Utah FOUNDATION RESEARCH BRIEF

Along for the Ride: An Examination of Utah's Transportation Situation

August 13, 2008

Rising gas prices, heavy road congestion, and the desire for more efficient transportation options have made transportation an increasingly important issue for Utah voters. Transportation ranked 9th in the 2008 Utah Priorities Survey; in 2004 it was the 11th ranked issue. Among the top concerns in this area were commute and travel times, the quality of Utah's roads, the development of public transit options, and expanding the capacity of freeways and highways. This research brief provides an overview of Utah's current transportation situation and examines each of these issues.

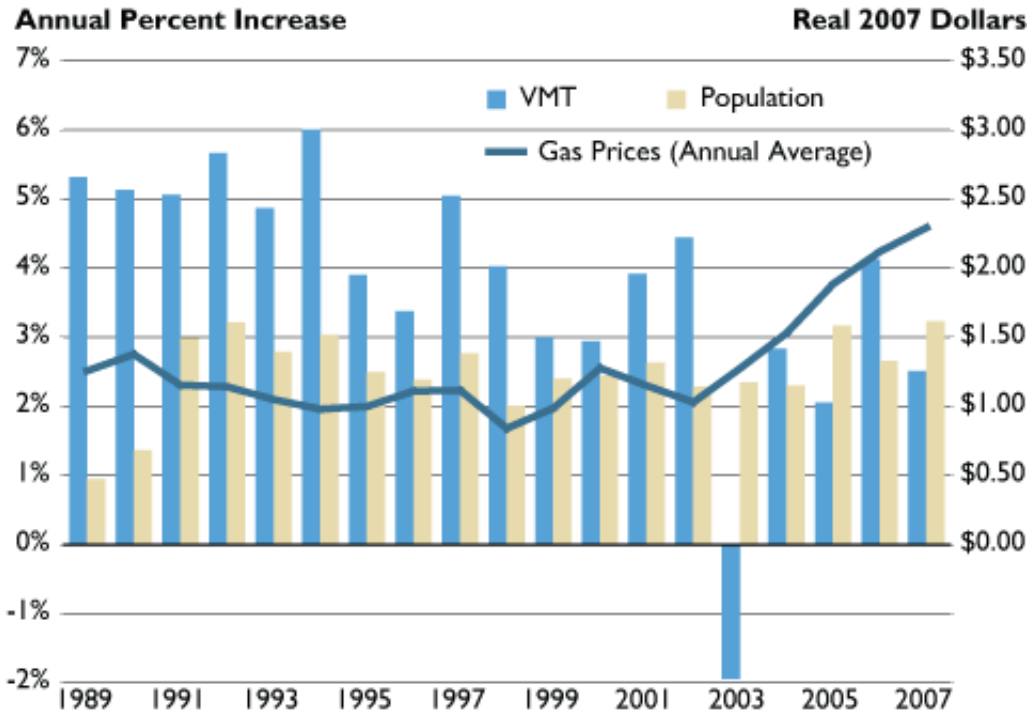
Utah's Current Transportation Situation

One of the state's main transportation challenges is how to deal with the growing demand for Utah's roads and highways. While this still remains an important challenge for the state, increasing gas prices have caused demand for Utah's roadways to slow over the past year and actually decline in recent months. Decreased demand for Utah's roads presents temporary benefits and challenges for the state in terms of congestion and funding.

While the number of vehicle miles traveled (VMT) had a positive compound average growth rate of 3.8% between 1988 and 2007, much of this rate was influenced by growth in the late 1980s and the early 1990s, when VMT increased between 5% and 6% per year.[1] Average yearly growth in Utah's VMT during the last 10 years is only about half of what it was between 1988 and 1998. VMT growth fell from 4.1% in 2006 to 2.5% in 2007. During the same period, Utah's population grew 3.2%, which is the fastest annual population growth the state has experienced in over 20 years, indicating that people in Utah are driving much less today than a year ago.[2]

Since 1988, there have only been three years when yearly growth in VMT was less than yearly growth in Utah's population (2003, 2005, and 2007). Due to rising gas prices, it is expected that this downward trend in VMT will continue. The Federal Highway Administration estimates that, between first quarter 2007 and first quarter 2008, the number of vehicle miles traveled in Utah decreased by more than 3.2%, which is significant decrease when compared to other years.[3] This decrease is consistent with the national trend; every state experienced a decrease in VMT between these two periods.

