Draft **2015-2040**

Regional Transportation Plan

Dixie Metropolitan Planning Organization

April 1, 2015 **DRAFT**

Prepared by:

The Dixie Transportation Planning Office
Five County Association of Governments
1070 West 1600 South, Building B
St. George, UT 84770

UNIFIED TRANSPORTATION PLANNING
DIXIE
METROPOLITAN
PLANNING ORGANIZATION

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Chapter 1 – **Executive Summary**

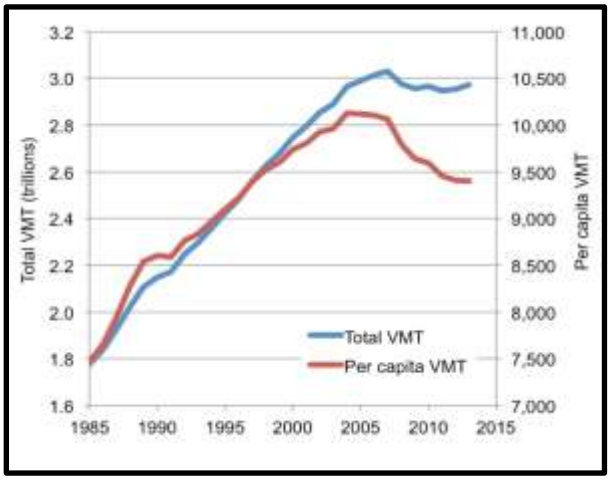
This Regional Transportation Plan (RTP) is the culmination of planning efforts undertaken by Dixie Metropolitan Planning Organization (MPO) for the Census Bureaus' designated urban areas in Washington County, Utah – including the St. George Urbanized Area and the Hurricane Urban Cluster. The RTP objective is to foster coordination of community leaders, the public, and stakeholders to plan for the transportation of people, goods, and services through goals centered on safety, air quality, congestion management, corridor preservation, public transit, pedestrian movement, and respect for environmental constraints.

The plan is updated every four years in coordination with the Utah Department of Transportation, three other MPOs in Utah, Washington County, and the cities within the urban areas noted above. Transportation planning in Washington County follows local visioning goals in collaboration with other planning efforts such as Utah's Unified Transportation Plan, Vision Dixie, the Utah Strategic Highway Safety Plan, Homeland Security plans, etc.

The cities of Ivins, Hurricane, LaVerkin, Leeds, St. George, Santa Clara, Toquerville, and Washington, are included in the planning boundary Map #2 in Appendix A.

This plan relies on principals defined in Vision Dixie, a visioning effort undertaken in 2006-08 to document the vision of Dixie's desired future development as defined by the public, elected officials, public service agencies, business interests, and other socioeconomic forces. From a transportation perspective, Vision Dixie calls for a variety of roads, transit, and pedestrian facilities, community connectivity and access to a greater variety of human services, businesses, and residential units.

Projected transportation demand in the St. George area was modeled using state-approved computer programs and verifies the Vision Dixie call for a variety of future transportation facilities.



Washington County's estimated population growth over the next 25 years combined with limited amounts of federal, state, and local funds available to accommodate their needs indicate that revenue streams will need to be incrementally increased and changed over time to generate sufficient resources to accommodate anticipated needs. The funding sources and future funding assumptions are explained in Chapter 5.

A summary of proposed transportation facilities, including a comprehensive list of road improvements over the next 25 years is noted in

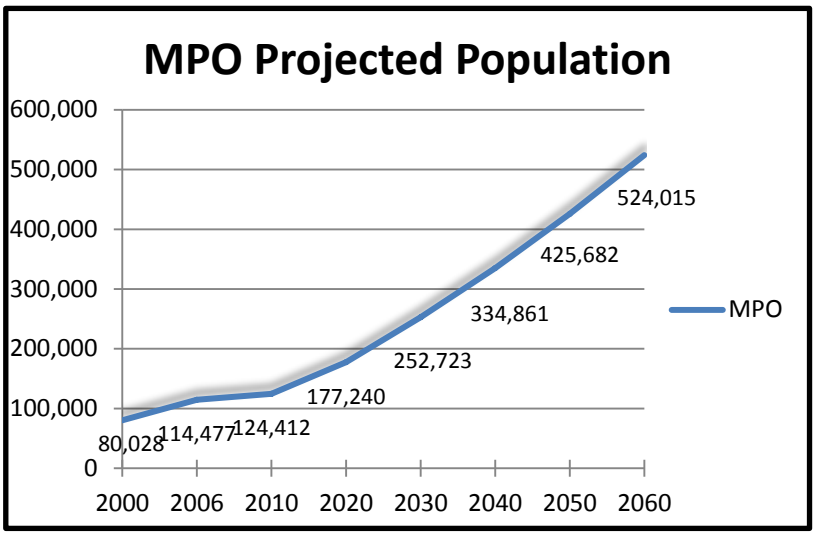
Chapter 6 and depicted on Map 1 in Appendix A. Exceptional evidence also points to the need for expanded bicycle facilities, pedestrian facilities, and regional transit systems throughout the Urbanized Area as outlined in Chapters 12 and 13.

Special attention must also be given to safety, congestion, and corridor preservation over the next 25 years. And of utmost importance is affording appropriate environmental protections of and respect for the varied "threatened and endangered species" (plant and animal) present in southwestern Utah as discussed in Chapter 11.

Taken together the chapters within the Regional Transportation Plan identify needs, issues, and potential solutions to facilitate transportation planning excellence.

Chapter 2 **–Need and Purpose**

According to the U.S. Census, the 2013 estimated population of Washington County, Utah is 147,800 people. According to the Utah Governor's Office of Planning and Budget (GOPB), the Dixie Metropolitan Planning Organization (Dixie MPO) population is expected to grow to over 177,000 by 2020; to over 252,700 by 2030; and to 334,800 by 2040.



This 2015-2040 Regional Long-Range Transportation Plan outlines how various jurisdictions within the Dixie MPO intend to meet the area's transportation demands and needs over the next 25 years. The area has many geographical features (hills, bluffs, and rivers) that challenge the circulation of people and freight and the creation of various transportation systems. The area is also habitat to threatened and endangered plant and wildlife species and is governed by county, state, and federal regulations.

The expected population growth coupled with the community's desire to retain mobility for people, goods, and services defines the need for this plan. This plan's purpose is to outline how these needs could be addressed over the next 25 years with consideration of geography, environment, socioeconomic trends, and anticipated transportation demand (needs).

The Dixie MPO encompasses the U.S. Census Bureau defined St. George Urbanized Area and the Hurricane Urbanizing Area. The Dixie MPO planning boundary includes the cities of Hurricane, Ivins, LaVerkin, Leeds, Santa Clara, St. George, Toquerville, and Washington and immediately adjacent sections of unincorporated Washington County in southwestern Utah as illustrated in the planning boundary Map #2 in Appendix A.

The Dixie MPO was designated by the Governor September 20, 2002. In compliance with federal guidelines the Dixie MPO develops and approves processes and procedures for conducting long range

planning, identifying proposed transportation projects for consideration in the Transportation Improvement Program (TIP) and social, economic and environmental implications of the regional transportation system and the traffic growth being experienced and anticipated in the future.

On July 6, 2012, the President of the United States signed P.L. 112-141, the Moving Ahead for Progress in the 21st Century Act (MAP-21).. The $105 billion law reauthorized federal surface transportation programs through (FY) 2013 and 2014. The reauthorization has persisted through May 2015 through continuing resolutions. Reauthorization of a similar transportation bill is anticipated soon, but not in time for consideration in this plan.

MAP-21 Transforms the framework for investments to guide the growth and development of the country's vital transportation infrastructure. MAP-21 continues to focus on safety and security, and requirements for public participation. The law also includes key transit and environmental requirements with an emphasis toward developing transportation alternatives ranging from passenger rail and transit to bicycle and pedestrian paths.

Common to MAP-21 and previous Acts, is the consideration in the planning process of broad based requirements or issues. MAP-21 identifies the following goals:

1. Leverage $1.75 billion of the Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program funds into $34 billion in private sector and other investments for transportation projects.
2. Develop a new transit safety program to assure safety on buses, subways, streetcar, and light-rail systems.
3. Step up safety efforts, including the fight against distracted driving, and to improve truck and motor coach safety.
4. Consolidate highway and transit programs, eliminating duplicate or outdated programs.

Chapter 3 **– Vision and Mission**

The 'Vision" is the guidepost for all efforts of the organization. At the Dixie MPO foundation are several ideologies designed to create the future of our transportation planning.

Though simply stated the 'Vision' is rooted in sound planning practice: to achieve transportation planning excellence.

"Achieve Transportation Planning Excellence"

Through "Vision Dixie", over three thousand residents created a framework in which future development and transportation can work together to create communities, and a region that preserves Southern Utah's quality of life. The "Vision" looks forward to an affordable, sustainable, and livable future.

The public preferences are summarized in a series of Vision Dixie Principles that illustrate how growth might occur as cooperative efforts are made to implement the principles identified through the process.

The Vision Dixie Principles provide a framework for voluntary implementation. Local officials have committed to work with residents to determine how these principles fit with local plans for the future.

The process was kicked off on October 18, 2006 when nearly 400 residents joined the Washington County Commission in a county wide process of workshops, technical research and analysis.

Over 1,200 residents attended workshops in the fall of 2006 to voice their preferences for how the county should grow. This input coupled with technical guidance from local planners, led to the creation of four scenarios that were unveiled at nine "Dixie Dialogue" meetings in May and June 2007. More than 500 residents attended these meetings to identify which ideas, contained in the scenarios, they favor. An additional 800 residents evaluated these scenarios on-line. Also in June 2007, an independent polling firm contacted 400 representative county residents to ask their opinions on growth issues and strategies.

Based on these citizen input initiatives, a steering committee made up of mayors from throughout the urbanizing area, established ten Vision Dixie Principles.

The Vision Dixie Principles:

Principle 1: Plan Regionally, Implement Locally

Principle 2: Maintain Air and Water Quality and Conserve Water

Principle 3: Guard our 'Signature' Scenic Landscapes

Principle 4: Provide Rich, Connected Natural Recreation and Open Space

Principle 5: Build balanced Transportation that includes a System of Public Transportation, Connected Roads, and Meaningful Opportunities to Bike and Walk.

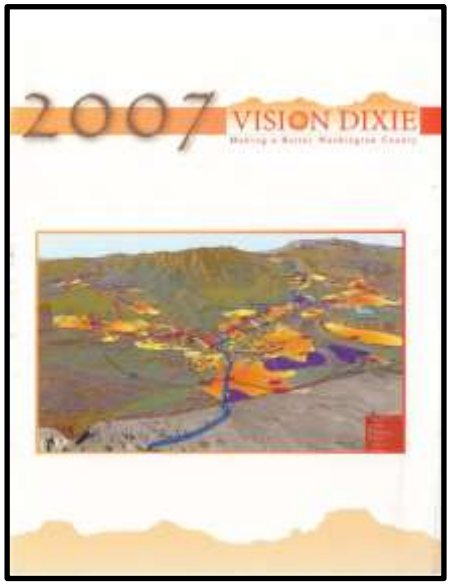
Principle 6: Get 'Centered' by Focusing Growth on Walkable, Mixed-Use Centers.

Principle 7: Direct Growth Inward.

Principle 8: Provide a Broad Range of Housing Types to Meet the Needs of All Income Levels, Family Types, and Stages of Life.

Principle 9: Reserve Key Areas for Industry to Grow the "Economic Pie".

Principle 10: Focused Public Land Conversion Should Sustain Community Goals And Preserve Critical Lands.



Because of (unique) geography, roads in Dixie have to accommodate more traffic and are susceptible to congestion. Thus, while auto use will continue to be dominant, roads will not be able to meet all our mobility needs decades into the future. Public transportation is especially important to keep us from

being overwhelmed by gridlock. Putting in place a transit backbone will help our downtowns, major centers, and Dixie University flourish, keep our air clean, and help reduce household expenses associated with day-to-day travel. (Vision Dixie 2035: Land-Use & Transportation Vision, p. 26)

A vibrant "center" includes multiple ingredients: a mix of uses, pedestrian-oriented buildings, focused density, connected streets, and context sensitive streets. (Vision Dixie 2035: Land-Use & Transportation Vision, p. 31)

Vision Dixie calls for corridor preservation for roads and transit, street connectivity, and the creation of community-friendly collector and arterial roads to reduce congestion and accommodate a growing population with the following long-term recommendations:

- Work together to identify and preserve transit corridors and potential station locations.
- Explore the creation of a transit district and a local option sales tax for transit.
- Adopt the road corridors of Utah Department of Transportation, DMPO, and Five County Association of Governments into local general plan updates. Corridor preservation should address road needs, transit needs, utilities, bicycle facilities and trails. Formalize local government ordinances and negotiation procedures to preserve corridors as development happens.
- Revise street connectivity standards in updated subdivision ordinances.
- Coordinate local street plans in sub-area plans to assure optimum connectivity.
- Coordinate local street plans between jurisdictions.
- Amend local policies and construction standards to comply with "complete streets" criteria (that include provision for pedestrians, bicycles and parking) consistent with street segments mapped in the general plan.

Vision Dixie principles 6-8 encourage "Walk-able, Mixed-Use Centers", "Directing Growth Inward," and "Enabling the Housing Market to Meet Housing Wants and Needs," with the following long-term recommendations:

1. Approximate areas for future mixed-use centers, remove zoning and subdivision barriers to mixed-use centers, and update community general plans to include these centers.
2. Include mapped priority land re-use areas in general plans to signify to developers and nearby land owners that development in those areas helps fulfill city-wide goals (of inward growth first).
3. Modify edge-of-town standards and annexation policies to encourage contiguous development and discourage leap-frog development through market-based mechanisms that charge leap-frog development consistent with its higher level of impacts (e.g., longer streets per home).
4. Amend the zoning map and ordinances to allow a greater range of (housing) densities.

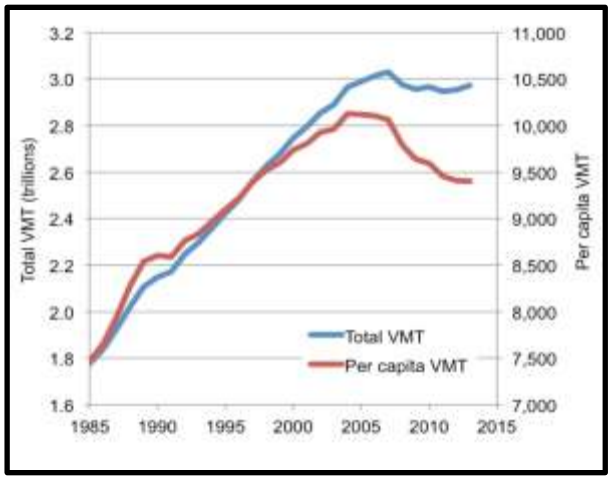
These recommendations are supported by the 2015-2040 Regional Transportation Plan.

This Vision can be realized through a strong day-by-day effort to attain goals and objectives, as stated in the Regional Transportation Plan with the mission to: "Foster coordination of community leaders, the public, and stakeholders to reach transportation goals centered around safety, air quality, congestion management, freight movement, corridor preservation, public transit, pedestrian movement, and respect for environmental constraints."

> *"Foster coordination of community leaders, the public, and stakeholders to reach transportation goals centered around safety, air quality, congestion management, freight movement, corridor preservation, public transit, pedestrian movement, and respect for environmental constraints."*

Chapter 4 – **Projected Transportation Demand**

Prior to the MPO designation, the City of St. George put in place a regional traffic model using the QRS II platform. In 2002, the MPO supported a contract to re-calibrate the model to Census 2000 data and subsequently in 2004 another MPO contract generated year 2015 and 2035 traffic projections based on updated population and employment data from the Governor's Office of Planning Budget. During 2005 and 2006, several corridor studies were undertaken using the model, including SR-9 in Hurricane where a new model was created.



Because of new land use information and population assumption changes identified, these corridor "models' influenced the need to expand the regional model and to re-calibrate. The model structure added the cities of Hurricane/LaVerkin Urban Cluster, Toquerville, Leeds Town, and the four cities in the Dixie MPO Planning Boundary, Ivins, Santa Clara, St. George and Washington along with Washington County areas adjacent to the cities/towns.

A change in model platform (software) was undertaken in 2010. This change came about as a result of discussions addressing the effectiveness of the expanded QRS II Dixie Model beginning as far back as 2007-2008. The QRS II model was migrated to the CUBE model in late 2010. The change also included all of Washington County to better predict traffic movements on a county-wide basis. A rigorous effort to update socio-economic data was completed as a part of the process with input from Washington County and each of the cities/towns in the County. The CUBE model is the platform used for the State Travel Demand Model; supported by UDOT and other MPO's.

In 2013, the four Eastern communities of Hurricane, LaVerkin, Toquerville and Leeds became a part of the Dixie MPO. These communities now each have representation on both the Transportation Advisory

Committee and the Transportation Executive Council. As noted above, the four communities had already been added to the Travel Demand Model (TDM).

Also in the summer of 2013 the DMPO again commissioned an update of the Travel Demand Model. This update was to incorporate the results of the 2012 Household Travel Survey and the 2010 Census and to make the model current with updates being made to the other travel demand models throughout Utah. Socioeconomic forecasts were also refreshed based on the Governor's Office of Planning and Budget (GOPB) 2012 forecasts. Completed in October of 2013, it became Version 2 of the DMPO Travel Demand Model.

Model Structure

Travel demand models are computer-based mathematical models that use socioeconomic and roadway network and land use data to forecast traffic under various scenarios. To forecast traffic the Dixie Travel Demand Model uses the traditional 4-step process. The four basic phases are:

The 2010 DMPO US census defined population was estimated at 105,336. With a 2010 county population of 138,115 over 76 percent of the county population lives within the DMPO urbanized census boundaries. The 2010 US census population estimate for the Hurricane Urban Cluster was 16,336.

1. Trip Generation – Trip generation determines how many trips are made in a region. To simplify the process, large geographical areas are broken up into smaller areas called traffic analysis zones (TAZ). Using information from sources like the Census Bureau and city land use plans, each TAZ is given certain attributes such as the number of households, employees, and average income levels. These attributes are then used to calculate the number of trip productions and attractions for each TAZ.

2. Trip Distribution –Trip distribution determines where the trips are going. Trip productions and attractions from different TAZ's are linked together using a gravity model to form origin-destination patterns. The gravity model states that the trip attraction between two zones is proportional to the size of the zones (number of households/employees) and the distance between them.

3. Mode Choice –What modal method of reaching a trip's destination is determined in step 3. Looking at factors such as cost, convenience and travel time it is determined if the trip will be made by walking, transit or vehicle.

4. Trip Assignment – The route the trip will take to reach its destination is then determined. Link attributes contained in the highway network such as capacity and travel speed are used to determine the shortest travel path to a destination. The trips are then assigned to the roadway network.

Each step of the process is calibrated to observed travel behavior. Base model forecasts are checked against observed traffic counts to ensure reasonable accuracy. Once the model is developed so that it replicates existing travel behavior, it is then used to evaluate future scenarios and alternatives.

Socio-Economic Characteristics

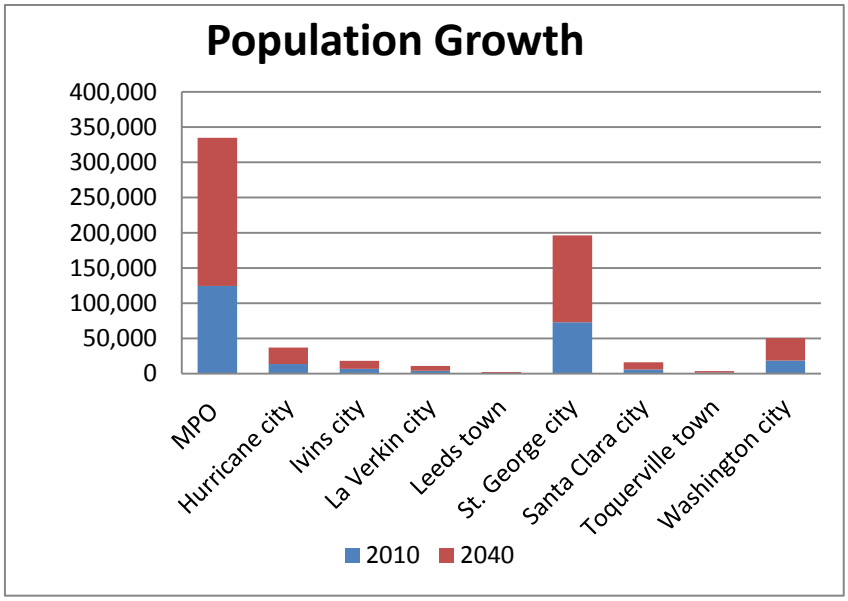


Figure 1 Population Growth - MPO Cities and Towns

The characteristics of population distribution in the MPO area are vital to the development and degree of transportation infrastructure that should be planned for over the life of the plan. Information gained from work done over the last few years helps to paint a picture of current and projected population growth. With the merging of the Hurricane Urban Cluster (population 16,336) with the DMPO Urbanized Area, the combined urban area population, based on the 2010 Census is 121,672 which means that over 88% of the county population now lives within the DMPO census defined "Urban" boundaries. Other cities and towns within the county include Apple Valley Town, Enterprise City, Hildale City, New Harmony Town, Rockville Town, Springdale Town, and Virgin Town as well as unincorporated County.

The following figures include population depictions for towns/cities within the "Planning Boundary" of the DMPO. Note that 100% of the member cities populations (124,412) live within the DMPO "Planning Boundary. The County-wide population is expected to increase from 138,115 in 2010 to 371,743 in 2040 with over 90% of the county population living within the cities of the DMPO Planning Boundary.

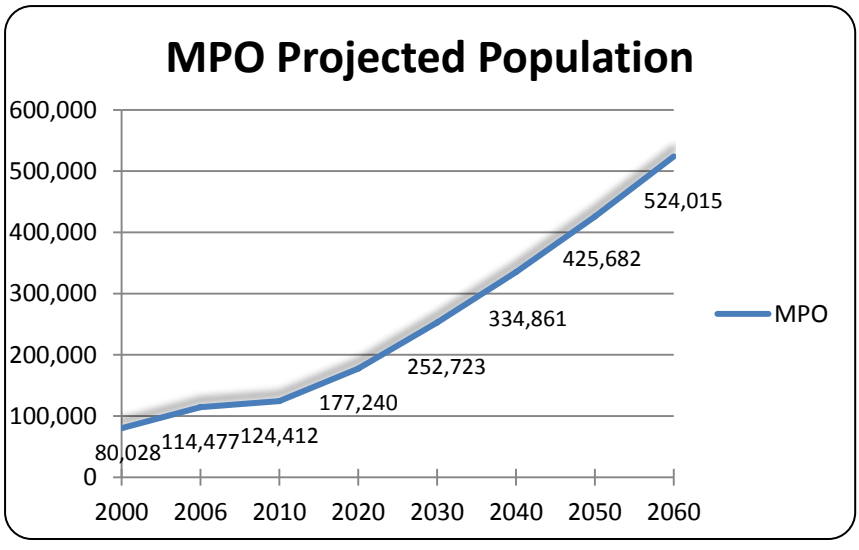


Figure 2 MPO Projected Population - MPO Cities and Towns

Note that the populations shown in Figures 1 & 2 represent the population for each of the cities that are members of the MPO. Since portions of the cities are not within the current census defined MPO urban boundary the populations shown are slightly higher than those of the urbanized area as detailed above. However, all cities represented are within the planning boundary as noted. Figure 3 represents historical population growth in Washington County.

The distribution of the current population and projected growth are illustrated on Map 4, the "Population Change Map" in Appendix A. The mapping includes a 2014 population distribution as well as identifies projected areas of growth out to 2040.

