UTAH DEPARTMENT OF TRANSPORTATION

STRATEGIC DIRECTION

2016

udot.utah.gov/go/strategicdirection

UDOT Keeping Utah Moving

About the Cover Photo – The Point construction

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DIRECTOR'S MESSAGE

CARLOS BRACERAS
Executive Director

During the past couple of years, whenever we have talked about the strategic direction for the Utah Department of Transportation, we have spoken about our Vision, Mission and Strategic Goals. Now in 2016, I'm more convinced than ever that our vision is correct, our mission is the right one and our strategic goals are taking us down the right track.

This is especially important for us this year because, as I see it, we are at a fundamental change point in the entire history of transportation. The next decade of transportation innovation will see changes that are fundamental and profound. We are seeing an extraordinary merger of technology, as we know it today, and the automobile. And our opportunities as a Department of Transportation are surely changing; autonomous vehicles, 3D printing for heavy construction and the "internet of things" are just a few innovations that promise to change the landscape of the transportation industry. These opportunities will allow us to be more successful than we ever imagined in achieving our Vision, Mission and Goals.

This is an exciting time to be working side-by-side with the best employees in transportation, especially in a state that is rapidly growing in population and economic strength. We need our best thinking today to anticipate innovative solutions to the opportunities of tomorrow, so we can keep Utah moving safer and more efficiently—today and in the remarkable future that awaits us.

VISION

Keeping Utah Moving

MISSION

Innovating transportation solutions that strengthen Utah's economy and enhance quality of life

EMPHASIS AREAS

Our Emphasis Areas highlight keys to our success as we move into the future. These are areas that require special attention and effort in pursuit of our Vision and Mission.

Integrated Transportation

Transportation is more than cars on roads. Integrated transportation considers the evolving and diverse expectations of the people and businesses that use our system. At every phase, from planning through maintenance, we consider how to better serve all of the transportation interests of our state, including transit, commercial vehicles, rail, pedestrians and cyclists.

Collaboration

Our mission is to strengthen economies and enhance quality of life in the communities of our state. The best—perhaps only—way to accomplish this is by collaborating closely with the communities we serve and collaborating with public and private partners to form effective, passionate teams. We strive to help communities achieve their individual visions.

Education

Perpetual thirst for knowledge and access to education enable our teams to prepare for the enormous and exciting shifts in the transportation industry with energy and enthusiasm. We also support the education of the generation who will follow us, and we embrace the cultivation of expertise in new technologies and disciplines.

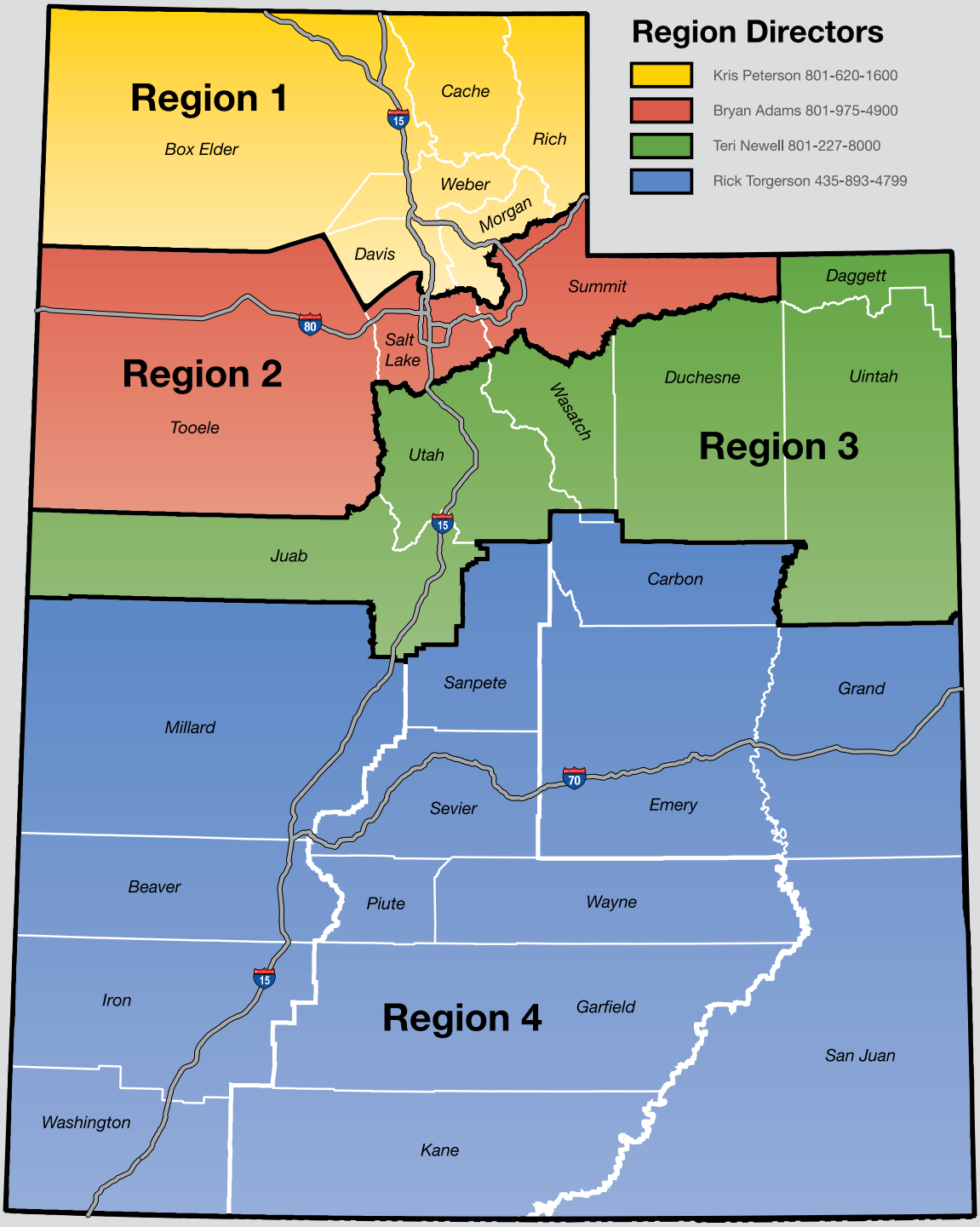
Transparency

Trust is our most valued asset, so we hold ourselves to the highest standards of fairness and openness. Transparency means not only allowing the public to be aware of what we are doing, but it also means that we conduct ourselves as responsible stewards of taxpayer money, getting the best value for every dollar we invest.

Quality

There is no substitute for quality. We work hard to complete work quickly and minimize impacts to the public and when we complete a project we deliver a quality product that will serve the public for many years to come. Quality is demonstrated not only in the processes we adopt, but also in the people we hire.

UDOT REGIONS



GOAL: ZERO CRASHES, INJURIES AND FATALITIES

UDOT is committed to safety, and we won't rest until we achieve zero crashes, zero injuries and zero fatalities.

STRATEGIES

- Engineering
  - At UDOT, we look for opportunities to improve safety at every phase of a project from planning and design to construction and maintenance.
  - UDOT engineers use sound design principals, cutting edge national research and best practices that have been proven to produce a safe and reliable transportation system.
- Education
  - UDOT demonstrates its commitment to safety through outreach efforts that help educate the public and make Utah a safe place to live, travel and conduct business.
- Employee and Partner Safety
  - A culture of active caring and behavior-based safety (BBS) is central to building a safe system.

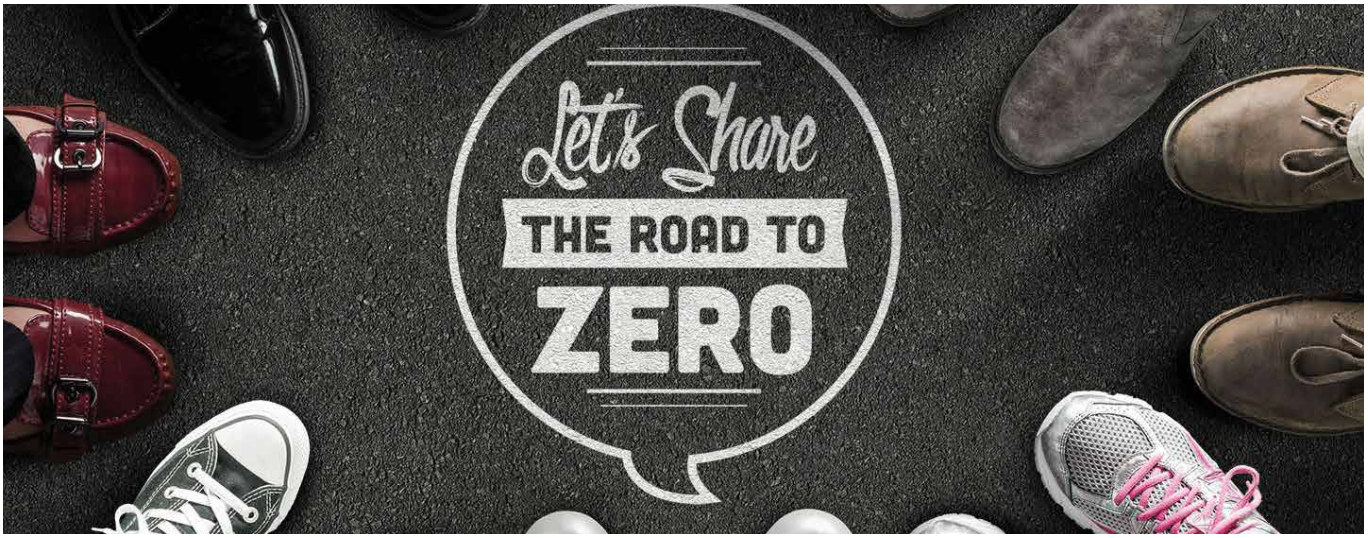
ENGINEERING

Every project includes safety elements. In an effort to make safety improvements on every project, UDOT launched a new web-based tool to help project managers easily identify opportunities. The tool utilizes a web-based platform to access and analyze crash data in a streamlined, easy-to-use interface.

The tools merge multiple data sets including crash, traffic and roadway data from a variety of sources to help users quickly identify crash patterns, analyze roadway segments for areas of varying concern, compare potential roadway projects and develop benefit-cost analysis according to Highway Safety Manual methods.

Key UDOT Traffic Safety Programs include:

- Highway Safety Improvement Project (HSIP) - $7.4M
- Spot Safety Improvement Program - $2M
- State Signal Program - $3M
- Railroad Safety Program - $1M
- New Traffic Signal Program - $5M
- Safe Sidewalk Program - $500K



The tool also provides a public portal, allowing our partners in law enforcement and local government to view high-level crash data summaries.

EDUCATION

As we continue to make Utah roads safer, our role of educating drivers is a critical element of our effort to reduce the 94 percent of fatal crashes resulting from human error. The Zero Fatalities program educates a wide range of audiences about the five behaviors primarily responsible for fatalities on Utah roads: aggressive driving, drowsy driving, distracted driving, impaired driving and failure to use a seat belt.

The Zero Fatalities program includes tailored campaigns to reach specific audiences such as new teen drivers, parents, commercial vehicle drivers, pedestrians and cyclists. Seat belt use, in particular, remains a focus of educational efforts following the adoption of a primary seat belt law during the 2015 Utah legislative session.