Figure 1: Vehicle Miles Traveled, Population, and Gas Prices



Source: UDOT, Utah Population Estimates Committee, U.S. Department of Energy, Energy Information Administration (EIA).
Calculations by Utah Foundation.

Local Gas Prices

The decrease in VMT is largely due to the increase in the retail price of gasoline. As of August 11, 2008, the average retail price of regular gasoline was $4.11 per gallon.[4] In terms of inflation-adjusted dollars, the average retail price of regular gasoline has increased more than 37% from one year ago. Increasing gas prices affect the way people conduct their every day activities and have forced many to change their transportation habits and travel plans. Figure 2 shows the latest available average gas prices for Utah, U.S. regions, and select European countries.

Figure 2: Gasoline Prices by Region, Per Gallon

(Regular All Formulations Retail Gasoline Prices as of August 4, 2008)

East Coast	$3.89
New England	3.93
Central Atlantic	3.93
Lower Atlantic	3.84
Midwest	3.77
Gulf Coast	3.77
Rocky Mountain	4.01
Utah*	4.11
West Coast	4.14
United Kingdom	8.57
France	8.37
Germany	8.53
Netherlands	9.49

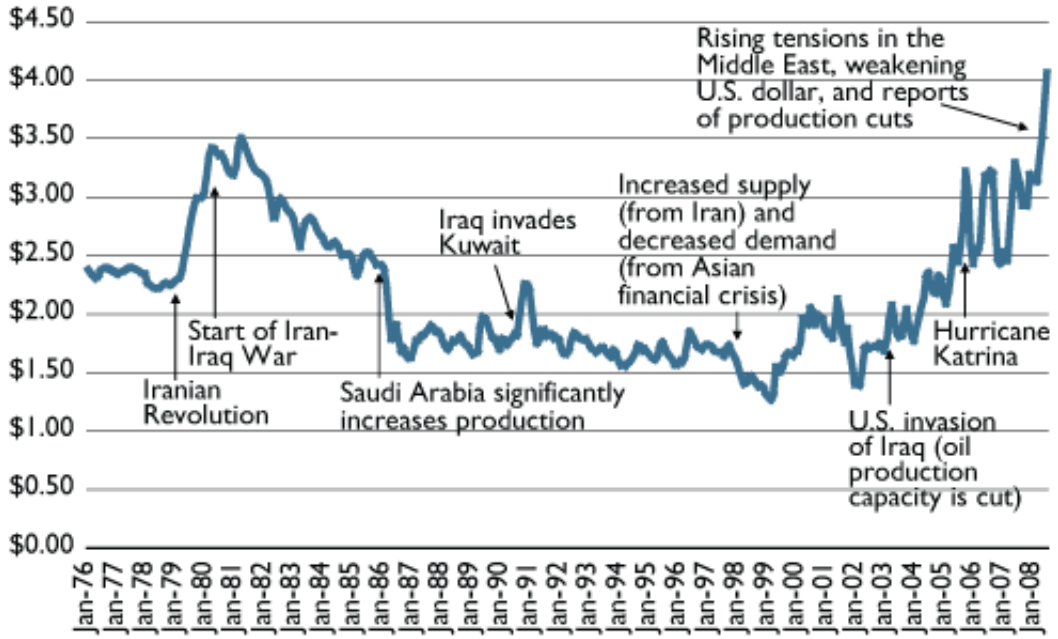
Source: EIA, AAA.

*Utah is as of August 11, 2008

National Gas Prices

Anyone who operates a gasoline-powered vehicle is acutely aware of rising gasoline prices. In order to gain greater perspective about the current situation, however, it is useful to examine national gas prices over a longer period of time. In March 1981, regular gasoline prices reached an average retail value of $3.50 per gallon (in terms of real 2008 dollars). This historic high wasn't passed until April 2008. Between these two periods, gasoline prices repeatedly increased and decreased, but remained relatively low overall. While many factors influence the changes in retail gasoline prices, Figure 3 illustrates a few of the major exogenous events.

