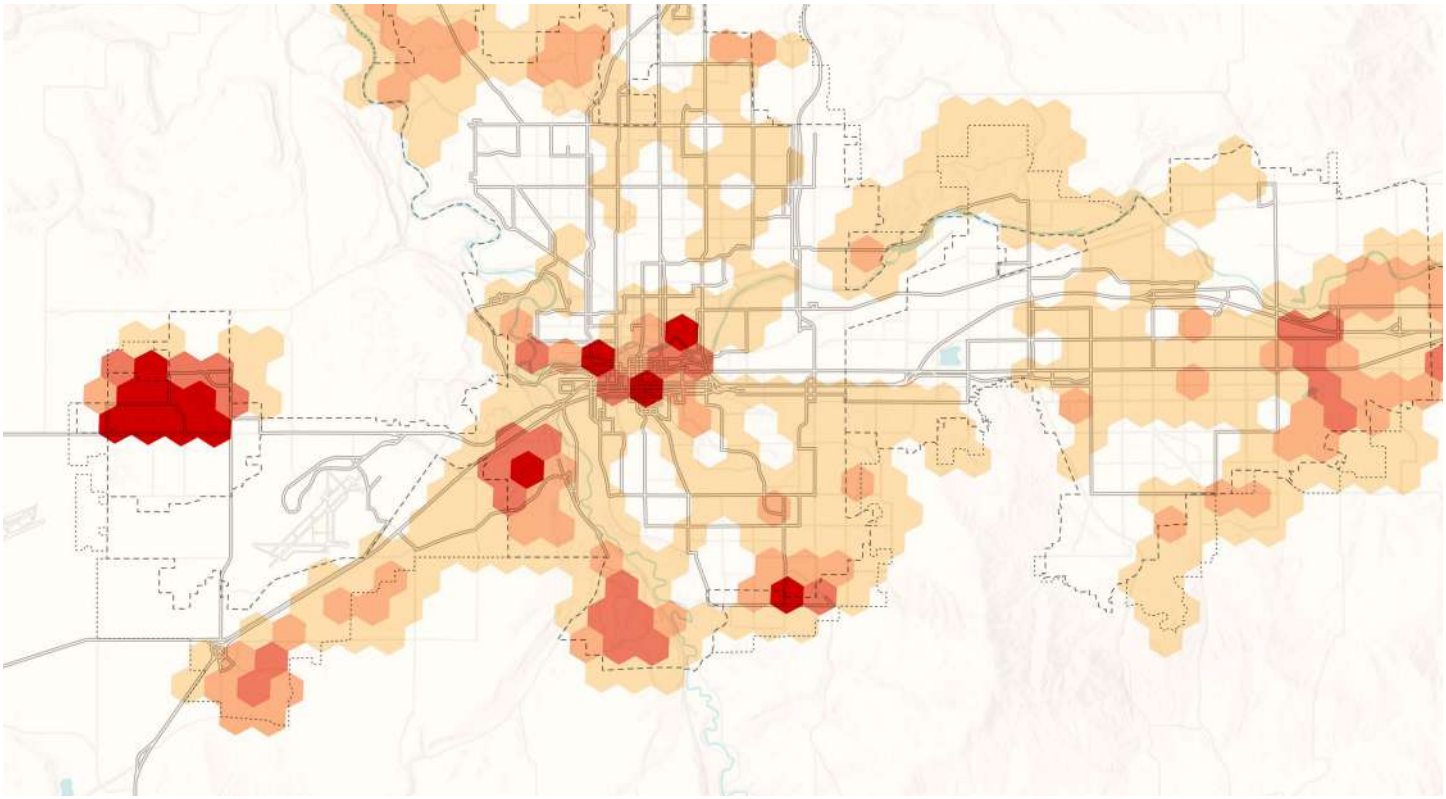


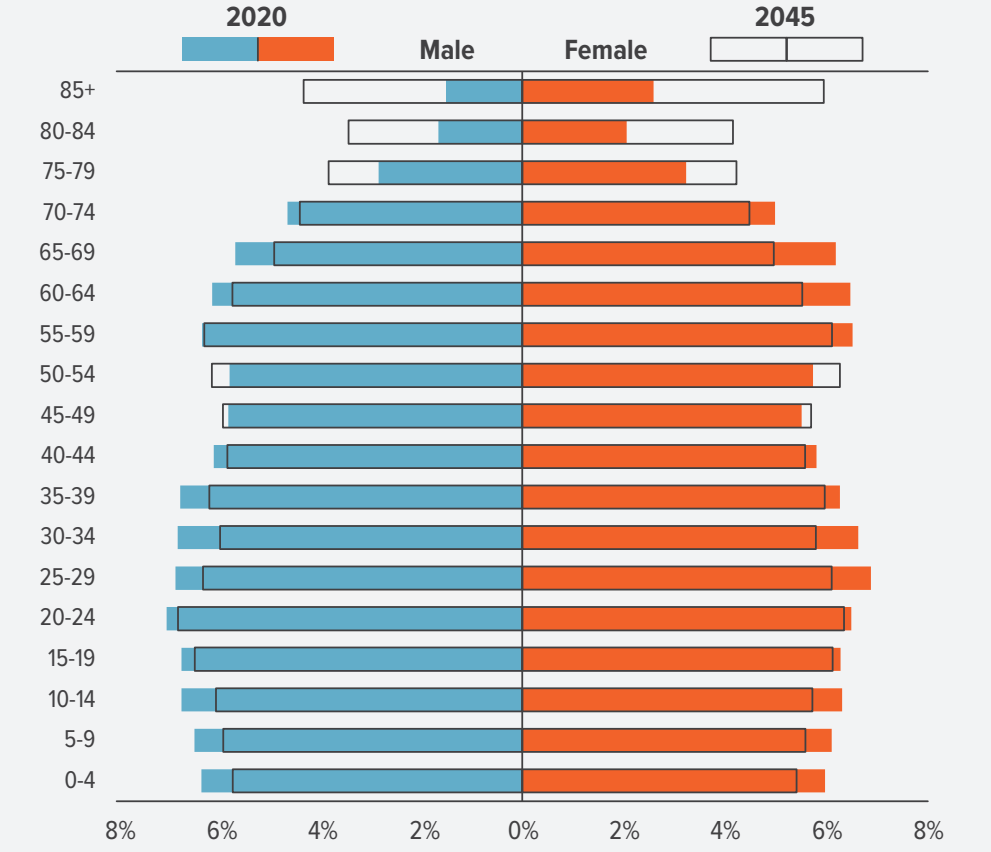
CHAPTER 3
WHERE WE'RE GOING

Future Conditions

How the forecasted changes in demographics and other considerations will impact the future transportation system.

The purpose of this chapter is to forecast future transportation conditions to the year 2045. One of the tools SRTC uses is the travel demand model and an alternative described as the 'Baseline' because it assumes that the only improvements to the regional transportation system are those projects and programs that are funded and programmed in the TIP. The 2045 Baseline alternative allows for a point of comparison and analysis to build alternatives. It is also required for environmental and financial review processes.

Figure 3.1: SRTC Planning Area 2020 and 2045 Population Pyramids



OFM. 2017 GMA Supplemental County Projections

The U.S. Census Bureau's demographic data, which is provided at various geographic levels, is utilized to assist in projecting future conditions. These demographic data points include population, employment, age distribution, income range, household composition, and residential location; all of which directly relate to transportation behavior.[1] The U.S. Bureau of Economic Analysis and the Federal Reserve also produce economic forecasts. These forecasts are produced in ranges due to the uncertainty in projecting birth/death rates, immigration and future economic conditions. While not all demographics can be accurately forecasted in the future, SRTC monitors and evaluates local, regional, and national trends to ascertain the expected impact to our transportation systems.

Population Forecast

The forecasted population for Spokane County in 2045 is 614,247, and increase of nearly 100,000 over the estimated 2019 population of 515,250. Employment is expected to grow at a similar rate, see Appendix B for details on forecasting methods.

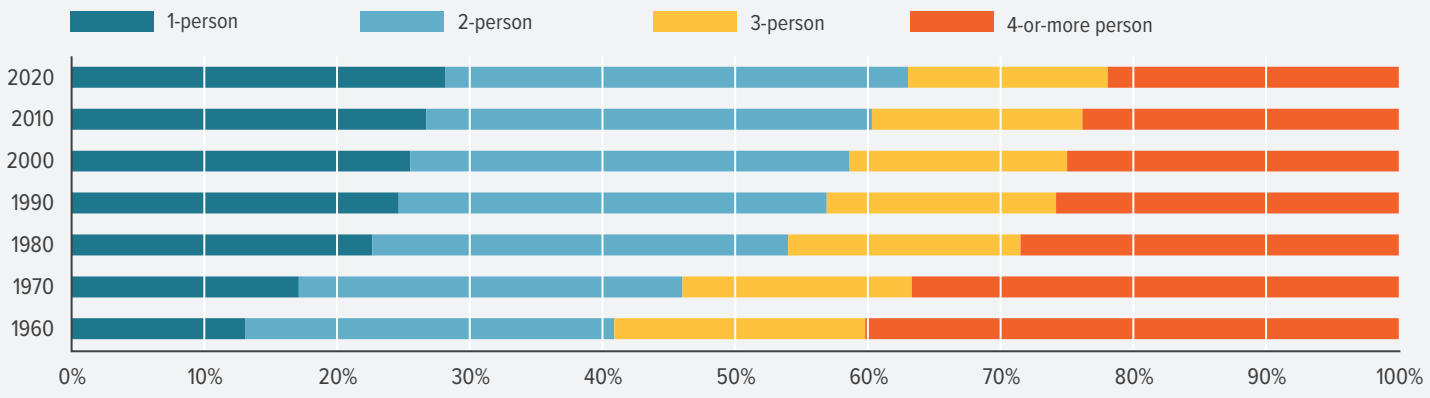
According to the U.S. Census Bureau, forecasts throughout the country include a large increase in senior populations through 2045. The aging of the baby boomer generation is the primary reason the senior population is forecasted to grow. Increases in life expectancy and potentially slight decreases in fertility rates also contribute to the senior population. See the current and future population pyramids for SRTC's planning area, provided in figure 3.1. The figure shows how the region's population is expected to change, by age groups and sex.

