2025 REPORT CARD FOR UTAH'S INFRASTRUCTURE

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AMERICAN SOCIETY OF CIVIL ENGINEERS

INFRASTRUCTUREREPORTCARD.ORG/UTAH

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Infrastructure area leads are in **bold**

Executive Summary

Utah continues to grow with the population expected to double by the year 2060. Utah's economy is consistently ranked among the best in the nation which attracts new residents and economic opportunities. The state is internationally recognized for its outdoor recreation opportunities including skiing, five national parks, hiking, and biking. These factors contribute to population and economic growth which relies on quality infrastructure to maintain a high quality-of-life. State, Federal, and Local agencies have been investing in Utah's infrastructure including the Salt Lake International Airport, a robust bridge improvement program, large scale transportation projects, transit improvements including new BRT and double track commuter rail, and programs to reduce per capita water usage. While these improvements are important to the state, the gap between infrastructure needs and available funding continues to grow. Most of the state's population lives along the Wasatch Front area where a large part of the infrastructure budget is spent, but our rural communities also play a critical role in the vitality of the state. These rural communities need access to clean water, reliable transportation, flood control, and responsible waste management. Utah's leaders and infrastructure agencies work diligently to plan for and address all of Utah's infrastructure needs, both rural and urban, with the limited resources available to the state.

The Utah Section of the American Society of Civil Engineers (ASCE) has developed this Infrastructure Report Card to communicate the continued need for resilient, reliable, and innovative infrastructure to benefit all Utahns. Utahns are our families, friends, neighbors, and fellow citizens and we view the responsibility of being good stewards of our state's infrastructure as a duty rather than simply an occupation. We hope that you will read the assessments of our infrastructure and consider the significant importance it plays in your daily life as well as the quality of life for all Utahns. Please consider contacting your state representatives and local leaders on issues that are important to you, your community, and the state. Your input is critical to prioritizing our state's needs and encouraging long-term planning and investment in our infrastructure.

About The Report Card for America's Infrastructure

In addition to the Utah report card, every four years, America's civil engineers provide a comprehensive assessment of the nation's 17 major infrastructure categories in ASCE's Report Card for America's Infrastructure. Using a simple A to F school report card format, the Report Card examines current infrastructure conditions and needs, assigning grades and making recommendations to raise them.

The ASCE Committee on America's Infrastructure, made up of 31 dedicated civil engineers from across the country with decades of expertise in all categories, volunteers their time to work with ASCE Infrastructure Initiatives staff to prepare the Report Card. The Committee assesses all relevant data and reports, consults with technical and industry experts, and assigns grades using the following criteria:

Methodology

CAPACITY

Does the infrastructure's capacity meet current and future demands?

CONDITION

What is the infrastructure's existing and near-future physical condition?

FUNDING

What is the current level of funding from all levels of government for the infrastructure category as compared to the estimated funding need?

FUTURE NEED

What is the cost to improve the infrastructure? Will future funding prospects address the need?

OPERATION AND MAINTENANCE

What is the owners' ability to operate and maintain the infrastructure properly? Is the infrastructure in compliance with government regulations?

PUBLIC SAFETY

To what extent is the public's safety jeopardized by the condition of the infrastructure and what could be the consequences of failure?

RESILIENCE

What is the infrastructure system's capability to prevent or protect against significant multi-hazard threats and incidents? How able is it to quickly recover and reconstitute critical services with minimum consequences for public safety and health, the economy, and national security?

INNOVATION

What new and innovative techniques, materials, technologies, and delivery methods are being implemented to improve the infrastructure?

In addition to this national Report Card, ASCE's sections and branches also prepare state reports on a rolling basis. Visit **InfrastructureReportCard.org/Utah** to learn about your Utah's infrastructure.

2025 Report Card

		2025	2020 Utah	2025 Nat'l
OVERALL		C	C+	C
Aviation		C+	C	D+
Bridges		B	B+	C
Canals		D+	D+	N/A
Dams		C+	C+	D+
Drinking Water		B-	B-	C-
Hazardous Waste		C+	C+	C
Levees		D-	D-	D+
Roads		B+	B+	D+
Solid Waste		B-	B-	C+
Stormwater		C	C+	D
Transit		B-	B+	D
Wastewater		C	C	D+

= higher than prior report card = lower than prior report card

Recommendations To Raise The Grade

1. **Comprehensive analysis of the future needs for the state's infrastructure must be completed at regular intervals** given the rapid growth of urban corridors. Specifically, detailed written plans are critical for the areas of water resources, canals, transportation, transit, and waste management. The state should be providing consistent financial support for project improvements, maintenance, resiliency, and risk reduction through reliable funding streams year after year that facilitate this planning.

