

## 6. TRANSPORTATION BENEFITS AND IMPACTS OF THE FISCALLY CONSTRAINED RTP

The *2035 Metro Vision Regional Transportation Plan (2035 MVRTP)* elements play a major role in improving the quality of life, economy, environmental quality, and mobility for the residents of the Denver region.

The 2035 MVRTP's balanced approach would help:

- Urban centers thrive;
- Focus growth into the urban growth boundary/area;
- Senior citizens maintain their mobility or receive in-home services efficiently;
- Low- and moderate-income workers reach their job sites;
- Business owners bring in customers or ship out products;
- Children travel to and from school more safely;
- Tourists and residents travel to, from, and within recreation sites;
- Reduce the emission of greenhouse gases; and
- Clean the air for people to breathe and see through.

Negative impacts of the transportation system would be minimized and mitigated for new projects as determined through the environmental and corridor study process.

Funding constraints that currently exist, however, will limit the benefits that will actually be realized. The *Fiscally Constrained 2035 RTP* will make the best use of insufficient funds to still achieve important benefits, but these benefits will fall short of those envisioned in the 2035 MVRTP.

### A. Transportation System Performance

This section presents measures comparing the performance of the existing 2010 roadway and transit system with that of the 2035 fiscally constrained system.

The growth in population and employment, the distribution of that growth, and the provision of transportation facilities and services will impact future travel patterns. Changes in region-wide travel measures between 2010 and 2035 are shown in Table 10. A summary of this information follows:

- The number of person trips will increase at a rate comparable to population growth.
- Vehicle miles traveled will increase at a rate somewhat higher than population growth
- Vehicle hours of travel will increase at a much greater rate, reflecting a substantial increase in overall traffic congestion and vehicle delay. Peak hour vehicle speeds will average less than 28 miles per hour.
- The percentage of miles traveled in severe congestion will nearly double.
- Overall transit tripmaking will nearly double. Transit ridership on the rail lines will increase four-fold.
- Transit-job accessibility for all residents, especially those living in low-income and minority communities, will increase, due primarily to the RTD FasTracks rapid transit and bus improvements.

The condition of the region's roadway infrastructure will also suffer. On the overall state highway system in Colorado, pavement condition is projected to drop from about 52 percent in poor condition now to about 78 percent in poor condition in 2035. CDOT estimates that a more than doubling of revenue is required to maintain pavement condition at today's level. The percent of bridges in poor condition would increase from about 3.7 percent of all bridges in 2009 to about 25 percent in 2035. The maintenance "level of service" (a performance measure adopted by CDOT to address maintenance actions) would drop from B now to F (failing) by 2016, and continue to fail through 2035. CDOT estimates that it would take a near doubling of the CDOT budget (about another \$1 billion per year in 2008 constant dollars) to maintain the state highway system quality at its current level of performance, let alone address increasing congestion. System quality for the state highway system in the Denver region is expected to be little different than the state as a whole.

## **Safety**

There will likely be many more annual crashes in 2035 than today, simply because of the growth in population and travel. If the rate of crashes per VMT remains unchanged from the 2004 rate, the number of annual reported crashes will increase from about 73,600 in 2005 to about 120,000 in 2035. The number and severity of crashes in the future will also be dependent on legislative, law enforcement, and social actions.

