

PLAN IMPACTS AND BENEFITS

The 2040 RTP was evaluated to determine its social, economic and environmental impacts and how well it would meet the transportation needs of the region through the year 2040. The goals and objectives for the RTP, as discussed in the “Goals and Objectives” section of Chapter 1, helped form the basis for this evaluation. The 2040 RTP was also analyzed with regard to its conformity with state air quality plans, potential mitigation measures to minimize project impacts, and other factors.

The emphasis of these evaluations was to identify issues that could prevent the implementation of recommended projects or would need to be addressed further in the preliminary engineering phase of project development. In addition, the evaluation considered locations where congestion is still expected to exist in 2040, even with the recommended 2040 RTP highway capacity improvements. This facet of the evaluation process is important in that it will encourage planners to continue pursuing strategies that could be considered for reducing or eliminating congestion at these locations.

SOCIAL IMPACTS AND BENEFITS

8.1

Transit, highway, and other projects and facilities identified in the 2040 RTP are socially beneficial. Such improvements help reduce congestion in the short term, while providing enhanced land access to improve the quality of life. On the other hand, poorly planned projects can have adverse social effects on existing urban areas and on future development. Negative social impacts include increased noise, neighborhood disruption, and residential and commercial dislocations. This section



discusses the 2040 RTP's potential impacts on land use, relocations and neighborhood disruption, housing goals and strategies, school safety, cultural resources, and disadvantaged groups.

Land Use

The connection between land use and transportation has been studied by planners and engineers for many years. Traditionally, extending a region's transportation network opens up additional land for eventual development. In turn, newly developed land with its increase in travel demand may require improvement of the existing transportation network. It is evident in the Wasatch Front Region that transportation improvements are not keeping up with the growth in travel demand. The rapid growth of the suburbs during the past several decades has created very significant changes in urban travel patterns. One of those changes is an increase in suburb-to-suburb travel. The trend to further decentralization and the attendant dispersal of population and employment, gives rise to the emergence of significant suburban commercial / industrial traffic generating activity nodes. This trend is expected to continue for the foreseeable future. New development has occurred without the

supporting transportation improvements needed to serve it. This situation will place even further demands on the transportation system that, without huge future investments, will not keep up with demand. This situation may result in continued congestion in the growing parts of the Wasatch Front Region.

In order to avoid or mitigate the effects of congestion, it will become increasingly important to coordinate local government land use plans and zoning ordinances with the regional transportation planning process. Local planners must carefully consider the transportation implications of their land use recommendations. Concurrently, regional transportation planners must strive to match recommended transportation investments to changing land use patterns. Implementation by local governments of the Wasatch Choice for 2040 Vision for land use and transportation will help reduce congestion through the establishment of additional activity nodes, corridors of mixed use, and transit oriented development. This approach will bring jobs, housing and transportation facilities closer together. Adopting policies needed to implement the Vision will reduce the need for vehicular travel and the resulting congestion.

The Wasatch Front Regional Council, in cooperation the local governmental jurisdictions, continues to coordinate transportation planning with local land use planning. The process used in the development of the 2040 RTP gave significant consideration to the location of future population, employment, and other variables that are factors used in estimating transportation demand. Both population and employment projections were correlated with the land use provisions of each local government's General Plan, the Wasatch Choice for 2040 Vision, and the Growth Principles, which were first developed in the Wasatch Choices 2040 visioning effort. The Wasatch Choice for 2040 land use Vision and land use and transportation planning information from the Region's local jurisdictions' general plans, were inputs to the transportation planning process. During the planning process, the WFRC made considerable efforts to create a Plan that would best support the Wasatch Choice for 2040 Vision and the official land use and transportation policies of its member entities.

Relocations, Neighborhood Disruption, and School Safety

Relocation and neighborhood disruption impacts vary with the type of transportation project proposed. Generally, relocation impacts are determined by the distance structures are "set back" from the existing street rights-of-way and the amount of right-of-way required for the project. Neighborhood disruption impacts occur when homes, businesses, or community institutions are physically removed from the neighborhood or when the roadway becomes a barrier to neighborhood interaction.

Relocation of homes and businesses may result of from the implementation many of some projects in the 2040 RTP. Most relocations will be relatively minor. The projects on the 2040 RTP will require the acquisition of an additional 7,200 acres of rights-of-way from an estimated 22,000 parcels. Freeways, expressways, and six and eight-lane principal arterials have the greatest potential to disrupt neighborhoods and create barriers.

Mitigation - During project design, relocations may be avoided by shifting the highway alignment to limit impacts. Relocation impacts can also be mitigated by following federal relocation guidelines, which provide for relocation assistance and other benefits. Neighborhood disruptions may be minimized by providing pedestrian and bicycle crossing facilities, maintaining local street inter-connectivity, depressing the roadway to limit visual intrusion and/or providing impacted neighborhoods with other resources to mitigate losses.

School Safety

School safety impacts resulting from roadway projects vary according to the nature of the roadway change, the type of school involved, and the traffic exposure student pedestrians may be subjected





to. For this report, projects with potential for unusual or major impacts on safety are those involving the widening of an existing road from 4 or less lanes to 6 or more lanes within the designated “walk-to-school” area of an elementary or junior high school. Local school districts were contacted to identify these walk-to-school areas. The state does not provide for the busing of students living within 1.5 miles of an elementary school or two miles of a secondary school. Projects on the 2040 RTP project list are estimated to be in immediate proximity to 476 schools. The average concentration of children in census block groups impacted by the projects is 30 percent of the total population within these block groups. Map 8-1 shows the location of elementary schools, junior high schools, high

schools, colleges and universities within the urbanized area in relation to the proposed projects.

Mitigation – Mitigation strategies for schools may include adjustment of project rights-of-way requirements in proximity to schools, provided adequate temporary or permanent pedestrian facilities adjacent to new or widened highways. Additional safety improvement would include adequate crossings with signals and air quality monitoring stations in proximity to schools that are adjacent or in close proximity to major highways.

Housing Goals and Strategies

The Wasatch Front Region has experienced tremendous growth in the past several years. As a result of this growth, the housing market in the Region has been very dynamic. While housing construction during this time period has generally kept pace with population growth, concerns have been expressed about the type, location, cost and other issues associated with new housing. The overall cost of housing is an issue that has been receiving much attention in recent years. Increases in housing costs within the urbanized area have been some of the steepest in the Nation. Volatility in housing prices due to general economic conditions is another factor that must be considered as well. In response to concerns about escalating housing costs, the State Legislature in its 1996 General Session passed a law requiring local jurisdictions to update the housing elements of their general plans. Specifically, local government plans must include an analysis of the need for moderately priced housing within their jurisdiction and a description of realistic programs and strategies aimed at promoting this type of housing. Many local governmental jurisdictions in the Wasatch Front area have completed the required housing element update. However, others are still in the process of addressing this requirement.

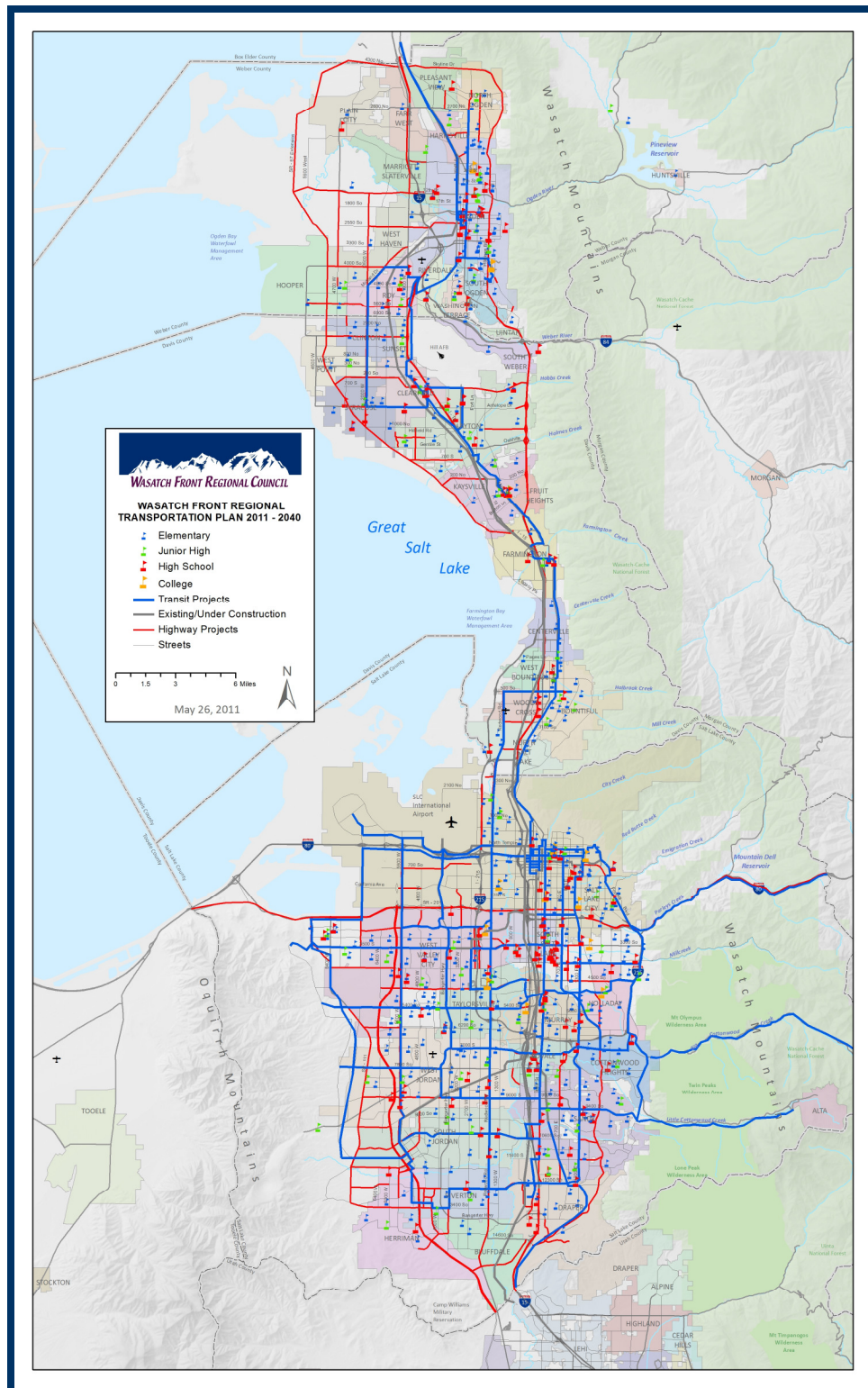
At the regional level, housing needs have been evaluated through a number of studies needed to generate comprehensive housing affordability strategies. More recently, broad based consolidated plans, largely concerned with housing and supporting infrastructure, have been required by the Department of Housing and Urban Development (HUD) in order for states and local jurisdictions to make use of various funding programs. These processes have identified general housing needs and have led to the creation of plans and strategies aimed at meeting these needs.

In addition to impacts on housing location, transportation projects can have direct impacts when relocations are required. Improvements proposed in the 2040 RTP have been reviewed to determine



MAP 8-1

WASATCH FRONT URBAN AREA SCHOOLS



if there are potential conflicts with local and regional housing goals and strategies. Generally, there appear to be few projects that would present such conflicts. Most new highway construction or widening projects included in the 2040 RTP may require a very limited number of dwelling units to be removed. However, two major highway projects will likely require more extensive removal of existing residences. These are the Mountain View Corridor (MVC) in western Salt Lake County, and the West Davis Highway (WDH) in Davis and Weber Counties. Any projects requiring the removal of homes and relocation of families would be subject to, and in accordance with, all applicable relocation and replacement policies.

Mitigation - As might be expected, in the current climate of relatively high housing costs, meeting the basic housing needs of those with very low incomes, or in need of specialized housing opportunities, is a significant concern. Expansion and coordination of area social service programs will likely be required to help meet affordable and specialized housing needs. The Wasatch Choice for 2040 envisions future centers for development in the region providing for mixed use and a variety of housing options to address the need for moderate and low-income housing. These centers will be designed as walkable communities served by transit to provide for improved access between future housing and employment opportunities. WFRC is also part of a consortium that has received a Sustainable Communities grant from the US Department of Housing and Urban Development (HUD). This grant will be used to assist in implementing the Wasatch Choice for 2040, part of which is to develop a regional housing plan. Transportation improvement projects proposed in the 2040 RTP would have little direct impact on housing goals or strategies aimed at meeting these needs. However, additional transit services can provide long term benefits such as improved access to social service providers, employment opportunities, etc. Lastly, when dwelling units need to be relocated, the state and federal governments can provide assistance through established relocation assistance programs.

Cultural Resources

Highway and transit projects can have positive impacts by improving access to cultural resources. However, potential negative impacts include noise, the need to relocate housing and other structures, etc. The evaluation of the 2040 RTP also considered potential impacts on historic districts.

The Wasatch Front Region has a number of national and locally registered historic districts, including University, Exchange Place, South Temple, Avenues, Central City, and Capitol Hill, located in Salt Lake City. Four additional Salt Lake City historic districts: Highland Park; Gilmer Park; Warehouse; and Northwest, are nationally registered. Ogden City has two national and locally registered historic districts: 25th Street and Eccles Avenue. The Jefferson Historic District is nationally registered, and Ogden City planners are considering the creation of the East Central Bench District. Farmington City has a single state registered historic district, Clark Lane. Copperton City, an unincorporated community in Salt Lake County, is listed on the national registry. West Bountiful, Riverton, Midvale, Murray, and Sandy City have older residential and commercial areas that might qualify as historic districts.

The evaluations of potential highway or transit projects in the 2040 RTP with regard to impacts on cultural resources are site specific. Evaluations show that there are approximately 100 historic sites comprising about 16 acres in size or larger, that may be impacted by proposed projects.

Mitigation - Specific impacts on all cultural resources will be identified and mitigation measures determined during the environmental analysis phase of the project development process. If unknown cultural resources are encountered during project development or construction, appropriate investigation and mitigation will take place. Efforts will be made, subject to federal and state policy,



to provide mitigation measures that are easily accessible to the general public. Such mitigation measures might, for example, include the placement of historical information markers, in addition to providing standard documentation.

8.2**ENVIRONMENTAL JUSTICE**

Environmental Justice embraces the principle that all people and communities are entitled to equal protection under national environmental, health, employment, housing, transportation, and civil rights laws. On February 11, 1994, President Clinton signed Executive Order 12998; Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. This order augments Title VI of the Civil Rights Act of 1964, which states in part that, "No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Recipients of federal aid are required to certify compliance with Title VI of the Civil Rights Act of 1964. The United States Department of Transportation must ensure nondiscrimination under Title VI and other applicable laws, regulations, and policies. Federal transportation authorities and the courts have held that Title VI applies to the transportation planning process and all citizens should receive the benefits of, and not be adversely impacted by, regional transportation plans.

Transportation Needs Of Target Population

The WFRC conducted a series of outreach meetings with the leadership of local organizations and non-profit groups representing low-income, minority, Native American, disabled, and elderly populations within the Urban Area. The purpose of the 2040 RTP was presented and specific transportation related issues were discussed. A summary of the concerns raised by each group has been provided in Table 8-1. More detailed documentation of these meetings can be found in Appendix T.

Regional Target Population Distribution

As part of its efforts to ensure region-wide environmental justice in the development and implementation of the 2040 RTP, the WFRC documented the distribution of specific, target population groups. Target populations along the Wasatch Front are defined as members of minority groups, Hispanic persons, low-income persons, persons with disabilities, and the elderly, as well as households without cars, as defined in the 2000 Census. Regional non-target populations are those individuals who are not members of the groups listed in the Table 8-1.

Geographic Information System (GIS) technology was applied to compare and map the data as target populations provided by the Census Bureau. Census data at the "block group" level was used for a spatial comparison and for the mapping of target and non-target populations. Those block groups that contain a higher percentage of target populations than the regional averages are identified in Map 8-2. The percentage of the six target categories was calculated for each block group and compared to the regional average. If a block group was below the regional average it was scored with 0 points in the category. If it was greater than the regional average, but less than twice the regional average, it was scored with one point. If it scored higher than two times the regional average, it received two points. With six categories, a total of 12 points is possible. The block groups were categorized as having Low (0-4 points), Medium (4-8 points), and High (8-12 points) concentrations of the target populations. The definition of each target population category is found below.



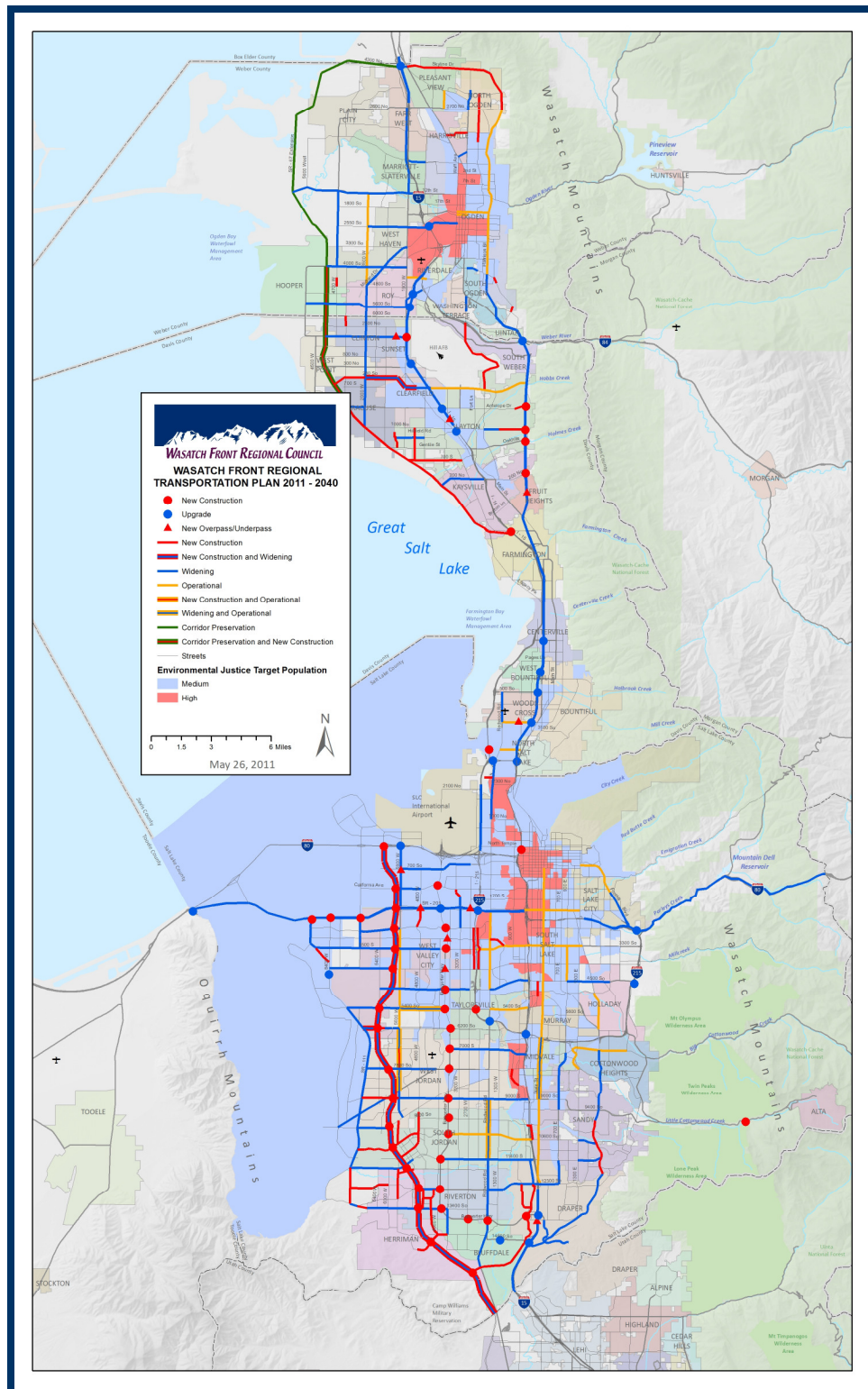
TABLE 8-1

**SUMMARY OF COMMENTS RECEIVED
FROM ENVIRONMENTAL JUSTICE GROUPS**

GROUP	SUMMARY OF CONCERNS
Community Action Program	UTA's route deviation procedure for impacted populations is working well and should be continued. A three-quarter mile distance away from transit stop is too far for many people to walk and that is especially true for senior citizens. Workforce Services needs better transit connections especially for those needing jobs. We should be more helpful for those unemployed. There are real health concerns within the Salt Lake Valley and air quality issues need to be addressed. More TODs are needed and should be planned now especially since the cost of land continues to climb.
Disability Rights Action Coalition	Limited transportation options for disabled. Our people ride buses. We cannot handle any more fare increases. Transit service is spotty on the eastside, especially south of 8000 South. "UTA is killing its own ridership by moving routes around and then saying there is no ridership." "Flex-Trans seems to be working adequately for now." New money should be spent on buses first, then on fixed guideway projects. The bus shelters along FrontRunner are not ADA accessible.
Indian Walk-In Center	North / south transit in general and TRAX in particular are adequate. More East-west transit service is needed. West Salt Lake County is where the focus needs to be. Don't cut the background bus system any more. More evening and weekend bus service is needed. The emphasis of the Vision on transit oriented developments is good.
NAACP	Our transportation plans funnel everything through Salt Lake City. We need to spread out our urban centers and employment. Many low income workers have to work Sunday shifts and the lack of transit is a problem.
Coalition de la Raza	Separate rights-of-way for buses and auto traffic. Public / private partnerships. Outreach in Spanish. There are few North/South bus routes on the west side. Bus patrons must go east to catch a north/south route and then go back out west. Buses are more flexible than TRAX. Buses should serve human service locations such as food banks, community medical clinics and Utah State Department of Workforce Services offices. Buses often drive right past people wanting to ride to stop a half-mile away.
Salt Lake Area Authority on Aging Board	More East-west transit service. Plan transit around concentrations of seniors.
Future Moves Coalition	Reduce VMT. Integrate the transportation system. Integrate land use and transportation planning. Transit first
Amalgamated Transit Workers Union	Don't put so much money into capital projects that operational budgets are sacrificed.



MAP 8-2
WASATCH FRONT URBAN AREA ENVIRONMENTAL JUSTICE TARGET POPULATIONS



- **Minority Population** - A member of a minority population is defined as a person that did not check "white" on the 2000 U.S. Census form, which represents a departure from previous censuses. Beginning with the 2000 U.S. Census, individuals were allowed to check more than one race category on the form. Persons who checked white and some other race were not included in the white population. Unfortunately, changes in the 2000 Census make it difficult to compare racial statistics with previous censuses.
- **Hispanic Population** – Hispanic population includes anyone, of any race, who indicated being of Hispanic origin in the 2000 Census.
- **Low-Income Population** - Low-income population is defined as living below the nationally defined poverty level as recorded in the 2000 Census.
- **Disabled Population** – Members of the disabled population are persons that indicated that they had a work disability or self-care or mobility limitation in the 2000 Census. The universe that this sample is drawn from is the population of persons over age 16.
- **Elderly Population** - The elderly population is defined as those persons over age 65 in the 2000 U.S. Census.
- **Zero Vehicle Households** – Total households that reported no vehicles available in the 2000 Census is included in the target populations. While the WFRC was not required to analyze this population, it is included because members of this group are transit dependant.

