FREIGHT MOBILITY IN UTAH

Spring 2017

UTAH DEPARTMENT OF TRANSPORTATION
FREIGHT PLAN SUMMARY

Enhancing Freight Mobility for a Strong Utah

UDOT Keeping Utah Moving

– Utah Freight Planning –

Contents

Utah is an important hub for moving goods, services and energy. Its intermodal service combines the best of highway, rail, pipeline and air, both regionally and nationally. Local freight movement is equally important to the state, reliably delivering goods and services to the residents and businesses who call Utah home.

Freight transportation also plays a major role in supporting Utah's economy. As the "Commerce Crossroads of the West," Utah offers the business community access to logistics and transportation services without equal in western America. Utah's freight transportation system plays a critical role in fostering economic vitality and competitiveness in regional and global markets.

FREIGHT MOBILITY IN UTAH

National Freight Goals

1. Invest in infrastructure improvement and implement operational improvements
2. Improve safety, security, efficiency and resiliency of freight transportation
3. Improve state of good repair of National Highway Freight Network
4. Use innovation and advanced technology
5. Improve efficiency and productivity of the National Highway Freight Network
6. Improve flexibility of States to support multi-state corridor planning and highway freight connectivity
7. Reduce environmental impacts of freight movement

UDOT Keeping Utah Moving

— Introduction —

Utah Freight Planning

Utah's Freight Vision

Our approach for efficient freight mobility is structured around UDOT's vision, mission and strategic goals. This contributes an important and significant piece in defining the direction and success of overall transportation mobility.

We recognize that a strong freight network depends on a strong transportation network.

ZERO CRASHES, INJURIES AND FATALITIES
- Educate the public
- Encourage innovation
- Incorporate innovative design and traffic management strategies

PRESERVE INFRASTRUCTURE
- Proactively preserve existing assets
- Continued maintainance and improvements – Good roads cost less
- Maximize the value of our infrastructure investment

OPTIMIZE MOBILITY
- Expand capacity
- Improve level of service
- Encourage innovation

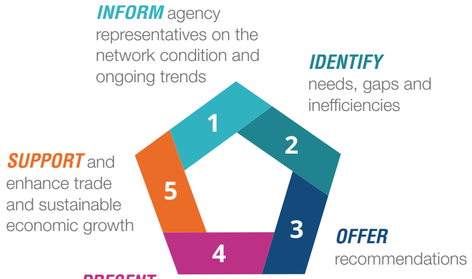
UDOT's Strategic Goals

Utah freight planning efforts are designed to support and sustain UDOT's strategic goals.

Utah's Freight Planning Efforts

Utah's first Freight Plan was completed in 2015 to guide freight planning activities in five-year planning cycles to address short- and long-term freight planning activities and investments.

The Plan's Purpose



2016 Plan Between Plans

A Freight Planning Framework was completed in late 2016 to support continued freight planning and outlines three objectives:

1. Sustain ongoing statewide freight planning in Utah
2. Implement recommendations of 2015 plan
3. Prepare for next Utah Freight Plan update

Who Helps with Planning

UDOT values the importance of obtaining input from a broad range of individuals and agencies across the transportation industry, local government, the public and private sector and other affected groups.

Freight Mobility Group

A Freight Mobility Group (FMG) has been formed to discuss and collaborate on freight-related issues and initiatives that can support a strong freight infrastructure and UDOT's planning efforts. The FMG will partner together to support public and private initiatives.

Members include:

- Cache Metropolitan Planning Organization (MPO)
- Dixie Metropolitan Planning Organization (MPO)
- Federal Highway Administration
- Mountainland Association of Governments
- Union Pacific Railroad
- Utah Trucking Association
- Wasatch Front Regional Council

UDOT Keeping Utah Moving

- Aeronautics
- Motor Carrier Division
- Planning
- Program Development
- Region 1
- Region 2
- Region 3
- Region 4

FMG focuses on:

- STIP and environmental processes
- State Freight Plan goals and objectives
- Challenges, risks and issues
- Project ranking system and rank of projects and solutions
- Freight mobility policies that can be highlighted or changed
- General timeline of planning, development and implementation of UDOT projects

FREIGHT MOBILITY IN UTAH

– Introduction –

The Big Picture

Why Utah's Geography Matters

Geography plays a significant role in Utah's thriving freight industry and has largely influenced the location of both highway and railroad freight routes in Utah and the West.

