

**Report B**

**Transportation Systems Performance**



## TRANSPORTATION SYSTEMS PERFORMANCE

During the development of this plan, MAG has worked to develop a performance-based planning effort that meets or exceeds those required by existing regulations. The direct results of those efforts are the following three sets of performance measures.

Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act provide a performance management framework for state Departments of Transportation, transit agencies, and MPOs to assess and monitor the performance of the transportation system. USDOT created seven national performance goals for the Federal-aid highway program and two national performance goals for transit agencies. Each DOT, transit agency, and MPO is required to coordinate together to set performance targets and report on progress toward meeting national goals and agency targets.

TransPlan50 should help the DOTs and transit agencies progress toward achieving performance targets. Each measure and target mesh with statewide goals and MAG's local goals. These goals were the basis of the creation of this plan.

## FEDERAL PERFORMANCE MEASURES

Federal performance measures, as required by MAP 21, are grouped into several categories. Each category contains multiple measures. MAG and its partners have developed a coordinated effort to collect data, measure outcomes, and set targets for each measure.

The purpose of these measures and targets are to help make more informed transportation decisions. However, moving forward, programming and future transportation plans will lean heavily on the results of these measures.

**Highway Safety:** It is assumed that as roadways are built or reconstructed that safety will improve on those facilities. Additionally, it is assumed that future transit projects would be built and operated to include safety features such as well-lit shelters, sidewalk bulb-outs, and marked pedestrian crossings. Increased use of bicycle and pedestrian facilities is a result of safe, user-friendly streets.

**Highway Infrastructure:** A MAG goal is to preserve what we have and make it work better. Projects have been developed with attention to state of good repair.

Also, communities need to build into their maintenance budgets the preservation of active transportation facilities such as sidewalks and shared-use paths. Many on-street facilities, such as buffered bike lanes, will be considered as part of roadway pavement width maintenance. However, even in those cases, upkeep of painted markings and signage must also be factored into the cost of maintaining good infrastructure.

**Highway System Reliability:** System performance and reliability is a focus of TransPlan50. Projects have been selected to support, as much as possible, current conditions while accommodating anticipated growth. Reliability is directly tied to the system's congestion, and as such, congestion-related measures are integrated into the performance-based planning of the plan.

**Freight Movement and Economic Vitality:** Access to economic opportunities is a vital aspect of any region, and freight considerations have been incorporated into the project selection and project prioritization of TransPlan50. The plan is aligned closely with the UDOT Freight Plan, incorporating projects from the Freight Plan into TransPlan50.

**Reducing Emissions Through Transportation:** Reducing emissions in the county through transportation is essential as motor vehicles are one of the most significant contributors to emissions throughout the state. Performance targets are set with the state, and detailed performance is documented in the Air Quality Conformity Analysis as federal regulations require.

### Summary of Federal Performance Measures and Targets

Performance Measure	Baseline (2021)	2-Year Target	4-Year Target
<b>Safety</b>			
Number of Fatalities (5-yr average)	277	2.5% reduction	
Fatality Rate (5-yr average)	0.86		
Number of Serious Injuries (5-yr average)	1502.6	2.5% reduction	
Serious Injury Rate (5-yr average)	4.679		
Non-motorized Fatalities and Serious Injuries (5-yr average)	223.8	2.5% reduction	
<b>Infrastructure</b>			
Percentage of Pavements of the Interstate System in Good Condition	67.80%	50.00%	50.00%
Percentage of Pavements of the Interstate System in Poor Condition	0.20%	5.00%	5.00%
Percentage of Pavements of the Non- Interstate NHS in Good Condition	49.30%	30.00%	30.00%
Percentage of Pavements of the Non- Interstate NHS in Poor Condition	0.90%	10.00%	10.00%
Percentage of NHS Bridges Classified as in Good Condition	28.60%	40.00%	40.00%
Percentage of NHS Bridges Classified as in Poor Condition	0.10%	10.00%	10.00%
<b>System Reliability</b>			
Percent of the Person-Miles Traveled on the Interstate That Are Reliable	98.90%	80.00%	80.00%
Percent of the Person-Miles Traveled on the Non-Interstate NHS That Are Reliable	90.10%	65.00%	65.00%
<b>Freight Movement and Economic Vitality</b>			
Truck Travel Time Reliability (TTTR) Index	1.16	1.4	1.4
<b>Emissions Reductions</b>			
Total Emission Reductions: PM2.5	4.181	0.013	0.754
Total Emission Reductions: NOx	130.114	0.164	13.921
Total Emission Reductions: VOC	27.171	0.028	11.116
Total Emission Reductions: PM10	86.551	0.014	5.09
Total Emission Reductions: CO	572.08	0.177	194.575