Household characteristics are also changing, with fewer households with children and fewer persons per household, see figure 3.2. What do these changing demographics mean for long range transportation planning in our region? Population growth typically results in increased travel and, depending on the physical layout of a community, could also result in an increase in vehicle miles and/or hours traveled. With continued growth in population and employment, it is expected that there will be continued demand on all transportation systems, including the private vehicular network.

Travel behaviors are often different between various age groups. The 35 to 44 year old age group tends to travel the most followed by those aged 25 to 34. Persons aged 16 to 24 are more likely than those in other age groups to bicycle for transportation, while those in older age groups are more likely to drive, especially when commuting to work. With growth expected in the population over age 65 and the younger generation's interest in alternative modes, there will likely be an increased demand in alternative transportation.

1 Demographics and Transportation in the United States 2050. Nathan Guequierre. 2003.

Figure 3.2: Households by Size and Decade in the SRTC Planning Area, 1960 to 2020



U.S. Census Bureau, Current Population Survey, March and Annual Social and Economic Supplements

Different household types (e.g., traditional single family, younger couples, single persons, families with no children, et cetera) have different travel behaviors. These trends are subject to a variety of economic factors, such as fuel prices and housing affordability. The built environment (i.e., existing development) also has a large impact on transportation mode choice. The development of land use forecasts for the Spokane region is detailed in the following section.

Forecast Methodologies & Future Land Use

A travel demand model simulation of future transportation conditions in 2045 is one tool used to evaluate potential system needs and deficiencies. This first 2045 alternative is described as the 'Baseline' because it assumes that the only improvements made to the 2019 transportation system are those already committed by agencies or jurisdictions in the near future and programmed in the TIP. As described in *Chapter 2: Where We Are*, information on the existing transportation system was used to build a travel demand model from the 2019 base transportation network in Spokane County. The forecasted population and employment growth for 2045 were applied to the 2019 base model network to predict future traffic conditions. The resulting 2045 Baseline model contains the vehicular and transit networks as of 2019, with the addition of funded projects that are programmed for completion in the next four years (listed in the SRTC TIP) and the forecasted growth in population and employment by the year 2045.

Employment, Housing & Employment Density Forecasts

SRTC uses housing units, employees, hotel/motel rooms, and higher education commuter students in the regional travel demand model to forecast the number of trips generated by land use type. Using adopted employment forecasts that aligns with the GMA population forecasting process, SRTC then uses persons per household ratios to derive the following number of SF and MF units, see figure 3.3. For more details, see Appendix B.

It's plausible that both SF and MF housing may grow faster than SF units as the aging population is anticipated to downsize from SF to MF. This influences transportation by increasing housing density. Housing and employment densities impact where trips start and finish and, therefore, the transportation needs between these locations. SRTC staff, in close coordination with area agencies, applied the Board adopted forecasting methodology to SRTC's travel demand model and to map the projected growth. See figure 3.4 for the 2045 Housing Density and figure 3.5 for the 2045 employment density.

For more information on how household and employment data is collected, forecasted, and allocated to each TAZ—as well as represented in the travel demand model—please see the SRTC travel forecasting documentation in Appendix B.

Figure 3.3: Growth in Occupied Housing Units, 2019–2045

	2019 Units	% of Units	2045 Units	% of Units
Occupied Single-Family Housing Units	155,442	75%	183,522	74%
Occupied Multifamily Housing Units	51,938	25%	66,069	26%
Total Occupied Units	**207,380**	**100%**	**249,591**	**100%**