Impacts of 2040 RTP on Target Populations

This comparison, summarized in Table 8-2, evaluated the potential impacts of recommended widening, rights-of-way acquisition, and new construction projects on minority, low-income, and disabled populations. The table shows the number of block groups in each target population category. Note that many of these block groups may fall into more than one category. The potential impacts of planned highway and transit projects on affected targeted populations throughout the Wasatch Front Urban Area is significantly lower than that on non-target groups.

TABLE 8-2

BLOCK GROUPS IMPACTED BY RTP PROJECTS

TARGET POPULATIONS	BLOCK GROUPS
Minority	298
Poverty	128
Disability	190

Benefits Of RTP For Target Populations

The 2040 Plan provides a number of transit related benefits which will positively impact members of the target populations. The Plan recommends continued growth in rail service and other enhancements funded, in part, by the November 2006 transit tax referendum approved in Salt Lake County. By 2040, the increase in transit service will equal approximately 125 percent of the 1997 bus system.

High frequency bus corridors are planned for the region's most heavily used arterial streets and collector roads. These facilities include 3500 South, 1300 East, North Temple, and Foothill Drive in



Salt Lake City, as well as 24th Street, Harrison Blvd, and Washington Blvd in Ogden. Additional light rail corridors are planned, including the Salt Lake International Airport and Draper lines. Regional commuter rail service between Salt Lake City and Utah County is currently under construction.

The Utah Transit Authority continues to upgrade its bus fleet and transit stops to meet the requirements of the Americans with Disabilities Act (ADA). All new buses are equipped with wheelchair lift ramps and secured tie-down positions for disabled patrons. Approved ADA curb cuts, better asphalt maintenance, improved site drainage at bus stops and shelters, and increased time for pedestrians to cross streets will benefit both patrons with disabilities and / or the elderly, as well as the general public.

Safety And Homeland Security

The WFRC does not perceive any social impacts from any of the safety projects, or projects which include specific safety features. Safety projects, and projects including safety features, will provide a direct social benefit to target populations. These benefits will include pedestrian safety, the improvement of intersection safety, the promotion of safer truck travel, the enhancement of railroad crossing safety and bicycle safety.

Similar to safety, security is also considered in the development of a regional transportation plan. The MPO is continuing the coordination effort with regional and local transportation planners as well as its more security oriented partners. In an effort to enhance the security of transportation infrastructure, the WFRC staff requested representatives of the two major regional security organizations the Utah State Division of Emergency Services and Homeland Security and the Utah Local Government Association of Emergency Services / Security, to coordinate with the MPO in their efforts through participation on its Regional Growth Committee. Likewise the MPO is represented on the Utah State Division of Emergency Services and Homeland Security Governing Committee. The State of Utah continues to update the Utah Emergency Operations Plan (EOP), which includes emergency operations procedures for all departments in state government including UDOT. The communications portion of the EOP is essential and includes links to all state, local and federal agencies as well as private industry. The WFRC has also reviewed the Utah Energy Shortage Contingency Plan and UTA's recently published Public Transit Emergency Management Operations and Recovery Plan to ensure proper coordination with the WFRC's on-going planning processes.

The 2040 RTP's recommendations address the security of the transportation system in a number of ways. With increases in the number of lanes at choke points on I-15, I-80 and other facilities in Weber, Davis and Salt Lake Counties, the likelihood of traffic congestion decreases as does the security vulnerabilities at these locations. Similarly, the capacity of the over-all system has been increased and needed redundancy features enhanced with the inclusion of high capacity transit and new and expanded highway facilities. These projects include Light Rail, Streetcar and Bus Rapid Transit lines; and highway projects such as the West Davis Corridor (SR-67 Extension) in Weber and Davis Counties, the expansions of I-15 and US-89 in Davis County, the expansions of SR-201, I-80 and I-15, and the initial construction work on the Mountain View Corridor in Salt Lake County. In summary, these projects decrease congestion by providing drivers with alternative routes and modes, and will increase the security of the transportation system by adding redundancy and decreasing the likelihood of a catastrophic system failure.

Recommended improvements for the Intelligent Transportation System (ITS) program will also enhance the security of the transportation system. Significant portions of the "Commuter Link" system, a computer-controlled system designed to monitor and manage traffic flow on freeways and surface streets, are in operation with information available to the public through the internet. ITS will continue to be improved with the addition of more closed-circuit television cameras, electronic roadway signs, coordinated traffic signals, ramp meters, traffic speed and volume sensors,



pavement sensors, weather sensors, and the continued use of the 511 Travel Information Line. Integrally linked to the ITS system, the UDOT Traffic Operations Center monitors and manages traffic flow on surface streets and freeways. UDOT's TOC is connected to smaller traffic control centers in Salt Lake City and Salt Lake County, as well as UTA's three radio control centers. All of these agencies work closely together to improve travel and security along the Wasatch Front.

QUALITY GROWTH

8.3

In May 2005, Envision Utah issued a publication titled: Thinking and Acting Regionally in the Greater Wasatch Area: Implications for Local Economic Development Practice. Section V of the publication includes a discussion on economic development and quality growth. Much of what follows is derived from this section of the Envision Utah publication.

Over the past several decades, the economic development equation has changed dramatically. Traditionally, the state attempted to lure manufacturing companies by promising a low-cost business environment. Also, tax breaks and access to "cheap labor, cheap land and cheap money" were driving forces. Geographic location was also an important ingredient to the mix of factors. As the nation has changed from an "industrial economy" to an "information economy," the factors that corporate site selectors consider have also changed. With skills at a premium in knowledge-intensive industries such as biotechnology, software and advanced manufacturing, a good location is now considered one that has, and can attract, a critical mass of educated people.

In this modern age, skilled labor is the single most important input for many companies. While the costs of doing business still matter, companies are often more concerned about locating in a region that will be attractive to the highly skilled employees they seek. The Brookings Institution issued a working paper (Natalie Cohen) wherein a strong connection is made between education and quality of life issues in the business-location decision. Essentially, "quality of life" has become a key competitive advantage in the fierce competition to recruit and retain firms and talent.

Company location determines how far residents must travel to work, and it influences the form of transportation they use to for commuting. Company location also impacts the character of community growth. A company that locates in a central, downtown facility spawns additional retail and service industry growth, contributing to a vital town center. In contrast, a company that builds a new facility on vacant land near a highway interchange reinforces a decentralized growth pattern and dependence on automobiles as the exclusive means of employee transportation.

Business location and expansion decisions need to be coordinated with land use, transportation and housing policies in order for the greater Wasatch Front Region to develop in ways that are efficient, equitable, environmentally-sound and attractive. Economic development officials also need to work together to determine which locations across the Region should be developed and / or preserved for future employment sites. Thinking, planning, and acting as a Region will help preserve the high quality of life that residents value. In contrast, unplanned and uncoordinated job site development has the potential to undermine the attractiveness and competitiveness of the entire Wasatch Front Region.

To achieve quality job growth, consideration should be given to the following factors: (1) labor force, (2) land supply, (3) infrastructure, and (4) community amenities. If all other factors are equal, community amenities often make the difference in a business location decision. Thoughtful municipal planning and coordination and steadfast cooperation between public and private actors is necessary to integrate high-impact, quality growth principles into economic development practice on



a region-wide scale. Thus, while it is important to think and act regionally in terms of overall business expansion and recruitment, it is also very important to think about how to prepare the Region's communities to be attractive destinations for high-skill, high-wage companies.



8.4

ECONOMIC IMPACTS AND BENEFITS

Economic Development and Redevelopment

The WFRC staff held meetings with representatives of the Governor's Office of Economic Development (GOED) to gather input for the 2040 RTP's Project Lists and to receive insights on the implications for regional economic development. In addition, UDOT, in conjunction with the development of its Statewide Plan, requested input from GOED on the same subject. In response to UDOT's request, GOED prepared a memorandum that identified the most important projects in the state in terms of economic development, using the following criteria: (1) Alignment with industry clusters; (2) alignment with anticipated location of future economic activity; and (3) alignment with planning efforts.

Using GOED's memorandum to UDOT and the results of the WFRC staff's own meeting with GOED personnel as resources, existing and potential sites in the Region that are expected to experience significant future economic activities, are identified below. The transportation facilities that serve or are needed to serve these sites are also identified.

Weber County

Pleasant View Area Industrial Park - The area is located near 2700 North between US-89 and SR-126. There are about 200 acres that could be developed for light industrial and other uses. I-15 is fairly close to the west. The number of future jobs this development could accommodate is estimated at a few thousand. Direct access is provided by either 2700 North, US-89, and / or SR-126. The northern terminus of the FrontRunner commuter rail is located in the area on 2700 North, which is in service during peak hours.



Transportation Access - Overall road capacity in the area will be an important factor in its development. The I-15 / 2700 North Interchange, the adjacent roads, and commuter rail will play an important role in making this site successful.

Business Depot, Ogden (BDO) - This facility was previously known as Defense Depot, Ogden. It was a military installation for many years. In 1997, Ogden City acquired the Depot and since then the City has expended considerable effort to convert the area into a business park. The City has granted the Boyer Company a 70-year lease for the facility. The company is making good progress toward filling the former depot with businesses of all kinds. The facility consists of 1,200 acres of land and has about 6 to 7 million square feet of floor space. About 75 percent of this space is under lease. There are about 500 acres available for new construction. During the past five years, ten new buildings have been constructed with a combined floor space of 1.5 million square feet. Some of the companies currently located in the BDO are Rossignol, Scott, USA, LK Stainless, Lofthouse Foods, Icon Health and Fitness, and Kimberly-Clark. Currently, there are about 3,000 employees. By 2025, about 10,000 employees are expected to be working at the BDO.

Transportation Access - The BDO facility's major access is via I-15, located about one mile to the west. The road that provides the most direct access to the BDO is 400 North. This road connects to I-15 via the 400 North-Pioneer Road / I-15 interchange. Other roads that serve the facility are 12th Street, 2nd Street (from the east), and 1200 West. Currently, because of surface deterioration, there are restrictions on the use of 1200 West by trucks heavier than 10,000 lbs. Marriott-Slaterville is planning a street widening from 2 to 4 lanes, with a turning median, and a reconstruction project for 1200 West, from 1000 North to 12th Street. The improvements to 1200 West and 400 North are important to the BDO's economic well being. Restrictions on 1200 West are a detriment to the BDO's leasing prospects. Current users of the facility are forced to detour on less convenient roads for access to and from the facility. Correction of these problems as soon as possible will help the BDO be more competitive and successful.

Davis County

Hill Air Force Base West Side Development (Falcon Hill) – Hill Air Force Base (HAFB) has begun construction of a 570-acre business and technology park next to I-15. The land is proposed for lease to private interests, and is located on the west side of the Base near the West Gate. This development is a very high priority for the state's economic development programs. The site offers an opportunity for a large-scale project which private land developers under normal conditions could not afford to develop. The general concept involves relocating the security fence away from I-15 to allow businesses to locate adjacent to the Base. The five million square feet of space being proposed for development over a 20-year period translates into 10,000 to 20,000 jobs. However, most of these jobs will relocate to Falcon Hill from existing locations in the Region. It is expected that this project will form one of two core locations for the defense / aerospace / advanced composites industry cluster (the other being at the Ogden-Hinckley Airport).

Transportation Access – In order to facilitate development of this project at I-15 and 1800 North, an interchange needs to be constructed, since it will provide significantly improved access to the site. It will be important for the interchange to function properly with ample capacity. A link to the FrontRunner commuter rail station in Clearfield would enhance the site.



Freeport Center / Freeport Center West (Clearfield) - The Freeport Center had its beginnings during World War II when it was established as a United States Navy defense installation. In the 1970s, the installation was closed and the property sold to private interests. It has redeveloped into a significant warehousing and manufacturing facility.

The Freeport Center is comprised of 680 acres of land. The Center consists of 78 buildings (ranging in size between 4,000 to 400,000 square feet) and employees approximately 7,000 people. About 7 million square feet of building space is available for the 70 companies located at the Center. Some of these companies include ATK-Thiokol, Lifetime Products, Futura Steel Manufacturing, Fram Oil, and U.S. Foods. The Center is essentially fully leased, with a vacancy rate of less than one percent. The facility is serviced by rail, and there is some room to expand on 40 vacant acres. There is also potential for redevelopment.

The Freeport Center West facility was established in 1991 and is located adjacent to the Freeport Center on the southwest side. It is comprised of about 85 acres with 10 buildings totaling about one million square feet. Two recently renovated buildings are available for lease at the facility each having about 120,000 square feet of available space.

Transportation Access - This facility is primarily served by I-15, which is located about one mile to the east and SR-126, which is located about one-half mile to the east. Both of these routes to the east of the Freeport Center are oriented in a north / south direction. Access from these two roads is provided via two I-15 interchanges. One is located at 1700 South (Antelope Drive) and the other at 700 South (SR 193) in Clearfield. Both of these east / west routes lead directly to the Freeport Center.

There are several transportation improvements currently underway and planned in the area that could serve the Freeport center. It will be important to provide some linkage to the FrontRunner commuter rail station which is located just to the east of the Freeport Center. Also, the 2040 RTP has identified east / west roads in need of improvements. These improvements enhance access in the area where the Freeport Center is located. These are the 200 / 700 South connection, and improvements to 200 South and 1700 South (Antelope Drive). Currently, internal traffic and parking presents some problems for the facility. Employees parking their vehicles at the buildings where they work may impede trucks serving the facility. The Freeport Center's property management organization has stated that they would like to construct a central parking lot for employees from which a shuttle, using vans or buses, would service the various businesses.

Salt Lake County

Northwest Quadrant - There is currently little specific information available for this area. However, several plans have been developed in the past year. A visioning process sponsored by Salt Lake City was completed in 2009. Formal action by the City is pending. The Northwest Quadrant as identified by Salt Lake City covers a large area (from SR-201 to about 3000 North, and from Bangerter Highway on the east to about 7400 West on the west). A considerable amount of light industrial and other development already exists on the west side of Bangerter Highway, with a potential for substantial expansion. North of I-80 and west of the Salt Lake International Airport is the International Center, which could also expand into a large amount of acreage to the west and north. In addition, there are trucking and railroad (Union Pacific Intermodal Terminal) complexes emerging in the 5600 West corridor both west and south of the International Center. As noted, there is considerable potential for growth in the Northwest Quadrant. The biggest drawback for the area has been the lack of water, sewer, and other infrastructure. There is also the presence of hazardous wastes, operating solid waste facilities, and environmental (wetland) issues.



Transportation Access – I-80, SR 201, and 5600 West, as well as Mountain View Corridor will play a vital role in serving the area. I-80, SR-201, Bangerter Highway, 5600 West, California Avenue / 1300 South, 6400 West, 700 South, 4800 West are the existing roads that primarily serve the area. North of I-80 and west of the airport there are few developed roads. A sub-regional transportation plan will need to be created and implemented, as well as other master plans, before the area can be developed. A future extension of the TRAX line from the airport, as well as a BRT system is expected to serve the area.

Murray - There are still several hundred acres available for development and / or redevelopment in Murray located near the Intermountain Health Care center at about 5300 South and 200 West. It is still undetermined precisely what type and scale of development will occur in this area over the next 10 or 15 years. Murray's central location and the nearby major transportation facilities make it an attractive location.

Transportation Access - I-15, I-215, 5300 South, State Street, Main Street, TRAX and FrontRunner commuter rail provide the bulk of the access to this site. If these facilities are fully functional, then Murray will have excellent access. Murray will need to develop and implement a good neighborhood traffic circulation master plan to facilitate access to and from the site.

Midvale - Midvale's central location in the Salt Lake Valley, good freeway access, the existing TRAX line, and the Mid-Jordan TRAX line make Midvale an attractive area for future development / redevelopment. There are over 200 acres on the slag site near the former Sharon Steel Plant, (now called Bingham Junction), which have been cleared for development. The site is directly served by the Jordan River Boulevard, an extension of 7200 South, and connects to 7000 South in West Jordan. There is potential to develop this site into a major office park, which could possibly become the center for the state's life sciences industry cluster. There are already potential tenants with solid interest in leasing and / or building over 250,000 square feet of office space.

Transportation Access - The Jordan River Boulevard leads directly to the site. The site is bounded on the east by 700 West (Main Street). I-15 and the I-15 / 7200 South Interchange are close by for easy access to the Midvale site. Other streets that could indirectly provide access to the site are 7800 South, 7000 South and 1300 West in West Jordan. The existing and future TRAX stations are removed from the site by several blocks. One station is just west of State Street on 7800 South. The FrontRunner commuter rail line will be located just east of I-15. Midvale and UTA officials should jointly consider how best to link this site to transit services.

Mid-Jordan Tech Corridor - Located between the New and Old Bingham Highways in West Jordan at about 6000 West are hundreds of acres of vacant land with the potential for a high tech center. Specific plans have not been prepared for this area. A high rate of residential development is occurring in both West Jordan and South Jordan, and complement the site from a jobs / housing balance standpoint.

Transportation Access - The Mid-Jordan TRAX line is currently under construction with the start of operations anticipated in August 2011. Providing an LRT line will make the site available to high capacity transit service. Roadways that will serve the area are the Old Bingham Highway, the New Bingham Highway, 5600 West, 6400 West, 8000 South, and Mountain View Corridor.



Daybreak - This development is in South Jordan. It is located just west of the Bangerter Highway and the main entrance is located at about 11400 South. There are 300 acres, or more available for new office space and other uses. The area is a master planned development created by Kennecott Land Company. Because it is a planned community, the area presents a special attractiveness, especially to out-of-state people who are more accustomed to this type of development. Master planned communities generally provide prospective customers greater assurance about the type and quality of future development that may emerge around them. The development is using concepts of “new urbanism” in its layout, design, and architecture.

Transportation Access – Currently, access to the area is provided by the Bangerter Highway, 11400 South, and 11800 South. The Mid-Jordan TRAX line will terminate at Daybreak. The Mountain View Corridor, as well as the TRAX line, will be needed in the near future in order for Daybreak to realize its development potential.

Point of the Mountain Area - This area includes property that is located within Draper and Bluffdale west of I-15. There could be two discrete subareas identified for this area. The first is the Utah State Prison property (Draper), which is generally bounded by the Bangerter Highway to the north, 14600 South to the south, and the D & RG Railroad line to the west. The other subarea could be called the turf farm property, which is bounded by 14600 South to the north, the proposed Porter Rockwell Blvd. and the D&RG Railroad line to the west. The two areas combined exceed 1000 acres. The Point of the Mountain area is strategically located on the boundary of Salt Lake and Utah Counties. The northern portion of Utah County and southern portion of Salt Lake County, are currently experiencing rapid growth.

The economic importance of the prison property has been validated by IKEA’s decision to locate at the north end of the area, and Sorenson Development’s announced office development at the southeast end. Preliminary plans for the vacant, state-owned property near the Utah State Prison envision a mixed-use development with two million square feet of office space; and major retail, hotel, and residential components. Based on anticipated property values, relocating the State Prison could well become economically viable in the future, thus doubling the size of the area available for development. There is some political support for moving the Utah State Prison to a location in Tooele County.

Extensive development of Bluffdale City’s turf farm property is probably a long-term prospect, even though a few office / warehouse type buildings have already been constructed in the area. In any event, there is a considerable amount of land available for development at this location that potentially could generate thousands of jobs.

The US National Security Agency is currently building a major data center at Camp Williams. This center, when complete, however, will only employ a couple hundred employees.

Transportation Access - I-15 is currently the primary transportation facility providing access to the area. The Bangerter Hwy / I-15 and 14600 South / I-15 Interchanges provide the land access from the freeway. The West Frontage Rd. also serves the area. A strong advantage for both of the subareas identified above will be the south extension of the FrontRunner Commuter Rail project, which is planned for completion in 2014. A station is planned in Draper. The construction of a rail station may create a need for an exit from Bangerter Highway, as will overall growth. A need may emerge for a north / south arterial west of I-15 connecting 14600 South to the IKEA area located north of Bangerter Highway. If the nearby segment of the Bangerter Highway is converted to a freeway, land access will need to be maintained and enhanced. The planning agencies responsible for this area should consider general traffic circulation plans for these locations.



Energy Analysis - Transit Projects

Transportation improvements can help promote economic growth and activity by reducing user operating costs and providing access to employment and retail opportunities. This section discusses the energy savings of the 2040 RTP recommended transit projects. The 2040 RTP includes a variety of transit projects and programs that encourage alternatives to the use of single occupant automobiles. Public transit alternatives include commuter rail, light rail, bus rapid transit, and local bus service. Rideshare programs and incentives include park and ride lots, freeway HOV lanes, UTA vanpools, and UTA rideshare matching service. To estimate the energy impacts of these transit projects, WFRC staff modified the travel demand model to eliminate transit and rideshare options from the available modes. The trips formerly served by transit and rideshare modes were then re-assigned to single occupant vehicles. A comparison of travel model results with and without transit modes was then made to estimate the impact of the transit projects in the 2040 RTP on reducing congestion, measured in vehicle hours traveled (VHT). The resulting energy savings provided by transit projects in the 2040 RTP are summarized in the Table 8-3.

TABLE 8-3

ENERGY SAVINGS - 2040 RTP TRANSIT PROJECTS

Vehicle Hours Traveled	123,100
Gallons of Fuel*	156,300
*CAFE standard 27.5 mpg for passenger vehicles at 35 mph yields 1.27 gallons per hour	

The 2040 RTP transit improvements reduce energy consumption in two ways: 1) the number of vehicle trips are reduced, and 2) (to a far lesser degree) the remaining vehicle trips experience less congested conditions, so less time is lost to delay. The VHT figures in the Table 8-3 reflect both aspects of energy savings resulting from the RTP transit improvements. Using an hourly fuel consumption rate per vehicle of 1.27 gallons per hour, the RTP transit improvements save about 156,000 gallons of fuel per day in the year 2040.

Energy Analysis – Highway Projects

The 2040 RTP also reduces congestion, vehicle hours of travel (actually delay or “non-travel”), and the corresponding fuel consumption through improvements to the highway network. By implementing operational improvements, providing new or wider facilities in congested locations, and eliminating “choke point” conditions, the RTP can significantly reduce traffic congestion compared to an unimproved highway network subject to ever increasing traffic demand. Table 8-4 below summarizes the benefits of these 2040 RTP highway improvements. In the year 2040, an estimated 159,000 gallons of fuel per day is saved as a result of implementing these improvements.

TABLE 8-4

ENERGY SAVINGS - 2040 RTP HIGHWAY PROJECTS

Vehicle Hours Traveled	125,100
Gallons of Fuel*	158,900
*CAFE standard 27.5 mpg for passenger vehicles at 35 mph yields 1.27 gallons per hour	



In addition to new capacity, the 2040 RTP also recommends a variety of Transportation System Management strategies to reduce congestion including signal coordination, Intelligent Transportation Systems, incident management, ramp metering, more efficient interchange and intersection configurations (such as single point urban interchanges and continuous flow intersections), and access management. These strategies also eliminate vehicle delay and result in fuel conservation and reduced emissions. Quantifying the VHT reductions from TSM efforts is difficult due to the diverse nature and application of these strategies and the challenge of isolating the benefits of one particular strategy when all the strategies are employed together. From the assumptions made in the travel model testing of region wide applications of TSM strategies, an overall reduction of VHT on the order of 3% is reasonable. If these assumptions are valid then a daily VHT reduction of 70,000-80,000 is possible from maintaining and increasing applications of TSM strategies in the Wasatch Front Region. This VHT reduction is the equivalent of 95,000 gallons of fuel saved each day.