**Figure B1: Federal Transportation Performance Measures**

**Transit:** There are two federal transit performance measures - state of good repair and safety. The effective date for safety performance measures will be after the TransPlan50 adoption. Safety performance measures will be in the next plan.

Table 2   Federal Transit Performance Measures	Mode	UTA Target <sup>1</sup>	Reported
<b>State of Good Repair</b>			
<b>Rolling stock:</b> Percent of revenue vehicles (by type) that exceeded their Useful Life Benchmark	Articulated bus	40%	0%
	Over-the-road bus	60%	56%
	Bus	60%	19%
	Cutaway bus	60%	18%
	Light rail vehicle	60%	0%
	Commuter rail locomotive	60%	0%
	Commuter rail passenger coach	60%	0%
	Van	60%	26%
<b>Facilities:</b> Percent of facilities (by group) with a condition rating below 3.0 on the Transit Economic Requirements Model scale	Passenger facilities	60%	0%
	Passenger parking facilities	60%	0%
	Maintenance facilities	60%	17%
	Administrative facilities	60%	4%
<b>Infrastructure:</b> Percent of track segments (by mode) with performance restrictions	Commuter rail	40%	5%
	Light rail	40%	27%
	Streetcar rail	40%	0%
<b>Equipment:</b> Percent of non-revenue vehicles (by type) that exceeded their Useful Life Benchmark	Automobile	40%	0%
	Trucks & other rubber tire vehicles	40%	0%
	Steel wheel vehicles	40%	0%

Footnotes:

1. The MAG concurs with all UTA targets.

**Figure B2: Federal Transit Performance Measures**

As shown in Figure B2, UTA meets its targets for rolling stock, facilities, infrastructure, and equipment. During plan development, MAG worked closely with UTA to incorporate state-of-good repair costs into financial planning. Costs for every transit project included the expenses required to keep the project in a state of good repair until the plan horizon year. State of good repair represents approximately ten percent of all new transit project costs.

## STATEWIDE PERFORMANCE MEASURES

In addition to the performance measures required by our federal partners, MAG has worked with its statewide transportation partners for many years to develop statewide transportation performance measures as an element of the Unified Transportation Plan. The Unified Transportation Plan communicates transportation needs for the entire state in a coordinated, jointly developed document. These measures result from that process and are used by all those involved to communicate performance as a state.



On April 16, 2018, MAG and its statewide partners signed the Performance-Based Planning and Programming Memorandum of Agreement. This cooperative agreement identifies the following:

1) **Developing and Sharing Information Related to Transportation Performance Data**

- a) UDOT will provide the MPO(s) with a subset, for their urbanized areas, of the state performance data that UDOT uses in developing statewide targets.
- b) MPO(s) that choose to adopt their own targets will provide any supplemental data used in determining any such target to UDOT or the Public Transportation Agencies, or both.
- c) Public Transportation Agencies that are part of the UDOT Transit Asset Management Plan (TAM) will provide their transit data to UDOT within four months of their fiscal year-end. Public Transportation Agencies creating their own TAM will provide transit data by asset class for the FAST Act transit performance measures to UDOT and MPO(s) in their transit regions within four months of their fiscal year-end.

2) **Selection of Performance Targets**

- a) UDOT will develop statewide performance targets for each of the FAST Act performance measures in cooperation with the MPO(s) and the Public Transportation Agencies.
- b) Public Transportation Agencies will develop their measures in the UDOT TAM or, if creating their own TAM, they will cooperate with their respective MPO(s) and UDOT when establishing transit targets.
- c) MPO(s) will cooperate with UDOT and Public Transportation Agencies in supporting the statewide targets or in establishing their own MPO targets. UDOT and Public Transportation Agencies will be given an opportunity to comment on the MPO(s) targets.
- d) UDOT, MPO(s), and Public Transportation agencies will develop and set targets as required by 23 CFR Parts 450 and 771 and 49 CFR Part 613.