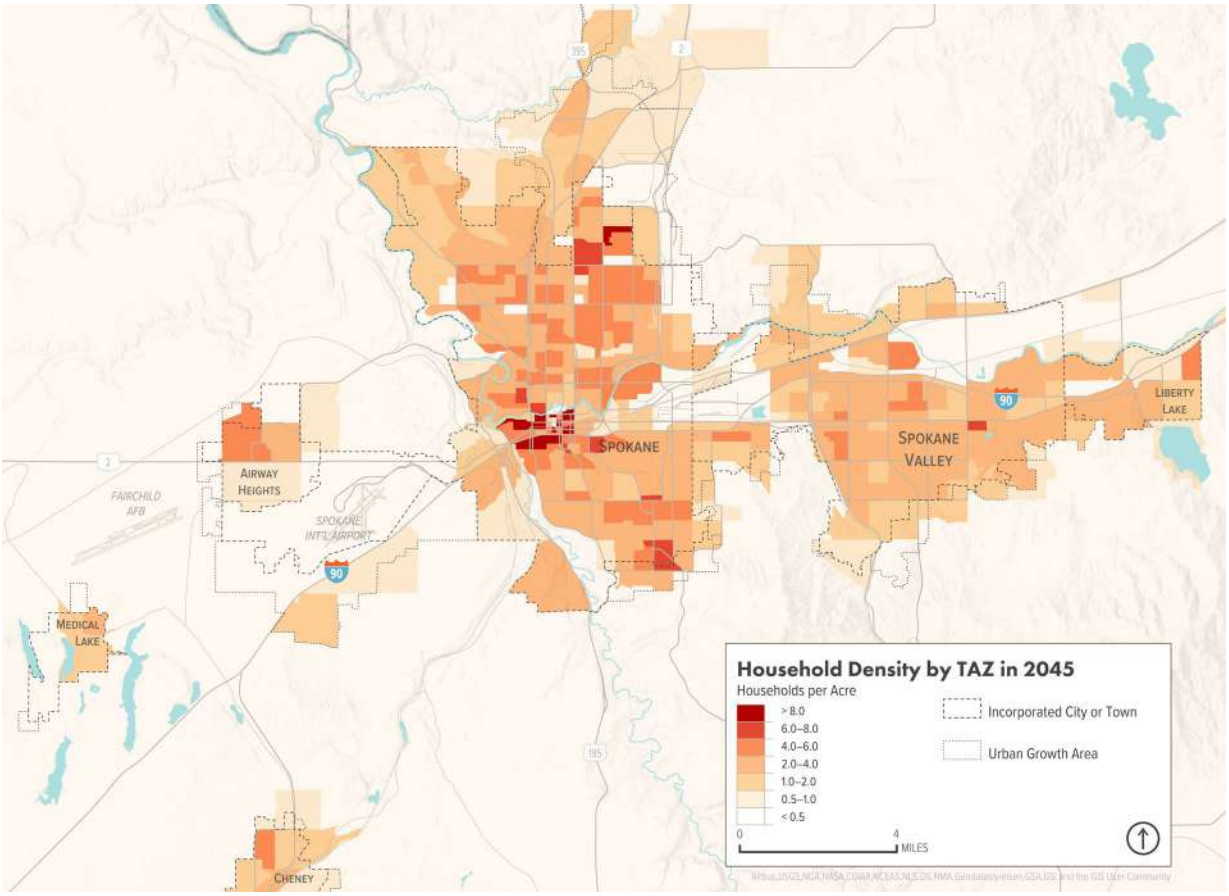


Figure 3.4: Map of Household Density by TAZ in 2045

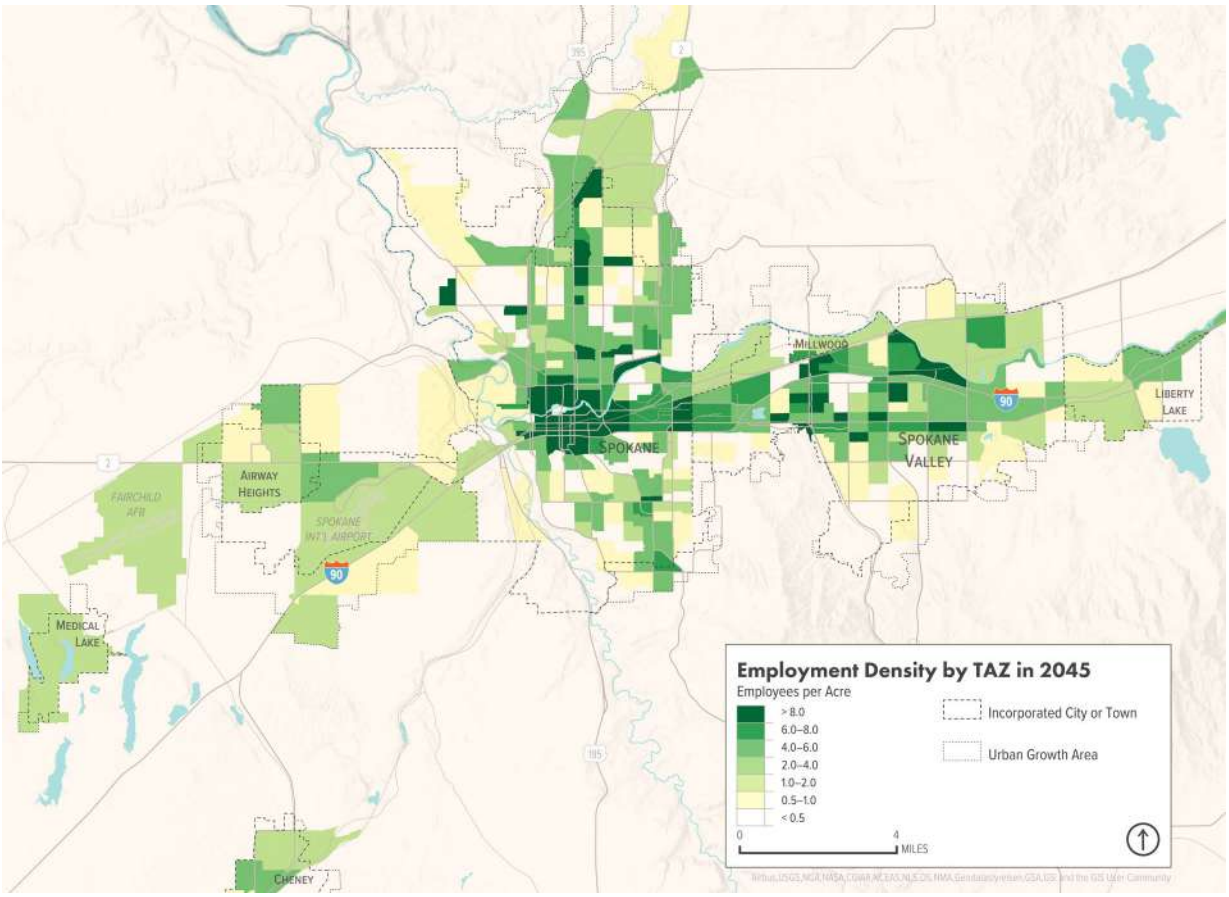


Figure 3.5: Map of Employment Density by TAZ in 2045

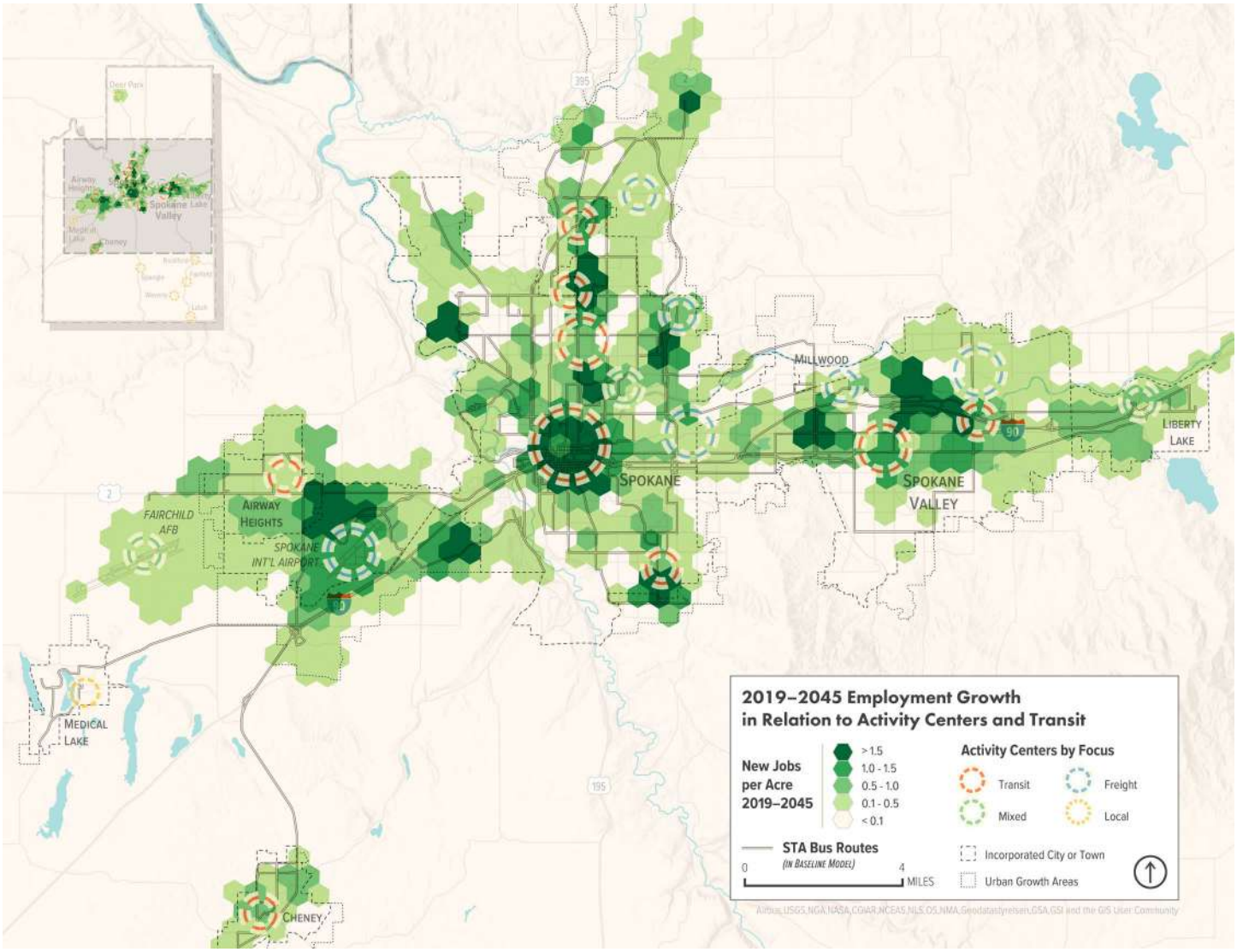


Figure 3.6: Forecasted Employment Growth in Relation to Transit Routes and Activity Centers

Future Employment Activity Centers

Employment activity centers have a major impact on regional and local travel patterns. They are defined as areas of regional significance that contain high concentrations of jobs. Activity centers are categorized as either transit focused, freight focused, or both, based on their employment composition. As described in *Chapter 2: Where We Are*, SRTC has also analyzed concentrations of job types to track where employment activity centers will be in the future.

Businesses located in freight focused activity centers are generally heavily reliant on shipping. These centers are more likely to be located on freight routes and they benefit from freight-related road improvements. Transit focused centers are associated with businesses that are more likely to have employees and customers that use transit and would benefit from related improvements. Future employment centers are forecasted to be largely consistent with existing centers. Figure 3.6 shows the location of employment activity centers in relation to future employment density changes, and how transit and freight routes connect these locations.

Future Land Use Analysis

Future land use forecasts for the year 2045 anticipate increased densities in a few areas, such as Downtown Spokane, along with continued low density development in the region's urban periphery. This forecasted pattern of development is a baseline scenario that was guided by current Spokane County and city comprehensive plans at the time of this plan. The impact of the 2045 land use projections on the regional transportation systems is described in the following section.

Future Transportation Conditions

The forecasted conditions and projected future concerns and needs for the various transportation networks and programs in the region are discussed in more detail in the following sections.

Forecasted Traffic Conditions

The regional travel demand model is used to estimate forecasted increases in traffic and public transportation usage. Figure 3.7 illustrates the forecasted increase in daily person, walk/bike, vehicular and transit passenger trips from 2019 to 2045 for the 2045 Baseline model.

VMT & VHT

Figure 3.8 reports VMT and Vehicle Hours of Travel (VHT) during the PM Peak Hour and for all day, which were derived from SRTC's 2019 Base and 2045 Baseline models. VMT and VHT are planning measures showing the growth of travel by miles and can indicate congestion by revealing how much time vehicles spend on area roadways. These results are used for further comparison with future alternatives. Both Daily and PM Peak VMT and VHT are expected to increase by more than 23 percent.

Both VMT per household and VHT per household are forecasted to increase slightly by 2045, possibly due to the higher levels of congestion in the Baseline alternative (see figure 3.9).

Congestion

As stated in *Chapter 2: Where We Are*, congestion can indicate more people are traveling and more economic growth. It can also change travel behaviors and create a shift in travel modes. On the less appealing side, congestion impacts many elements of a community, including personal travel times, costs to shippers, air quality, and fuel consumption. In other words, congestion costs time, gas and money and impacts the quality of life (particularly health and income) of people who travel regularly in congested conditions.

The average commuter in the Spokane urban area loses $937 per year due to traffic delays (47 hours per year spent in traffic). The estimated annual cost of congestion to truck freight movement in the area is $27 million, which includes the costs related to delay and excess fuel consumed.[2]

From a regional perspective, Spokane has recurring congestion that lasts for a limited period during the AM and PM Peak. Additionally figure 3.8 indicates more potential congestion is expected with the addition of new projects. SRTC's CMP, as mentioned in Chapter 2, identified the top eight corridors with the most congestion.

Results from SRTC's 2045 Baseline travel demand model are used to help identify future recurring congestion on those corridors. Making no other roadway improvements to support future growth is not realistic, however, the Baseline alternative allows for a direct comparison of the impacts of future growth on the current transportation system. Also, the travel demand model is able to predict growth in recurring congestion. It does not help predict non-recurring congestion, such as collisions and weather events.

Figures 3.10 and 3.11 show PM peak hour delay in 2019 Base model compared to the 2045 Baseline model. The increased delay is a result of population and employment growth. Chapter 4 will include a comparison of the increase in PM peak hour delay after a Build alternative of projects has been selected.

Figure 3.7: Daily Person, Vehicle, and Transit Trips forecasted in 2019 Base and 2045 Baseline Scenario

	2019 Base	2045 Baseline	% Increase
Total Person Trips	2,329,000	2,827,100	21%
Total Vehicle Trips	1,846,500	2,259,100	22%
Total Transit Passenger Trips	34,400	40,200	17%
Total Walk/Bike Trips	229,300	259,900	13%

Figure 3.8: Total VMT and VHT in Baseline Scenario

	2019 Base	2045 Baseline	% Increase
PM Peak Hour VMT	821,800	1,015,000	24%
Daily VMT	9,717,500	12,018,700	24%
PM Peak Hour VHT	22,900	29,000	26%
Daily VHT	268,600	340,500	27%

Figure 3.9: VMT and VHT per Household in Baseline Scenario

	2019 Base	2045 Baseline	% Increase
PM Peak Hour VMT	4.0	4.1	3%
Daily VMT	47.0	48.0	3%
PM Peak Hour VHT	0.1	0.1	5%
Daily VHT	1.3	1.4	5%