Employment and Commuting

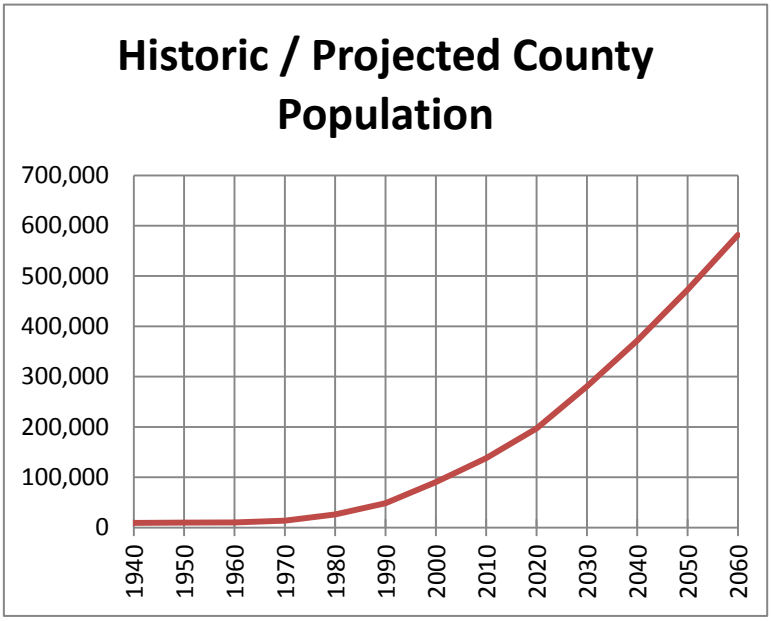


Figure 3 Historic / Projected Population - Washington County

According to the Utah Department of Workforce Services there were approximately 4,648 employment establishments operating in Washington County in 2013 (see Appendix C for table of major employers). It should be realized that companies come and go. In 2013, the number of employment centers in Washington County with more than 100 employees was 52. As is the case with many businesses, there are seasonal peaks in employment, such as the Christmas holiday season at retail establishments. The largest employer in the urbanized area is the Washington County School District. Their employees, however, and their work destinations, are spread throughout the urbanized area.

As of 2014 Washington County has experienced two full years of strong employment expansion. It is anticipated that additions to the county's employment base should continue to strengthen Washington County's numbers in the months ahead. According to the Department of Workforce Services; "in December 2013 the County's year-to-year employment gain clocked in at 5 percent, representing a net increase of roughly 2500 jobs." Leisure/hospitality services and construction were very close for the top honors with retail trade, government (including public education) and healthcare/social services all adding good numbers of new positions. As growth continues, so too will the need for adequate transportation facilities.

Objectives and Goals

To plan for future transportation demands upon the transportation network, the DMPO will strive to meet necessary goals and objectives to recognize the impacts of the area growth on transportation.

Objective

To recognize population growth and land uses as the key drivers of future transportation demand.

Goals

1. Stay abreast of changes in population growth and projections in the area.
2. Be aware of changes in land development patterns and how those changes affect population growth and transportation demand.

3. Stay current on socio-economic factors and changes that may affect the demand for transportation.
4. Provide for regular updates of the Transportation Demand Model and look for opportunities to update the model within localized studies.
5. Keep up with Model platform updates and changes in technology that can improve the accuracy of the Transportation Demand Model.
6. Become more educated and efficient in the execution and use of the Transportation Demand Model in keeping the model current and useful to the DMPO and its partners.

Chapter 5 – **Financial Plan**

Current Funding Sources, Gas Taxes, Fees

Currently in the Washington County area, federal, state, and local governments as well as private developers provide funds to pay for improvements.

Federal Funds:

The current federal highway and transit bill (Moving Ahead for Progress in the 21st Century Act or MAP-21) continues to fund federal transportation programs under continuing resolutions while a new federal highway bill is anticipated within the next several months.

State Funds:

The Utah Department of Transportation receives state highway user revenues as well as state general funds for highway construction and maintenance projects. The highway user revenues sources include motor fuel taxes, special fuel taxes, vehicle registration fees, driver license fees, and other fees. General fund revenues are also used for transportation and the state has the authority to issue bonds for specific highway projects.

A portion of the state highway user funds are made available to local governments for highway construction. Seventy percent of these funds are kept by the UDOT for their construction and maintenance program. The remaining 30 percent of funds are made available to the cities and counties in the state through the Class B and C Program for road maintenance or construction.

Local Funds:

In addition to B&C funds, local governments use a variety of funding sources for transportation improvements including a quarter of a percent sales tax for transportation, development impact fees, general funds (sales and property taxes), bonding arrangements, the Local Corridor Preservation Fund (vehicle registration fees), and special service district fees.

Private Sources

Private interests may also provide transportation improvements. As developers construct the local streets within their own subdivisions, they may also be required to dedicate rights-of-way for the construction of collector and arterial streets adjacent to their developments. Developers are also considered as possible sources of funding for projects needed because of the impacts of the development, such as the need for traffic signals or arterial street widening.

Private sources may also be considered for public transit improvements which could provide benefits to their particular interests. For example, businesses or developers may be willing to or required to support capital expenses or operating costs for transit services that provide special benefits to their development such as a reduced need for parking or increased accessibility.

Following is a brief list of programs used to fund transportation projects within the Dixie MPO:

FEDERAL HIGHWAY ADMINISTRATION

- Surface Transportation Program (STP)
    - Dixie MPO cities
- Congestion Mitigation / Air Quality (CMAQ) (Available only after DMPO reaches non-attainment status)
- Interstate Maintenance (IM)
- National Highway System (NHS)
- Surface Transportation Program
- Urbanized Area
- Small Urban
- Flexible (Any-Area)
- Transportation Enhancements
- Highway Safety Improvement Program (HSIP)
- Hazard Elimination
- Railroad Crossings
- Safe Routes to School (SR2S)
- Bridge Replacement
- Off System - Local
- Off System - Optional
- Federal Lands Programs
- High Priority Projects (HPP)
- Transportation Improvement Projects (TI)
- Recreational Trails
- Transportation Alternatives Program (TAP)

FEDERAL TRANSIT ADMINISTRATION

- **(**5307) Block Grant Funds
- (5309) Discretionary Funds
- (5310) Services for elderly and disabled
- (5311) Grants for Outside Urban Area
- (5340) High Density States Program
- (5316) Job Access and Reverse Commute
- (5317) New Freedom Program

STATE OF UTAH

- State Construction
- State General Funds
- State Traffic
- Corridor Preservation Funds

LOCAL

- County (B Funds)
- City (C Funds)
- General Funds
- Transit Sales Tax
- Corridor Preservation Fund

PRIVATE

- Donations / User Fee
- Developer Funded Projects
- Public/Private Partnerships

Unified Plan Process

To create a fiscally constrained long range transportation plan, the Dixie MPO joined with the Utah Department of Transportation and others in the Utah Unified Plan Financial Working group to make common assumptions regarding current and future funding sources available for transportation. This effort projected revenues, inflation rates, estimated construction costs, and the cost of future rights-of-way. The Dixie MPO Executive Committee also examined local funding options and adopted a series of additional future funding assumptions associated with transportation. Below is a discussion of these

assumptions, an outline of current funding sources, and a policy document supporting acquisition of future federal, state, and local funding for transportation projects.

State (Future) Funding Assumptions

The Unified Plan Financial Working Group agreed on the following *state wide* revenue assumptions:

- 100% Auto Related Sales Tax- 16.6% total by FY 2017
- 75% Auto Related Sales Tax- 12.5% total by FY 2015
- $0.05 SW Fuel Tax or Equivalent, every 10 yrs starting in FY 2014 (30% to B & C Fund)
- State Wide Vehicle Registration Fee- $10 increase in FY 2018

Local (Future) Funding Assumptions

The Dixie MPO Executive Committee agreed on the following *local* revenue assumptions:

- ¼ percent Local Option Sales Tax or equivalent by 2015
- An additional $0.05 Local Option Fuel Tax or equivalent every 7 years starting in 2016
- An additional $5 Local Option Vehicle Registration Fee (or equivalent) every 10 years starting in 2018
- ¼ percent Sales Tax or equivalent for public transit

Fiscal constraints through 25-year planning phases

These future funding assumptions, taken together with existing funding sources were calculated and documented in a "Regional Transportation Plan Financial Report" as agreed upon through the Unified Plan Financial Working Group and endorsed by the Dixie MPO Transportation Executive Council.

The group projected a 4.5 percent to 5 percent annual inflation rate (a conservatively high estimate based on past experience) on all cost projections. A conservatively low 1.96 percent inflation rate was projected on revenue sources. Utah's shifting population was also figured into these assumptions based on projections by the Governors' Office of Planning and Budget. Currently the Dixie MPO is home to 6.67 percent of the state's population. GOPB projects the Dixie MPO population will reach 8.6 percent of state population by 2021 and 10.2 percent in 2030.

Federal formula funds, which represent only a small portion of an MPOs annual budget, assist MPO planning, environmental assessments and construction seed money for projects that move from the Plan to the Transportation Improvement Program. These federal dollars come from FHWA's Surface Transportation Program and FTA's Transit Programs with an approved 2% inflation rate.

Projected Transportation Revenues

The following table shows the total revenues assumed for projects in each of the three phases of the long range plan. Total expenditures are detailed in the "Project & Phasing List" in Chapter 6.

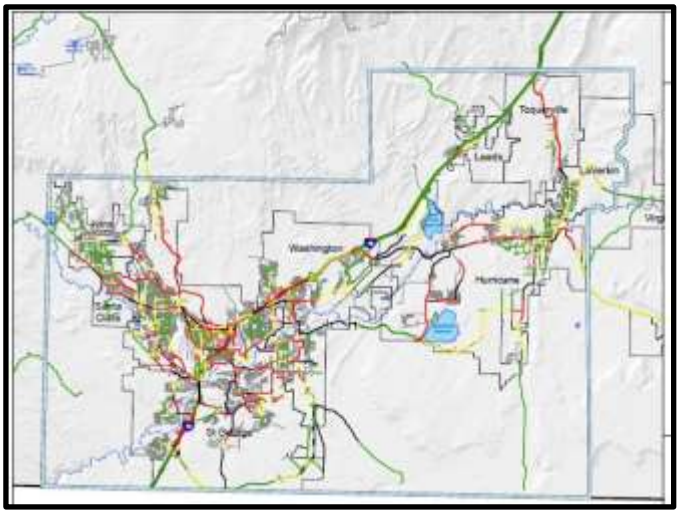
2015-2040 Long-Range Plan Total	
Total Funding Assumptions	$1,871,919,869
Total Needs	$1,942,110,000
Total Difference	($70,190,131)

When compared with the needs list and anticipated costs in Chapter 6, these funding assumptions seem adequate in Phase 1 of the RTP. However, a re-evaluation of revenue needs may be appropriate in Phases II and III – beyond year 2025.

Chapter 6 – **Existing and Proposed Transportation Facilities**

Methodology

As discussed in Chapter 4, the Dixie MPO's CUBE modeling platform was used to analyze future traffic demand. The CUBE Model applied mathematical forecasting formulas to population, land use, socio-economic, trip generation, trip distribution, and mode choice data.



2040 Traffic Congestion No-Build Map (See Appendix A)

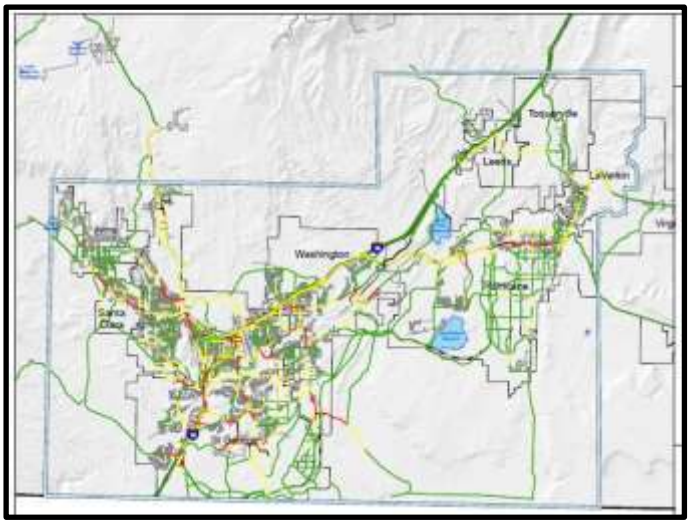
These forecasts were then imposed on the existing transportation networks. Then projects were conceptualized to relieve traffic congestion "hotspots" in each phase of the plan. Phase One includes the years 2015-2024. The associated project list was created to relieve the traffic demands of 2024. Phase Two includes 2025-2034 with a similar project list to relieve congestion under 2034 forecasts, and Phase Three includes the projects needed in 2035-2040.

Current Network

An inventory of the current MPO road network is best noted through use of the Traffic Congestion 2040 - No-Build map (Map 6 in Appendix A). The roads illustrated in red and black indicate areas of concern for traffic congestion in 2040. If no additional projects are built, the traffic demand in 2040 would exceed current roadway capacities on roads depicted in black. And similarly traffic demand on roads depicted in red would be at full capacity.

Future Network

The Traffic Congestion 2040 - Build map (Map 7 in Appendix A) shows areas concern for traffic congestion in the year 2040 assuming that the projects in this plan are all built at that time. Similarly the traffic demand in 2040 would exceed current roadway capacities on roads depicted in black. And similarly traffic demand on roads depicted in red would be at full capacity.



2040 Traffic Congestion Build Map (See Appendix A)

Projects and Phasing

The next several pages list a variety of transportation projects identified using the methodology outlined in chapters 2-5 above. Projects range from highway widening to bridge and overpass construction, as well as proposed new corridors. Additionally listed are UDOT projects of interest that may lie outside the MPO boundaries, but are vital connections in serving the overall traffic demand of the area (See Map 1 Projects and Phasing Map in Appendix A).

Regional Transportation Plan -- Projects & Phasing -- 2015 - 2040

Proj. #	Route	Category	City	Project Description	Project Concept	Estimated Cost in 2015 dollars
Phase One (2015-2024)						
1	3184	Regional	I	Old Highway 91 , Kayenta Parkway to Pioneer Parkway (3-Lane Section)	Reconstruction	$2,900,000
2		Regional	I	Red Mountain Blvd. (200 East) , Old Highway 91 to Center Street	Reconstruction	$2,300,000
3		Regional	SC	Red Mountain Drive , Pioneer Parkway to Western Corridor	New Construction	$1,843,000
4		Regional	I	Snow Canyon State Park Access Road	Reconstruction	$400,000
5	Old 91	Regional	I	Santa Clara Drive , Swiss Village to 200 E	Reconstruction	$4,200,000
6		Regional	SG	Plantations Drive , construct from Sunbrook Drive to Dixie Drive	New Construction	$10,000,000
7	SR-8	State	UDOT	Sunset Blvd , widen to 6-lanes past Valley View Dr	Minor Widen/Striping	$500,000
8		Regional	SG	Indian Hills Drive widen to 3 lanes	Widen/Reconstruct	$3,476,000
9	SR-18	State	UDOT	Bluff Street & Sunset Grade Separated Intersection	New Construction	$20,000,000
10	SR-18	State	UDOT	Bluff Street & St. George Blvd Intersection Improvements & SR-18 Widening	Widen/Reconstruct	$38,300,000
11		Regional	SG	Airport Road from old airport to Black ridge Drive	New Construction	$1,250,000
12	SR-18	State	UDOT	SR-18 , St. George Blvd. to Main Street	Widen/Reconstruct	$16,800,000
13		Regional	SG	Astragulus Dr from So. Pkwy Exit 1 to So. Pkwy Exit 3	New Construction	$10,080,000
14	I-15	State	UDOT	I-15 Brigham Road to Dixie Drive, Southbound Widening	Widening	$25,000,000
15		Regional	SG	100 South , Widen from 700 East to Bluff St	Re-Striping	$250,000
16		Regional	SG	700 South , Widen from 700 East to Bluff St	Re-Striping	$250,000
17	SR-34	State	UDOT	St. George Blvd. Widening from 900 East to 1000 East	Widening	$2,500,000
18		Regional	SG	400 South Trail & Underpass , DSC 700 East to DSC Health Science Building	New Construction	$2,500,000
19		Regional	SG	River Road , Widening/intersection improvements, Blvd. to 700 S	Widening	$5,000,000
20		Regional	SG	River Road , Widening/intersection improvements, Riverside Dr to Bundy Ln	Widening	$5,000,000
21		Regional	SG	River Road , widen to 5-lane section from Ft. Pierce Drive to Brigham Road	Widen/Reconstruct	$3,500,000
22	I-15	State	UDOT	I-15 MP8-10 Aux lanes and Mall Drive Underpass	Widen/Reconstruct	$57,000,000
23		Regional	SG	Commerce Drive - extend road from 1630 East to Price City Hills Road	New Construction	$4,176,000
24		Regional	SG	Horseman Park Road - extend road from River Road to Price City Hills Road	Widen/Reconstruct	$7,000,000
25		Regional	SG	Red Hills Parkway (SG, W), 2000 East to Green Springs	Widen/Reconstruct	$3,600,000
26		Regional	SG	Little Valley Road , extend road to Price City Hills Road and widen	New Construction	$3,000,000
27		Regional	SG	Price City Hills Road Phase 1 - construct new road from 2450 South to River Road	New Construction	$19,440,000
28		Regional	SG	450 N from 2450 E to 2860 E	New Construction	$1,080,000

29	I-15	State	UDOT	I-15 MP 10 Thru Turns at Green Springs	Reconstruction	$2,700,000
30		Regional	W	Green Springs and Telegraph Intersection Improvements	Widen/Reconstruct	$2,200,000
31		Regional	SG	3000 East from 1550 South to 2450 South - 5 Lane Road	Widen/Reconstruct	$300,000
32		Regional	W	Wal-Mart / Home Depot Connection between Washington & St. George	New Construction	$922,000
33		Regional	SG	2450 South - extend & improve road to Crimson Ridge Dr	New Construction	$3,000,000
34		Regional	W	3650 South from Washington City Limit to Southern Corridor	New Construction	$5,353,000
35		Regional	W	Merrill Road Extend to Washington Fields Rd	Widen/Reconstruct	$2,433,000
36	I-15	State	UDOT	I-15 Milepost 11 Interchange	New Construction	$30,000,000
37		Regional	W	Washington Fields Road , Lost Ridge Dr. to 3650 South (Phase IV A & B)	Widen/Reconstruct	$5,960,000
38		Regional	SG	Airport Parkway from North Airport Access to Airport Loop Road	New Construction	$5,400,000
39		Regional	W	Washington Fields Road , Warner Valley Road to Airport Rd (Phase VII)	New Construction	$4,005,000
40	SR-7	State	UDOT	So. Parkway Segment IIIb, Warner Valley Road to Washington Dam Road (1st Barrel)	New Construction	$22,000,000
41		Regional	H	Purgatory Road - Environmental Study	Environmental	$540,000
42		Regional	H	Purgatory Road , Extend to Washington Dam Rd	New Construction	$11,664,000
43	SR-9	State	UDOT	So. Parkway Segment VI , Interchange at Telegraph & SR-9	Interchange	$12,390,000
44	SR-9	State	UDOT	SR-9 I-15 to Southern Parkway, Environmental Document	Environmental	$2,000,000
45	SR-9	State	UDOT	So. Parkway Segment VI, I-15 to 5300 W - Widen and Improve to Freeway Standards	New Construction	$16,600,000
46		Regional	H	Turf Sod Road from 4300 West to Southern Parkway	New Construction	$7,200,000
47	SR-7	State	UDOT	So. Parkway Segment IVb, Sand Hollow to 3000 S (1st Barrel)	New Construction	$30,000,000
48		Regional	H	2770 West (SR-9 to 600 North)	New Construction	$3,500,000
49	SR-7	State	UDOT	So. Parkway Segment V, 3000 S to SR-9 (1st Barrel)	New Construction	$50,770,000
50		Regional	H	2300 South from 700 West to 4800 West (Phase I-III)	New Construction	$30,700,000
51		Regional	H	3000 South from 1150 West to 3400 West	New Construction	$4,000,000
52		Regional	H	1300 West Street from 600 North to 1500 South	New Construction	$11,943,000
53		Regional	H	1150 West Street , from 600 North to 100 South	Widen/Reconstruct	$1,954,000
54		Regional	H	700 West from 600 North to Airport Road	Widen/Reconstruct	$12,263,000
55		Regional	SG	Traffic Control Center ITS	ITS	$500,000
56		State	UDOT	Northern Washington Parkway Corridor , Red Hills Parkway to MP 13 - Environmental	Environmental	$5,000,000
57		Regional	MPO	Active Transportation Improvements - Phase I	New Construction	$3,000,000
	PHASE 1 (2015-2024)				**Total Funding Needs:**	$539,642,000
					Funding Assumptions:	$530,651,455
					Remainder **(Overage)**	($8,990,545)

Project #	Route	Category	City	Project Description	Project Concept	Estimated Cost in 2015 dollars
Phase Two (2025-2034)						
1	3184	Regional	I	Old Highway 91 , 200 E to Shivwits Reservation 5-Lane	Reconstruction	$5,000,000
2		Regional	I	Western Corridor North , Old Highway 91 to Snow Canyon Parkway	New Construction	$29,400,000
3		Regional	SC	Santa Clara Dr to Western Corridor Connector Road	New Construction	$2,000,000
4		Regional	SC	South Hills Collector A from Clary Hills Dr to Plantations Dr	New Construction	$2,500,000
5		Regional	SG	Plantation Drive/Western Corridor - Old Hwy 91 to Sunbrook	New Construction	$40,944,000
6	SR-18	State	UDOT	SR-18 , Red Hills Parkway to Winchester Hills	Widen/Reconstruct	$58,800,000
7		Regional	SG	Temple Trail Drive Phase 2 - Construct new road from Indian Hills Drive to Dixie Drive	New Construction	$2,700,000
8		Regional	SG	Temple Trail Drive, Phase I from Airport Road to Indian Hills Drive	New Construction	$5,250,000
9		Regional	SG	Hidden Valley Drive Frontage Road - new road on east side of I-15 from MP 2 to MP 4	New Construction	$19,440,000
10	I-15	State	UDOT	I-15 SPUI at MP 4, and Lane Widening from MP 4-8	Widen	$112,900,000
11		Regional	SG	Man O War I-15 Crossing between Pioneer Rd to Hidden Valley Dr	New Construction	$30,000,000
12		Regional	SG	Quality Drive from Commerce Dr to Hidden Valley Rd	New Construction	$6,480,000
13		Regional	SG	400 East I-15 Ped Tunnel Crossing	New Construction	$4,000,000
14		Regional	SG	1450 South Extension over the Virgin River to Riverside Drive	New Construction	$20,000,000
15		Regional	SG	White Dome Frontage Road - new road from Southern Parkway to airport	New Construction	$5,832,000
16		State	UDOT	Northern Washington Parkway Corridor , Red Hills Parkway to MP 13 - Phase I	New Construction	$47,000,000
17		Regional	SG	River Road , Widen to 5-lane section from Enterprise Dr to So. Pkwy	Widening	$6,840,000
18		Regional	SG	Cottonwood Springs Dr from Red Hills Pkwy to Washington Parkway	New Construction	$7,200,000
19		Regional	SG	1630 East, Extend from Venture Dr to Southern Parkway	New Construction	$5,000,000
20		Regional	SG	Horseman Park Road - extend road from Price City Hills Road to West Airport Rd	New Construction	$3,600,000
21		Regional	SG	South Frontage Rd from White Dome Frontage Rd to Desert Canyon Dr	New Construction	$9,360,000
22		Regional	SG	Airport Loop Road from Washington Fields Rd to 1630 E	New Construction	$18,056,000
23		Regional	W	Main Street from I-15 Frontage Road to Washington Parkway	New Construction	$1,752,000
24		Regional	W	Extend Main Street to 100 East, south of 400 South	New Construction	$1,925,000
25		Regional	SG/W	Crimson Ridge Dr (SG/W) from 3000 East to Washington Fields Road	New Construction	$3,136,000
26		Regional	W	Washington Fields Road from 3650 South to Stucki Farms (Phase VB)	Widen	$2,269,000
27		Regional	W	Washington Fields Road from Stucki Farms to Warner Valley Road (Phase VIB)	Widen	$3,068,000
28	SR-7	State	UDOT	So. Parkway Segment IIIa (SG & W), Airport to Warner Valley Road (2nd Barrel)	New Construction	$22,420,000
29		Regional	SG	So. Pkwy East Frontage Road from Deseret Canyon Dr to So. Pkwy Interchange 9	New Construction	$5,400,000
30	I-15	State	UDOT	I-15 Corridor Lane Widening, MP 10 to MP 16	Widen/Reconstruct	$125,075,000