Broad Outreach

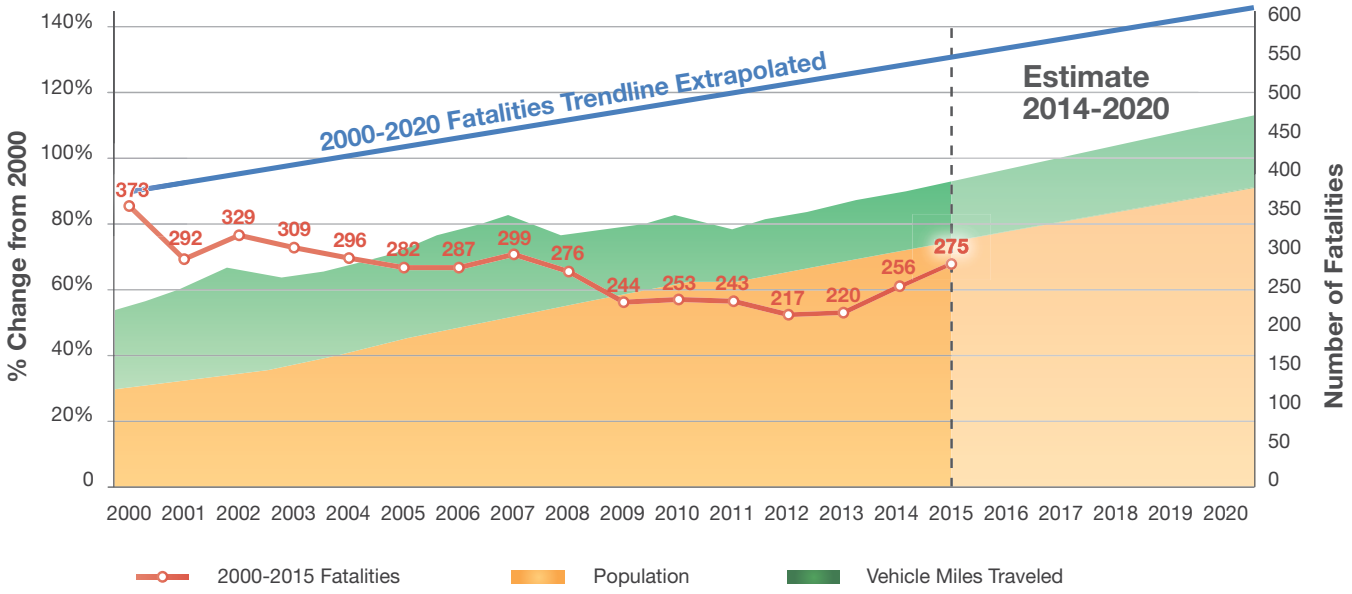
Fatalities on Utah roads affect everyone, regardless of age, gender or socioeconomic status. For this reason, safety outreach occurs through a number of campaigns targeted to various audiences. Each campaign operates under the Zero Fatalities banner, echoing messages about the five safety behaviors most common in fatal crashes.

EMPLOYEE AND PARTNER SAFETY

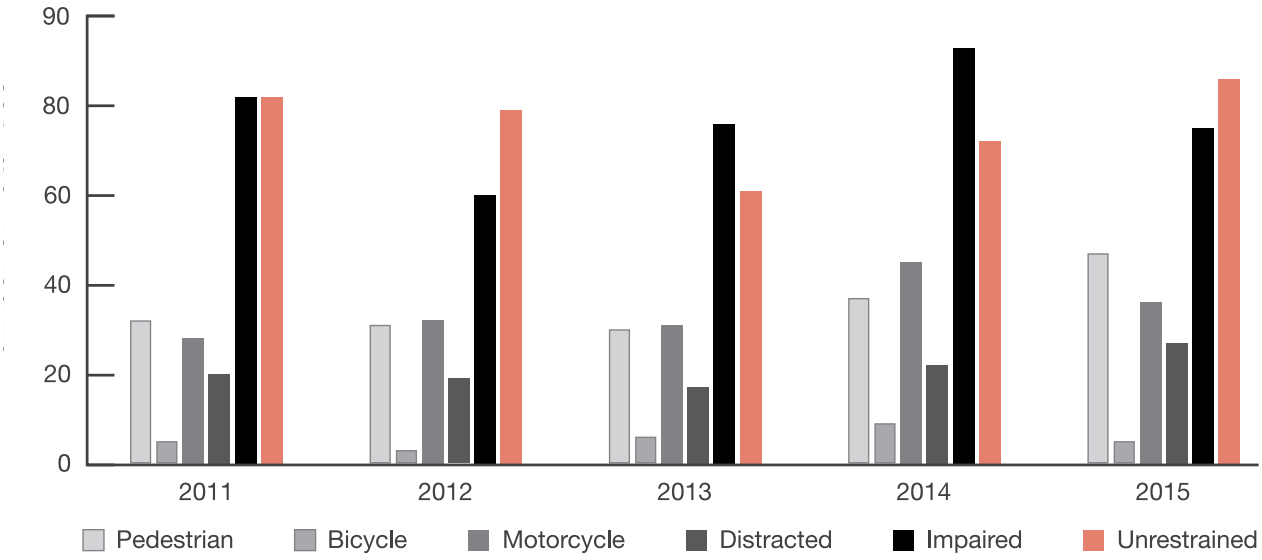
Behavior-Based Safety (BBS) is an innovative program that focuses on human behavior to minimize injuries, prevent fatalities and decrease the costs associated with safety incidents. More than 90 percent of all injuries are due, in part, to at-risk behaviors; BBS targets these behaviors.

With BBS, employees observe each other on the job and provide safety feedback to reinforce safe work practices and correct risky ones. Behavioral data is then tracked and trended for BBS teams to make improvements. In combination with the safety culture assessment, BBS improves safety culture, safety systems and safety communication. The end result is a more open, positive safety culture and fewer safety incidents. So far, less than a year after implementation, early results show positive change at UDOT in every category.

REDUCING HIGHWAY FATALITIES TO ZERO



FATALITIES TYPE *(A FATALITY MAY APPEAR IN MULTIPLE CATEGORIES)*

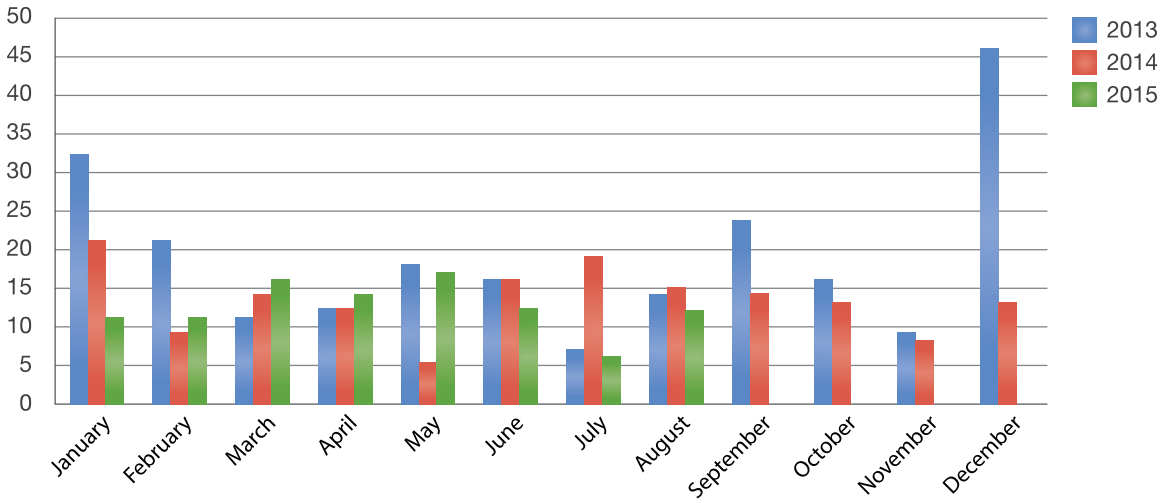


**Fatality Analysis Reporting System (FARS) data*

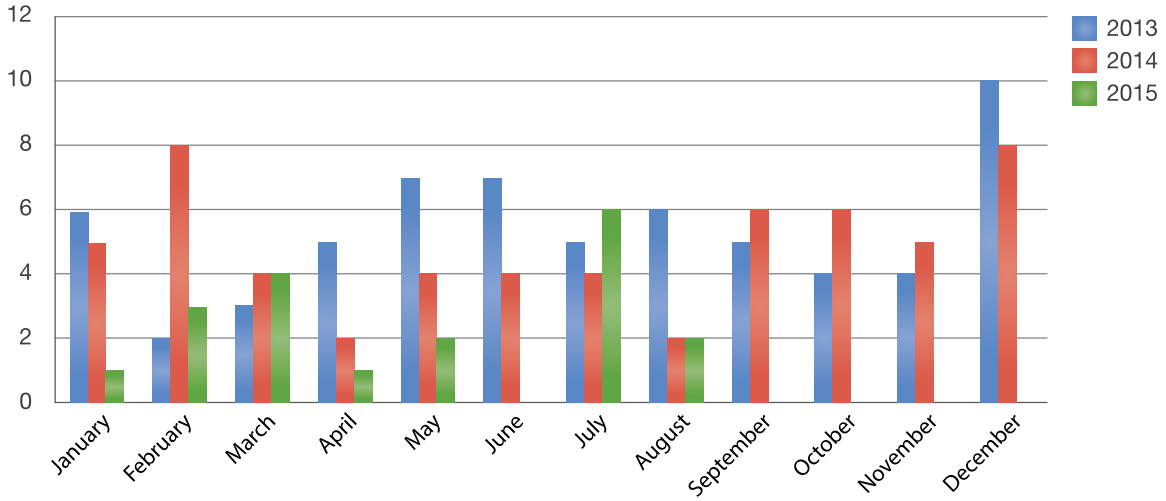
Year after year, the top contributing factor in fatal crashes is improper restraint. The number of people that could have been saved by wearing a seat belt represents about half of Utah's roadway fatalities.

PERFORMANCE MEASURES

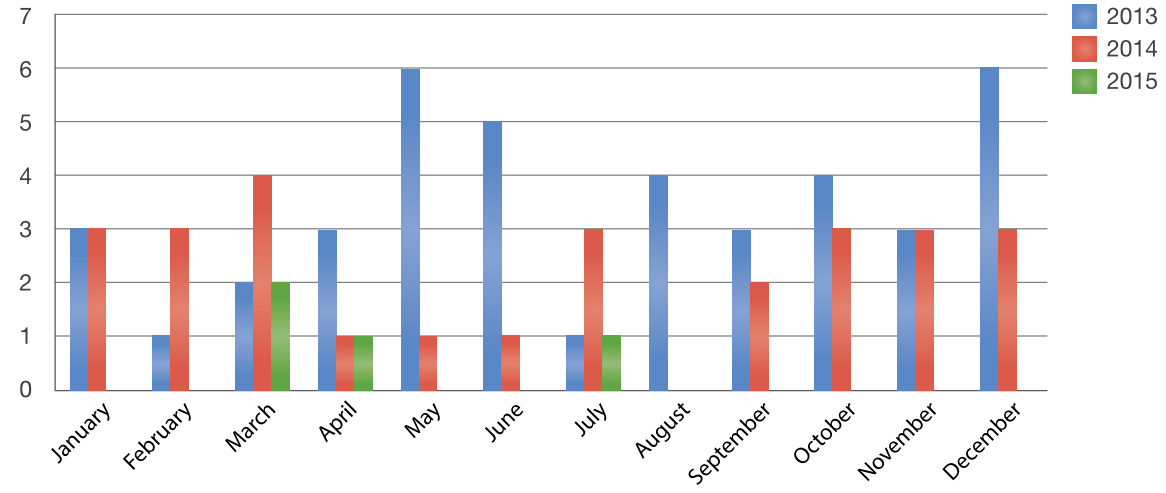
UDOT VEHICLE INCIDENTS



UDOT INJURIES REPORTED



UDOT LOST TIME INJURIES OR ILLNESS



TEEN DRIVING BEHAVIORS WITH PARENTS INVOLVED IN TRAINING

HALF

as likely to speed

70%

less likely to drink and drive

2X

likely to wear seat belts

30%

less likely to talk on a cell phone while driving

Teens with parents involved in their driver's training are half as likely to speed and 2X as likely to wear their seat belt

Zero Fatalities (ut.zerofatalities.com)

More than half (56 percent) of those who are aware of Zero Fatalities say this program has influenced them to avoid the top behaviors responsible for deaths on the roads.