2 https://mobility.tamu.edu/umr/congestion-data/

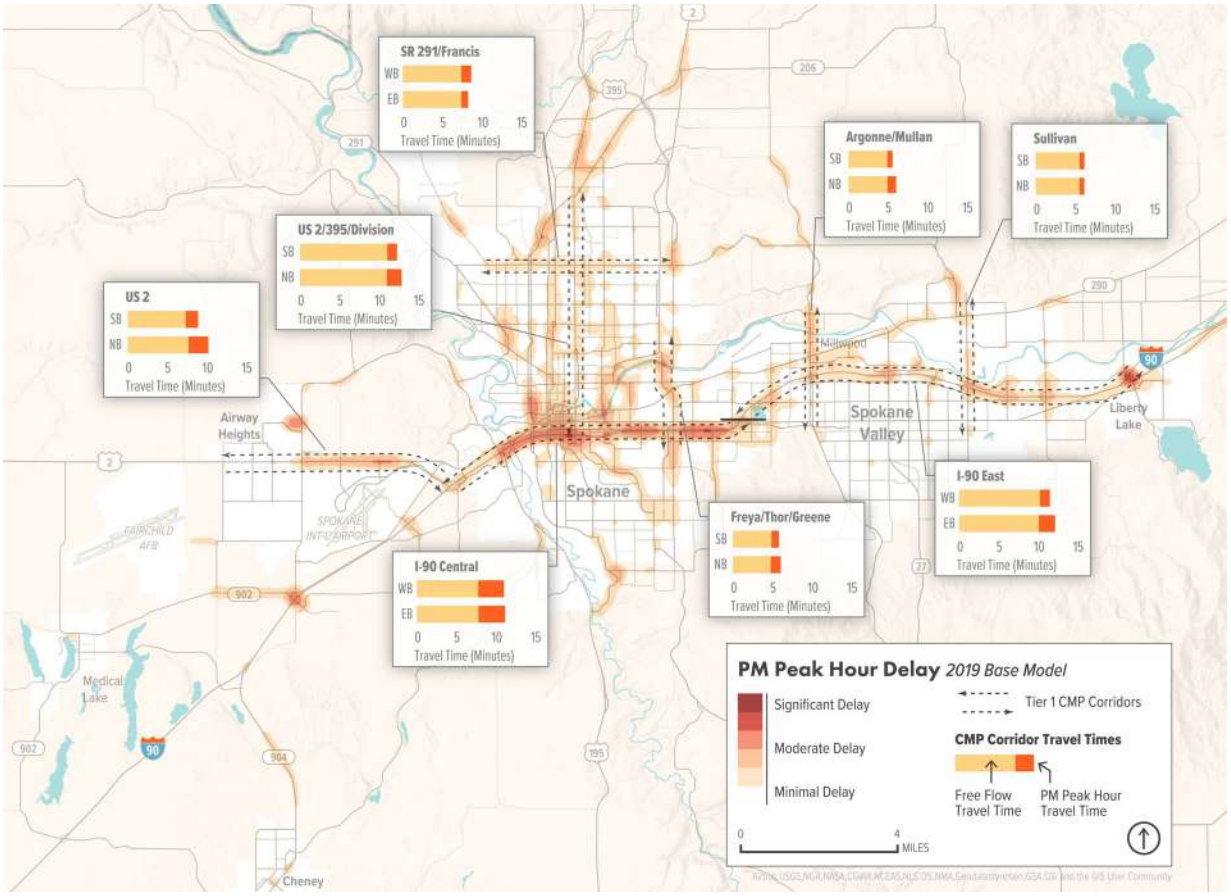


Figure 3.10: PM Peak Hour Delay in 2019 Base Model

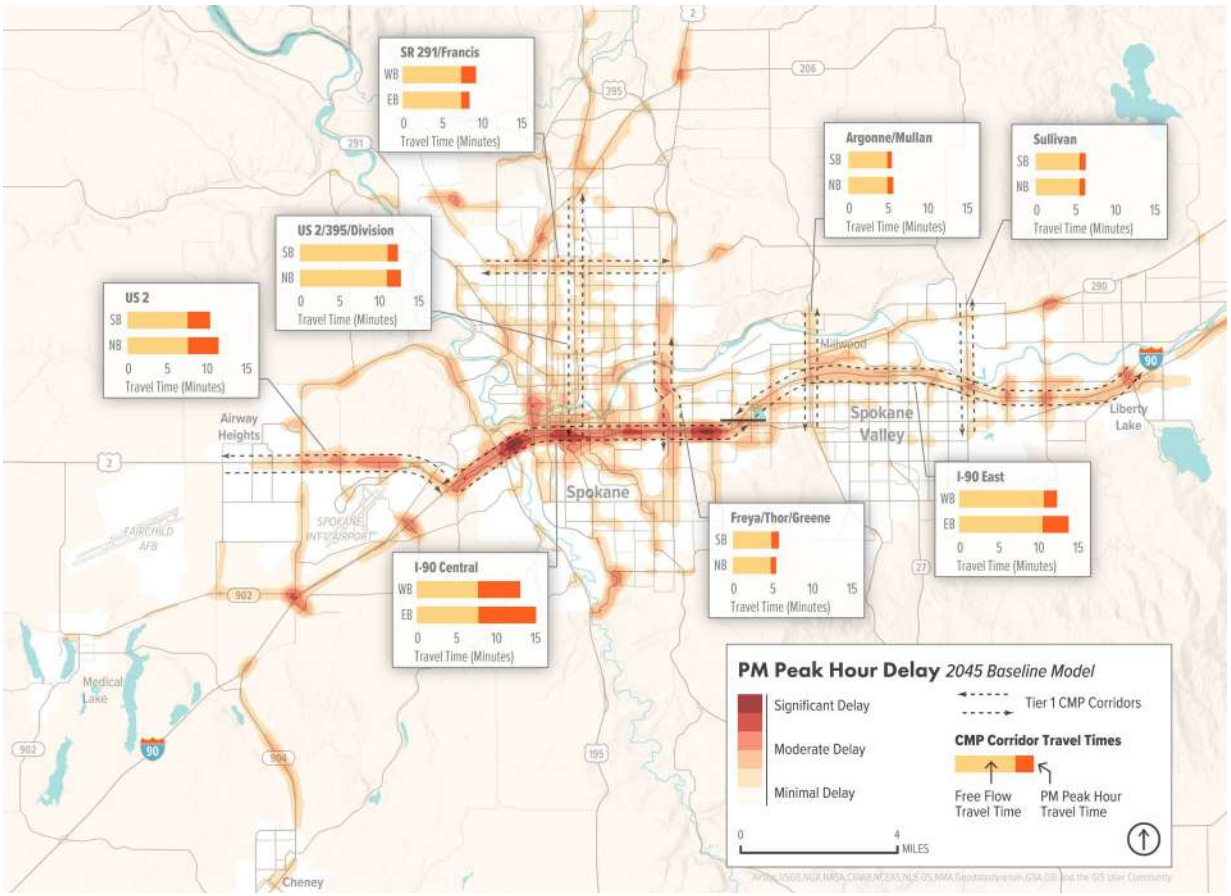


Figure 3.11: PM Peak Hour Delay in 2045 Baseline Model

Performance Measures & Targets

Performance-based planning and programming applies performance management principles to transportation system policy and investment decisions, providing a link between management and long-range decisions about policies and investments that an agency makes in its transportation system. Performance-based planning and programming is a system-level, data-driven process to identify strategies and investments. Long-range planning helps to define key goals and objectives and to analyze and evaluate strategies and scenarios for meeting goals. Connecting performance measures to goals and objectives through target setting provides a basis for understanding and sharing information with stakeholders and the public.

Figure 3.12: WSDOT and SRTC 2021 Safety Targets

	WSDOT		SRTC	
Measure	5-Year Rolling Average 2015–2019	2021 Target	5-Year Rolling Average 2015–2019	2021 Target
Number of Fatalities	542.8	444.1	33.0	27.0
Fatality Rate	0.885	0.724	0.86	0.70
Number of Serious Injuries	2,208.6	1,807.0	137.8	112.7
Serious Injury Rate	3.599	2.944	3.57	2.92
Non-Motorist Fatalities and Serious Injuries	577.0	472.1	47.4	38.8

The USDOT has issued a series of final rules that require transportation system performance targets. Each rule specifies a performance measurement and target setting process for state DOTs and MPOs. SRTC is required to set and report on target attainment for the following performance areas:

- Safety
- Pavement and Bridge Condition
- System Reliability
- System Performance
- Freight
- Congestion Mitigation and Air Quality
- Public Transit Asset Management
- Public Transit Safety

The primary purpose of this process is to increase state and MPO transparency and accountability, as they invest federal taxpayer dollars in transportation infrastructure improvements and services. It is also aimed at ensuring states and MPOs invest money in transportation projects that collectively make progress towards the achievement of defined goals.

Safety

WSDOT annually publishes statewide safety performance targets in the HSIP Annual Report that it transmits to FHWA each year. WSDOT adopts and annual statewide targets for all safety categories as zero fatalities and zero serious injuries—this is often referred to as "Target Zero". In July 2021, WSDOT reaffirmed Target Zero provides the framework and trendline for developing safety performance targets.

On May 9th, 2019 the SRTC Board approved a resolution to plan and program projects so that they contribute to the accomplishment of the statewide performance targets for safety. The new statewide targets followed a five-year rolling average trendline instead of using the state identified "target zero" trendline. Most recently, the SRTC Executive Director reaffirmed SRTC's support of the 2021 statewide targets in a letter submitted to WSDOT on Dec 9, 2020. WSDOT's safety targets, along with SRTC's contribution to achieving the statewide target, are reported in figure 3.12.

While there are no penalties to MPOs, there are penalties to WSDOT if the state has not met or made significant progress toward achieving the performance targets after two years. The state DOT would:

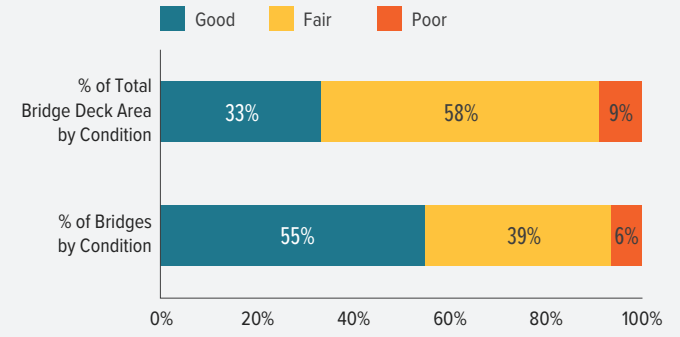
- Dedicate its obligation authority equal to the apportionment for HSIP to the state for the prior year to highway safety improvement projects until the USDOT Secretary determines that the state had made significant progress or met the targets; and
- Annually submit to USDOT a safety implementation plan until the USDOT Secretary determines that the state has made significant progress or met the targets.