**Table 10**  
**2035 Fiscally Constrained RTP Roadway and Transit Performance Measures**

<b>System Measures – Weekday for DRCOG Region</b>	<b>Existing 2010</b>	<b>2035 Fiscally Constrained</b>	<b>Change from 2010</b>
Population	2,885,000	4,349,000	50.7%
Employment	1,561,400	2,576,000	65.0%
Total Person Trips	13,126,600	20,074,900	51.6%
Bicycle and Walking Trips	918,000	1,560,600	70.0%
Vehicle Trips	9,258,500	14,036,550	51.6%
Vehicle Miles Traveled (VMT)	74,435,100	119,255,207	60.2%
Per Capita VMT	25.8	27.4	
Vehicle Hours Traveled	1,997,950	3,553,500	77.9%
Avg. vehicle speed - all day (mph)	37.3	33.6	-9.9%
Avg. vehicle speed - peak hours (mph)	32.3	27.6	-14.6%
Person Miles Traveled (no transit)	101,419,900	163,460,900	61.2%
Person Hours Traveled (no transit)	3,353,600	5,956,900	77.6%
Rail transit trips (boarding)	78,190	332,880	325.7%
Total transit trips (linked trips)	290,630	539,800	85.7%
Person Miles Traveled on transit	1,686,100	3,886,300	130.5%
Transit share of all daily trips	2.38%	2.92%	
Transit share of all daily work trips	6.64%	7.23%	
Share of total population with good transit-job accessibility (2)	38%	43%	
Share of population in low-income or minority areas with good transit-job accessibility(2)	64%	80%	
Roadways with 3+ hours of severe congestion (lane-miles)	984	2,915	196.2%
Vehicle Hours of Delay	200,430	628,290	213.5%
Percent of VMT in severe congestion	11.6%	21.9%	

(1) Source: DRCOG Travel Models C2\_10\_10Base, C2\_10\_2035RTP

(2) Good accessibility = 100,000+ jobs within a 55-minute transit trip.

## B. Sustainability and Energy Consumption

The following Metro Vision transportation policies and actions strategies address efforts to preserve and enhance the environment and reduce energy consumption.

### **Sustainability and Energy: Metro Vision Transportation Policies and Action Strategies**

**Policy # 14. Environmental Quality.** Develop and maintain a sustainable transportation system that protects and enhances air quality, energy efficiency and the overall environment.

- Provide a wide variety of transportation facilities, including rapid transit, bus service, high-occupancy vehicle (HOV) lanes, and bicycle and pedestrian facilities, that are more energy efficient and less polluting in aggregate than single-occupant vehicles.
- Prioritize transportation system improvements that minimize transportation-related fuel consumption and air pollutant and greenhouse gas emissions.
- Promote improvements in roadway construction and street maintenance activities to reduce dust and particulates; decrease associated energy consumption and pollutant emissions; and minimize and mitigate polluted water running off roadways.
- Encourage use of alternative fuel sources and clean-burning technology and provision of supporting infrastructure and services for alternative fuels.
- Cooperatively develop mitigation strategies with affected regulatory or resource agencies in instances of unavoidable environmental impact.
- Support legislation that would increase fuel economy beyond current Federal Corporate Average Fuel Economy (CAFÉ) standards, impose fuel economy standards for heavy duty vehicles, incentivize purchasing high fuel economy or alternative fuel vehicles, and provide incentives for accelerated retirement of inefficient and/or high-polluting personal, commercial and fleet vehicles that are beyond repair.
- Support actions or regulations that reduce engine idling.
- Explore the potential of select speed limit reductions.

Several specific sustainability goals were approved by the DRCOG Board of Directors and are incorporated into the 2035 MVRTP. The direct transportation-related goals discussed below (and also presented in Chapter 1) represent a region-wide vision that local governments and partner agencies will collectively work toward, each contributing in a manner appropriate to local circumstances and objectives. Each goal stands on its own with associated benefits, but they also progress sequentially. Reduction of travel by SOVs causes a reduction in VMT which then results in reduced greenhouse gas emissions.

#### **Goal: Reduce Share of Travel by SOV**

The specific goal measurement is to reduce the percent of trips made to work by single-occupant vehicle (SOV) in the Denver region to 65% by 2035 (per U.S. Census Bureau statistics). The

U.S. Census Bureau data will be used because it is consistently obtained every year and provides an inexpensive, consistent and valid set of trend data.