### 3) Reporting of Performance Targets

- a) UDOT and Public Transportation Agencies will report the statewide performance targets to FHWA and FTA, as applicable, and shall provide a copy of such reporting to the MPO(s).
- b) MPO(s) will report their performance targets to UDOT and their Public Transportation Agencies in the form of a memorandum or meeting minutes from their board.
- c) If the MPO(s) choose to adopt the targets of UDOT or the Public Transportation Agencies, or both, documentation of the MPO(s) support of the appropriate targets shall be provided to UDOT or the Public Transportation Agencies, or both. If MPO(s) choose to adopt their own targets, written notification that the MPO(s) will set a quantifiable target, for the performance measure within the MPO planning area, with its associated data, will be provided to UDOT or the Public Transportation Agencies, or both.

### 4) Reporting of Performance to Be Used in Tracking Progress Toward Attainment of Critical Outcomes for The Regional Area.

- a) Reporting of targets and performance shall conform to [23 CFR 490](#) (National Performance Management Measures), [49 CFR 625](#) (Transit Asset Management), [49 CFR 673](#) (Public Transportation Agency Safety Plan), and [49 CFR 450.334](#) (Obligated Projects).
- b) UDOT will include information outlined in [23 CFR 450.216](#) (f) (Development of Long-range Statewide Plan) in any statewide transportation plan amended or adopted after May 27, 2018, and information outlined in [23 CFR 450.218](#) (9) (Development of STIP) in any statewide transportation improvement program amended or adopted after May 27, 2018.
- c) MPO(s) will include information outlined in [23 CFR 450.324](#) (Development of Metropolitan Transportation Plan) in any RTP amended or adopted after May 27, 2018, and information outlined in [23 CFR 450.326](#) (d) (Development of TIP) in any TIP amended or adopted after May 27, 2019, and conform to [23 CFR 450.306](#) (d) (performance-based approach).

### 5) Data collection for the State Asset Management Plans for the National Highway System.

UDOT will be responsible for collecting bridge and pavement condition data for the State asset management plan for the NHS.

Through this cooperative agreement, MAG can receive all the required data, participate in each measure's statewide target-setting process, and select targets. MAG has adopted all applicable statewide targets, as shown in Figure B3. If necessary, those targets may be adjusted in the future.

## 2023-2050 Unified Plan Goals and Measures

Goals	Objectives	Performance Measures
<b>1</b> Safety	Reduce fatal and serious injuries on the transportation network	Fatalities and serious injuries per capita
<b>2</b> Economic Vitality	Increase the number of jobs, services, and desired destinations Utahans can reach within a certain travel time	Increase the number of jobs, service, and desired destinations that Utahns can reach within a certain travel time
	Increase the miles of facilities available for active transportation	Number of new active transportation miles
<b>3</b> State of Good Repair	Keep infrastructure in good condition	Cost/benefit savings from proper maintenance
<b>4</b> Air Quality & Environment	Reduce emissions that adversely affect health, quality of life, and the economy	Key mobile source ozone and PM2.5 emissions
<b>5</b> Mobility	Reduce vehicle hours of travel	Vehicle hours of travel per household
	Increase the share of trips using non-single occupant vehicle modes	Ridership
	Improve reliability of system	% on time (transit) existing only % system reliable (road) existing only



**MPO PERFORMANCE MEASURES/ PROJECT SELECTION**

MAG performance measures are an extension of the MPO goals developed by the Regional Planning Committee and their staffs. Those goals were analyzed and reviewed through each planning process for the last several plans. While minor modifications have been made, the core goals have remained.

To implement a performance-based planning and programming process. During several public meetings, stakeholders and staff refined existing goals into key objectives. Performance measures for those goals and key objects have been developed to measure progress toward meeting those goals. Programs such as Free Fare Transit with the Utah Valley Express Bus Rapid Transit System should be expanded to other transit and mobility programs that benefit air quality and relieve congestion.