Pavement & Bridge Condition

FHWA's Pavement and Bridge Conditions rule to assess the condition and performance of bridges on the NHS was finalized on May 20, 2017.

WSDOT's performance measure data indicates that, of all Washington state bridges on the NHS, 33.9 percent are in good condition and 57.4 percent are in fair condition (see figure 3.13). This leaves 8.7 percent in poor condition. These figures include NHS bridges that are owned by WSDOT, as well as those owned local agencies. The federal performance target is no more than 10 percent of bridges in poor condition. Figure 2.10 indicates the most recent information available for condition, from July 2017.

Figure 3.13: Washington State NHS Bridge Condition



NBI ASCII Files, 2020

Highway System & Freight Performance

The system performance rule was finalized on May 20, 2017. The statewide process to develop congestion targets is not far enough along to report. The highway system performance measures describe how reliable the travel time is through a particular corridor; these measures apply statewide and are not specific to the Spokane region. To guide freight investments and improve freight system performance in Washington, WSDOT developed the 2017 Washington State Freight Investment Plan by engaging various freight partners and stakeholders, including MPOs and RTPOs. The Freight Investment Plan identified freight priority projects and described how those priorities would be invested and funded through FFY 2016–2020 National Highway Freight Program (NHFP) funds. SRTC supports the highway system and freight performance targets developed by WSDOT. These targets were adopted by the MPO board on November 8th, 2018 through resolution 18-05.

Congestion Mitigation & Air Quality Performance

SRTC is an air quality attainment area working under a maintenance plan for past violations to the national ambient air quality standards for particulate matter ten microns or smaller (PM 10) and for Carbon Monoxide (CO). By August of 2024, the region should no longer be a maintenance plan area.

SRTC reports the air quality improvement that come from projects funded by the SRTC CMAQ funding awards. These emission improvements are rolled up into a statewide baseline and future target. SRTC supports the statewide targets developed by WSDOT. These targets were adopted by the MPO board on November 8th, 2018.

Asset Management

Transportation assets are the physical elements, such as pavement, bridges, culverts, signs, and other roadway features that make up the transportation system. Transportation asset management is the process of maintaining and preserving assets by strategically planning and investing state, federal and local funds to obtain the best long-term benefit.

To achieve these goals, WSDOT developed maintenance and preservation practices to establish a consistent approach to identifying transportation needs and deficiencies during all stages of an asset's lifecycle. The goal is to maintain the performance of the facility before it drops below acceptable standards but not so soon that resources are wasted. This required process is called asset management.

WSDOT has the requirement to write the asset management plan for our state, which includes:

- A summary listing of pavement and bridge assets on the NHS, regardless of ownership. A condition description of those assets, with pavement listings separated for interstate and non-interstate
- Asset management objectives and measures
- Performance gap identification
- Life cycle cost analysis used to manage preservation
- Risk management analysis with the results of the periodic evaluations of facilities requiring repair or reconstruction due to emergency events
- A 10-year financial plan
- Investment strategies

Performance Evaluation

To ensure transportation system performance and condition is linked to decision-making, SRTC applies many of the performance related measures discussed in this chapter to the project selection process.

Projected Roadway Operations, Maintenance & Preservation Needs

Currently, there isn't a consistent regional system for monitoring road and bridge conditions, as well as estimating maintenance, operations and preservation expenditures in the Spokane region. However, WSDOT's Economic Analysis Division provides a summary of historical revenues and expenditures by county and jurisdiction. Over the last few years, transportation maintenance expenditures in Spokane County have averaged about $47 million per year.[3] However, this doesn't account for unfunded needs like deferred maintenance due to financial limitations. As of 2021, SRTC member agencies have reported over $700 million in existing maintenance and preservation backlogs.

TSMO

Transportation Systems Management and Operations (TSMO) is an approach that uses regional strategies to improve mobility, safety, reliability, and reduce congestion for all users while ensuring the preservation of the existing transportation systems.

3 WSDOT City Streets and County Roads merged Dataset, 2014–2018.

At the core of the region's TSMO efforts is the SRTMC. The SRTMC is a multi-jurisdictional enterprise made up of six partners that include the City of Spokane, City of Spokane Valley, STA, Spokane County, WSDOT, and SRTC. The SRTMC is where information about the transportation network is collected, processed, and fused with other operational and control data to produce information. This information is used by system operators to monitor operations, implement control strategies, coordinate and initiate response to situations, and relay information to the public.

In 2019 the SRTMC updated its ITS Architecture Plan. The plan establishes objectives which will help meet the plan's goals. Examples of those objectives include:

- Increase use of SRTMC traveler information website in the next 3 years
- Develop SRTMC multi-modal trip planning tool by year 2021
- Decrease amount of time to warn travelers of dangerous conditions or emergency situations
- Increase the percent of the primary arterial corridors in which travel conditions can be detected remotely to 75 percent by 2023
- Reduce the daily hours of recurring congestion on I-90 by 3 percent by year 2023
- Reduce transit wait time at key intersections in the PTBA
- Increase intersection safety for non-vehicular users of the intersection

To help meet these objectives, the ITS Architecture Plan proposes a list of projects which will advance Horizon 2045's TSMO goals.[4] These strategies will be considered in *Chapter 4: How We'll Get There*.

Projected Freight Movement Conditions

As discussed in Chapter 2, the Inland Pacific Hub (IPH) project provided a wealth of information about freight mobility in the region. The IPH Regional Freight Profile report, using base year data from 2007, forecasts freight commodity flows for the mid (2017) and long (2027) terms.[5] The study identified several current issues that could pose a significant challenge for future trade competitiveness, economic development, and transportation planning. One of the biggest issues identified during the IPH study was the large lane imbalance for the region. Lane imbalance is the difference in the amount of goods shipped outbound compared to inbound. This creates increased costs and logistical issues for shippers, which obviously impacts area businesses.

Along these same lines is the issue of through freight traffic. Almost 53 percent of freight by tonnage and 54 percent of freight by value just passes through the area. This through traffic uses capacity on the regional highway and rail transportation system and causes wear and tear to it but generates very little economic benefit to the region. The situation is a natural by-product of being located along national freight corridors such as I-90 and the two Class I rail lines.

The tonnage of inbound freight to Spokane County is forecasted to increase 21 percent by 2027 while outbound is expected to increase more than 9 percent during the same period. The largest forecasted growth in export commodities is machinery, waste/scrap materials, transportation equipment, fabricated metal products, and nonmetallic minerals. The largest inbound growth commodities include electrical equipment, machinery, transportation equipment and rubber/miscellaneous plastics. Secondary traffic, which is primarily warehousing and intermodal container transfers at transload, consolidation and distribution facilities, is expected to experience some of the largest growth. Transport to/from rail ramps is also forecasted for strong growth through 2027, for the reasons described in the following rail subsection.

Truck Freight

The majority of freight in the region is transported by truck. Fifty-four percent of freight by weight is hauled by truck while 79 percent of freight by value is moved by this mode. Nearly 34 percent of the weight and 65 percent of the value of the truck freight just passes through the region. Truck freight tonnage is forecasted to increase 18.5 percent by 2027. Over the midterm, truck freight flows to northern markets are forecasted to increase by 26 percent while inbound movements are expected to grow by 21 percent. The outbound commodities expected to have the most growth in transport via truck are transportation equipment, machinery, farm products, and fabricated metal products. For inbound commodities, the largest growth is forecasted for transportation equipment, petroleum/coal products, chemicals/allied products, and fabricated metal products.

The lane imbalance issue is particularly burdensome for the regional trucking industry. Nearly 32 percent of commodities shipped via truck are outbound compared to only 21 percent inbound. This indicates a potentially high number of trucks that return empty. Several trucking issues were raised as part of the IPH effort and in the Horizon 2045 roundtables. The primary concern was about north-south movement and support for the completion of the North Spokane Corridor. Also, the need to improve or expand bypass routes, such as Bigelow Gulch was consistently heard. Another issue was the need to address regulatory differences across neighboring states and Canada.

4 The plan can be accessed at: https://www.srtc.org/wp-content/uploads/2020/01/SpokaneRegionITSArchitecture2019_Final.pdf.

5 Global Insight 2007 TRANSEARCH™ Data

Rail Freight

The vast majority of rail freight in the region is just passing through the Spokane area—over 81 percent of the tonnage and more than 92 percent of the value of goods on rail is through freight. The future trend for through freight traffic is unclear. However, internal, inbound, and outbound rail freight is forecasted to increase by 1 percent through the year 2027. The forecasted increase in intermodal tonnage is nearly 43 percent by 2027. As stated in the IPH study, this "is a clear indication that freight is switching even more toward truck transport and intermodal trailers and containers."[6]

The highest growth commodities shipped inbound via rail are forecasted to be food/kindred products, transportation equipment, and chemicals/allied products. For outbound rail commodities, growth in fabricated metal products, transportation equipment, and clay, concrete, glass or stone is expected. Coal and other bulk products are also forecasted to increase, perhaps dramatically depending on the status of several proposed export terminal projects in western Washington and Oregon. However, the exact increase in commodity flow, including the number or length of unit trains and the impact to our regional transportation system, is unknown at this time

The potential for increased rail traffic, due to several proposed bulk commodity port projects, is a regional issue SRTC continues to monitor. While the exact number of additional trains and the specific impact to our regional transportation system is yet unknown, SRTC staff continues to communicate with lead agencies and will closely study the information once available.

Air Freight

The commodities transported by air carriers are mostly high value, time-sensitive products that many businesses depend upon. Therefore, strengthening the opportunity to use air cargo was a high priority of many stakeholders that participated in the IPH project. The outbound commodities forecasted to have high growth are machinery, fabricated metal products, and food/kindred products. Import growth is expected in transportation equipment and fabricated metal products. More information on projected increases in air cargo is provided in the following Projected Air Transportation conditions section.