- 74.0% - Existing 2009 value
- 72.5% - “Model predicted” 2035 value
- **65.0% – Goal**

The current DRCOG FOCUS travel demand model predicts that the goal would not be met by 2035. However the model is based on current conditions, demographic traits, and trends related to travel and development patterns. As these factors change in the future (e.g., fuel cost, fuel supply, and level of mixed-use, higher density, or transit oriented development), the model will be adjusted. U.S. Census Bureau values will also be tracked closely.

### **Goal: Reduce Per Capita VMT**

The specific goal measurement is to reduce the regional per capita VMT by 10% by 2035. The values for this goal are provided by the DRCOG FOCUS travel demand model.

- 26.3 miles per day per person – 2005 value
- 25.8 miles – 2010 value
- 27.4 miles – “Model predicted” 2035 value
- **23.7 miles – Goal**

The per capita VMT has declined slightly since 2005 due to such factors as gas prices and the economic recession. However, the model is currently predicting a resumption of past long-term increases in per capita VMT through 2035. The results indicate that the established goal is ambitious, but that future changes in fuel costs, development patterns (e.g., urban center and transit stations), demographics, and other factors can help to reduce per capita VMT. The model will be adjusted in the future to reflect up to date real world factors.

### **Goal: Reduce Per Capita Transportation Sector Greenhouse Gas Emissions**

The specific goal measurement is to reduce the regional annual per capita GHG emissions from the transportation sector by 60% by 2035. The values for this goal are calculated through outputs from the DRCOG FOCUS travel demand model combined with assumptions for GHG emission rates and fuel economy (i.e. miles per gallon) associated with motor vehicles. Carbon

dioxide (CO<sub>2</sub>) emissions are used as the surrogate for GHGs since CO<sub>2</sub> represents about 95% of all GHGs.

- 9,925 pounds of CO<sub>2</sub> per day per person – 2005 value
- 9,730 pounds – 2010 value
- 8,480 pounds – 2035 value (30 mpg avg. car)
- 5,780 pounds – 2035 value (51 mpg avg. car)
- **3,970 pounds – Goal**

It is currently forecast that the Denver region will make strides towards the achievement of the GHG goal. The GHG reductions are primarily a result of reduced gasoline consumption due to a) increased fuel economy (miles per gallon) associated with the federal Corporate Average Fuel Economy (CAFE) standards and b) an increased share of electric and other alternative fueled vehicles in use. Both of these factors are difficult to predict, so a high-low range of mpg was used for the CO<sub>2</sub> calculations. Numerous other technical factors (share of electricity generated by wind and solar, roadway and transit operational efficiencies) and societal factors (demographics, land use patterns, more trips by walking or bicycling, teleworking) will also impact GHG emissions.

### **Energy Consumption**

As noted above energy consumption is closely related to GHG emissions associated with the burning of motor vehicle fuels. Another way of calculating true energy consumption is by BTUs, or British Thermal Units. The BTUs can be burned indirectly or directly from the transportation system. Direct energy impacts of the transportation system derive from the energy from fuels consumed by vehicles using the system--automobiles, trucks, buses and trains. Indirect impacts include energy used by equipment constructing and maintaining the system.

Direct energy consumption by motorists in 2035 will be dependent on changing behaviors relative to key factors discussed in the previous section. While somewhat hard to predict, reduction in motor vehicles fuel consumption relative to sustainability goals and action strategies is anticipated.

The estimated fuel consumed by motor vehicles in the Denver region in 2010 was about 4.0 million gallons per day. By 2035 the amount is estimated to range from 3.0 million to 4.7 million gallons per day, depending on the average fuel economy of the motor vehicle fleet.

Direct energy consumption by the transit system in 2035 would require consideration of similar factors. Using a methodology promulgated by FTA (*Reporting Instructions for the Section 5309 New Starts Criteria*), the direct energy consumption associated with the *Fiscally Constrained 2035 RTP* is about 760 billion BTU/day in 2035, compared to 412 billion BTU/day in 2005. This computation assumes no radical changes to price or supply of fuel. (Note: energy consumption in the United States in 2009 was approximately 259 trillion BTU/day).

