, and now estimates that an average of 10 percent was urban in 2006. An additional 15 percent, on average, was semi-urban. None of the freestanding communities is completely separate from surrounding urban or semi-urban areas.

Development Type in Freestanding Community Buffer Areas (2006 Average)



Because of the change in methodology, the 2006 estimates are not directly comparable to the 2004 estimates. The more recent estimates, therefore, serve as a new benchmark for measuring subsequent trends.

Action Steps: To help maintain separation from the larger urban area, freestanding communities can take the following actions:

• Ensure that land within the buffer area remains non-urban either by preserving potential open spaces in the buffer area or keeping lands in rural use.

- Pursue intergovernmental agreements with counties and neighboring communities to gain assurances that land within the buffer area will remain non-urban.
- Work with transportation providers to avoid locating major facilities in buffer areas.



A Look at Transportation in Our Region

Preserving and upgrading our region's transportation system will be one of our toughest challenges over the next 27 years. Population growth, preexisting development patterns, and inadequate funding challenge the ability of our region to achieve our transportation vision.

Metro Vision's goal is a transportation system that provides safe, environmentally sensitive and efficient mobility choices for people and goods. The plan also calls for a system that integrates with and supports the social, economic and physical land use development of our region and the state.

To assess progress on transportation goals, DRCOG measures five indicators:

- 1. Funding of major transportation projects that add capacity to the system
- 2. Traffic congestion
- 3. Safety
- 4. Roadway surface and bridge conditions
- 5. Use of alternatives to driving alone

Transportation Indicators: Highlights

- Over the past decade, federal and state transportation funding has not kept up with regional growth in population and travel. DRCOG estimates that our region can afford to implement only a fraction of the capacity projects we need to accommodate future growth.
- Congestion levels are getting worse. Miles of severely congested regional freeways and arterials increased from 22 in 1990 to 99 in 2005. DRCOG forecasts that number will grow to 258 by 2035. Congestion is not just aggravating; it's costly to business and wastes commuters' time.
- The crash rate has increased since 1995, although the fatality rate has declined since 2001.
- Pavement conditions on state highways have improved since 2000. Future funding is insufficient, however, to maintain current road and bridge conditions. About 92 percent of local roads are in good or fair condition, thanks to local government expenditures above and beyond motor vehicle fuel taxes and registration fees.
- Transit ridership has gone up since 1990, with the opening of the Southwest and Southeast light rail lines clearly increasing ridership in those corridors. Working at home, or teleworking, has also become a very popular alternative. More than 5 percent of our region's workers teleworked in 2006, among the highest rates in the nation.

MEASURING PROGRESS Regional performance measures and indicators

Funding of Major Transportation Projects that Add Capacity to the System

Goal: A transportation system that provides safe, environmentally sensitive and efficient mobility choices for people and goods. Metro Vision also calls for a system that integrates with and supports the social, economic, and physical land use development of our region and state.

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

Measures: Current and future funding levels for capacity projects, and the needs the funding can cover.

Conclusions: In 2005, when the DRCOG Board adopted the 2030 Regional Transportation Plan (RTP), DRCOG estimated that our region needed to spend about \$58 billion (in 2008 dollars) on new capacity to accommodate forecast growth over the duration of the plan. This estimate included expansion of the regional roadway system, new regional transit and other improvements such as bicycle/pedestrian facilities and new local roads. DRCOG further estimated that only about \$34 billion in funding for capacity improvements was available from state, federal and local sources, resulting in a \$24 billion shortfall.

DRCOG updated these estimates in 2007 when the 2035 RTP was adopted. Capacity needs increased to about \$64 billion, reflecting better cost estimates and increased construction costs. Available funding also increased to about \$40 billion, primarily due to increased contributions from local governments and private developers. The shortfall, however, remained constant at \$24 billion.



Regional Transportation Plan (RTP) Capacity Needs and Funding Estimates (Billions of 2008 Dollars)

Action Steps: To expand the capacity and improve the efficiency of the transportation system, our region can take the following actions:

- Pursue additional funding for capital roadway, transit, bicycle, and pedestrian projects and operational projects in congested corridors and at bottlenecks.
- Implement incident management plans to quickly retain capacity lost during specific events.
- Adhere to the UGB/A to reduce the need for new infrastructure.







Goal: A transportation system that provides safe, environmentally sensitive and efficient mobility choices for people and goods. Metro Vision also calls for a system that integrates with and supports the social, economic, and physical land use development of our region and state.

Policies: Reduce the growth in travel delays due to recurring congestion.

Measures: Historic and forecast miles of congested freeways and major regional arterials; the monetary cost to business of delays faced by commercial vehicles; and hours of delay per peak period traveler.

Conclusions: All the congestion measures show a negative trend, indicating that congestion is bad and getting worse. Starting in about 1990, miles of congested roadways dramatically increased, corresponding with population and economic growth. DRCOG forecasts this trend will continue into the future. Currently, workers who commute during peak hours spend, on average, more than 60 percent of their trip in congested conditions. That statistic has increased from 40 percent in 1990, and will likely continue to increase.



Severely Congested Roadways (Miles of Freeways and Major Regional Arterials)

Congestion is not just an inconvenience, but also a major cost to local businesses. The estimated cost of congestion to businesses was about \$1 billion per year in 2005, doubling the 1990 level of \$540 million (in 2006 constant dollars). DRCOG expects the cost to reach \$4.3 billion by 2035. These costs represent wasted dollars that could otherwise be invested in capital or workforce development.



Cost of Congestion to Businesses (Billions of 2006 Dollars)

Perhaps the most significant consequence of congestion is its effect on our region's residents and workers. Each peak-period traveler in the Denver metropolitan area wastes an average of 48 hours a year sitting in traffic. On this measure, our region performs about average among our peer regions in the western United States. Annual delay per person per year is worse in Dallas, at 58 hours, and better in Salt Lake City, at 27 hours.



Annual Hours of Congestion Delay per Person in 2002

The increasing congestion levels result from continued population and employment growth in our region with limited investment in transportation infrastructure or transportation alternatives.