One of the most important achievements of the Zero Fatalities program is educating new drivers and their parents about safe driving. Through a targeted sub-campaign, Don't Drive Stupid (dontdrivestupid.com), and mandatory parent attendance at Parent Night classes, nearly 20,000 parents and students were reached last year.

Zero Fatalities - $2.8M

Student Neighborhood Access Program (SNAP) (udot.utah.gov/snap)

The SNAP program helps encourage healthy Utahns, cleaner air and better traffic by getting cars off the road and students walking to school. SNAP's Walking School Bus app, launched in August of 2014, has helped significantly increase the number of children walking and biking to school. Since its launch, users have walked 143,000 miles and reduced 163,000 car trips. The app has been honored with 18 national awards, including the prestigious Silver Anvil Award.

SNAP - $710K

Truck Smart (udot.utah.gov/trucksmart)

Efforts include a mass media campaign and an emphasis on education of new drivers. The Truck Smart program partners with local driver education programs and the Utah Trucking Association to teach teens about driving safely around trucks. One of the most impactful elements of the class is the opportunity to sit in the cab of a commercial truck, typically provided by members of the Utah Trucking Association. Truck Smart has worked with nearly 200 driver education classes in the past year.

Truck Smart - $115K

FEATURE FOCUS

Primary Seat Belt Law & Partnerships for Outreach

During the past five years more than 1,000 people have died on Utah's roads; the most common contributing factor was failure to properly buckle up. A relatively small percentage of our population continues to travel unbuckled, but they represent nearly half of our roadway fatalities (excluding pedestrian, cyclists and motorcyclists, who don't have the option of buckling up).

National data demonstrates that seat belt usage typically increases in states with primary seat belt laws. In 2015, Utah's legislature voted to help keep our roads safer by passing a primary seat belt law.

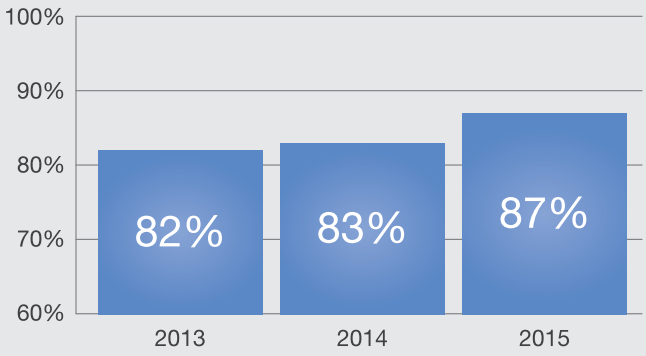
BUCKLE UP

UTAH'S LAW TO SAVE LIVES

The Law: All passengers must wear seat belts and children up to age 8 must be properly restrained in a car or booster seat.

Since the primary seat belt law went into effect, UDOT and the Utah Department of Public Safety (UDPS) are continuing in their partnership to increase education and enforcement to help save lives. UDPS performed two Click It or Ticket (CIOT) enforcement periods in 2015 to leverage momentum around the new legislation and increase public awareness.

SEAT BELT USAGE TRENDS



The Zero Fatalities program is focusing its efforts on increasing seat belt education through a broad range of platforms targeting diverse demographics. Efforts include grassroots presentations, media campaigns, social media, local media coverage, partnerships, community events and pledges. UDOT has also begun utilizing existing overhead freeway signs, to remind travelers to buckle up.

Each year observational seat belt surveys conducted in June offer indications of increased seat belt usage (up 8 percent from 82 percent), although these results should be considered preliminary. A subsequent observational survey in October revealed a slight decline from the June results, with usage rates at 85 percent. UDOT and UDPS will continue with outreach and education efforts to maintain and improve seat belt usage levels.

In 2015, UDOT began using overhead message boards to share safety messages reminding drivers to buckle up and observe other safe driving behaviors.

HEADS UP

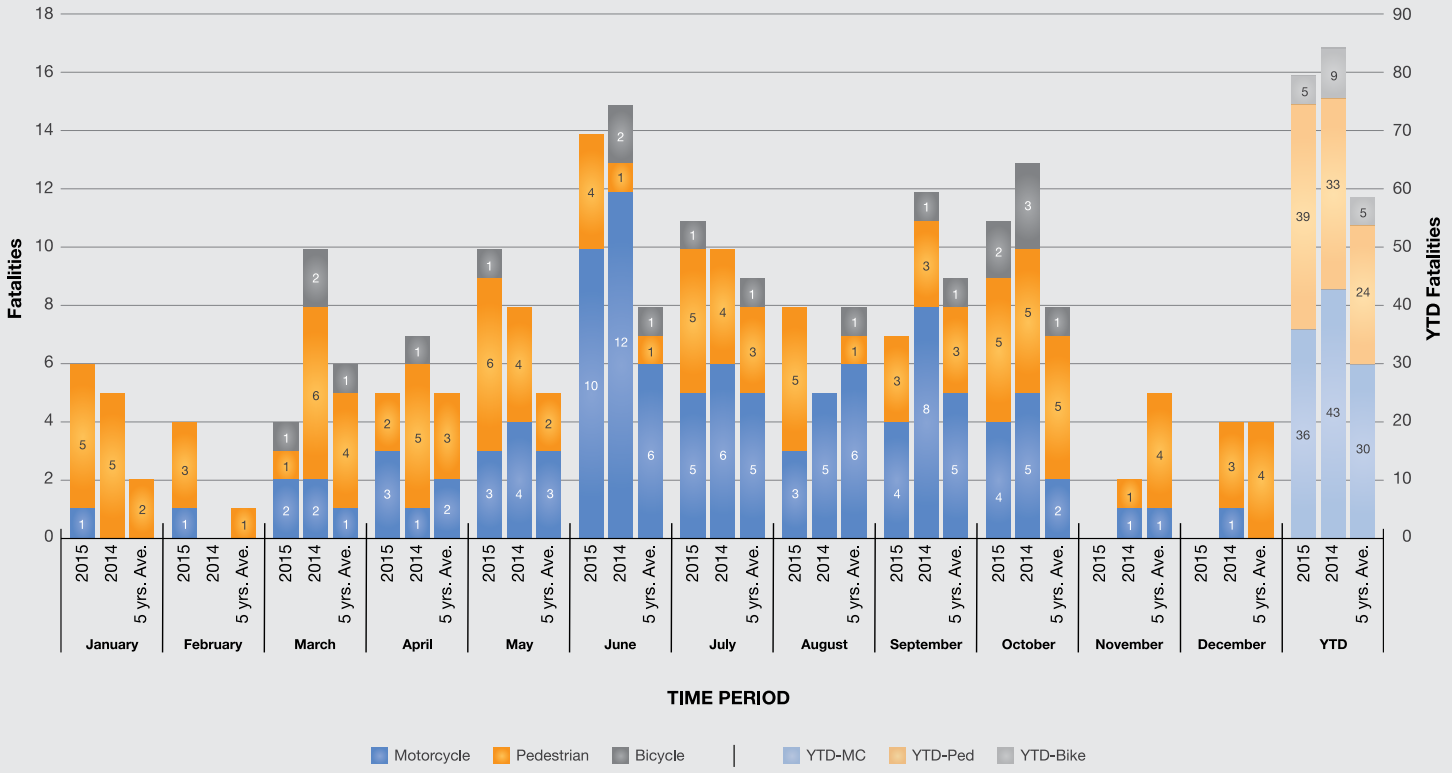
WE'RE ALL RESPONSIBLE

Pedestrians, Bicycles & Motorcycles

As Utah residents increasingly desire active transportation options and alternative modes of transportation, the number of fatalities among these users has increased. UDOT and UDPS have partnered to target pedestrians, cyclists and motorcycles. A campaign called Heads Up was developed to target these users and to educate vehicle drivers how to be safe when sharing the transportation system. UDOT and UDPS conducted social media outreach, media events and grassroots education in an effort to reverse the trend of increased fatalities among these users.

FATALITIES

Fatality data are as of 10/31/2015. All data are preliminary and subject to change.



GOAL: PRESERVE INFRASTRUCTURE

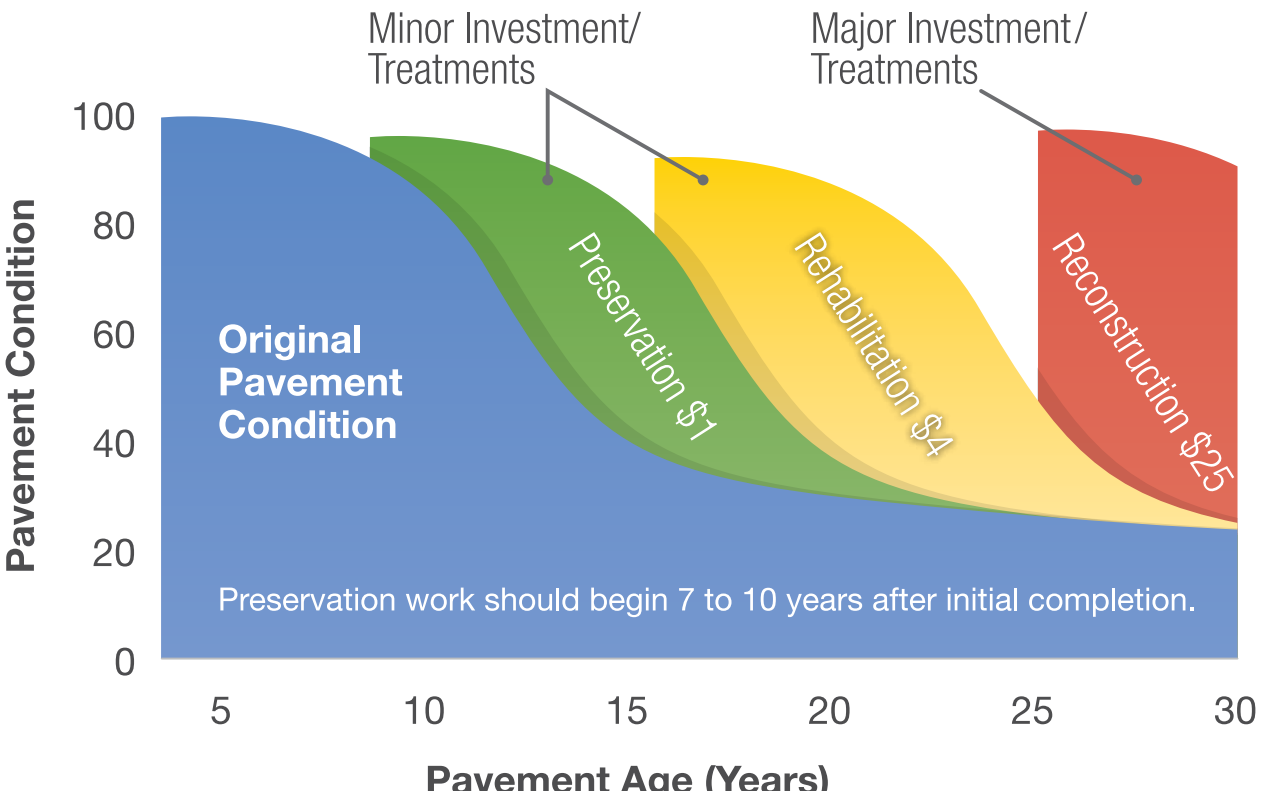
- Minimize cost, maximize benefits
- Schedule regular upkeep to prevent deterioration
- Provide the best value at the lowest life cycle cost