Figure 3: National Gas Prices
(U.S. City Average, Real 2008 Dollars)

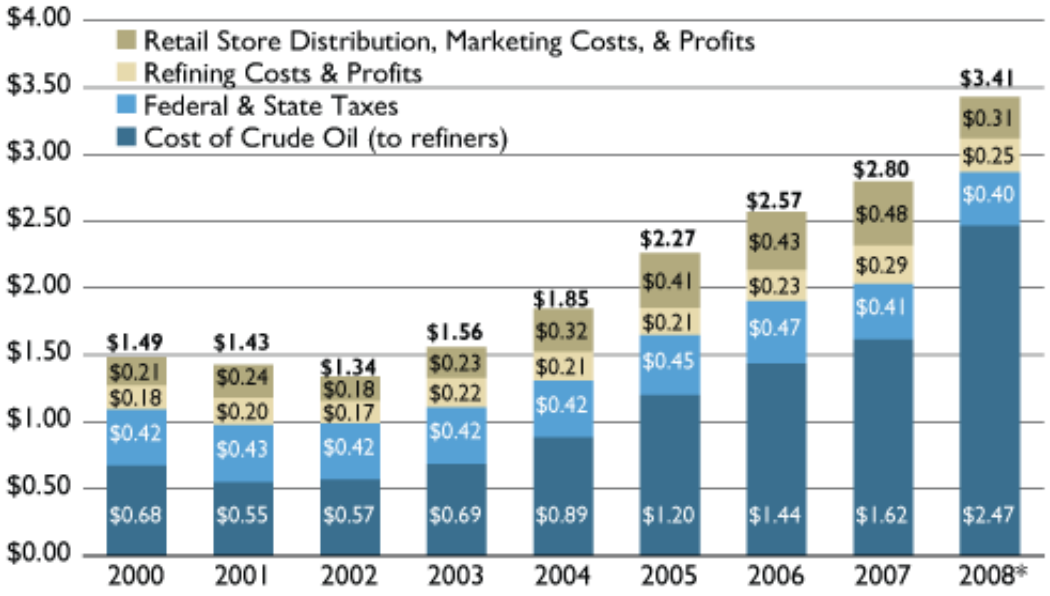


Source: U.S. Bureau of Labor Statistics (BLS). Calcuations by Utah Foundation.

With gas prices reaching an all time high in July, many consumers are now interested in what, exactly, they pay for when buying gasoline. The Energy Information Administration provides information on the components of the retail price of gasoline. These components include the monthly average price refiners pay for crude oil, a

national average of federal and state taxes applied to gasoline, refining costs and profits (which is the difference between the average value of gasoline as it exits the refinery and the average price of crude oil), and distribution, marketing costs, and profits (which is the difference between the average retail price of gasoline and the sum of the other three components). Figure 4 shows the changes in the dollar amount devoted to each component as the price of gasoline increases. Interestingly, the amount of money dedicated to refinery and retail profits have decreased. The increase in the price refiners pay for crude oil, however, is suggestive of growth in oil producers' profits.

Figure 4: What We Pay for in a Gallon of Gasoline



Source: EIA.

*Data available from January to June 2008.

Commute and Travel Time

Although VMT has decreased in recent months, Utah voters are still concerned with congested roads and long travel times. Much of this congestion is due to the fact that the state's highway capacity (the number of lane miles, or the measured mileage along a road multiplied by the number of lanes) increased by only about 2% between 1990 and 2006, even though Utah's population increased by 51% and VMT increased by 79%.[5] The slow growth in road and highway capacity has led to long hours of delay, especially along the Wasatch Front. The Texas Transportation Institute estimated that each motorist experienced an average annual delay of 27 hours driving in Salt Lake City in 2005, compared to 8 hours in 1990.[6] While congestion has significantly risen since 1990, overall congestion in Salt Lake City is moderate when compared with the rest of the nation. In 2005, Salt Lake City had the 45th worst congestion out of the 85 urban areas analyzed.