Fuel Price Impacts

A number of lessons can be learned from the gasoline price spikes of 2008. The average price for a gallon of unleaded gasoline rose from \$2.96 in July 2007 to \$4.09 in July 2008, an increase of 38%. At this price, changes in travel behavior became noticeable with a nationwide decrease in annual vehicle miles traveled (VMT) of 3.5%. *{Dan Brand, "Impacts of Higher Fuel Costs"}. Utah experienced similar declines in VMT in 2008 due to the elevated fuel prices. The question is, "What happened to all that VMT?"

Perhaps the most important lesson from the 2008 fuel price spike is that traveler behavior began to change as gasoline prices reached the \$4.00 threshold. But the nature of the changed travel behavior remains a critical question.

In a short term price spike, commuters have limited options. People still need to get to work and other essential activities. Buying a more fuel efficient vehicle may be a sound long-term response to higher fuel prices, but this is not a remedy immediately available to most consumers. National transit statistics for 2008 indicate that only about 5% of the reduced VMT diverted to public transit. Locally, the number of passengers using Utah Transit Authority services increased 12.5% from 2007 to 2008. But for 2009 UTA passenger volumes decreased 4.2% to volumes very close to 2006 levels. Other possibilities are that travelers reduced discretionary travel, took advantage of flexible work schedules such as four-day work weeks, joined carpools, or they may have opted for telecommuting opportunities. Still others may offset the increased commuting costs with decreases in discretionary spending.

In a study of fuel price elasticity, it was concluded that "motorists do find ways of economizing on their use of fuel, given time to adjust. Raising fuel prices will therefore be more effective in reducing the quantity of fuel consumed than in reducing the volume of traffic." * Daniel J. Graham and Stephen Glaister, "The Demand for Automobile Fuel: A Survey of Elasticities," Journal of Transport Economics and Policy, Volume 36, Part 1, January 2002. But even small reductions in traffic volumes can produce noticeable improvements in traffic congestion. As noted in the Brand article cited above, peak-period congestion can be relieved to a large degree with only minor reductions in traffic volume.

A related lesson from the fuel price experience of 2008 is the impact this can have on transportation funding. The primary source of highway construction and maintenance funds is fuel tax. If travelers respond to increased fuel prices with less traveling and less fuel consumption, then the revenues from fuel sales will also be reduced. This is an important consideration as the Wasatch Front faces increased demand for transportation in the future, while current instability in the Middle East raises serious questions about the cost and availability of fuel.



TRANSPORTATION IMPACTS AND BENEFITS

8.5

Statistics regarding vehicle hours of delay further quantify the mobility impact of the 2040 RTP. Without these projects, total vehicle hours of delay during the evening commute would be over 370,000. With implementation of the RTP, the vehicle hours of delay would decrease by more than a third, totaling about 220,000. Maps 8-3 and 8-4 show congestion levels in 2040 without and with implementation of the Regional Transportation Plan, respectively. Roadways colored red are expected to have significant levels of congestion. Those colored green are expected to have moderate or no congestion. By comparing these maps, it can be observed that the projects in the 2040 RTP will improve traffic mobility substantially over not implementing the Plan, especially in Davis County, Weber County, and southwest Salt Lake County.

In addition to improving traffic mobility, the RTP will provide increased accessibility to transit. Ridership is forecast to increase from 90,000 linked trips per day in 2009 to over 220,000 in 2040. Approximately five percent of peak period commuter trips are now taken by bus or rail. This figure is forecasted to increase to nearly seven percent if the RTP is fully implemented.

Vehicle miles of travel (VMT) per capita is anticipated to increase from 24 per day to 26 per day, or by eight percent. This means that VMT is expected to grow at a rate slightly faster than population. Many of the highway improvements in the 2040 RTP allow for more direct (shorter) trips, and transit and other mode improvements reduce the number of vehicle trips. Both system management and demand management strategies (see section 7.8) will also help hold VMT growth to only a slight increase over the rate of expected population growth.

PUBLIC HEALTH AND TRANSPORTATION

8.6

Obesity among the population is also of concern to officials responsible for public health. These conditions are the result of the lack of physical activity, among other contributing factors. Reliance on personal vehicle use, along with work in employment sectors that require little or no physical activity, is contributing to more sedentary lifestyles. Although Utahans are better off than many people, the state still faces repercussions caused by these conditions. Nationally, for example, physical inactivity accounts for about 2.4 percent of health care costs, or approximately \$24 billion per year.

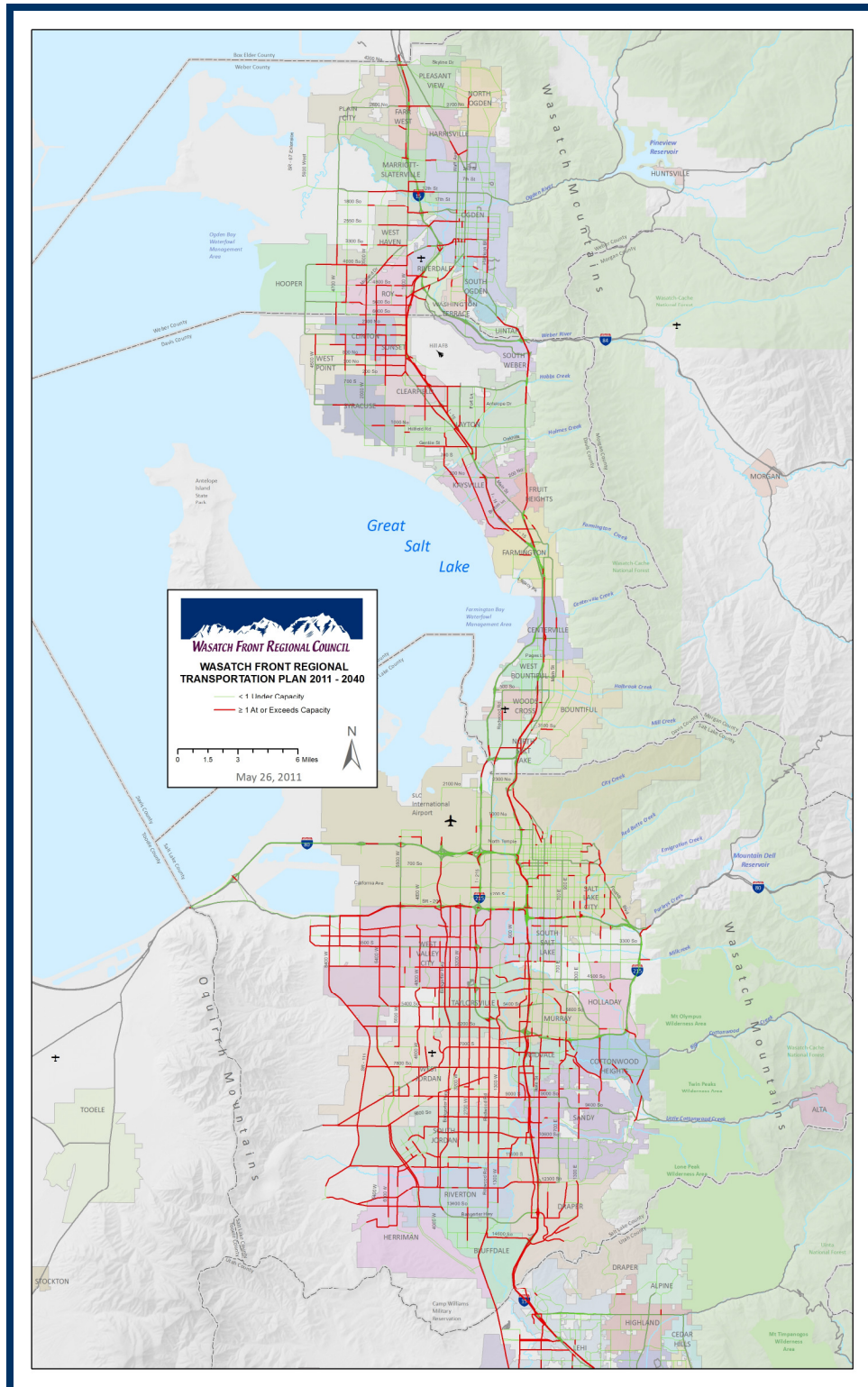
In 2006, the WFRC commissioned a study on active living / transportation for the Wasatch Front Region. The study recommends incorporating physically active mode opportunities into the existing regional transportation system. The study report covered subjects ranging from funding options to policy guidelines and design elements. With the adoption of these active transportation policies by the Regional Council and by making them a critical component of the regional transportation system, the WFRC is encouraging local governments and other organizations to accommodate more pedestrian and bicycle options in their transportation planning products.

The WFRC adopted the policy approaches / recommendations in 2006 because of the benefits that could be realized when these policies are implemented. The policy recommendations, which are listed and discussed in Chapter 7, under "Active Living Principles," essentially call for the following.

- Provide adequate, safe, and appropriately located infrastructure for all modes of transportation
- Provide active links (sidewalks and bike paths) to existing and new transit stations and stops.
- Provide bicycle parking and storage in transit oriented locations.

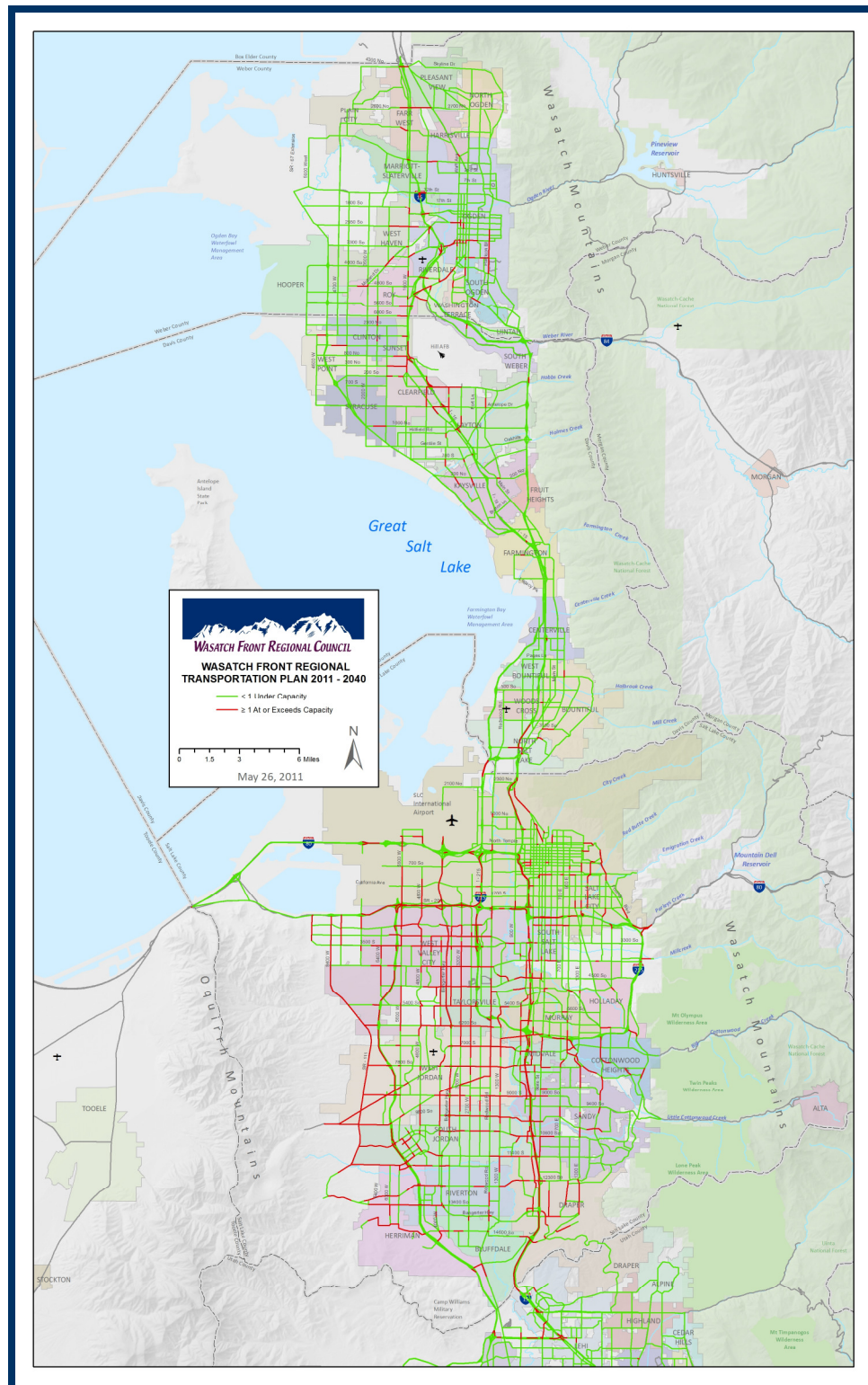


MAP 8-3

**WASATCH FRONT URBAN AREA 2040 TRAFFIC ON
2016 TRANSPORTATION SYSTEM VOLUME / CAPACITY**

MAP 8-4

WASATCH FRONT URBAN AREA 2040 VOLUME / CAPACITY



- Plan and implement land use and transportation choices that provide for and encourage active transportation modes.

A variety of benefits can result from following active living / transportation policies. Recent studies have shown that if active mode infrastructure is provided and is convenient, people who would not normally seek out these types of facilities will use them. Linking mass transit facilities with active mode transportation facilities encourages people to use both modes of transportation. Providing mixed and transit oriented land uses, makes communities more walkable and friendly toward non-motorized or active modes of transportation. If active living / transportation infrastructure is implemented in new developments, and more opportunities for active living are provided in the urban environment, it is more likely people will make choices about modes of transportation that do not include the automobile. The resultant benefit would not only improve the physical health of those who walk, ride bicycles, use transit, etc., but it will also reduce the amount of VMT and traffic congestion, improve air quality, and improve the overall quality of life.

8.7

ENVIRONMENTAL IMPACTS AND BENEFITS

New transportation projects and improvements to existing facilities will address the anticipated needs for greater highway and transit capacity in the Salt Lake and Ogden - Layton Urbanized Areas. However, these projects can have negative environmental impacts as a result of construction and operation. The effects of the 2040 RTP on various aspects of the environment were examined. In particular, the 2040 Plan's effect on general air quality, noise, water quality, wetlands, water bodies and floodplains, cropland and sensitive species are examined and evaluated. Site specific impacts will need to be investigated in detail as NEPA (National Environmental Policy Act) principles are applied to the planning processes. Most new construction and transit improvement projects that receive federal funding require, at a minimum, a detailed environment assessment (EA), which outlines the social, economic and environmental impacts of the various project alternatives considered. The approval of a draft and a final EIS (Environmental Impact Statement) are required if environmental and social impacts for a specific transportation project are deemed "significant". This section will provide an overview of the possible environmental impacts from the Planning and Environmental Linkages reports from uPLAN. Project specific impacts can be found in Appendix U.

Air Quality

Emissions from cars and trucks traveling on public highways have been declining since the 1990's, even with increases in the overall amount of vehicle travel. This trend for the past and projected into the future is depicted graphically below in Figures 8-1, 8-2, and 8-3. The emission reduction from vehicles can be attributed mainly to substantial improvements in vehicle emission technology required by federal vehicle standards. Local emission testing and repair programs have also played a lesser but important role in reducing overall vehicle emissions.

In the future time frame of the RTP, as vehicles with the latest vehicle emission technology replace older vehicles with greater emissions, the overall emissions from vehicles will be less than vehicle emissions observed today. The latest emission standards for cars and light trucks have eliminated over 85% of the emissions compared to vehicles manufactured in the 1970's. In addition, large diesel trucks beginning with model year 2007 are now subject to much stricter emission standards than in the past and this will also contribute significantly to an overall decrease in future vehicle emissions.

FIGURE 8-1

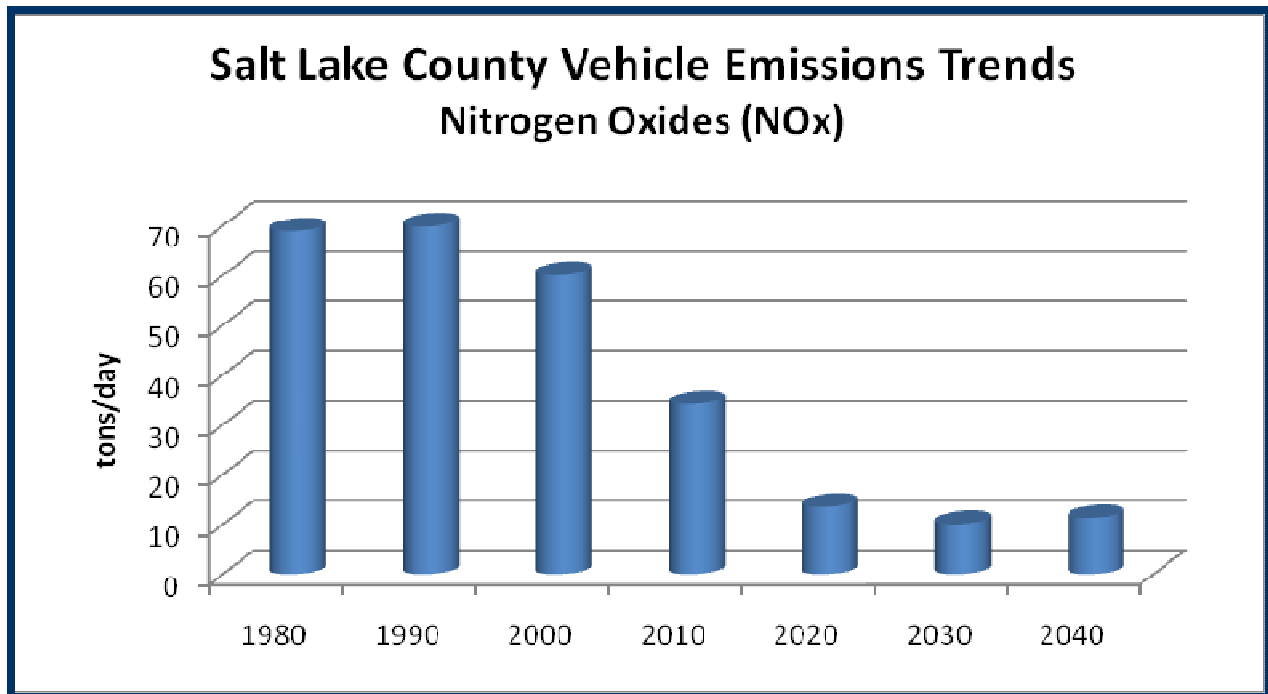
SALT LAKE COUNTY VEHICLE EMISSION TRENDS – NO_x

FIGURE 8-2

SALT LAKE COUNTY VEHICLE EMISSION TRENDS – CO

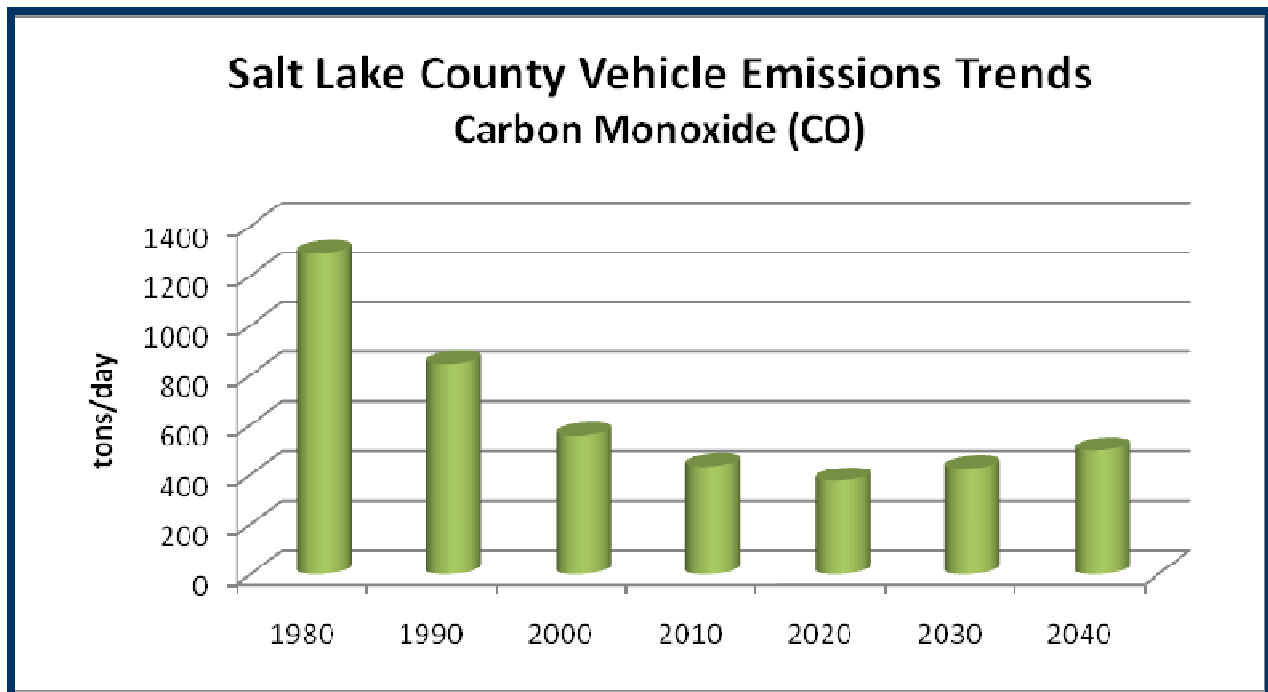
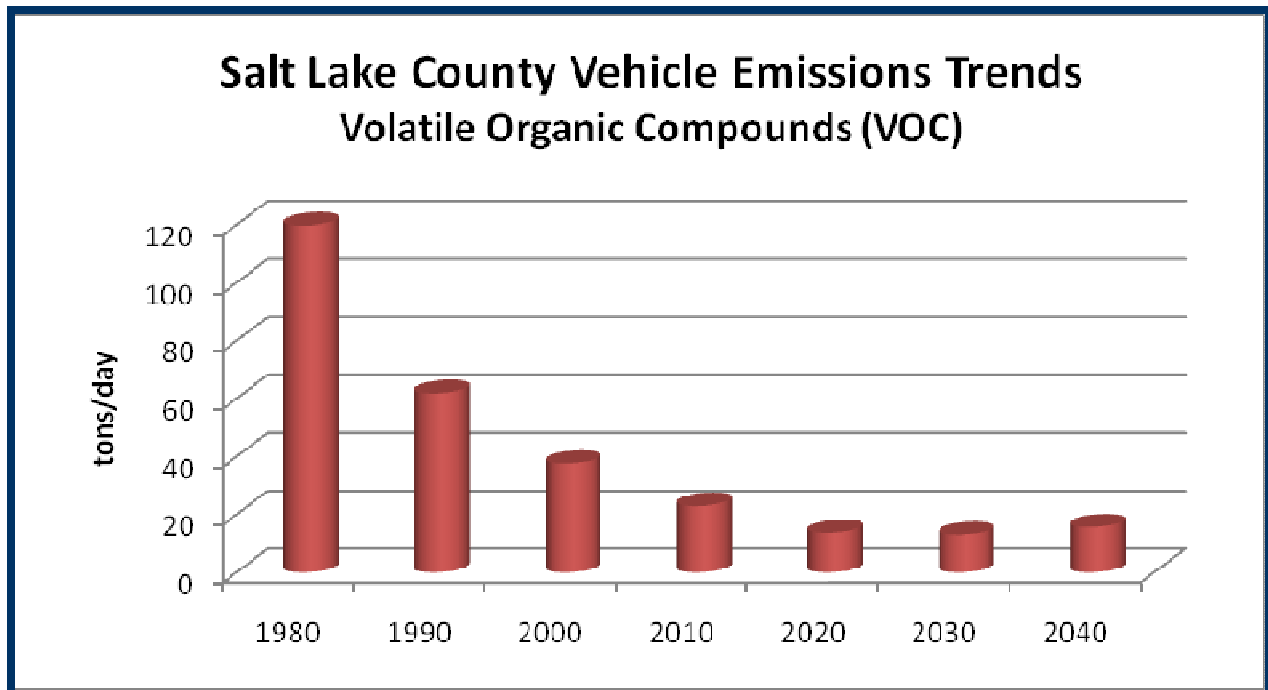


FIGURE 8-3**SALT LAKE COUNTY VEHICLE EMISSION TRENDS – VOC**

Other contributing factors to reduced vehicle emissions include the 2040 RTP recommendations for expanded transit service and highway improvements strategically planned to alleviate congestion and corresponding emissions. Congested traffic is responsible for excess emissions for two reasons. First, the additional load to vehicle engines operating in stop and go conditions; and second, the inefficiency of congested traffic that generates emissions but produces no movement of people or goods. The Energy Analysis contained in Section 8.4 of this document estimates that by 2040 the RTP transit projects eliminate approximately 194,100 daily vehicle trips which is the equivalent of about 123,100 vehicle hours or 2,219,000 vehicle miles. In addition, RTP highway projects eliminate 120,000 daily vehicle hours of travel. These reductions in congestion and delay amount to reductions of CO, NO_x, and VOC emissions of about 35.5, 0.7, and 1.0 tons per day respectively due to transit improvements in the 2040 RTP; and reductions of 47.6, 1.1, and 1.4 tons per day respectively due to congestion relieving highway improvements in the RTP.