31		Regional	W	Washington Dam Road , 1900 East to East City Limits	Widen/Reconstruct	$3,244,000
32	SR-7	State	UDOT	So. Parkway Segment IIIb, Warner Valley Rd. to Washington Dam Rd. (2nd Barrel)	New Construction	$27,330,000
33		Regional	W	Long Valley Road , construct road from SR-7 Interchange 11 to Interchange 12	New Construction	$8,884,000
34		Regional	W	Warner Valley Road from Purgatory to the road through Warner Valley	New Construction	$10,447,000
35	SR-7	State	UDOT	So. Parkway Segment IVa, Wash. Dam Rd to Sand Hallow (2nd barrel)	New Construction	$14,750,000
36		Regional	H	4300 West from SR-9 to Southern Parkway	New Construction	$24,863,000
37	SR-9	State	UDOT	So. Parkway Segment VI, 5300 W to So. Pkwy - Widen/Improve to Freeway Standards	New Construction	$21,700,000
38		Regional	H	130 North from 3400 West to 3700 West	New Construction	$500,000
39		Regional	H	200 North from 2770 West to 3400 West	New Construction	$5,000,000
40		Regional	H	3000 West from 150 South to Rlington Parkway	New Construction	$13,900,000
41	SR-7	State	UDOT	So. Parkway Segment IVb, Sand Hallow to 3000 S (2nd Barrel)	New Construction	$20,060,000
42	SR-7	State	UDOT	So. Parkway Segment V, 3000 S to SR-9 (2nd Barrel)	New Construction	$18,880,000
43		Regional	H	2750 West from 150 South to 3000 West	New Construction	$10,800,000
44		Regional	H	1300 South from 200 West to 3000 West	New Construction	$5,800,000
45		Regional	H	Rlington Parkway from 400 South to 4700 South	New Construction	$17,800,000
46		Regional	H	1150 West from 100 South to 1500 South (Phase II)	Reconstruction	$5,000,000
47	SR-17	State	UDOT	SR-17 (TQ) - Widen from MP 4.1 to I-15	New Construction	$7,000,000
48		State	UDOT	Toquerville Bypass - Construct bypass road off SR-17 from MP 4.1 to MP 1.1	New Construction	$30,300,000
49		Regional	SG	Traffic Control Center ITS	ITS	$500,000
50		Regional	MPO	Active Transportation Improvements - Phase II	New Construction	$3,000,000
51	I-15	State	UDOT	Initial SR-9 Interchange Modifications	Reconstruction	$23,400,000
	Phase Two (2025-2034)				**Funding Needs:**	$880,505,000
					Funding Assumptions:	$826,089,633
					Remainder / (Overage)	($54,415,367)

Project #	Route	Category	City	Project Description	Project Concept	Estimated Cost in 2015 dollars
Phase Three (2035-2040)						
1		Regional	I	Kwavasa Drive in Kayenta	New Construction	$6,254,000
2		Regional	SG	Western Corridor , MP 2 to Old Highway 91 (1st Barrel)	New Construction	$83,000,000
3		Regional	SG	Green Valley Drive - extend road to Western Corridor	New Construction	$18,720,000
4		Regional	SC	Pioneer Parkway , Lava Flow Drive to Red Mountain Drive	Widen/Reconstruct	$10,800,000
5		Regional	SG	Navajo Drive - extend road to Western Corridor	New Construction	$9,450,000
6		Regional	SG	Dixie Dr - Widen to 7-lane section from Plantations Dr to Blackridge	New Construction	$8,000,000

7		Regional	SG	Red Hills Parkway - Increase capacity between SR-18 and Northern Corridor	Widen/Reconstruct	$10,080,000
8		State	UDOT	Northern Washington Parkway Corridor , Red Hills Parkway to MP 13 - Phase II	New Construction	$47,000,000
9		Regional	W	Washington Fields Dr - Widen from Warner Valley to 3650 S	Widening	$5,000,000
10	I-15	State	UDOT	I-15 Widening in Southbound direction from MP 16-13	Widen/Reconstruct	$6,000,000
11		Regional	W	Roadway through Warner Valley from Warner Valley Road to Southern Parkway	New Construction	$14,859,000
12	I-15	State	UDOT	Leeds North Interchange @ MP 23.7	Interchange Upgrade	$25,000,000
13	I-15	State	UDOT	I-15 MP Exit 16 to Exit 27 Widening	Widening	$159,600,000
14		Regional	EWC	Babylon Road	New Construction	$36,900,000
14		Regional	H	1500 South from 700 West to 3000 West	New Construction	$6,600,000
15		Regional	H	3300 South from Rlington Parkway to 3000 West	New Construction	$6,700,000
17	SR-9	State	UDOT	SR-9 , increase capacity from SR-59 to Southern Parkway	Widen/Reconstruct	$20,000,000
18		Regional	EWC	Toquerville to Leeds Connector Road	New Construction	$12,000,000
19		Regional	H	1500 West from 1300 South to 3000 South	New Construction	$6,000,000
20		Regional	H	1150 West from 1500 South to 5000 South (Phase III)	New Construction	$11,000,000
21	SR-9	State	UDOT	SR-9 (LV), Widen from SR-17 to La Verkin eastern city limit	New Construction	$10,500,000
22	SR-59	State	UDOT	SR-59 from MP 20.9 to 22.10, from Big Plain Junction to SR-9	Widening	$5,000,000
23		Regional	SG	Traffic Control Center ITS	ITS	$500,000
24		Regional	MPO	Active Transportation Improvements - Phase III	New Construction	$3,000,000
Phase Three (2035-2040)					**Funding Needs:**	$521,963,000
					Funding Assumptions:	$515,178,781
					Remainder	($6,784,219)

2015-2040 Long-Range Plan Totals

Total Assumptions	$1,871,919,869
Total Needs	$1,942,110,000
Total Difference	($70,190,131)

Chapter 7 – **Safety Management**

Introduction

The Dixie MPO is committed to excellence in transportation planning. One area of planning which has, is, and will be given a lot of attention is 'Safety Management'. On the pages to follow, data and information will be presented that illustrates issues related to 'Safety and Security' as well as 'Traffic Safety'. Some ways those issues can be mitigated through objective identification and specific strategies or projects intended to lessen their impact are also presented.

The UDOT has put significant efforts into safety related data and campaigns. That information is used as a part of the Dixie MPO planning effort. For more information on the UDOT campaign, please refer to the UDOT web site at http://www.udot.utah.gov/main/f?p=100:pg:0::::T,V:2956,

Safety Performance Measures

As of 2015, the Federal Highway Administration is drafting a set of performance measures to aid MPOs in planning and goal setting activities as long-range plans are drafted. The generally agreed upon performance measure for "Safety" involves a look at "Serious Injury and Fatal Crashes," combined with the goal of reducing the number and rate of these crashes over time. The Utah Unified Transportation Planning Group and the Utah Department of Transportation agree with this general guidance.

Consideration of projects that increase safety or that may lead to the reduction of serious injury and fatal crashes is integrated into the Dixie MPO project selection process. Furthermore, the MPO annually reviews the Utah Safety Index Map to identify potential projects for the Highway Safety Improvement Program.

State Safety Leadership Team

UDOT's Office of Traffic and Safety is facilitating an on-going safety plan and strategy in cooperation with many local, regional, state, and federal partners. Each MPO in Utah is a member of this leadership team. One of the most visible projects has been the "ZERO Fatalities: A Goal We Can All Live With" program. Receiving national attention, this icon is fast becoming known throughout the entire state.

The primary program goals and objectives endorsed by the team and MPO boards will rely on education, outreach, and multi-agency partnering to accomplish them. Current Emphasis Areas include increasing use of safety restraints, improving intersection safety, and reducing aggressive driving, distracted driving, drowsy driving, truck safety, pedestrian and bicycle safety, and impaired driving. Various safety groups and governmental agencies have partnered on this statewide media campaign.

Continuing Safety Areas include enhancement of child safety, railroad crossing safety, older driver safety and transit system safety. Ongoing planning to improve pedestrian safety, bicycle safety, motorcycle safety, younger driver safety, and rural road safety will be coincided with increasing work zone safety and promoting safer truck travel. Special areas that may be visited and promoted periodically include enhancement of safety management systems, crash data systems, and emergency services capabilities.

UDOT, in conjunction with several road safety partners has created initiatives to promote road safety in Utah. One of those initiatives is the Utah Comprehensive Safety Plan. As noted on UDOT's website: "The Utah Comprehensive Safety Plan was developed by the Utah Safety Leadership Team, which consists of approximately 20 different private and governmental groups (including UDOT) interested in promoting roadway safety. The plan outlines a number of different roadway safety emphasis areas and notes what needs to be done from an engineering, education, and enforcement standpoint to achieve a reduction in fatalities for each emphasis area. Implementation and evaluation of the plan are also discussed." This plan can be accessed from the UDOT link noted above. Additionally, the State Freight Plan, addressed in Chapter 15 focuses on the safe movement of freight through the state.

Traffic Safety

As the fast growing area in and around the Dixie MPO develops, the number and frequency of traffic accidents will likely increase. Information available to the MPO identifies location and the major contributing factor to the accident as well as the severity of the accident and what injury resulted. Serious and fatal crash information is displayed in Map 5 - Traffic Crashes (Appendix A).

The UDOT has provided crash data by county which includes severity and contributing characteristics of the crashes. The chart below illustrates the incidence of severe injury and fatal crashes in Washington County between 2010 and 2014. Additionally, severe and fatal crashes and locations are illustrated on Map 5 "Traffic Crashes" of Appendix A.

Washington County – Serious Injury and Fatal Crashes by Contributing Factor, 2010-2014

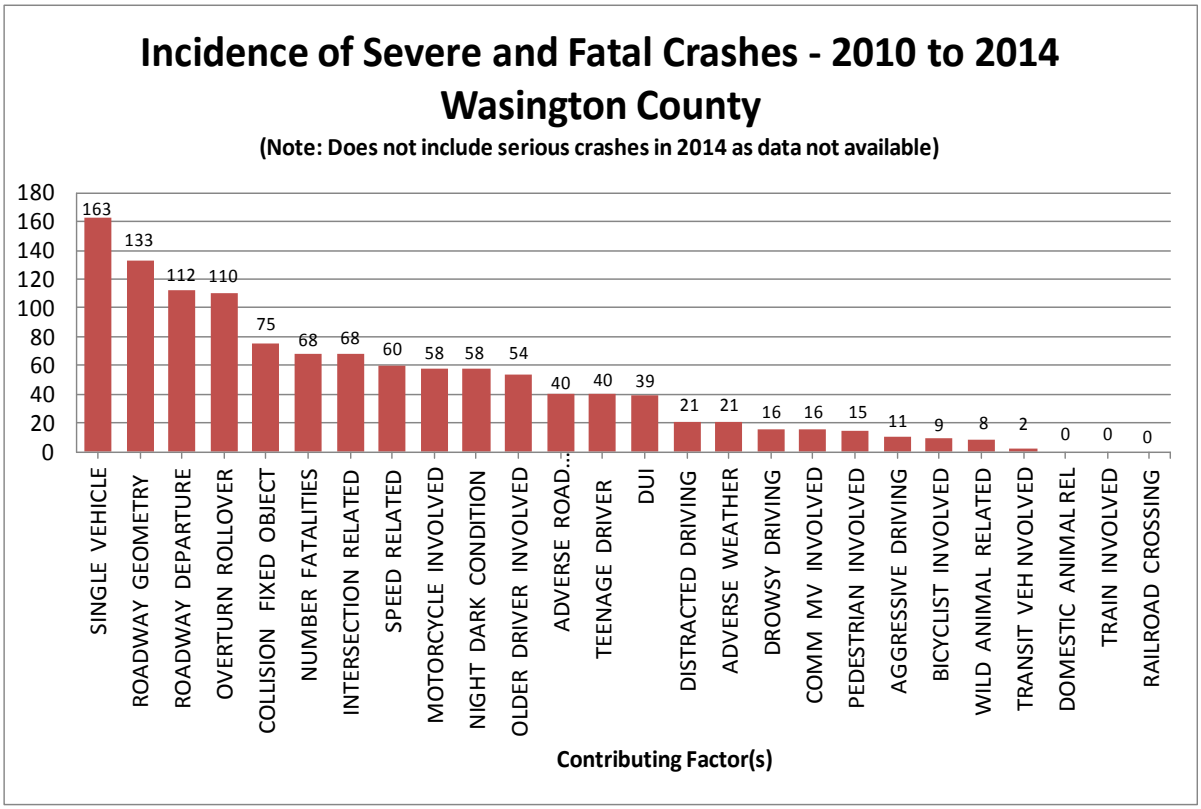


Figure 4 - Incidence of Severe and Fatal Crashes - 2010 - 2014 - Source: UDOT, protected under 23 USC 409

An analysis completed by Cambridge Systematics shows several contributing factors to crashes in Washington County. Common crash factors for our area include: multiple vehicles, intersection related crashes, aggressive driving/speeding, young drivers, single vehicle crashes, older drivers, roadway departure crashes, improper use of safety equipment, distracted driving, CMV involved crashes, overturn/rollover, crashes in work zones, and impaired driving.

From that analysis several possible focus areas were identified. The following are areas that will be given greater review:

Roadway Departures

The 2012 statistics from the Fatality Analysis Reporting System (FARS) show that nationally, there were 30,800 fatal crashes resulting in 33,561 fatalities. 54% of the fatalities were in rural areas while 46 % were in urban areas. The fatality rate per 100 million vehicle miles traveled was 2.4 times higher in rural areas than in urban areas (1.86 and 0.77, respectively).

Nearly 36 percent of the fatal crashes were single-vehicle Run-Off-the-Road (ROR) crashes on various road types.

For two-lane, undivided, non-interchange, non-junction roadways exclusively, there were 8,901 (24 percent) single-vehicle ROR crashes recorded. There are more than twice as many ROR fatal crashes on rural roads than on urban roads, partly due to the higher speeds on rural roads and the greater mileage and lack of additional lanes and median separation.

Some of the most prevalent contributing factors are listed below with a brief explanation of the problem. Objectives and strategies to address these factors also follow.

Restraint Use

More than half (52%)of the passenger vehicle occupants killed in traffic crashes in 2012 were unrestrained and 79% of passengers who were totally ejected were killed. NHTSA estimates that 12,174 lives were saved in 2012 by the use of seat belts.

Intersection Accidents

Intersections constitute only a small part of the overall highway system, yet intersection-related crashes constitute a higher percent of all crashes within urban areas (Kuciemba and Cirillo, 1992). Crashes are concentrated at intersections primarily because this is the point where traffic movements most frequently conflict with one another as illustrated in Figure 5. Good geometric design combined with good traffic control can result in an intersection that operates efficiently and safely.

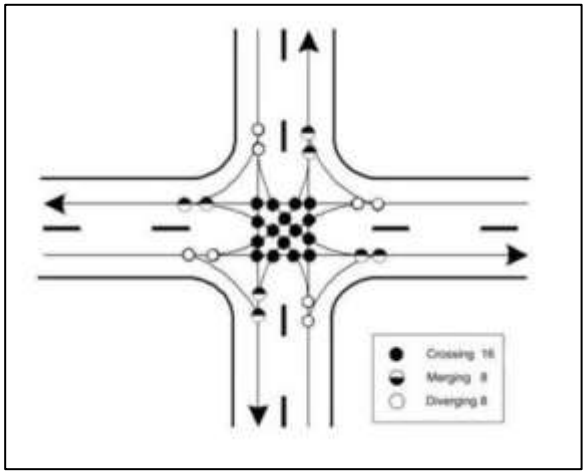


Figure 5 Intersection Conflict Point Diagram

Aggressive Driving

While estimates of the problem vary, perceptions among both law enforcement and drivers are that aggressive driving is becoming more prevalent. According to a National Highway Transportation Safety Administration (NHTSA) survey about aggressive driving attitudes and behaviors, more than 60 percent of drivers see unsafe driving by others, including speeding, as a major personal threat to themselves and

their families. More than half admitted to driving aggressively on occasion. The Surface Transportation Policy Project estimated that aggressive actions contributed to 56 percent of all fatal crashes. However, without a clear definition of aggressive driving, these broad assertions are difficult to support.

Older Drivers

Between 2012 and 2050, the United States will experience considerable growth in its older population. In 2050, the population aged 65 and over is projected to be 83.7 million, almost double it estimate population of 43.1 million in 2012, according to the US Census Bureau. By 2030, one in five Americans will be age 65 or older. In 2012, there were 5560 people 65 and older killed and 214,000 injured in motor vehicle crashes. These older people made up 17 percent of all traffic fatalities during the year. As people age, a decline in sensory, cognitive, or physical functioning can make them less safe drivers, as well as more vulnerable to injury once in a crash. Yet older Americans depend on automobiles for meeting their transportation needs.

The real safety concern for the older driver arises when one also takes into consideration their increased likelihood of being injured or killed in a crash. The older population traffic fatality rate per 100,000 U.S. residents was 12.9 in 2012 as compared to 18.7 in 2003.

Objectives & Strategies

The Dixie MPO is focusing on the above contributing factors because of the impacts they pose in our area. Although these factors pose significant concerns it is possible to help alleviate those concerns through the adoption and implementation of objectives and strategies addressing each area. The listing below includes strategies which if implemented will help the Dixie MPO to address each focus area:

Roadway Departures (RD)

RD1 Keep vehicles from encroaching on the roadside

- Install shoulder, edge-line, or mid-lane rumble strips where needed
- Provide improved highway geometry for horizontal curves
- Provide enhanced pavement markings
- Provide skid-resistant pavement surfaces
- Apply shoulder treatments
- Eliminate shoulder drop-offs
- Widen and/or pave shoulders
- Add medians or median separation where appropriate

RD2 Minimize the likelihood of crashing into objects or overturning if vehicles travel off the shoulder

- Design safer slopes and ditches to prevent rollovers
- Provide appropriate clear zones
- Remove/relocate objects in hazardous locations
- Delineate trees or utility poles with retro-reflective tape

RD3 Reduce the severity of the crash

- Improve design of roadside hardware

- Improve design and application of barrier and attenuation

Intersections

Un-signalized

I.1 Management of access points near un-signalized intersections

- Implement driveway closures/relocations
- Implement driveway turn restrictions

I.2 Reduce the frequency and severity of intersection conflicts through geometric design improvements

- Provide left-turn lanes at intersections
- Provide bypass lanes at T-intersections (Hi-T designs)
- Provide deceleration lanes and right-turn lanes at intersections
- Provide right-turn acceleration lanes at intersections
- Provide full-width paved shoulders in intersection areas
- Restrict or eliminate turning maneuvers by use of medians
- Restrict or eliminate turning maneuvers by providing channelization or closing median openings
- Close or relocate “high-risk” intersections
- Reduce lane off-sets through intersections
- Improve pedestrian and bicycle facilities to reduce conflicts between motorists and non-motorists

I.3 Improve sight distance at un-signalized intersections

- Clear sight triangles on stop- or yield-controlled approaches to intersections
- Clear sight triangles in the medians of divided highways near intersections
- Eliminate parking that restricts sight distance

I.4 Improve driver awareness of intersections as viewed from the intersection approach for both daytime and night time driving

- Improve visibility of intersections by providing enhanced signing and delineation
- Improve visibility of the intersection by providing lighting
- Provide stop bars on minor road approaches
- Install larger regulatory and warning signs at intersections

I.5 Choose appropriate intersection traffic control to minimize crash frequency and severity

- Provide all-way stop-control at appropriate intersections
- Eliminate all-way stop control where not warranted
- Provide roundabouts at appropriate locations

I.6 Improve driver compliance with traffic control devices and traffic laws at intersections

- Provide targeted public information and education on safety problems at specific intersections

I.7 Reduce operating speeds on specific intersection approaches

- Post appropriate speed limit on intersection approaches

I.8 Guide motorists more effectively through complex intersections

- Provide turn path markings
- Provide lane assignment signing or marking at complex intersections
- Meet or exceed MUTCD signing and striping requirements

Signalized intersection

I.8 Reduce frequency and severity of intersection conflicts through traffic control and operational improvements

- Restrict or eliminate turning maneuvers
- Employ signal coordination
- Improve operation of pedestrian and bicycle facilities at signalized intersections
- Remove unwarranted signals
- Provide advance intersection warnings where needed on higher speed road

I.9 Reduce frequency and severity of intersection conflicts through geometric improvements

- Provide/improve left-turn channelization
- Provide/improve right-turn channelization
- Improve geometry of pedestrian and bicycle facilities
- Reduce un-necessary delays
- Reduce lane off-sets through the intersection
- Improve night-time signing and visibility

I.10 Improve sight distance at signalized intersections

- Clear sight triangles
- Avoid curved approach roads
- Adjust median landscaping to allow for proper sight distance
- Add back plates to enhance contrast between signals and their surroundings
- Add supplemental signal heads to enhance signal visibility

Aggressive Driving

AD.1 Deter aggressive driving in specific populations, including those with a history of such behavior, and at specific locations

- Conduct educational and public information campaigns

AD.2 Improve the driving environment to eliminate or minimize the external triggers of aggressive drivers

- Change or mitigate the effects of identified elements in the environment
- Reduce nonrecurring delays and provide better information about these delays

Older Drivers

OD.1 Plan for an aging population

- Establish a broad-based coalition to plan to address older adults' transportation needs

OD.2 Improve the roadway and driving environment to better accommodate the special needs of older drivers

- Provide advance warning signs
- Provide advance-guide and street name signs
- Provide all-red clearance intervals at signalized intersections

- Provide more protected left turn signal phases at high-volume intersections
- Provide offset left-turn lanes at intersections
- Improve lighting at intersections, horizontal curves, and railroad grade crossings
- Increase overall sign size (letters and numbers)
- Use higher reflective sign sheeting to provide improved recognition
- Encourage compliance with new retro-reflectivity standards
- Improve roadway delineation
- Replace painted channelization with raised channelization
- Reduce intersection skew angle
- Improve traffic control at work zones

OD.3 Reduce the risk of injury and death to older drivers and passengers involved in crashes

- Increase seatbelt use by older drivers and passengers through public education campaigns
- Provide "mature driver" stickers for all drivers over 65

Chapter 8 – Security

The world has come to understand, since September 11, 2001, that our security is of utmost importance. We are fortunate to have a very active and comprehensive Emergency Management Office in Washington County

Washington County Emergency Management

The Washington County Emergency Management Office has developed an Emergency Management Plan and is currently working on an update of that plan. The plan includes a County response to a variety of emergency situations which may occur in and around our communities. An evacuation Annex portion of the plan identifies procedures to coordinate evacuation needs during times of a natural, man-made, technological, Homeland Security emergencies or disaster.

The portion of the Washington County Emergency Management Plan as it relates to transportation coordination and which is referred to as the Evacuation Annex is summarized below

Assumptions

Highway and roadway evacuation capacities may be reduced significantly because of overload, accidents, stalled vehicles, road construction, and weather conditions, or by the event itself, which may either directly or indirectly impact the integrity of our infrastructure.

Preparation

Evaluate and establish potential evacuation routes, identify congestion points (areas under construction and repair, etc.).

Response
Identify as closely as possible the specific number of people to be evacuated, and provide the means of transportation if necessary. In any event define the routes to be taken and identify shelter sites which are available.

Direction and Control
The ultimate authority for protective action decision-making in Washington County rests with the Board of County Commissions or their designated representative(s).

Responsibilities

Washington County Council on Aging
Provides a Transportation Branch Director to coordinate essential services as a staff member of the Emergency Operation Center and supplies transportation resources needed.
Evacuation planning also will include consideration of:
1. The area to be evacuated.

2. Pick-up points where persons without private transportation will gather for evacuation by public transport.

3. Designated evacuation routes to be used by all vehicles during the evacuation.

4. Location of traffic control points.

5. Safe areas or buildings which provide some temporary measure of protection for evacuees from an actual or threatening disaster.

6. Location of reception centers where evacuees will be sent prior to moving to shelters or mass care shelters.

7. Designated mass care shelters that provide emergency sheltering and feeding of large numbers of evacuees.

8. Location of medical aid stations on evacuation routes, at temporary safe areas, and mass care shelters.

9. The time available for a reasonably risk-free evacuation.

10. Any personal belongings for the evacuated public.

Coordination with professional emergency managers

It is important to reach out to potential partners and develop a relationship in order to develop and foster a solid and lasting relationship. Building a network of professionals that work in the

areas of security and emergency management that coordinates on a routine basis, regardless of whether a specific project is being developed, is critical to being able to smoothly incorporate these partners when beginning a new project.

The Washington County Emergency Management Office has worked diligently over the years to coordinate with all emergency management professionals.

Objective and Goals

To help to maintain a safe and secure environment the DMPO will work towards meeting goals in cooperation with the Washington County Emergency Management Office and as stated below.

Objective

Work within existing networks to support the efforts of the Washington County Emergency Management Office.

Goals

1 Become more aware of the efforts of the Washington County Emergency Management Office.

2 Use the County Emergency Management contact list to begin a dialogue regarding evacuation planning for applicable projects.

3 Work with emergency managers to identify the best evacuation routes through the transportation network.

Chapter 9 – Congestion Management

The DMPO recognizes the value in understanding how project development impacts congestion/delay time. This brief analysis identifies some of the impacts associated with congestion.

There are many ways to describe congestion on a transportation network. For this plan, the total vehicle hours were compared on the entire transportation system in the model year 2040 in both the build (meaning all potential projects have been constructed) and no-build (meaning no potential projects have been constructed) scenarios. A reduction in congestion is realized by building the projects shown in the 'Projects & Phasing list' in Chapter 6 and illustrated in the "Network Travel Time" chart.