Future Freight Mobility Needs

The primary deficiencies that need to be addressed were derived from the extensive outreach, research and analysis for the IPH project. Some of the identified needs include:

- Address the significant empty backhaul issue due to shipping lane imbalances
- Improve access to northern markets by enhancing the capacity of north-south trucking routes and tapping into existing rail service to Canada
- Address the truck size and weight regulatory differences with neighboring states and Canada

The IPH Transportation Investment and Project Priority Blueprint was developed to outline a recommended scenario of projects that are bundled together for optimal economic benefit. The final Blueprint strategies are discussed in more detail in *Chapter 4: How We'll Get There*.

Passenger Rail

The Spokane area is served by Amtrak with one scheduled trip eastbound and two westbound each day. The Empire Builder train travels between Chicago and Portland, OR or Seattle passing through St. Paul, MN with a departure from Spokane to Seattle at 2:15 AM, Spokane to Portland, OR at 2:45 AM, and an eastbound departure at 1:25 AM. The inconvenience of the late night/early morning passenger train schedules is frequently expressed at public meetings. There is no forecasted increase for passenger rail service in our area.

Projected Air Transportation Conditions

Aviation demand forecasts are used to determine what improvements should be made at the airport facilities and also can help predict traffic and noise impacts. The following information is from SIA's Master Plan, Chapter 2 Aviation Forecasts.

Air Passenger Projections

Passenger activity at SIA is forecasted to 2030. The number of passengers boarding that depart from SIA, or enplanements, is projected to grow from 2 million in 2019 to 3.1 million by 2030. Since January 2020, SIA has announced multiple new routes, including to Atlanta, Chicago, Las Vegas, and several cities in California.

Air Cargo Projections

Growth in air cargo at SIA is also expected to increase. The latest annual cargo forecast for 2030 is for nearly 72,000 tons of air cargo to pass through SIA. According to WSDOT's draft freight plan, air cargo at SIA is forecasted to be more than 76,000 metric tons by 2024 and nearly 98,000 by 2034.[7]

Projected Public Transportation Conditions

The county's population is expected to grow by almost 100,000 by 2045, which will likely mean a need for additional transportation services. SRTC monitors trends in the aging population (see Figure 2.4), persons with disabilities (see Figure 2.5), veterans, young persons, and other sectors of the public that are traditionally known to use public transportation services. The Millennial generation also has a desire for alternatives to vehicle ownership. Together these

6 Regional Freight Profile. Inland Pacific Hub Transportation Study, 2009.

7 http://www.wsdot.wa.gov/freight/

growing populations and changing trends point to a continued future demand for public transportation.

Other traditional factors that could have potential impacts to transit ridership include fuel prices and the success of college and employer bus pass programs. However, with the general market move towards electric/hybrid personal vehicles it is unclear if fuel prices will continue to be a major determining factor impacting transit ridership. Newer unknown factors include technological advances such as ride-hailing and ride-sharing apps.

STA, the largest local provider of public transportation, offers service within the PTBA. Historically, providing efficient transit services to outlying or rural areas has been difficult due to relatively lower housing densities and dispersed activity centers, as well as the lack of local funds to match federal or state monies for operations.

Providing more service to meet this demand will be a challenge in the face of limited resources. However, the importance of planning for strategies to address future needs is critical. STA has updated their comprehensive plan to include policies related to Flexible Services such as dynamic routing and Transportation Network Companies (such as Lyft and Uber) partnerships to maximize transit service throughout the PTBA.

In 2016, voters approved STA Proposition 1 to fund a ten year plan to maintain, improve and expand public transit service as the region grows. New revenue from the local sales tax rate increase (0.1 percent increase effective April 1, 2017, and a second 0.1 percent effective April 1, 2019) will allow STA to increase overall service by 25 percent throughout the region. More than 25 projects will expand to reach new areas, provide more trips along major corridors, improve customer amenities, and reduce overall travel times. The first improvements started in 2017, including:

- Later night service on Saturdays throughout the transit system
- Service on East Indiana between Spokane Valley Mall and Greenacres
- Night and weekend service on North Nevada
- Increased weekend frequency in Airway Heights
- Breaking ground on the West Plains Transit Center near I-90 exit 272
- Submission of an application for a FTA Small Starts grant and evaluation of the planned Central City Line
- Beginning the design process for high frequency routes to Cheney, Sprague and I-90, along the Monroe and Regal corridors

Figure 3.14 illustrates the STA fixed route system for the 2045 Baseline in relation to areas of projected residential growth.

The planning efforts for public transportation have a direct impact on the vitality of the region. For almost 15 years community partners have been working on defining a transit project to help further its economic development goals for Downtown Spokane and the University District. The result is a six-mile, corridor-based BRT line connecting Browne's Addition to Spokane Community College by way of Downtown Spokane and the University District. Construction began in 2021. It will be operated using a modern-style electric battery bus and is projected to serve nearly 900,000 boardings annually. It will feature more frequent trips and convenient elements like pre-board ticketing, level boarding and improved stations with real-time signage, wayfinding and other amenities. It is projected to increase land and improvement values in the corridor by $175 million over 20 years.

The City Line is the first HPTN route planned to be fully implemented. Improvements for the implementation of the Cheney, the Monroe-Regal, Division, Sprague and I-90 HPTN corridors are also included in STA Moving Forward Plan. STA Moving Forward and the HPTN are described in more detail on STA's website.[8]

Combining investment in capital and operations, public transportation projects generate an average of 17,900 jobs per year, per $1 billion investment given the existing mix of operations (72 percent) and capital (28 percent) expenditures. Associated with the 17,900 jobs is roughly $2.9 billion of sales volume, which adds $1.8 billion of Gross Domestic Product (GDP), (including $1.2 billion of worker income). The total federal, state, and local tax revenues generated from this economic activity is roughly $382 million.[9] For details about project costs and revenues, please see the Financial Plan section of Chapter 4.

Future Active Transportation Conditions

The outreach for Horizon 2045 provided public comments about the future active transportation needs of the region. While improvements in active transportation were noted over the past few years, topics heard during focus groups include:

- Snow removal and snow storage needs to be improved
- Pedestrian and bicycle signage, education and enforcement is needed
- Driver awareness of pedestrians needs to be improved
- The area lacks a serious bicycle network

8 https://www.spokanetransit.com/

9 Economic Impact of Public Transportation Investment, 2014 Update. Economic Development Research Group, Inc and Cambridge Systematics, Inc., 2014

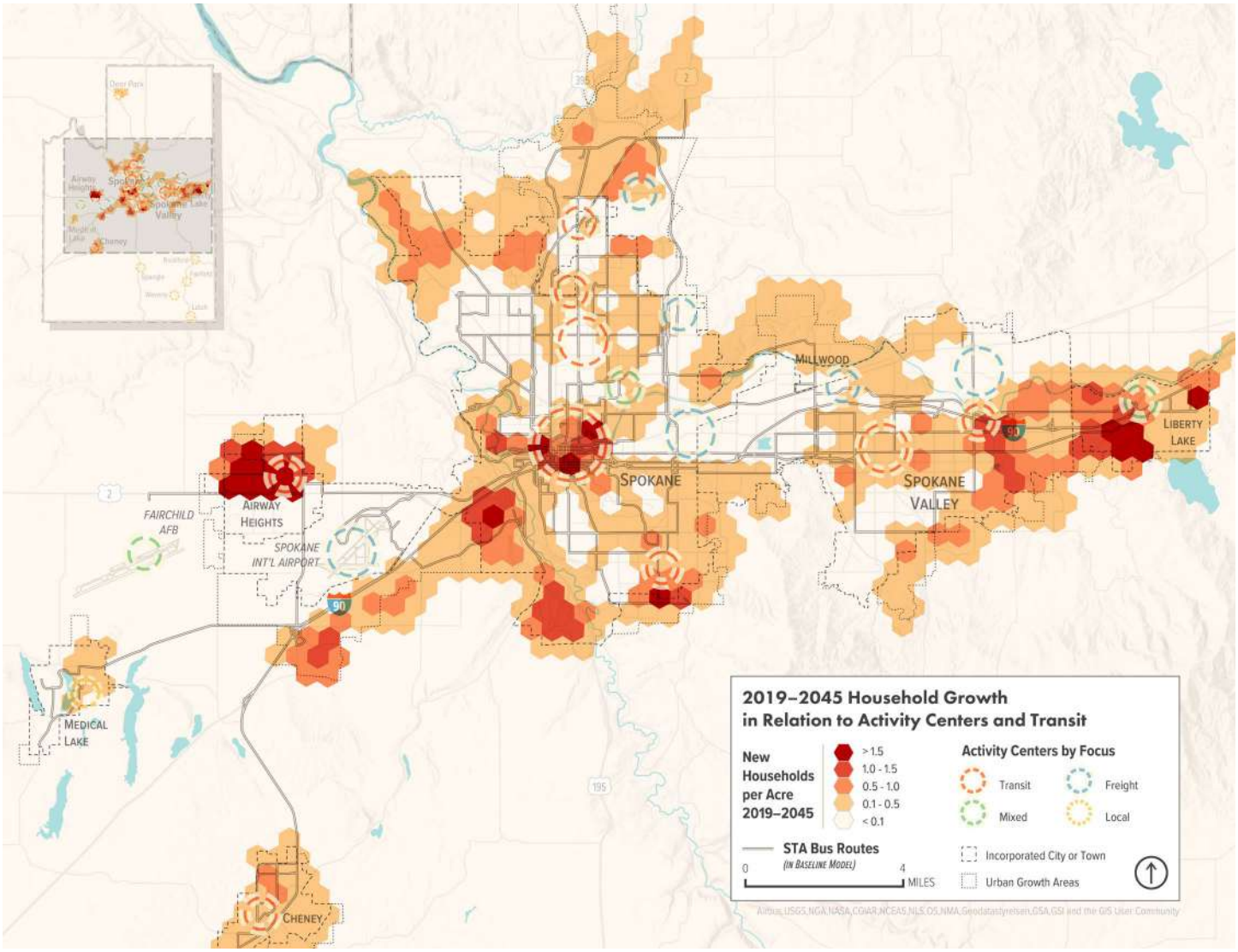


Figure 3.14: Forecasted Housing Growth in Relation to Transit Routes and Activity Centers

- There is a lack of bike network to trail heads
- Trail gaps need to be filled in such as Centennial Trail and Fish Lake Trail
- Sidewalks need improvements such as fixing damaged sidewalks and filling in gaps where none exist
- Roadways need to be swept more often to improve safety for cyclists,
- Implement land use decisions that support non-motorized transportation

Other frequently heard issues include the need for more countdown timers for crosswalks and improving safety, access, and mobility for all users.