Action Steps: To tackle congestion, our region can take the following actions:

- Increase the capacity of the multimodal system by funding capital projects and operational projects in congested corridors and at bottlenecks.
- Help people and businesses avoid or adapt to congestion by providing alternative transportation services, such as transit, park-n-Ride lots, bicycle and pedestrian facilities, ridesharing and telework/flexible work hour assistance, and real-time traveler information.
- Implement the land use elements of Metro Vision, such as urban centers, to allow for shorter trips, minimizing the impact on travelers even as congestion persists.
- Increase transportation system management activities, such as the use of intelligent transportation systems, traffic signal timing and incident management, to assure more reliable travel times.





Goal: A transportation system that provides safe, environmentally sensitive and efficient mobility choices for people and goods. Metro Vision also calls for a system that integrates with and supports the social, economic and physical land use development of the region and state.

Policies: Develop and maintain a safe transportation system for all of its users. Traffic safety is a major public health concern.

Measures: The number and severity of crashes involving motor vehicles on our region's roadways. The Colorado Department of Transportation (CDOT) defines crashes as reported collisions between autos/trucks and other vehicles, trains, bicycles, pedestrians or objects and reported single-vehicle incidents, such as rollovers.

Conclusions: In 2004, there were about 81,000 crashes and 231 fatal accidents on our region's roads. While the overall crash rate (per 100 households) has increased slightly since 1995, the death rate has declined since 2001. The 2004 injury rate is also lower than it was in 1995, but has increased in recent years.



Crash, Injury and Death Rates

Congestion and safety are related concerns. Increasing congestion can cause the accident rate to increase. Accident severity may be less, however, if travel speeds are lower. Conversely, crashes can cause significant additional delay on top of routine congestion.

The safer design of new vehicles should help reduce injury and death rates in the future. The role of human behavior, however, is more difficult to address. Improper driver behavior is the primary cause of 80 percent of the crashes in Colorado.

Action Steps: To promote the safety and security of all transportation system users, our region can take the following actions:

- Conduct further analysis of crash data to determine locations of concern.
- Implement mitigation projects that will decrease crashes, especially those involving fatalities.
- Monitor and support legislation aimed at cost-effectively improving the safety of drivers, passengers, pedestrians, and bicyclists.

Roadway Surface and Bridge Conditions

Goal: A transportation system that provides safe, environmentally sensitive and efficient mobility choices for people and goods. Metro Vision also calls for a system that integrates with and supports the social, economic and physical land use development of the region and state.

Policy: Assure the preservation and maintenance of existing facilities. Deferring maintenance needs shifts the cost later in time and usually leads to a facility reconstruction. Facility reconstruction costs are usually much higher than the cumulative cost to maintain facilities in good operating order.

Measures: The percentage of roads and streets in good or fair pavement condition; the percentage of roads and bridges needing reconstruction; and the amount of funds available to keep existing facilities in good and fair conditions.

Conclusions:

State Highways and Bridges

The CDOT target for our region is 69 percent of state highways in good or fair pavement condition. In 2006, 70 percent was in good or fair condition, up from 47 percent in 2000.

When preventative maintenance is no longer financially feasible, reconstruction is required. In our region, 24 percent of state highways and 5 percent of the bridges need reconstruction. The I-70 viaduct east of Brighton Boulevard, which by itself accounts for 7 percent of all the bridge surface in our region, was in fair condition as of 2006 and must be replaced by 2035.

State Highway Surface Conditions (Percent Good or Fair)



The state must spend about \$87 per person annually to adequately maintain highways and bridges. Roughly two-thirds of this amount is needed to maintain pavement in good or fair conditions. One-third is needed for highway and bridge reconstruction. Recently, the Colorado Transportation Commission allocated about \$40 per person annually, which will meet about half of the needs.

Annual Cost and Revenue Allocation to Maintain State Highways and Bridges (2008 Dollars per Person, FY2008-2035)



Poor road conditions can also increase individual driver costs by requiring additional vehicle maintenance. CDOT estimates that poor roads cost drivers an average of \$71 per person per year.

Local Roads and Bridges

Our region's local governments have maintained 93 percent of their roads and 94 percent of their bridges in good or fair condition. To achieve this level of quality, local governments have allocated significant levels of funding from non-traditional sources. The traditional gas taxes and motor vehicle registration fees only contribute about 17 percent of the funding for local road programs. Local government special assessments and general funds contribute 75 percent of the funding. Private developers and other sources account for the remaining funds. Whether local governments can and will continue to allocate this level of funding for road programs is uncertain.



Local Government Roadway Program Revenues (2006 Dollars per Capita)

Action Steps: To assure the preservation and maintenance of existing facilities, our region can take the following action:

• Seek additional funds necessary to maintain the transportation system.

MEASURING PROGRESS Regional performance measures and indicators



Use of Alternatives to Driving Alone

Goal: A transportation system that provides safe, environmentally sensitive and efficient mobility choices for people and goods. Metro Vision also calls for a system that integrates with and supports the social, economic and physical land use development of the region and state.

Policies: Provide increased transit service and facilities that stimulate travel by means other than the single-occupant motor vehicle, encourage transit-oriented development and provide mobility options.

Measures: Historical trends in use of transportation alternatives and comparisons to similar regions.

Conclusions: The use of alternative modes in general, and transit ridership specifically, dropped sharply in the 1980s. Much of this trend was due to increased auto ownership and the growing number of two-worker households. In the 1990s, both of these demographic trends leveled off.

Transit ridership grew steadily throughout the 1990s, leveled off in the early 2000s, and has been increasing in recent years. Transit use in the Southwest corridor increased from 11 percent in 1997 to 20 percent in 2001 after the Southwest light rail line opened.



Transit Ridership (Average Weekday Boardings)



Denver is comparable to other regions in alternative mode use. The region has a lower share of carpools, but a higher share of commuters who use transit and work at home (telework). The share of persons teleworking has grown steadily and was 5.6 percent in 2006, among the highest in the nation.



Use of Alternative Modes Compared to Peer Regions (Percent of Work Trips)
DRCOG expects the share of alternative mode use to increase in the future, as our region invests in rapid transit, transit-oriented development and bicycle/pedestrian facilities, and as more people telework.