Much of the Wasatch Front Urbanized Area has been designated as a non-attainment area by the Environmental Protection Agency for certain types of air borne pollutants. Exhaust emissions from automobiles, trucks, and buses contribute to three of these pollutants: carbon monoxide (CO), ozone (O₃), and particular matter (PM_{2.5} and PM₁₀). The impact of the 2040 RTP on emissions of each of the mobile source related pollutants was examined and evaluated. The WFRC determined that the 2040 RTP is consistent with and conforms to state air quality plans (for more information on air quality, please refer to Section 8.11 of this Chapter, entitled “Air Quality Conformity Determination.”)

Noise

Roadway noise impacts vary, based on traffic, the nature of the road, and adjacent land use characteristics. Relevant traffic characteristics are volume, speed, and vehicle mix. The roadway characteristics affecting noise include grades and the presence or absence of noise barriers. Also important are adjacent land use characteristics, including the noise sensitivity of adjacent land uses,



the distance between the roadway and the land use, and the design and construction of affected buildings.

A majority of projects in the 2040 RTP will have relatively minor or no impact on existing developed areas. However, the projects listed in Tables 8-5 and 8-6, primarily interstate highways and principal and minor arterials, have the greatest potential for noise impacts on adjacent communities. These roads pass through identified residential areas and are relatively high-speed, high-volume facilities.



TABLE 8-5

**SALT LAKE URBANIZED AREA PROJECTS WITH
POTENTIAL NOISE IMPACTS**

(Table includes both funded and unfunded projects)

STREET	FROM	TO
I-80	1300 East	Parley's Canyon
SR-201	I-15	I-80
3500 South	4000 West	8400 West
4100 South	Mountain View Corridor	4000 West
4500 South	2300 East	900 East
4700 South	2700 West	6400 West
5400 South	I-15	SR-111
6200 South	5600 West	SR-111
Fort Union Blvd.	1300 East	3000 East
7000 South	Redwood Road	Bangerter Highway
7800 South	Bangerter Highway	SR-111
New Bingham Highway	5600 West	SR-111
8000 South	Bangerter Highway	New Bingham Highway
10400 South	Redwood Road	Bangerter Highway
11400 South	I-15	Bangerter Highway
11400 South / 11800 South	Bangerter Highway	SR-111
12600 South	Bangerter Highway	9000 West
13400 South	Bangerter Highway	Mountain View Corridor
8400 West	SR-201	3500 South
6400 West	12600 South	13400 South
Mountain View Corridor	I-80	Utah County Line
5600 West	4400 South	14400 South
Redwood Road	8000 South	Bangerter Highway
Main Street	3300 South	Vine Street
700 East	Carnation Drive	12300 South
900 East	3300 South	Fort Union Blvd.
Highland Drive	8400 South	13800 South



Mitigation - Specific project noise impact assessments and mitigation measures will be determined during project design. Noise effects may be mitigated by shifting the highway alignment away from noise sensitive land uses, depressing the roadway, or installing noise barriers between the highway and the sensitive areas. In addition to the highway projects, light rail and commuter transit systems also have the potential for noise impacts.

Noise barriers are most frequently incorporated into limited access highways. Noise mitigation is less effective or not effective for non-limited access, since land access roads, such as driveways, would largely negate mitigation efforts. As a matter of UDOT policy, noise mitigation measures will not be incorporated into certain sections of these projects where proposed development has not been approved by the local government authorities at the time highway facilities are under construction. Therefore, the affected local governments should require developers to consider the noise effects of existing adjacent and planned highway facilities during the development approval process. These considerations include proper setback distances from the noise source, and walls or berms between the noise source and receptor.

TABLE 8-6

**OGDEN - LAYTON URBANIZED AREA PROJECTS
WITH POTENTIAL NOISE IMPACTS**
(Table includes both funded and unfunded projects)

STREET	FROM	TO
1800 North (Clinton)	Main Street	5000 West
200 South	500 West	North Legacy Corridor
Syracuse Road (SR-108 / 127)	1000 West	North Legacy Corridor
Hill Field Road Extension	2200 West	3200 West
700 South / 200 South (Clearfield)	I-15	2700 West
Antelope Drive	Oak Forest Drive	US-89
500 South (West Bountiful)	I-15	Redwood Road
West Davis Corridor	Weber Co. Line	I-15 / US-89
2000 West	Weber Co. Line	Syracuse Road
2700 West	Hill Field Road Extension	North Legacy Corridor
US-89	I-15 (Farmington)	I-84
Skyline Drive (North)	2600 North	US-89
2600 North / 2700 North	I-15	3500 West
Midland Drive	Hinckley Drive	3500 West (Roy)
5600 South	1800 West	3500 West
5600 South / 5500 South	3500 West	5800 West
North Legacy Corridor	Davis County Line	I-15
3500 West	1200 South	Weber Co. Line
Monroe Boulevard	1300 North	2700 North

Water Quality

The National Clean Water Act, the State's Non-point Source Management Plan, and various other governmental regulations require the monitoring of water resource impacts and management in the

urbanized areas. Water quality impacts resulting from a highway improvement project generally depend on traffic volumes, pavement width additions, and the aquifer recharge capability of the surrounding soils.

Water quality is affected by oil and other hazardous materials deposited by vehicles on the roadway and subsequently washed into ground water or open bodies of water. The amount of pavement added roughly correlates with increased road salt and other solvents used during the winter months. The aquifer recharge capability of the soils surrounding the project and the project's proximity to a well recharge area is indicative of the likelihood of roadway runoff contaminating drinking water. The 2040 RTP is expected to require approximately 17,000 acres of right-of-way in ground water recharge zones and an additional 1,500 acres in close proximity to surface water and potential wetlands.

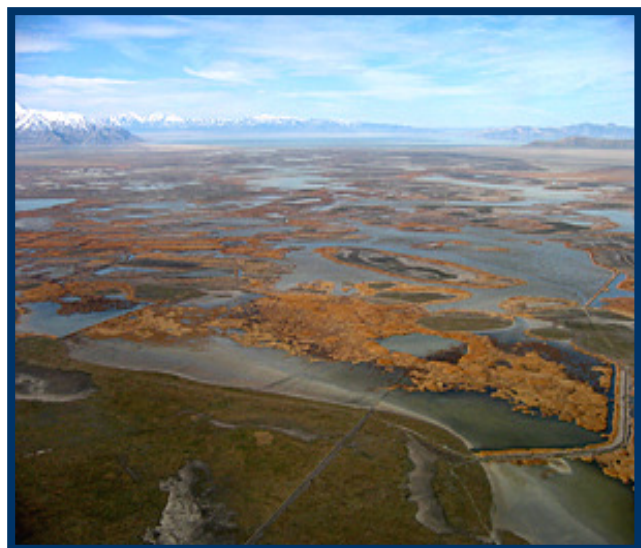
Mitigation - Specific project water quality impact assessments will be made, and mitigation measures based on best management practices will be determined during the environmental phase of the individual project development process. During project design, settling ponds or storm water removal facilities may be used to limit the introduction of hazardous material seepage into important aquifers. Map 8-5 shows the surface water features located within the Wasatch Front Urban Area.

Wetlands

Wetlands are areas able to support vegetation adapted for life in water- saturated soils. Wetlands can be generally defined as vegetated aquatic areas, such as bogs, marshes, swamps, and prairie potholes. Jurisdictional wetlands are those wetlands, which are within the extent of the Corps of Engineers' regulatory overview. Large, intact wetlands serve critical environmental functions, including flood control, water purification, and the provision of habitat for fish and wildlife. The significance of roadway wetland impacts varies, based on wetland characteristics such as the size of the wetlands area, the level to which the wetlands have already been disturbed by human development, and jurisdictional status.

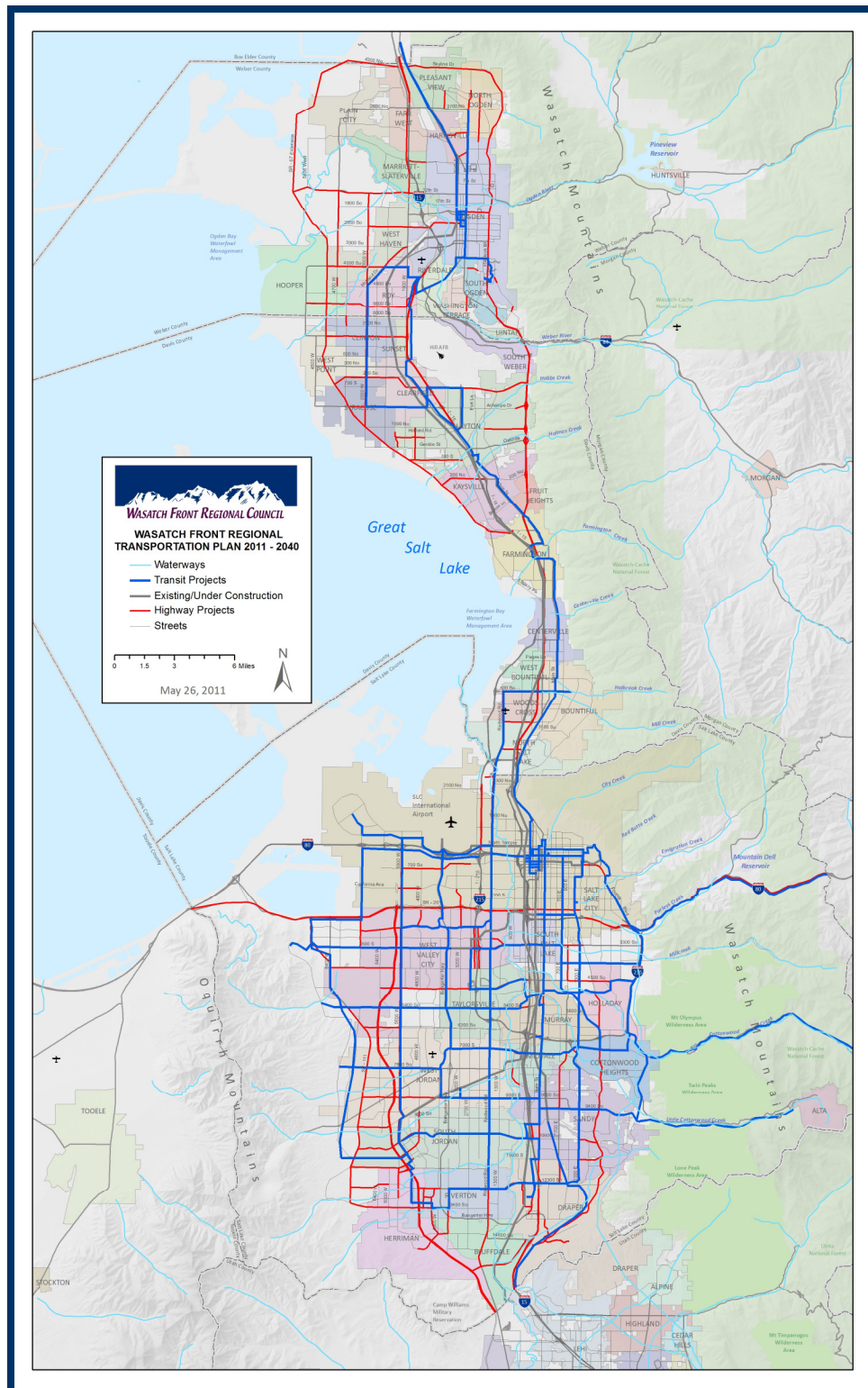
A project may impact wetlands by providing a barrier between adjacent wetland areas or by encroaching upon a single wetland area.

The projects in the 2040 RTP that were deemed to have potential impacts on wetlands were those involving new construction or a widening of two or more lanes, and that would traverse, or be in close proximity to, the wetlands identified by the U.S. Fish and Wildlife Service's National Wetlands Inventory. The National Wetlands Inventory, which is based on aerial photography and did not include site sampling, includes both jurisdictional and non-jurisdictional wetlands in Utah and throughout the United States. The degree of impact for the projects listed as potentially affecting wetlands will depend on the amount of right-of-way required. Thus, projects requiring a considerable amount of right-of-way would have more impact than those requiring minimal or no new right-of-way.



MAP 8-5

WASATCH FRONT URBAN AREA SURFACE WATER



Mitigation – Regarding the projects included in the 2040 RTP, consideration should first be given to impact avoidance. Specific jurisdictional wetland impact assessments will be made during the project development stage, and mitigation measures will be determined during the environmental evaluation and review phase. Strategies to mitigate impacts to wetlands should include: avoidance by shifting the alignment away from wetlands, replacing lost wetlands, banking wetlands, and / or using “no access” lines to restrict accompanying land development. Potential wetland areas within the Wasatch Front Urban Area are shown on Map 8-6.

Farmland

The 2040 RTP’s recommended improvements will impact farmland by acquiring rights-of-way through active agricultural areas. In the urbanized areas, much of the prime farmland and farmland of statewide importance has already been developed, or is planned for urban uses. Examples of this are properties in Salt Lake County located between SR-111 on the west and the Union Pacific Railroad tracks on the east. These farmlands were designated in 1978 as prime farmland or farmland of statewide importance. In southern Davis County, a 1978 Soil Conservation Service map designated much of Centerville, west Farmington, and parts of West Bountiful as prime agricultural land. Much of this land has been, or is under consideration for development. In Weber County, a



considerable amount of the prime agricultural land is located between I-15 and the wetlands of the Great Salt Lake. Much of this land has already been converted to urban use, and the agricultural lands that remain are currently under substantial development pressure. In both Weber and Davis Counties, several farms have received the designation “Agricultural Protection Zones” which gives the land special status and makes it more difficult for local and state governments to use condemnation procedures to acquire property for a public purpose.

Prime farmlands of the Wasatch Front are generally those with relatively high quality soil, reliable water, and fewer than 30 dwelling

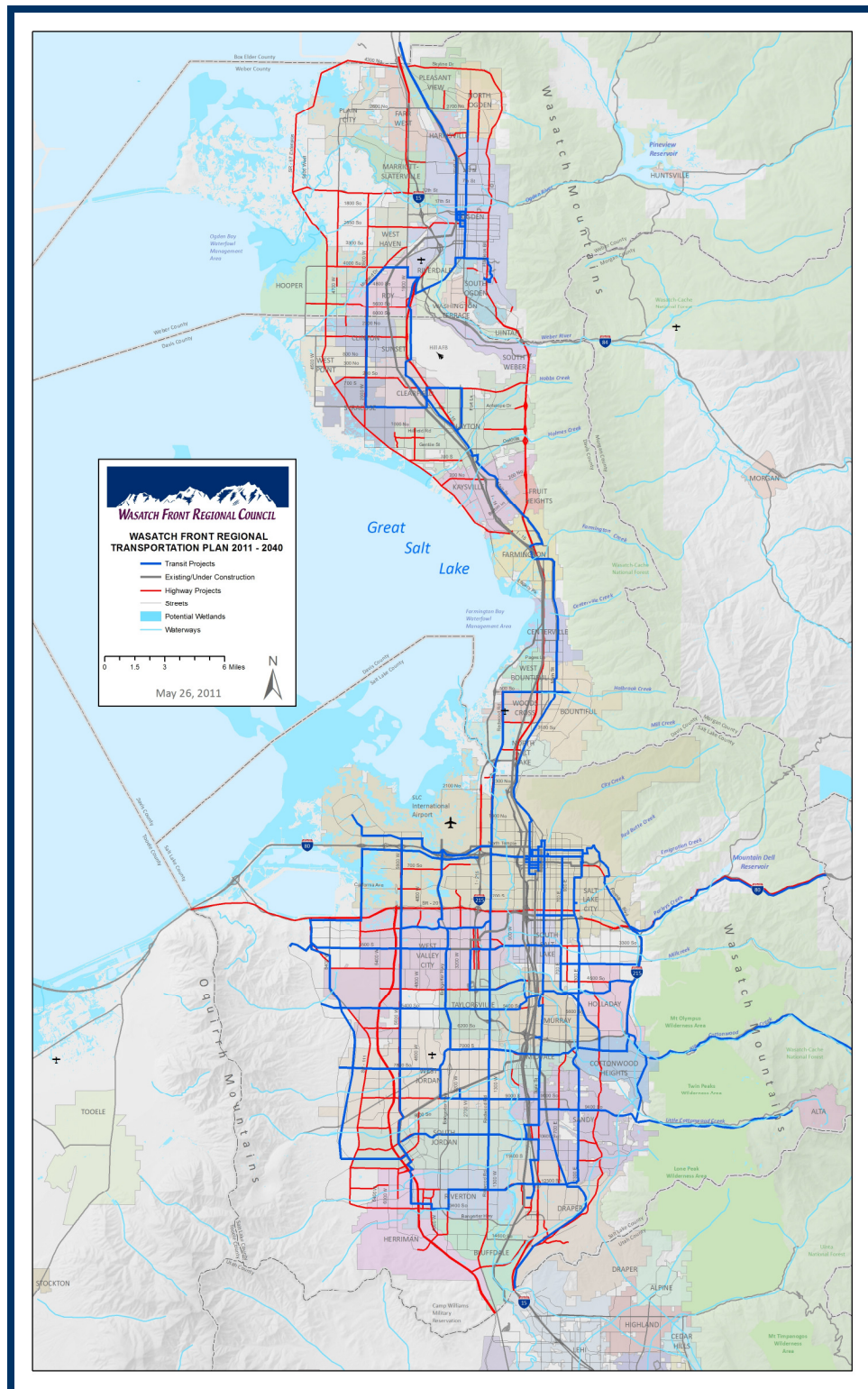
units per 40-acre area, which are not currently designated for urban use. Lands currently within a municipality, which are used, but not zoned for agricultural or open space preservation, are presumed to be urban or designated for future urban use.

With the exception of new roadway construction and rights-of-way acquisition projects, the extent of direct impacts by the 2040 RTP improvements on farmlands is relatively minor. New roadways often require larger amounts of rights-of-way than past projects and have the potential for greater direct impacts on farmland. Also, new roadways have the indirect impact of making farmlands more attractive for urban land uses.



MAP 8-6

WASATCH FRONT URBAN POTENTIAL WETLAND AREAS



Farmland in Salt Lake County, has over the years, been largely consumed by urban development. Forty or more years ago, there were still large tracts of land in agricultural use, particularly in the southwestern part of Salt Lake County. Today, much of that farmland has been converted to residential and other uses, and the balance has been planned for urban development. Farmland that remains in Salt Lake is mostly destined for development, since there are no local government policies in place that would specifically provide for the preservation of farmland.

There are some parcels in Salt Lake County that are used for pasture, growing of hay, and turf farming. The communities that still have some agricultural lands are Herriman, Bluffdale, West Jordan, and Salt Lake City. In Salt Lake City, there are several parcels of farmland on the west side, and in the Northwest Quadrant.

Most of Davis County's remaining farmlands are located west of the West Davis Highway, or west of Bluff Road. Davis County's farmland is also being converted to urban uses, similar to the pattern of Salt Lake County.

Weber County, of the three urbanized counties, has the most remaining farmlands. Most of this farmland is located in western Weber County, west of 1900 West, between the communities of Roy and Plain City. There are still large tracts of land that produce a variety of crops, including hay, corn, and onions. There is also a considerable amount of pastureland, as well as a few dairy operations in the area. A number of area farmers have expressed a desire to continue to farm the land as long as possible. They do not welcome urban type development and the construction of transportation infrastructure in the area. The 2040 RTP is estimated to impact 46 acres of Agricultural Protection Area and an additional 953 acres of agricultural land.

Mitigation – Farms which have been officially designated as part of an “Agricultural Protection Zone”, along with other productive farmlands in the Region, need to be avoided. If avoidance is impossible, due to the absence of other reasonable alternatives, care should be taken in the planning of the transportation facilities to limit the disruption of farm operations to the least extent possible. Local government planning and zoning regulations can play a vital role in preserving viable farmlands.

Wildlife Habitat / Sensitive Species

The 2040 RTP was evaluated to determine potential impacts on wildlife habitat and endangered and threatened species known to exist in Salt Lake, Davis, and Weber Counties. Bald eagles are known to feed near the Great Salt Lake. The proposed West Davis Highway could possibly affect this habitat. Endangered and threatened plants include Ute Ladies'-tresses and Deseret Milkvetch. It is not known if these plants and animals would be adversely impacted by projects listed in the 2040 RTP. A survey of sensitive species will be conducted during the Environmental Impact Statement phase of project development.

The three urbanized counties of the WFRC contain significant wildlife habitat areas for a variety of species. The Great Salt Lake and associated wetlands provide an internationally significant migratory bird habitat. Many streams provide habitat for fish, mammals, reptile, and amphibian habitats. A portion of the foothills have been converted for urban use, which interfaces with the native grass, sage, and scrub oak-covered habitat. Mule deer, elk, mink, and snowshoe hare winter and at times spend their entire life cycles in these areas. Also, several species of birds use the foothills for year-round habitat, such as the California Quail, Ring Neck Pheasant, and Ruffed Grouse.