<b>MPO Performance Measures</b>		
<b>Goals</b>	<b>Key Objectives</b>	<b>Performance Measures</b>
Expand and Connect Freeways, Expressways, and Arterials	Make regional highway connections to complete the grid	New regional connections
		Local plan integration
	Add freeway capacity	New freeway miles
		Local plan integration
Create a Robust Regional Transit System	Add transit capacity	New transit miles

		Increased ridership (mode split)
Build a Regionally Connected Active Transportation System	Increase direct connections to transit	New connections to fixed guideway transit stops
	Build additional active transportation facilities	New miles of active transportation facilities

**Figure B4: MPO Performance Measures**

### Highway Performance Measures and Process

Selecting projects for the 2023 RTP need-based plan involved measuring congestion. Using the traffic demand model, which is described in more detail in the Transportation Travel Demand Network Report, MAG modeled projects at the end of the phase they were needed (phase 1, 2032, phase 2, 2042, phase 3, 2050), and the average volume/capacity (v/c) was derived.

MAG staff then prioritized projects in the fiscally constrained plan. The first phase of needed projects was ranked in the following order:

1. Already programmed in the state or regional transportation improvement program
2. Have environmental documentation or are in the process of
3. The most congested at the end of phase year, highest volume/capacity number

Projects from phase 2 and 3 needs were then ranked by which had the most congestion. For all phases of the RTP, if projects were more costly than planned funds, funding was given to the following highly congested project, which could fit within the funding constraints.

Other MPO performance measures were considered but not used in the final scoring process. These measures were based on Wasatch Front Regional Council (MPO adjacent to MAG) performance measures for project selection. They include

**1. Improves access to opportunities**

Using an access to opportunities model, the number of people and jobs are calculated for each Traffic Analysis Zone (TAZ) for the year 2032. Each project is then run with the model to see how much they improve access.

**2. Improves access to opportunities in Equity Focus Areas**

The same model from above is run while looking at TAZ that matches the Equity Focus area census block groups created by WFRC and performed for both WFRC and MAG MPOs. (More information on Equity Focus areas is found in the Impacted Communities Analysis report.)

**3. Supports affordable transportation costs**

Scores projects that improve access to an equity center

**4. Enhances freight mobility**

Projects are scored higher if they are built on a corridor with a higher percentage of current freight traffic.

**5. Reduces vehicle hours of delay**

Measures how much congestion (using vehicle hours of delay) projects remove from an existing corridor, or if a new roadway, how much traffic it removes from the surrounding area at the end of phase 1, 2032.

**6. Improves safety**

Using United States Road Assessment Program (usRAP) data, projects are scored higher if located on a corridor with more safety concerns

**7. Improves state of good repair- Bridges**

Projects on a corridor that could replace dilapidated bridges were given a higher score.

**8. Improves state of good repair- Pavement**

Projects on a corridor that could replace aging road surfaces were given a higher score.

**9. Advances previous investments**

Projects that have environmental documentation or are going through the environmental process were given a score

**10. Supports the Wasatch Choice Vision centers** Projects that built or improved infrastructure in or around Wasatch Choice Vision centers were given a score.

An initial scoring was compiled and weighted based on the type of facility (freeway/expressway and arterial) and compared against each other for a final score. MAG looks to continue to improve the way highway and other modes of transportation projects are scored in upcoming RTP updated cycles and do so in a way that aligns with state and federal performance measures.

### **Transit Performance Measures/Process**

Transit projects in the 2023 update are built from the 2019 RTP update, discussions with the Utah Transit Authority, public input and feedback, and modeling work analyzing ridership out to 2050. More details per different modes of transit can be found in the Transportation Network Travel Demand report. MAG looks to continue to refine the process of selecting and identifying transit projects through performance measures in coordination with UTA and UDOT. These measures may also look to compare to indices that make projects competitive for federal grants and funding.