Action Steps: To encourage the use of transportation alternatives, our region can take the following actions:

- Invest in more transit.
- Invest in high-occupancy vehicle or high-occupancy/toll lanes.
- Promote a workplace culture that allows flexibility such as teleworking, compressed work weeks, or flex-time.
- Implement the urban centers called for in Metro Vision, which make alternative modes more convenient.
- Establish employer-based incentives for carpooling and vanpooling, such as parking cash-outs.



A Look at the Environment in Our Region

The Denver region's natural setting is one of its greatest assets. It's no mystery why the region's climate, location at the foot of the Rocky Mountains, and proximity to the South Platte River have attracted human activity for centuries. Metro Vision focuses on protecting the environmental assets that make our region so special: clean water, clean air, and access to parks and high-quality open space.

Metro Vision has three goals specifically relating to environmental quality. These goals guide the region in mitigating the effect of more than 1.5 million additional residents by 2035 on our land, water and air. They include the following:

- Establish an integrated, linked, permanent parks and open space system that will include a variety of open space and make appropriate open space accessible to all of our region's population.
- Restore and maintain the chemical and physical integrity of our region's waters to ensure clean water for residents and a balanced, healthy, ecological community.
- Protect human health and environmental quality by achieving and maintaining ambient air quality standards.

DRCOG developed seven indicators to measure progress on environmental goals:

- 1. Parks and open space per capita
- 2. Amount of protected regional open space preservation focus areas
- 3. Regional biodiversity
- 4. Water quality
- 5. Wastewater capacity
- 6. Water supply and demand
- 7. Air quality

Environmental Indicators: Highlights

- Our region has made progress in the area of parks and open space preservation, but the number of imperiled and vulnerable species and natural communities has increased since 2003.
- The water quality assessment is mixed. Although some stream segments have improved, the total number of impaired stream segments is increasing.
- The region's wastewater treatment system is working well and is anticipating future needs adequately. Plant capacity is in better shape today than in 1997. The region could face a water shortfall by 2030, however.
- Regional air quality indicators also show mixed results. Carbon monoxide and small particulate levels are well below federal standards. As our region's population and motor vehicle travel continue to grow, however, concerns about ozone have also increased. In 2007, our region violated federal ozone standards.

Parks and Open Space

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

Policy: Protect a minimum of 854 square miles of non-federal parks and open space by 2035, which would maintain the region's current (2004) ratio of 127 open space acres per 1,000 people.

Measure: Total square miles of non-federal parks and open space, including land owned by the state or local governments as well as conservation easements and other methods of preserving the long-term open space character.

Conclusions: In 2000, the region had 120 acres of parks and open space (local and state) per 1,000 residents. By 2004 this number increased to 127 acres per 1,000 residents, or a total of 520 square miles. This increase is due in large part to increased numbers of, and revenues from, local sales tax-funded programs.

Protected areas are often located at or beyond the urban edge, however, and are therefore less accessible to residents of the central urban area.



Action Steps: To maintain the current per capita amount of parks and open space as the population grows, our region can take the following actions:

- Continue to act on opportunities for protecting additional open space and work to make future open space acquisition accessible to all of our region's residents.
- Collaborate with organizations such as Great Outdoors Colorado, The Nature Conservancy and local land trusts to increase the amount of parks and open space in the metro area.

Amount Of Protected Regional Open Space Preservation Focus Areas

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

Policy: Preserve open space in key focus areas including canyons and river corridors, the mountain backdrop, prominent geographic and geologic features, east metro area plains preserve and open space buffers surrounding each of the four freestanding communities (see map on next page).

Measures: For each preservation focus area, the total area needing protection, the amount currently protected by state and local governments, and the amount of these areas already in urban development. (See page 12 for information on open space buffers surrounding the freestanding communities).

Conclusions: Our region is roughly halfway to reaching its 2035 goal for protecting the mountain backdrop and a third of the way toward the goal for protecting river canyons and corridors. Protection of the east plains focus area has only progressed to 25 percent of the goal area.

Because the focus areas are large, regional-scale "overlay zones" that include much land that is already developed, it won't be possible to preserve all of these lands. Preserving as much of these areas as possible is still important, however. Because the preservation focus areas increased in size and number during the most recent Metro Vision update, the current results are not directly comparable to the previous indicator report.



Protection of Preservation Focus Areas (Square Miles)

Action Steps: To protect open space preservation focus areas, our region can take the following actions:

- Adopt an ecosystems approach to acquisition of preservation areas and the placement of development and transportation projects.
- Implement active open space acquisition programs that promote focus areas as high-priority systems for protection.
- Refine the identification and mapping of suitable high-quality focus areas.



Regional Biodiversity of Species and Significant Natural Communities Status

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

Policy: Conserve and protect natural resource areas for future generations. Important natural resources include surface waters, riparian areas, wetlands, forests and woodlands, prairie grasslands, wildlife and wildlife habitat, and other environmentally sensitive lands.

Measure: The number of species and natural communities in our region categorized as imperiled or vulnerable to extinction by the Colorado Natural Heritage Program (CNHP), a program of Colorado State University. CNHP determines conservation status based on field surveys for bird, fish, insect, mammal, mollusk and vascular plant species, among others. They also assess the status of "natural communities," which are generally defined as ecological plant associations.

Conclusions: The number of imperiled or vulnerable species and natural communities in the DRCOG region increased from 45 in 2003 to 96 in 2007 (see figure). The 2007 number of imperiled and vulnerable species represents around 1 percent of the state's biodiversity (3,597 total species in 2002). Although this is a relatively small percentage, any species loss is irretrievable.



Imperiled and Vulnerable Species

Action Steps: To protect species biodiversity and maintain significant natural communities, our region can take the following actions:

- Support continued efforts to collect data on biodiversity and to identify and map areas that contain significant concentrations of biodiversity and significant natural communities.
- Refine conservation goals to help identify conservation areas that provide representation of species and communities native to the region and provide sufficient habitat for them to ensure their future survival.
- Carefully consider impacts and prepare and implement mitigation strategies to address them in transportation and land use planning decision-making through environmental impact analysis and comprehensive plan implementation.