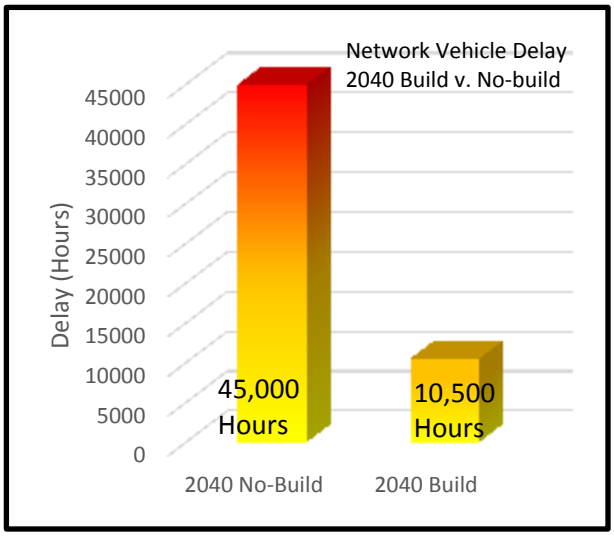


Figure 6: Network Travel time

The "Network Vehicle Delay" chart compares total network travel time per day in year 2040 for the build *v.* no-build alternatives. There will be 45,000 delay hours per day in the no-build scenario where current capacities are maintained but not expanded. This is compared to the 10,500 vehicle hours if all the projects are built. Thus the build scenario represents a total savings of 34,500 hours per day leading up to and beyond 2040.

The 2040 Daily Travel Times shown in Table 9, assumes a snapshot in time in 2040. It shows a No Build scenario resulting in 264,905 daily network travel time hours, or an 11% increase in hours above the Build scenario of 236,795 hours of daily travel time.

The "Cost Benefit Analysis" table, Table 11, shows the total time saved (in hours) of the build scenario, (building all projects in the long range plan) over the 25-year plan time period. It assumes two scenarios, hourly delay cost of $20 and of $30, with both showing a positive ratio over 1.0: 1.87 at $20 and 2.80 at $30

In summary, managing congestion on a network with limited capacity growth due to topography constraints puts heavy pressure on decision makers to make every attempt to implement the projects in this plan to serve the population and travel demand expected in year 2040. The mix of highway, public and private transit, and bicycle pedestrian facilities will help maintain the quality of life and economic growth of Utah's Dixie.

Table 9 - Daily Travel Times

2040 Daily Network	
Condition	*Travel Time (hours)*
No Build	264,905
Build	236,795

Table 11 – 25-Year Cost Benefit Analysis

Total Time Saved (hrs)	Cost Benefit ($20/Hr)	Cost Benefit ($30/Hr)	Total Estimated Roadway Improvement Cost	Cost to Benefit Ratio ($20/hr)	Cost to Benefit Ratio ($30/hr)
164,350,000	**$3,287,000,000**	**$4,930,500,000**	**$1,761,710,000**	**1.87**	**2.80**

Objectives and Goals

With these factors in mind, the Dixie MPO recognizes the potential for extreme traffic congestion and will strive to support congestion reducing efforts.

Objective

The Dixie MPO will encourage the reduction and management of traffic congestion through the implementation of useful transportation tools as well as construction of appropriate infrastructure.

Goals

1. Support the use of transportation tools including ITS Message Boards, the Traffic Control Center (TOC), Traffic Management efforts, Ramp Metering, Reversible Lanes, Cross-over left turn lanes and other state of the art tools.
2. Support the use of appropriate Transit Projects including the implementation of a Bus Rapid Transit (BRT) line.
3. Support the funding and construction of Transportation infrastructure projects aimed at reducing congestion.
4. Encourage and recommend congestion reducing tools in each new project.
5. Use the Travel Demand Model to identify congestion delay and measure the reduction progress.

Chapter 10 – Corridor Preservation

Corridor preservation is the practice of purchasing anticipated rights of way years ahead of planned transportation projects as an effort to reduce overall costs. Some estimates indicate that the early and well planned purchase of transportation corridors can result in cost savings of one-fifth or one-sixth of the amount that would be needed if the purchase were put off. The degree of importance for corridor preservation increases in areas like the Dixie MPO where high population growth is anticipated.

The Dixie MPO encourages all municipalities to anticipate and address corridor preservation needs within their own boarders – and utilize the Washington County Corridor Preservation Fund: In 2009, the Washington County Board of Commissioners implemented a "$10 per vehicle" annual registration fee to endow a corridor preservation fund that is administered by the county-wide Council of Governments (COG).
The COG is made up of elected leaders from throughout Washington County which meets at least annually to review a list of priority projects and program funds from the Local Transportation Corridor Preservation Fund.

The Local Transportation Corridor Preservation Fund Act is accumulating about $1.2 million of revenues annually for acquisition of rights-of-way. A portion of these corridor preservation funds are also available for transportation planning studies outside the MPO area.

In order for a project to receive funding, it must be on the COG project priority list. Currently, a number of projects have benefited from preservation funds including the 600 North project in Hurricane, the Bluff Street Widening project in St. George, and a future widening of State Route 9 in Hurricane.

The current list of prioritized projects is included on page 31.

NAME OF ROADWAY

2015 Alphabetical Listing

1400 West - Between 1300 South & 600 North - Hurricane
3000 East Widening - St. George
3050 East / 850 North Home Depot / Walmart Connection - St. George City - (to be ADDED)
400 South & 200 East Intersection Roundabout - Ivins (to be REMOVED)
600 North Street - 200 West to SR-9 - Hurricane
900 East - Virgin River Crossing, also knowns as Heritage Bridge - St. George
Airport Bypass Road (700 West, 1500 South, 2060 South, & 1150 West) - Hurricane
Apple Valley Gateway - Apple Valley
Bluff Street - St. George
Bridge Road - Relocate/rebuild historic bridge - Rockville
Dixie Springs Drive & 300 South St. - Hurricane
Extension of Washington Dam Road to Southern Parkway - Washington City & Washington County
Hurricane Valley to Leeds Connection - Hurricane
Indian Hills Drive - St. George
Kwavasa Drive (600 West) - Ivins (to be ADDED)
Kolob Road Intersection with SR-9 - Relocation / rebuild - Virgin
Leeds North Interchange Feasibility Study - Leeds
Mall Drive - Bridge over Virgin River and Underpass at I-15 - St. George
Merrill Road - Washington City
Mile Post 11 New Freeway Interchange - Washington City (to be ADDED)
North Airport Loop Road - St. George and Washington City
Purgatory Road - From SR-9 to Washington Dam Road - Hurricane and Washington City
Southern Parkway - UDOT
SR-17 - LaVerkin through Toquerville - UDOT
SR-17 Bypass - Toquerville
SR-18 - I-15 along Bluff Street to Veyo - UDOT
SR-34 - St. George Boulevard - I-15 to Bluff Street - UDOT
SR-9 Shoulder Widening - I-15 to Southern Parkway - UDOT
SR-9 Southern Parkway Interchange to Zion - UDOT
SR-9 to SR-59 Connection - through Sheep Bridge Road or Rockville / Smithsonion Butte
Toquerville to Leeds Connection
Washington Parkway - through Red Cliffs Desert Reserve - Washington City , St. George, & County
Western Corridor - 100' Corridor from Snow Canyon Parkway through Ivins/Santa Clara
Western Corridor - Sun River to Santa Clara

Objectives and Goals

It is of critical importance to preserve transportation corridors now and in the future; the DMPO will work towards meeting goals and objectives to assist this worthy cause.

Objective

Coordinate with the COG to edit its list of priority projects and select right-of-way acquisitions that maximize the effective use of the Washington County Corridor Preservation Fund.

Goals

1. Encourage all municipalities to anticipate and address corridor preservation needs within their own boarders.
2. Assist with the efforts of Washington County Public Works in preparing the Annual Master Priority Corridor Preservation Project List.
3. Make DMPO members aware of, and provide reminders and assistance in making proper use of the Preservation Fund.
4. Become more aware of project needs and look for opportunities to preserve important transportation corridors through the use of the Fund.
5. Work with DMPO partners to identify opportunities for corridor preservation.

Chapter 11 – **Environmental Mitigation**

The Dixie MPO recognizes that transit, road, and trail projects all bring positive and negative impacts on natural and built environments. Therefore the MPO strives to establish steering and stakeholder committees to guide early corridor planning studies. Committees are comprised of resource agencies, land managers, environmental groups, developers, and others who consider impacts to air quality, farmland, fish and wildlife, historical/archeological resources, geologic hazards, floodplains, water quality, and wetlands.

While corridor planning requires only a broad consideration of potential environmental impacts – a more detailed analysis is required as each project advances into the Environmental Assessment (EA) or Environmental Impact Statement (EIS) phase prior to project construction. Following is a discussion of potential environmental issues that require analysis of impact, concern, avoidance, or mitigation remedies:

Impacts

Farmland Impacts

Preservation of farmland is increasingly difficult in the Dixie Region. The shrinking availability of land, incentives to sell and give way to development, and the area's harsh desert environment are combining

to reduce the supply of farmable land within the Dixie MPO planning boundary. Incentives for jurisdictions to protect and preserve farm environments may not be strong enough to overcome these market forces that are driving a growth in population and consuming once farmable land for commercial and residential use.

Fish and Wildlife Impacts

The following table presents federally threatened and endangered species, and State sensitive species found throughout the Dixie Region. Although these species are identified for long range planning purposes and early corridor preservation studies, a more detailed investigation of impacts, avoidance, or mitigation is required at the Environmental Assessment or Environmental Impact Statement stages of environmental analysis.

Federally Listed Species in Washington County, Utah

Threatened(T), Endangered(E), and Candidate(C) Species

This list was compiled using known species occurrences and species observations from the Utah Natural Heritage Program's Biodiversity Tracking and Conservation System (BIOTICS); other federally listed species likely occur in Utah Counties. This list includes both current and historic records. (Last updated on January 12, 2012)**.

Common Name	Scientific Name	Status
Plants		
Siler Pincushion Cactus	Pediocactus sileri	Threatened
Shivwits or Shem Milkvetch	Astragalus ampullarioides	Endangered
Holmgren Milkvetch	Astragalus holmgreniorum	Endangered
Gierisch Mallow	Sphaeralcea gierischii	Candidate
Dwarf Bearclaw-poppy	Arctomecon humilis	Endangered
Reptiles/Amphibians/Fish		
Virgin Chub	Gila seminuda	Endangered
Woundfin	Plagopterus argentissimus	Endangered Candidate
Relict Leopard Frog	Rana onca	Extirpated
Desert Tortoise	Gopherus agassizii	Threatened
Birds		
Greater Sage-grouse	Centrocercus urophasianus	Candidate
Yellow-billed Cuckoo	Coccyzus americanus	Candidate
Mexican Spotted Owl	Strix occidentalis lucida	Threatened
Southwestern Willow Flycatcher	Empidonax traillii extimus	Endangered
Mammals		

Utah Prairie-dog	Cynomys parvidens	Threatened
Gray Wolf	Canis lupus	Endangered Threatened
Brown (Grizzly) Bear	Ursus arctos	Extirpated

** Created by the Utah Division of Wildlife Resources - January 12, , 2012

Note: Please contact the U.S. Fish and Wildlife Service (801-975-3330) for the purpose of consultation under the Endangered Species Act.

Historical/Archeological Impacts

Historical and archeological sites are other components that are not easily measured, but add character and quality of life in the Dixie Region. Avoidance, mitigation, and restorations are options to consider as planned solutions reach the environmental analysis phase.

Although the Dixie Region has not been completely surveyed for archaeological resources, the MPO boundary areas are likely to contain numerous archaeological sites.

The ancestral Southern Paiute are believed to have moved into this region sometime between AD 1000 and 1300. They were hunters and gatherers who practiced a seasonal round of resource collection and processing over a broad and diverse landscape. In southern Utah, however, some Southern Paiute groups became small-scale farmers and diverted water from the Virgin and Santa Clara Rivers and other smaller streams to cultivate garden plots. Euro-American explorers to this region, including Dominquez and Escalante in 1776 and Jedidiah Smith in the 1820s, reported seeing irrigation ditches and small check dams constructed by the Southern Paiute to divert water from the rivers and streams onto their fields of corn, beans, and squash. A Southern Paiute site, located on private land near the study area, was excavated by archaeologists from Brigham Young University in the 1980s. This site contained evidence of maize cultivation that dated to AD 1700 and 1830 (Allison 1988).

As part of the NEPA process, consultation will be required with Native American tribes that may have an interest in the study area. Final determination of tribes to include in the consultation process will be made during the NEPA process. The tribes with interest in the study area include the Hopi Tribe; the Navajo Nation; the Paiute Indian Tribe of Utah and its Shivwits, Cedar, Indian Peak, and Kanosh Bands; the Uintah/Ouray Ute; the Las Vegas Paiute; the Moapa Paiute; and the Kaibab Paiute.

Few surveys of historic resources have occurred within the study area. Historic resources in the study area relate to the 18th and 19th century Euro-American explorations. In 1776, two Franciscan priests from New Mexico, Dominquez and Escalante, traveled through southern Utah looking for an overland route to the Spanish colonies in California. This travel route came to be known as the Old Spanish Trail. The main branch of the Old Spanish Trail followed the Santa Clara River south from Mountain Meadows and then veered to the west over the low pass of Utah Hill (old Highway 91). In 2001, the Old Spanish Trail was designated as a National Historic Trail.

By the early 1850s, the first colonies were being established by members of the Church of Jesus Christ of Latter-day Saints (Mormons) in southern Utah. Some of the structures built by these colonies may be found in the study area; these structures include irrigation systems along the Santa Clara and Virgin Rivers and sites associated with stock animals.

Geologic Hazards

The geologic diversity within the State of Utah is well known and much of that diversity and topographical constraint exists in Dixie. The region is not immune to earthquakes, rock fall, landslides or volcanoes. Due to recent area events, rock fall hazards have become an increasing concern for area planners and constructors. Rock fall information can be

obtained by visiting the Utah Geological Survey website (http://www.geology.utah.gov/utahgeo/hazards/landslide/index.htm). The MPO encourages transportation solutions to take in to account the known geologic hazards in plans, designs, and construction to prevent, avoid, or mitigate as much as possible current, ongoing, and future geologic events.

Water-body and Floodplain Modification

Washington County in cooperation with FEMA and other agencies has produced an updated floodplain plan to deal with the aftermath of the January 2005 Flood in Dixie and to prevent and control floodwaters in future significant storm events. This plan is available at the offices of Washington County. Recently FEMA has developed new Digital Flood Insurance Maps that greatly assist planning around and through flood plain areas. These and other maps are available at the FEMA web site or through any of the Washington County City offices that participate in the Federal Flood Insurance Program. There is also the newly formed Washington County Flood Control Authority which is a intergovernmental body that now deals with regional flood control issues within the county. Transportation needs solutions/projects must be planned designed and built with these requirements and conditions in mind.

Water Quality Impacts

Water quality can be greatly impacted by the amount of hard surfaces (including roadways) in a region. Hard surfaces lead to polluted runoff instead of the water table's natural percolation cycle. Most of the larger communities within the MPO boundaries participate in the Utah Pollutant Discharge Elimination System (UPDES) programs. These programs administered through the Utah Department of Environmental Quality (DEQ) are designed to reduce or eliminate pollutants from surface runoff in conjunction with the EPA Clean Water Act.

Wetland Impacts

Wetlands provide an invaluable resource to our ecosystem. Section 404 of the Clean Water Act protects wetlands from development without a permit issued by the Army Corps of Engineers. Designing the roadways to protect the wetlands within the Dixie Region is in accordance with the requirements of the Clean Water Act and leads to a more sustainable community. A local office of the Army Corps of Engineers has been established and is available for further information.

Climate Change

While local discussions of climate change effects are minimal within the Dixie MPO more and more attention is being directed within the state concerning this issue. MPO executives and planners regularly discuss flood control plans and recognize the need to construct roads and bridges to accommodate heavy runoff volumes and to facilitate the local needs for drainage; however climate change may also have an effect on this and other aspects of transportation. Flooding events in 2005 and 2011 stimulated local awareness of potential hydrology concerns in a changing environment and validated the need to over-plan bridge facilities and other flood treatments within the flood plains and waterways of Southwestern Utah. Changes in temperature, precipitation and extreme weather events have the potential to negatively affect the populations throughout the MPO.

A document titled "Climate Change and Public Health in Utah" provides an accessible overview and description of the influence of environmental factors on climate change and health in Utah. Many identified indicators could have an effect on how transportation is looked at and planned in the future.

Air Quality

Washington County, Utah, is currently considered an attainment area as defined by the Clean Air Act and therefore is not regulated by the EPA or the Utah Division of Air Quality. However, proper planning will be required if the region reaches non-attainment status in the coming years or if EPA regulations are tightened. In non-attainment status, plans to reduce personal automobile dependency would become vital. Although there are many sources of air pollution, including ambient air moving in from other parts of the region, auto emissions, vapor gases, and dust are common contributors to air pollution locally. Mode/trip decisions, reducing single occupancy vehicles, improving traffic flow and recovering gaseous vapors are some of the ways to protect the quality of air. These and other strategies will be looked at and recommended to local governments for their consideration and adoption. The Dixie area has been growing rapidly for many years and will continue to grow to build out conditions, and must look seriously at protecting its air shed quality.

The MPO anticipates continued growth in vehicle miles of travel, and the associated congestion and traffic delays. Some societal tendencies are catching hold toward the use of energy efficient vehicles, and alternate modes of transportation such as bicycles, but the potential for air quality problems, especially for Ozone, is real for Utah's Dixie.

Ozone is the primary cause of summer air polution. It is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) mix with sunlight and heat. Ozone is a mix of chemicals emitted mainly from vehicle tailpipes, diesel engines and other smoke emmiting plants.. Often referred to as "smog" is a problem when temperatures are high and daylight hours are long. On hot summer days it can lead to shortness of breath, chest pains and lung inflammation.

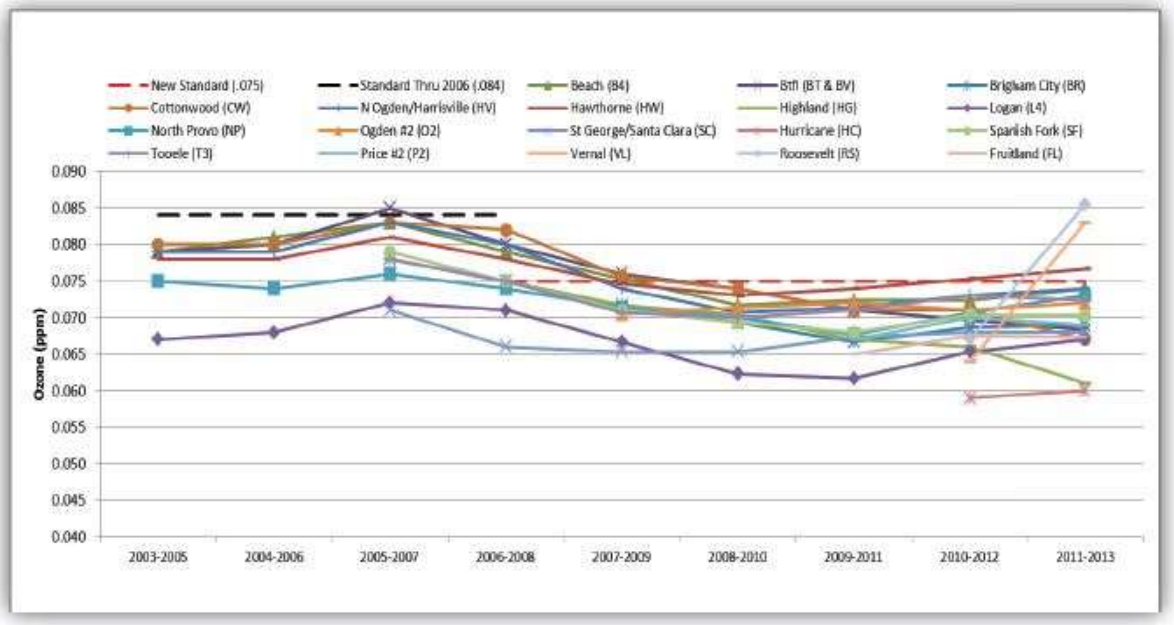
The consequences of allowing air quality to deteriorate to the point of exceeding pollutant standards, is costly. Besides the human health impacts and costs that are well documented, once an area is labeled a `non attainment' area for pollutants, meaning it cannot maintain air quality to acceptable standards, federally funded improvements to transportation t systems are restricted. Additional state and federal regulatory actions are then placed over an area increasing the cost to do business, to plan, and to implement projects. Needed federal funding may also be curtailed or withheld if attainment measures are not met.
The DAQ has conducted a summer ozone study in 2012 and is involved in the Western Air Quality Studies in looking at ozone transport and background values. One of the conclusions in the 2012 study suggests that there is broad regional transport of ozone. The study noted that "high ozone concentrations in rural Utah were potentially influenced by regional transport of ozone, springtime emissions of biogenic volatile organic compounds, stratospheric ozone intrusion and wildfire smoke." For the full study visit the DAQ Division of Air Quality web site.

The Division of Air Quality and the Department of Environmental Quality have offered to help the Dixie area avoid this situation, or postpone it for as long as feasible, and will encourage Congress to deal more fairly with areas that are experiencing ambient Ozone from outside sources. DAQ strongly recommends that the Dixie area do all that it possibly can on a voluntary basis in taking reasonable and cost effective measures to protect the air shed.

The State Division of Air Quality (DAQ) reports the status of local air quality. DAQ staff reported that an air quality monitoring station was in place in St. George from July of 1995, through the end of 1997. According to data gathered during that period, although no pollutants exceeded the current standards

at that time, new Ozone standards currently being implemented by the EPA were approached during April/May of 1996 and 1997. In 2008, another air quality monitoring station was established in Santa Clara with similar results as illustrated in the graph below. Currently the Santa Clara monitoring station has been replaced with a station in Hurricane City as the DAQ continues to monitor air quality in the area. Much of the data is available on the DAQ website at: http://www.airquality.utah.gov/news.htm. The DAQ has also published its Annual Monitoring Plan for 2014 which includes the Hurricane monitoring station (HC) as part of the program. The State has future plans to start monitoring for ozone at a location in Iron County that is yet to be determined.

Figure ??? 3-Year Average 4th Highest 8-Hour Ozone Concentration



DAQ staff made recommendations to the DTAC to consider developing a voluntary action plan to protect the air shed. Air shed protection is managed at the county level by DAQ.

To be proactive, the DTAC agreed to begin drafting a protection plan, and to conduct a locally funded short term Ozone study. SECOR, an air quality-engineering firm was chosen from a number of submitted proposals and began monitoring from a station placed on Washington County Annex property near the location of the original DAQ monitoring site. Data from this six-month study, conducted from May 2002, through October 2002, also did not exceed current Ozone standards but Ozone levels were slightly higher when compared to the 1995- 97 DAQ data. Also, data available from a permanent monitoring site in Mesquite, Nevada shows very similar Ozone concentrations to St. George, according to SECOR. These studies, together with other data from the southwestern region of the US, show that Ozone levels approaching .08 ppm are prevalent regardless of urbanized status. The results of the SECOR study is available for review at the Dixie Transportation Planning Office, Five County Association of Governments, 1070 W. 1600 S., St. George, UT 84770.

Ozone standards were changed in 2010, but subsequently stayed on appeal of a law suit.

In January 2010 EPA proposed stricter standards for smog. As part of EPA's extensive review of the science, the Clean Air Scientific Advisory Committee (CASAC) was asked for further interpretation of the epidemiological and clinical studies they used to make their recommendation. To ensure EPA's decision is grounded in the best science, EPA will review the input CASAC provides before the new standard is selected. Given this ongoing scientific review, EPA intended to set a final standard in the range recommended by the CASAC by the end of July, 2011.

As of this writing, discussions with the DAQ indicate that "The standard is still in flux. EPA is under a court order to propose something new by Dec. 1, 2014. This will be a draft rule which will be finalized by Oct. 1, 2015. EPA has suggested that it is looking at a range of 60 -70 ppb for the standard, although there are those that are also pushing for a no change option. The draft rule may not have a hard value proposed rather a range could be proposed and then allowing for comment."

It is reported that: "Basically, any change to any level in the proposed range will likely result in the violation of the standards and a designation of a non-attainment status for most of the state. "

The standard levels of acceptable Ozone were .075 ppm prior to the 2010 proposal. The proposed change would bring that level down to .065 ppm to .070 ppm. At the lower levels, if approved, it is projected that the MPO and surrounding areas will become non-attainment. According to DAQ information, regional Ozone levels close to the new standard are being seen at monitoring sites throughout the southern Utah region, from Four Corners, into the Grand Canyon, Zion National Park, Dixie and southern Nevada. DAQ also suggests that a local condition is occurring in springtime such that when vegetation begins to green up and temperatures are rising, the combination of emissions of nitrogen oxides (N Ox) and volatile organic compounds (VOC) contribute to ozone formation, and should be included in the scope of emissions inventory and non regulatory monitoring efforts.