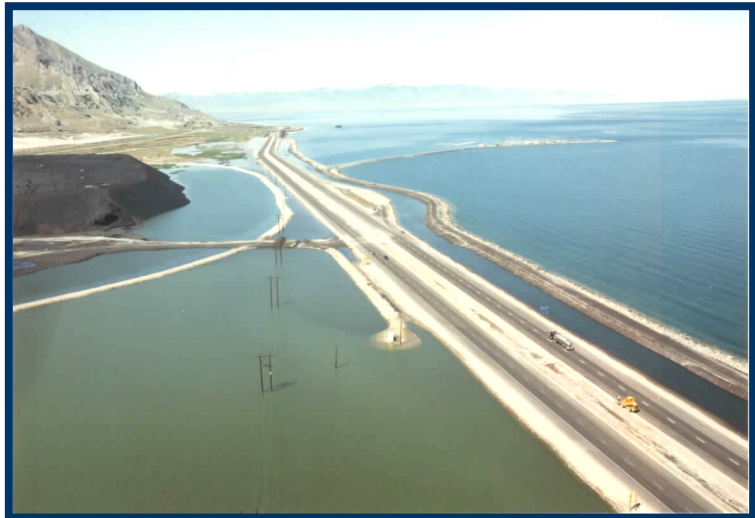


Mitigation - The best method of mitigation is avoidance. If this is not possible, then plans are needed to minimize and / or mitigate unavoidable impacts. There are a variety of measures that can be taken, such as providing wildlife corridors if a transportation facility creates a barrier to wildlife movement or migration. It will be important to coordinate very closely with the U.S. Fish and Wildlife Service and the Utah Department of Wildlife Resources during the various phases of project development.

Water Body / Floodplain Modification

Natural water bodies and floodplains help to moderate flooding and accommodate erosion in a river. Projects can impact a water body by disturbing ground within 20 feet of natural or semi-natural rivers and streams, realigning or channeling meandering waterways, placing obstructions in floodplains, and utilizing unstable floodplain crossings.

The Army Corps of Engineers District Office has indicated in the past that the Jordan River in Salt Lake County was of particular concern, and urged that new crossings of the river be avoided, or minimized whenever possible. One project in the 2040 RTP that will affect the Jordan River is Porter Rockwell Blvd. This project will necessitate the construction of bridges. The numerous smaller streams flowing from the surrounding mountains were not considered in the evaluation, as they will be evaluated at a later time in more detail during the Environmental Impact Statement phase of project development. Map 8-5 on [Page 257](#), shows the distribution of surface water bodies within the Wasatch Front region.



Mitigation - Transportation facilities should, wherever possible, avoid floodplains. If a project must be located in a floodplain, the facility will need to have the proper vertical elevation to prevent flooding. As a way to mitigate the natural hazard of flooding, alternative routes should be identified if the project is determined to be essential to the Region's overall transportation network. Stream crossing should be at right angles to minimize impacts. The channelization of streams and rivers should be minimized or avoided so that the natural channel and the habitat it provides can be preserved. If a watershed management plan exists for an area under consideration for a project, care should be taken to carefully coordinate efforts with watershed planner. Lastly, pre-construction meetings should be held with public officials, contractors, and others to discuss floodplain protection and how the project can be best designed to maintain natural drainage patterns and any existing runoff measures.

Hazardous Waste

The potential for the discovering of hazardous waste deposits buried in project rights-of-way is a concern. The purchase of a contaminated site, or possibly even the purchase of property subdivided from a contaminated parcel, may result in the public agency that purchased the property becoming financially liable for a hazardous waste site clean-up process. This liability, if it falls to the transportation agency, could create significant financial burdens and project delays.



To identify projects that could be affected by hazardous waste sites, WFRC compared the location of proposed 2040 RTP projects with the location of "Superfund" sites listed in the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS). CERCLIS is the database used by the EPA to track the status of potential and confirmed hazardous waste sites. (Inclusion in CERCLIS simply means EPA has been notified of the possibility of some release of hazardous substance to the environment, thereby triggering the need for a preliminary assessment.) The distribution of CERCLIS National Priority List Superfund Sites is shown in Map 8-7.



Besides the National Priority List Superfund Sites for the three urbanized counties of the Wasatch Front Region noted above, there are between one and two hundred other CERCLIS sites that have the potential of becoming EPA Superfund Sites. It has not been determined definitively that the sites are contaminated, but that there is the potential that they may be. These sites have been identified and mapped by the State Department of Environmental Quality (DEQ), Division of Environmental Response

& Remediation (DERR). The database and map should be consulted prior to, or during the EIS preparation phase of project development.

The 2040 RTP projects are in immediate proximity of approximately 5,000 acres of hazardous waste sites. Additionally, there are another 49 acres of solid waste sites that are impacted.

Mitigation – The existence of hazardous waste or Superfund sites could significantly affect the feasibility of a transportation projects. Disturbance of a site could present a significant hazard and could cost millions of dollars to mitigate before construction of a transportation project could begin. Therefore, it is very important for transportation agencies to be aware of where these sites are located so that decisions about the proposed transportation facility can be made in light of this information. It may be prudent to avoid hazardous waste sites if added costs and time are important. On the other hand, while increasing costs, a transportation project can be the catalyst for removing a negative environmental condition and spur further mitigation of property for development. Planning for the possible mitigation and use of sites impacted by hazardous waste for transportation project and other infrastructure should involve the closest possible collaboration with local planning authorities, current property owners, and other community representatives.

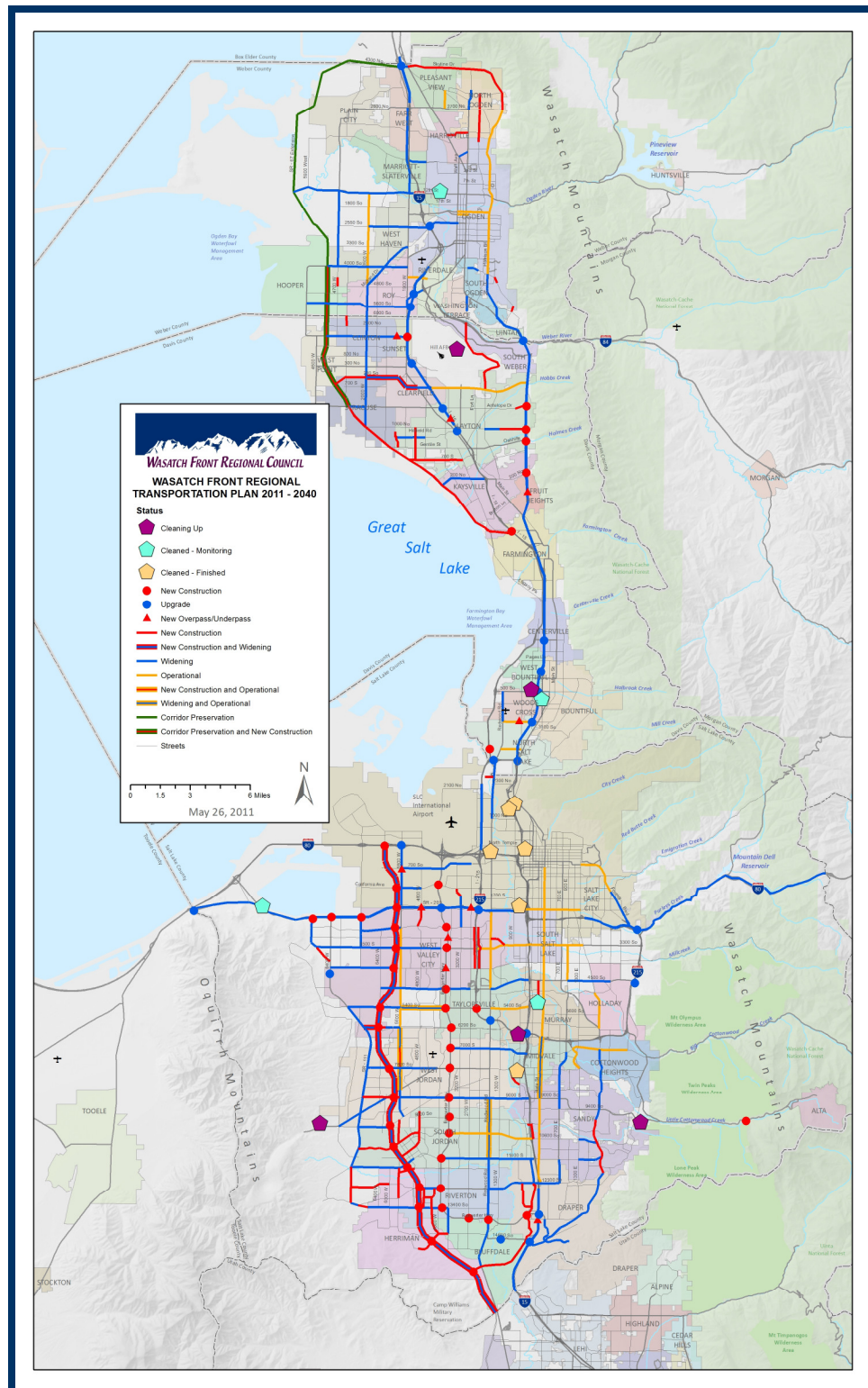
Geologic Hazards

It is important to consider geologic and other physical constraints when evaluating transportation projects. In this case, the concern is not only what impacts transportation projects may have on the environment, but what impacts the environment may have on the projects and the safety of the people who will use them. The geologic hazards chosen for this evaluation were: (1) Steep slopes; (2) faults; and (3) liquefaction potential. Steep slopes present a host of problems to transportation projects, including slope failure due to water saturation of soils, that would greatly increase maintenance costs. Faults are problematic from the standpoint of potential movement along a fault line.



MAP 8-7

WASATCH FRONT URBAN AREA NATIONAL PRIORITIES SUPERFUND SITES



Such slippage due to earthquakes could range from “gradual” to “catastrophic”. In any case, building on a fault line is risky and should be avoided. Liquefaction is associated with fine soils or clays that are not well drained. They can become highly unstable during an earthquake event and may take on quicksand-like properties. Liquefaction tends to increase earthquake damage.



Urbanized area transportation projects subject to potential problems from earthquake fault zones are noted below in

Tables 8-7 and 8-8. Projects in areas with high liquefaction potential are listed in Tables 8-9 and 8-10. These areas of concern are depicted graphically in Map 8-8.

TABLE 8-7

**SALT LAKE URBANIZED AREA PROJECTS WITH POTENTIAL TO
CONFLICT WITH FAULTS**

(Table includes both funded and unfunded projects)

STREET	FROM	TO
500 South / 700 South	Surplus Canal	5600 West
I-80	1300 East	Parleys Canyon
SR-201	3200 West	Mountain View Corridor
4500 South	I-215	2700 East
Highland Drive	Draper City Limits	Traverse Ridge Road
Wasatch Blvd.	7000 South	Little Cottonwood Road

TABLE 8-8

**OGDEN - LAYTON URBANIZED AREA PROJECTS
WITH POTENTIAL TO CONFLICT WITH FAULTS**

(Table includes both funded and unfunded projects)

STREET	FROM	TO
US-89	I-15 (Farmington)	I-84
Skyline Drive (North)	2600 North	US-89
1100 West (Pleasant View)	Skyline Drive	4000 North



TABLE 8-9

SALT LAKE URBANIZED AREA PROJECTS IN AREAS OF HIGH LIQUEFACTION POTENTIAL

(Table includes both funded and unfunded projects)

STREET	FROM	TO
500 South / 700 South	Surplus Canal	5600 West
California Avenue	I-215	7200 West
SR-201	3200 West	Mountain View Corridor
3500 South	2700 West	4000 West
4500 South / 4700 South	I-15	Redwood Road
5400 South	I-15	Mountain View Corridor
7000 South	State Street	Redwood Road
9000 South	I-15	Bangerter Highway
10600 South / 10400 South	I-15	Redwood Road
Bangerter Highway Interchange	@ Redwood Road	
14600 South	D&RGW Railroad Structure	
8400 West	SR-201	3500 South
7200 West	I-80	3500 South
Mountain View Corridor	SR-201	6200 South
5600 West	I-80	SR-201
4800 West	California Avenue	3500 South
Redwood Road	Davis Co. Line	1000 North
Bingham Junction	7000 South	8400 South
I-15 Interchange	@ 100 South	

Mitigation - Liquefaction can disrupt transportation networks, and destroy or severely damage residential, commercial, and other structures.

When transportation infrastructure is planned in high liquefaction areas, it will be important to consider design and construction guidelines that will mitigate or minimize the effects of liquefaction. It is equally important to consider design guidelines to minimize the destructive effects of liquefaction for residential and other structures. A variety of measures can be

incorporated into the design of a structure so that it can better withstand the effects of liquefaction. Information regarding preventive actions that can mitigate the potential effects of



liquefaction can be obtained from the relevant county Hazard Mitigation Plan and from hazard mitigation planners. With regard to faults, it is important to be aware of the areas where movement along a fault could damage transportation infrastructure. Measures can be taken that can minimize the effects of fault movement. The most important preventive measure is to avoid building on a fault, which is particularly applicable to urban development. Among other measures, transportation structures can be reinforced and designed to better withstand earthquakes.

TABLE 8-10

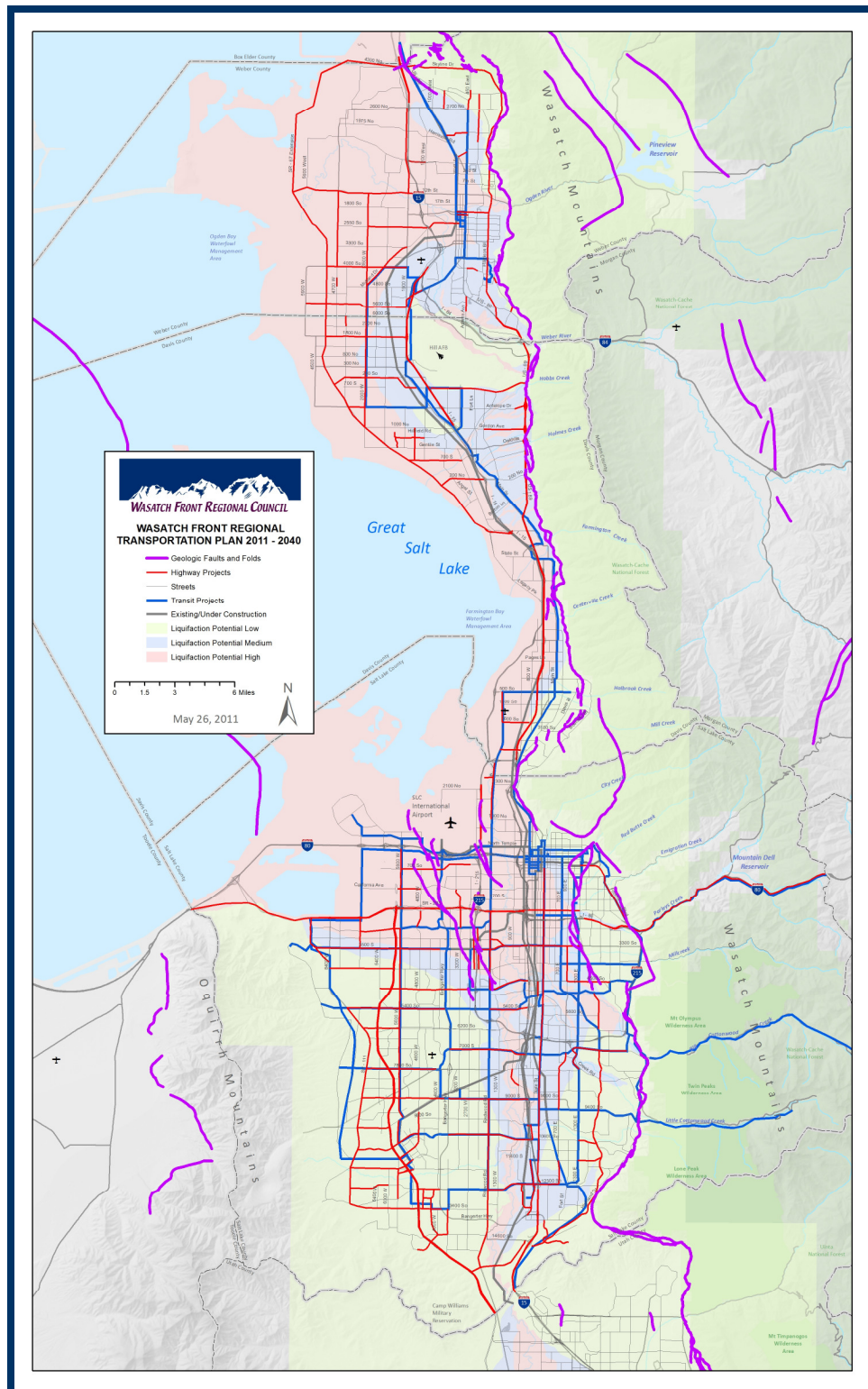
**OGDEN - LAYTON URBANIZED AREA PROJECTS IN AREAS OF
HIGH LIQUEFACTION POTENTIAL**

(Table includes both funded and unfunded projects)

STREET	FROM	TO
1800 North	200 West	5000 West
200 South (Syracuse)	2000 West	North Legacy Corridor
Syracuse Road	1000 West	North Legacy Corridor
Hill Field Road	2200 West (Layton)	3200 West (Layton)
700 South / 800 South	I-15	2700 West
Parrish Lane (Centerville)	I-15	1250 West
I-215 Interchanges	@ Legacy Parkway	@ I-15
North Legacy Corridor (Davis Co.)	Weber Co. Line	I-15 / US-89
2000 West	Weber County Line	North Legacy Corridor
2700 West (Layton)	Hill Field Road Extension	North Legacy Corridor
Redwood Road	500 South (Davis Co.)	2600 South
I-15	US-89	I-215
I-15 Interchanges	@ Lund Lane	@ Parrish Lane
2600 North / 2700 North	I-15	3500 West
1200 South	I-15	North Legacy Corridor
24 th Street	I-15	Wall Avenue
Hinckley Drive	1800 West	Midland Drive
40 th Street	Adams Avenue	Gramercy Avenue
4000 South	1800 West	North Legacy Corridor
Midland Drive	Hinckley Drive	3500 West
5600 South	1800 West	3500 West
5500 South / 5600 South	3500 West	5800 West
North Legacy Corridor (Weber Co.)	Davis County Line	1200 South
4700 West	4000 South	5100 South
3500 West	1200 South	Davis County Line
1800 West	1200 South	2700 North
I-15	Box Elder County Line	2700 North
I-15 Interchange	@ 24 th Street	
1200 West	Pioneer Road	12 th Street
1100 West (Pleasant View)	Skyline Drive	4000 North



MAP 8-8
WASATCH FRONT URBAN AREA FAULTS AND LIQUEFACTION POTENTIAL



NEPA PRINCIPLES AND REQUIREMENTS

8.8

During the preparation of the 2011-2040 RTP, certain aspects and principles derived from the National Environmental Policy Act were considered and incorporated into the planning process. In total these actions meet and exceed the federal planning and environmental requirements found in 23 CFR Part 450.316 & 318. A number of the environmental factors, or categories to be considered, and types of analyses required by NEPA were utilized, such as the manner of describing project purpose and need, safety and security, economic development, land use, alternatives analysis, and core system performance measures. Systems proposed for and projects selected for the RTP were evaluated for their potential impact on the environment. Indices considered included air quality, noise, impact on wetlands, water bodies and flood plains, existing and planned land use, etc.

In 2004 a "Coordinating Committee" was organized to consider the linking of the Regional Transportation Plan planning process and NEPA. The Coordinating Committee is comprised of representatives from UDOT, WFRC, FHWA, and UTA. The Committee developed a list of actions to pursue. The action items were summarized, along with the status of their implementation in a "memorandum to the file," dated May 21, 2007, titled "Integration of NEPA into the RTP Planning Process." This memorandum has been included in the RTP as Appendix V. The 2040 RTP benefited by the pursuit of many of these actions whether conducted for the 2030 RTP or for previous regional transportation plans. Of particular note, the 2040 RTP has benefited from the updating of the Wasatch Front visioning process and the development of the uPEL tool. The uPEL tool is a web based environmental tool used for assessing the direct environmental impacts of transportation actions.

PURPOSE AND NEED CONSIDERATIONS

8.9

A brief "purpose and need statements" for each of the highest cost, first phase projects in the 2040 RTP are included in the section below. The premise behind the development of these purpose and need statements is that they will help inform the corridor level analysis for each project when it is conducted. Any project that cost \$100 million or more, and is either partially or wholly in the first phase of the planning horizon, is provided a brief purpose and need statement. The purpose and need statements are organized as follows: Problems, Needs, and Deficiencies; Solutions; and Expected Outcomes.

Davis and Weber County Projects

North Ogden - Salt Lake (Three Stages)

Problems, Needs, and Deficiencies: Utah Transit Authority Routes 612 and 470 are high performing routes that could perform even better with capital and operating improvements. Current service is relatively slow, moderately unreliable (13 percent), and has a high potential for standing loads.

The Falcon Hill Development in the northern portion of the alignment offers huge ridership potential and will, if it develops to its full potential, require significant transit service in order to avoid large increases in area emissions and congestion. Hill Air Force Base has about 30,000 workers but no transit service. Southeast and south central Davis County provide a large commuter shed into Downtown Salt Lake City, which requires more direct, convenient service than can be offered by Commuter Rail. 30th Street and Washington Boulevard has a large disadvantaged population. Higher density activity centers include Ogden CBD, the Cosydale area, and Roy near the Ogden Airport. Larger infill areas include Washington between 20th and 25th Streets, the Cosydale area, and Falcon Hill.



Solutions:

- Reconfigure UTA Routes 612 and 470 into a continuous route and provide with a more robust schedule of service including high frequency service and extended hours of operation, much like TRAX.
- Construct a transit center near the relocated West Gate of Hill Air Force Base which permits cross fence transfers between the North Ogden – Salt Lake transit line and a Hill Air Force Base shuttle.
- Preserve and eventually move to an exclusive right-of-way through Falcon Hill.
- Incrementally consolidate and add full amenities to transit stations along the alignment.
- Incrementally add reliability and speed improvements such as transit signal priority, queue jumpers, and exclusive transit lanes to the line as funding permits.

Expected Outcomes: The expected outcomes of this project would include the following: vastly improved ridership in the corridor; improved economic development opportunities, reduced vehicle miles traveled and congestion associated with Hill Air Force Base and Falcon Hill; more reliable service and reduced potential for standing loads throughout the alignment; greater transit operational efficiencies in the corridor for UTA, support for transit oriented development being proposed in the corridor; and, higher transit participation in the South Davis to Salt Lake Commute.

Ogden - Weber State University (Two Phases)

Problems, Needs, and Deficiencies: UTA Route 603 is a high performing route that could perform even better with capital improvements. Relatively high levels of congestion are evident in the area of Weber State University and McKay-Dee Hospital. The East Central Community and the area near 30th Street and Washington Boulevard includes high concentrations of disadvantaged people. Washington between 21st and 33rd Streets is a regional activity center. Plans for economic expansion in this area are significant, but potential for road improvements are minimal. Growth of the Weber State University area as a regional activity center will be limited without improved transit services. Congestion in the area is projected to hamper transit with slow speeds and increased schedule unreliability. Two project alignments continue to be under review for this project.