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

Policy: 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.

Measures: Miles of impaired stream segments and water quality trends for a typical lake and stream in our region. The Colorado Water Quality Control Commission designates stream segments and bodies of water as "impaired" when they fail to meet their designated uses.

Conclusions: The map on page 46 shows the location of impaired stream segments in our region. As the chart below indicates, the number of impaired streams increased between 1992 and 2006. Water quality has improved, however, at the representative "typical" locations chosen for this indicator.

The increase in the number of impaired segments is due to pollution, effects of drought, and implementation of new standards. Our region succeeded in removing a number of stream segments from the list each year, indicating that efforts are in fact improving water quality after problems have been identified.



Impaired Stream Segments

The next chart shows the concentration of *chlorophyll a* in Cherry Creek Reservoir, a typical lake in our region, from 1989 to the present. High levels of *chlorophyll a* can indicate poor water quality. Since 1999, *chlorophyll a* levels have been decreasing due to improvements in point and nonpoint phosphorous control from both natural and anthropogenic sources.



Chlorophyll a Concentration in the Cherry Creek Reservoir (Micrograms per Liter)

The final chart illustrates the trend in total suspended solids (TSS) in the South Platte River near the confluence with Cherry Creek, a typical river in our region. Total suspended solids measure the pollution content of a river or stream, such as metals, e. coli and nutrients. Suspended solids also decrease the aesthetic appeal of our streams.

Although the data are erratic from year to year, the TSS chart indicates a slight downward trend in this pollutant. As new wastewater technology is brought online and stormwater management practices are enacted, DRCOG expects continued improvement in our region's streams with respect to TSS levels.



Total Suspended Solids in the South Platte River at 19th St.

Action Steps: To reach clean water goals, our region can take the following actions:

- Implement and carry out the actions recommended in the Metro Vision Clean • Water Plan.
- Use growth management, low-impact urban design techniques and transportation • best management practices to improve water quality by reducing the impact infrastructure has on the hydrologic system.
- Develop policies that require developers to reduce runoff and improve water quality ٠ through stormwater management practices.



Wastewater Capacity

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

Policy: Identify an effective regional system of wastewater treatment facilities that meets federal and state standards.

Measure: Wastewater treatment plant capacity relative to growth needs.

Conclusions: Colorado's Water Quality Act requires that wastewater providers begin planning for expansion when they reach 80 percent of their capacity. At 95 percent of capacity, facilities must be under construction. By this standard, the region's facilities are keeping up with growth.

As shown in the chart, 11 of 42 major treatment facilities had reached 80 percent of capacity and two had reached 95 percent in 1997. By 2003, none of these facilities was approaching full capacity and only four were at the 80 percent "planning" level. In 2006, no facilities were at the 80 percent level but two facilities had reached the 95 percent level. Both facilities were in the process of constructing new capacity.



Wastewater Treatment Facilities Capacity Status

Action Steps: To ensure adequate wastewater treatment capacity for future growth, treatment facilities can take the following actions:

- Consider the impacts of growth on their service areas.
- Work with DRCOG to prepare utility plans that anticipate the need for future expansions. Such planning ensures that capacity is increased in time to handle growth.

Water Supply and Demand

Goal: Support the growth of our region with adequate infrastructure, including water supply.

Policy: Locate 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.

Measures: Information about water demand and supply in subareas of the state from the Colorado Department of Natural Resources Statewide Water Supply Initiative (SWSI). The department provides data for four areas that include portions of the DRCOG region. Although these areas combined are larger than our region, they provide the most accurate picture of water supply. The 2004 data from the previous indicators report is still the most current data available.

Conclusions: The SWSI calculates gross demand shortfall as the difference between known water supply projects in some phase of planning or development and the total increase in gross water demand. Even under the optimistic assumption that all of these projects are successful, the areas that include our region will still be almost 10 percent short of meeting 2030 demand for municipal and industrial water.

Recent local water supply planning and construction, such as the Rueter-Hess reservoir project in Douglas County and the Denver Water study of expansion of its northern water collection system, will help address the shortfall.

Subbasin	2000 gross demand	2030 gross demand	Projected conservation savings	Increase in gross demand	ldentified gross demand shortfall
Denver Metro	366	486.6	26.8	120.6	12.5
South Metro	152.9	241.5	15.4	88.6	1.5
Upper Mountain	9.8	27.7	1.7	17.9	1.4
Northern	212.5	377.4	22.6	164.9	18.4
Total	741.2	1,133.2	66.5	392	33.8

Municipal and Industrial Water Demand Forecasts (Thousands of Acre-Feet per Year)

Note: The Denver Metro subbasin includes Adams, Denver and Jefferson counties. South Metro includes Arapahoe, Douglas and Elbert counties. Upper Mountain includes Clear Creek, Gilpin, Park and Teller counties. Northern includes Boulder, Broomfield, Larimer and Weld counties.

Action Steps: To ensure adequate water supply for future growth, our region can take the following actions:

- Assess currently available water supplies and identify actions that can meet projected demands.
- Identify intergovernmental projects that can serve the region.
- Update the SWSI information on a regular basis.
- Use growth management and urban design to reduce the growth in water demand.
- Take a more proactive stance in dealing with the issue of water quantity at the regional level.
- Establish regional water conservation strategies.
- Advance and promote an aggressive public education campaign on the topic of the availability and use of water resources in a drought-prone region.

Air Quality

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

Policy: Reduce growth in mobile source air pollution emissions by providing travel alternatives, improving the efficiency of the regional transportation network and changing key features of the development pattern. In combination, these will help achieve national, state and regional air quality objectives.

Measure: Trends in three major air pollutants: carbon monoxide, particulate matter and ozone.

Conclusions: During the 1980s, our region regularly violated the federal carbon monoxide (CO) standard. We have not violated the standard since 1995, however, and the trend line shows continued improvement. At 2.5 parts per million in 2007, CO levels were well below the federal standard of nine parts per million.