PAVEMENT MANAGEMENT

Strategies

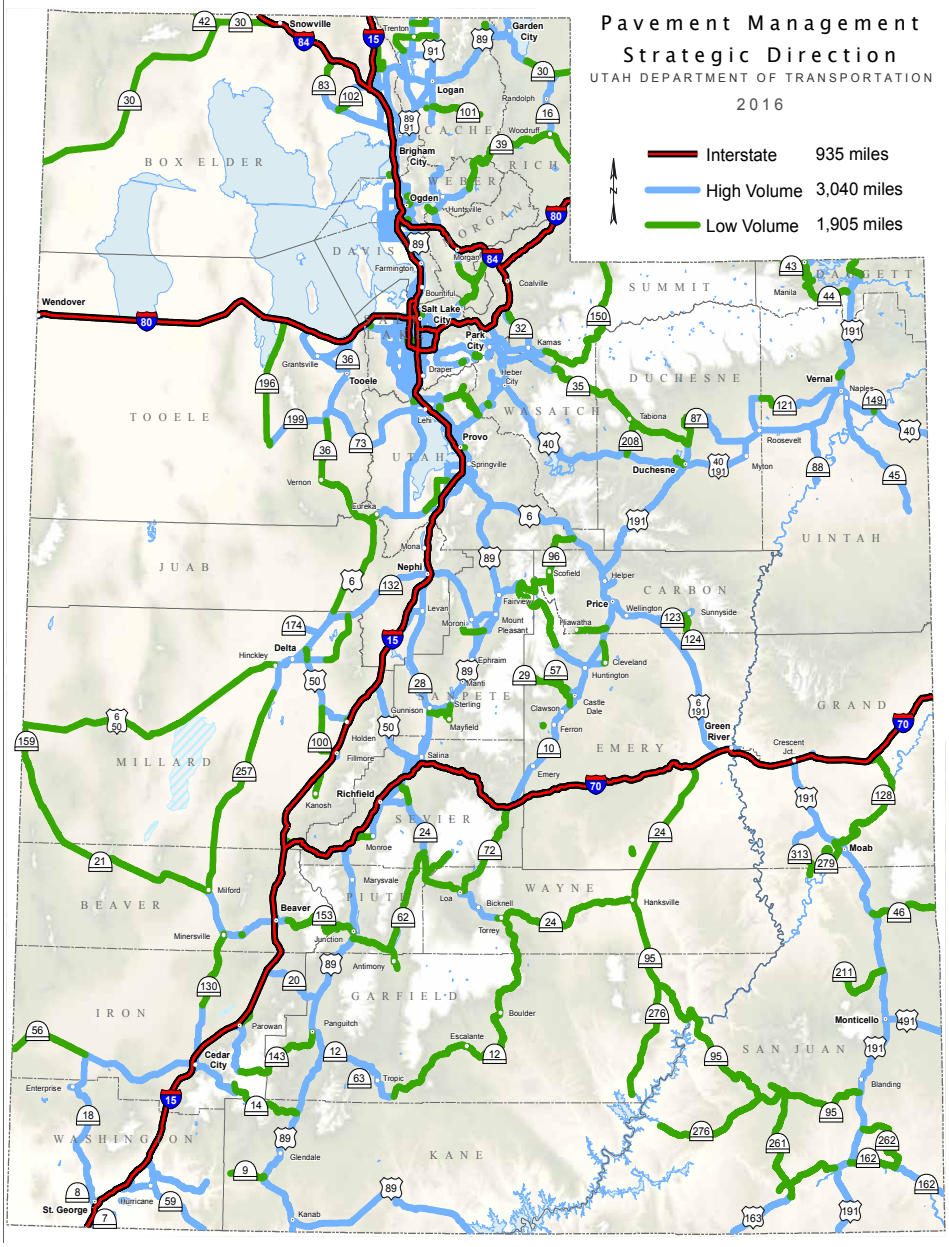
Pavement Management—cost-effective treatments minimize cost while achieving the greatest long-term benefit

EXTENDING PAVEMENT LIFE



- Pavement Optimization
- Specific projects are recommended based on the available budget and the greatest benefit.

MAINTENANCE MANAGEMENT



Interstate
Centerline Miles ~ 935, 16%
Lane Miles ~ 31%
VMT ~ 53%
Combo VMT ~ 62%

High Volume:
>1,000 vehicles or 200 trucks per day
Centerline Miles ~ 3,040, 52%
Lane Miles ~ 50%
VMT ~ 45%
Combo VMT ~ 36%

Low Volume:
<1,000 vehicles or 200 trucks per day
Centerline Miles ~ 1,905, 32%
Lane Miles ~ 19%
VMT ~ 2%
Combo VMT, 2%

Total
Centerline Miles ~ 5,880
Lane Miles ~ 23,500
VMT ~ 51,003,150
Combo VMT ~ 5,726,350

- Pavement tiers – acknowledgment of the importance of different road classifications
  - Interstates
  - High-Volume (average annual daily traffic (AADT) > 1,000 and truck volume > 200)
  - Low-Volume (AADT) < 1,000)
- Pavement distress surveys and modeling techniques are used to forecast 4future pavement condition
- With this information, UDOT programs $230 million a year to maintain the overall condition of the state highway system, providing the greatest benefit at the lowest cost

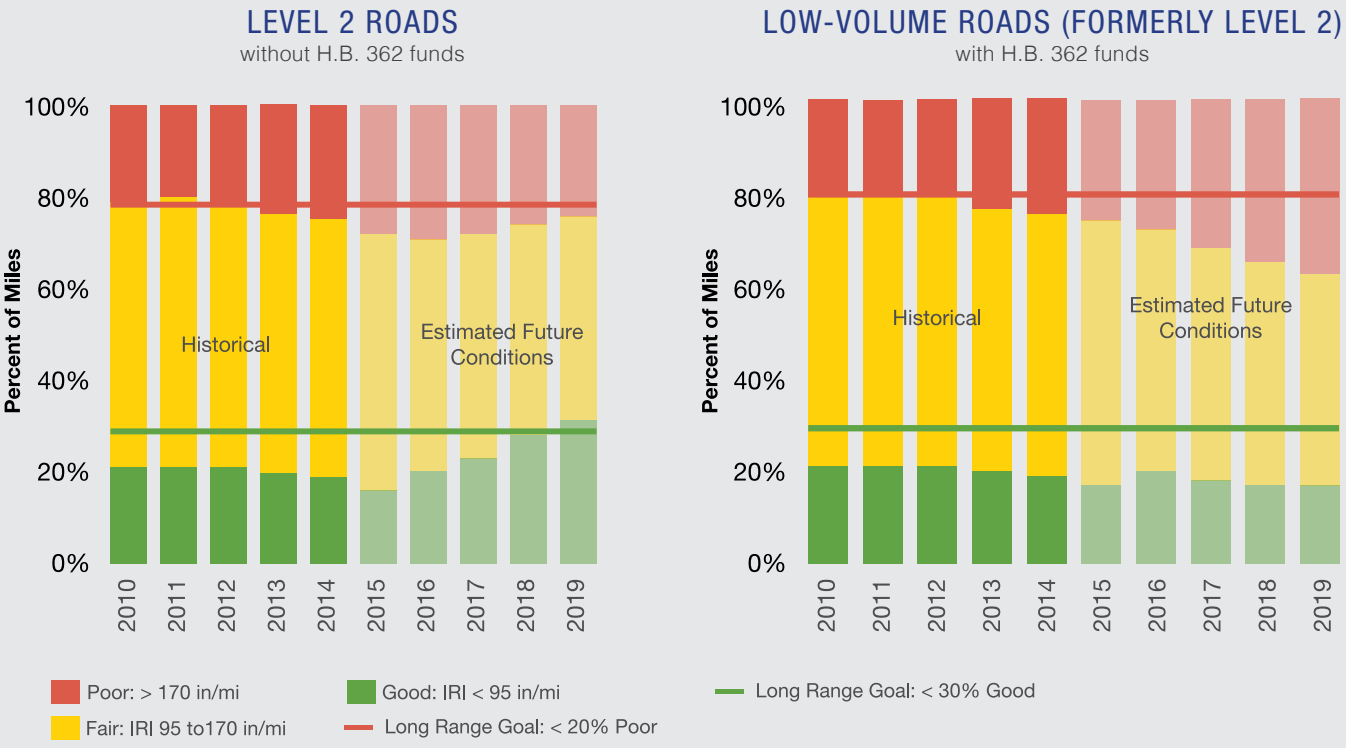
FEATURE FOCUS

The End of Level 2 Roads: System-wide Proactive Preservation

In 2008, the Department recognized that there was not available funding to practice the "Good Roads Cost Less" philosophy of proactive preservation on the entire state highway road system. UDOT created a tiered preservation strategy for pavements.

UDOT tiers identified interstates and high-volume roads as critical transportation assets. It was determined that low-volume roads (known as Level 2 Roads) would have limited dedicated funding. The condition of the interstate and high-volume roads has slowly improved while low-volume roads have demonstrated a trend of deterioration.

During the 2015 General Session, legislators modified the method to determine the state fuel tax rate, resulting in a 4.9 cent/gallon gas tax increase. This increase will be dedicated to improving the condition of low-volume roads and bridges. The Department expects that during the next five years there will be a steady improvement in those roads. Our pavement management model forecasts that, combined with existing sources of revenue, the pavement condition of low-volume roads will slowly improve with the infusion of $40 million new funding resulting from the increased gas tax.

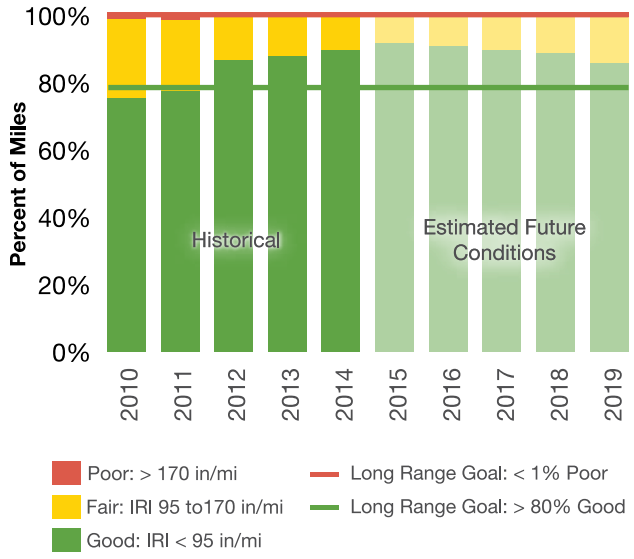


As a result of the 2015 4.9 cent gas tax increase, an additional $40 million will allow UDOT to apply its proactive preservation to all roads, improving the overall condition of the system and reversing the trend of deterioration among low-volume roads.