2. **Prioritize funding for bridges** to maintain and operate the state's transportation system. As many of the bridges constructed during Utah's early expansion are approaching the end of their service lives, or are now in fair or poor condition, it is anticipated that moving forward approximately 60 bridges each year will require replacement. This past year UDOT's 'Bridgefest' demonstrated that this level of action can be done, but ongoing dedicated funding is required to preserve, rehabilitate, or replace these bridges.

3. **Increase funding of the Dam Safety Program** to at least $10 million per year to rehabilitate all dams within 50 years. An increase to $20 million per year would allow faster repairs but could still require 25 years for all required repairs. The rate of rehabilitation for dams within the State is lower than needed due to current funding levels.

4. **Multimodal transportation infrastructure needs optimization to compete in affordability** of cost per trip with car travel. The way Utah lives and moves is changing... In Utah, it's unlikely that many citizens will switch completely from car use to relying entirely on multi-modal transportation options such as public transit. However, single car families in high-density population centers are becoming more common. Incentivizing mass transit, active transportation, and other multi-modal transportation in Utah will require these systems to compete with car travel in affordability.

5. **Utah's water future is dependent on resource management.** Water systems should continue improving collaboration with State/local agencies and stakeholders to ensure responsible management of all water infrastructure assets. Funding is critical for urgent levee improvements, drinking water efficiency upgrades, and canal infrastructure condition assessments.

Aviation

2025 Grade: **C+**

Executive Summary

Aviation is a critical component of Utah's economy and a lifeline to essential goods and services for many people in remote areas of the state. However, with more than 95% of the state's total enplanements and a construction budget of $3.6 billion, the new Salt Lake City International Airport (with Phase 1 completed in 2020, Phase 2 in 2023, and continued construction on Phases 3 and 4) receives the bulk of the attention, it is important to not neglect the needs of the smaller commercial airports and general aviation airports that serve the more remote areas of the state. The gap between necessary expenditures for maintaining and improving the state's network of airports and the funds currently available from all sources is growing. Clearly, this gap needs to be addressed in the near future in order to maintain safety and resilience throughout the system.

Background

Aviation-related infrastructure is critical to linking Utah, a popular tourist destination with a robust economy, to the rest of the world. Building and maintaining this infrastructure (which includes cargo facilities, passenger terminals, runways and parking garages) is essential for the state's business and tourist economy. Of equal importance, many of Utah's rural airports are necessary for providing essential services (such as firefighting, medical, and disaster management services) to remote areas of the state.

Per the National Plan of Integrated Airport Systems (NPIAS), there are currently 35 public use airports in Utah. Of these, there are six airports which are Primary Commercial Service Airports, one Nonprimary Commercial Service Airport, one Reliever Airport, and 27 General Aviation Airports.

The roles airports serve in the national airport system as well as the types and quantities of airports eligible for federal funding under the Airport Improvement Program (AIP) are categorized by the National Plan of Integrated Airport Systems (NPIAS) as follows:

- Primary Commercial Service Airports: Publicly owned airports that have more than 10,000 passenger boardings each year. These include large hub, medium hub, small hub, and non-hub airports.
- Nonprimary Commercial Service Airports : Publicly owned airports that have at least 2500 and no more than 10,000 boardings each year.
- Reliever Airports: Publicly or privately owned Federal Aviation Administration (FAA)-designated airports that relieve congestion at Commercial Service Airports as well as provide improved general aviation access.
- General Aviation Airports: Public use airports that do not have scheduled service or have less than 2500 passenger boardings each year. These airports must have at least 10 based aircraft to be included in the NPIAS and therefore be eligible for AIP funding.

The Salt Lake City International Airport is the only Large Hub Commercial Service Airport in the state. Per the FAA, this airport is ranked the 22nd busiest airport in the nation based on the quantity of enplaned passengers in 2022. This airport plays a critical role in the state's economy. Its operations serve as a key component in providing affordable access to both domestic and global markets for both businesses and individuals.

While the Salt Lake City International Airport is by far the largest and busiest airport in the state, Utah has a wide variety of airports covering a large geographic area. In 2021, the Utah Department of Transportation (UDOT) Division of Aeronautics generated the Utah Aviation Development Strategy, which among other things, provides an inventory of the state's airport system. This system consists of 46

airports, all of which are publicly owned, with the exception of two privately owned airports. There are eight commercial service airports and 38 general airports. Included in the system are the 35 airports in the NPIAS, making them eligible for federal funding under the Airport Improvement Program.