The SRTC travel demand model is a tool used to predict the demand for biking and walking in our region. Increasing biking and walking trips will require the need for improved access to comfortable and safe biking and walking infrastructure. The SRTC 2045 Baseline model forecasts nearly a 13 percent increase in walk/bike trips.

One example of community and business interest in improving access is the Transportation and Pedestrian Safety Plan developed by Inland Northwest Lighthouse, a company that helps to expand job opportunities for blind or visually impaired people. Their plan identifies street, transit and other improvements "to enhance the ability of blind and low vision employees of the Inland Northwest Lighthouse to travel smoothly, safely, and efficiently to and from their workplace and within their community."[10]

10 Inland Northwest Lighthouse Transportation & Pedestrian Safety Plan, 2012.

SRTC also coordinates with other similar agencies such as Lilac Services for the Blind, an organization providing independent living training to people with vision loss, regarding accessibility needs. These agencies have identified improvements, including the proper installation of accessible pedestrian signals, the need for snow removal from sidewalks, the benefit of directional curb ramps, and design elements allowing access at roundabouts

Transit is an extension of the pedestrian and bicycle network, allowing users to extend the length of their trips or reduce the burden of physically demanding routes (i.e., riding a bike downhill and then catching a bus for the return uphill trip).

In cooperation with member jurisdictions, SRTC has developed a Regional Bike Route Priority Network. With limited funding at the regional level, investment in the Regional Bike Priority Network will provide the most regionally-significant impact. Used for planning purposes, the Regional Bike Route Priority Network contains almost 700 miles of existing and proposed routes. Gaps have been identified in areas where connections are limited. Routes on this network focused on connecting key community infrastructure with growth areas while maintaining adequate spacing between routes. The existing Regional Bike Network, when broken down by classification, is mostly made up of unmarked shared-use roadway, see figure 3.15.

The focus of the Regional Bike Priority Network will be to improve the comfort, connectivity and safety of the bike route system for all users. Research indicates that dedicated bike infrastructure (improvements beyond unmarked-shared roadways) helps drop injury rates.[11] The Regional Bicycle Priority Network is shown in Chapter 4 (figure 4.3).

Figure 3.15: Regional Bicycle Network Mileage by Classification

Facility Type	Facility Description	Mileage	% of Network
Class I	Shared Use Path	135.6	10.2%
Class II	Bicycle Lane	142.6	10.7%
Class III	Shared Roadway Bike Route	176.5	13.2%
Class IV	Shared Roadway	879.4	65.9%
Total		**1,334.1**	**100.0%**

11 American Journal of Public Health, Vol. 102 No. 12, pages 2336-2343. http://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2012.300762

Future of Transportation Programs

Several regional programs have demonstrated their impact on improving traveling conditions, often much more economically than adding new lanes or roads.

TSMO

The benefits from TSMO programs, such as incident management, signal coordination, and access management, save the region approximately 274,000 hours and $604 million in annual congestion costs.[12]

TDM

TDM is a program of projects, programs and services aimed at improving the efficiency of the existing transportation system. TDM strategies include encouraging the use of alternatives to driving alone, such as carpools, vanpools, public transit, biking, and walking. Alternative work-hour programs such as the compressed work week, flextime, and telecommuting are also TDM approaches. Other strategies include parking management tactics such as preferential parking for carpools and variable parking pricing, basing the price on demand at any particular time.[13] State and regional CTR programs implement these types of services and also provide information and education resources to the traveling public.

The Spokane County CTR program began in 1991 to address traffic congestion, air pollution and fuel consumption by focusing on reducing single occupant vehicle trips at major employers. For over two decades Spokane County has administered and assisted seven local jurisdictions that participate in the program. In 2006 legislation was passed that required SRTC, as the RTPO, to create regional goals for the CTR program. SRTC and Spokane County CTR work closely to mirror the goals of local and regional plans while Spokane County functions as the administrator and implementer of the program. Some services CTR has implemented recently include:

- Creating MyCommute.org mobile app
- Expanding CTR Guaranteed Ride Home (GRH) program
- Bike safety classes with League of American Bicyclists-certified trainers
- Providing transit and vanpool subsidies for first-time participants
- Developing a Liberty Lake shuttle program offering service from a Park and Ride to CTR worksites

SRTC also reviews local jurisdiction's CTR plans for regional consistency and to update the SRTC Regional CTR Plan. Local and regional plans must be approved by the CTR board in order to be eligible for state funding.

Safety

With the addition of federal performance measures, safety improvements continue to be a high priority for regional transportation investments. Horizon 2045 emphasizes strategies that reduce vehicular, pedestrian and bicycle collisions. The Safety and Security Guiding Principle and associated policies support improvements that eliminate safety deficiencies, promote education and enforcement programs, and stress that proper maintenance of the transportation system is critical. Evaluation criteria for project programming will be regularly revisited by SRTC to ensure there is an appropriate weight for safety investments.

Security

Future transportation investments will be influenced by security considerations. The incorporation of security into the regional transportation planning process helps to:

- Preserve the reliability and resiliency of the regional transportation systems
- Maintain essential transportation services
- Instill confidence in the capability and resilience of transportation infrastructure
- Support cost-effective transportation security projects
- Involve stakeholders with security responsibilities in the transportation planning process
- Establish security policies, performance measures and targets (see Guiding Principles)
- Develop information systems and other analytical tools to assist in risk assessment and project prioritization
- Inform decision makers about transportation security issues and resource availability[14]

The risks to transportation facilities are evaluated based on the probability of an incident, the vulnerability of the facility and the potential damage costs.[15] As discussed in Chapter 2, Greater Spokane Emergency Management (GSEM) is the coordination agency during major emergencies and has a comprehensive plan for response to events. SRTC will continue to support this effort through project identification, prioritization and selection for funding for critical transportation infrastructure.

12 2012 Urban Mobility Report. Texas A&M Transportation Institute.

13 Transportation Demand Management. Winters, Paul L., Center for Urban Transportation Research.

14 Surface Transportation Security Volume 3: Incorporating Security into the Transportation Planning Process (NCHRP Report 525). AECOM Consult, Inc. and Maier Consulting, Inc., 2005.

15 Security Considerations in Transportation Planning: A White Paper. Plozin, Stephen E.

Future Environmental Conditions

Stewardship and improving quality of life are adopted guiding principles at SRTC that lend themselves to our commitment to environmental considerations. The construction of transportation infrastructure and the operation of vehicles have a direct impact on our natural and built environment. With this in mind, our region must be vigilant in understanding and monitoring environmental issues.

The impacts of vehicle emissions and congestion on Carbon Monoxide (CO) levels are significant in the Spokane region. Operating under CO and PM-10 air quality maintenance plans, SRTC is required to track the growth rate of VMT in the region. That analysis is available in Chapter 4 in the Air Quality Conformity Determination section.

Additionally, both ozone and fine particulate (PM-2.5) are air pollutants of concern in the Spokane region. In October 2015, the ozone standard was lowered from 75 parts per billion (PPB) to 70. The most recent 3-year average (2018-2020) for ozone in Spokane was 61 PPB. The PM-2.5 standard is 35 µg/m3, with the Region's most recent 3-year average (2018-2020) at 35 µg/m3.

On April 29, 2014 Governor Inslee signed Executive Order 14-04: Washington Carbon Pollution Reduction and Clean Energy Action. A portion of the executive order focuses on clean transportation since the greatest percentage of carbon emissions comes from cars, trucks and other transportation-related sources. WSDOT is leading an effort with other agencies and governments to promote strategies, policies and investments that support lower-emission multi-modal options, clean fuels and electrification.

SRTC has policies in Horizon 2045 that will maximize the use of existing infrastructure and improve the availability and safety of lower impact and less expensive alternative modes of transportation. These policies also support environmental conditions that relate to transportation equity issues. The region must ensure that environmental impacts are minimized and do not disproportionately impact areas of populations.

Future projections of other environmental conditions are currently not available for our region. As new or revised regulations and methods to monitor conditions emerge, the potential for increased evaluation may become available. For example, water quality impacts from transportation have become an area of greater emphasis, as regulations for cleaning of catch basins and the treatment of runoff from road facilities affect more jurisdictions.

Quality of Life

Although many of the indicators used to measure quality of life or livability cannot be forecasted for the future, SRTC will continue to monitor air pollutant levels, transit accessibility, mode share, and the household measures mentioned in Chapter 2. SRTC will partner with the Spokane Regional Health District, Spokane Clean Air Agency and other entities in developing transportation-related strategies to preserve and enhance the region's quality of life.

As discussed in the Projected Traffic Conditions section, congestion has an impact on a region's quality of life. However, there is a perception that all congestion is bad. This is not necessarily the case in all circumstances for all communities. Some congestion is a sign of economically healthy and vibrant communities. Congestion can mean a lot of people doing a lot of things, which translates to economic activity.

Economic Vitality

Highways, roads, bridges and other transportation investments make up nearly 34 percent of the national, state, and local (non-military) assets. "State and local governments are largely responsible for maintaining the stock of non-defense assets in the U.S., including critical economic infrastructure."[16] It is estimated that, at a minimum, an additional amount of $26.4 billion is needed annually to maintain existing national transportation systems and accommodate future demand. What this translates to at the local level is the potential for job generation and economic impact from manufacturing, construction, operations, maintenance and preservation activities. Transportation projects have some of the highest potential for creating jobs, sustaining employment, generating economic activity and therefore enhancing economic vitality.