Action Plan

A multi agency team is being established to develop a scope of work for DAQ non regulatory air pollution monitoring in Dixie with the intent of determining local pollution levels for several pollutants, but to especially focus on Ozone. The geographic scope will be the entire County of Washington.

More stringent guidelines are available under EPA's new Ozone Flex Program for areas concerned about potential future non attainment of either the 1 hour or 8 hour ozone standards, to achieve emission reductions, secure public health benefits, and accrue possible credits to future planning efforts, to the extent allowed by the Clean Air Act and EPA guidance or rules.

Prevailing Winds in Dixie tend to move from the southwest in a northeasterly direction, almost on a daily basis. This air movement helps to change the air, to `refresh it', in a word, on a regular basis. However, the same prevailing winds are likely to carry contaminated air from nearby urban areas like, Las Vegas, or even from the Los Angeles Basin, into and through Dixie. Truckers who drive the I-15 Corridor on a regular basis are convinced of this relationship. Of course, anyone may have an opinion, but empirical results would be needed to determine the relationship and to affect public policy. Efforts are being made by the DAQ and others to document these ozone transport relationships. Postponing empirical results may compromise community health standards and be against the operating values agreed to by DMPO partners. The partners agree to:

- Cooperate and coordinate with DAQ and other local stakeholders in developing and Implementing a regional scope of work for non regulatory monitoring in Utah's Dixie

- Encourage use of mobile monitoring equipment to help determine local and regional Ambient source contributions
- Participate in pollutant source inventorying and sharing other data, as needed
  (See Appendix C for typical pollution source list)

Traffic Congestion is a contributing factor to the level of air quality due to increase in pollutants, as vehicles progress slowly and are queued up at intersections for long cycle lengths. Vehicles that are idling emit more pollutants than when operating at optimum speed, which is around 30mph. Delay time at specific intersections as well as along routes is an indicator of Congestion. Another indicator may be average road link speeds that fall below 15 mph. If feasible, speed data may be available or determined that will be useful in making traffic flow impact decisions. The Dixie MPO and its partners recommend the following strategies for local government consideration and action:

- Encourage Intersection Flow improvements & Traffic Signal synchronization
- Consider one way streets where feasible
- Maintain capacity, speed, and function of arterial /collector roads & corridors
- Encourage business and industry to establish Flexible employee work hours
- Encourage placement of fiber conduit in all new construction or rehabilitation projects for future ITS strategies
- Encourage municipal purchase of unused buried conduit
- Support mobility management efforts such as van pooling
- Plan appropriately to reduce overall delay hours
- Improve transit operations to provide more opportunities to leave vehicles at home
- Continue to maintain and update the Traffic Demand Model in providing useful data pertinent to air quality
- Encourage local governments to prepare corridor management plans and signal coordination plans to reduce delays and congestion.

Municipal Corporation Policy varies throughout Dixie as to visible efforts to improve air quality. St. George City for example, has executed resolutions such as tree planting, especially in parking lots, which reduces vapor emissions from automobile gas tanks; encourages non polluting industry; supports and operates public transit; and has had a goal of having a bicycle/pedestrian trail within 15 minutes of every home. Communities in the region are all actively supporting paths and trails and their connectivity. The Dixie MPO encourages the following strategies for local government support and action:

- Landscaping/tree planting strategies, especially for parking lots
- Fleet Vehicle fueling in cool hours of the day
- Covering all solvent tanks or open storage of vaporous gases/liquid
- Encourage non polluting industry
- Encourage any polluting industry to apply modern emissions technology
- Encourage Volatile Organic Compounds (VOC) recovery at all fueling stations
- Encourage fleet vehicle preventive care as recommended by manufacturers
- Encourage and support van and car-pooling of employees -
- Support regional Public Transit
- Encourage fleets that use alternative fuels (incentives available)
- Support Walk-able Communities and neighborhoods (land use, zoning, codes)

- Support MPO Long Range Plans, Policy, and Standards in local development decisions
- Encourage all municipalities to implement a "Complete Streets" plan and policy

Private/Public Partnerships can go a long way in encouraging business and citizen contributions to air quality protection. Encourage the Chambers of Commerce to partner with local business, colleges, and industry to support similar protection measures as listed above.

Dixie MPO Work Plan:

1. Participate with DAQ and local partners in non regulatory monitoring
2. Create Public/Private Education Program
   Distribute information to and through:
   - Chamber of Commerce members
   - Municipalities
   - Washington County
   - Public Agencies
   - Schools, College
   - Neighborhood organizations
   - Coverage in local newspapers
   - Newsletters
3. Include Air Quality Protection strategies in the Long Range Transportation Plan
4. ITS technology should be reviewed and appropriate, effective tools implemented when feasible and affordable.
5. Assist DAQ in emissions inventory of sources of potential pollutants
6. Seek voluntary action consistent with prevention or control of related emissions
7. Seek funding for local action planning from the Environmental Protection Agency

Air Quality Task Force:

The Southern Utah Air Quality Task Force was formed in 1996. The first challenge was to address fugitive dust issues in the St. George area. Since its creation the Task Force has been encouraged to address many additional air quality matters such as air quality monitoring, agricultural and range fire smoke, motor vehicle emissions, and application of pesticides and herbicides. Many have been concerned about the potential for transfer of air pollution from the Los Angeles and Las Vegas areas.

The purpose of the Task Force is:

- To work together to prevent future non-compliance with air quality
- To support and conduct non-partisan research, education, and informational activities to increase public awareness of air quality concerns and solutions
- To achieve communication within industry, communities and government representatives; and to sustain air quality values

The goal of the Task Force has been to encourage community awareness and involvement. They currently meet monthly and hold an annual Air Quality Summit to educate the public and community leaders about air quality issues affecting this area. The group generally meets the third Wednesday of every month at 10:00 a.m. at the Association of General Contractors of Utah office in St. George.

Integration of NEPA into the Planning Process

While the above elements are important components of the natural and built environment in the Dixie Region, and each deserves their own thoughtful and comprehensive analysis. This plan does not attempt to perform a comprehensive Environmental Analysis or Environmental Impact Statement as regulated by National Environmental Policy Act (NEPA). At this point, projects included in this plan are for planning and modeling purposes only. Some projects amount to little more than a proposed line on a map. It is not intended to identify specific alignments for planned corridors. When a formal proposal is made, the NEPA process will follow.

Unified and Cooperative Planning Processes

In 2009, public and private planners throughout Utah began creating the unified planning tool "U-Plan" – a web-based information platform designed to allow road and utility planners to jointly access information on rights-of-way, infrastructure lines, environmental concern areas, habitat areas, and other built and natural resources. The Dixie MPO views U-Plan as an integral tool within the transportation planning process and encourages outside agencies to participate.

Objective and Goals

The Dixie MPO recognizes that there are many environmental challenges throughout its planning boundary that must be considered when planning and constructing regional transportation corridors. As a result, a number of strategies have been identified throughout this chapter.

Objective

The DMPO understands the need to consider these environmental challenges in the planning stages and will strive to incorporate environmental solutions into its planning process.

Goals

1. To support the environmental processes associated with requirements for federally funded projects.
2. To become more aware of the historical and geological issues of the area.
3. Commission necessary studies and investigations to support the planning process.
4. Stay abreast of changes in environmental requirements throughout the planning area and specifically those related to air quality with special emphasis on ozone.
5. Support the plans, strategies, and Task Force identified in this chapter.
6. Be committed to the DMPO work plan as described above.

Chapter 12 – **Active Transportation**

As stated in the Chapter 3 above, pedestrian and bicycle facilities are an integral part of the area's transportation system. Active transportation provides a myriad of economic, environmental and social benefits for the region. Vision Dixie calls for the implementation of "complete streets" criteria to ensure streets and roads accommodate all users including drivers, transit riders, pedestrians, and bicyclists, as well as for older people, children, and people with disabilities. Complete Street designs are also intended to improve motorist attitude and behavior toward other street users.

In Spring 2014, Dixie MPO Staff and the Technical Advisory Committee acknowledged that there was a need to develop a more safe, attractive, and better connected system of pedestrian and bicycle infrastructure. The region already includes an extensive array of trails, and some shared roadways and bike lanes. However, walking and cycling for transportation purposes is often inconvenient and unsafe, as the current transportation system lacks meaningful connections to destinations.

Acknowledging this need, the Dixie MPO Commissioned a *Dixie MPO Bicycle/Pedestrian Master Plan* to identify projects and policies in the region that will create a transportation network conducive to cycling and walking. With the assistance of Alta Planning and Design, the Dixie MPO is developing this plan. A Steering Committee comprised of the following entities was appointed to guide the process in developing the plan:

- St George City
- Hurricane City
- Washington City
- Ivins City
- Santa Clara City
- UDOT
- Southern Utah Bicycle Alliance
- Southwest Utah Public Health Department
- Dixie State University
- Washington County School District

When finalized, the Bicycle/Pedestrian Plan will recommend a network of connected bikeways and improved sidewalk connections, with estimated costs and potential funding sources for each project. Facility types include sidewalks, bike lanes, shared roadways, and shared use paths, and various crossing improvements. Map 9 in Appendix A includes potential projects that have been recommended as a draft of this Plan is being developed. Map 8 in Appendix A includes those projects that have been officially adopted by cities throughout the region. In addition to projects, the plan will include a description of potential policies and programs that can be implemented to improve active transportation conditions in the region. Potential programs and policies include: education and awareness campaigns, sidewalk infill programs, bicycle parking policy and development regulations, among others.

The Dixie MPO will recommend incorporating the MPO Bicycle Pedestrian Plan into each municipality's transportation plan, including coordinating with municipalities in the region to ensure the Bicycle/Pedestrian Plan is in accordance with existing transportation plans. At the conclusion of the plan, the Dixie MPO will continue to utilize the Bicycle/Pedestrian Plan Steering Committee to coordinate the implementation of bicycle and pedestrian activities throughout the region.

Objectives and Goals:

Objective
Improve conditions to make cycling and walking for transportation more safe, attractive, and convenient

Goals

1. Facilitate the appropriate design, construction, and maintenance of bicycle and pedestrian facilities.
2. Support a multimodal transportation system for all new construction and reconstruction projects.
3. Encourage policies and programs that improve bicycle and pedestrian safety.

Chapter 13 – **Transit Service**

SunTran provides transit service for the City of St. George and Ivins, currently operating fixed bus routes and paratransit (ADA) service between 6:00 AM and 8:00 PM Monday through Saturday. There is no service on Sundays or major holidays. The system consists of six fixed bus routes, four of which operate on 40 minute headways with two operating on 80 minute headways. SunTran has experienced significant ridership growth since its inception in 2003 (See graph below). Areas being served by transit include: downtown St. George, Red Cliffs Mall, Dixie State College, the Dixie Center, the Dixie Downs area, Bloomington and Ivins City. Map 10 in Appendix A shows the six existing fixed SunTran routes, as well as potential routes for expansion.

SunTran continues to grow substantially in ridership and several studies and plans point to the need for expanded and improved transit service in the Dixie region to develop a more balanced transportation system and provide a greater range of transportation choices, particularly for those with limited mobility. In a recent onboard transit survey, 90% of respondents stated it was important to expand SunTran service to new places in the area. This survey also indicated that the majority of SunTran riders rely on the service to meet their daily transportation needs, with 76% of respondents stating that they did not have another option (besides riding SunTran) for making their trip.

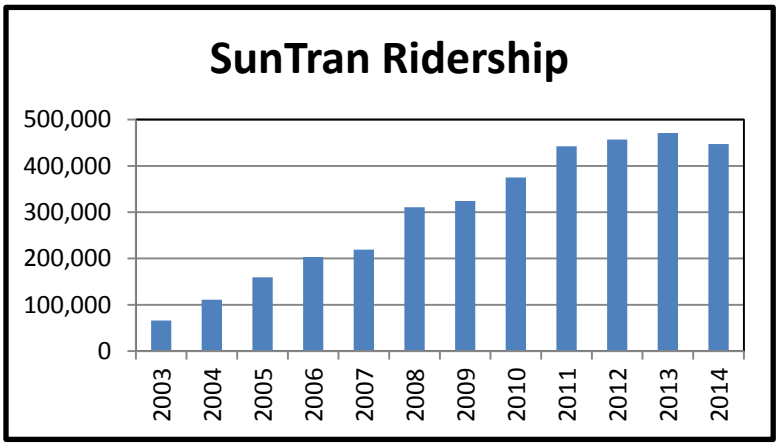
Potential Transit Expansion Areas

In January 2015 transit service was expanded to Ivins and Bloomington. This expansion was accomplished through an inter-local agreement with Ivins and St George City, operator of SunTran. Studies have identified the following additional areas/corridors in the region to be in need of transit service.

Hurricane and Zion National Park Corridor

The *Dixie Bus Rapid Transit Feasibility Study* (BRT study) and the *Hurricane to Zion Canyon Transit Study* both point to the potential short term and long term viability of transit service in this corridor. The BRT study evaluated the potential for long-term feasibility of transit service between central St George City and Hurricane City and central St George City and the airport. The study suggests that when the service area reaches 252,000 people and 143,000 jobs, BRT service will be viable. However, conventional bus service should be implemented to serve existing demand. Map 10 (Appendix A) displays potential alignments for these routes.

The *Hurricane to Zion Canyon Transit Study* evaluates and recommends transit service between Hurricane and Zion National Park. After analyzing demand in the corridor, the study recommends implementing fixed-route transit service with 60 minute headways. The study emphasizes that transit would only be viable in this corridor provided that a transit connection is also provided between St George and Hurricane.



The next step toward implementing transit in this corridor is to provide an implementation plan for transit service in the short term, which identifies service characteristics, fare structure, and funding, given resources that are available at the present time. This service is likely to be provided initially through an inter-local agreement with St George City, Hurricane, Springdale, and other communities in the corridor.

Washington City

A concept route to Washington City was presented in the *Dixie MPO Regional Transit Study*. In 2014, Washington City began the process of formulating an agreement with SunTran to institute a fixed route that connects to the existing bus system with complementary para-transit service. SunTran management is currently working with Washington City to determine which route would best serve the community. A potential route is displayed on Map 10 (Appendix A). The Dixie MPO recently provided assistance to the stakeholders in the process by utilizing the Regional Travel Demand Model to estimate ridership of two route alternatives to inform the process. Similar to Ivins City, initial service to Washington City is likely to be provided through an inter-local agreement with St George City.

Santa Clara City

Due to budget constraints, service to Ivins City was initially instituted without service to Santa Clara City, which the bus passes through on the route. However service to this community would benefit a large population of residents, not currently being served. The Dixie MPO will support coordination between Ivins, St George City, and Santa Clara City to provide public transit service to Santa Clara City, given adequate funding and public support.

St George Airport

As noted above, a bus rapid transit line, servicing St George Airport is a viable service in the long term. However, in the short term interim bus service should be provided to begin phasing toward a BRT line. The *St George Urbanized Area Short Range and Long Range Transit Plan* (2006) identifies an express route to the airport. To maximize efficiency, the route schedule should be coordinated with air service.

Other Transit Improvements

The *St George Urbanized Area Short Range and Long Range Transit Plan*, completed in 2006 identifies a service plan, which includes providing service to Middleton and Bloomington Hills, while modifying other routes. This Plan is in need of an update to reflect current needs for the system and recommend improvements that would improve transit level of service, while offering a plan to sustain the service. In addition to servicing new areas, consideration should be given to provide more frequent and direct service to reduce travel time. In addition to a service plan that recommends specific routes, the plan should include a capital, institutional and financial plan. Some of these elements can draw upon the findings of the *Dixie MPO Regional Transit Study*. The plan should take into account the financial assumptions of the Dixie MPO for additional transit funding, including ¼% sales tax by 2020.

Coordination with other modes

As regional transit service is improved and expanded, coordination with other modes of transportation is essential to offering alternative transportation options. Every trip on fixed-route public transportation begins and ends with another mode, whether it be cycling, walking or driving. Due to additional demand, SunTran has recently purchased additional capacity on its bicycle racks. SunTran Management indicates that demand for wheel chair users on transit has also risen substantially in recent years. In addition, SunTran is working with a Bus Shelter work group to improve conditions for passengers at bus stops. The *Southwest Utah Coordinated Human Service Public Transportation Plan* identifies the need for a last mile study to identify needed improvements for transit users on roadways near transit. Furthermore, as transit expands to Hurricane, Zion National Park and the Airport, consideration for Park-and-ride locations should be given.

Improved connections to inter-city bus and shuttle services are necessary to connect residents with the greater region. Greyhound, St George Shuttle, Aztec Shuttle, and St George Express currently offer service to Salt Lake City, Las Vegas and other nearby cities. However, these services are not well-connected to SunTran. Coordination with each entity is needed to improve the experience of transit users.

Coordination among providers to match users to the appropriate transit service or services is the focus of the Five County AOG Mobility Management Program. The Five County Regional Mobility Council guides this program, while coordinating human service and public transportation services throughout the region. The Dixie MPO will continue to support mobility management efforts to coordinate and expand services to meet the needs of seniors, persons with disabilities, and low income individuals, as well as the greater community. The *Southwest Utah Coordinated Human Service Public Transportation Plan* includes mobility management and other strategies to meet these needs.

Funding and Governance for expanded transit service

Public Transportation cannot be provided without adequate financing. Additional funding is necessary to implement any expansion of the current transit system, including those listed above. In 2012, a *Dixie MPO Regional Transit Study* was completed to evaluate the governance and funding options available to the Dixie region for expansion and diversification of transit service. The study includes a case study of six

transit organizations of similar size to illustrate the variety of governance and funding options for public transportation.

The study recommends a phased approach toward developing a regional transit service, beginning with improved service in St George and initial service to adjacent cities through inter-local agreements, followed by the establishment of a Regional Transit District, which is supported with a dedicated multi-jurisdictional funding for transit. This is only possible through public support, which should be gauged throughout the process.

As noted above, the first phase is currently being implemented through inter-local agreements in Ivins, with the initial phases of such agreements occurring in Washington City and the Hurricane/Zion Corridor. The Dixie MPO Transportation Executive Committee (DTEC) has officially endorsed the financial assumption that ¼% sales tax will be implemented by 2020. This assumption is contingent upon public support. The Dixie MPO will support the region's communities as they plan for improved regional transit service.

Objectives and Goals

Objective

Enhance and expand public transportation to build a more balanced transportation system

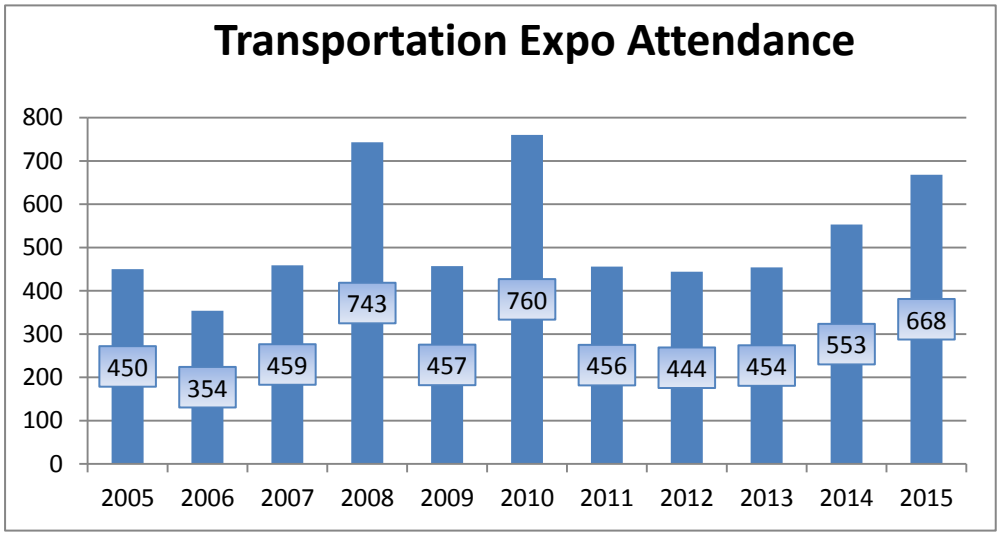
Goals

1. Provide technical assistance to SunTran and cities in the region to plan for and implement expanded transit service
2. Support efforts to develop a regional transit district or authority
3. Identify sustainable funding sources for public transportation and assist with procuring funds
4. Support the mobility management program to coordinate transportation services and meet the needs of residents with limited mobility

Chapter 14 – Public Involvement

Commitment to Public Involvement

The International Association of Public Participation defines five levels of public involvement in the International Association of Public Participation Spectrum of Public Participation. These five levels are 1) Inform, 2) Consult, 3) Involve, 4) Collaborate, and 5) Empower.



Public involvement is vital as the Dixie MPO plans transportation facilities through 2040. The MPO uses a web site, legal notices of meetings, news releases and a variety of news letters to **inform** constituents of meetings, studies, plans, and opportunities to become involved in the planning process.

The MPO also sponsors an annual "Dixie Transportation Expo" to gather public comments and respond to inquiries, consult with citizen groups, and collaborate with them to realize potential solutions. An estimated 500 to 700 people attend the "Expo" annually and comment on individual projects, plans, studies, environmental issues, future initiatives, etc. as transportation plans are laid and as projects move forward through the process from concept to construction. The "Expo" is typically scheduled the second Tuesday of each February.

In some areas, the MPO has also found ways to empower citizen committees to directly influence plans for the future. The Vision Dixie process discussed earlier in this document was based on citizen input and attempts to capture the public's vision for the metropolitan area of the future – and then plan to that vision. The bicycle/pedestrian trail section of this plan was also reviewed and expanded through the efforts of a citizen's committee. In addition, the Southern Utah Truckers Association has given comments about roadway improvements that can be made to help freight move more smoothly through our communities.

Moving forward, the MPO is committed to include public involvement initiatives in its decision-making efforts, to communicate public concerns to MPO voting members, and to educate the public on MPO deliberation, options, strategies, and plans of regional significance.

Public Comments:

Public comments from the 2015 Transportation Expo and in the advertised public comment phase of this plan are noted below with MPO RESPONSES IN ALL CAPS:

General Comments

Specific Comments on the Draft Regional Transportation Plan 2015 - 2040

Chapter 15 – **Freight**

Freight Mobility Group

As a small MPO, the Dixie MPO has a seat on the State-wide Freight Mobility Group. The group is charged with the drafting of a State-wide Freight Plan including a Primary Freight Network Map. That plan is the backbone of this chapter and the map is found here as Map 12 (Appendix A). The state-wide plan is being drafted currently and the information provided will be included in this chapter as it comes available.

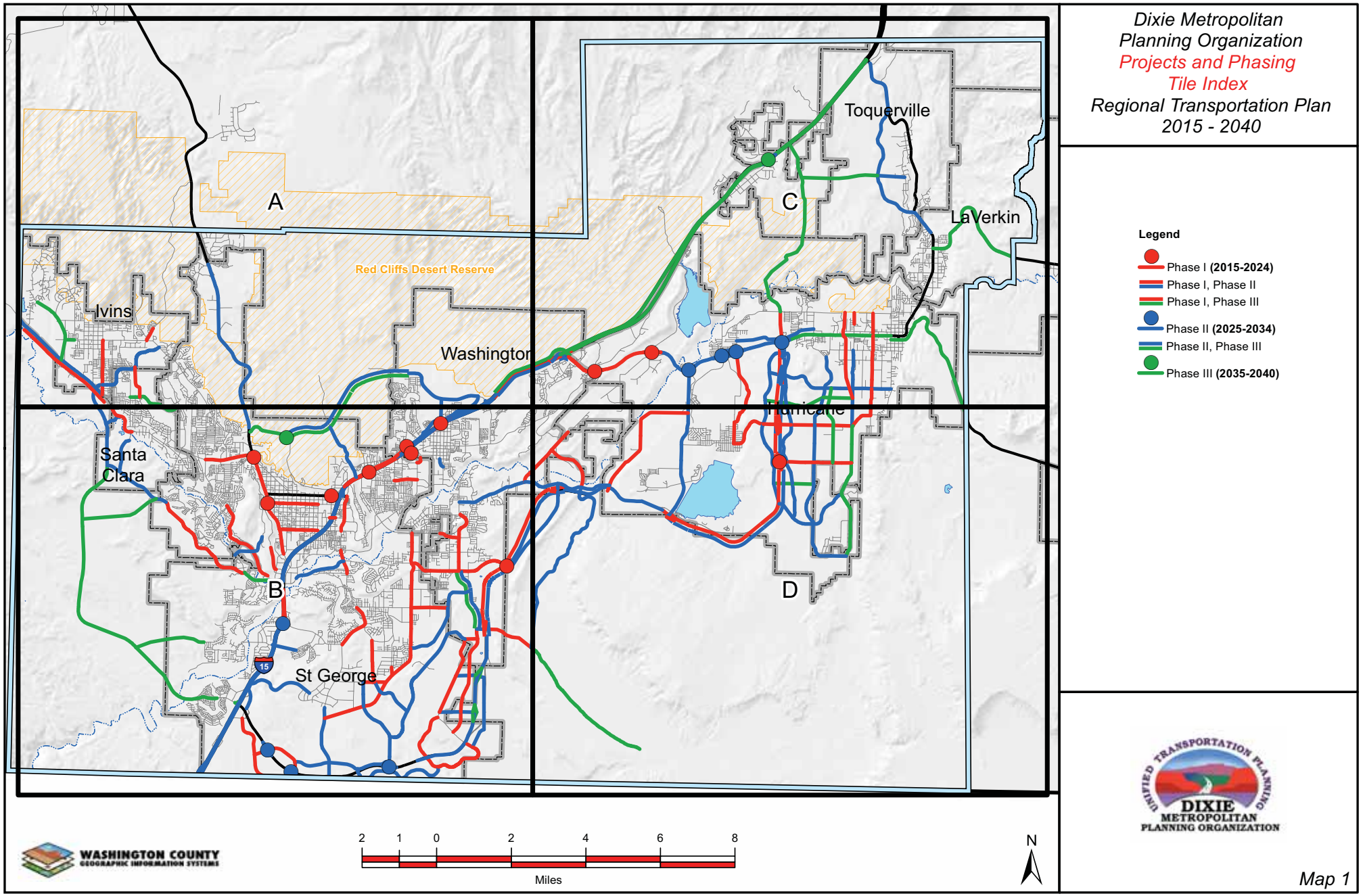
Southern Utah Truckers Association (SUTA)
SUTA is another great source of information. The membership recently participated in a survey to help determine transportation improvement projects they feel can help to move freight through our region safely and more efficiently.