Condition & Capacity

Although the COVID-19 pandemic significantly impacted passenger air travel throughout the world in 2020 and 2021, the number of enplanements has bounced back to pre-pandemic levels (quickly in most cases). Conversely, the pandemic had a positive impact on air freight, and at most commercial airports, this growth has continued. Both air freight and passenger air travel are expected to experience continued growth for the foreseeable future as Utah's business and tourism industries remain some of the best in the nation. Further demand can be expected with Salt Lake City's anticipated hosting of the 2034 Winter Olympic Games.

Aviation demand can be measured in a variety of ways. The FAA Terminal Area Forecast, generated annually, provides projections for operations, enplanements, load factors, capacity, seat miles, trip length, and fleet mix, among other factors. However, for this document, enplanements and operations are the only metrics used for comparison purposes.

In 2014, planning began on the new Salt Lake City International Airport terminal which was designed to replace the 1960's era facility. In recent years, this airport became severely unable to meet demand and presented concerns about the terminal's structural resilience. Phases 1 and 2 of the new terminal have now been completed. The facility includes 69 gates, a new car rental building and a 3600 vehicle parking garage. Phases 3 & 4 are still under construction with overall completion scheduled for January 2027. This project will bring the total number of operational gates to 94. When completed, the terminal will be designed to accommodate 34 million passengers per year. The FAA Terminal Area Forecast for Fiscal Years 2020-2045 is estimating an annual growth rate of 4.0% in enplanements and 2.1% per year in operations at Salt Lake City International Airport during this 25 year period (for reference, in 2023 total enplanements were 12,905,239).

While there should be plenty of capacity available for the new Salt Lake City International Airport to handle more traffic in the foreseeable future, some of the other Primary Commercial Service Airports in the state are growing rapidly and quickly reaching their design capacity. For example, even though Provo Municipal Airport opened its new terminal in 2022, there were 810,000 passengers served in 2023, which is very nearly at design capacity. This airport is currently in the process of expanding its ramps to allow for more gates to be added. Similarly, St. George Regional Airport, which opened in 2011 as a replacement for a smaller airport, is currently operating at near capacity with 153,000 passengers served in 2021.

The Utah Aviation Development Strategy established target objectives to enable airports to best fulfill their assigned role in the state airport system. Recommended roles for all system airports are identified as follows:

- UT-I Commercial Service
- UT-II Corporate/Tourism/Freight

- UT-III Recreation and Community Access
- UT-IV Essential Access

Figure 1: Utah Airports By Role (Ref: Utah Aviation Development Strategy

While the condition of all eight UT-I airports met their objectives for runway length, runway width, taxiways, taxiway lighting, and pavement conditions, some of these airports fell short of their objectives for visual navigational aids, runway end identifier lights, approaches and runway lighting. Likewise, many of the UT-II, UT-III, and UT-IV airports did not meet all of their objectives. Of particular concern is that 19% of UT-II airports, 22% of UT-III airports and 62% of UT-IV airports do not meet the Pavement Conditions Index (PCI) objectives for their primary runways (the objective for pavement condition is for all system airports to maintain a PCI of 70 or greater for primary runways). The Utah Aviation Development Strategy identifies the projects needed to help airports meet their specific service objectives and estimated costs related to meeting these objectives (see the following section for estimated costs and potential funding sources).

Funding and Future Need

Utah's airports have diverse revenue and funding streams, but financial resources continue to fall short of estimated needs. Airport projects are funded through a combination of federal (FAA), state, and local funding. Generally, airports that are eligible for FAA and state funding must be available for public use and are required to meet appropriate FAA design standards. Projects that are eligible for state and federal funding are subject to both FAA and state priority rankings, grant assurances, funding availability, and other considerations. In addition, revenue-producing items (such as hangars) are typically not eligible for federal funding unless certain provisions are met. Utah's Division of Aeronautics' highest priority is to fund safety and pavement projects. This Division currently has an annual budget of about $3 million for Airport Capital Improvement Plan (ACIP) projects (the ACIP is a planning tool developed by the FAA to identify and prioritize airport development needs). The Utah Division of Aeronautics provides half the match at general aviation airports for federal ACIP projects while the airport sponsor typically meets the other half of the local match.

General aviation and commercial service airports also compete for federal discretionary funds. These are awarded based on priority given to each potential project by the FAA. The prioritization process ensures that the most important and beneficial projects are the first to be completed given the availability of discretionary funds. Between 2015 and 2019, FAA discretionary funding for Utah airport projects averaged approximately $38 million each year on ACIPs, with nearly $15 million going to Salt Lake City International Airport, $20.3 million going to the other commercial service airports, and $3.0 million to

the general aviation airports in the state. Also, $29 million from the Infrastructure Investment & Jobs Act (IIJA) was obtained in 2023 to help fund the Salt Lake City International Airport Terminal and North Concourse Redevelopment Program.