PERFORMANCE MEASURES

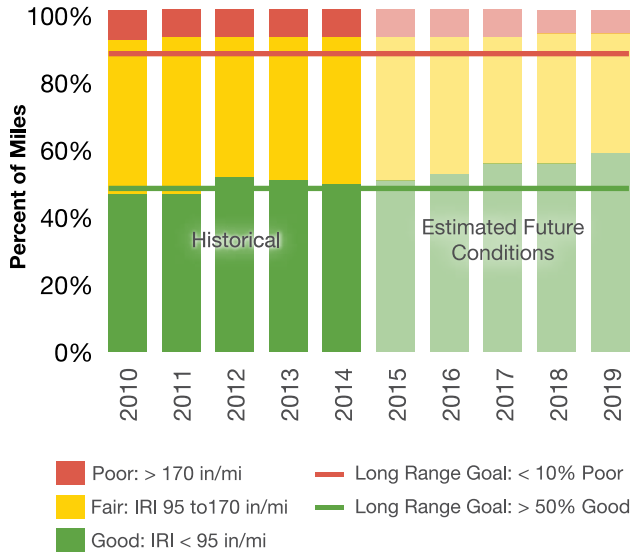
INTERSTATE PAVEMENT CONDITION (935 MI/ 7,235 SA)

$42M/Year Forecast



HIGH-VOLUME PAVEMENT CONDITION (3,080 MI/ 11,845 SA)

$148M/Year Forecast



The Department model forecasts a steady condition for both the interstates system and for high-volume roads.

Crews remove and replace asphalt on S.R. 36 in Tooele.

BRIDGES

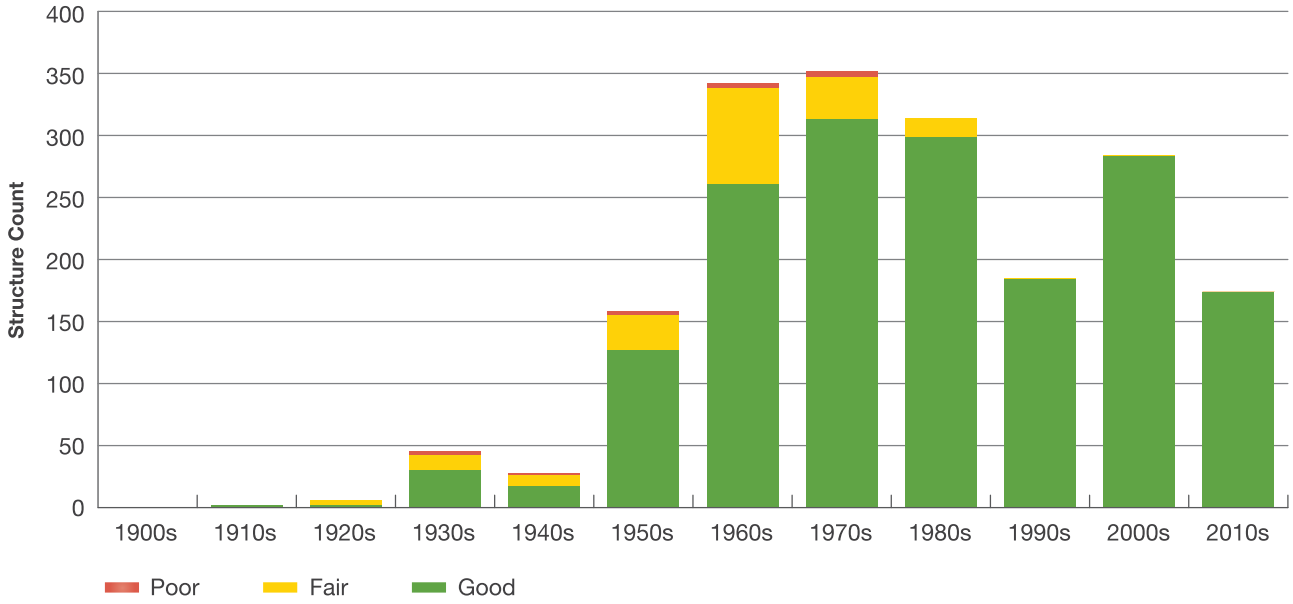
Strategies

- **Invest strategically:** Maintain this $5 billion asset by investing approximately $222.5 million specifically dedicated to structures during the next five years on a combination of structures preservation, rehabilitation and reconstruction projects.
- **Leverage funding from other programs and projects:** Maximize value by anticipating and taking advantage of investments from capacity, chokepoint and pavement projects that can improve bridges and structures.
- **Extend the lifespans of aging bridges:** Focus on preserving new structures to extend the design life of existing bridges and rehabilitating structures in fair condition to extend their service life and delay costly replacements.

Note: Performance measure graphs take into account specific funding for structures in addition to supplementary funding for work completed on structures within other programs, including capacity, chokepoint and pavement preservation.

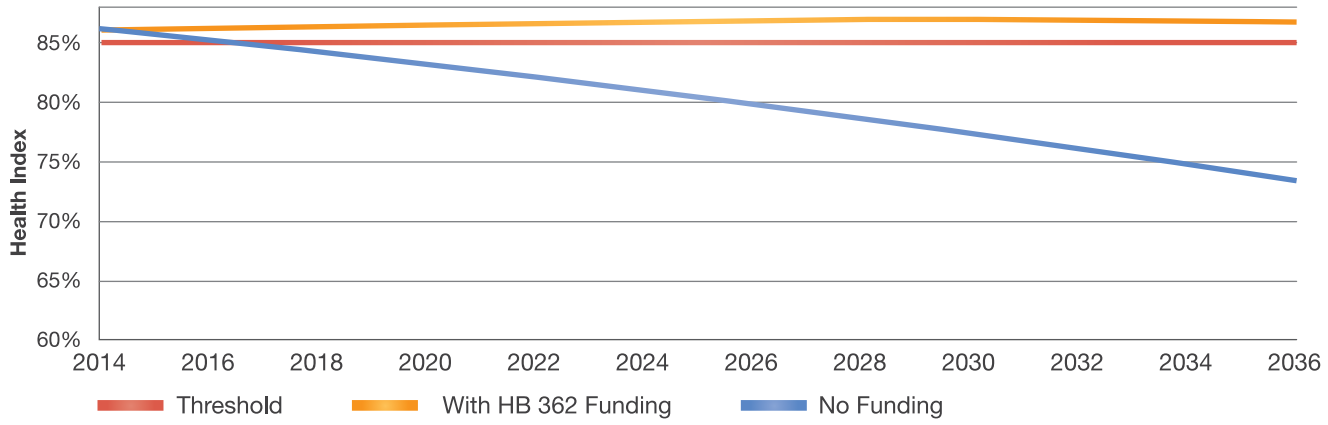
All structurally deficient state-owned bridges will be programmed during the 2016 STIP cycle for replacement or rehabilitation, but 20 percent of the state's bridges have exceeded their design life. This number will increase to 30 percent during the next decade.

STATE-OWNED BRIDGE HEALTH INDEX BY DECADE

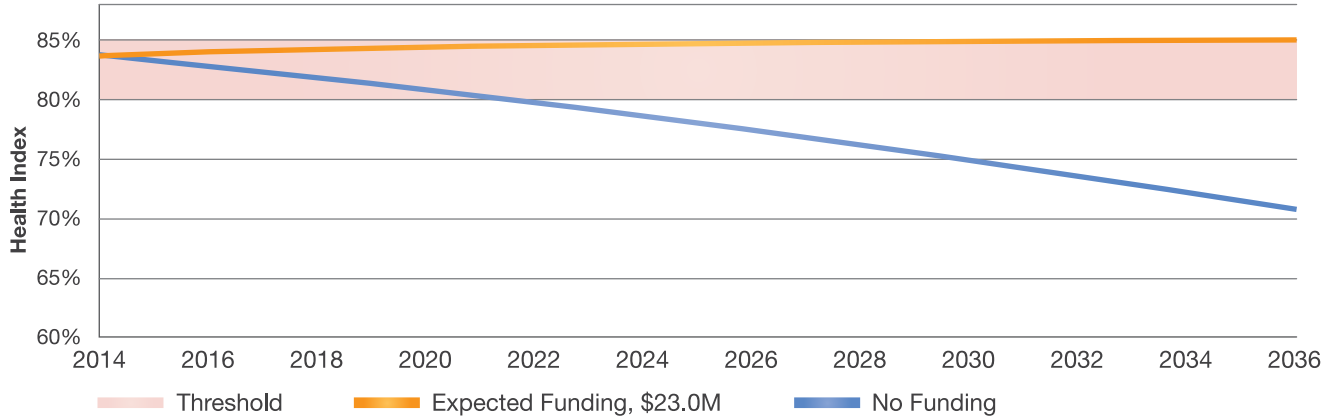


PERFORMANCE MEASURES

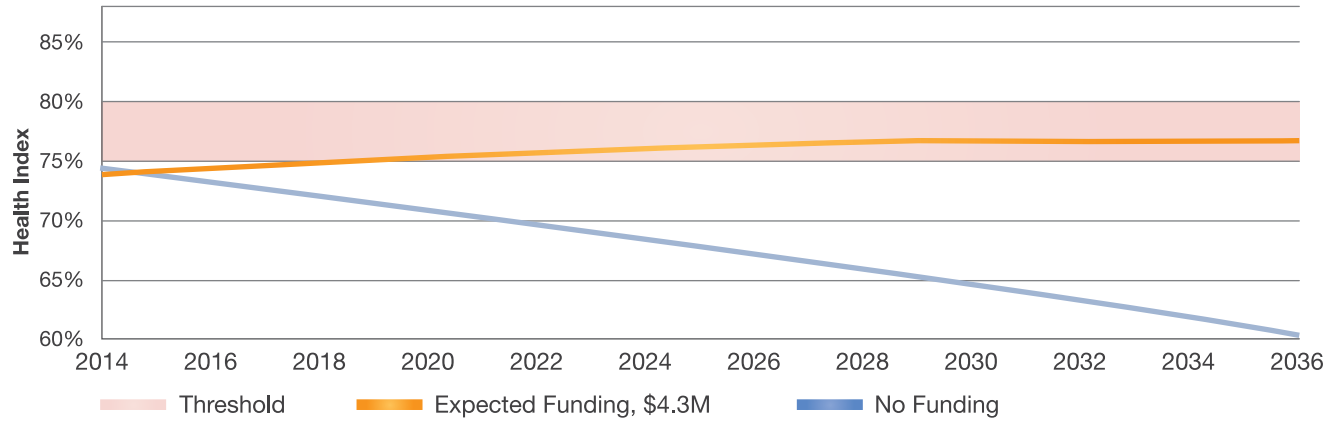
PROJECTED SYSTEM HEALTH: NHS INVENTORY



PROJECTED SYSTEM HEALTH: STATE INVENTORY



PROJECTED SYSTEM HEALTH: LOCAL FEDERAL AID



National Highway System (NHS) State-Owned Non-NHS, and Locally Owned Federal Aid Structure conditions continue to improve.