Public transportation projects generate about 22 jobs per $1 million investment, while the repair of bridges and roads creates more than 20 and the building of new roads and bridges generates approximately 14.5 jobs for the same level of investment. In contrast, coal, oil/gas, and nuclear industries generate between four and seven jobs per $1 million in investment. Transportation projects also have a huge impact on import-export balance. Road, bridge, rail, and transit projects use nearly 90 percent domestically (often locally) produced materials versus energy projects, which range from 13 percent to 30 percent use of imported supplies. This translates to a potentially significant increase in job generation in the manufacturing sector alone.[17]

The Inland Pacific Hub project conducted an economic analysis of potential benefits from a scenario of freight-related transportation investments. The results of the study, collectively called the Transportation Investment and Project Priority Blueprint, demonstrated a significant economic im-

16 How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth. Political Economy Research Institute, 2009.

17 How Infrastructure Investments Support the U.S. Economy: Employment, Productivity and Growth. Political Economy Research Institute, 2009.

pact from the proposed projects, including the generation of more than 46,000 jobs and approximately $3.4 billion in regional value-added benefits. The cumulative economic impact, including those to the freight sector in terms of reliability and productivity, are estimated to result in benefits that would exceed total costs by $1.7 billion.

The Spokane Regional Comprehensive Economic Development Strategy stated that "Spokane County is a critical access point for freight, flight and rail systems."[18] The Strategy recognizes that continued investment in freight, private vehicular and public transportation is critical to ensuring regional economic vitality. "Economic growth and development requires large financial investment in both public and private facilities, be they public infrastructure like transportation, education opportunity (like quality public schools along with graduate professional degree programs), or private capital for factory, office, and residential housing."

Employment activity centers have a significant impact on regional and local travel patterns. Employment centers are defined as concentrations of jobs by type - transit focused, freight focused, or both. SRTC analyzed concentrations of job types in to track where employment activity centers will be in the future. See figure 3.6 in the Future Employment Activity Centers section of this chapter for the forecasted 2045 transit, freight and mixed focus employment centers.

18 Comprehensive Economic Development Strategy for the Spokane Region. Greater Spokane Incorporated. FY2011-2012.

Connected & Autonomous Transportation

SRTC continues to monitor trends, research, and planning efforts related to connected and autonomous vehicles at the state and national level. SRTC participates on Autonomous Vehicle (AV) subcommittees for "Infrastructure and Systems" and "Health and Equity" led by the WSDOT.

Electrification of Transportation Systems

Through the Spokane Regional Transportation Electrification project, SRTC recognizes that further regional planning, coordination and collaboration will be necessary. Planning for the electrification of transportation systems is one of the ways SRTC can respond to the current federal government administration's new emphasis areas of climate change, sustainability, and equity.

Electrification of Transit

STA has invested in more than ten battery electric buses in 2020 and 2021. There are ongoing efforts to plan and fund bus charging at various transit stops throughout the region.

Electrification of Vehicles

SRTC was awarded a grant of $2.5 million for electric vehicle supply equipment (EVSE) from the Washington State Department of Commerce through the US Department of Energy's Clean Energy Fund III. Matching funds were provided by Avista and STA.

Scenario Planning

Scenario planning provides a framework for stakeholders to make decisions that help achieve a shared vision for the future by analyzing various factors that can impact the way in which a region is developing.

Scenario planning can be utilized to contemplate how changes in transportation, land use, demographics, or other factors such as climate change could affect connectivity, accessibility, mobility, and resiliency across the region.

As SRTC advances its data analytics capabilities, it will continue to explore how the above-mentioned factors could impact the planning area. This exploratory analysis will better prepare decision makers to invest in facilities that can adequately serve users of the future.

Summary of Future Conditions & Needs

Assuming the 2045 Baseline alternative described throughout this chapter, the impacts to traffic conditions could require reactive, rather than proactive, measures be taken to address them. Absent considerable investments in transportation improvements and programs, personal travel and the mobility of goods and services will be hindered. This is particularly true of major corridors, such as I-90, US 2, and US 395.

Affordable and convenient year-round public transit, walking, and biking options for our community are needed. Shifting trips to these modes can offset increases in travel time and delay. Moreover, SRTC values supporting these modes, often relied on by traditionally underserved users. Tracking and monitoring alternative modes and congestion will require new data and analytical methods.

Our transportation system is aging. New rules require reporting and monitoring safety, congestion, pavement, and bridge performance. Moving forward, keeping our system's assets in safe and good condition is a priority. Based on anticipated future conditions, figure 3.16 lists identified needs and the focus areas they impact.

Strategies to address these transportation issues are described in the following *Chapter 4: How We'll Get There*.

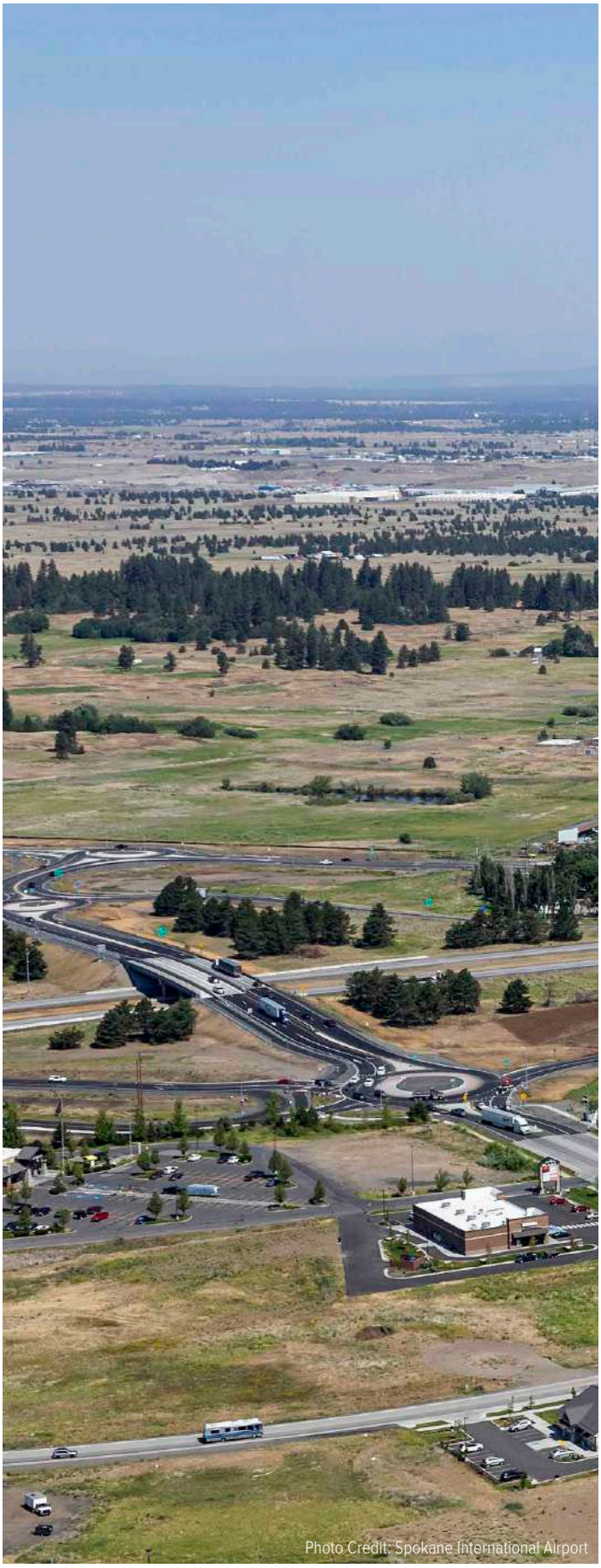


Photo Credit: Spokane International Airport

Figure 3.16: Summary of Future Transportation Needs

FOCUS AREAS

Financial	Public Transportation	Safety	Air Operations	Quality of Life
Condition of Assetts	Regional Coordination	Freight	Active Transportation	Operations, Maintenance & Preservation

FUTURE TRANSPORTATION NEEDS	Financial	Condition of Assetts	Public Transportation	Regional Coordination	Safety	Freight	Air Operations	Active Transportation	Quality of Life	Operations, Maintenance & Preservation
Sufficient transportation funding to manage transportation assets is the most critical issue for the Spokane region, especially when considering the significant costs for roads and bridges. Also, public transportation planning efforts are making progress in addressing increased future demand; however additional funding is critical to ensure implementation.	●	●	●	●						
Absent future improvements, the Spokane region will experience increased congestion in certain congestion management corridors. Mobility improvements should be considered in those corridors or parallel corridors, particularly where redundant network is absent. Tracking and monitoring of congestion will need to be improved.	●	●	●	●		●	●			
Public transportation service and other information, technology, design and Travel Demand Management and operations programs (Travel Systems Management) have obvious benefits to the traveling public and freight shippers. This includes programs like CTR and TSMO.	●		●	●	●			●	●	●
More coordination is required to plan for larger regional needs, particularly when those needs cross jurisdictional boundaries and impact neighboring communities.	●			●						
Additional monitoring, reporting, and analysis of serious and fatal collisions is necessary to meet federal performance measures and to reduce such collisions and improve the safety of our roadways.	●				●				●	●
Freight movement forecasts point to the need for infrastructure and logistics improvements in order to take advantage of future economic opportunities.	●					●	●			
Demographic and land use changes will increase pressure on the regional transportation networks and likely increase use of alternative modes. A systematic process should be put in place to monitoring bicycle & pedestrian use and to assess the results of new projects and programs.								●	●	
Equity in transportation planning is a focus as it relates to addressing the transportation needs of historically underserved communities. Improving snow removal and/or storage to ensure accessibility for all users year-round is critical for access to transportation and personal mobility. SRTC and the SRHD should coordinate closely acknowledging transportation as a social determinant of health.			●					●	●	
There is an increased need for education and enforcement programs to understand and be able to communicate the benefits of sustainable transportation and land use. Also to improve data collection, safety, encourage best practices and innovative to ensure a high quality of life in the region.					●				●	
Advancement in technology such as the use of ride-hailing apps, electric vehicles and self-driving vehicles should be monitored as it could impact transportation mode shift, safety, design needs, funding and operations.				●	●				●	●