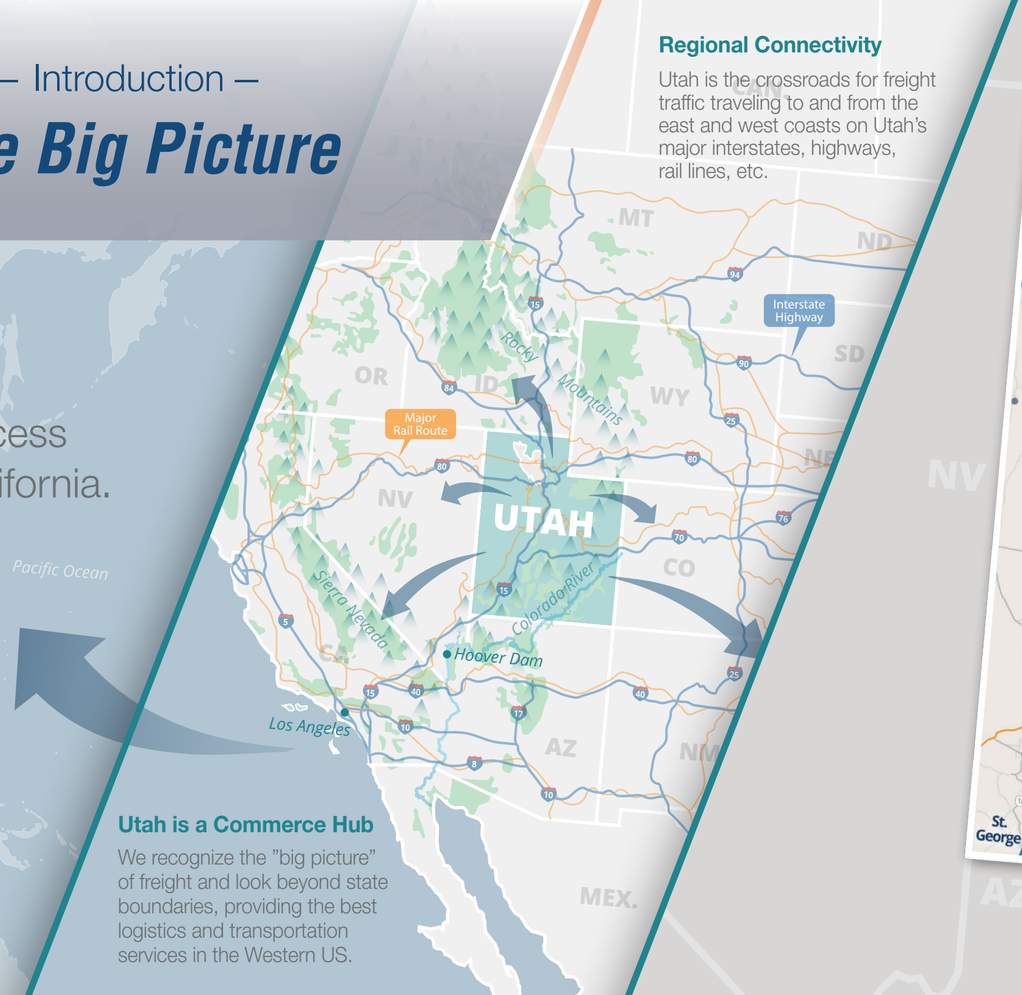
Sierra Nevada Mountain Range

The Sierra Nevada Range is a 300-mile barrier to east-west truck and rail freight movement. The extreme ruggedness and environmental sensitivity makes this mountain range impassable and requires that local infrastructure circumvent the area.

Colorado River Canyons

A major obstacle to north-south freight traffic in the West is the Colorado River. The canyons of the Colorado, including the famous Grand Canyon, extend from Grand Junction, CO, to Laughlin, NV. The 723-mile segment marks the longest geographical barrier to ground transportation in the lower 48 states.

Utah gains Pacific Rim access via ports in California.