MAINTENANCE

Strategies

Maintenance work has traditionally fallen into two categories: routine and reactive maintenance.

- Routine maintenance is work that can be planned based on trends and asset conditions. A few examples include: invasive weed spraying, mowing, sweeping and paint striping.
- Reactive maintenance activities are difficult to plan for but require quick response from maintenance crews. Some examples of these activities are: pothole patching, guardrail repair, attenuator repair and crash cleanup.

Proactive preservation in a reactive realm: Apply the practice of proactive maintenance in routine maintenance work and seek opportunities in reactive efforts.

Implement new performance measures: UDOT is implementing two new initiatives to structure spending around improved performance measures.

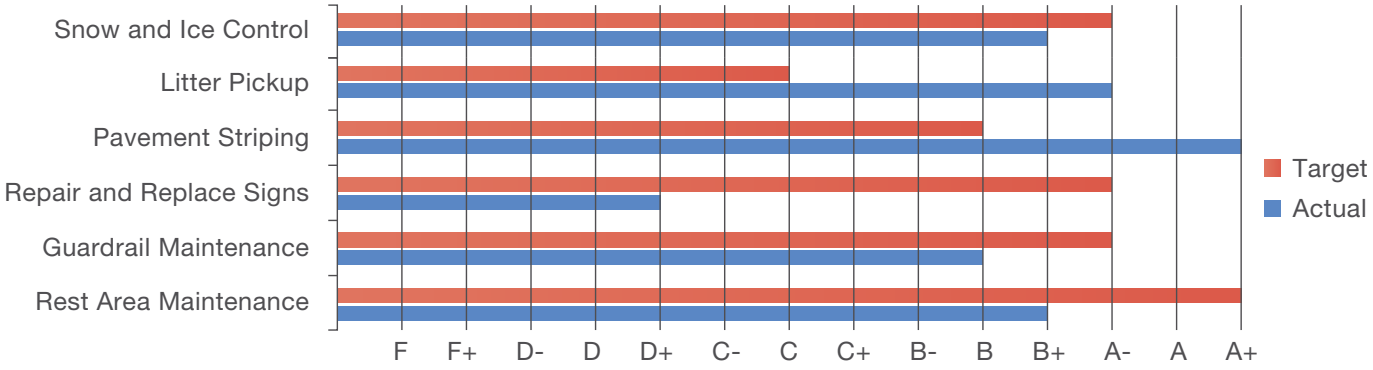
The Maintenance Division is currently developing new performance measures to improve performance. In 2015, UDOT programmed $126 million in maintenance work. During the coming year, 80 percent of the budget will be subject to performance-model budgeting.

PERFORMANCE MEASURES

The Central Maintenance Division's maintenance management quality assurance (MMQA) program is used to identify performance of 16 specific state highway assets. These assets include pavement striping, litter and drainage features, as well as operational performance items such as snow and ice removal.

These measures help the UDOT Maintenance Division identify their respective performance based on the current funding levels provided. The graph below represents some of our key measures for the 2015 fiscal year.

MMQA SELECT KEY MEASUREMENTS



GOAL: OPTIMIZE MOBILITY

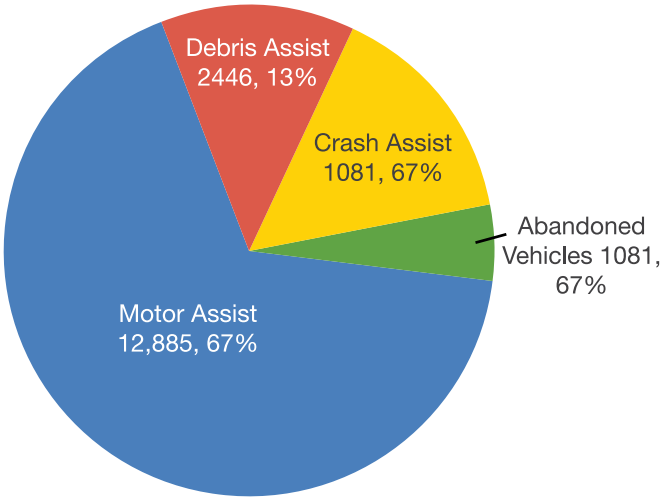
STRATEGIES

- Manage the current system for the best operational efficiency possible.
- Implement new and innovative strategies to improve the system.
- Consider mobility when planning and designing to add capacity.

MANAGE SYSTEM

Signal Optimization

- Integration with Partners: The TOC is the key to providing a cost-effective and efficient solution to help relieve congestion on Utah's roads and highways. Utah is known for its world-class traffic signal operations and performance metric, most notably integrating signal control with its partners.
- More than 80 percent of the signals in the entire state are connected to one shared system managed out of UDOT's Traffic Operations Center (TOC), which is an unmatched accomplishment. This allows UDOT to work with partners in developing seamless traffic control plans, particularly for events such as construction or sports events.
- Upgraded Software: This year, Utah's world-class traffic signal operations system received an upgrade to its software system. Previously, the system had limits to how many signals could be on one module. The upgrade eliminated these limits and allowed for everything to be on one system with no module boundaries.
- Signal Performance Metrics: UDOT is among the first in the country to use real-time traffic signal performance metrics in optimizing traffic signal coordination. These metrics were developed in coordination with Purdue University and the Indiana Department of Transportation.



Using these metrics, traffic controllers can often identify and correct issues before drivers can call in a report. Utah has been using real-time metrics for several years, and as a result the system operates much closer to the ideal.

Incident Management

UDOT's Incident Management Program began in 1994 with the goals of increasing first responder safety, reducing congestion and delays and reducing secondary crashes. Effective incident management is a team effort requiring vigilant monitoring and communication from the traffic operations control center and swift action on the part of prepared field workers.

This year, the incident management program was reorganized to better coordinate resources statewide. This change has afforded the incident management team greater flexibility to respond more quickly and more completely to incidents ranging from minor to disastrous.

Traveler Information

- **Variable Message Signs (VMS):** Statewide research consistently shows Utah drivers consider VMS information to be their top resource for information on expected travel times, upcoming construction, lane closures, crashes blocking their route or information ahead of a large weather event. UDOT has received positive public and media response for increased use of VMS for public safety campaigns including seat belt awareness, air quality initiatives and drunk driving enforcement.
- **Social Media:** This year, UDOT made its outreach more accessible by switching from descriptions based on milepost locations to descriptions based on user-friendly landmark names. UDOT is moving toward more visual and video communication, using its YouTube channel to share messages including educational materials, such as animations and tutorials.

- 1,972 signals in Utah
- 1,690 signals on central system
- 1,176 signals owned by UDOT
- 900 traffic cameras
- 175 variable message signs

- **UDOT Traffic Cameras:** Located throughout the state, UDOT's nearly 1,000 traffic cameras provide real-time traffic views of current road conditions. Live footage is available on the UDOT Traffic mobile app and website.
- **UDOT Traffic:** This website (udottraffic.utah.gov) and app provide access to information about traffic conditions, accidents, road construction activities, seasonal road closures, traffic cameras and VMS messages. The UDOT Traffic app has a push-alert feature, called the TravelWise Alert, to inform the traveling public of major traffic issues.

Managed Lanes

The High-Occupancy Vehicle (HOV)/Express Lanes move more people per hour per lane than the general-purpose lanes. With the completion of the I-15 South Davis Improvements Project, Utah now has 82 miles of continuous Express Lanes—making it the longest single stretch of HOV toll lanes in the country.

Snow Removal

UDOT operates a fleet of approximately 500 snowplows to manage an average of 25 winter storms each year. UDOT crews remove more than 65 million tons of snow and ice from Utah's roads.

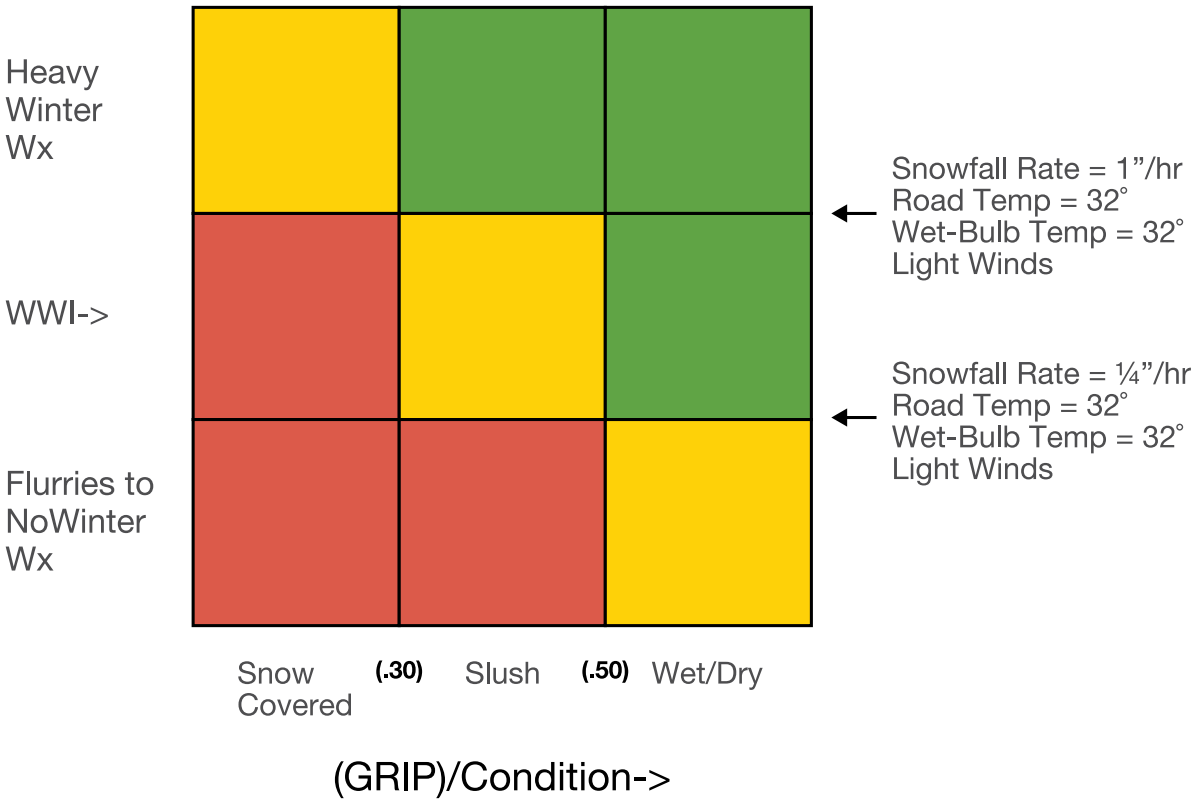
UDOT continues to make the snow and ice removal process more efficient by:

- Using equipment such as wing plows and tow plows that allow greater control and efficiency
- Applying brine before storms and using salt more efficiently
- Using technology such as Road Weather Information Systems (RWIS) and weather forecasting information to assess conditions and dispatch plows advantageously
- Saving more than 20,000 gallons of diesel fuel per year by training drivers using a snow plow simulator
- Pre-wetting the salt to start the melting process immediately, which saves the department 18,000 tons of salt annually

UDOT is constantly working to improve performance in every area, and during the past year the Department has identified several opportunities to enhance snow removal performance.

One of these opportunities is the installation of Automated Vehicle Locator (AVL) trackers on every snowplow to improve deployment and management of resources and to help make the public aware of road conditions and plowing efforts. Plow locations and routes are available online at udottraffic.utah.gov and on the UDOT traffic mobile app.