Some of those projects are listed below.

SR-7		extend the southern corridor from the airport to I-15 near Leeds
I-15		modification to exit 16 SB to SR-9 because the turning radii are too tight
I-15		exit 5 signal timing does not work for trucks
I-15	complete	bridge at exit 5 has big bump
SR-59		need uphill climbing lane out if Hurricane
3050 East		remove raised landscape median to lengthen turn movement to desert drive

These projects have been added to the state-wide freight project list to be considered as part of the State-wide Transportation Improvement Program (STIP)

APPENDIX A – Maps


Dixie Metropolitan
Planning Organization
Projects and Phasing
Tile Index
Regional Transportation Plan
2015 - 2040
Legend
Phase I (2015-2024)
Phase I, Phase II
Phase I, Phase III
Phase II (2025-2034)
Phase II, Phase III
Phase III (2035-2040)
A
B
C
D
Toquerville
LaVerkin
Red Cliffs Desert Reserve
Ivins
Washington
Hurricane
Santa Clara
St George
15
2 1 0 2 4 6 8
Miles
N
WASHINGTON COUNTY
GEOGRAPHIC INFORMATION SYSTEMS
UNIFIED TRANSPORTATION PLANNING
DIXIE
METROPOLITAN
PLANNING ORGANIZATION
Map 1
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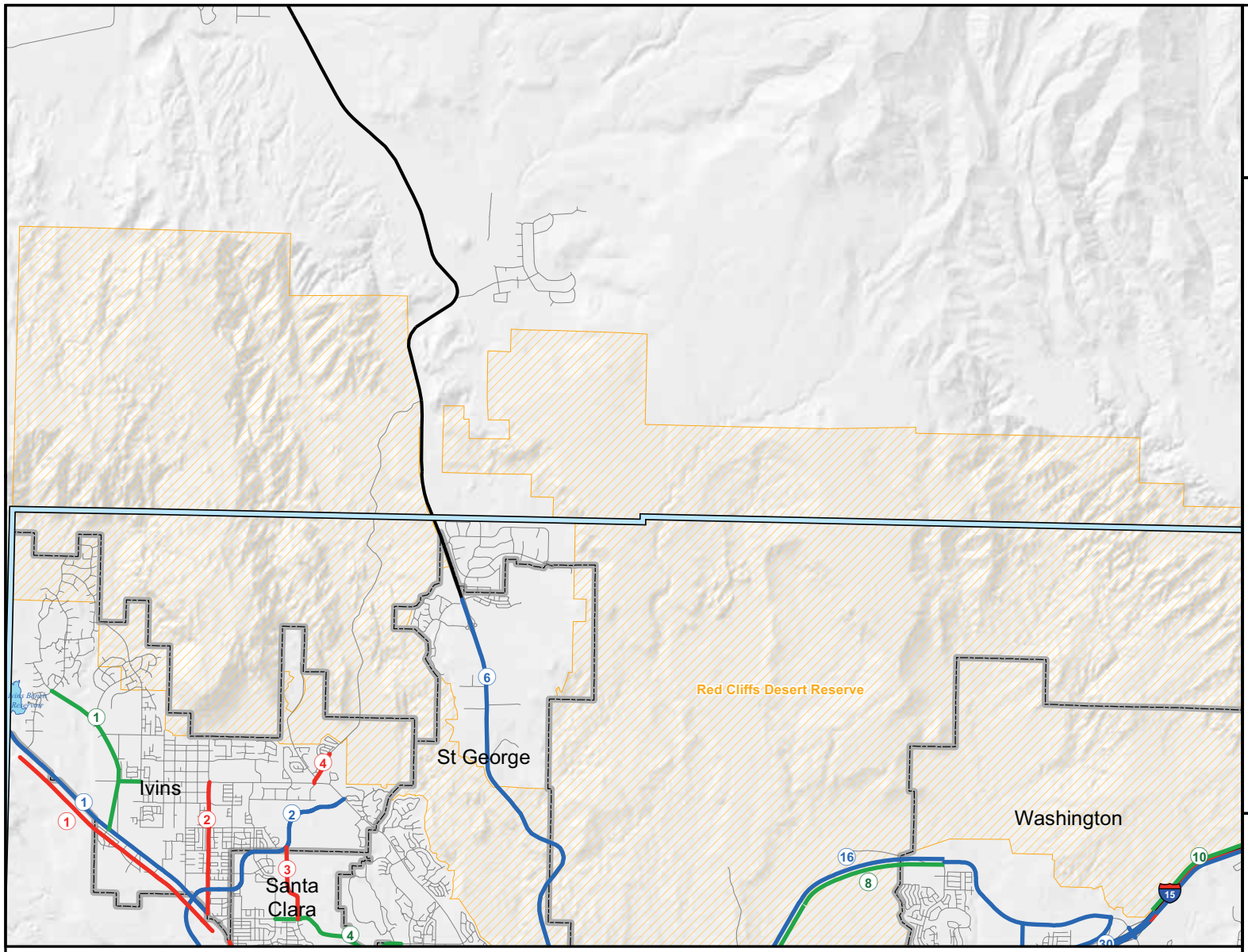

Dixie Metropolitan Planning Organization
Projects and Phasing
Tile A
Regional Transportation Plan 2015 - 2040

Legend

- Phase I **(2015-2024)**
- Phase I, Phase II
- Phase I, Phase III
- Phase II **(2025-2034)**
- Phase II, Phase III
- Phase III **(2035-2040)**

A	C
B	D

WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

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Miles

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UNIFIED TRANSPORTATION PLANNING DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 1A

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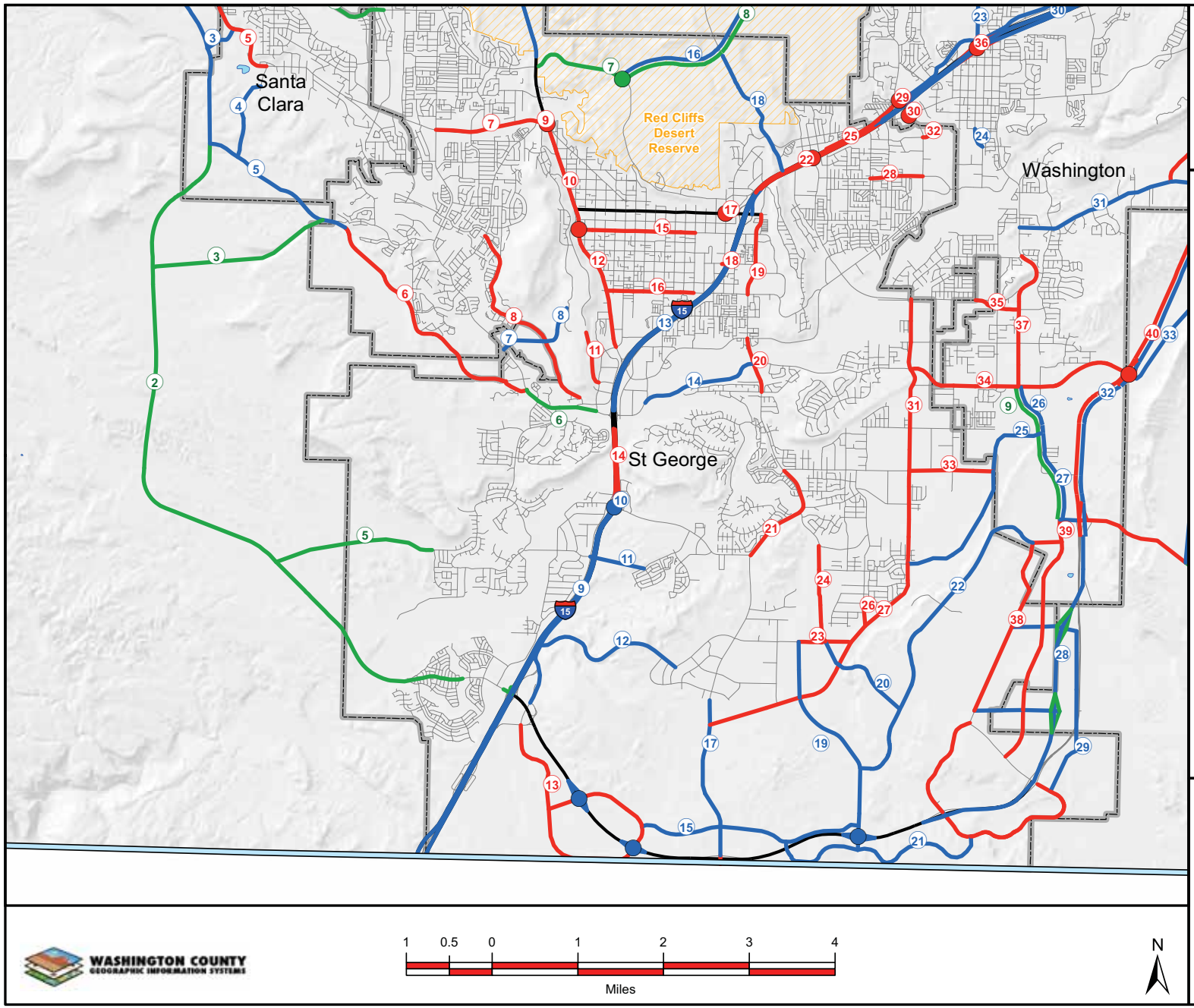

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Dixie Metropolitan Planning Organization
Projects and Phasing
Tile B
Regional Transportation Plan 2015 - 2040

Legend

- Phase I **(2015-2024)**
- Phase I, Phase II
- Phase I, Phase III
- Phase II **(2025-2034)**
- Phase II, Phase III
- Phase III **(2035-2040)**

A	C
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WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

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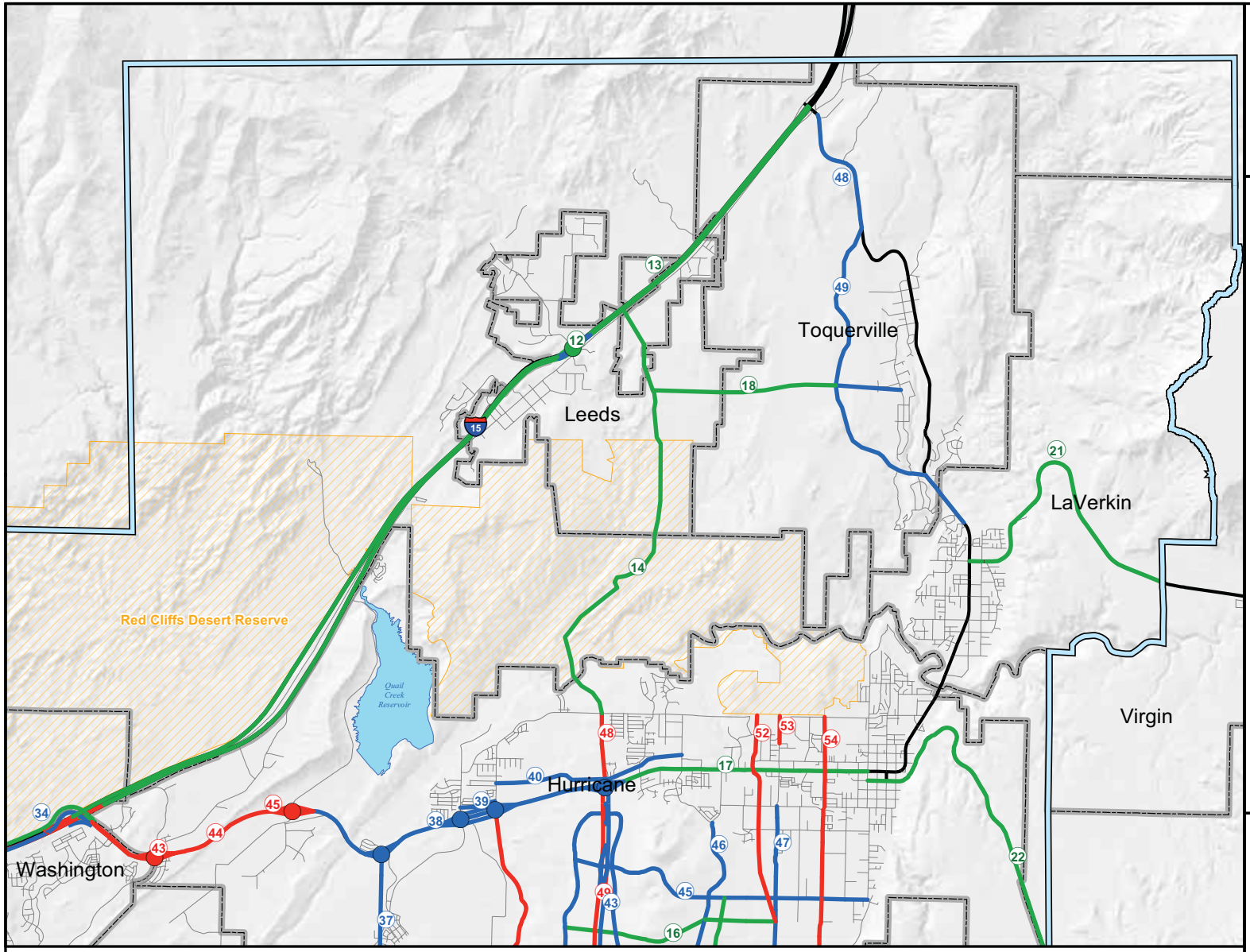
UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 1B



Dixie Metropolitan Planning Organization

Projects and Phasing

Tile C

Regional Transportation Plan 2015 - 2040

Legend

- Phase I **(2015-2024)**
- Phase I, Phase II
- Phase I, Phase III
- Phase II **(2025-2034)**
- Phase II, Phase III
- Phase III **(2035-2040)**

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WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

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UNIFIED TRANSPORTATION PLANNING DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 1C

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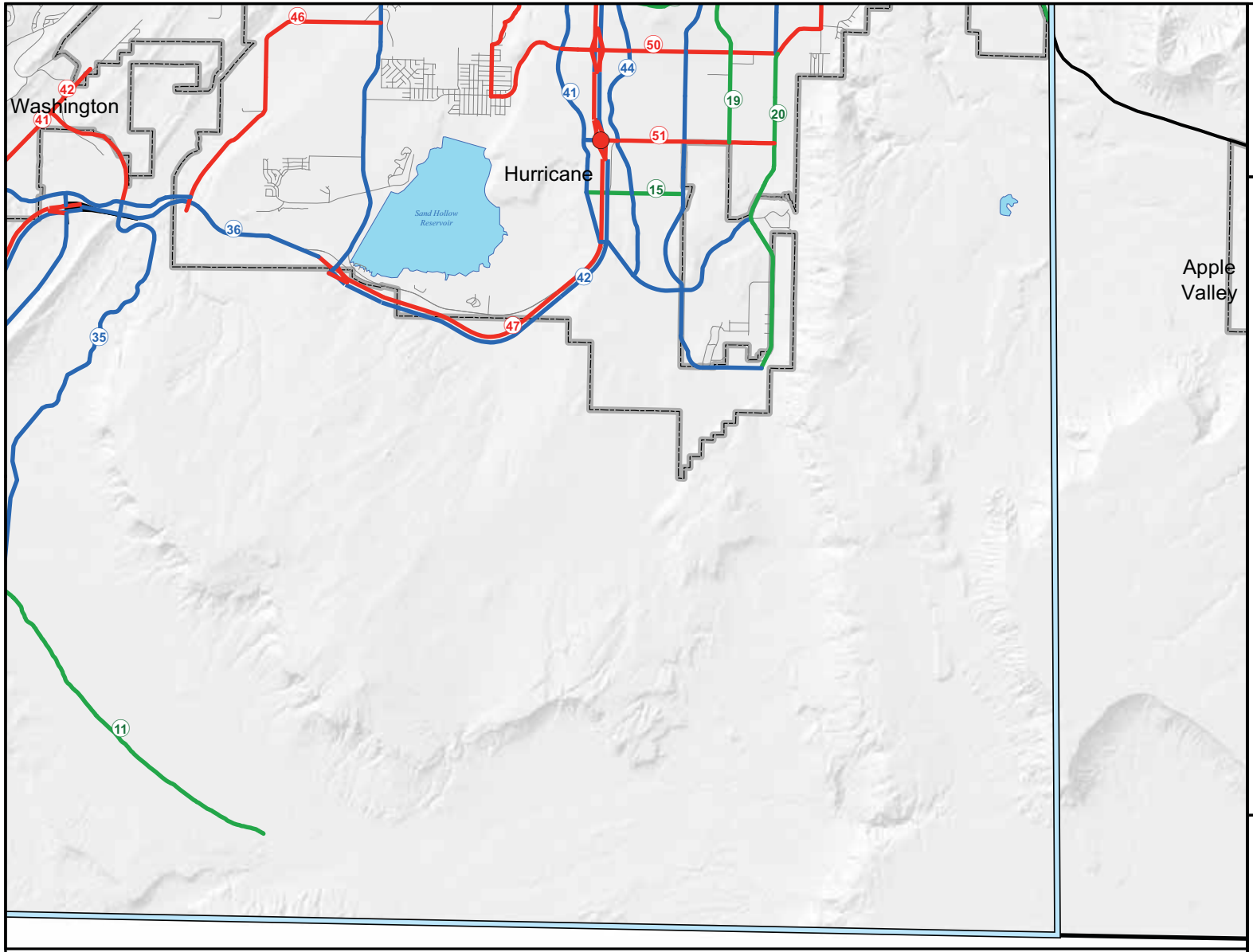

Dixie Metropolitan Planning Organization
Projects and Phasing
Tile D
Regional Transportation Plan 2015 - 2040

Legend

- Phase I **(2015-2024)**
- Phase I, Phase II
- Phase I, Phase III
- Phase II **(2025-2034)**
- Phase II, Phase III
- Phase III **(2035-2040)**

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WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

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UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 1D

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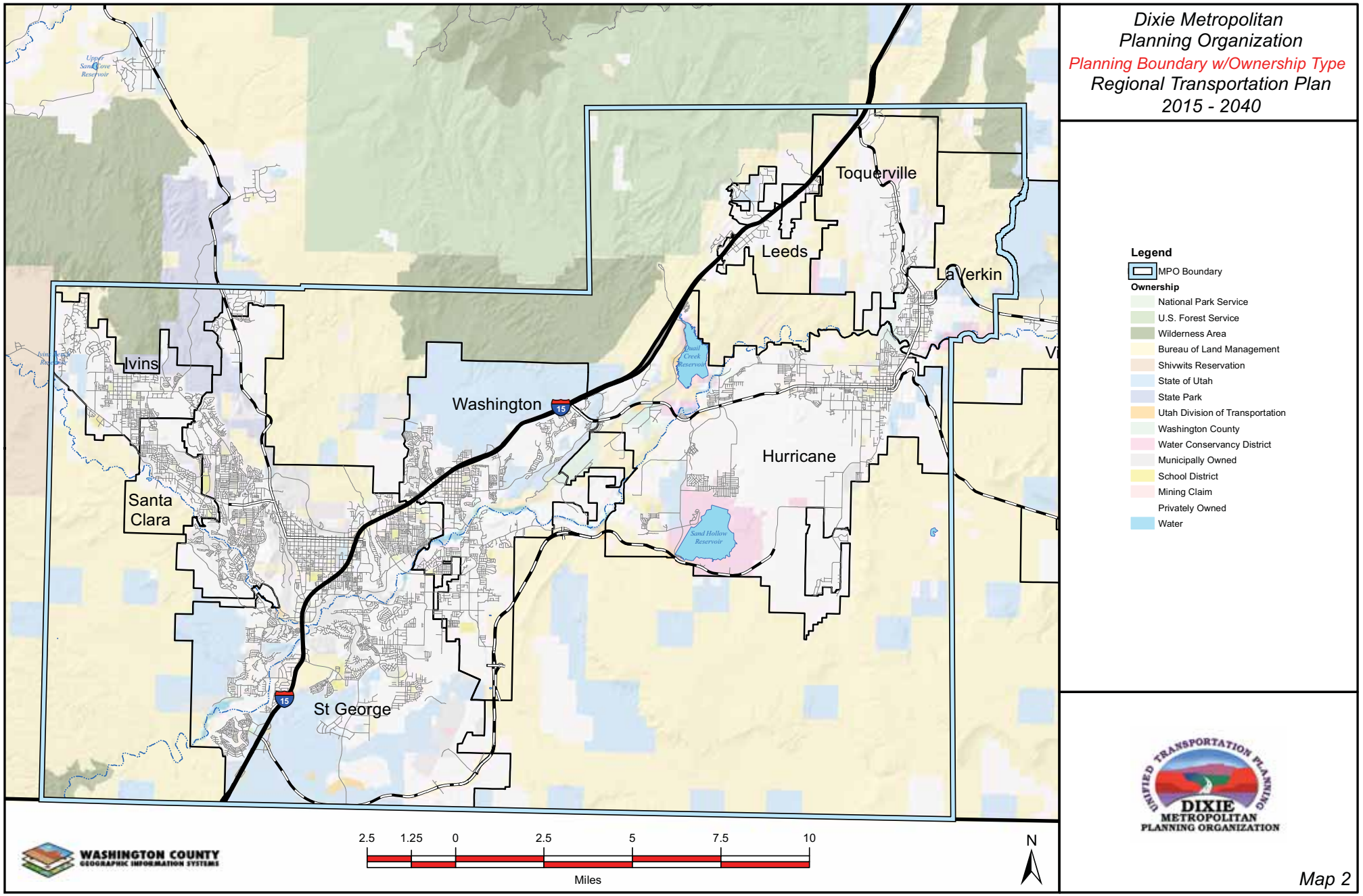

Dixie Metropolitan Planning Organization

Planning Boundary w/Ownership Type

Regional Transportation Plan 2015 - 2040

Legend

- MPO Boundary

Ownership

- National Park Service
- U.S. Forest Service
- Wilderness Area
- Bureau of Land Management
- Shivwits Reservation
- State of Utah
- State Park
- Utah Division of Transportation
- Washington County
- Water Conservancy District
- Municipally Owned
- School District
- Mining Claim
- Privately Owned
- Water

UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 2

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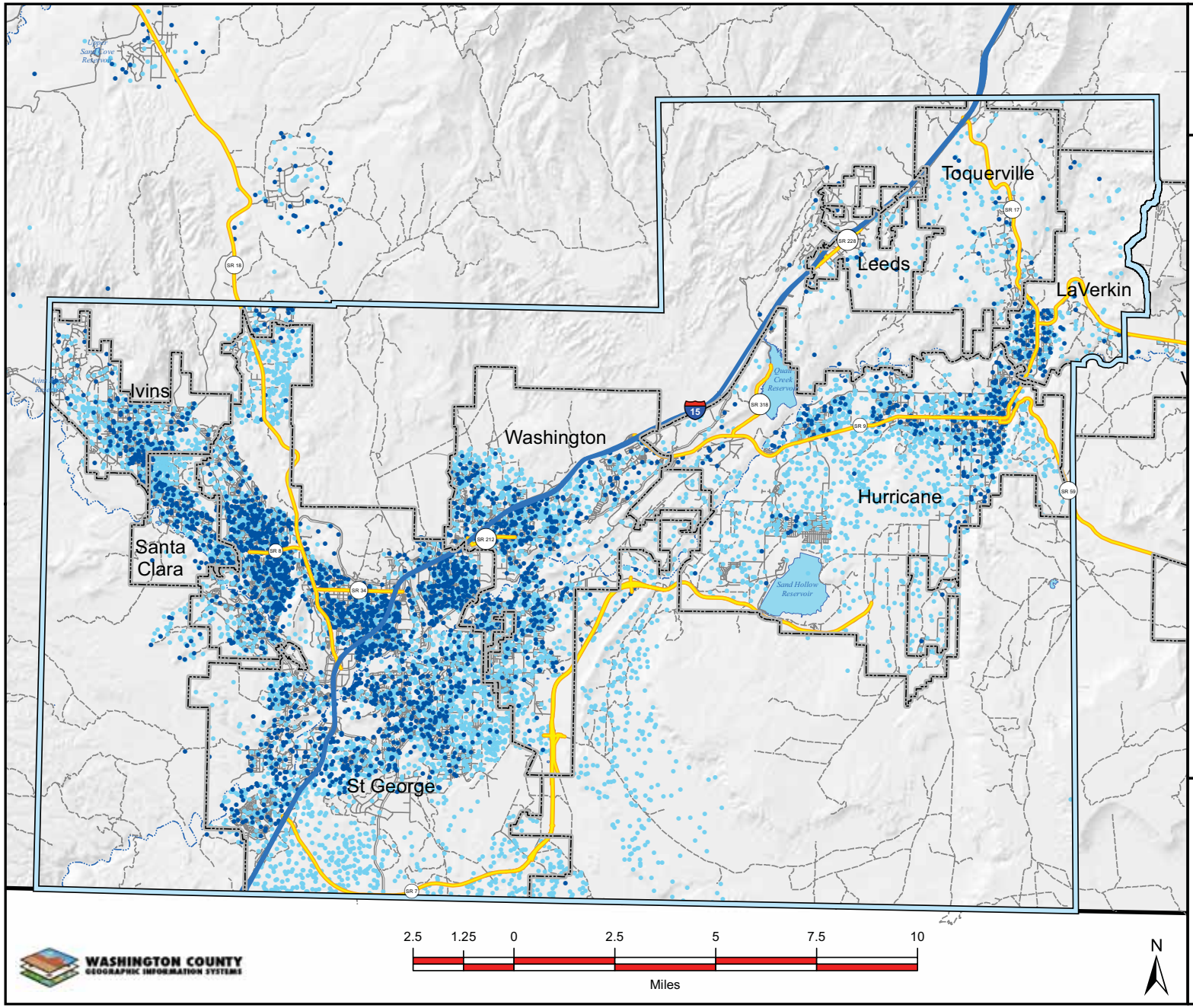

Dixie Metropolitan Planning Organization
2014-40 Population Change
Regional Transportation Plan
2015 - 2040

Legend

2014 Population

- 1 Dot = 50 people

2040 Projected Population

- 1 Dot = 50 people

WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

UNIFIED TRANSPORTATION PLANNING DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 3

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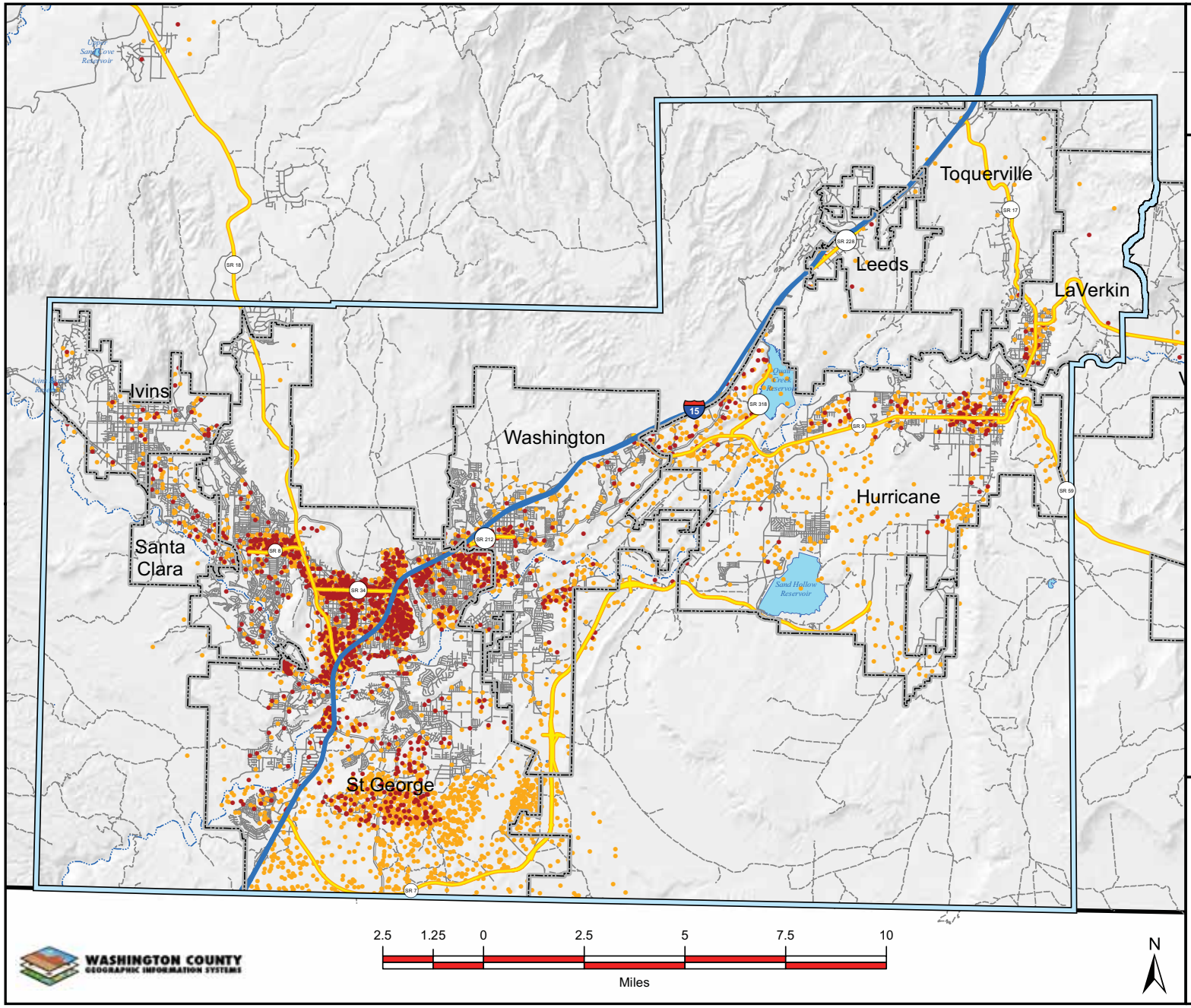

Dixie Metropolitan Planning Organization
2014-40 Employment Change
Regional Transportation Plan
2015 - 2040

Legend

2014 Total Employees

- 1 Dot = 50 people

2040 Projected Total Employees

- 1 Dot = 50 people

UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 4

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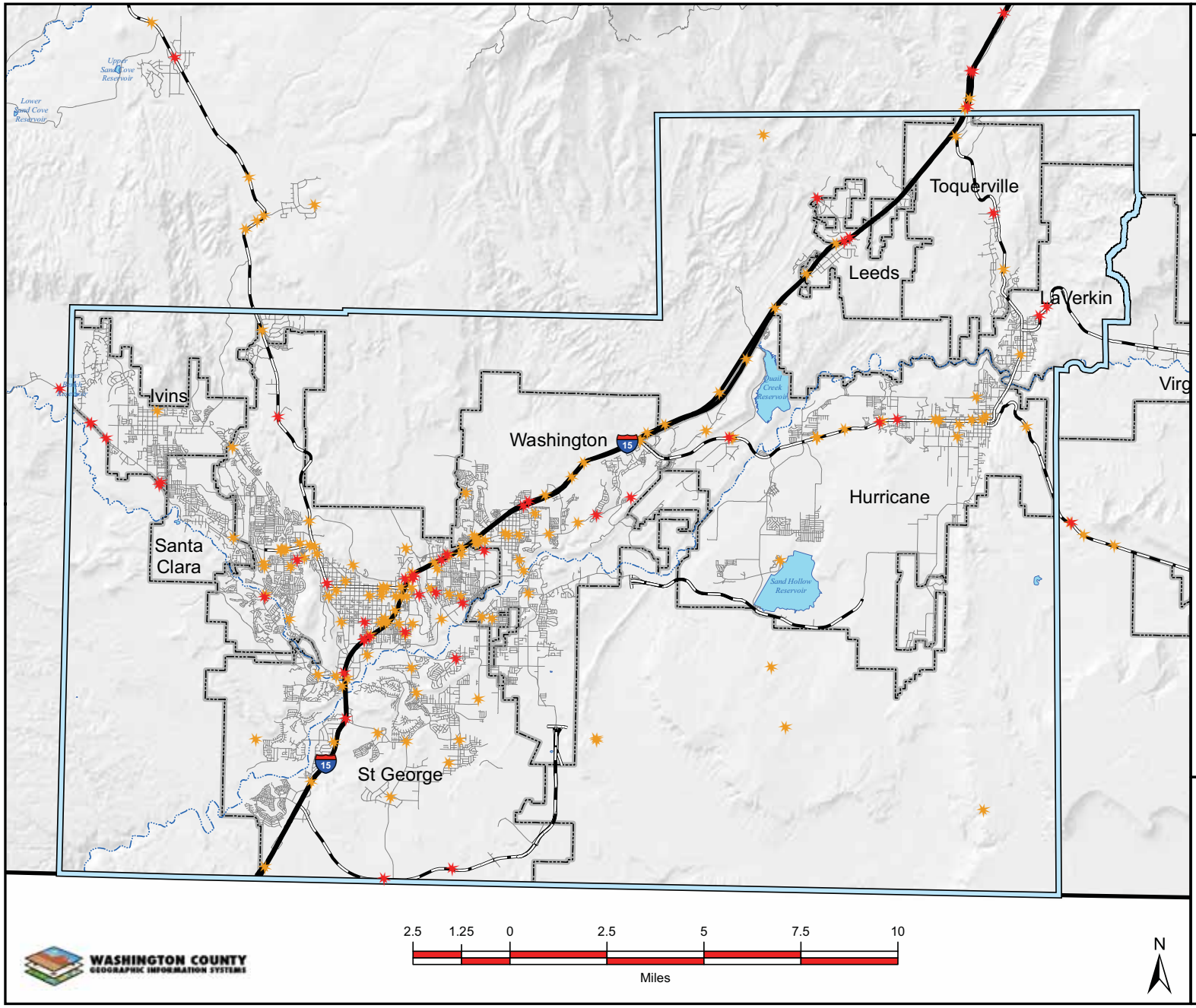

Dixie Metropolitan Planning Organization

2010-2014 Traffic Crashes

Regional Transportation Plan 2015 - 2040

Legend

Traffic Accidents

- Serious Crash
- Fatal Crash

Note: Serious crashes for 2014 are not shown - data not available.
UDOT crash data are protected under 23 USC 409

WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

UNIFIED TRANSPORTATION PLANNING DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 5

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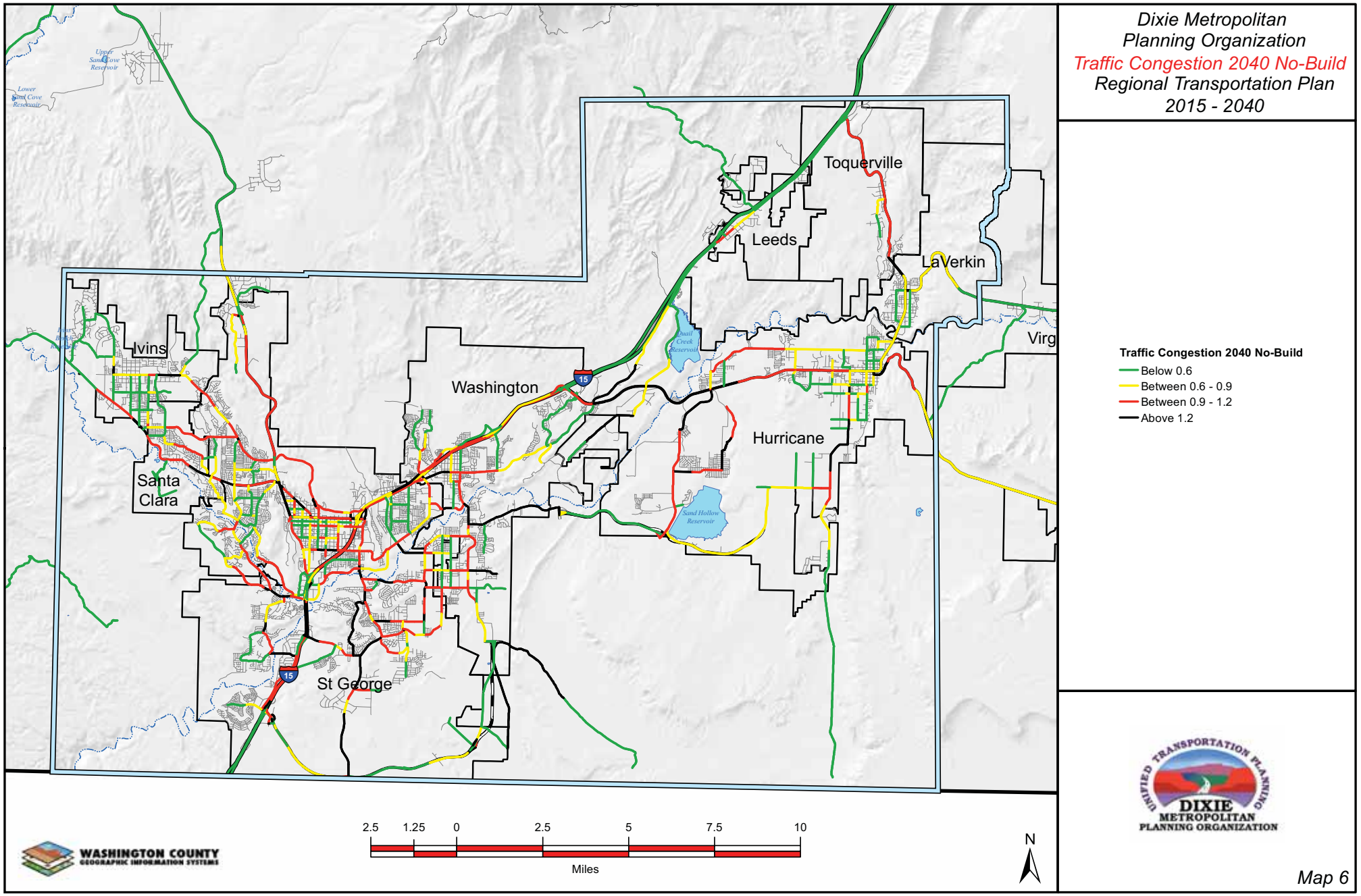

Dixie Metropolitan Planning Organization

Traffic Congestion 2040 No-Build

Regional Transportation Plan 2015 - 2040

Traffic Congestion 2040 No-Build

- Below 0.6
- Between 0.6 - 0.9
- Between 0.9 - 1.2
- Above 1.2

UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 6

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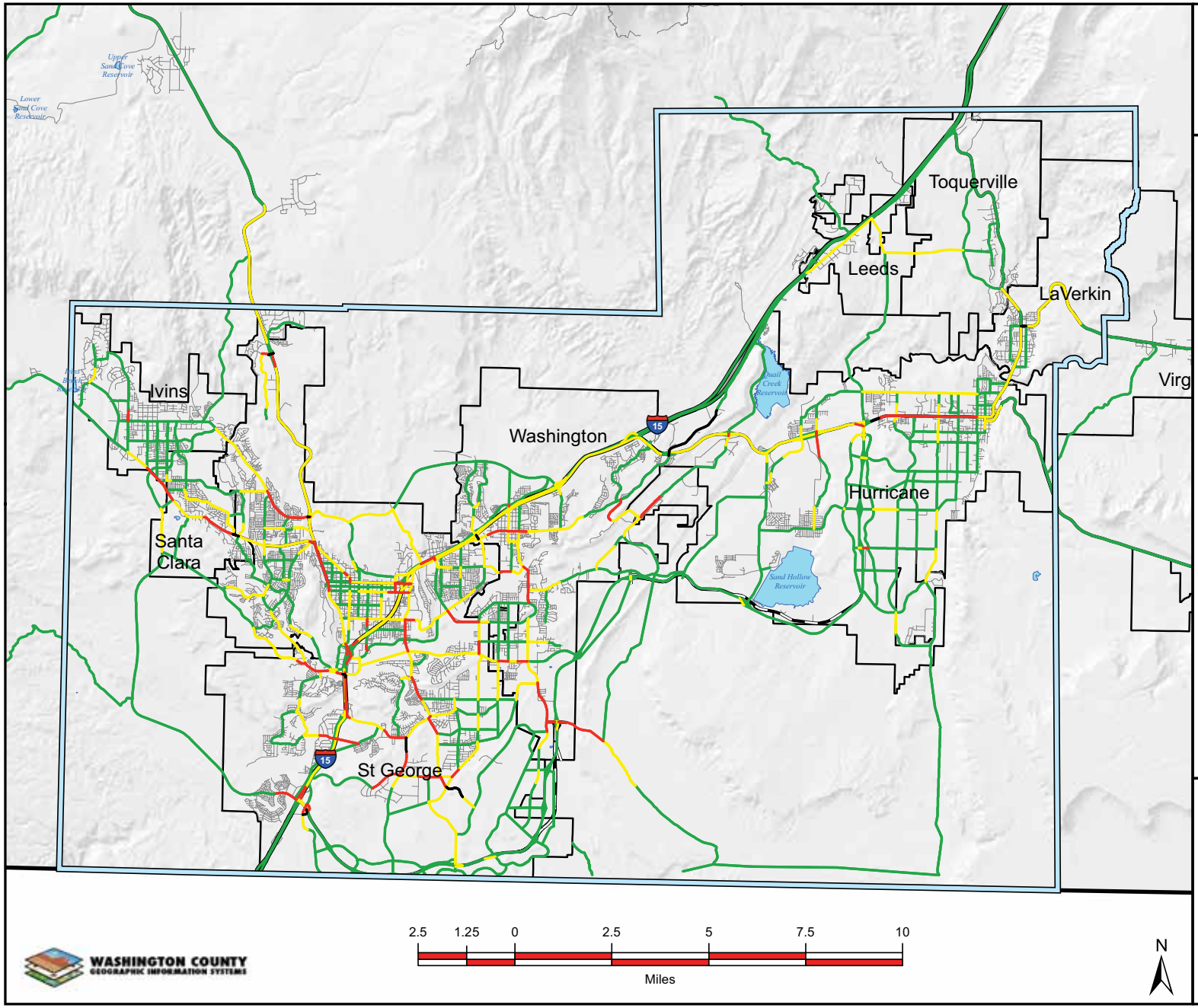

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Dixie Metropolitan Planning Organization

Traffic Congestion 2040 Build Regional Transportation Plan 2015 - 2040

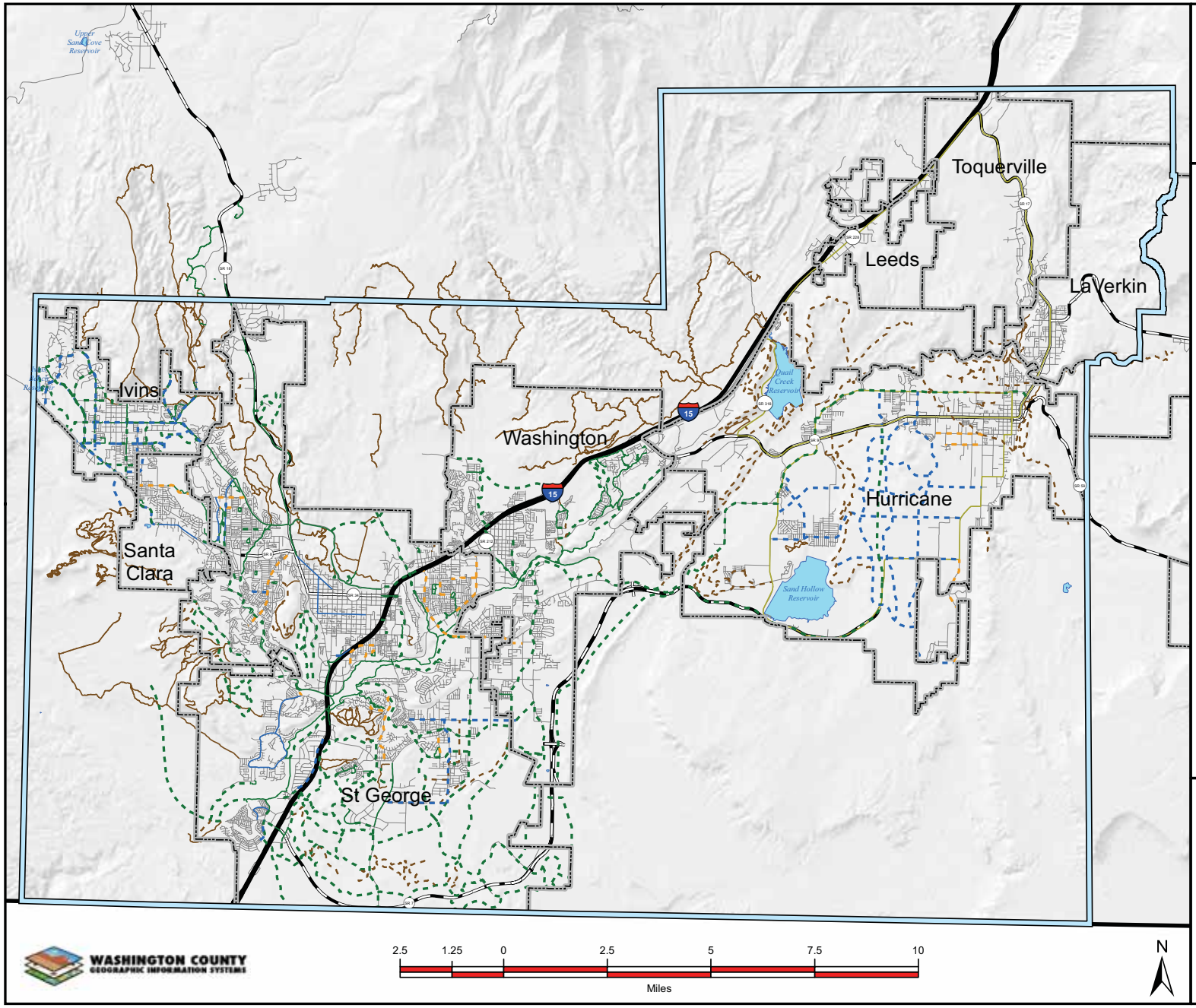
Traffic Congestion 2040 Build

- Below 0.6
- Between 0.6 - 0.9
- Between 0.9 - 1.2
- Above 1.2

WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 7



Dixie Metropolitan Planning Organization
Currently Planned Bicycle/Pedestrian Facilities
Regional Transportation Plan 2015 - 2040