The 2035 RTP also contains many other strategies and facility assumptions that will help slow the growth in energy consumption. For example, operations management strategies will help keep cars, trucks, and buses moving smoothly by reducing stop-and-go conditions. New roadway lane-miles will address key congestion points. Strategies to enhance the transit system and support TDM, bicycle, and pedestrian improvements will provide alternative means of travel to single-occupant vehicles. The strategies contained in the RTP will greatly help to address energy consumption and the goals associated with providing a sustainable future for the region.

## C. Environmental Justice (EJ)

An important consideration for the 2035 MVRTP is the impact of its elements on the minority and low-income populations of the Denver region. The applicable Metro Vision transportation policy and action strategies are:

### **Environmental Justice: Metro Vision Transportation Policies and Action Strategies**

**Policy #13. Transportation for the Disadvantaged.** Provide a transportation system that considers the needs of and impacts on minority, low-income, elderly, and disabled persons.

- Ensure that minority, low-income, elderly, and disabled households receive a proportionate share of accessibility benefits, travel mode choices, and services from future transportation system improvements and are not disproportionately affected by negative impacts associated with those improvements.

Guidance for evaluating these impacts is derived from Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations*, which was signed by President Bill Clinton on February 11, 1994. The Executive Order and accompanying memorandum reinforced the requirements of Title VI of the Civil Rights Act of 1964 that focus federal attention on the environmental and human health condition in minority and low-income communities.

The U.S. Department of Transportation Order on Environmental Justice, issued to comply with Executive Order 12898, defines minority as a person who is:

- Black (a person having origins in any of the black racial groups of Africa);
- Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
- Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or
- American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

A low-income person means a person whose median household income is at or below the Department of Health and Human Services poverty guidelines. For the 2000 Census, the poverty threshold was approximately \$17,000 for a family of four.

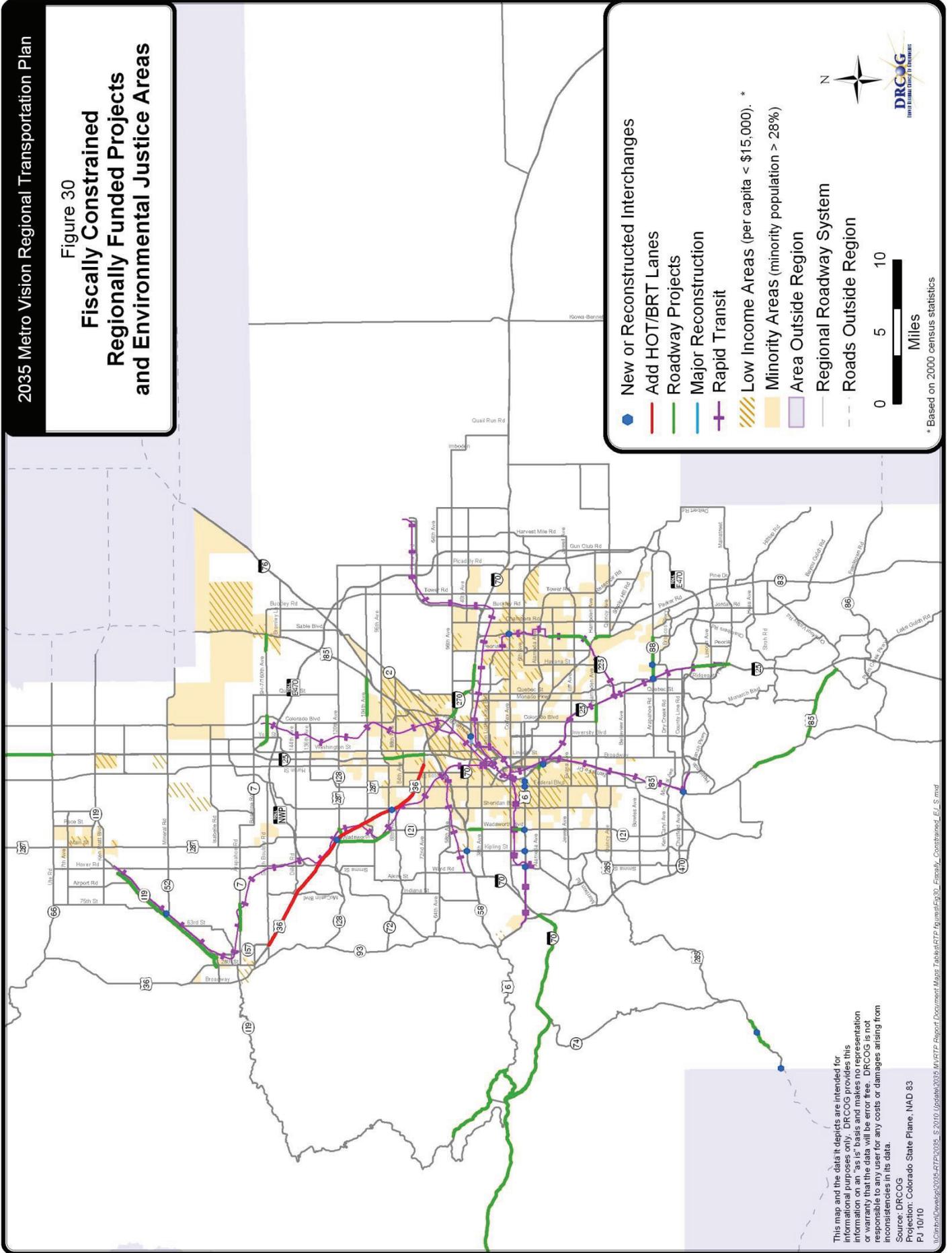
Transportation plans and programs (1) must provide a fully inclusive public outreach program (see Chapter 1); (2) should not disproportionately impact minority and low-income communities, and (3) must assure of the receipt of benefits by minority and low-income populations. The 2035 MVRTP (including the *Fiscally Constrained 2035 RTP*) addresses these three principles and they were considered throughout the decision-making process. These principles must also be considered in the project design and implementation phases for future specific projects.