In addition, the FAA Denver Airports District Office (ADO), whose jurisdiction includes the entire state of Utah, has developed a strategy to maintain Utah's runway pavements by conducting major reconstruction at each NPIAS airport every 20 years. Funds for runway rehabilitation consist of FAA Airport Improvement Program (AIP) grants in addition to discretionary funds.

The State of Utah collects taxes from aviation users and aircraft owners which are used to support the Division of Aeronautics services, capital improvements at system airports, and other functions. Most public use general airport improvement projects are eligible for 90% federal funding, with the remaining 10% split equally between local and state funds.

The Utah Aviation Development Strategy estimates annual funding needs for Utah airports from 2021 to 2030 will total $42.6 million, which consists of $14.3 million for all Aviation Development Strategy-related projects as well as $28.3 million to address current ACIP requests. The estimated funding from federal, state, and local sources is estimated to be approximately $33.6 million to meet these needs, which represents a $9 million funding gap. If additional state or FAA funding is not forthcoming and public-private partnerships (P3s) cannot be developed, then difficult investment decisions need to be made to help ensure that airports and projects that are most critical to the success of Utah's airport system are funded.


Utah IRC Media Release

Operation and Maintenance; Innovation

Proper operations and maintenance activities are paramount to ensuring the safety of airport operations. For Commercial Service Airports and Reliever Airports this includes ensuring a primary runway Pavement Condition Index (PCI) of at least 70 is maintained. It also means proper maintenance of approaches, runway and taxiway lighting, navigation aids, on-site weather reporting, snow removal, de-icing equipment, security fencing and ground services equipment to make sure these systems are fully functioning. For General Aviation Airports, maintaining a PCI of at least 70 for primary paved runways, proper operation of runway lights, and wildlife mitigation are the main objectives for operations and maintenance.

Technological advancements play a critical role in airport service and the safety of aircraft using these facilities. In 2007, the FAA began work on the Next Generation Air Transportation System (NextGen) with the goal of modernizing the National Airspace System (NAS). This nationwide initiative uses new technologies and procedures to increase the safety, efficiency, capacity, access, flexibility, predictability, and resilience of the NAS while reducing the environmental impact of aviation. The FAA Reauthorization Act of 2024 instructs the FAA to operationalize the programs under NextGen by the end of 2025.

Currently, NextGen is being utilized at Salt Lake City International Airport through a technology called Data Communication Program (DataComm), which improves communications between air traffic controllers and pilots by replacing some traditional voice communications with digital information exchanges. By using digital messages, air traffic controllers, pilots, and airline operation centers can communicate more clearly and efficiently. Better communication boosts controller and pilot productivity, improves safety, and has the potential to reduce flight delays in addition to helping aircraft fly more direct routes, which saves time and fuel. Another component of NextGen being used at Salt Lake City International Airport is Terminal Radar Approach Control Facilities (TRACON), which is a system of networked hardware that guides aircraft as they approach, depart, or pass through an airport's airspace.

Prior to 2013, there were four air traffic control towers operating in Utah: Salt Lake City International Airport, Provo Municipal Airport, Ogden-Hinckley Airport and St. George Regional Airport. In 2013, the FAA closed the air traffic control towers at Provo Municipal and Ogden-Hinckley Airports. With implementation of NextGen, air traffic for these two airports is now controlled at Salt Lake City International Airport. In addition, air traffic at St. George Regional Airport is now controlled in Los Angeles. This has prompted Gov. Spencer Cox to petition the Utah State Legislature for $15 million in funding to build a new control tower in St. George. Although some people see this as a strictly political move, others feel it's safer to be controlling air traffic locally.

Public Safety and Resilience

Because airports facilitate the movement of people as well as goods and services, they are critical to Utah's economy. These movements must occur safely at all times to ensure confidence and reliability in the system.

In 2022, the National Transportation Safety Board (NTSB) reported 339 deaths during 22.5 million flight hours of US General Aviation. This figure continues a downward trend after a peak of 416 deaths during 21.8 million flight hours in 2019. Although there are many different causes of general aviation accidents, infrastructure plays a role in ensuring safety both on the ground and in the air. Establishing runway safety areas, practicing runway incursion mitigation, and implementing wildlife hazard mitigation are all ways to protect public safety.