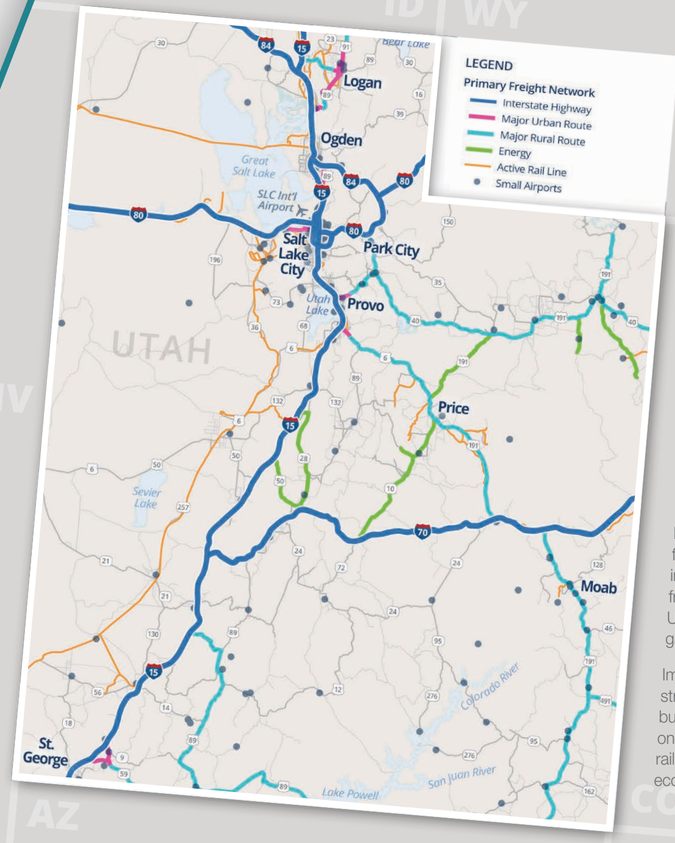


Regional Connectivity

Utah is the crossroads for freight traffic traveling to and from the east and west coasts on Utah's major interstates, highways, rail lines, etc.

Utah is a Commerce Hub

We recognize the "big picture" of freight and look beyond state boundaries, providing the best logistics and transportation services in the Western US.



Utah's Road and Rail Freight Routes

Since 2003, Utah has identified key highway and rail corridors that support the efficient movement of freight, giving us a better understanding of regional and transcontinental freight flow. These freight routes are what allows us to move goods efficiently, which is critical to maintain our status as a strategic freight hub. Of all modes of transportation, trucking has the greatest impact on Utah's economy and business community and is Utah's top overall freight mode.

Railroad is Utah's second top mode for freight and also plays a vital role in supporting our economy. Railroad freight and intermodal service link Utah with national and international gateways.

Improving these key corridors will strengthen the shippers, receivers, businesses and industries dependent on our state's infrastructure and private rail service, ultimately supporting Utah's economic competitiveness.

FREIGHT MOBILITY IN UTAH

– Freight Transportation–

Economic Influence

Keeping Utah's Economy Moving

Utah long ago earned the title as the "Crossroads of the West" due to its regional connectivity, which provides a natural economic vitality and competitiveness in regional and global markets.

Freight transportation plays a major role in contributing to Utah's strong economy by efficiently moving goods and services within the state and beyond its borders.

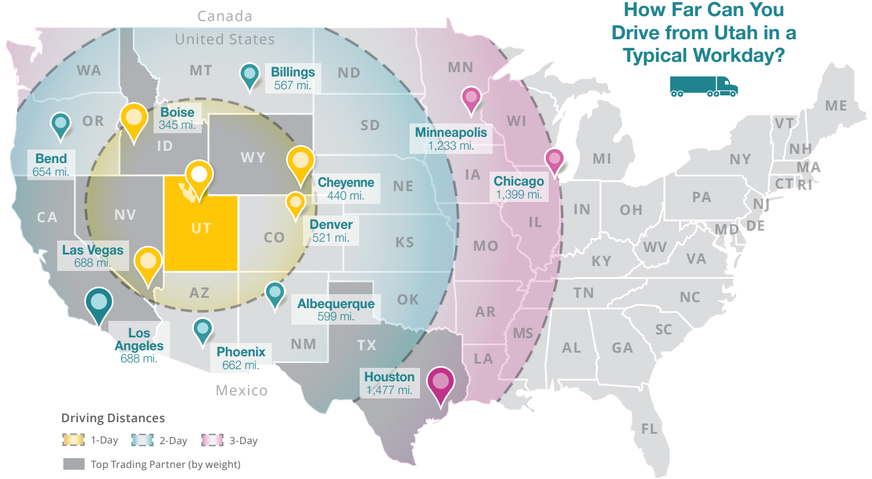
The relationship between sustaining economic activity and local infrastructure is cyclical in nature. You can't have one without the other.

Utah's robust freight network continues to play a major part in attracting new business to the state. Industries such as IT, healthcare, tourism, Silicon Slopes, etc. can trust that the state's infrastructure will provide a reliable freight network for businesses and employees.