UDOT has also developed new performance measures for tracking and measuring snow removal efforts. Performance ratings will reflect the conditions of the road and the level of effort, taking into consideration available resources.



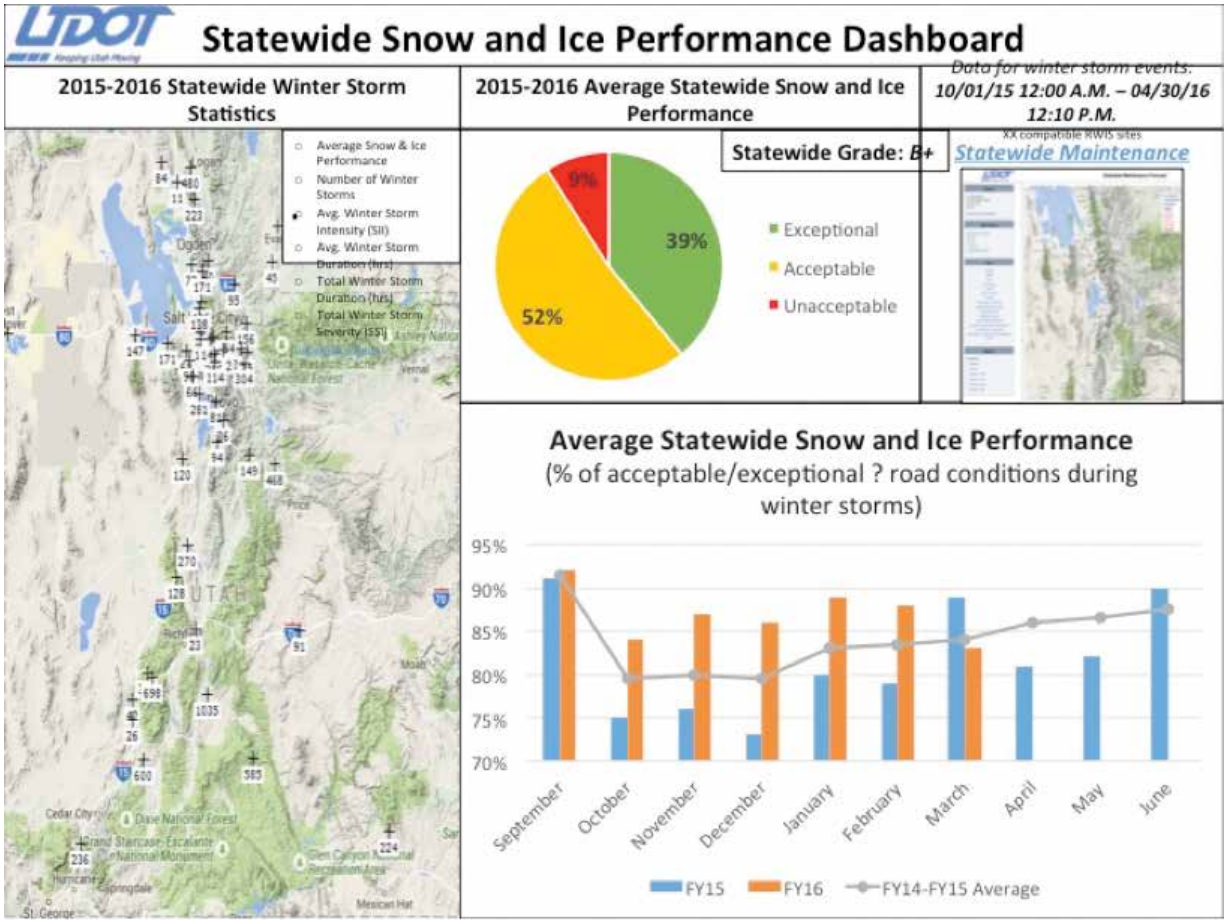
Definitions:

Green-Road condition exceeds acceptable road conditions per given weather conditions.

Yellow-Acceptable road conditions per given weather conditions.

Red-Recovery time. Potential for improved road conditions per given weather conditions.

A dashboard similar to the one shown below will display information about UDOT's snow removal performance. This dashboard will be available to UDOT staff as a resource for helping refine efforts; it will also be available to the public, in an effort to be transparent and to help road users understand how and when roads are being served.



OPTIMIZE SYSTEM

Innovative Designs

UDOT is known for pioneering and adapting innovations such as Flex Lanes, Commuter Lanes, ThrU-Turn Intersections (TTIs), Diverging Diamond Interchanges (DDIs) and Continuous Flow Intersections (CFIs). Utah continues to adapt innovative designs to enhance the communities they serve with effective traffic solutions.

Integrated Transportation

UDOT recognizes the importance of an integrated transportation system, which includes bike lanes, paths and access to buses and trains.

UDOT's Active Transportation Policy ensures that the needs of bicyclists, pedestrians and other active transportation users are routinely considered as an important aspect of funding, planning, design, construction, operation and maintenance of UDOT transportation facilities.

UDOT is currently partnering with the Utah Transit Authority (UTA) to develop a transit signal priority program, which will coordinate data between UTA buses and traffic signals. If a bus is on or ahead of schedule, the traffic signals will function as normal; however, if a bus is behind the signal timing will adjust to give preferential treatment to the bus. This is just one way the Department is working to support the transit system.

ADD CAPACITY

As Utah's population rapidly grows, and along with it the demands on the transportation system, adding capacity will not be the sole—or even primary—strategy for addressing rising needs; however, increased capacity will remain an important investment to keep Utah moving.

UDOT is shifting its approach to the planning and design of new capacity. Increasingly we are considering mobility, at times employing a specialized mobility and operations task force to evaluate designs and identify opportunities for improved operations and, in many cases, budgetary efficiencies.

Currently, capacity projects are funded through the Transportation Investment Fund (TIF). Listed below are some of the most significant projects this past year:

- I-15 South Davis Improvements Project (completed fall 2015)
- State Route 154 (Bangerter Highway) and Redwood Road Interchange (completed summer 2015)
- Bluff Street Interchange at Red Hills Parkway (completed spring 2015)
- The Point; I-15 from state Route 73 to state Route 71 (under construction through spring 2016)

FEATURE FOCUS

Reliability: A New Measure of Transportation System Success

Transportation professionals at a national level have begun to discuss reliability as a potential performance metric to evaluate the effectiveness of a transportation system. Historically, the transportation industry has placed all its focus on average travel times and travel savings. While reduction of delay remains important for quality of life and viability of commerce, another factor—reliability or consistency of travel times—is at least as important.

Commercial users of the system, from trucking companies to ready-mix concrete suppliers, depend heavily on reliability in the transportation system to ensure profitability or, in some cases, survival. In addition, quality of life for residents, commuters and tourists declines as reliability of travel times diminishes.

While this concept is intuitive, it is relatively new within the transportation industry, and national experts are currently working to develop standardized measures surrounding reliability. In Utah, we have been working to define our own performance measures surrounding reliability. We define success as the combination of minimal delay and reliable travel times; a reliably slow commute will not be considered success.

As Utah and our national partners in industry continue to develop this concept and the performance measures to support it, the Department will communicate evolving methods and standards.

EVALUATING OPTIONS:
Managed Motorways

UDOT is currently evaluating several options for improving reliability while reducing overall delay. One promising option currently under consideration as part of the Wasatch Front Central Corridor Study is the concept of Managed Motorways. This approach builds on the familiar idea of ramp metering, taking it a step further to include metering from one freeway to another. For example, traffic entering I-15 from I-80 would be metered at a consistent pace using a metering signal.

RELIABLE, FAST SPEEDS

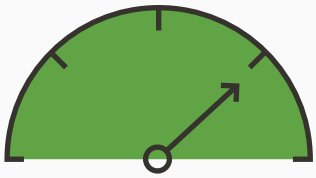
The average speeds are fast, and the variation from the average is low. Average travel times in this corridor are low, and are consistently low. Drivers can rely on the average travel time to plan their trip.

Example:

I-15 NB and SB in Utah County, south of Lehi (limited congestion)

Operational strategies:

- Protect and maintain



UNRELIABLE, FAST SPEEDS

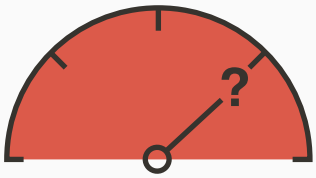
The average speeds are fast, but speeds vary significantly. While average travel times in this corridor are low, they are also inconsistent. Drivers cannot rely on the average travel time to plan their trip.

Example:

I-15 NB in the PM peak hour 12300 S to I-215 (non-recurring congestion)

Operational strategies:

- Incident management, especially IMT
- Weather-responsive traffic management
- Special event traffic management
- Ops-focused MOT approach to construction
- Traveler information
- Ramp metering
- Managed lanes
- Safety audit



RELIABLE, SLOW SPEEDS

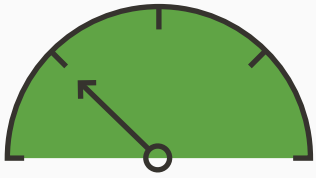
The average speeds are slow, and the variation from the average is low. Average travel times in this corridor are high, and are consistently high. Drivers can rely on the average travel time to plan their trip.

Example:

I-15 SB in the PM peak hour from I-215 to 9000 S (recurring congestion)

Operational strategies:

- Add capacity
- Ramp metering
- Travel Demand Management
- Managed lanes
- Mode split



UNRELIABLE, SLOW SPEEDS

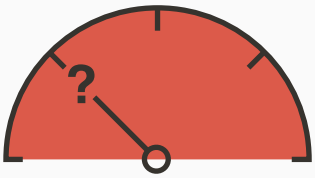
The average speeds are slow, and speeds vary significantly. Average travel times in this corridor are high, and they are inconsistent. Drivers cannot rely on the average travel time to plan their trip.