Utah's aviation system continues to be tested by wildfires, earthquakes, weather-related disasters, cybersecurity threats, and global pandemics. Regardless of the incident, it is imperative that aircraft operations continue. Many rural airports throughout the state support first responders such as police, fire, and medical units which makes them essential to the communities they serve. Furthermore, during and after natural disasters and other emergencies, airports play a major role in acting as gateways for urgent relief and access to critical supplies. Thus, it is critical that all commercial airports in the state perform regular assessments of their facilities and update their recovery strategies for these types of events.

C+

Recommendations to Raise the Grade

- Airport authorities should develop and implement a plan to improve resilience to catastrophic events, particularly for the state's network of rural airports.
- The Utah Department of Transportion Division of Aeronautics should continually monitor the status of NPIAS airports, particularly the level of activity at airports with less than 10 based aircraft (based aircraft represents the number of aircraft that are stored at a specific airport) to ensure that they don't lose their AIP funding. Incentives should be initiated at airports approaching the minimum number of based aircraft to help ensure that funding will continue.
- Prioritize and fund Airport Capital Improvement Plan (ACIP) projects that align with the Division of Aeronautics Aviation Development Strategy.
- Explore the use of public-private partnerships (P3s) to fund projects such as hangars and parking facilities.
- Consider additional funding sources such as increased fuel tax allowing airports to generate the needed revenue to invest in their infrastructure.

Sources

American Society of Civil Engineers, Utah Section. “Report Card for Utah’s Infrastructure”, 2020.

American Society of Civil Engineers, Reston, VA, “Report Card for America’s Infrastructure”, 2021.

Federal Aviation Administration, “National Plan of Integrated Airport Systems (NPIAS)”, 2023.

Federal Aviation Administration, “CY 2022 Enplanements at All Commercial Service Airports”, 2023.

Federal Aviation Administration, “Terminal Area Forecast”, 2024.

National Transportation Safety Board, “US Civil Aviation Accident Statistics”, 2023.

Congressional Research Service, “Infrastructure Investment and Jobs Act (IIJA) and Airport Funding”, 2022.

Utah Department of Transportation Division of Aeronautics, “Aviation Development Strategy”, 2020.

Salt Lake City International Airport, “SLC Airport Overview”, 2024.

St. George News, “’People are Coming Here’: Local Officials Say St. George Airport Needs Traffic Control Tower”, January 12, 2024.

Bridges

2025 Grade: **B**

Executive Summary

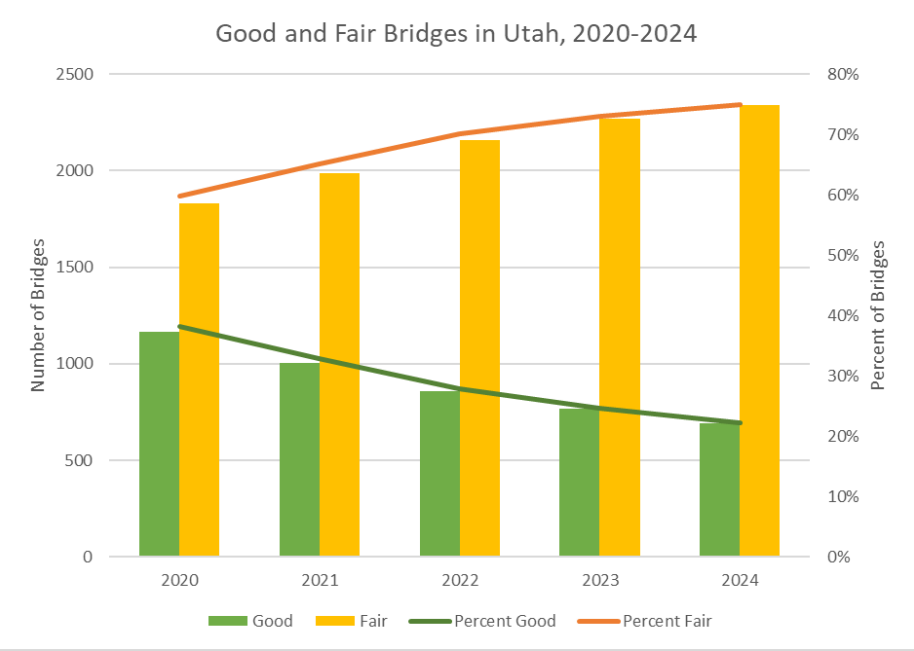
The 3,125 bridges in Utah are a critical component to our transportation network. State and local agencies in Utah have demonstrated that funds allocated for the preservation, rehabilitation, and replacement of bridges are thoughtfully and judiciously spent. However, there is a current shortfall of funding. This shortfall contributed to a sharp 44 percent increase in poor condition bridges from 2020 to 2024. During that time, Utah bridges in good condition also decreased by over 40 percent and those in fair condition increased more than 25 percent - both demonstrate a concerning development. Funding for and condition of Utah's bridge inventory are both trending in a negative direction and allocation of additional funds is necessary to Keep Utah Moving.