### Geographic Concentrations of EJ Communities

The first step in the environmental justice evaluation process was to identify geographic concentrations of minority and low-income populations. The transportation analysis zones (TAZs) identified as either “minority” or “low-income concentrated” make up the environmental justice areas of the region. Figure 30 shows the TAZs where, based on the 2000 Census data, the percent of minority population is at or above the regional minority percentage of 28 percent. The minority population is concentrated in census tracts to the north, southwest, and east of the Denver CBD. Other localized concentrations are in Boulder, Brighton, Longmont, and Lafayette.

In preparing TAZ data sets, DRCOG classifies zones based on per capita income (dividing total TAZ income by the TAZ population). The lowest classification (income less than \$15,000 in 1999 dollars) is considered to be a reasonable approximation of low-income for use in the environmental justice assessment. Figure 30 also shows these low-income TAZs.

Figure 30  
**Fiscally Constrained  
 Regionally Funded Projects  
 and Environmental Justice Areas**



This map and the data it depicts are intended for informational purposes only. DRCOG provides this information on an "as is" basis and makes no representation or warranty that the data will be error free. DRCOG is not responsible to any user for any costs or damages arising from inconsistencies in its data.  
 Source: DRCOG  
 Projection: Colorado State Plane, NAD 83  
 PJ 10/10

## **Travel Characteristics of Low-Income and Minority Communities**

Evaluations of the travel characteristics of the minority and low-income population of the Denver region were conducted based on 2000 census data. The analysis revealed several key factors:

- 66 percent of minority workers drove alone in private vehicles to work;
- Hispanics had the highest carpool rate to work (23 percent);
- Blacks had the highest use of public transit to work (13 percent);
- Whites had the highest drive-alone rate to work (77 percent); and
- Workers with lower incomes were more likely to use public transit or walk to get to work.