### **AT Performance Measures**

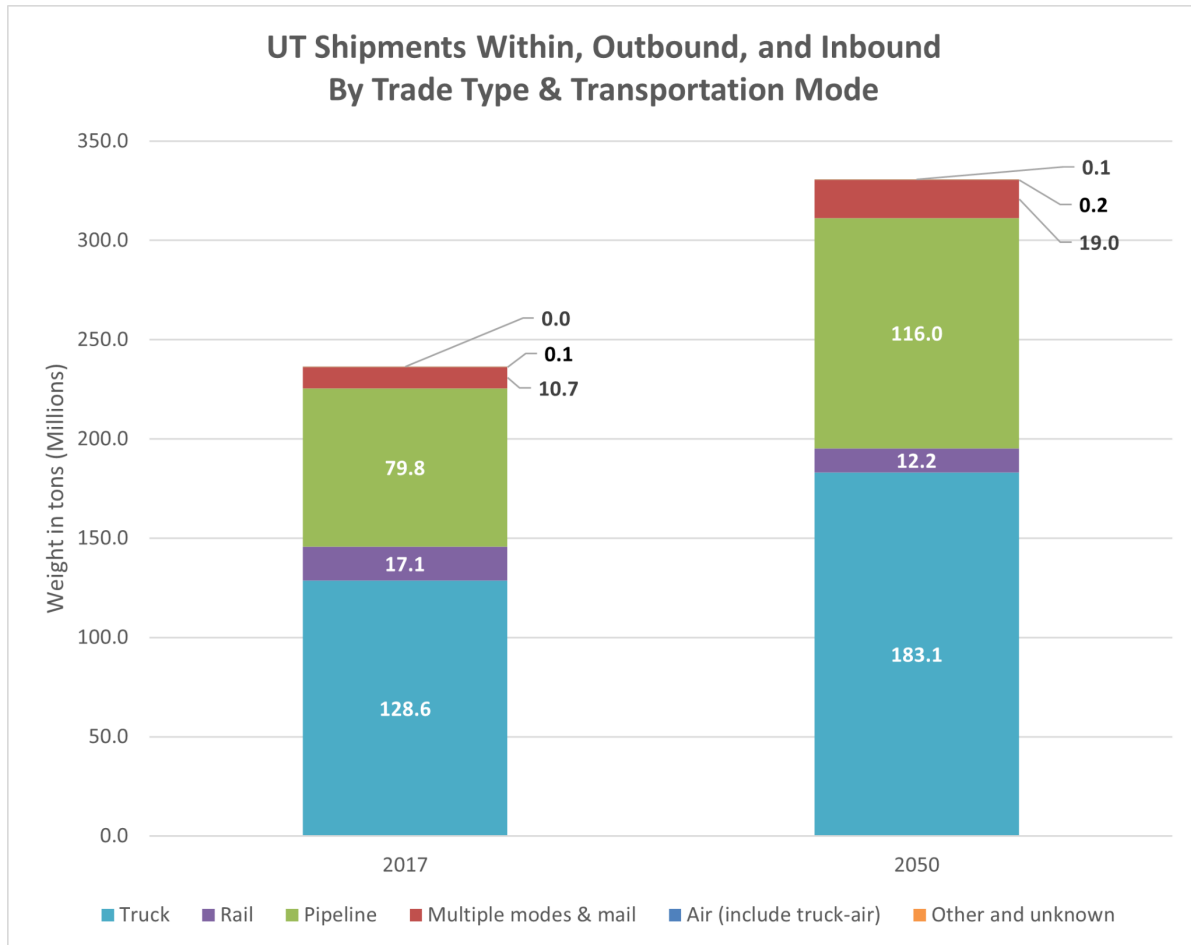
Active Transportation projects were also phased by needs and fiscal constraint in the 2023 TransPlan50 update. This process is more detailed in the Active Transportation Network report. Performance measures used include

- Crash and Safety Data
- Speed and Sudden Braking data (Wejo)
- Employment and Housing Density
- Equity Focus Areas
- Distance to Destinations
- Level of Traffic Stress