Condition and Capacity

While the number of bridges in poor condition in Utah is still well below the national average, the number has increased in recent years. In 2024, 2.9 percent of Utah's bridges were in poor condition (Table 1), compared to the national average of 7.5 percent. That is a drastic increase compared to previous years. The Utah Department of Transportation (UDOT) Structures Division expects this trend to continue and warns of a "bubble" of deteriorating infrastructure, particularly with the original Interstate system constructed in the 1960s and 1970s having surpassed its 50-year service life. The average age of bridges in the state is 40 years and 1,099 (35 percent) bridges in Utah are more than 50 years old.

Table 1 - Condition of Bridges in Utah

Condition of Bridges in Utah									
Year	Number of Bridges	Good	Percent Good	Fair	Percent Fair	Poor	Percent Poor	Load Posted	Percent Load Posted
2024	3,125	693	22.2%	2,341	74.9%	91	2.9%	230	7.4%
2023	3,109	766	24.6%	2,268	72.9%	75	2.4%	203	6.5%
2022	3,080	858	27.9%	2,158	70.1%	64	2.1%	205	6.7%
2021	3,056	1,005	32.9%	1,988	65.1%	63	2.1%	201	6.6%
2020	3,062	1,167	38.1%	1,833	59.9%	62	2.0%	197	6.4%



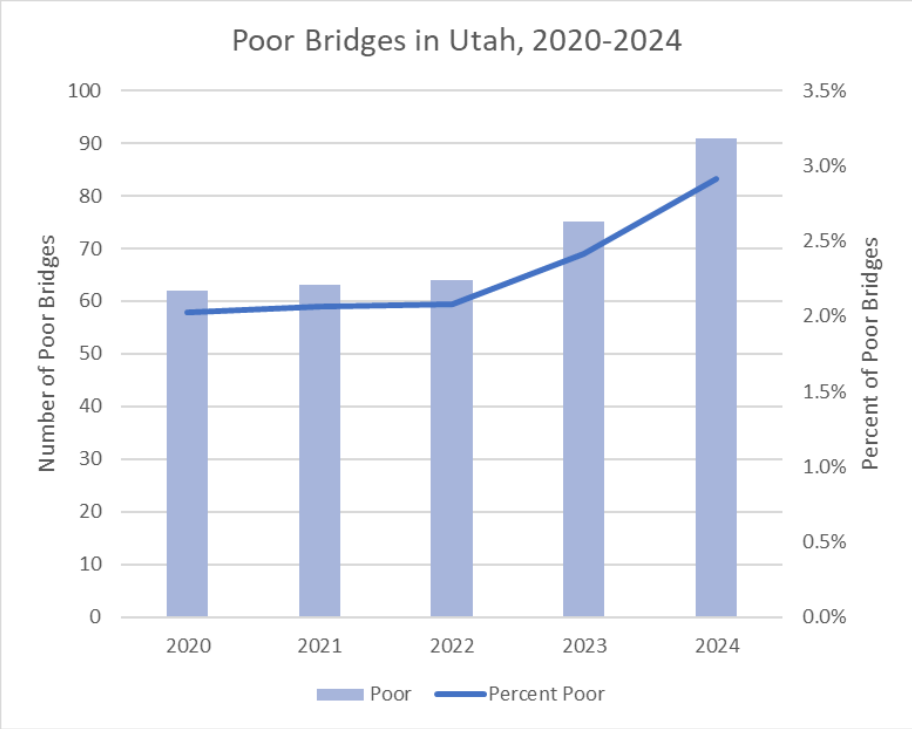


Table 2 - Condition of Bridges in Utah by Deck Area

Condition of Bridges in Utah by Deck Area				
Year	Percent Good	Percent Fair	Percent Poor	Percent Load Posted
2024	20.9%	77.2%	1.89%	2.10%
2023	23.1%	75.5%	1.47%	1.68%
2022	26.4%	72.8%	0.78%	1.75%
2021	30.0%	69.1%	0.91%	1.75%
2020	35.8%	63.3%	0.85%	1.74%

Priority of preservation, rehabilitation, and replacement funds is generally placed on larger bridges with higher average daily traffic (ADT) volumes. The percent of poor bridges in Utah when accounting for deck area remains low (Table 2), but the data shows a recent negative trend in this metric as well.