 PM_{10} , or particulate matter less than 10 microns in size (the width of a human hair), also posed a problem for our region in the 1980s. Wood-burning bans on high-pollution days, use of liquid deicers and increased street sweeping of sand after snowstorms resulted in a dramatic reduction in PM_{10} levels. In 2007, PM_{10} levels were well below the federal standard of 150 micrograms per cubic meter of air.



The final figure shows trends in ozone levels, including the fourth-highest values for each year and the three-year averages of the fourth-highest values. The Environmental Protection Agency (EPA) uses the three-year average to determine compliance with federal standards.

The average value for the three-year period of 2005-2007 marginally exceeded the federal standard of 84 parts per billion. The non-attainment area includes seven counties in the DRCOG region plus parts of two counties to the north. Within the next year, the Regional Air



Quality Council (RAQC) must prepare a plan for reducing ozone pollution, called the State Implementation Plan (SIP).

Action Steps: To meet national air quality standards, our region can take the following actions:

- Assist the RAQC in preparing the SIP to assure compliance with the federal standard.
- Follow the Governor's Directive to the RAQC issued in July 2007 and set a goal of reducing or eliminating ozone levels above 80 parts per billion.
- Consider additional elements that would further reduce ozone levels in anticipation of the more stringent federal standard (75 parts per billion) that will come into effect in 2010.
- Continue to implement the maintenance plans for CO and PM₁₀.



A Look at Our Region's Social and Economic Profile

The Denver region is one of the nation's most attractive places to live, work, and play. Our region's strong economy, affordable housing market, and ample recreational opportunities draw a diverse group of residents. With the development of FasTracks and easier travel around the metro area, our region will become an even more enticing place for business and residential development.

Metro Vision's goal is to maintain and improve the quality of life in our region. Although quality of life is difficult to measure, DRCOG developed a number of socio-economic indicators that are broadly related to this goal:

- 1. Economic activity
- 2. Population demographics
- 3. Housing supply
- 4. Health
- 5. Community life

Social and Economic Indicators: Highlights

- The regional economy recently regained jobs lost during the recession of 2000. Employment growth, primarily within the service sectors, will continue to help the economy improve.
- The region's population continues to grow. Major demographic changes including a growing Hispanic population and aging of the baby boomers will have important impacts on the labor force and demand for aging services.
- Housing stocks have increased in the past few years. Home foreclosures pose a serious threat to the residential market, however, and may continue to do so in the short term until more stringent regulations are put into place.
- Our region is following the national trend toward increasing home ownership. Median home prices are close to the national average.
- Although more individuals report exercising regularly, obesity is also increasing in our region. Additionally, the number of cigarette smokers has remained constant.
- Funding has stayed constant for the arts and other cultural amenities, which have an important influence on our regional economy.

Economic Activity

Goal: Maintain and improve quality of life in the Denver region. Build on our region's stature as the economic and cultural center of the Rocky Mountain region and position our region as one of the nation's most attractive and desirable metropolitan areas.

Measures: Employment growth, unemployment rate, industry mix, wage/salary levels and new business starts.

Conclusions: In the 1990s, our region was a national leader in employment and income growth due to strong telecommunications and technology industries. The recession in the early 2000s, however, eliminated many of the jobs that kept our economy strong. Employment growth in the professional services sector in recent years allowed our region to recover many of the jobs lost and employment numbers are now similar to what they were in 2000.



Jobs and Unemployment Rate

DRCOG expects continued employment gains over the next few years, particularly within the service sectors. The Bureau of Economic Analysis recently credited the "increasing role of the Denver, Colorado, metropolitan area as a regional trade and service center" as the motivator for growth in service industries.

Additionally, DRCOG expects the engineering sectors to continue adding jobs, as many local businesses reap the benefits of federal defense, space exploration, and homeland security contracts.

Economies with a diversity of industries are more likely to survive economic recession, and our region's economy has diversified over time. In 2002, the 10 largest employment categories accounted for 83 percent of our region's wage and salary jobs. By 2005, the 10 largest categories accounted for only 75 percent of jobs.

Many of the industries that produce jobs within our region pay high average wages. For example, firms within the professional, scientific, technical, finance and insurance industries pay average salaries that exceed \$60,000. These industries attract a variety of skilled workers who demand high wages and help expand our local economy.



Average Annual Wages in 2005 - Top Ten Industries (Thousands of Dollars)

In the early 1990s, our region experienced a large jump in the number of new businesses. After 2000, the rate of start-ups began to fall. However, approximately 8,000 new businesses started up between 2002 and 2005, indicating confidence in our region's economy. Action Steps: To promote economic health, our region can take the following actions:

- Support economic development programs targeting industries that will provide jobs with the appropriate wage and skill levels for the resident labor force.
- Provide the infrastructure needed to attract industry clusters that will further diversify the economy, such as biotech and software development.
- Encourage new business starts by streamlining the permit and licensing process for small business.
- Provide programs that support existing businesses.
- Retain individuals who are educated in Colorado's school system and encourage them to obtain higher levels of education.

Population Demographics

Goal: Maintain and improve quality of life in the Denver region while adapting to and accepting changes associated with an increasing population.

Measures: Population growth, diversity, education and age.

Conclusions: Regional population growth soared during the 1990s, reaching a high of 3.3 percent annual growth in the decade's last four years. By comparison, the population grew 1.3 percent annually during the 1980s. Since 2000, population growth has slowed to about 2 percent annually. DRCOG expects growth to continue at about 2.5 percent annually through the remainder of the decade.



Average Annual Polulation Growth Rate



Births to Hispanic and Non-White Mothers (Percent of Total Births in 2005)

Racial and ethnic diversity can contribute to community vitality by expanding ideas and perspectives. Although our region's racial composition changed very little during the 1990s, the Hispanic population grew dramatically during that time period (Hispanic identity is an ethnic characteristic and is independent of race). Much of this increase was due to people moving into the region, but just over one-third of the increase came from births to existing residents.

Residents over the age of 25 with bachelor's degrees rose from 27 percent in 1990 to 30 percent in 2000. The share of residents with a graduate degree also rose from 10 percent to 12 percent over the same time period. Many of these individuals were educated outside the Denver region before moving here. The continued attraction and retention of highly educated residents is crucial for our region's economic health.