A 2006 report by TRIP (a national transportation research group) found that traffic congestion on Utah's main streets and highways cost commuters as much as $1,275 annually in wasted time and fuel.[7] Figure 5 indicates the 10 sections of Utah's roadways which cause the greatest delay to motorists, as well as the number of hours lost and gallons of fuel wasted as a result of traffic congestion on these routes. It is important to note that these numbers are based on 2006 retail gasoline prices, meaning the total cost of congestion per motorist is probably much higher today. Any increased road and freeway capacity in the last two years could have offset these increased costs because it would have reduced the number of hours and gallons of fuel wasted due to congestion. However, it is likely that the increased cost from gas prices is much greater than the offset from any increase in road or freeway capacity.

Figure 5: Ten Most Congested Roads in Utah

Rank	Route	From	To	County	Extra Hours Lost	Gallons of Fuel Wasted	Total Cost of Traffic Congestion Per Motorist on This Route
1	I-15	1600 North Orem	University Parkway	Utah	76	59	$1,275
2	I-15	500 East American Fork	1600 North Orem	Utah	59	46	$992
3	7800 South (SR 48)	2700 West	Bangerter Highway	Salt Lake	55	43	$926
4	SR 73	Lehi	SR 68	Utah	45	35	$757
5	SR 18	I-15	Sunset Blvd. (SR 8)	Washington	43	33	$719
6	SR 89	I-84	South Ogden	Weber	42	33	$710
7	5600 West (SR 172)	4500 South	6200 South	Salt Lake	41	32	$684
8	SR 9	520 West Hurricane	SR 17	Washington	40	31	$676
9	700 East (SR 71)	9400 South	12300 South	Salt Lake	38	29	$633
10	SR 77	I-15	Main Street Springville	Utah	37	29	$621

Source: The Cost of Traffic Congestion in Utah: The State's 25 Worst Traffic Jams and the Steps Needed to Relieve Traffic Congestion, TRIP 2006.

While congestion causes frustration, it appears that, on average, most Utah workers have fairly short commutes to work compared to the national average. Data from the Census show that more than 75% of Utah's total workforce has a commute of less than 30 minutes, and when broken down into five-minute intervals, the majority of workers have a commute of less than 10 minutes. The majority of workers at the national level have a commute of 15-20 minutes. Commute time, however, largely depends on a person's mode of transportation. The majority of those who drove themselves, took a taxicab, motorcycle, bicycle, or walked had a commute time which was less than 10 minutes. The majority of workers who carpooled had a commute time of around 15 to 25 minutes and the majority of those who took public transportation had a commute time of more than an hour. Using public transportation often takes longer than driving, but it is possible that those who live farther away from work use public transit at a higher rate than those with a 10-15 minute commute.

Figure 6: Average Commute Time to Work
By Percent of Utah Workers Utilizing Each Means of Transportation

Minutes	Total	Drove Alone (Car, Truck or Van)	Carpooled (Car, Truck or Van)	Public Transportation	Bicycled, Walked or Other Means
less than 10	19.1%	19.4%	13.4%	2.1%	41.3%
10-14	16.6%	17.5%	12.8%	5.5%	18.7%
15-20	17.8%	18.6%	17.0%	8.8%	13.8%
20-24	16.0%	16.5%	16.6%	10.9%	8.4%
25-29	5.9%	6.2%	5.6%	3.8%	2.5%
30-34	11.4%	11.1%	13.8%	15.8%	6.0%
35-44	4.2%	3.9%	5.2%	11.4%	2.1%
45-59	4.8%	3.9%	8.2%	15.8%	1.8%
60 or more	4.3%	3.0%	7.4%	25.9%	5.4%

Source: Census, American Community Survey (2006).

Alternative Method of Eliminating Congestion: Congestion Pricing

Congestion pricing is used to expand the capacity of existing highways by encouraging drivers to make discretionary trips during off-peak periods. This is accomplished by charging drivers a variable rate to enter a given set of lanes during peak traffic. To guarantee that all cars in these lanes can maintain a minimum speed, the price of entering the lanes changes in real time, depending on the congestion level. When traffic increases in these lanes, so does the price of entering the lanes. During non-peak times, driving in the lanes could be free. During rush hour, the price to enter the lanes could be as little as 50¢ or as much as $10, depending on current capacity. The monitoring and billing is done electronically through the use of transponders or electronic recording of license plates.[8]

Congestion pricing has been implemented in several areas around the world, including Stockholm, Sweden. Results from the Stockholm system revealed that traffic in the pricing area decreased 22%, while traffic accidents involving injuries fell by 5-10%. Exhaust emissions, including carbon dioxide and particles decreased by 14% in the inner city and 2-3% in the surrounding county.[9] After a seven-month trial period, voters were allowed to decide whether or not they wanted to keep the system. While there was strong support from within the city, those in the suburban areas opposed the plan. In the end, the referendum passed 52 to 46%.