Solutions:

- Initiate a robust schedule of local bus service, to include high frequency service and extended hours of operation much like TRAX, on the proposed alignment as soon as practical.
- Construct an exclusive right-of-way with full amenity stations on Washington Avenue and through Weber State University, including as many streetcar elements, as is financially practical. Imbedded rail would seem to be a very practical addition at this point in those areas where the road/transit lanes are rebuilt.
- Incrementally add overhead electrical power, etc. and purchase rail vehicles to permit streetcar use as soon as sponsors are financially able.
- Continue to use bus service on streetcar lanes and at stations on this alignment.



Expected Outcomes: The expected outcomes of this project would be the following: improved transit visibility and accessibility especially on the WSU campus; long term maintenance of transit schedules for Washington Boulevard and WSU transit lines; facilitation of the growth of Downtown Ogden and the WSU/McKay-Dee area regional activity centers. Improved FrontRunner ridership.

North Legacy Corridor

Problems, Needs, and Deficiencies: As the western portions of both Davis and Weber County grow, there will be an increased demand for travel and transportation capacity. Many north-south (I-15) and east-west facilities are already severely congested and motorists are experiencing significant delays. More regional capacity is needed in closer proximity to accommodate new demand. In addition, there are few existing alternative north-south routes that could be used by commuters and emergency response vehicles in the event of an incident on I-15.

Solutions: Construction of a north-south limited access principal arterial, or parkway type facility from Farmington to the Box Elder / Weber County line would provide part of the solution to traffic growth in the area. In addition, the corridor is planned to be wide enough to allow for future options, such as mass transit and non-motorized facilities to be incorporated, as needed, into the corridor.

Expected Outcomes: The expected outcomes of this project would be the following: (1) additional north-south transportation capacity to help meet 2040 travel demand; (2) a single, continuous alternate north-south route that could reduce congestion and increase safety when I-15 is congested, under reconstruction or closed because of accidents; and (3) an additional route for emergency vehicle response.

Salt Lake County Projects

Salt Lake City - Foothill Drive - Wasatch Drive (Three Phases)

Problems, Needs, and Deficiencies: UTA Route 2, "2 the U", is a high performing route. It could perform even better it was extended to Research Park and given operating and capital improvements. Increasing congestion in the corridor, and high potential for standing loads on this line, may become a deterrent to further ridership growth. Much of the area between Salt Lake Central and the University has a large population of disadvantaged people. The area between Salt Lake Central and 700 East constitutes a Regional Activity Center. The eastern portion of the University campus, the medical center, and Research Park constitute large infill opportunities.

Foothill Boulevard is a congested corridor through which run several transit lines including a proposed transit service to Park City. Foothill Boulevard is the most heavily used access corridor to the University of Utah area from the east side of the Salt Lake Valley. The University of Utah area is the second largest transportation destination in the Salt Lake Valley and is growing quickly. The area near Parley's Way is forecasted to become an activity center. Preserving transit speeds and schedule reliability on Foothill Boulevard is essential.

Wasatch Boulevard in the East Millcreek, Cottonwood Corporate Center, Cottonwood Heights areas provides access to large residential communities and several popular canyons. Efforts are continuing to preserve these popular canyons that also serve the Region as vital watersheds. It is anticipated that the gravel pits in this area will become a significant activity center. Transit has been suggested as a premier tool in these preservation and development efforts.



Solutions:

- Expand the hours of service on UTA's "2 the U" bus line and extend that service to Research Park.
- Add a transitway connection between Mario Capecchi Drive near Pollock Road and Arapeen Drive, if feasible, to provide a more direct transit connection between the University of Utah Medical Center and Research Park.
- Extend the service to Park City.
- As funding becomes available, incrementally add reliability and speed improvements by implementing transit signal priority, queue jumpers, and transit lanes to the line out to Parley's Way / Foothill Boulevard.
- Create a second service on the line for Millcreek, Cottonwood Corporate Center, and the Cottonwood Canyons.
- Incrementally implement reliability and speed improvements such as transit signal priority, queue jumpers, and transit lanes to the line.

Expected Outcomes: The expected outcomes of this project would be the following: a high visibility transit mall east/west through Downtown Salt Lake City; large ridership gains in the corridor; reduced vehicle miles traveled and congestion associated with Research Park, the Medical Center, and Cottonwood Corporate Center; the preservation of transit travel speeds and schedule reliability throughout the corridor; new, high quality recreational and worker service to and from Park City; and, reduced traffic impacts to the Cottonwood Canyons and potentially Millcreek Canyon.

State (Three Phases)

Problems, Needs, and Deficiencies: Route 200 in the northern portion of State Street has the highest bus ridership in the UTA system despite having relatively low travel speeds, a moderate probability of standing loads, and a somewhat unreliable schedule (10 percent). Both Routes 200 and 201 could perform even better with capital and operating improvements. The neighborhoods near State Street between about 300 North and about 2100 South have dense concentrations of disadvantaged people. High activity areas include the stretches of State Street between downtown and 3900 South, at 5400 South, near Fashion Place Mall, between 9400 and 11800 South, and west of Interstate 15 between 11800 and 12300 South. The Corridor also has many locations ready for infill development including large areas near downtown, between 2100 and 5400 South, near Fashion Place Mall, between 8000 and 10000 South, and between 11800 and 12300 South.

Solutions:

- Expand the schedule of operations on Route 201.
- Incrementally consolidate and add full amenities to transit stations along the State Street alignment.
- Incrementally add reliability and speed improvements such as transit signal priority, queue jumpers, and exclusive transit lanes to the line as funding permits.



Expected Outcomes: The expected outcomes of this project would be the following: greater transit operational efficiencies in the corridor; improved ridership in the corridor; more reliable service; increase economic development; and support for transit oriented development being proposed for the corridor.

Draper Line (North)

Problems, Needs, and Deficiencies: TRAX does not extend to Draper City. Draper is a growing community with increasing congestion. Draper proposes to encourage development of property near 12400 South and wants transit support for that area. The property near 12400 South is a current infill area and is forecasted to become an activity center.

Solutions:

- Extend TRAX south to 12300 South.

Expected Outcomes: Increased TRAX ridership. Improved land use densities and greater ridership in the 12400 South area.

Redwood (Three Phases)

Problems, Needs, and Deficiencies: UTA Route 217 on the northern segment of Redwood Road is a high performing route that could do even better with capital investments and improvements in operations. Current serviced operates at acceptable speeds, but is moderately unreliable, and has a high potential for standing loads. Redwood Road near North Temple and between 800 and 1300 South has high densities of disadvantaged people. The area near North Temple, between 2100 and 3100 South, and at 5400 South and the Mid-Jordan Line have regionally significant economic activities. The corridor also offers infill opportunities at nearly every major intersection.

Solutions:

- Expand the schedule of operations on Route 218.
- Incrementally consolidate and add full amenities to transit stations along the Redwood Road alignment.
- Incrementally add reliability and speed improvements such as transit signal priority, queue jumpers, and exclusive transit lanes to the line as funding permits.

Expected Outcomes: The expected outcomes of this project include: enhanced transit operational efficiencies within the corridor; increased transit ridership; more reliable service; improved service for disadvantaged populations, and support for the transit oriented development being proposed in the corridor.

3900 / 3500 South (Three Phases)

Problems, Needs, and Deficiencies: Route 35M (MAX) in the western segment of the corridor is Utah's first Enhance Bus (BRTI) line with a small segment of Bus Rapid Transit (BRTIII) near Valley Fair Mall. It is felt that this route could perform even better if extended east across the Salt Lake Valley, allocated more capital, and by improving opera. The Millcreek and Valley Fair Mall areas have moderate densities of disadvantaged people. Existing or forecasted activity centers in the corridor include Downtown Magna, 5600 West, the Valley Fair Mall, West Millcreek area, St. Marks Hospital, and the Highland Drive area. The Valley Fair Mall, the area



between Redwood Road and the Jordan River, West Millcreek, and the Cottonwood Mall are identified as large infill areas.

Solutions:

- Expand the schedule of operations on 35M.
- Expand the exclusive transit lane as 3500 South undergoes improvement. Incrementally consolidate and add full amenities to transit stations along 3300 South and 3900 South.
- Incrementally add reliability and speed improvements such as transit signal priority, queue jumpers, and exclusive transit lanes to the line as funding permits.

Expected Outcomes: The expected outcomes of this project would be the following: greater transit operational efficiencies in the corridor; increased ridership; more reliable service; improved service for disadvantaged populations, and support for the transit oriented development being proposed in the corridor.

5600 West (Two Phases)

Problems, Needs, and Deficiencies: The northern corridor segment includes the Salt Lake City International Airport, the third largest activity center in Salt Lake County, and the International Center which is a moderate density employment center. 5600 West provides access from a large suburban and exurban areas. A freeway with a transit line is proposed in this corridor. However, it is proposed that transit come first to support lessen auto dependence in the corridor. The area near 5400 South has a significant density of disadvantaged people. Areas near 3500 South and the Daybreak development on the south end of the corridor are forecasted to become activity centers.

Solutions:

- Initiate a Bus Rapid Transit (BRTIII) line and make operational improvements between 2700 South and 6200 South.
- Make capital improvements north and south.

Expected Outcomes: Provide faster, more-reliable public transportation services with the corridor; increase travel choices; and, support local government land-use objectives.

I-80

Problems, Needs, and Deficiencies: This section of I-80 was constructed nearly 40 years ago and has essentially exceeded its anticipated lifespan. There are areas in the corridor where the facility is deteriorating. It is subject to heavy traffic congestion during peak hours, and has a higher than expected accident rate. There are 12 bridge structures that are structurally deficient. There are 10 bridge structures that are functionally obsolete. Most of the bridges were not designed to meet current earthquake standards. The pavement needs to be completely replaced. The safety problems are, to a large degree, rooted in its design. Current travel speeds and traffic volumes are higher than what the facility was designed for in the 1960s. The facility is plagued with numerous drainage problems. Culverts tend to be partially filled with dirt, storm drains are deteriorating, etc.

Solutions: The following project objectives have been identified that would either minimize or eliminate problems: (1) preserve the infrastructure in the corridor by providing adequate drainage and structurally adequate pavement and bridges; (2) provide a multi-modal system that



accommodates future travel demand and improves operations; (3) implement measures designed to improve highway safety where economically justified; (4) optimized capacity through the utilization of TSM and TDM; (5) provide for multi-modal transportation opportunities where feasible; and (6) improve transit operations in the corridor.

Expected Outcome: The expected outcomes of the improvements in the corridor would include the following: structurally adequate pavement, bridges, and other infrastructure; increased capacity and improved operations; enhanced safety, retaining of I-80 as a significant link in the trans-continental transportation system; increased use by multi-modal and transit patrons; and preservation and enhancement of the economic viability of the area that I-80 serves.

SR-201

Problems, Needs, and Deficiencies: This corridor contains several sections, and facilities between I-215 and the Tooele / Salt Lake County boundary that are proposed for various improvements. The primary needs in this corridor are greater capacity, improved operational efficiencies, and increased safety, particularly at existing intersections / Interchanges. Much of the growth that will add to the need for greater capacity comes from the industrial employment centers that are anticipated for the areas that the corridor serves. In particular, there is a trend for transportation-oriented or trucking companies to locate near the corridor with the potential of greatly increasing truck traffic and movement of goods. There is a need to replace at-grade intersections with interchanges to: (1) meet safety concerns; (2) permit travel at design speeds; (3) increase capacity; and (4) to add an overpass at 4800 West.

Solutions: The addition of two auxiliary lanes (one in each direction), in conjunction with the upgrade of the Interchange, an over pass at 4800 West, new interchanges at 7200 West and 8400 West, the upgrade of the interchange at I-80, and other proposed projects will provide the improvements needed to enhance the function of this important highway.

Expected Outcome: The expected outcome of planned improvements is to provide greater east / west capacity for anticipated traffic in the corridor. In particular, the movement of goods should be greatly facilitated, and add to the economic competitiveness of the Wasatch Front Region. This facility is intended to compliment and augment I-80, which is located about two and one-half miles to the north and provides one of the most significant east / west transcontinental interstate routes in the Nation.

11400 / 11800 South

Problems, Needs, and Deficiencies: Current and projected rapid growth in the 11400 / 11800 South corridor is creating a need to increase capacity on existing sections, as well as construct new sections of roadway. Along with population growth, a substantial increase of business activity and employment opportunities is also expected. In the southwest part of Salt Lake County, there is a need to complete the transportation network in both north-south and east-west directions. This corridor will play a significant roll in providing added capacity in the east-west direction between SR-111 and I-15. Several intersections and two I-15 interchanges in the study area are, or will be operating at above capacity during the peak hours by 2040. This congestion is expected to cause difficulties and delays for commuters and local travelers, as well as increases in emergency service response times. In addition, without the capacity improvements, economic development will suffer, adversely affecting employment opportunities and local government finances.

Solutions: In order to relieve congestion the I-15 interchanges in the study area that are expected to be over capacity by 2040, a new I-15 Interchange at 11400 South is proposed. In



addition, the existing facility is proposed for widened to six lanes. A new river crossing and the linking of the existing sections of 11400 / 11800 South with new roadway sections will complete the highway from I-15 to SR-111. Intersection improvements at the Bangerter Hwy., and Jordan Gateway / Lone Peak Parkway, as well as improvements to 10600 South and 12300 / 12600 South are assumed.

Expected Outcome: The expected outcomes include: (1) increased capacity and improved operations at several intersections and ramps on I-15 in or near the corridor study area; (2) economic stimulation due to an improved development environment, giving rise to increased employment opportunities and sales tax revenues; (3) the addition of a much needed east-west route contributing to the completion of the arterial network in the southwestern part of Salt Lake County; and (4) minimized impact to the natural and social environments.

10400 / 10600 South

Problems, Needs, and Deficiencies: Congestion on east-west roadway facilities is becoming a more difficult problem each year. It is hampering mobility in the area as heavy growth continues in the southwestern part of Salt Lake County. Travel demand is growing at a rapid rate and capacities need to be increased, particularly on 10400 / 10600 South. The two lanes are unable to meet current demands of an arterial; lack paved shoulders; have only partial curb, gutter, and sidewalk; and have insufficient sight distances in some areas. Consideration needs to be given to geometric design, signal operations / coordination, transit, and non-motorized facilities deficiencies. Lastly, new residential and commercial growth does not have adequate access to a minor arterial street, which limits access to the regional transportation system.

Solutions: Add capacity and extend the corridor further to the west to connect with SR-111, in order to complete the regional transportation system. Some specific solutions would include the following: (1) widening of the corridor to a consistent cross-section with additional travel lanes, shoulders curb and gutter, park strips, and sidewalks; (2) adding bicycle lanes to the corridor, in accordance with regional and local master plans; (3) widening and improving intersections along the corridor to provide dedicated right and / or left turning lanes, and upgraded traffic signals; (4) implementing additional raised center-island medians at locations along the corridor for access control and access management purposes; and (5) accommodating transit service along the corridor by providing 10-foot shoulders that can be used for bus loading and unloading.

Expected Outcome: The proposed action is intended to ensure that existing and future traffic is adequately accommodated. Other objectives of the proposed action include: (1) enhanced operational characteristics; (2) improved operation of the major signalized intersections; and enhanced opportunities to incorporate multi-modal facilities within the corridor.

4500 / 4700 South

Problems, Needs, and Deficiencies: This facility essentially traverses most of the Salt Lake Valley in the east / west direction starting at I-215 (east) and ending at 6400 West. It is classified as a principal arterial and as such plays a significant role as a roadway facilitating traffic in the east / west direction. Residential and commercial development in the corridor area has added to the considerable traffic congestion evident on this facility. Many adjacent commercial developments have compromised the proper functioning of the roadway and better access management is needed. Often during the peak hour there is a complete breakdown of the traffic flow from I-15, particularly westbound at the major intersections, such as Redwood Road, I-215 (west), and Bangerter Highway. There is a need to add two lanes throughout the entire corridor, along with other improvements, in order to increase roadway capacity. Also, there is a need for more transit facilities in the corridor.



Solutions: The 2040 RTP calls for the addition of two travel lanes (two lanes in each direction). In addition, operational and safety improvements at the major intersections, bicycle / pedestrian improvements, ITS, TDM, and TSM type measures need to be implemented. Public transit in the form of a Bus Rapid Transit II (BRT II) is also being proposed to serve a portion of the corridor, between about 600 West and Redwood Road.

Expected Outcome: Overall, planned improvements are expected to provide increased capacity within the 4500 / 4700 South Corridor, improved operations at the intersections / interchanges, improved safety, and improved bicycle and pedestrian facilities. Also, improved transit service in a portion of the corridor, particularly at employment / activity nodes can be expected.

3500 South

Problems, Needs, and Deficiencies: Traffic volumes in the 3500 South corridor already exceed capacity, particularly at intersections. In the corridor there are variations in the shoulder widths and medians, and inconsistencies in the number of travel lanes. In addition, poor access control to the adjacent properties has greatly compounded the traffic congestion. Travel times are expected to double by 2040 if improvements are not made. Adding to the problems in the corridor is poor pavement condition, which hampers the roadway's operational efficiency. Mass transit is also being hampered by slow speeds and lack of transit support facilities (waiting areas, sidewalks, crosswalks, etc.). Lastly, pedestrian and bicycle use is being discouraged because of the lack of adequate facilities. Beside the transportation related problems, there are also issues relating to land use, aesthetics and urban design, and street infrastructure.

Solutions: Consideration should be given to strategies that include spot improvements, better management of signal operations at intersections, and implementing general upgrades to improve traffic flow, such as access management. Improving transit facilities and service would reduce congestion by attracting more transit riders. Improvement would include more safe, accessible, and easily identifiable bus stops and informational kiosks, increasing transit frequency, timeliness, and reliability, and providing express bus service with signal prioritization during peak hours. Vehicle, pedestrian, and bicycle safety improvements at intersections and mid-block should be considered.

Expected Outcome: It is expected that implementing planned capacity and other improvements would provide an efficient and safe transportation arterial; allow safe and convenient access to the local businesses adjacent to and close by the corridor; and would accommodate the needs of multi-modal travel, including transit, pedestrian and bicycle modes.

12600 South

Problems, Needs, and Deficiencies: The southwestern part of Salt Lake County is growing at a very rapid rate. As growth continues, ever increasing number of vehicles are using the east-west roadway facilities, of which 12600 South, categorized as a principal arterial, is a part. Future residential and commercial development will dramatically increase travel demand and exceed the existing capacity of 12600 South and its intersections with other roads. In addition, there is a need to extend 12600 South to the west, from 4800 West to 8000 West. This action will allow urban development along this corridor to be served, and a portion of the regional transportation system to be completed. The 12600 South corridor has several problems that affect its ability to accommodate current and future travel demand. These deficiencies include: narrow, unimproved two-lane roadway sections; some sections not meeting design standards, inefficient signalization at intersections; and poor access to other principal arterials.



Solutions: Add capacity in the form of additional travel lanes, turning lanes and medians. Improve the operational characteristics of intersections, including channelization, signal cycle, and other improvements that will increase the roadway's functionality. Enhance safety by adding medians, shoulders, curb and gutter, park strips, and sidewalks. Increase capacity to accommodate inter-modal facilities within the corridor, including buses, bicycles, pedestrians, trails, and other non-motorized modes.

Expected Outcome: The expected outcomes would include improved east-west regional travel, enhanced functionality and safety, improved operations at the various intersections, corrected design deficiencies, more choice with regard to modes of transportation, and improved access to a principal arterial and the regional transportation system.

Mountain View Corridor

Problems, Needs, and Deficiencies: Needs in the Mountain View Corridor area result from a rapidly growing population and employment opportunities. The existing roadway network in the area consists of minor arterial streets and is not well suited to accommodate high volume and longer-distance traffic. Existing transit consists of local bus and some express bus service. Existing deficient transportation conditions, which will worsen in the future, have resulted in the following problems: lack of adequate north-south transportation capacity in western Salt Lake County; lack of adequate transportation capacity in northwest Utah County; increased travel time and lost productivity; lack of transit availability; reduced safety due to increased roadway congestion; and lack of continuous pedestrian / bicycle facilities.

Solutions: The problems noted above can be addressed with the following improvements. First, build a freeway between I-80 and SR-201 with a total of four lanes (two lanes in each direction). Second, build a freeway from SR-201 to the Salt Lake / Utah County line with a total of six lanes (three lanes in each direction). Third, implement congestion management programs, such as HOV lanes (one in each direction), ramp metering, and Intelligent Transportation System (ITS) measures that would manage traffic flow. Fourth, build interchanges so that various arterial streets can be interconnected with new facilities in the Mountain View Corridor. In addition, provide transit facilities in the form of express bus in the Mountain View Corridor, and in the 5600 West Corridor, from 12600 South to I-80, provide transit facilities, such as bus rapid transit, or other transit service as demand warrants. Additional facilities for non-motorized modes are planned for the Mountain View Corridor to accommodate both pedestrian and bicycle travel.

Expected Outcome: The expected outcomes from this major improvement are increased mobility resulting from reduced congestion, increased availability of transit and other travel modes, increased economic opportunities, improved access to adequate transportation facilities for residential areas and improved regional mobility.

I-15

Problems, Needs, and Deficiencies: The problems and needs associated with this project affect both Salt Lake and Utah Counties. Currently, there is significant traffic congestion in the I-15 corridor in southern Salt Lake County (from 10600 South to the County line) as well as in Utah County from the Salt Lake / Utah County line to Santaquin. There are segments within the described termini of this major freeway improvement project that do not meet current safety standards. Because of rapid population and employment growth, the corridor is fast approaching capacity. Conditions will worsen by 2040, resulting in unacceptable levels of service. Projected growth is expected to double the traffic volumes on I-15 by 2040, resulting in increased travel time and crash rates, which will adversely affect the quality of life in the region.



Solutions: The following improvements are being proposed in the corridor in an effort to solve the pressing problems of capacity, safety and other needs: Expand the freeway from six to ten lanes (five lanes in each direction) in Salt Lake County and expand lanes as needed (to a maximum of nine lanes) in Utah County. There are also traffic management options, including TSM, TDM, and ITS programs, that are proposed for improving the project's operating efficiency, reducing the vehicular demand during peak travel times, and improving safety and efficiency through the application of advanced technology. Public transit alternatives such as commuter rail, light rail, and bus service will play an important role in reducing traffic on I-15.

Expected Outcome: The project is expected improve national, regional, and intra-county mobility for people and goods, provide multi-modal transportation choices as part of the overall transportation network, provide cost effective transportation solutions, minimize and mitigate impacts to the natural and cultural environments, to be a part of a transportation system that is compatible with locally adopted growth and development policies and land use plans; and to eliminate design deficiencies that hamper operations and create safety concerns.

Highland Drive

Problems, Needs, and Deficiencies: Due to the rapid population and employment growth in southeast Salt Lake County (Cottonwood Heights, Sandy, and Draper), transportation demands have increased significantly. Existing roadways are becoming increasingly congested, necessitating increasing roadway capacities in the area. Specifically, there are needs for: improved mobility for both longer and shorter distance travel; improved access within the transportation corridor area; and policies to keep the transportation corridor open, or free from additional development so that it will be feasible to provide more capacity. In addition, there is a need to extend the Highland Drive Corridor southward in an effort to complete an interconnected regional transportation network. Highland Drive has been functionally classified as a principal arterial and, therefore, is intended to play a significant role in providing north-south mobility.