The aging of the baby boomer population will also have a significant effect on the national and regional economy. Communities must consider the forthcoming changes to the labor force and the increasing demand for aging services as this population group ages.



Population Aged 30 to 59 (Percent of Total Population in 2005)

Action steps: To promote continued vitality, our region can take the following actions:

- Support funding for K-12 and higher education.
- Retain individuals who are educated in Colorado's school system and encourage them to obtain higher levels of education.
- Plan to provide services, housing and transportation networks that meet the needs of a changing population, both in terms of ethnic and age characteristics.

Housing

Goal: Maintain and improve quality of life in the Denver region. Provide affordable housing choices for the region's residents.

Measures: Growth of the housing stock, diversity of housing options and home prices.

Conclusions: Our region's residential housing market helped our economy recover from the recession of the early 2000s. Low mortgage interest rates allowed new buyers to enter into the real estate market and existing homeowners to borrow against their homes. Builders responded to the demand for new homes, flooding the markets with new units.

2001 saw the greatest increase in new units and the housing stock grew consistently through 2005. DRCOG expects the residential housing market to slow down through the next few years, as the abundance of available stock is absorbed.



In 2005 and 2006, Colorado led the nation in home foreclosures, which pose a serious threat to the residential market and may continue to do so in the short term until more stringent regulations are put into place.

The Denver region has a variety of housing types, including about 743,000 single-family units and 340,000 multifamily units as of 2005. Sixty-six percent of the region's homes were owner-occupied in 2000, up 4.8 percent from 1990, reflecting a national trend toward home ownership. In 2000, almost 90 percent of the region's single-family homes were owner-occupied while fewer than 20 percent of the multi-family homes were owner-occupied.

Housing Unit Composition in 2005



Over the past 15 years, housing prices in the DRCOG region have steadily climbed, but remain close to the national average. The median home price for the Denver metro area was \$249,000 in 2006.

Action Steps: To address the region's housing needs, our region can take the following actions:

- Encourage the construction of diverse housing types to provide residents with a choice of housing size, price and location.
- Further investigate, with DRCOG support, the relationship between housing choices and retention of the diverse workforce needed to support the region's growing economy.
- Encourage stricter regulations of the mortgage industry to help eliminate the prevalence of foreclosures.



Goal: Maintain and improve quality of life in the Denver region. Good human health and high levels of activity are direct consequences of a strong quality of life.

Measures: Obesity, physical activity, tobacco use, and the consultation of a primary care doctor, as well as a composite index based on these four measures. Health statistics come from the Colorado Department of Public Health and Environment and do not include Broomfield, Clear Creek and Gilpin counties.

Conclusions: Our region's composite health index has changed little in the past few years. More important than the overall composite score is how residents have changed individual health habits.

Fifty-four percent of residents reported moderate regular physical activity in 2005, up from 25 percent in 2000. Obesity levels increased during the same time period, however, from 13 to 18 percent.

Cigarette smoking in our region has remained relatively consistent over time. Nineteen percent of the regional population admitted to smoking cigarettes in 2000, compared with 18 percent in 2005. The new statewide ban on smoking in public places may lead to a decreased smoking rate in the future.

Action Steps: To ensure the continued health of residents, our region can take the following actions:

- Create goals similar to the national 2010 health objectives (http://www.healthypeople.gov/Data/Data2010.htm).
- Take a comprehensive approach to promoting personal health through schools, park and recreation districts and community design.
- Encourage pedestrian- and transit-oriented development, which support healthier, more active lifestyles.
- Continue enforcing smoking bans in public areas to help discourage the convenience and accessibility of smoking.

Community Life

Goal: Maintain and improve quality of life in the Denver region. Active engagement and participation of residents in the community make a substantial contribution to our region's quality of life.

Measures: Park and recreation spending, cultural spending, and voter participation. These measures reflect state and local government efforts to provide opportunities for engagement within the region and indicate how active residents are in selecting their local leaders.

Conclusions: Local per capita spending on parks and recreational facilities in our region and state spending on scientific and cultural affairs has remained relatively constant during recent years. Funding of regional scientific and art programs through the Scientific and Cultural Facilities District (SCFD) was \$42 million in 2007, up from \$40 million the previous year.

Support for scientific and cultural opportunities contributes not only to our region's quality of life, but also the economy. The Colorado Business Committee for the Arts estimated that in 2006, the art community's impact on the Denver economy was approximately \$1.4 billion generated from tourism, job creation, and tax revenue.

Voter participation in our region has remained constant for the past few years, with increased participation during presidential election years. Overall participation remains relatively low, at about 50 percent.



Voter Participation

Action Steps: To improve community life, our region can take the following actions:

- Ensure adequate financial resources from public and private sources for both recreational and cultural amenities.
- Encourage more eligible residents to register and to vote.
- Encourage neighborhood design and social conditions that foster a sense of community.

Action Steps

The primary purpose of the regional performance measures and indicators is to spur action that will help the region meet its quality of life goals. This report identifies a number of action steps that can help move our region closer to Metro Vision goals. Many of these action steps would benefit more than one goal. For example, actions to implement the urban centers will also help with the region's density and extent of development, reduce congestion, increase transit ridership, improve air quality and improve the health index. Similarly, actions that implement the regional open space preservation focus areas will also improve the extent of development, freestanding community buffers, water quality and community life indicators.

DRCOG can act on some of the steps, but many require actions by local governments, the state or other regional entities, or by all levels of government. The steps are summarized below.

Growth and Development



Urban Area Consumption

- Align planned developments with the region's urban growth boundary/area (UGB/A).
- Provide only transportation facilities and services consistent with the UGB/A.
- Provide only water and wastewater services consistent with the UGB/A.

Urban Density

- Establish higher densities for new development.
- Support continued infill activities.
- Implement urban centers.
- Encourage transit-oriented development.

Large-Lot Development

- Limit large-lot development to lots already platted.
- Target investment in transportation infrastructure and other services to areas within the UGB/A.
- Work together on improved methods for tracking large-lot development in our region.

Urban Centers

- Support job-producing economic development at urban centers.
- Re-evaluate urban centers periodically to determine if they are developing as expected.
- Explore regional incentives to guide jobs into planned centers.
- Provide appropriate capacity to serve the travel demand at the urban centers.