From 2014 to 2023, Utah has replaced an average of 23 bridges per year, less than one percent of its inventory. At this continued rate, it would take over 100 years to replace all existing structures.

In the past, when a structure has decreased from fair to poor condition, the state has been able to program the rehabilitation or replacement of these structures. For the first time, that is not the case. Per the UDOT Structures Division, funding is no longer adequate to plan for the repair or replacement of all state-owned bridges in poor condition within the four-year funding cycle.

The Federal Highway Administration (FHWA) Long-Term Bridge Performance Program uses machine learning to project potential bridges that may transition from fair to poor condition based on reported condition and historical trends. This tool forecasts the potential for an additional 72 bridges in Utah transitioning from fair to poor in the next four years alone, with a probability of occurrence of 50 percent. While this tool is not a crystal ball, it does provide additional insight into the large number of structures that are on the cusp of poor condition. This includes the large group of vital bridges built in the initial Interstate construction.

Table 3 - Poor Condition Bridges in Utah by Owner

Condition of Bridges in Utah by Owner									
Year	Number of Bridges Owned			Number of Poor Bridges			Poor Bridge Percentage		
	Federal	State	Local	Federal	State	Local	Federal	State	Local
2024	179	1,908	1,038	14	25	52	7.82%	1.31%	5.01%
2023	180	1,886	1,043	14	14	47	7.78%	0.74%	4.51%
2022	176	1,863	1,041	12	10	42	6.82%	0.54%	4.03%
2021	174	1,848	1,034	11	14	38	6.32%	0.76%	3.68%
2020	175	1,844	1,043	14	13	35	8.00%	0.70%	3.36%

Structures owned by local governments are generally more likely to be in poor condition than those owned by the state (Table 3). This is true in Utah, where 1.3 percent of state-owned structures (by count) are in poor condition compared to 5.0 percent of locally owned structures (by count). Despite having about half as many bridges and about one-sixth of the total deck area, local agencies have more than three times as many poor bridges as the State. Limited resources such as funding and staffing can shoestring efforts to maintain or rehabilitate these bridges. The Bridge Formula Program (BFP) funded by the Infrastructure Investment and Jobs Act (IIJA) is expected to help, but local agencies need more assistance.

Federally owned bridges also make up a significant portion of the bridges in poor condition. While less than 6 percent of bridges in Utah are owned by federal agencies such as the Bureau of Land Management or the National Park Service, over 15 percent of the poor condition bridges in Utah are federally owned. The U.S. Forest Service stands out as an owner of 129 bridges, 12 of which are in poor condition. Since 2021, none of the federally owned bridges in poor condition have been rehabilitated or replaced.

Funding and Future Need

Funding has fallen behind the needs of the UDOT Structures Division and local agencies. Funding has not kept up with the deterioration of aging infrastructure, increased construction costs, and increased inventory. From 2019 to 2023, the average bridge replacement cost in Utah increased from $204 to $394 per square foot of deck area. However during this period, the UDOT Structures Division funding stayed stagnant. This results in a stark decrease in buying power of -48 percent.

UDOT Structures Division and local agencies have shown in recent years that the funding they receive is well utilized. As noted in the 2020 Report Card for Utah's Infrastructure, an increase in funding led to a significant decrease in poor condition bridges.

The IIJA established the BFP to replace, rehabilitate, preserve, protect, and construct highway bridges. This funding has helped, and this program is expected to considerably decrease the number of poor condition locally-owned bridges in Utah. The IIJA requires 15 percent of the funds be spent on bridges that are not on federal aid routes, which are often owned by local jurisdictions, but the program developed by UDOT to allocate BFP funds is allocating approximately 85 percent to local structures. There are 90 bridges slated to be replaced using BFP funds, 78 of which are locally owned. Yet, the funding is still not enough to rehabilitate or repair all poor condition bridges, and there is still a funding shortfall. In addition, while these funds are providing significant benefits, especially to local agencies, this is a temporary solution to a continuing problem, as BFP funds were only appropriated for 2022 through 2026.

Utah's bridge infrastructure faces a critical challenge in meeting both current demands and future growth projections. The surge in population and economic development has placed increased pressure on the state's transportation systems. According to projections from the Kem C. Gardner Policy Institute at the University of Utah, Utah's population is expected to grow from approximately 3.45 million in 2024 to over 5 million by 2050. Infrastructure owners in Utah are grappling with increased demand for additional surface transportation while maintaining a deteriorating existing infrastructure.

Michael Baker International ASCE UT award wining project

Operation and Maintenance

UDOT Structures Division has preservation and rehabilitation programs in place. While systemic programs have been developed to preserve existing structures, these programs are not funded well enough to keep our bridges on the preferred preservation cycle.