UDOT Keeping Utah Moving

Why Bring Business to Utah?

- ☑ Direct access to all major markets across western North America by highway, rail/ intermodal and air cargo
- ☑ Simplified supply chains for local businesses through access to multimodal logistics services from a single, central location, relative to markets in western America, western Canada and the Pacific Rim
- ☑ Direct intermodal service via Ports of Los Angeles, Long Beach and Oakland to Pacific Rim markets



How Far Can You Drive from Utah in a Typical Workday?

Competitive Wages

Employment in the freight industry offers one of the most competitive wages in the state.

#1 Best State for **& Employment Business**

Industry	Number Employed	Average Annual Salary
Aviation	6,066	$65,232
Railroad	1,582	$69,084
Pipeline	265	$107,016
Trucking	20,191	$41,808
Warehousing	8,283	$38,040

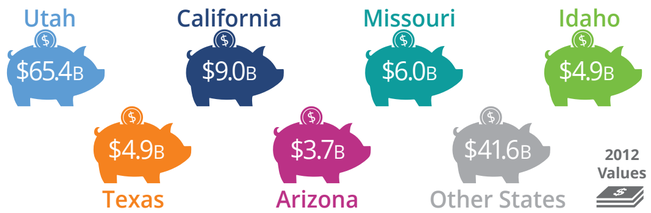
*straight average; weighted average is $46,516

Total	Average
36,387	$64,236*

Utah's Freight Planning Efforts

Utah prefers to use state and local dollars to maintain and improve the logistics network, but other primary trading partners include California, Colorado, Idaho, Texas and Nevada.

Top Trading Partners (by value)



Better Infrastructure Brings Economic Growth

Commerce **relies on** well-maintained **roads, railroads, airports and pipelines**

so that manufacturers can **obtain raw materials and parts,**

and **deliver** finished products to **consumers.**

Utah continues to **attract new business** because of its **stable, efficient and accessible infrastructure.**

Strong Utah

FREIGHT MOBILITY IN UTAH

– Utah's –
Commodities

U.S. Freight on the Move

National Highlights from 2012

On a typical day in 2012, 32 million tons of goods, valued at $37 billion, moved nearly 9 billion ton-miles on the Nation's transportation network.

Annually – 11.7 billion tons of freight, valued at $13.6 trillion.

Truck:
Weight 8 billion tons
Value $10 trillion
74% of total shipment

Rail:
Weight 2 billion tons
Value $450 billion
3% of total shipment

Air:
Weight 5 million tons
Value $400 billion
3% of total shipment

Pipeline:
Weight 700 million tons
Value $600 billion
4% of total shipment

UDOT

Top Commodities by Value

Base Metals
Electronics
Machinery
Misc. Manufactured Products
Motorized Vehicles
Other Foodstuffs
Pharmaceuticals

Top Commodities by Weight

- 29.8% Gasoline
- 13.9% Coal
- 10.3% Nonmetal min. prods.
- 8.9% Coal byproduct
- 8.1% Gravel
- 6.8% Basic chemicals
- 5.4% Waste/scrap
- 5.0% Other commodities
- 4.2% Crude petroleum
- 3.8% Base metals
- 3.7% Fuel oils

Freight – any good, product or raw material carried by commercial means of transportation

Logistics – managing how and where freight moves

Simplified Supply Chains

Businesses located in Utah greatly simplify supply chain challenges by having (and providing) access to multimodal logistics services from a single, central location. This benefits businesses and markets in western America, western Canada and the Pacific Rim.

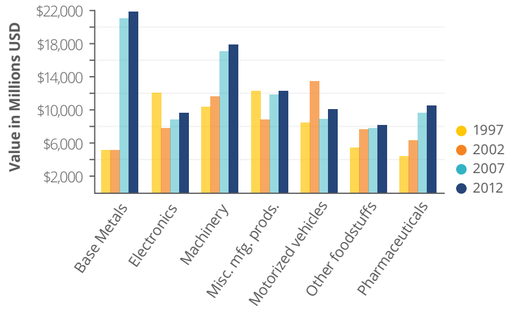
8 Freight Railroads + **1** Intermodal Facility — **600** Container/Trailer Lifts per Day

5,000 Miles of Pipe + **5** Oil Refineries — Crude Oil, refined petroleum products and solid material in slurry form

2 Air Cargo Facilities + **16** Cargo Carriers — **328** million pounds of air cargo and air mail

Top Commodities Year After Year

Utah's top commodities traded from, to and within the state change from year-to-year based on demand; however, several of these commodities are consistently ranked as being in the top 10 for trade.