Automobile ownership is closely correlated to income. In 2000, about 67,000 households located throughout the Denver region did not have an automobile available. It is important that alternative modes of travel such as public transit, sidewalks and bike paths are provided for the use of residents of these households.

## **Benefits of the Metro Vision and Fiscally Constrained 2035 RTP in EJ Communities**

The 2035 MVRTP includes many projects, services, and policies that would improve transportation for people unable to use an automobile to travel. It will also provide a system that connects people with a greater number of job opportunities via convenient commuting trips.

### **Fiscally Constrained 2035 RTP Benefits**

Figure 30 displays the location of regionally-funded roadway and rapid transit capacity projects in relation to the environmental justice areas. Several beneficial projects will directly serve residents in these areas. Many other smaller-scale projects and services will also be provided through future TIPs. It should also be noted that many future road projects would include elements that will benefit non-drivers.

More than half of the anticipated *Fiscally Constrained 2035 RTP* regional system expenditures will be for public transit and other non-roadway projects and services. Six additional rapid transit rail lines and two extensions will be completed by 2019 as part of RTD's FasTracks Plan. BRT/HOV/HOT lanes will be added to US-36. Bus service will increase by about 36 percent through 2035. The Fiscally Constrained Rapid Transit System, shown in Figure 28, is also displayed on Figure 30 in relationship to environmental justice areas.

Transit accessibility to jobs will greatly improve. Table 10 shows the share of population within the environmental justice areas that would meet the “good transit-job accessibility” criteria in 2010 (64 percent) and with the *Fiscally Constrained 2035 RTP* (80 percent). The criterion requires having at least 100,000 jobs located within a 55-minute transit trip of home.

Other beneficial components of the *Fiscally Constrained 2035 RTP* include extensive additions to the bicycle and pedestrian system, expansion of demand-responsive transit service, and further outreach by the DRCOG carpool and vanpool matching service. This is very beneficial in helping find transportation for persons without access to an automobile, if there are common workplaces or school destinations. Road capacity projects that reduce congestion will be of benefit to the majority of minority persons that travel by car to work.

In addition to the extensive transit system that is being planned by RTD, the *Fiscally Constrained 2035 RTP* provides additional funding sources to serve the needs of the disadvantaged population. FTA Section 5316—Job Access and Reverse Commute Program (JARC) is probably the most significant in terms of providing the most benefit to the environmental justice communities (although it doesn’t specifically address minority populations). The JARC Program develops new transportation options for welfare recipients and other low-income individuals to access jobs and to better link urban areas and suburban job sites. The funds can be used for capital purchases, for operating costs, and for promoting the use of transit vouchers and passes. In the Denver-Aurora Urbanized Area, RTD acts as the designated recipient for the funds. The DRCOG region expects to receive more than \$20 million in 2008 constant dollars of JARC funds through 2035.

The *Transit Element of the 2035 MVRTP* has identified potential transit projects that address job access/reverse commute needs for JARC funding. The analysis provided an overview of employment areas that appear to be underserved by transit. Specific areas in the region that could be considered for JARC service and funding include:

- North Denver Region—Retail/service employment areas near I-25/120<sup>th</sup> Avenue and I-25/104<sup>th</sup> Avenue;
- East Denver Region—Montbello Industrial Park;
- Southeast Denver Region—Parker Road/Leetsdale Drive corridor from Colorado Boulevard to I-225;
- Southwest Denver Region—Wadsworth Boulevard/Hampden Avenue intersection; and
- West Denver Region—Denver Federal Center in Lakewood and the Jefferson County Government Center.

Implementation of the full Metro Vision regional transportation system would greatly expand the benefits beyond those of the Fiscally Constrained system. However, additional funding sources must be secured to reach the desired Metro Vision system.