Growth and Development (continued)

Freestanding Community Town Center Viability

- Review development plans to ensure the further mixing of uses in town centers.
- Strive for economic stability and unique identity through increased and balanced job and housing growth.

Freestanding Community Buffer

- Ensure that land within the buffer area remains non-urban either by preserving all potential open spaces in the buffer area or keeping lands in rural use.
- Pursue intergovernmental agreements with counties and neighboring communities to gain assurances that land within the buffer area will remain non-urban.
- Work with transportation providers to avoid locating major facilities in buffer areas.



Transportation

Funding of Major Transportation Projects that Add Capacity to the System

- Pursue additional funding for capital roadway, transit, bicycle, and pedestrian projects and operational projects in congested corridors and at bottlenecks.
- Implement incident management plans to quickly retain capacity lost during specific events.
- Adhere to the UGB/A to reduce the need for new infrastructure.

Traffic Congestion

- Increase the capacity of the multimodal system by funding capital projects and operational projects in congested corridors and at bottlenecks.
- Help people and businesses avoid or adapt to congestion by providing alternative transportation services such as transit, park-n-Ride lots, bicycle and pedestrian facilities, ridesharing and telework/flexible work hour assistance, and real-time traveler information.
- Implement the land use elements of Metro Vision, such as urban centers, to allow for shorter trips, minimizing the impact on travelers even as congestion persists.
- Increase transportation system management activities, such as the use of intelligent transportation systems and incident management, to assure more reliable travel times.

Safety

- Conduct further analysis of crash data to determine locations of concern.
- Implement mitigation projects that will decrease crashes, especially those involving fatalities.
- Monitor and support legislation aimed at cost-effectively improving the safety of drivers, passengers, pedestrians, and bicyclists.

Roadway Surface and Bridge Conditions

• Seek additional funds necessary to maintain the transportation system.
Transportation (continued)

Use of Alternatives to Driving Alone

- Invest in more transit.
- Invest in high-occupancy vehicle or high-occupancy/toll lanes.
- Promote a workplace culture that allows flexibility such as teleworking, compressed work weeks, or flex-time.
- Implement the urban centers called for in Metro Vision, which make alternative modes more convenient.
- Establish employer-based incentives for carpooling and vanpooling, such as parking cash-outs.



Environment

Parks and Open Space

- Continue to act on opportunities for protecting additional open space and work to make future open space acquisition accessible to all of our region's residents.
- Collaborate with organizations such as Great Outdoors Colorado, The Nature Conservancy and local land trusts to increase the amount of parks and open space in the metro area.

Amount of Protected Regional Open Space Preservation Focus Areas

- Adopt an ecosystems approach to acquisition of preservation areas and the placement of development and transportation projects.
- Implement active open space acquisition programs that promote focus areas as high-priority systems for protection.
- Refine the identification and mapping of suitable high-quality focus areas.

Regional Biodiversity of Species and Significant Natural Communities Status

- Support continued efforts to collect data on biodiversity and to identify and map areas that contain significant concentrations of biodiversity and significant natural communities.
- Refine conservation goals to help identify conservation areas that provide representation of species and communities native to the region and provide sufficient habitat for them to ensure their future survival.
- Carefully consider impacts and prepare and implement mitigation strategies to address them in transportation and land use planning decision-making through environmental impact analysis and comprehensive plan implementation.

Water Quality

- Implement and carry out the actions recommended in the Metro Vision Clean Water Plan.
- Use growth management, low-impact urban design techniques and transportation best management practices to improve water quality by reducing the impact infrastructure has on the hydrologic system.

DENVER REGIONAL COUNCIL OF GOVERNMENTS

Environment (continued)

• Develop policies that require developers to reduce runoff and improve water quality through stormwater management practices.

Wastewater Capacity

- Consider the impacts of growth on facility service areas.
- Work with DRCOG to prepare utility plans that anticipate the need for future expansions. Such planning ensures that capacity is increased in time to handle growth.

Water Supply and Demand

- Assess currently available water supplies and identify actions that can meet projected demands.
- Identify intergovernmental projects that can serve the region.
- Update the SWSI information on a regular basis.
- Use growth management and urban design to reduce the growth in water demand.
- Take a more proactive stance on dealing with the issue of water quantity at the regional level.
- Establish regional water conservation strategies.
- Advance and promote an aggressive public education campaign on the topic of the availability and use of water resources in a drought-prone region.

Air Quality

- Assist the RAQC in preparation of the SIP to assure compliance with the federal standard.
- Follow the Governor's Directive to the RAQC issued in July 2007 and set a goal of reducing or eliminating ozone levels above 80 parts per billion.
- Consider additional elements that would further reduce ozone levels in anticipation of the more stringent federal standard (75 parts per billion) that will come into effect in 2010.
- Continue to implement the maintenance plans for CO and PM₁₀.



Social and Economic

Economic Activity

- Support economic development programs that target industries that will provide jobs with the appropriate wage and skill levels for the resident labor force.
- Provide the infrastructure needed to attract industry clusters that will further diversify the economy, such as biotech and software development.
- Encourage new business starts by streamlining the permit and licensing process for small business.

Social and Economic (continued)

- Provide programs that support existing businesses.
- Retain individuals who are educated in Colorado's school system and encourage them to obtain higher levels of education.

Population Demographics

- Support funding for K-12 and higher education.
- Retain individuals who are educated in Colorado's school system and encourage them to obtain higher levels of education.
- Plan to provide services, housing and transportation networks that meet the needs of a changing population, both in terms of ethnic and age characteristics.

Housing

- Encourage the construction of diverse housing types to provide residents with a choice of housing size, price and location.
- Further investigate, with DRCOG support, the relationship between housing choices and retention of the diverse workforce needed to support the region's growing economy.
- Encourage stricter regulations of the mortgage industry to help eliminate the prevalence of foreclosures.