Quality of Utah's Roads

Another key concern for Utah residents is the quality of Utah roads. A 2006 study by TRIP found that 8% of Utah's bridges were structurally deficient and that 9% were functionally obsolete.[10] Structural deficiency does not necessarily imply that a bridge is unsafe; it means that the structure is unable to carry the vehicle loads or tolerate the speeds that would normally be expected. Functional obsolescence means the bridge has inadequate width or vertical clearance for its associated highway system. In some cases, bridges become functionally obsolete because of highway improvements, such as the widening of approaching roads or a redefinition of standards.[11] While Utah's percentages are low compared to other states, UDOT has dedicated money, resources, and time to improving Utah's bridges in the last two years.

A 2008 TRIP study looked at pavement conditions in select urban areas. The study found that 11% of Salt Lake City's roads were in poor condition, 31% were in mediocre condition, 27% were in fair condition, and 31% were in good condition.[12] The study found that Salt Lake City's road conditions result in an additional average annual vehicle maintenance cost of $323 per motorist. Driving on roads in poor condition increases consumer costs by accelerating vehicle deterioration, increasing the frequency of needed maintenance, and increasing fuel consumption.

The study also found that 6% of Ogden/Layton's roads were in poor condition, 17% were in mediocre condition, 28% were in fair condition, and 50% were in good condition. Only 1% of Provo/Orem's roads were in poor condition, 17% were in mediocre condition, 38% were in fair condition, and 44% were in good condition. Poor road conditions result in an additional average annual vehicle maintenance cost of $205 per motorist in Ogden/Layton and $173 in Provo/Orem.

On average, UDOT spends $3,800 a year per lane-mile of road on repairing roads. It spends another $7,200 a year per lane-mile on rehabilitating or preserving pavements to prevent deterioration.[13] Using a scale that measures the roughness of pavement, UDOT strives to maintain 90% of interstate pavements, 70% of arterial pavements, and 50% of collector pavements in fair or better condition. In 2006, 93% of interstate pavements, 65% of arterial pavements, and 49% of collector pavements met UDOT's criteria.[14] Utah's wide temperature fluctuations tend to wear roadways down at accelerated rates, however, which can make road maintenance difficult. Rising oil prices have also increased the cost of asphalt and road construction, forcing UDOT to consider alternatives such as using concrete or delaying projects.

Funding

The primary source of Utah's transportation funding is the motor fuel tax. In 2007, more than 36% of the total transportation fund came from the collection of this tax.[15] Utah currently has a 24.5 cent per gallon gasoline tax. This is a moderately sized tax, ranking 24th highest in the nation.[16] The current federal gasoline tax is 18.4 cents per gallon. The motor fuel tax helps fund the day-to-day operations of transportation-related programs, as well as helps maintain and build new roads and transportation infrastructure.

Unlike sales tax revenue, fuel tax revenue does not keep pace with the growth in the economy because revenue depends on the number of gallons of fuel consumed and not on a percentage of the sale price. This can result in stagnant real tax revenues unless there is an increase in the tax amount or an increase in the number of gallons of gasoline purchased. Real tax revenues can also actually decline during periods when gasoline consumption falls due to rising gas prices or increased fuel efficiency. In fact, the Utah Department of Transportation could see a $10 to $20 million shortfall in 2009 because of a decline in gas tax receipts.[17]

Declining fuel tax revenue can have a negative effect on Utah's ability to improve its roads, highways, and

bridges. While the state was able to offset the decline in real fuel tax revenue by dedicating the state's 2006 and 2007 budget surpluses to transportation capital spending, the majority of these surpluses were dedicated to state-controlled highways. City and county roads have not benefited from these surpluses and, from 2000 to 2008, the B & C road account, which provides funding for city and county roads, was the only transportation spending account that experienced a negative compound annual growth rate (-0.5%).[18] The account did receive increased state funding in 2007 and 2008, but the percent increase was much smaller than the percent increase in the other transportation funds. These funds include Road Construction, Centennial Highway Needs Program, and the Critical Highway Needs Fund.