Solutions: Add capacity by widening existing sections of Highland Drive from 2 to 4 lanes, build new sections of 4-lane roadway, and improve existing intersection operations. Where appropriate, provide pedestrian, bicycle, and mass transit (express and local bus) facilities throughout the Corridor, as appropriate.

Expected Outcome: Completion of planned improvements in the Highland Drive Corridor is expected to ameliorate severe traffic congestion (peak hour) on certain sections of 1300 East and 700 East; minimize or eliminate the use of local streets for through traffic (for the lack of an alternative route); and generally improve access / mobility in the southeastern part of Salt Lake County.

Redwood Road

Problems, Needs, and Deficiencies: The projected 2040 peak hour traffic demand exceeds available transportation capacity. Redwood Road must be improved in order to provide a more safe transportation facility for existing commercial and residential development and to more adequately move traffic. Currently, bicycle and pedestrian facilities are deficient and do not adequately accommodate users. There is some conflict with wildlife in the corridor.

Solutions: Increase the number of lanes from 2 (sometimes 3 lanes) to 5-lanes with two through lanes in each direction. This will increase the capacity of Redwood Road to accommodate existing and anticipated 2040 traffic, reduce congestion along the project corridor; and enhance transportation safety for all users. Redwood Road will be improved in accordance with current design standards. Bicycle lanes and shoulders will be added where necessary,



intersections will be upgraded, medians will be added in some locations, and wildlife corridor connectivity will be addressed. Plans call for wildlife crossings to be constructed at three locations along Redwood Road.

Expected Outcome: Planned improvements should accomplish the following: improve connectivity between existing and proposed transportation arterials and highways; provide a transportation infrastructure that meets current roadway standards and that will be an asset to the communities the facility serves; provide a transportation facility that operates an acceptable level of service and meets UDOT's goal of a level of service "D"; maximize long-term roadway capacity by managing access concurrent with UDOT policies and existing and planned land uses; improve emergency response time and availability of emergency response teams; and reduce conflicts with wildlife living near or crossing Redwood Road.

SR-111

Problems, Needs, and Deficiencies: Residential and commercial growth will mean substantially more traffic volumes on SR-111 and other roads in the area. There is room to develop an additional 200,000 housing within the area served by the highway, with a population of close to 600,000 people. Currently, SR-111 is a two-lane facility. As the west side of Salt Lake County continues to grow, capacity, safety, and other deficiencies will need to be addressed. Since SR-111 is planned to function as a principal arterial and is expected to carry relatively high speed and high volume traffic, there is a need to increase the number of lanes from two to four lanes. Principal arterial roadways are spaced about every two or three miles. The SR-111 corridor is needed on the west side of Salt Lake County to help complete the principal arterial roadway network.

Solutions: The proposed solutions to the needs outlined above are as follows: Provide two additional travel lanes (one in each direction); Improve the operations and safety of the existing and future SR-111 intersections by providing turning lanes and other improvements; implement ITS, TDM, and TSM strategies; and accommodate non-motorized travel, such as pedestrian and bicycle facilities.

Expected Outcome: With the planned improvements for the project, the following outcomes are expected: Improved capacity to accommodate increased traffic demand traveling at relatively high speed; the construction of efficient and safe intersections; implementation of ITS, TDM and TSM strategies; accommodation of non-motorized modes of transportation; and TDM, and TSM strategies; and reduced conflicts with wildlife living in proximity to the corridor.

8.10

SAFETEA-LU PLANNING FACTORS

The Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users requires regional and metropolitan planning organizations to assure that the transportation planning process provides for the consideration of projects and strategies in accordance with eight general planning factors. These factors are designed to assist planners in developing comprehensive solutions to area transportation needs. The SAFETEA-LU planning factors for improving transportation system management, operation, efficiency and safety are consistent with the goals and objectives of the 2040 RTP. The following paragraphs list the eight SAFETEA-LU planning factors and describe how the 2040 RTP has considered each requirement. Appendix W provides a brief summary of federal guidance on interim SAFETEA-LU provisions.

1. **Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.**



The 2040 RTP provides a network of improved transportation facilities, both highway and transit, which are essential to the economic vitality of the region. The 2040 RTP calls for the modernization of a critical portion of the local interstate freeway system, an improved regional highway network, Bus Rapid Transit, enhanced bus service, the extension of the light rail system, regional commuter rail, and increased attention to intermodal center locations and development. The facilities improvements recommended by the 2040 RTP would provide increased accessibility to regional employment opportunities for both individuals who rely on private automobiles and for persons using public transportation. Improved local and regional accessibility and connection to large employment centers, business districts, commercial developments, industrial parks, educational institutions, shopping malls, neighborhoods, and area airports will promote the Wasatch Front Region's competitiveness, productivity, and efficiency in the 21st Century.

2. Increase the safety of the transportation system for motorized and non-motorized users.

The 2040 RTP incorporates the recommendations of the Utah Comprehensive Safety Plan developed by UDOT with a goal of reducing crashes and eliminating fatalities on streets and highways. The WFRC participates on UDOT's Safety Leadership Team and is a sponsor of UDOT's "Zero Fatalities" campaign.

The highway and transit facilities proposed in the 2040 RTP will increase the safety of motorized and non-motorized users through new construction and other improvement projects. While safety related improvements, because of their relatively small scale, are not specifically listed or mapped, safety issues will be given due consideration through the WFRC's Transportation Improvement Plan (TIP) project selection criteria. Controlling facility access, expanding freeway capacity, and putting traffic on streets that are designed to adequately accommodate demand improves overall network safety. Major highway improvements, widening projects, and facility access control through congestion management systems all combine to enhance travel safety. The 2040 RTP includes a Regional Bicycle Facilities Plan and suggested policies for enhancing pedestrian access through appropriate urban design, site planning, subdivision design, etc. These policies can serve as guidelines for local governments to consider in land use decisions. One of the goals of the regional Bicycle Facilities Plan is to identify improvements that enhance the safety of bicycle travel. The policies for pedestrian facilities and access will also help promote safety.

3. Increase security of the transportation system for motorized and non-motorized users.

The WFRC continues to coordinate its planning processes with the Utah State Division of Public Safety and Homeland Security and with the Utah Local Governments Association for Emergency Services and Security to identify security issues regarding the transportation system. Both UDOT and UTA have established plans that address emergency and security issues.

The highway and transit recommendations in the 2040 RTP will increase security for motorized and non-motorized users through new construction and improvement projects that provide alternative routes and modes, especially through area choke points. For UTA, security is an important consideration in designing and operating rail and bus services. UTA employs security personnel to ensure the personal safety of its patrons. Park-and-ride lots are well lit and frequently patrolled. Finally, telephone service is provided in the event of an emergency.

4. Increase the accessibility and mobility of people and freight.



One of the goals of the 2040 RTP is to “Increase transportation mobility and accessibility for both persons and freight, thus promoting economic vitality in the region.” The roadway and transit improvements recommended in the 2040 RTP will help reduce area congestion and enhance accessibility. Increased mobility is provided by a variety of travel options including new or widened highways and primary arterial streets, light rail transit, BRT, enhanced bus service, new regional commuter rail transit service, bus transit hubs, planned intermodal centers, and additional transit amenities, such as park-and-ride lots. The 2040 RTP anticipates an increase in the number of miles of bus service, including expansion of weekend and night routes, and additional paratransit service to major travel demand generators. Freight movement, both interstate and intrastate, will benefit from the reconstruction and modernization of the local freeway system, shifting a portion of trips to transit modes, improvements to the regional highway network, and other access enhancements. The region’s highway system will continue to provide convenient access to air cargo facilities. Also, as part of UTA’s recommended regional commuter rail project, several of the Union Pacific Railroad’s intermodal facilities have been consolidated into an intermodal freight transfer center in Salt Lake City. This new hub will improve the movement of rail freight traffic.

5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.

The Wasatch Choice for 2040 process, which developed a Vision for future growth and Growth Principles to guide development in the Wasatch Front Region, included a significant amount of input on what kind of future development the public would like to see. One of the purposes of this effort was to identify quality of life issues. The WFRC developed 2040 RTP recommendations for highway and transit improvements consistent with the growth principles and in support of an overall high quality of life for those residing throughout the Region.

State and local plans for growth and economic development were part of the foundation of the 2040 RTP transportation recommendations. The WFRC staff met with officials of every municipal and county to ensure that socio-economic projections developed by the WFRC were consistent with local plans. In addition, the Utah State Economic Development Office reviewed the 2040 RTP recommendations and provided input on priorities as they affect further economic growth in the Wasatch Front Region.

Concern for the environment of the Wasatch Front Urban Area is an integral part of the 2040 RTP planning process. Recommended facilities are considered with respect to environment impacts at the system level, utilizing maps and other information identifying environmental concerns. As facilities are brought forward through the planning, design, and construction process, appropriate environmental reviews are conducted by qualified individuals. By attempting to minimize travel delay, energy conservation is promoted through successful congestion management strategies, increased system capacity, and the provision of transit alternatives. The 2040 LRP Update provides a number of recommendations for improved regional transit, including an increased emphasis on promoting UTA’s Rideshare Program. These efforts combine to enhance mobility and accessibility to home and work, while minimizing impacts on the natural environment and reducing energy use.

6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

The 2040 RTP recommends the development of intermodal centers and park-and-ride lots at optimum locations to improve connectivity of the regional transportation system. The 2040



RTP also promotes shared opportunities for multimodal transportation development including light rail transit, commuter rail, augmented bus service, and pedestrian and bicycle pathways. Identified park-and-ride lots are located near automobile, pedestrian and bicycle connections for access to bus service and carpools. Feeder bus service to the light rail system is provided for in the 2040 RTP, along with transit hubs where transfers can take place between different travel modes. Transit-to-transit connections are possible, as well as transit to aviation connections. Access to airport cargo facilities, railroad freight service, Amtrak passenger rail service and intrastate / interstate bus lines (i.e. Greyhound) is accommodated for at planned intermodal facilities. One of the 2040 RTP'S goals is to "Provide an equitable distribution of transportation modes, facilities and benefits to permit all geographic, economic and social groups to effectively participate in essential urban activities."

7. Promote efficient system management and operations.

The WFRC has both congestion management and pavement management processes. It also encourages implementation of transportation demand management and transportation system management strategies developed to promote efficient system management and operations. These strategies rely on specific recommendations to be implemented as existing highway facilities are improved or new facilities constructed. Each capacity widening project recommended in the 2040 RTP is accompanied by a list of specific methods to improve system efficiency. These lists include such advanced traffic management system strategies as access management plans, fiber optic cables for the implementation of the region's ITS, message signs, cameras and travel demand concepts designed to promote the efficient use and management of the existing and proposed transportation network. The WFRC, in cooperation with UDOT, UTA, and local communities, has prepared an ITS Architecture Plan to guide the implementation of ITS projects for both highway and transit.

8. Emphasize the preservation of the existing transportation system.

The financial analysis section of the 2040 RTP assures that adequate funding for maintenance, operation, and preservation of highway and transit facilities is provided. The 2040 RTP assumes adequate funding to preserve existing streets and highways. This is a priority of both UDOT and local governments. UDOT has recently updated its asset management program that identifies funding levels needed to maintain and preserve UDOT's pavements and structures, and to improve the safety of its system. These new estimates of funding needed to preserve the existing system, show an increase from previous estimates and were included in the financial plan. This program, combined with proper access management, incident management, and the updating of signal timing, will help preserve the existing transportation system. The 2040 RTP also recommends the upgrading of transit facilities and the replacement of all vehicles on a regular schedule. The transit portion of the 2040 RTP assumes replacement of buses every 12 years and recommends the construction of additional maintenance facilities. Over the years, UTA has gained a very positive reputation for maintaining its facilities and is not expected to change its maintenance policies.

AIR QUALITY CONFORMITY DETERMINATION

8.11

Weber, Davis, and Salt Lake Counties, Salt Lake City, and Ogden City are designated as non-attainment (or maintenance) areas for one or more air pollutants. Specifically, there are four areas in the Wasatch Front region, which are subject to air quality conformity regulations. These areas are listed in Table 8-11.



TABLE 8-11**WASATCH FRONT REGION NON-ATTAINMENT DESIGNATIONS**

AREA	DESIGNATION	POLLUTANT
Salt Lake City	Maintenance Area	Carbon Monoxide (CO)
Ogden City	Maintenance Area	Carbon Monoxide (CO)
	Moderate Non-Attainment Area	Particulate Matter (PM ₁₀)
Salt Lake County	Moderate Non-Attainment Area	Particulate Matter (PM ₁₀)
Salt Lake (including Davis, Salt Lake, and portions of Weber, Box Elder, and Tooele Counties)	Moderate Non-Attainment Area	Particulate Matter (PM _{2.5})

An analysis of projected vehicle related emissions from the transportation network defined in the 2040 RTP shows that vehicle emissions will pass the conformity tests for each non-attainment area along the Wasatch Front. A summary of the mobile source emission budgets as defined in the State Implementation Plan is given in Table 8-12. The analysis demonstrating conformity is contained in “Air Quality Memorandum 27”, a copy of which can be found in [Appendix X](#).

TABLE 8-12**MOBILE SOURCE EMISSION BUDGETS**

AREA	POLLUTANT	YEARS	SIP BUDGET (tons/day)
Salt Lake City	CO	2012 - 2040	278.60
Ogden City	CO	2012 - 2020	75.36
	CO	2021 - 2040	73.02
	PM ₁₀ *- NOx	2007 - 2040	4.57
	PM ₁₀ – Dust*	2007 - 2040	2.28
Salt Lake County	PM ₁₀ – NOx**	2012 - 2040	32.30
	PM ₁₀ – Dust	2012 - 2040	40.30
Salt Lake***	PM _{2.5} - NOx	2015-2040	76.85
	PM _{2.5} – Direct Particulates	2015-2040	1.16

*Use “Build less than 1990” Test

**State air quality rules allows for a portion of the surplus primary PM10 budget (PM10 – Dust) to be applied to the PM10 secondary (PM10 – NOx) budget.

Use “Build less than 2008” Test

Vehicle Emission Modeling

Vehicle emissions were estimated using the EPA approved Mobile6.2 model. After March 2012, all conformity determinations will be required to use EPA’s latest vehicle emissions model known as MOVES. Data from the WFRC travel model was used to describe the transportation network for the analysis years 2007, 2009, ,2016, 2020, 2030, , and 2040. The travel model provides data for VMT,

hourly distribution of VMT, speed distribution of VMT, and highway facility type distribution of VMT, for each analysis year. Local data was prepared to determine the age distribution of the vehicle fleet using DMV data for 2007, and the vehicle type distribution using UDOT vehicle classification counts for 2007. Local emission inspection and maintenance programs for each county were also coded for input to the Mobile6.2 model.

OVERALL MITIGATION

8.12

Organizations involved in transportation planning have been encouraged by federal agencies, such as the Federal Highway Administration, Federal Transit Administration and others to be more sensitive to environment needs and to incorporate principles of the National Environmental Policy Act into their planning processes. With this encouragement in mind, efforts were made during the WFRC's current planning process to put more emphasis on resolving environment issues, and to seriously consider NEPA principles. Possible impacts, many of which are required to be considered by NEPA, associated with the projects proposed in the 2040 RTP have, in a general way, been identified. In addition, possible mitigation actions that could be taken if environmental impacts could not be avoided were also addressed. General guidelines are listed here to be used as projects are advanced in the project development process. (Note: A document prepared by the Southeast Michigan Council of Governments' entitled, "Integrating Environmental Issues in the Transportation Planning Process: Guidelines for Road and Transit Agencies," was used as a resource in the preparation of this section of the 2040 RTP concerning mitigation of impacts.)

Federal transportation statutes dictate a series of requirements for the regional transportation plan and Transportation Improvement Program. Current federal legislation - the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU, contains a requirement that the RTP include "a discussion of types of activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan. This discussion shall be developed in consultation with Federal, State, and tribal wildlife, land management, and regulatory agencies."

In essence, this process as applied to the Plan involves three-steps: (1) Defining and inventorying environmentally sensitive resources; (2) identifying and assessing likely impacts on these areas from RTP projects; and (3) addressing possible mitigation at the system-wide level. The process is designed to identify, early on, possible project impacts on environmentally sensitive resources and to provide this information to implementing agencies and elected officials for use in making transportation related decisions. The analysis was conducted on a regional level only. It was determined that the outcome of this analysis should alert the implementing agencies as projects are developed of environmental sensitivities and possible mitigation opportunities.

Mitigation measures can be identified in the planning process and are considered in the 2040 RTP. However, consideration of how impacts that are unavoidable can be mitigated should be undertaken in "corridor studies" and in the environmental impact statement preparation phase of project development. Thus, the discussion of mitigation in this document is just the beginning of a relatively long process of identifying impacts and mitigation measures as transportation projects are developed.

Regardless of the type of project or the resources that may be impacted, sound guidelines need to be considered and followed during the planning, design, construction, and maintenance of transportation projects. Good planning practices need to be followed to ensure a blending of sound construction techniques with desired environmental protection goals. There are two types of



guidelines that need to be addressed during the development and implementation phases of projects. These guidelines are for planning / design and construction / maintenance. For the purposes of this discussion, guidelines relating to planning and design are the focus, and are presented below. As for construction and maintenance guidelines, the AASHTO Center for Environmental Excellence's "Environmental Stewardship Practices, Procedures, and Policies for Highway Construction and Maintenance" should be referred to and is recommended for use in minimizing impacts of transportation projects.

Government Resource Agency Coordination

In August of 2009, a meeting sponsored by the WFRC was held with government resource agencies and other interested parties. Representatives from each of the MPOs and UDOT attended the meetings. The purpose of the initial meetings was to determine the needs and issues of each agency prior to the identification of projects recommended for inclusion in the 2040 RTP. These meetings were well attended with broad representation from three metropolitan water districts, the Bureau of Land Management, the Bureau of Reclamation, the Utah State Historical Preservation Office, the Utah Division of Natural Resources, the Utah Division of Water Quality, the Utah Division of Solid and Hazardous Waste, the Utah Division of Air Quality, the U.S. Corps of Engineers, the Utah Department of Agriculture, the Utah State Division of Parks and Recreation, the Federal Highway Administration, the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, and Weber Pathways, representing the bicycle and pedestrian interests. A third meeting was held in October 2010 to discuss possible or potential mitigation measures and individual projects. This meeting was also well attended with most of the same agencies being represented. The comments of the agency representatives relating to mitigation are briefly summarized below.

Air Quality: "Transportation planners need to be aware that we are currently in non-attainment status and that current air quality standards are under re-consideration."

Agricultural Land Preservation: There is a concern about the loss of prime agricultural land. What are we doing to mitigate these losses? The Utah Department of Agriculture would like to be "at the table" when these issues are considered.

Bicycle Facilities: Does uPEL show where there are bicycle and pedestrian facilities? Can it be expanded? Interchanges and intersections need to be more bicycle-friendly.

Coordination of Transportation and Utility Infrastructure Plans / Corridors: Utility agencies and companies, and agencies responsible for constructing and maintaining roadways, need to improve coordination in planning. Thus, the scheduling of construction projects for utility lines can be coordinated, where possible, with the construction and / or maintenance activities of the transportation agencies. At a minimum, agency officials need to be aware of the development plans of all other agencies who share a right-of-way. Sufficient advance notice of future highway construction projects is encouraged so that mitigation efforts can be planned and implemented. The sharing of corridors for transportation and utilities infrastructure helps reduce the impacts on the natural environment, particularly critical lands.

Water Conservation: Corridor planning should include planning for differing types of needs in the corridor such as water, power, etc .

Preserving Streams, Rivers, and Lakes: The environs of navigable streams, rivers, and lakes need to be protected as bridges and other road infrastructure are constructed. Measures also need to be taken to minimize effects on floodplains. The earlier regulatory agencies, especially the Corps of Engineers, can be brought into the planning process, the easier it will be to avoid natural resource conflicts.



Water Quality: Does uPEL have a layer for water source protection areas? Such data should be considered prior to any major plans.

Hazardous Wastes: The Dept. of Solid and Hazardous Waste has an interactive map that shows hazardous waste sites and other useful planning information.

Fish and Wildlife: Officials are aware that there is a desire for corridor preservation. They should be contacted early in the process. An upfront environmental study before the corridor is set will have a positive impact and avoid conflicts.

Alternative Energy: Alternative fueling stations and re-charging stations for plug-in hybrids should be included in the various long range plans.

Sustainable Communities: EPA is working with HUD on sustainable communities grants and there will be more federal programs of this nature coming on-line. Transportation planners should begin coordinating with HUD on this issue.

Historic and Pre-Historic Resources: This Utah state office is mostly working on areas that have possible impacts from projects under consideration. They do not have funding to review other non-threatened areas at present. It would be helpful if they knew where to concentrate their efforts in order to fill data gaps, it would help.

PERFORMANCE MEASURES

8.13

Performance measures for the 2040 RTP were identified for the goals and objectives listed in Table 8-13. Each measure was selected based on readily available data, both current and future. These measures will allow the WFRC staff to track historical trends in performance and set goals accordingly. It will also be possible to make regular reports to the Council on system performance using these measures. Table 8-13 presents a comparison of performance measures for the years 2007 and 2040. The 2040 RTP performance measures are presented with and without the 2040 RTP recommended improvements.

The performance measures in Table 8-13 illustrate how traffic conditions will change in the future from current conditions (2007), and what those future conditions would look like with the 2040 RTP and without the improvements included in the 2040 RTP (2040 “No Build”). As can be expected, traffic conditions in 2040 will be characterized by greater traffic volumes with more delay and congestion than traffic conditions in 2007. But the delay and congestion in 2040 is dramatically improved by implementing the 2040 RTP compared to the “No Build” scenario. A discussion of each of the goals and corresponding performance measures is presented below.

Economic – The performance measures selected to reflect economic vitality is home to work travel time for commuters, and freight travel time from freight centers to the nearest freeway. Commuter times were estimated for travel by private automobile and public transit, and are displayed as the percentage of commuter trips that are 20 minutes or less in duration. Implementing the 2040 RTP improves commuter and freight times which will contribute to economic vitality in the future compared to the “No Build” scenario.