Health

- Create goals similar to the national 2010 health objectives (http://www.healthy people.gov/Data/Data2010.htm).
- Take a comprehensive approach to promoting personal health through schools, park and recreation districts and community design.
- Encourage pedestrian- and transit-oriented development, which support healthier, more active lifestyles.
- Continue enforcing smoking bans in public areas to help discourage the convenience and accessibility of smoking.

Community Life

- Ensure adequate financial resources from public and private sources for both recreational and cultural amenities.
- Encourage more eligible residents to register and to vote.
- Encourage neighborhood design and social conditions that foster a sense of community.

Sources Graphs, Charts, Maps

Growth and Development

p. 7: "Extent of Urban Development," DRCOG development type data, derived from aerial photo interpretation and analysis of platted parcels. DRCOG defines as urban areas subdivided at urban densities. This includes residential areas with housing densities of one unit or more per acre and commercial, office or industrial areas.

p. 8: "Urban Density," DRCOG housing unit estimates in the existing urban area. Future percentage increases are calculated using Metro Vision policies and the 2035 Urban Growth Boundary/Area.

p. 9: "2006 Development Type," DRCOG development type data, 2006.

p. 10: "Urban Center Employment" and "Urban Center Housing Units," DRCOG annual employment and housing unit estimates.

p. 11: "Freestanding Community Town Center Employment" and "Freestanding Community Town Center Housing Units," DRCOG annual employment and housing unit estimates.

p.12: "Development Type in Freestanding Community Buffer Areas," DRCOG development type data, 2006.

Transportation

p. 17: "Regional Transportation Plan (RTP) Capacity Needs and Funding Estimates," compiled from the DRCOG "2030 Regional Transportation Plan," and the "2035 Regional Transportation Plan" adjusted by the Colorado Department of Transportation Colorado Construction Cost Index.

p. 19: "Metro Vision 2035 Regional Transportation Plan Roadway Improvements" (map), DRCOG Metro Vision 2035 Plan.

p. 20: "Metro Vision 2035 Regional Transportation Plan Rapid Transit Improvements" (map), DRCOG "Metro Vision 2035 Plan."

p. 21: "Severely Congested Roadways," compiled from DRCOG "Mobility: A Report on the Status of Transportation in the Denver Region," 1997, and Regional Travel Model forecasts performed in 2007 for the 2035 Regional Transportation Plan.

p. 22: "Cost of Congestion to Businesses," compiled from DRCOG Regional Travel Model forecasts performed in 2007 for the 2035 Regional Transportation Plan, Commercial Vehicle Value of Time (\$71.05/hour) from Texas Transportation Institute, "2004 Urban Mobility Study: Performance Measure Summary for Denver-Aurora," 2004. http://mobility. tamu.edu/ums/congestion_data/tables/denver.pdf

p. 23: "Annual Hours of Congestion Delay," compiled from Texas Transportation Institute "2005 Urban Mobility Study: Congestion Data for Your City." http://mobility.tamu.edu/ums/ congestion_data/west_map.stm

p. 24: "Congested Roadway Segments" (map), DRCOG travel model and traffic counts.

p. 25: "Crash, Injury and Death Rates," compiled from Colorado Department of Transportation annual accident data files and DRCOG annual population and household estimates.

p. 27: "State Highway Surface Conditions," compiled from the Colorado Department of Transportation's annual Integrated Roadway Inventory System (IRIS).

p. 28: "Annual Cost and Revenue Allocation to Maintain State Highways and Bridges," compiled from DRCOG system preservation cost assessment for the 2035 Regional Transportation Plan, 2007 and the Colorado Department of Transportation 2008 resource allocation.

p. 29: "Local Government Roadway Program Revenues," compiled from Colorado Department of Transportation annual "Local Government Receipts and Expenditures Report" files and 2006 Construction Cost Index, DRCOG annual population and household estimates.

p. 30: "2006 Pavement Conditions" (map) Colorado Department of Transportation 2006 Integrated Roadway Inventory System (IRIS).

p. 31: "Transit Ridership," Regional Transportation District "Monthly Passenger Boardings by Type of Service," 1981-2006.

p. 32: "Use of Alternative Modes," Journey to Work Data from the American Community Survey (ACS), 2006, United States Census Bureau. http://www.census.gov

p. 32: "Use of Alternative Modes Compared to Peer Regions" Journey to Work Data from the American Community Survey (ACS), 2006, United States Census Bureau. http://www.census.gov

Environment

p. 37: "Parks and Open Space," DRCOG Regional Open Space Plan and 2006 open space inventory.

p. 38: "Protection of Preservation Focus Areas," DRCOG summary of data from local governments, 2007, and DRCOG development type data, 2006.

p. 40: "Existing Parks & Open Space and Preservation Focus Areas" (map) DRCOG Metro Vision 2035 Plan.

p. 41: "Imperiled and Vulnerable Species," Colorado Natural Heritage Program of Colorado State University, 2007. http://www.cnhp.colostate.edu/list.html
"States of the Union: Ranking America's Biodiversity," a NatureServe report, 2002. http://www.natureserve.org/publications/statesUnion.jsp

p. 43: "Impaired Stream Segments," Colorado Water Quality Control Division, Colorado Department of Public Health and Environment, various submittals to the United States Environmental Protection Agency.

p. 44: "Chlorophyll a Concentration in Cherry Creek Reservoir," Cherry Creek Water Quality Control Authority, "Cherry Creek Reservoir Watershed Plan 2003," p. ES-02 updated in 2007.

p. 45: "Total Suspended Solids in the South Platte River at 19th Street," United States Environmental Protection Agency, STORET database retrieval.

p. 46: "Impaired Stream Segments" (map) Colorado Water Quality Control Division, Colorado Department of Public Health and Environment, various submittals to the United States Environmental Protection Agency.

p. 47: "Wastewater Treatment Facilities Capacity Status," Colorado Department of Public Health and Environment Water Quality Control Division summary of discharge monitoring reports.

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Jennifer Schaufele, Executive Director

Contributing Authors Bill Broderick Nathan Chatfield John Coil Jill Locantore Larry Mugler Rachel Thompson Lawrence Tilong





Denver Regional Council of Governments 1290 Broadway, Suite 700 Denver, CO 80203-5606

www.drcog.org - 303-455-1000