Example:

I-15 SB in the PM peak hour from I-215 to Point of the Mountain (both recurring and non-recurring congestion)

Operational strategies:

- All strategies identified

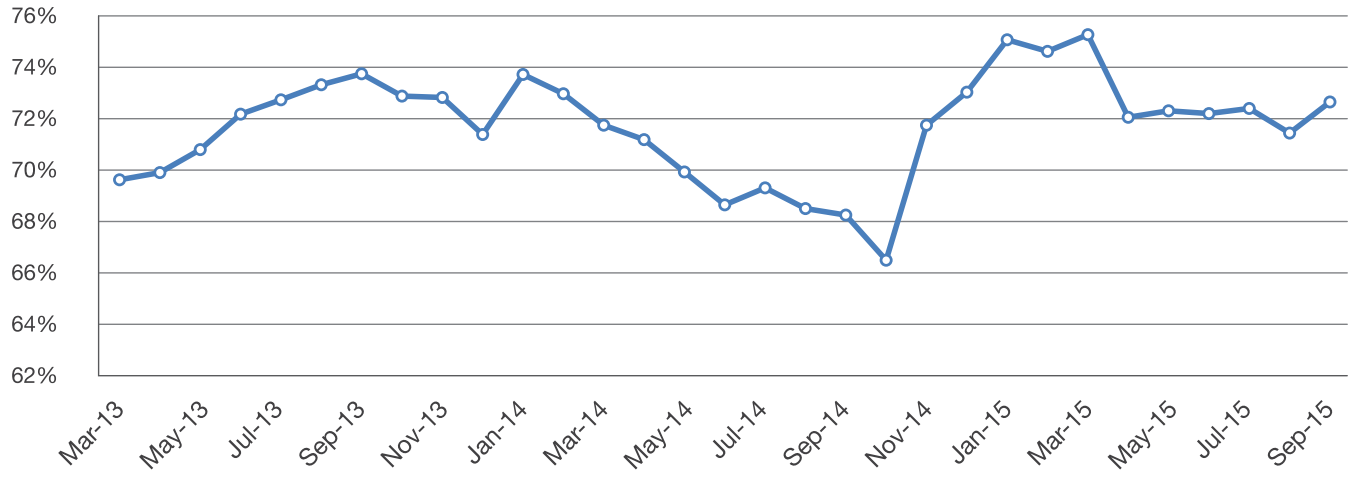


PERFORMANCE MEASURES

Signal Optimization

PERCENT OF VEHICLES ARRIVING ON GREEN-RIVERDALE ROAD

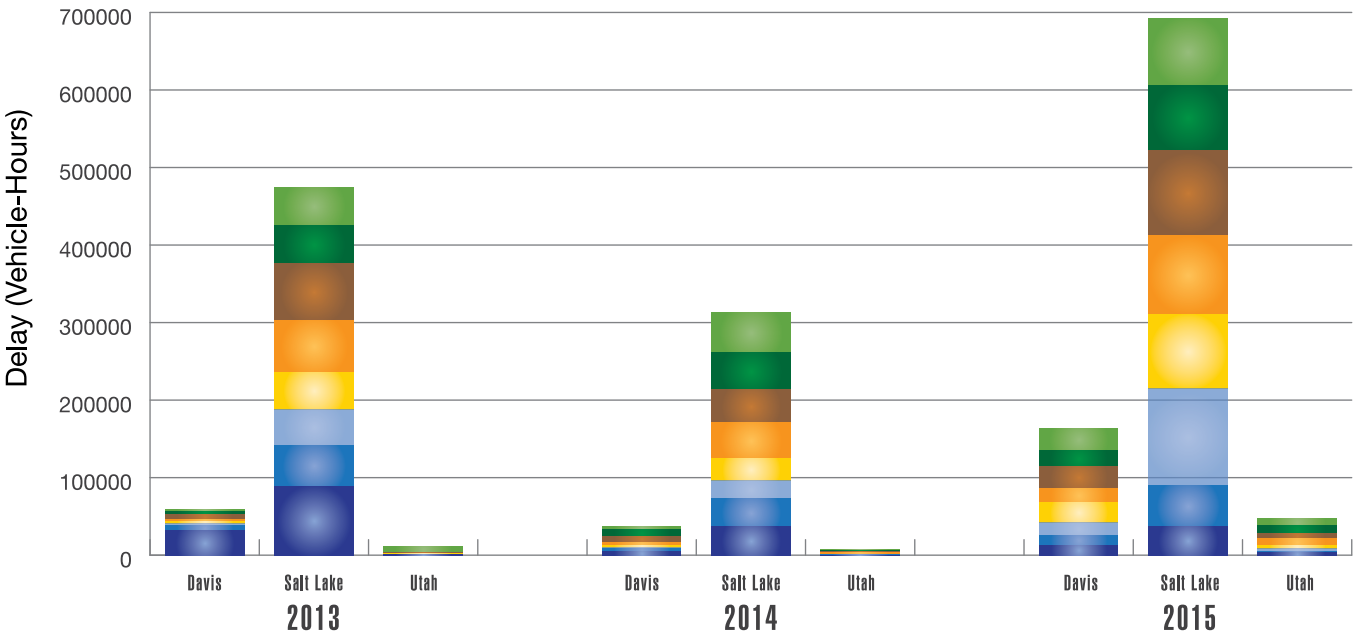
10:00 A.M. TO 2:00 P.M. MONDAY THROUGH FRIDAY



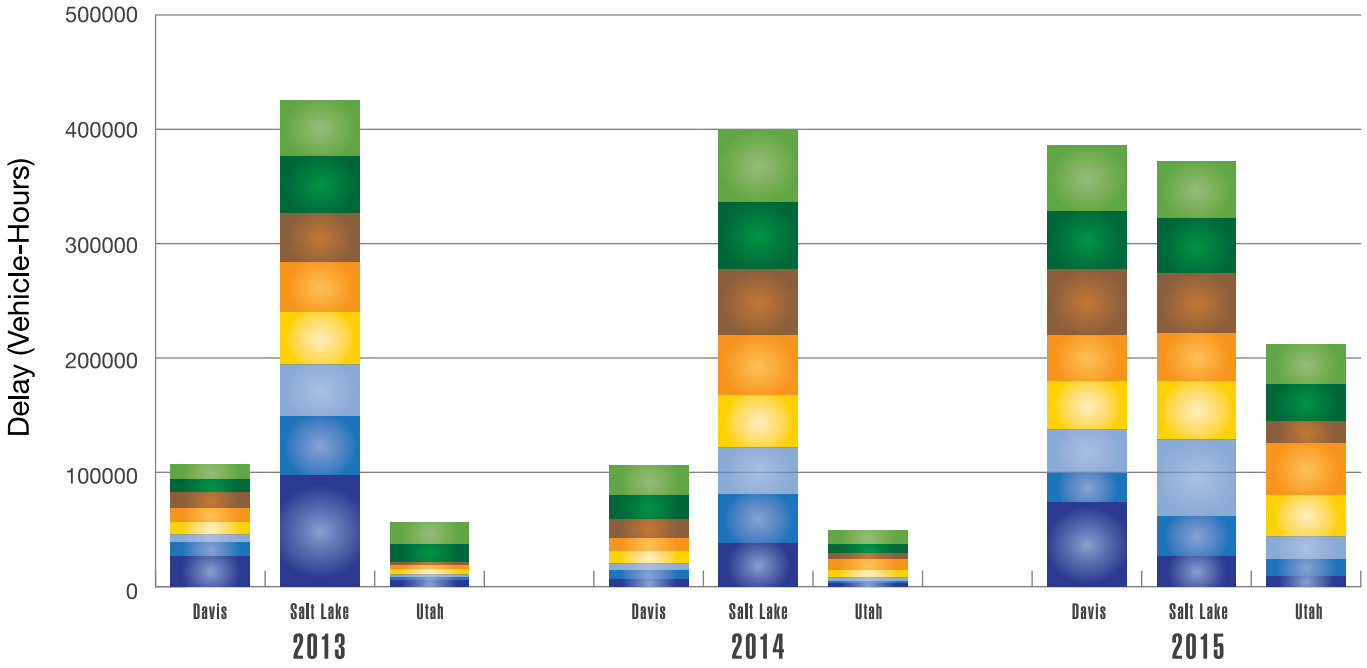
The chart is showing the percent of vehicles arriving on green each month since March 2013 to September 2015 along Riverdale Road. Traffic lights on the corridor were re-timed Summer of 2013 and late Fall 2015. The impacts are apparent. UDOT makes similar changes on other corridors statewide.

Reliability

I-15 SB DELAY BY COUNTY (ALL DAY, EVERYDAY)



I-15 NB DELAY BY COUNTY (ALL DAY, EVERYDAY)



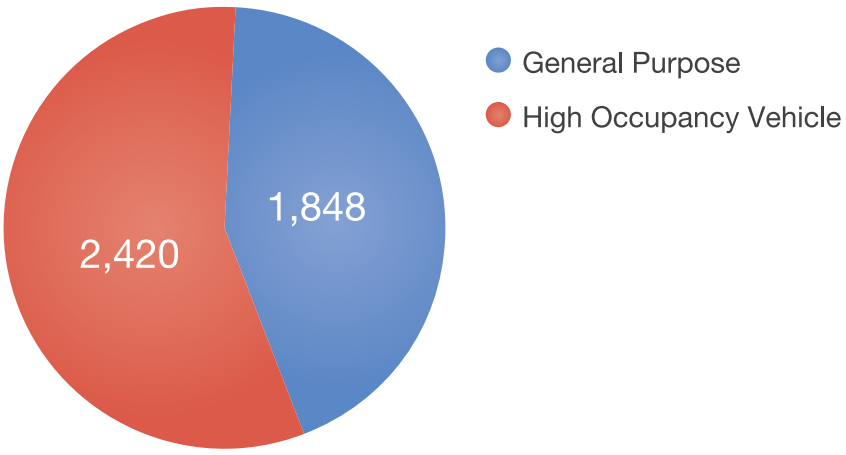
Davis County delays in 2014 and 2015 reflect construction-related impacts from the I-15 South Davis Improvements project. Utah County delays in 2015 reflect construction-related impacts from The Point project.

Managed Lanes

The HOV/Express Lanes move more people per hour per lane than a general purpose lane and account for only 7.4 percent of crashes.

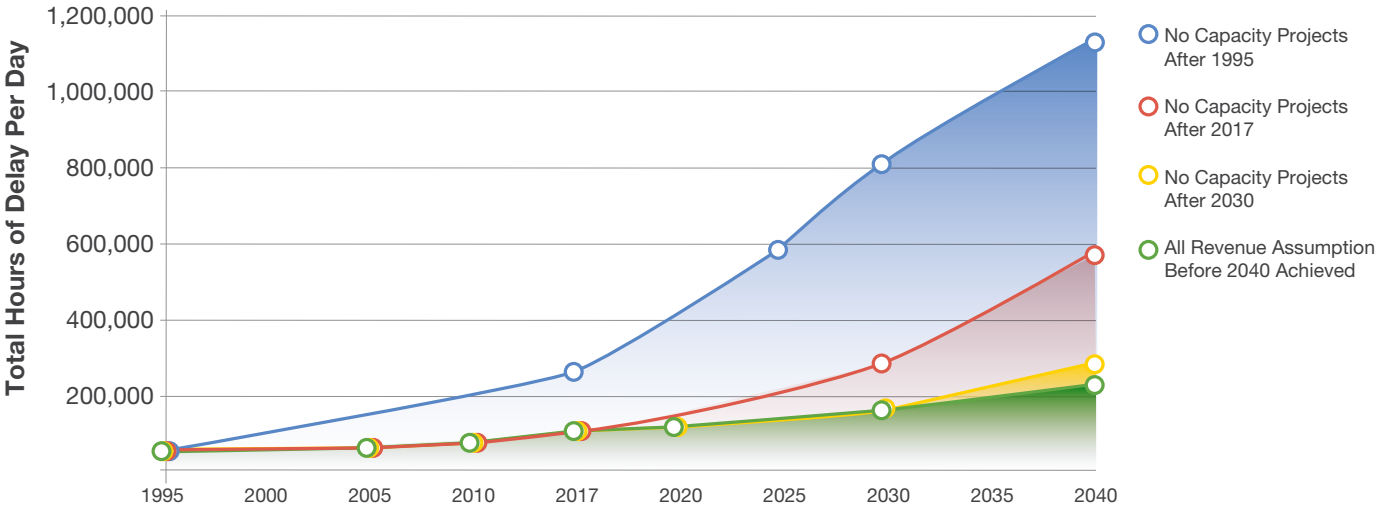
PEOPLE THROUGHPUT

PEOPLE/HOUR/LANE



Add Capacity

DELAY ALONG THE WASATCH FRONT - DAVIS, WEBER, SALT LAKE & UTAH COUNTIES



Even with planned capacity projects, delay will increase after 2015. Mobility projects have made a difference in delay, however continual focus on mobility will need to be maintained in order to continue this trend.