Safety – Data and tools to forecast traffic accidents were not available for this report. In the Accessibility and Mobility section below, there is a performance measure for the quality of traffic



TABLE 8-13

GOALS AND PERFORMANCE MEASURES

GOALS AND PERFORMANCE MEASURES	2007 CURRENT CONDITIONS	2040 WITHOUT RTP	2040 WITH RTP
Economic			
Percentage of commute times less than 20 minutes by car	52%	36%	40%
Percentage of commute times less than 20 minutes by transit	21%	23%	27%
Freight center travel time to the nearest freeway (minutes)	4.5	5.7	4.9
Safety			
(See below "Percentage of PM Peak period VHT at LOS "D" or better")			
Security			
(See below "Percentage of PM Peak period VHT at LOS "D" or better")			
Accessibility and Mobility			
Daily VMT per capita	25	27	28
Percentage of PM Peak period VHT at LOS "D" or better	93%	60%	75%
Select corridor PM peak travel times*			
Average travel time	19.4	23.1	21.1
Percent change in travel time from 2007	--	19%	9%
Daily linked transit trips	87,666	175,272	221,639
Transit mode share: Linked Transit Trips / Total Person Trips.			
All Trips	1.3%	1.6%	1.9%
Peak Period Commuter Trips	4.7%	5.9%	6.8%
Percentage of commute times less than 20 minutes by car in disadvantaged population zones	68%	56%	59%
Energy / Environment			
Gallons of fuel consumed for automobiles	2,131,020	3,506,711	3,698,804
Percent change from 2007 vehicle emissions - PM _{2.5}	--	-31%	-24%
Percent change from 2007 vehicle emissions - NOx	--	-77%	-75%
Percent change from 2007 vehicle emissions - VOC	--	-51%	-48%
Percent change from 2007 vehicle emissions - CO	--	-17%	-9%
Percent change from 2007 vehicle emissions - CO ₂	--	64%	73%
Livability			
(See above "Average travel time" and "Transit Mode Share")			
Efficiency			
Annual person-hours of delay/capita	10.3	53.1	26.4
Preservation			
ROW Percentage: ROW owned or funded/ROW needed to implement the RTP	--	--	39%
*Estimated travel times for each of 23 corridors is given in Table 8-14.			

flow or “level of service” (LOS). The measure is the “Percentage of PM Peak Period Vehicle-Hours at LOS “D” or Better”. LOS “D” refers to traffic conditions that are unstable with little or no opportunity to change lanes or pass, but traffic is still moving although at a reduced speed. This is the “rush hour” traffic condition most drivers are familiar with, but it is not the “stop-and-go” forced flow condition designated as LOS “E”, or gridlock conditions designated as LOS “F”. While the percentage of traffic operating at LOS “D” or better is not a measure of safety, it does indicate that it is reasonable to expect that improved traffic conditions as a result of implementing the 2040 RTP will result in fewer accidents.

Security – Similar to the Safety goal, data and tools to forecast security were not available for this report, indeed they are difficult to define. As discussed in the Safety section, the “level of service” measure in the Accessibility and Mobility section discussed below may also be a surrogate measure for security. Other congestion related measures listed in Table 8-13 such as “annual person-hours of delay/capita” or “percentage of commute times less than 20 minutes” also indicate that the 2040 RTP reduces congestion. A transportation system with less congestion is a more secure transportation system that can more readily accommodate emergency vehicles or evacuations in case of a natural disaster or other event. The 2040 RTP also includes significant investments in alternate transportation modes such as public transit, pedestrian, and bicycle facilities all of which offer transportation alternatives in emergency situations.

Accessibility and Mobility – Six performance measures were defined for the Accessibility and Mobility goal related to the quantity and quality of travel. The first, vehicle miles traveled (VMT) per capita, is an indication of how the growth in vehicle travel corresponds to population growth. VMT per capita grows by 12% from 25 in 2007 to 28 in 2040. As the transportation network expands to previously unpopulated areas, overall travel increases accordingly.

The percentage of PM peak period vehicle hours at LOS “D” has been discussed in the previous two sections. Under the “No Build” scenario, only 60% of PM peak period traffic would experience travel free from forced flow “stop-and-go” conditions (LOS “E” and “F”). Implementing the 2040 RTP improves this condition significantly with 75% of peak period traffic free from forced flow “stop-and-go” conditions.

Select corridor travel times in the PM peak period were estimated using the travel demand model to give a meaningful indication of the amount of congestion and delay to be expected in the future. The estimated travel time for specific corridors in the Wasatch Front Region is given in Table 8-13 on the previous page. As an overall performance measure, the average of all the corridor travel times was calculated as an indication of future delay. Compared to current conditions, it would take 19% more time to traverse the corridors listed in Table 8-14 under the “No Build” scenario. By implementing the 2040 RTP the average travel time is reduced to just 9% greater than current conditions.

Several performance measures were identified for transit service in this section. The number of linked transit trips is estimated to grow from 88,000 in 2007 to 222,000 with the 2040 RTP. Of all the person trips made in the region, the percentage made by transit will grow from 1.3% in 2007 to 1.9% in 2040. Of all the peak period commuter trips (home to work), the percentage made by transit will grow from 4.7% in 2007 to 6.8% in 2040.

As an indication of mobility, the percentage of commute times less than 20 minutes by car from disadvantaged population zones was calculated. A disadvantaged population zone is defined by the socio-economic factors for that zone, namely age, income, and minority status. Without any improvements to the transportation system, 56% of the commuter trips from disadvantaged



TABLE 8-14

SELECT CORRIDOR TRAVEL TIMES

SELECT CORRIDOR TRAVEL TIMES	2007 CURRENT CONDITIONS	2040 WITHOUT RTP	2040 WITH RTP
North/South			
SR-108: 3300 S (Ogden) to Syracuse Rd	19.1	25.2	19.1
I-15: 400 S (Salt Lake City) to 31st Street (Ogden)	41.1	49.8	43.1
SR-106: 500 S (Bountiful) to State St (Farmington)	15.0	16.1	15.5
Highway 89: I-15 (Lagoon) to Harrison Blvd	23.4	33.6	22.2
Bangerter Highway: I-80 (Airport) to 13400 S	35.5	41.9	36.3
5600 W: I-80 to 6200 S	21.9	23.7	23.2
1300 E: 500 S (University of Utah) to 12300 S	28.4	33.9	32.1
State Street: 500 S to 10600 S	24.6	28.3	27.8
Highland Dr: 6200 S to 9400 S	11.6	11.9	11.6
I-15: 500 S (Salt Lake City) to University Pkwy (Orem)	47.8	59.6	52.3
Average	26.8	32.4	28.3
East/West			
1200 S (Weber): SR-126 to Harrison Blvd.	9.9	12.1	11.6
SR-193: I-15 to Highway-89	17.3	19.0	18.7
SR-108 (Syracuse Rd): I-15 to 2000 W	15.0	15.8	15.6
200 N: I-15 to US-89	7.9	8.4	8.3
200 N: I-15 to Angel St	8.8	9.6	9.0
500 S: Redwood Rd to Orchard Dr	8.9	10.4	10.5
3300 S: I-15 to 5600 W (Magna)	19.7	22.4	21.4
5400 S: I-15 to 5600 W (Kearns)	20.0	21.6	23.0
7200 S: I-15 to Wasatch Blvd	18.4	23.8	23.4
9000 S: I-15 to 4000 W	14.9	22.4	19.1
9000/9400 S: I-15 to Highland Dr.	14.1	15.3	14.7
12600 S: I-15 to 5600 W	16.5	19.6	19.7
12600 S/12300 S: I-15 to 1300 E	6.8	7.6	7.1
Average	13.7	16.0	15.5

population zones would be 20 minutes or less in duration. By implementing the 2040 RTP this measure improves to 59%.

Energy / Environment – Automobile fuel consumption and reduction in emissions are the performance measures identified for the Energy and Environment goal. Daily fuel consumption for vehicle travel is estimated to increase from 2.1 million gallons in 2007 to 3.7 million gallons in 2040. These estimates are based on current fuel economy standards defined in Mobile6, the Environmental Protection Agency's vehicle emission model. These estimates do not reflect the

latest proposal to improve Corporate Average Fuel Economy (CAFE) standards compared to current levels.

Vehicle emissions were also estimated using the Mobile6 model. Due to improved vehicle emission technology and vehicle emission testing, 2040 emissions of PM_{2.5}, NO_x, VOC, and CO from vehicles will be 24%, 75%, 48%, and 9% lower respectively than vehicle emissions in 2007 even though there will be more vehicle travel in the future. Emissions of CO₂, a non-toxic greenhouse gas, are estimated in the Mobile6 model as a function of fuel consumption (which is a function of vehicle miles traveled) and are expected to increase by 73% compared to 2007 emissions of CO₂. This projection does not consider the proposed CAFE standards discussed above or other vehicle technologies designed to reduce fuel consumption and resulting CO₂ emissions.

Livability – Livability can be difficult to measure because it means different things to different people, and it often involves intangibles not easily quantified such as “quality of life”. For the purpose of measuring livability for the RTP, the percentage of developed land within the urban boundary (as defined in the census) was considered as the performance measure. The weakness of this measure is that the urban boundary changes over time as the area develops.

Another weakness of the measure proposed above is that for some people lower density may be a preferred form of development, but in the interest of reducing infrastructure cost a higher density development (infill) has advantages. For this RTP analysis, the reader is directed to other performance measures documented in Table 8-13 that describe the transportation system. Future RTP documents will consider more effective measures for livability. One possibility is an inventory of available housing by housing type such as single-family, multi-family, and mixed use. Housing information was not available in such form at the time of this publication.

Efficiency – The amount of annual traffic delay, in person-hours per capita, was identified as the measure of efficiency for the RTP. Delay is defined as the additional time required for travel due to congestion compared to traveling under uncongested or “free flow” conditions. This measure represents how efficient the transportation system is at moving people. In 2007 it is estimated that annual traffic delays amount to 10.3 hours for every person in the Wasatch Front Region. By 2040 under the “No Build” scenario this annual delay per capita will have grown over 5 fold to 53.1 hours. Implementing the 2040 RTP substantially reduces this delay per capita to 26.4 hours.

Preservation – Implementing the 2040 RTP will require about 10,500 additional acres of right-of-way. Preserving this right-of-way is critical to the success of the RTP. The percentage of required right-of-way currently owned by the implementing agencies (city, county, or State) is a good indication of the preservation efforts of the transportation plan. For the 2040 RTP, 39% of the right of way needed is already owned by the implementing agencies

GREEN INFRASTRUCTURE PLAN

8.14

Green Infrastructure Defined

Green Infrastructure is an interconnected network of natural systems that provide a diverse range of environmental, social, recreational, psychological, public health, and economic benefits. The natural systems that make up green infrastructure include features such as forest preserves, historic sites, agricultural lands, rivers, wetlands, parks, and nature reserves. Figure 8-4 illustrates the landscape features of green infrastructure.



The term “green infrastructure” originated in the strategic conservation planning field led by The Conservation Fund and the U.S. Forest Service. Their emphasis was primarily on forests, wetlands, and large natural areas. These agencies propose that natural systems be identified as infrastructure because they support essential ecosystem functions upon which all life depends. Large protected and connected areas are the foundation for a green infrastructure network.

Connectivity is important in planning for and upgrading man-made infrastructure (gray infrastructure) such as roads, storm drains, sewers, utilities and levees. This large scale connected approach is just as important in understanding and improving green infrastructure. An interconnected system allows for greater vitality, value and function of ecological, hydrological, recreational and agricultural networks, promoting the economy and contributing to the health and quality of life of residents.

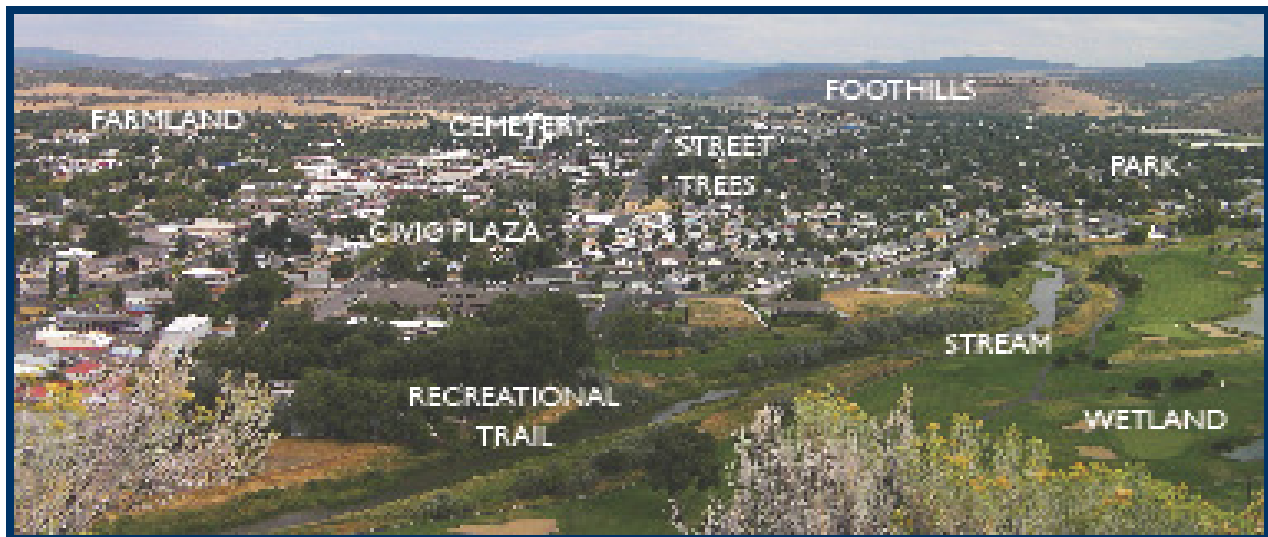
The Benefits of Green Infrastructure

Green Infrastructure provides clean air and water, and benefits a large number of people in the Wasatch Front in numerous ways. It enhances public health and safety through wildfire suppression, clean and safe drinking water, healthy food production, and mitigation of flood hazards.

Some green infrastructure benefits, such as water purification, nutrient storage and cycling, flood attenuation, soil generation, and carbon sequestration are necessary functions that otherwise would be ignored or provided by expensive constructed gray infrastructure systems. The ecosystem benefits provided by green infrastructure have considerable financial value, if compared with the costs of generating equivalent benefits from gray infrastructure.

FIGURE 8-4

GREEN INFRASTRUCTURE FEATURES



The Wasatch Front Green Infrastructure Plan

The Wasatch Front Region is characterized by considerable ecological and biological diversity, cultural richness, historical depth, and an abundance of recreational resources. All of these attributes and features are dependent upon the Region’s geography and natural resources.

Population growth has led to widespread land use changes. Unfortunately, growth is reducing natural landscapes and affecting ecological systems. This, in turn can affect the Wasatch Front Region’s economic health and resident quality of life. Taking a green infrastructure approach in the



Wasatch Front requires identifying and understanding natural systems and protecting those systems, before development or degradation begins, as well as seeking to restore valued lands and connectivity in already developed landscapes.

The Wasatch Front Green Infrastructure Plan is the product of a collaborative effort with other agencies to identify and connect the region's green infrastructure. The Plan identifies valuable natural and developed areas, as well as potential connections between these areas. The Plan also helps determine which lands can accommodate growth and which lands are better suited for protection, preservation or conservation. It places a strong emphasis on implementation and identifies strategies that can be used by the Wasatch Front Regional Council, counties, cities, municipalities, transportation entities, other government entities, private foundations and the general public to ensure inclusion of green infrastructure planning in long range initiatives. The Plan establishes environmental priorities to guide planners in reviewing development applications, allocating funding, updating municipal general plans, and making acquisition decisions. The Wasatch Front Green Infrastructure Plan provides a valuable tool for guiding future conservation efforts and planning decisions. Figure 8-5 illustrates the type of GIS informational layers used to develop the WFRC Green Infrastructure Network Design.

Green Infrastructure and Transportation Planning

If green infrastructure and gray infrastructure are considered as two different systems within the same overarching network, then green infrastructure planning and transportation planning are simply two strategies for assessing and improving the same interconnected regional network. The tenets of green infrastructure can help transportation planners more fully understand the benefits of an integrated planning approach and vice versa. In other words, green and gray infrastructure function together; they are inherently connected, and planners should be able to draw from both fields to understand the complexities of the urban landscape and the potential benefits afforded by increased connectivity.

The growth principles and objectives outlined in this Regional Transportation Plan are also fundamental to green infrastructure planning as well. Both plans seek to protect and enhance the environment, strengthen the sense of community, enhance the regional economy, promote regional collaboration, and ensure public health and safety. Working with transportation planners and others, the green infrastructure plan can help shape urban and suburban form and promote the best possible patterns of development.

CLIMATE CHANGE

8.15

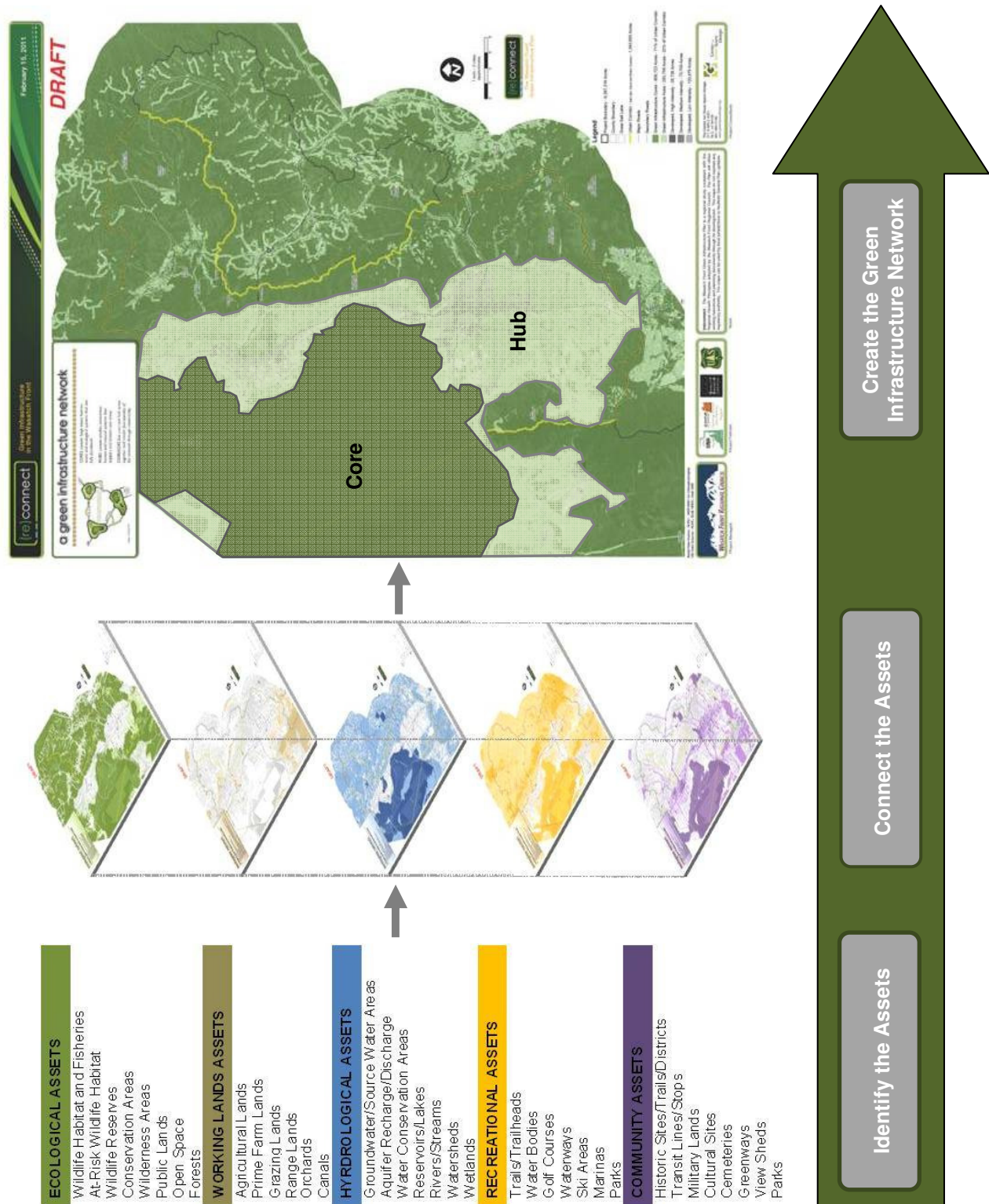
The subject of climate change is a scientifically complex one, one that has recently generated significant discussion. Water, carbon dioxide and methane (and traces of other gases in lower proportions) are considered "greenhouse" gases (GHG), meaning that they reflect back some of the radiant heat energy that reaches the earth's surface that would otherwise return to space. Without the "greenhouse" effect of the earth's atmosphere, the mean temperature of the earth would be below freezing. Many scientists now suggest that mankind's activities are adding to the concentration of greenhouse gases in the atmosphere, resulting in potential changes in the earth's climate.

Even with this scientific research, there is still great uncertainty about the nature or degree of impact that increases to greenhouse gas concentrations will have on the climate. While an evaluation of mobile source emissions on climate change is not a required element of the RTP, WFRC



FIGURE 8-5

GREEN INFRASTRUCTURE INFORMATIONAL LAYERS



management feels that it is important to begin to outline some of the issues related to the role of the RTP in addressing potential changes to the global climate.

In the context of the WFRC 2040 Regional Transportation Plan, the questions pertaining to climate are: **1) How does the 2040 RTP impact global climate change?**, and **2) How does global climate change impact the 2040 RTP?**

How does the 2040 RTP impact global warming?

The analysis of Performance Measures in Chapter 8 of this document shows that CO₂ emissions from vehicle activity are expected to be 73% greater in 2040 than 2007. This forecast is based on results from the Mobile6 vehicle emissions model using vehicle activity described in the 2040 RTP. The Mobile6 model estimates CO₂ emissions based on assumed fuel consumption rates for vehicles. The Mobile6 model is not sensitive to speed (congestion conditions) when it comes to CO₂ rates.

New CAFÉ (Corporate Average Fuel Economy) standards aimed at improving vehicle mileage rates will have a significant impact on reducing future CO₂ emissions. Also, new vehicle concepts such as hybrid electric or pure electric vehicles will have a part in reducing future CO₂ emissions from vehicles. Producing more of the electricity needed for these new concept vehicles from sources other than coal such as nuclear power, wind energy, or geothermal sources would result in a net decrease in vehicle related CO₂ emissions compared to vehicles relying on internal combustion engines. While expanding transit service and other transportation strategies may help reduce travel and greenhouse gas emissions, the improved emission standards for future vehicles will have the greatest impact on reducing mobile source emissions.

How does global warming impact the 2040 RTP?

The WFRC 2040 RTP did not make any special provisions for the potential impacts of global climate change. What those specific changes would be along the Wasatch Front Region of Utah is anyone's guess.

One possibility is a dryer, hotter climate. This scenario might be a benefit in terms of construction of transportation facilities as this would tend to extend the construction season. This could also reduce snow removal costs, winter weather delays, and weather related crashes. On the other hand, the negative economic impacts of a region chronically stricken with drought could significantly alter the population and employment forecasts currently found in the RTP.

The other extreme is a cooler, wetter climate. In contrast to the above scenario, this scenario would increase snow removal costs and shorten the construction season. Highway safety would be compromised and weather related delays would be more frequent and severe. A wetter Utah climate could also lead to springtime flooding from excessive runoff which could damage roads and bridges. Rising levels of the Great Salt Lake could threaten critical transportation facilities adjacent to the Lake such as I-15, I-80, and the Salt Lake City International Airport. Slope failures are another possibility, particularly in mountain passes critical to transportation such as Parley's Canyon (containing I-80), Ogden Canyon, Little Cottonwood Canyon, and Big Cottonwood Canyon. More frequent or more extreme freeze-thaw cycles can have a detrimental effect on pavement quality and service life. This possibility exists under either scenario – warmer or cooler.

In either climate scenario, Utah is already a four-season state with considerable experience adapting to both types of climate. The extreme to which the climate may shift - if at all - is the crucial question, and this can only be speculated at this time.