Legend

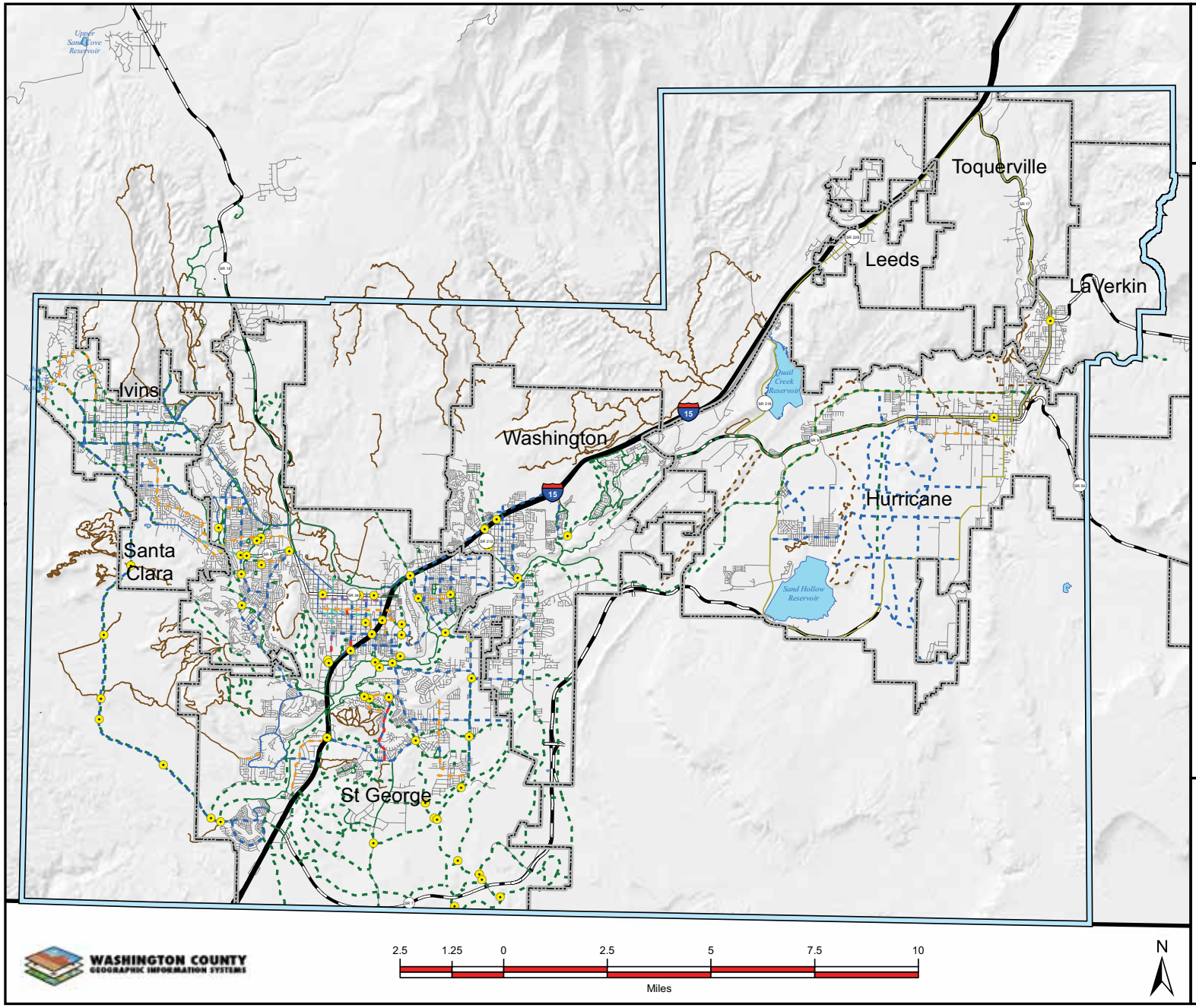
Planned Routes
- Bike Lane
- Shared Roadway
- Shared Use Path
- Unpaved Trail

Existing Facilities
- Bike Lane
- Shared Use Path
- Signed Bike Route
- Unpaved Trail

UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 8

Path: S:\Projects\MPO\2015-2040_Regional_Transportation_Plan\2015-2040_Bike_Ped_Map Facilities.mxd



Dixie Metropolitan Planning Organization
Bicycle/Pedestrian Planning Options
Regional Transportation Plan 2015 - 2040

Legend

- Potential Spot Improvements

Potential Facilities

- Bike Lane
- Buffered Bike Lane
- Climbing Bike Lane
- Protected Bike Lane
- Shared Roadway
- Shared Use Path
- Sidewalk
- Unpaved Trail

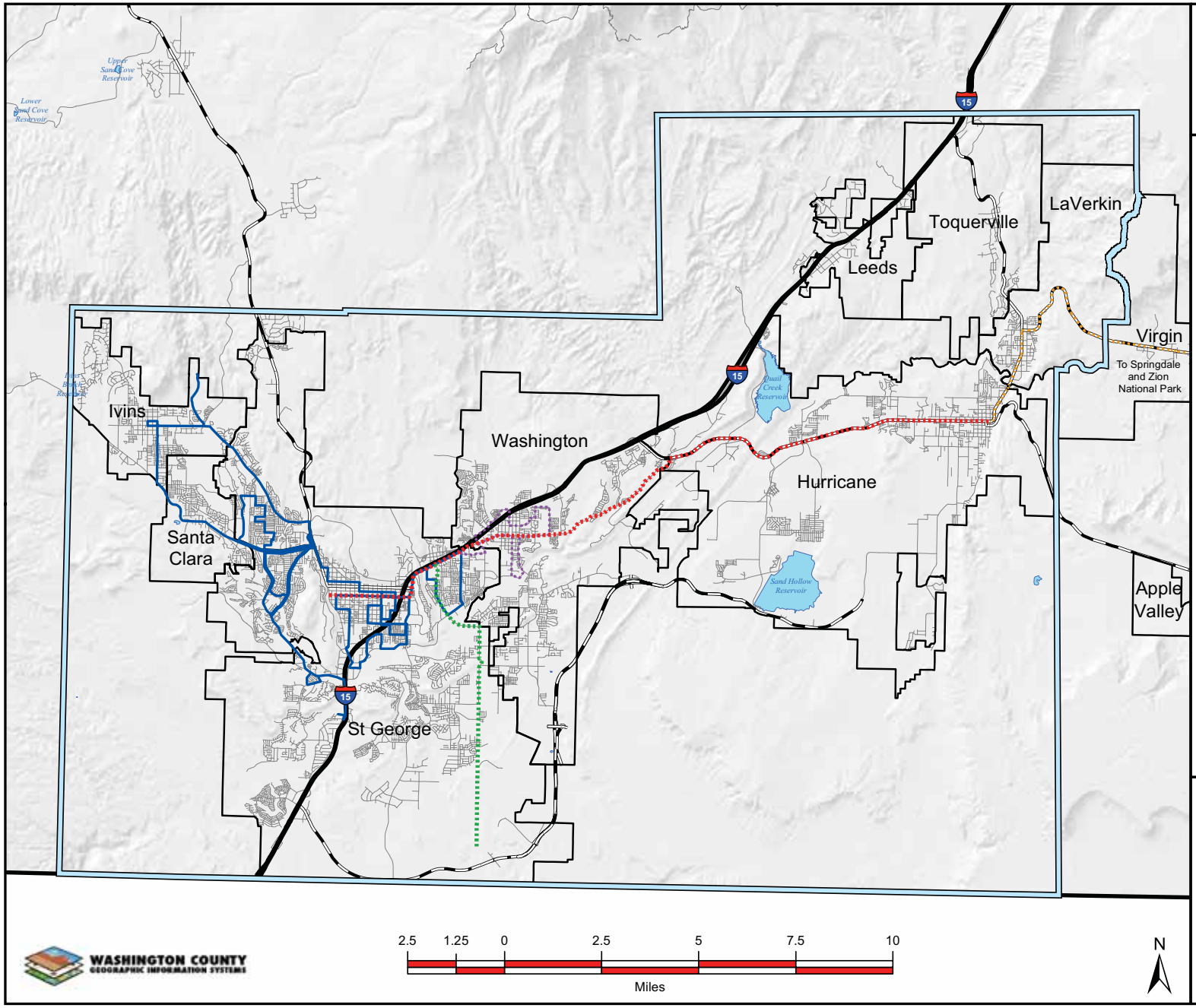
Existing Facilities

- Bike Lane
- Shared Use Path
- Signed Bike Route
- Unpaved Trail

UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 9

Path: S:\Projects\MPO\2015-2040_Regional_Transportation_Plan\2015-2040_Bike_Ped_Map Options.mxd



Path: S:\Projects\MPO\2015-2040_Regional_Transportation_Plan\2015-2040_Transit_Service_Map.mxd

Dixie Metropolitan Planning Organization
Transit Service
Regional Transportation Plan 2015 - 2040

Legend

- Existing Routes

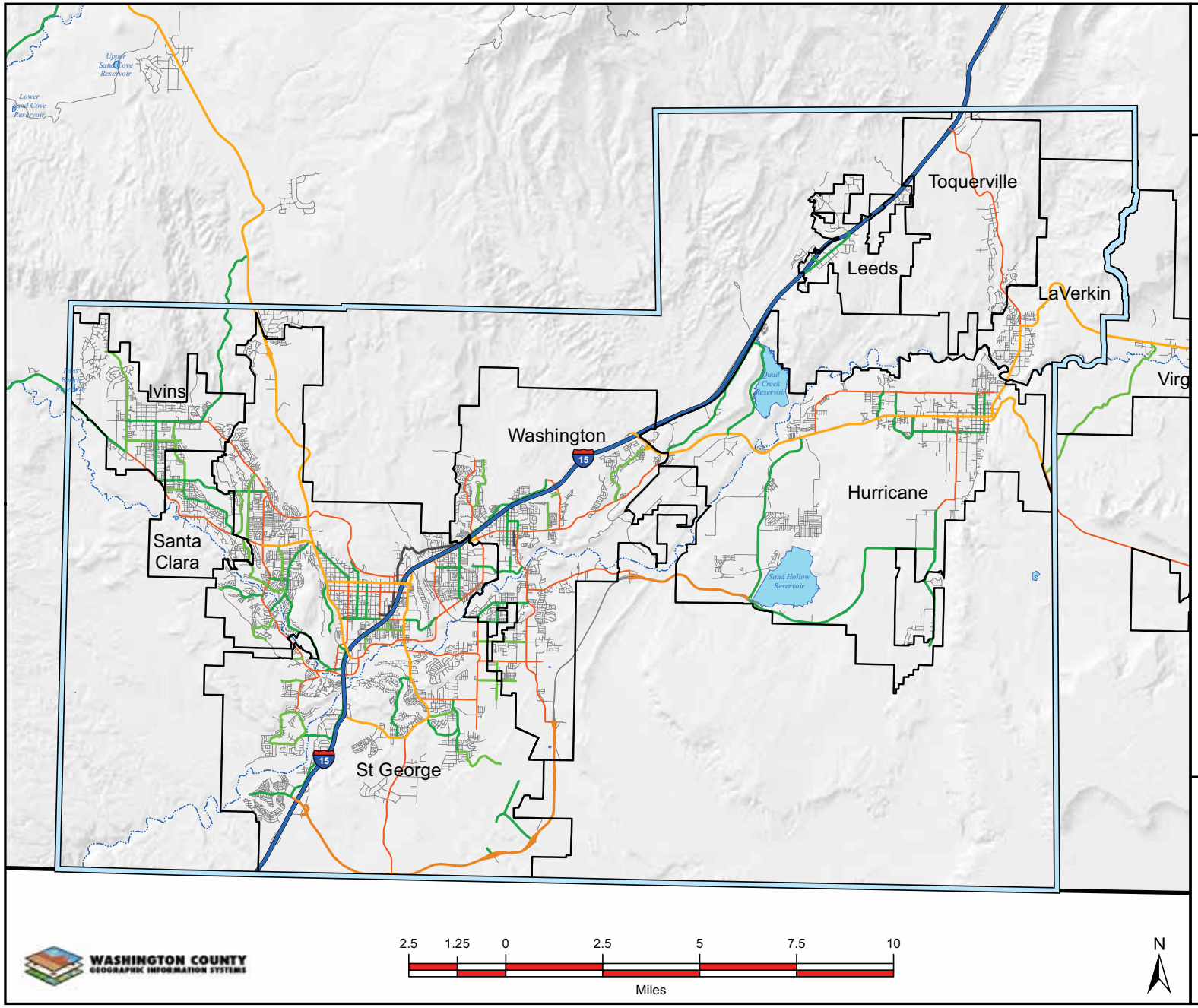
Potential Route Expansions

- Airport BRT Route
- Hurricane BRT Route
- Hurricane to Zion Canyon Route
- Washington City- Fixed Route

WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

UNIFIED TRANSPORTATION PLANNING
DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 10



Dixie Metropolitan Planning Organization

Functional Classification

Regional Transportation Plan 2015 - 2040

Legend

Functional Class

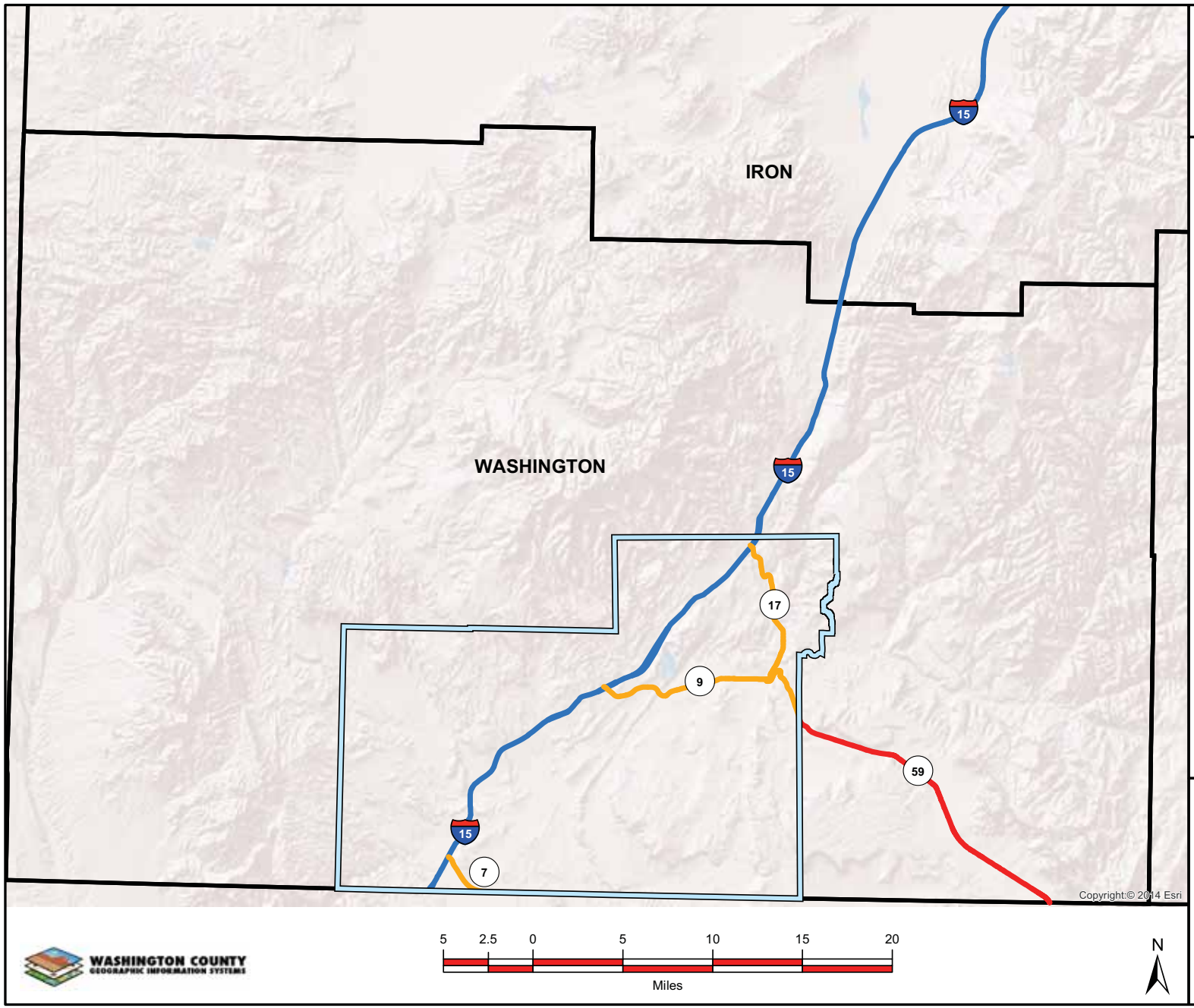
- INTERSTATE
- MAJOR ARTERIAL
- MAJOR COLLECTOR
- OTHER FREEWAY & EXPRESSWAY
- OTHER PRINCIPAL ARTERIAL
- MINOR ARTERIAL
- MINOR COLLECTOR
- LOCAL
- URBAN LOCAL
- RURAL LOCAL

WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

UNIFIED TRANSPORTATION PLANNING DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 11

Path: S:\Projects\MPO\2015-2040_Regional_Transportation_Plan\2015-2040_Functional_Classification_Map.mxd



Dixie Metropolitan Planning Organization
Primary Freight Network
Regional Transportation Plan 2015 - 2040

Legend

MPO Boundary

Utah's Primary Freight Network

Interstate Routes

Critical Rural Freight Routes

Critical Urban Freight Routes

WASHINGTON COUNTY GEOGRAPHIC INFORMATION SYSTEMS

UNIFIED TRANSPORTATION PLANNING DIXIE METROPOLITAN PLANNING ORGANIZATION

Map 12

Path: S:\Projects\MPO\2015-2040_Regional_Transportation_Plan\2015-2040_Primary_Freight_Map.mxd

Appendix B

POTENTIAL FUNDING SOURCES

Funding sources for transportation improvement projects are needed if the recommended projects of the Transportation Plan are to be built. In the Washington County area, federal, state, and local governments as well as private developers provide funds to pay for improvements.

Federal Funds:

The prior federal highway and transit bill SAFETEA-LU (Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users) continues to fund federal transportation programs under continuing resolutions. And a new federal highway bill is anticipated within the next several months.

State Funds:

The Utah Department of Transportation receives state highway user revenues as well as state general funds for highway construction and maintenance projects. The highway user revenues sources include motor fuel taxes, special fuel taxes, vehicle registration fees, driver license fees, and other fees. General funds include sales taxes and other taxes. In addition, the state has the authority to issue bonds for specific highway projects.

A portion of the state highway user funds are made available to local governments for highway construction. Seventy-five percent of these funds are kept by the UDOT for their construction and maintenance program. The remaining 25 percent are made available to the cities and counties in the state through the Class B and C Program.

Class B and C funds are allocated to each city and county by a formula based on population and road mileage. These funds can be used for either maintenance or construction of highways, although at least 30 percent of the funds must be used for construction projects or for maintenance projects that cost over $40,000.

Safe Sidewalks Program has also been established by the legislature to fund the construction of sidewalks on roads on the state system. The money is distributed through a formula based partially on miles of state road in each UDOT Region. Each city and county located in the region submits projects to the UDOT Region office, which then prioritizes them. A statewide committee then makes the final project selection.

Local Funds:

Local government agencies have a variety of funding sources available to them for transportation improvements. The primary source is from the general fund of the cities and counties. These general funds can be used for construction of new roads or the upgrading or maintenance of existing ones. Transportation projects, however, must compete with the other needs of the city or county for the use of these funds.

Local governments have several other options for improving their transportation systems. Most of these options involve some kind of bonding arrangement, either through the creation of a redevelopment district, a more traditional special improvement district organized for a specific project benefiting an identifiable group of properties, or through general obligation bonding arrangements for projects felt to be beneficial to the entire entity issuing the bonds.

The Local Corridor Preservation Fund allows the Washington County AOG to collect vehicle registration fees of $10 per vehicle for transportation corridor preservation. The Utah Department of Transportation has responsibility for seeing that the major requirements of the legislation are met, such as compliance with federal property acquisition procedures, and a locally adopted access management plan, or ordinance.

Private Sources

Private interests often provide sources of funding for transportation improvements. Developers construct the local streets within subdivisions and often dedicate right-of-way for and participate in the construction of collector and arterial streets adjacent to their developments. Developers should also be considered as a possible source of funds for projects needed because of the impacts of the development, such as the need for traffic signals or arterial street widening.

Private sources also need to be considered for transit improvements which will provide benefits to them. For example, businesses or developers may be willing to support either capital expenses or operating costs for transit services which provide them with special benefits, such as a reduced need for parking or increased accessibility to their development. Following is a brief list of programs used to fund transportation projects within the Dixie MPO:

FEDERAL HIGHWAY ADMINISTRATION

- Surface Transportation Program (STP)
- Congestion Mitigation / Air Quality (CMAQ)
- Available only after DMPO reaches non-attainment status
- Interstate Maintenance (IM)
- National Highway System (NHS)
- Surface Transportation Program
- Urbanized Area
- Small Urban
- Flexible (Any-Area)
- Transportation Enhancements
- Highway Safety Improvement Program (HSIP)
- Hazard Elimination
- Railroad Crossings
- Safe Routes to School (SR2S)
- Bridge Replacement
- Off System - Local
- Off System - Optional
- Federal Lands Programs
- High Priority Projects (HPP)
- Transportation Improvement Projects (TI)
- Recreational Trails

FEDERAL TRANSIT ADMINISTRATION

- **(5307)** Block Grant Funds
- **(5309)** Discretionary Funds
- **(5310)** Services for elderly and disabled
- **(5311)** Grants Outside Urban Area
- **(5340)** High Density States Program
- **(5316)** Job Access/Reverse Commute
- **(5317)** New Freedom Program

STATE OF UTAH

- State Construction
- State General Funds
- State Traffic
- Corridor Preservation Funds

LOCAL

- County (B Funds)
- City (C Funds)
- General Funds
- Transit Sales Tax
- Corridor Preservation Fund

PRIVATE

- Donations / User Fee
- Developer Funded Projects
- Public/Private Partnerships

Appendix C

Typical Sources of N Ox and VOC:

Aircraft Purge Systems
Chemical Milling
Cold Solvents
Construction Equipment
Boiler Systems
Dip Tanks
Fueled Engines, mobile and stationary
Engine Test Facilities
Fueling Stations
Fueling Equipment
Fuel Tanks, mobile and stationary
Generators
Landscaping Equipment, engines
Paint Strippers
Painting Operations
Wastewater Treatment Plants

Sources of Air Quality Programs, Regulations, and Information:

Department of Environmental Quality, State of Utah
Division of Air Quality, DEQ, State of Utah
Environmental Protection Agency
The Ozone Flex Program: Voluntary Strategies to Reduce Smog (June 21, 2001)

Major Employers 2014 - Washington County

Major Employers 2014 - Washington County

Rank	Company	Industry	Size
1	Washington County School District	Public Education	3,000-3,999
2	Intermountain Healthcare	Health Care	2,000-2,999
3	Wal-Mart	Warehouse Clubs and Supercenters	1,000-1,999
4	Dixie State University	Higher Education	1,000-1,999
5	St. George City	Local Government	500-999
6	Skywest Airlines	Air Transportation	500-999
7	United States Government	Federal Government	500-999
8	Washington County	Local Government	250-499
9	Andrus Trucking	General Freight Trucking, Long Distance	250-499
10	City of Washington	Local Government	250-499
11	Caption Call	Interpretation Services	250-499

12	Costco	Warehouse Clubs and Supercenters	100-249
13	Red Rock Canyon School	Residential Care Facilities	100-249
14	Tuachan Center for the Arts	Entertainment Facilities	100-249
15	Lin's Supermarket	Grocery Stores	100-249
16	Red Mountain Spa	Accommodations	100-249
17	Allconnect	Telephone Call Centers	100-249
18	Home Depot	Home Improvement Centers	100-249
19	Stephen Wade Auto Center	Automobile Dealers	100-249
20	Red Lobster/Olive Garden	Full-Service Restaurants	100-249
21	Harmons	Grocery Stores	100-249
22	RAM Manufacturing	Fabricated Metal Product Manufacturing	100-249
23	Hurricane City	Local Government	100-249
24	Orgill	Hardware Wholesalers	100-249
25	State of Utah	State Government	100-249
26	Xanterra Parks and Resorts	Accommodations	100-249
27	Cinnamon Hills Youth Crisis Center	Residential Care Facilities	100-249
28	Diamond Ranch Academy	Residential Care Facilities	100-249
29	Sunroc Corp	Ready-Mix Concrete	100-249
30	Entrada at Snow Canyon	Golf Courses	100-249
31	Wendy's	Fast Food Restaurants	100-249
32	Wilson Electronics	Communications Equipment Manufacturing	100-249
33	Boulevard Furniture	Furniture Stores	100-249
34	Express Services	Temporary Help Services	100-249
35	Target	Discount Department Stores	100-249
36	Central Utah Medical Clinic	Health Care	100-249
37	Albertsons	Grocery Stores	100-249
38	Interstate Rock Products	Heavy Construction	100-249
39	Wittwer Management	Accommodations	100-249
40	Smith's Marketplace	Grocery Stores	100-249
41	Red Cliffs Health and Rehabilitation	Nursing Care Facilities	100-249
42	Subway	Fast Food Restaurants	100-249
43	Lowe's Home Improvement	Home Improvement Centers	100-249
44	Maverik Country Stores	Gasoline Stations and Convenience Stores	100-249
45	Southwest Center	Outpatient Care Centers	100-249
46	Deseret Laboratories	Pharmaceutical Manufacturing	100-249
47	Kolob Care and Rehabilitation	Nursing Care Facilities	100-249
48	Danville Services	Health Care	100-249
49	Wells Fargo Bank	Banking	100-249
50	Zions Bank	Banking	100-249
51	Megaplex Theatres	Theaters	100-249
52	Staheli Laundry Services	Linen Supply	100-249
53	Second Nature Entrada	Child and Youth Services	100-249

Source : Business Resource Center at Dixie State University; Updated July 2014 by BRC; Data Source UDWS