### **Impacts of the Fiscally Constrained 2035 RTP in EJ communities**

The recommendations contained within the *Fiscally Constrained 2035 RTP* should not have disproportionate adverse impacts on the low-income or minority communities. Negative impacts of the transportation system, such as air pollution, excessive noise, and crashes would be distributed throughout the region. Vehicle miles of travel will increase more in areas outside these environmental justice areas than within. Negative impacts of transportation projects, such as construction effects and right-of-way acquisitions, would be associated with the improvements shown in Figure 30 and are not disproportionately located in low-income or minority communities. There are no new major transportation facilities planned that would create new barriers to minority or low-income communities, given that the regional system contains few new roads (primarily improves existing ones) and the FasTracks rapid transit guideways for the most part follow current or former rail alignments or current freeways.

The *Fiscally Constrained 2035 RTP* does not reflect final alignments, design attributes, or approvals for projects that are identified. Environmental studies must be conducted before any transportation project involving federal funds or actions can be constructed. These studies must define mitigation, minimization, or abatement strategies that address the following example environmental topics:

- Noise levels
- Right-of-way and property takings
- Water quality
- Parks
- Site-specific air quality
- Fish and wildlife
- Social, community and economic impact
- Wetlands
- Hazardous materials

## D. Environmental Mitigation

The DRCOG region is comprised of diverse environmental and ecological resources. These include the extensive municipal, county, state, and federal parks and public lands that are used by many residents and visitors, an extensive bicycle and pedestrian trail network, numerous areas of wildlife habitat of both Colorado Species of Special Concern and federally protected Threatened and Endangered Species, and archaeological/historic resources. Protection of the environment is a key goal in development of the transportation system, as reflected by the following Metro Vision transportation policies and action strategies:

### Environment: Metro Vision Transportation Policies and Action Strategies

**Policy #14. Environmental Quality.** Develop and maintain a transportation system that protects and enhances air quality, energy efficiency and the overall environment.

- Prioritize transportation system improvements that minimize transportation-related fuel consumption and air pollutant and greenhouse gas emissions;
- Promote improvements in roadway construction and street maintenance activities to reduce dust, particulates; decrease associated energy consumption and pollutant emissions; and minimize and mitigate polluted water running off roadways;
- Cooperatively develop mitigation strategies with affected regulatory or resource agencies in instances of unavoidable environmental impact.

SAFETEA-LU included new requirements for identifying environmental resources potentially affected by the transportation plan, as well as developing mitigation activities for natural and historical resources. Further, these mitigation strategies must be developed in consultation with federal, state, and tribal wildlife, land management, and regulatory agencies (resource agencies). Planning and environmental processes have historically been conducted separately from one another. However, as written in SAFETEA-LU and further reinforced in the Metropolitan Planning Rule, it is Congressional intent to more closely link them together, in the hopes of streamlining the transportation planning/NEPA processes, reducing the duplication of work and expediting the delivery of transportation projects.

Appendix 1 contains corridor visions describing the growth, development, and transportation visions for each of the 35 key multimodal corridors of the region. These include detailed statistics on population and employment growth, as well as congestion measures from DRCOG's Congestion Management Database. They also include a broad overview of selected environmental resources that could be impacted by any proposed transportation improvement. These environmental overviews are not intended to be a detailed discussion of specific environmental impacts—as this usually occurs in project development during the formal NEPA process—but are intended to introduce environmental

considerations into the regional transportation planning process, and in so doing, more closely link the transportation planning and environmental processes.

The following overall mitigation strategy applies generally to all resources in all corridors:

- (1) **Avoidance**—Alter the project so an impact does not occur.
- (2) **Minimization**—Modify the project to reduce the severity of the impact.
- (3) **Mitigation**—Undertake an action to alleviate or offset an impact or to replace an appropriated resource.

More resource-specific mitigation strategies can be found in the *Environmental Discussion of the 2035 Statewide Transportation Plan*.