Transporting by Rail

Short Line and regional railroads account for 31% of U.S. freight rail mileage and 10% of employees. They range in size from small operators handling a few carloads a month to multi-state operators close to Class I size.

Switching and Terminal railroads usually perform pick-up and delivery services within a port or industrial area, or move traffic between other railroads.

Railroad	Type	Utah Supply Chain Commodities					
		Coal	General Freight	Crude Oil	Petroleum Products	Salt	Copper
BNSF RR Company	Class I	■	■■	■■■			
Deseret Power RR (isolated railroad)	Short Line	■	■				
Salt Lake City Southern RR	Short Line		■				
Salt Lake, Garfield & Western RR	Short Line		■■	■	■■■	■■■■	
Savage, Bingham & Garfield RR	Short Line		■■	■			
Union Pacific RR	Class I	■	■■■■	■■■	■■■■■	■■■■■■	■■
Utah Central RR	Short Line		■■	■		■■■	
Utah Railway	Short Line	■	■■■	■■			

FREIGHT MOBILITY IN UTAH

– Utah's –

Freight Assets

Utah's Multimodal Freight Network

Roadways: Of the 6,000 miles of state-maintained highways in Utah, more than 2,000 miles handle the majority of truck freight in the state

Pipelines: Utah is the hub of an extensive pipeline network extending as far as Spokane, Washington, and Alberta, Canada.

Air: Regional air cargo operations such as St. George, Cedar City, Moab, Logan, Price, Vernal and Wendover are important to business and economic development in those areas.

Intermodal: Union Pacific Railroad's Salt Lake City Intermodal Terminal (SLCIT) is the primary intermodal facility in the Mountain West. California's major seaports are Utah's primary global gateways for intermodal freight. Without trucking, intermodal freight would not exist.

UDOT Keeping Utah Moving

Building a Robust Infrastructure

Freight transportation assets are part of a state's infrastructure that pertain directly to freight movements, including highways, railroads, pipelines, airports and intermodal facilities.

Efficient freight movement must travel seamlessly along geographic corridors. Utah's robust infrastructure provides choice of transportation modes between locations or activity centers.