Alternative Method of Funding: Oregon's Pilot Program

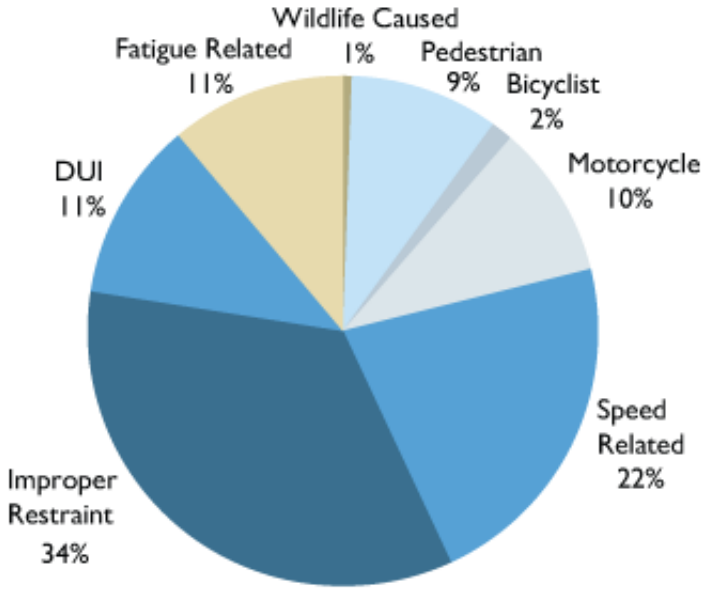
In order to prevent declining fuel tax revenue, some states have considered imposing a vehicle miles traveled tax. This tax imposes a mileage fee charged for each mile driven within the state. In March 2006, Oregon's Department of Transportation launched a 12-month Road User Fee Pilot Program in which participants paid 1.2 cents per mile driven rather than Oregon's state gas tax of 24 cents per gallon. Mileage was monitored with GPS devices installed on participants' vehicles, and the fee was calculated and paid for when drivers filled up at participating gas stations (the GPS system transmitted mileage information to devices installed on gas pumps, which credited the gas tax and charged the mileage fee).

ODOT designed the pilot program to test two types of mileage fees. The first type was a straightforward replacement of the gas tax. The second type incorporated a premium for travel in congested zones at peak periods. The system charged these participants 10 cents per mile for peak period travel in congested zones, but only 0.43 cents per mile for other travel. It was expected that the second group would experience a decline in VMT, but researchers did not expect to see any change in the first group. Surprisingly, both groups experienced a significant decline in VMT over the 12-month period. Although 91% of program participants preferred the mileage tax, it is unlikely Oregon will implement the program due to high costs associated with refining the necessary technology, privacy concerns, and acceptance of the plan by both automobile manufacturers and service stations.[19]

Driving on Utah's Roads

Another aspect to consider is how safe drivers and passengers are travelling on Utah's roads. Although Utah consistently has one of the highest percentages of young drivers in the nation, it has a relatively low traffic-related fatality rate. In 2006, Utah ranked 38th highest in the nation in terms of the number of persons fatally injured in a motor vehicle crash relative to population (Utah ranked 34th highest in terms of fatalities relative to licensed drivers).[20] In 2007, there were 285 traffic-related fatalities in Utah; 100 females and 185 males.[21] One hundred and forty-one of these fatalities occurred during the day, 115 occurred at night, and 14 occurred at dawn or dusk. Only 39 of the 285 fatalities occurred on snowy or wet roads. The rate of traffic fatalities was 1.06 per 10,000 people in 2007, whereas in 2000 in was 1.66.[22]

Figure 7: Utah Auto-Related Fatalities by Type, 2007



Source: Utah Department of Transportation (UDOT), 2007 Zero Fatalities Report.
A fatality may appear in multiple categories.