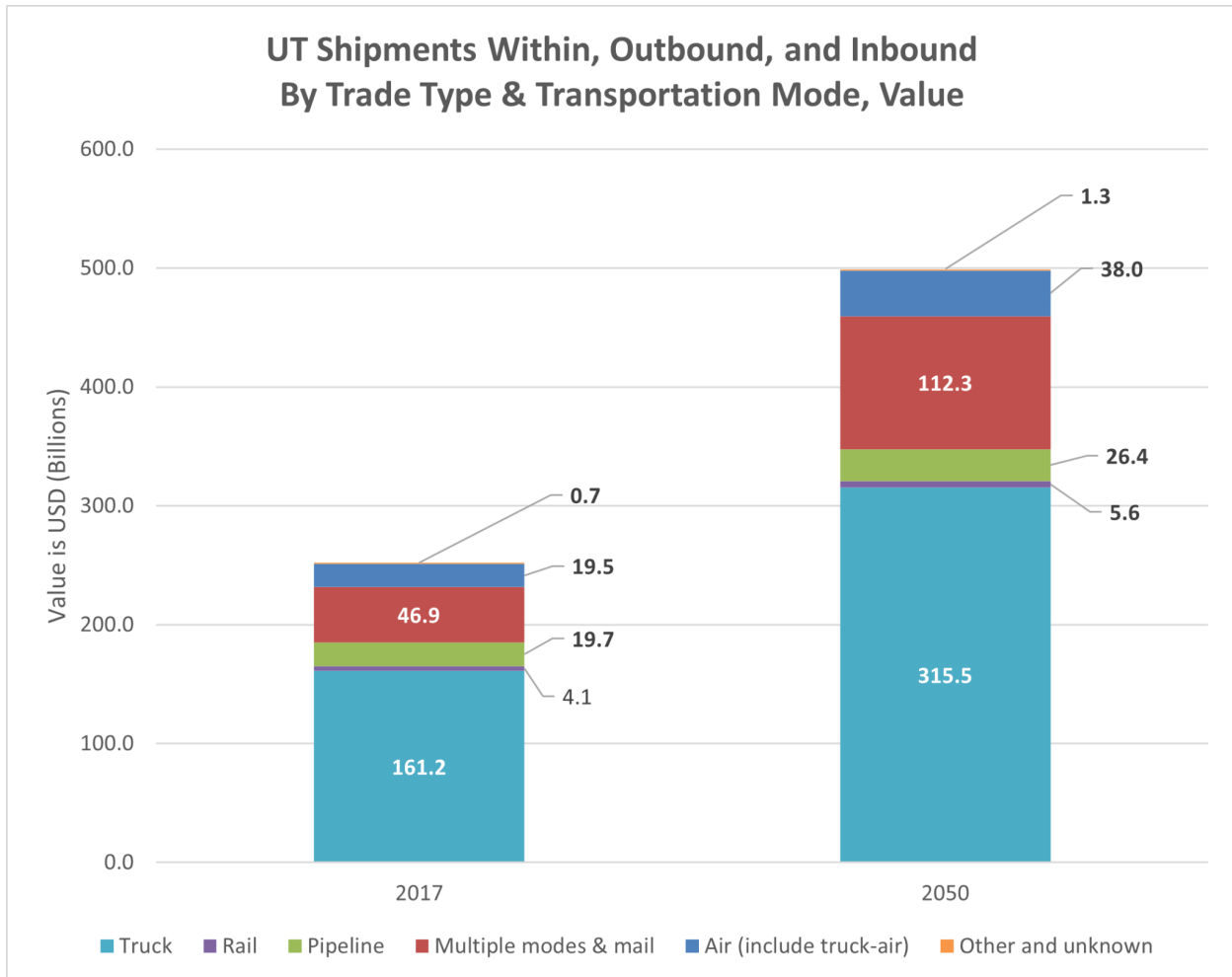
### **FREIGHT NETWORK**

Utah plays a significant role in freight movement across the United States. The smooth flow of freight in Utah and across its borders is essential to Utah and America's current and future economy. The geographic area of MAG is an important location for roadways and railroads but is less important for pipelines and aviation because of the lack of pipeline infrastructure and air cargo service.

Approximately 236 million tons of freight valued at \$252 billion was shipped to, from, and within Utah via the various modes of transportation in 2017, according to data available from the Federal Highway Administration’s Office of Freight Management and Operations. The following table shows the shipments by weight and value for Utah for 2015 and projections for 2050.



**Figure B5: Movement of Freight in Utah, by Weight**



**Figure B6: Movement of Freight in Utah, by Value**

**Freight Highway System:** The trucking industry is Utah's dominant freight mover. This is due primarily to freight traffic traveling to and from the east and west coasts on I-70, I-80, and I-84 and north and south along the CANAMEX Corridor of I-15. Truck traffic averages 23 percent on Utah highways versus a national average of only 12 percent. Additionally, northern Utah is the hub of western refrigerated (reefer) truck freight operations. Many large reefer truck companies maintain terminals along the Wasatch Front to take advantage of Utah's crossroads status. Geography has also made Utah a strategic trucking hub because of its location relative to the Sierra Nevada Mountain Range in California, the Humboldt River Valley in Nevada, and the Colorado River Canyons in southern Utah. Truck transportation works in conjunction with pipelines, railroads, and aviation to provide efficient multimodal transportation to Utah's shippers. The following list provides vital points about trucking and its importance to Utah. During 2017:



1. Trucks carried 128 million tons of freight in Utah, accounting for 54 percent of the total weight shipped.
2. Trucks carried \$161 billion of freight in Utah, accounting for 64 percent of the total value shipped.
3. The trucking industry in Utah employed more than 22,953 people with an average annual salary of \$45,784.
4. More than 80 percent of US communities depend solely on trucking to deliver goods and commodities.
5. C.R. England is the largest refrigerated truck company in North America and is headquartered in Salt Lake City.