Highways

2,047 miles Freight Network

- 937 interstate miles
- 112 urban miles
- 737 rural miles
- 261 energy miles

Bridges

3,717 BRIDGES

1,867 of them are state-maintained

$4B invested + $18.7M annual maintainenance

Freight Railroads

1,343 miles of FREIGHT RAIL in operation as of 2012

Aviation

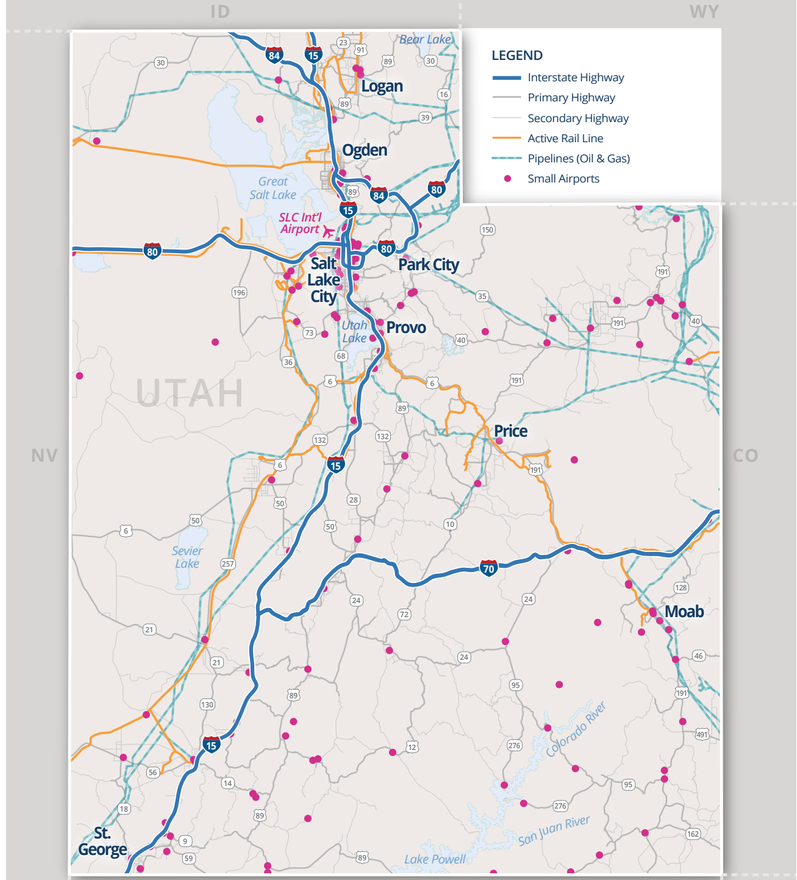
SLC Int'l airport

+46 public use airports

8 of which have cargo space

Pipelines

5,000 + miles of PIPELINE carrying oil & natural gas across the state



TRAINS help our nation's multimodal freight network

EFFICIENTLY TRANSPORT 54 TONS/PERSON of goods each year

...that's about 5 MILLION TONS PER DAY

AGRICULTURE · CONSTRUCTION · ENERGY · AUTOMOTIVE · CONSUMER GOODS · CHEMICALS

RAILWAYS DELIVER A VARIETY OF GOODS

...and... For every $1 SPENT by railroads $10 RETURN IN ECONOMIC ACTIVITY is generated

DID YOU KNOW...

ONE TRAIN can carry as much freight as HUNDREDS OF TRUCKS

in 2014 RAIL FREIGHT 63.2M TONS moved into, out of, & through Utah

...that's equivalent to 3.5M TRUCK LOADS

FREIGHT MOBILITY IN UTAH

– Spotlight on –

Trucking in Utah

Did You Know?

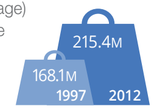
- Utah has the **9th lowest** share of truck involvement **in fatal accidents**
- 20th most **commercial trailers** are **registered in Utah** (152,692) ...1.3% of nation's total
- Utah saw more than **27 million vehicle miles traveled** in 2013 (35th highest)
- Utah has more than **6,000 miles of well-maintained highway**
- The Salt Lake Valley has one of the **largest concentrations of major truck terminals**, trucking industry support facilities and truck dependent businesses
- Utah is home to more than **15,000 companies** which provides businesses easy access to transport and delivery of goods and services

UDOT Keeping Utah Moving

Why Trucking Matters in Utah

Utah is heavily dependent on truck movement (by both value and weight). This places a great responsibility to maintain a strong infrastructure in the state.

Annual freight movement (tonnage) has grown almost 30% over the last 15 years. The more freight we move, the more job growth we have.



20,191 Employed

$41,808 Average Annual Salary

The trucking industry alone employs more than 20,000 in our state. To keep up with this growth, UDOT continues to explore options to make highways more efficient for moving freight.

Top Supply Chains Use Trucking

1. Energy Extraction

Because of Utah's mountainous terrain, many energy extraction operations of coal and crude oil are transported by truck directly from the mines and wells to railroad loadout facilities.

2. Food Transport

More specifically, temperature-controlled food products such as chocolate, dairy products, fruits, meats, medicines and vegetables.

Refrigerated trucks, also known as reefer trucks, have a refrigeration unit allowing them to maintain a set temperature for perishable fresh fruits and vegetables or frozen foods.

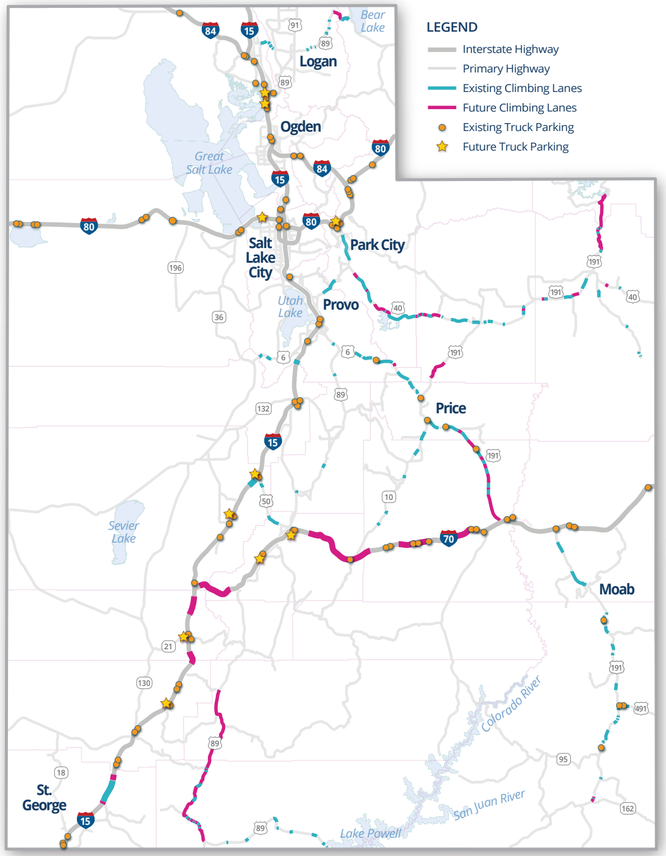
Reefer trucks make up a large percentage of total truck traffic passing through Utah on Interstate 80, I-84, I-70 and I-15.