[http://www.dot.state.co.us/StatewidePlanning/PlanStudies/2035\\_swp/2035\\_Environmental\\_Technical\\_Report\\_Draft.pdf](http://www.dot.state.co.us/StatewidePlanning/PlanStudies/2035_swp/2035_Environmental_Technical_Report_Draft.pdf)

The mitigation strategies described in the Statewide Plan cover all portions of the state; many are applicable to the DRCOG region. Further, CDOT has led much of the required coordination and consultation with the appropriate resource and regulatory agencies and tribes, and incorporated their comments as part of the overall mitigation strategy.

Specific mitigation strategies are generally developed as part of the project environmental review process conducted under NEPA. Since the corridor visions are rather general and not project-specific, it is difficult to develop specific mitigation strategies. However, many of the corridors in the DRCOG region are the site of proposed improvements that have either recently completed the NEPA process with Finding of No Significant Impact or a Record of Decision, or are currently undergoing the NEPA process. These NEPA studies are led by implementing agencies such as CDOT and RTD, and must undergo extensive coordination and consultation with resource and regulatory agencies as they are developed. These documents do or will contain detailed mitigation strategies. Any environmental documentation that is ongoing or has recently been completed for any part of these corridors is referenced in these corridor vision plans because they contain the more detailed information on potential impacts and mitigation strategies.

Also, the RTD issued a *Programmatic Cumulative Effects Analysis* (PCEA) in 2007 to evaluate the broad ecosystem-wide cumulative effects of the overall FasTracks program. In addition to the impacts, the PCEA describes three types of mitigation measures for each of the following resources: land use, water quality, air quality, energy, wetlands, and social and environmental justice. They are: **corridor mitigation** (mitigation measures that can be implemented on a corridor-wide basis), **programmatic mitigation** measures (measures that have already been agreed to by RTD or will be eventually implemented as each project advances), and

**recommended mitigation** measures, which are suggested mitigation measures that RTD would support but are the responsibility of other organizations or entities.

## E. Air Quality Conformity

The conformity of the *Fiscally Constrained 2035 RTP* is documented in the *2010 Cycle 2 DRCOG Conformity Determination and Denver-North Front Range 2010 Joint Interim 8-Hour Ozone Conformity Determination*. These conformity documents demonstrate the Denver region's timely implementation of adopted Transportation Control Measures (TCMs) and meeting of federally prescribed emissions tests. The emissions tests involve comparisons with budgets which define the maximum amount of pollution which can be generated and still assure attainment of the federal ambient air quality standard. All transportation projects of regional significance (federal, state or locally funded) must be identified in the *Fiscally Constrained 2035 RTP*. A summary of the required emissions tests for the year 2035 follows.

- The Denver Carbon Monoxide (CO) Maintenance Plan provides for a budget of 1,600 tons per day within the Denver/Boulder non-attainment area. The 2035 estimate is 1,304.2 tons per day, which is lower than the budget.
- The Longmont Carbon Monoxide Maintenance Plan provides for a budget of 43 tons per day within the Longmont non-attainment area. The 2035 estimate is 42.0 tons per day, which is lower than the budget.
- The Denver PM<sub>10</sub> State Implementation Plan provides for two budgets—55 tons per day of direct PM<sub>10</sub> emissions and 56 tons per day of nitrogen oxides (NO<sub>x</sub>). The 2035 estimate is 42.1 tons per day of direct PM<sub>10</sub> emissions and 30.6 tons per day of NO<sub>x</sub>. Both of these are less than the relevant budgets.
- The Denver-North Front Range Area Ozone State Implementation Plan provides for two budgets—109 tons per day of volatile organic compounds (VOCs) and 123 tons per day of Nitrogen Oxides (NO<sub>x</sub>). The 2035 estimate is 64.4 tons per day of VOC and 36.2 tons per day of NO<sub>x</sub>. Both of these are less than the relevant budgets.

All adopted TCMs in adopted SIPs have been implemented. The last TCM, the Southeast Corridor light rail line, opened in 2006. To help assure compliance with the PM<sub>10</sub> SIP, 31 operating agencies have committed to reduce street sanding, substitute deicers for sand, and/or increase street sweeping after snowfalls. These commitments are included in the conformity document.