**Freight Railroad System:** Since the completion of America's first transcontinental railroad at Promontory, Utah, on May 10, 1869, 150 years ago, railroads have played a significant role in freight transportation in Utah. The railroad industry develops, owns, operates, and maintains its infrastructure.

In Utah, primary railroad terminals, known as freight yards, are found in Ogden, Salt Lake City, and Provo. Smaller secondary rail yards are located in Helper, Midvale, and Milford. Six routes of the Union Pacific Railroad converge on the Wasatch Front, linking Utah with Northern and Southern California, the Pacific Northwest, and Midwestern and Eastern points.

Most mainline railroad infrastructure in Utah is owned and operated by America's largest railroad, Union Pacific (UP). The 1996 UP takeover of Southern Pacific (SP) resulted in a near monopoly situation in railroad freight service in Utah. As a part of the UP/SP merger, the Federal Surface Transportation Board (STB) directed the west's other large railroad, Burlington Northern Santa Fe (BNSF), to provide limited freight service in Utah. The BNSF Railway owns limited rail infrastructure in Utah, primarily its two railroad freight yards in Provo and Midvale. Most BNSF operations are conducted via a trackage rights agreement over selected UP lines.

A modest number of smaller short-line railroads in Utah primarily handle freight traffic to and from UP and BNSF. Utah's railroads provide specialized freight service to the state's businesses and industries handling a variety of shipments.

Within Utah County, there are several major rail corridors, including the Tintic Line, Sharp Line, and Provo Subdivision Line. Lines run from north to south on the east side of the county, typically parallel to I-15, and east out through Spanish Fork Canyon. Several strategies have been developed to utilize or streamline current rail corridors in improving the county's transportation system. These include:

1. Adding a spur from the Sharp to Tintic line in southern Utah County to allow a future commuter rail corridor to travel seamlessly from Provo to Payson
2. Potentially utilizing abandoned portions of the Provo Subdivision Line in northern Utah County for future light rail service from Orem to Lehi.
3. Consolidating the Provo Subdivision line in southern Utah County from Spanish Fork Canyon to Springville 400 South to enhance safety, improve community connectivity, and reduce congestion for area drivers

**Freight Aviation System:** Air freight is the smallest component of the freight transportation system serving MAG. Salt Lake International Airport primarily services air freight for the MAG area. There is no air cargo service in Utah County.

### **REGIONAL AIRPORT PLANNING**

Provo Airport has transformed over the last 20 years from a local municipal airport servicing primarily single-engine aircraft to a commercial service airport of regional importance. Starting with the expansion of the primary runway in '98, the Provo Airport has continued to make upgrades in anticipation of future needs. The addition of the Part 139 permit, RADAR, Air Traffic Control Tower, parallel taxiway, and TSA certification allowed the airport to seek FAA funding to expand the current terminal.

Provo is currently served by Allegiant Airlines and Breeze Airways, serving multiple destinations throughout the county.

Current projections show that Utah County is growing at a rate that will nearly double its population by 2050. Projections for Provo Airport enplanements also show rapid growth. Provo airport will never become a regional hub like SLC International but will become Utah County's air alternative.

The new terminal opened in 2022 with a capacity of over 350 passengers with four gates. The Terminal is designed to be scalable to up to 10 gates. This provides room for more than 1M passengers per year. This terminal was planned to provide room for growth in Utah Valley for the next 5 to 10 years, but accelerated passenger growth has required expansion sooner. Projections show that 1 million passengers is possible within the next 20 years.

A regional terminal in Provo adds millions to local economies and removes thousands of vehicle trips to Salt Lake International annually. [Attached](#), please review the terminal growth projections for the Provo Airport.