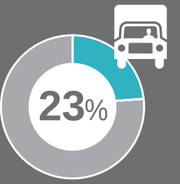
Utah is the headquarters to some of North America's largest temperature-controlled trucking companies. Utah plays a critical role in local, regional and national supply chains for moving temperature-controlled food products across North America from western growing areas.

9,000 employees

5,500 tractors

7,700 trailers





Truck Traffic in Utah

Truck traffic is 23% of total traffic on Utah's highways, while nationally it averages only 12%. This is the highest percentage of truck traffic in the U.S. Some trucks have origins or destinations in Utah, and others pass through, en route to other states.

Climbing and Passing Lanes

Climbing lanes provide an additional auxiliary lane for slower moving vehicles such as trucks and RVs.

Passing lanes provide an additional auxiliary lane on rural two-lane highways for passing slower moving vehicles.

Truck Parking

Due to its location along several east-west corridors, Utah sees a high number of trucks needing long-term parking. Truck drivers are allowed to drive 11-hours before a mandated 10-hour rest break must be made.

I-15 alone has 1,734 spaces at private-sector truck stops and 74 truck parking spaces at state rest areas totaling 1,808 spaces.

Four major areas in Utah needing additional truck parking have been identified from south to north:

- St. George and Cedar City areas
- Nephi area just south of the Wasatch Front
- The warehouse district in Salt Lake City
- Ogden to Tremonton in northern Utah

FREIGHT MOBILITY IN UTAH

– 2040 –
Freight Forecast

National Trends

- Population Growth
- E-Commerce
- Driver Shortage
- Autonomous Vehicles
- Regional Distribution Strategies
- Increased Rail Movement
- Clean Energy & Alternative Fuels
- New International & Domestic Shipping Lanes
- Complete Streets & Sustainable People Movement

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Utah's Freight Trends

Anticipated trends moving forward:

- Goods movement is expected to remain heavily truck dependent, both in terms of weight and value.
- Expect California and Idaho to continue as top trading partners into the future.
- There is a disproportionate burden of moving highway commerce in Utah.

Accomplishments

- Identified and inventoried long-term truck parking
- Identified and constructed climbing lanes on interstate highways
- Identified and constructed passing lanes on non-interstate PFN routes
- Identified freight centers and their routes to PFN
- Identified safety and mobility challenges associated with operating industry standard 53-foot trucks at interchanges and intersections
- Identified inventory of existing truck chain-up areas
- Identified inventory of truck escape ramps
- Implemented capacity improvement to PFN routes

Needs

- Need more freight collector routes in urbanized areas along Wasatch Front corridor
- Need more railroad crossing grade separations
- Need improved interchange/intersection design such as turning radius, signal timing and turn-lane lengths
- Need full-width paved shoulders on PFN routes
- Need more acceleration/deceleration lanes for trucks
- Need more adequate long-term truck parking near freight centers
- Need more designated truck routes through cities and towns, often on non-state-maintained roads and streets

Freight Analysis Framework

The Freight Analysis Framework (FAF) is the FHWA-compiled data set using multiple sources to outline freight movements for all 50 states. The FAF also provides an estimate for value and weight (tonnage), which is used as a guide for UDOT's freight planning efforts.