Even though DUI-related fatalities tend to receive more media attention, only 37 people died due to drunk driving in 2007. This is compared to 37 people who died due to drowsy driving and 72 people who died due to aggressive driving and speed-related issues.[23] Utah had the lowest percentage of DUI-related fatalities in the nation in 2006 (22%), indicating that aggressive driving and speeding are much bigger problems in the state.[24]

Future Transit and Highway Plans

Due to congestion and increasing gas prices, many Utahns are concerned with both the development of new public transit options and the expansion of Utah's freeway and highway capacity. Several new public transit options are currently being developed by UTA. One example of such projects is MAX, Utah's first bus rapid transit line. MAX began operation on July 14, 2008 and connects Magna and West Valley City to TRAX (Utah's light-rail line) at 3300 South. A bus rapid transit line looks and functions like a regular bus, but has limited stops, as well as traffic signal priority, which enables it to move faster than regular traffic.[25] The Provo/Orem area is also planning to develop a bus rapid transit system in order to improve transportation flow in its cities.

UTA's FrontLines 2015 project includes constructing 70 miles of new light rail and commuter rail. This project consists of four light rail lines and an extension of FrontRunner (Utah's commuter rail). The Mid-Jordan Line will branch off the 6400 South TRAX station and extend to 5600 West. From there the line will travel to Daybreak in South Jordan. The West Valley Line will extend from the 2100 South station to the West Valley City Intermodal Center, which will be located near 3600 South and 2700 West. The Airport Line will travel along North Temple, connecting downtown to the Salt Lake International Airport. The Draper Line is expected to extend from the 10000 South station to 14600 South in Draper and may continue on to parts of White City, South Jordan, and Bluffdale. The FrontRunner South project will run from the Salt Lake Intermodal Hub to Provo. All five projects will be completed and in full operation by 2015. Other possible UTA projects include establishing public transit between Park City and Salt Lake City and extending TRAX to Lehi.

Once completed, UTA's Frontrunner will extend from Brigham City to Payson, connecting nearly the entire Wasatch Front. The commuter train will run entirely on its own tracks, a situation made possible by the purchase of 175 miles of railroad right-of-way from Union Pacific. Funding for FrontRunner comes from a combination of federal grants and a quarter-cent sales tax increase in Utah and Salt Lake Counties. By the end of the project, FrontRunner will receive a total of $489.3 million from the Full Funding Federal Grant Agreement.[26]

There are many current and future plans underway for expanding Utah's roads, highways, and freeways. UDOT is currently focused on its *Innovate 80* and *I-15 NOW* projects. *I-15 NOW* includes mainline, interchange, and bridge reconstruction from the I-84 interchange in Riverdale to 2700 North in Farr West. This project began in 2006 and will be completed by fall 2008. The *Innovate 80* project consists of replacing 12 bridges along the

I-80 corridor, adding two new lanes in each direction on I-80 between State Street and 1300 East, adding new lanes between Kimball Junction and Silver Creek, laying new concrete in Parleys Canyon in order to reduce future potholes, and providing several other safety improvements. Most of these projects will be finished by fall 2008 and all projects are expected be finished by fall 2009.[27]

The 2008 Utah State Legislature also identified $2.6 billion to fund the reconstruction of I-15 from American Fork Main Street interchange to Spanish Fork US-6 interchange. Reconstruction includes widening I-15 by two lanes in each direction between the American Fork Main Street exit and the University Avenue exit and by one lane in each direction between the University Avenue exit and the US-6 interchange. The original plan, which would have added two lanes in each direction between 12300 South in Salt Lake County to US-6, was estimated to cost $5 billion and therefore replaced with the smaller option in order to preserve the state's bonding capacity. Construction on this project could start as early as spring 2010.[28]

UDOT's Long Range Transportation Plan 2007-2030 is the transportation mobility plan for rural and small urban areas. A couple of the larger plans include widening I-15 from Box Elder/Weber County to Brigham City's south interchange and widening US-6 from US-89 Spanish Fork to Diamond Fork Canyon. Both of these plans are expected to be completed by 2015.[29] Governor John Huntsman Jr., Salt Lake County Mayor Peter Corroon, and Salt Lake City Mayor Ralph Becker are also working together to improve the flow of traffic by synchronizing traffic lights. This will, in turn, save money in fuel costs and cut down on air pollution from idling cars.[30]