FREIGHT MOBILITY IN UTAH

— Project Funding —

Implementation Plan

Utah Freight Plan Projects

are now included in the:

- UDOT LRTP 2015-2040
- Utah's Unified Transportation Plan 2015

Importance of Regional Planning Activities Beyond Utah

- I-80 Winter Operations Coalition
- I-15 Mobility Alliance
- Multistate I-15 Dynamic Mobility Project
- UDOT provides draft Freight Plan to adjacent states and California for comment and review

UDOT Keeping Utah Moving

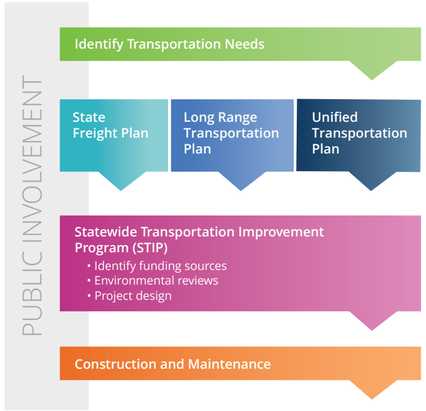
Long- and Short-Term Focus

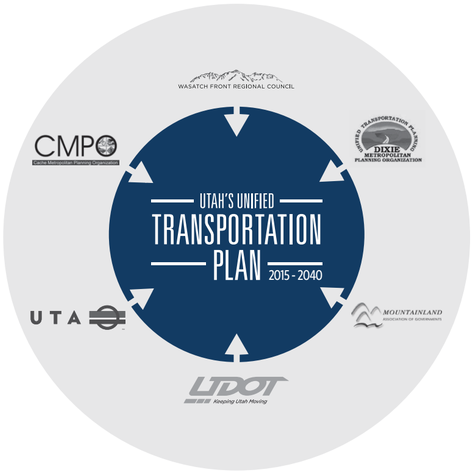
- Long-term truck parking throughout Utah and around Freight Centers (ST)
- Climbing lanes on interstate highways (ST & LT)
- Passing lanes on non-interstate PFN routes (ST & LT)
- Freight centers and improvement of routes linking them to the PFN (ST)
- Expand on-going work with private freight industry partners (ST & LT)
- Truck chain-up areas and escape ramps (ST)
- Capacity projects for highways (ST & LT)
- Advocate for turning radii, signal timing, turn lane lengths, full-width paved shoulders, and acceleration/deceleration lanes for PFN routes (ST & LT)
- Continue to identify and construct railroad crossing grade separations (ST & LT)
- Communicate the need for designated truck routes in cities and towns on non-state routes (ST)

Public Involvement Strategy

The Utah Freight Plan was created with stakeholder input from local government, rural planning organizations (RPOs), metropolitan planning organizations (MPOs) and UDOT Regions.

Outreach to the public sector included representatives on Utah's Freight Mobility Group, shippers and receivers, and representatives from various freight modes including trucking, rail, pipelines, intermodal and air.





UTAH POPULATION

Collaborative Planning

Utah's transportation agencies work together to develop common goals, planning time horizons, performance measures and financial analyses for state and local transportation needs. UDOT, UTA and the Metropolitan Planning Organizations (MPOs) agree on what projects and needs to include in the Unified Plan, the timing and funding for them, and the best way to measure their effectiveness in meeting shared objectives.

By colloborating, agencies are working to ensure an excellent quality of life for all Utahns that includes good air quality, a vibrant economy and affordable transportation choices.

Why a Unified Plan?

Investing in major capital projects require decades of planning and thoughtful consideration regarding how to pay for them. Preserving the existing transportation system means ensuring roads, buses, rail lines, trails, sidewalks, etc. are properly maintained. This requires a coordinated, regional effort that does not stop at jurisdictional boundaries.

Utah's population is growing rapidly, which means more vehicles, homes and businesses and a greater strain on the natural environment. This growth presents both challenges and opportunities for how to collaboratively plan for transportation, land use and development in a coordinated manner.

Benefits of Collaboration

Accessibility

The Unified Plan will improve how quickly and easily people get to work and will increase the number of jobs they can access from home.

8,700 Wasatch Front

23,000 rest of Utah

MORE JOBS within 20 minutes of the average household in 2040

Increased access to jobs helps to support upward socioeconomic mobility by providing more choices for employment opportunities.

$1 invested in preservation now **SAVES UP TO** $25 in future reconstruction

Preservation of Infrastructure

Good infrastructure costs less. Investing in the preservation of the existing transportation system ensures taxpayer dollars are being used efficiently. Proactively taking care of the infrastructure already in place will save money by reducing the need for costly reconstruction in the future.

Economic Vitality

A well-functioning transportation system is the backbone of a robust economy. It connects people to jobs and other destinations, and facilitates the efficient movement of goods and services within communities and across the state.

$183.6 BILLION in additional GDP through 2040


UDOT
Keeping Utah Moving