Other Forms of Transportation

Highways and Ground Freight

Currently, there are over 700 trucking companies located in Utah. Because Utah is part of the Mexico/Canada corridor, it is considered an ideal location for product distribution.[31] In 2007, 6.3 million trucks cleared Utah's port of entry and 6.5 million trucks were weighed. There were also 58,000 oversize/overweight permits sold, which brought in more than $8.5 million in permit sales revenue to the state.[32]

Rail

Utah has 1,400 miles of railroad track throughout the state that converge in the Salt Lake/Ogden metropolitan area.[33] Union Pacific is the primary rail service provider for the state and owns 1,302 miles of this track. It employs over 1,700 employees in Utah and its business mix includes agricultural products, automotive, chemicals, energy, industrial products, and intermodal freight. The main lines link Utah to major sea ports such as Los Angeles, Oakland, Portland, and Seattle, as well as many other key locations throughout the country.

Air Freight

Sixteen cargo carriers handle more than 550 million pounds of air cargo and airmail annually in Utah. Air cargo volumes within the state have grown at an average annual rate of 9%. This increase in airfreight growth pushed for the development of a new cargo area located at the north end of the terminals at the Salt Lake International Airport in 1998.[34]

Air Travel

Salt Lake City International Airport had the best on-time arrival and departure records compared to all other major airports in the U.S. in the first half of 2008 with on-time arrivals for 80.9% of flights and on-time departures for 85.2% of flights.[35] The airport has 14 airlines and provides over 800 scheduled daily departures with non-stop service to 100 different cities. In 2007, the airport serviced 22 million passengers. It is the 17th largest connecting hub airport in the United States and the 54th busiest in the world in terms of passenger numbers.[36]

Conclusion

Utah's transportation system faces many challenges. Due to rising gas prices and road congestion state government will need to focus its resources on providing more efficient and diverse methods of transportation. Fortunately, dedicating recent state budget surpluses to improving Utah's freeways and bridges and developing definite plans for extending public transportation lines has helped the state effectively manage the current situation. More may need to be accomplished quickly though, in order to meet Utah's ever changing transportation needs as gas prices, congestion, and commute times continue to increase.

Endnotes

[1] Utah Department of Transportation (UDOT).

[2] Utah Population Estimates Committee.

[3] U.S. Department of Transportation, Federal Highway Administration (FHWA). The Vehicle Miles of Travel (VMT) represents the annual average of vehicles driving on the various roadways in Utah.

[4] AAA's Fuel Gauge Report, Price per gallon of Unleaded Regular Gasoline.

[5] Highway Statistics 2006, *FHWA*; Utah Population Estimates Committee; UDOT.

[6] 2007 and 2002 Annual Urban Mobility Reports, *Texas Transportation Institute*.

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[8] "The Causes and Costs of Traffic Congestion in Utah," *The Utah Taxpayer, A Publication of the Utah Taxpayers Association* (July 2008).

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[12] "Keep Both Hands on the Wheel: Metro Areas with the Roughest Rides and Strategies to Make our Roads Smoother," *TRIP* (March 2008); http://www.tripnet.org/national.htm.

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[17] Mary Richards, "Fewer Drivers mean less Money for Roads," *KSL* (July 29, 2008).

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[21] "Zero Fatalities, 2007 Utah Fatalities Data Analysis" *UDOT* (2007).

[22] Ibid, Calculations by Utah Foundation.

[23] Ibid.

[24] "Traffic Safety Facts: 2006 Data," *National Highway Traffic Safety Administration* (March 2008).

[25] UTA.

[26] "Utah Transit Authority's FrontRunner Commuter Rail," *UtahRails.Net* (August 7, 2008); http://utahrails.net/uta/uta-frontrunner.php.

[27] UDOT.

[28] UDOT.

[29] "UDOT's Long Range Transportation Plan 2007-2030" *UDOT* (June 2007).

[30] Jared Page, "Improved S.L. Traffic Flow Sought," *Deseret News* (June 3, 2008).

[31] "Utah Transportation: Section 8 of the Utah Business and Economic Profile," *EDCUtah* (2008).

[32] UDOT

[33] "Utah Transportation: Section 8 of the Utah Business and Economic Profile," *EDCUtah* (2008).

[34] Ibid.

[35] U.S. Department of Transportation, Bureau of Transportation Statistics

[36] Salt Lake International Airport

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