Many locally owned bridges are lacking simple maintenance. Educating local governments on their responsibilities as owners and providing advice on how to leverage limited personnel and financial resources may lead to an increase in maintenance that prevents deterioration in the future. UDOT participates in the annual Building Utah conference with local agencies to present an overview on bridge inspection, preservation, load ratings, and funding opportunities.

UDOT also invites each local owner to attend the regular biennial inspections of their bridges and has personnel available for questions, education, and field visits where possible. While efforts are made, additional funding, personnel, and resources would have a positive impact on their ability to provide additional support.

Population growth in Utah has increased the inventory of bridges in the state. Funding and personnel are not keeping up with the growth. In addition to the immediate impacts this growth has on capacity, it also causes long-term impacts to operations and maintenance as resources are spread even more thinly across a larger portfolio.

Public Safety

Utah remains committed to meeting federal requirements for inspections of in-service bridges, plus additional inspections as warranted. Bridges are load rated to determine the safe load carrying capacity. When it is determined that the safe load carrying capacity is less than legal or expected loads, the safe load is posted on a sign before the bridge and larger vehicles are restricted from crossing. Load rating requirements for emergency vehicles are a new requirement that has caused additional structures to be load posted but increases public safety by ensuring that these vehicles are able to safely and quickly respond to public emergencies. The number of bridges in Utah posted for load restrictions remains low at 230 (7.4 percent). Nationally, that value is over 10 percent.

Resilience

As discussed in the 2020 Report Card, the resiliency of Utah's bridges was tested when a 5.7 magnitude earthquake occurred in Magna, near Salt Lake City on March 18, 2020. This event provided an opportunity to test and refine the emergency response plan. One structure was temporarily closed for minor repairs out of an abundance of caution, and some minor repairs were performed on other structures, but overall, the bridges within the Salt Lake Valley performed well during the seismic event.

After significant flooding in the spring of 2023, a comprehensive assessment of scour critical structures was performed, including many post-event inspections of bridges at risk of scour. One bridge in Utah is being replaced using federal emergency funding due to scour vulnerability, but the assessment generally found capacities to be satisfactory.

A long-lasting structure is a climate-friendly structure that reduces potential waste associated with reconstruction. UDOT is currently developing a statewide plan to address resiliency.

Innovation

Utah continues to use innovative material solutions such as lightweight cellular concrete and techniques including bridge slides and other Accelerated Bridge Construction methods. These are not used for each construction project in the state but are tools in the toolbox to utilize when prudent and advantageous to do so.

Other innovations include the exploration of various new project delivery steps and methods. UDOT Structures Division is replacing its Annual Bridge Report with a new dashboard to provide transparency to the public and easy access to data for designers. The BFP is being used as a pilot program for vari-

ous new project delivery ideas and UDOT, including the Structures Division, continues to be a leader in digital delivery, which refers to the use of 3D models in lieu of conventional plan sets as contract documents for construction.

UDOT is also taking innovative steps to manage its inventory. The department is utilizing unmanned aerial systems to gather data during inspections and using technology to map future projects and gather condition data. The department is also exploring the effectiveness of ground-penetrating radar, infrared, and automated concrete sounding to make better decisions and be efficient with their spending.

B

Recommendations to Raise the Grade

- Increase funding to local government programs and to UDOT Structures Division to address increased costs of construction, increased inventory and associated maintenance costs, and rapidly aging infrastructure. Align future funding to both population and inflationary measures, such as the Highway Construction Price Index, to ensure sustainable long-term funding mechanisms.
- Earmark funds for perpetual maintenance, in-service inspection, and load rating updates of new bridges constructed when programming funds for large transportation projects.
- Provide funding to develop an education program for local governments to teach the importance of maintaining their bridge inventory and how to effectively do so with limited personnel and financial resources. This can be done in conjunction with the Building Utah conference that many local agencies attend, or through the Utah Local Technical Assistance Program (LTAP).

Sources

American Road & Transportation Builders Association, "ARTBA Utah State Bridge Profile", 2024.

Federal Highway Administration, "LTBP InfoBridge", 2024.

Federal Highway Administration, "National Bridge Inventory", 2024.

Staff interview, NOAA'sHydrographicServicesReviewPanel, 2024.

Interview with Simmons, C. H., & Nix, R., Utah Department of Transportation: Structures Division, (J. Laprevote, A. Ball, & J. Simpson, Interviewers), 2024, February 15.

The University of Utah Kem C. Garner Policy Institute, "State and County Projections Tableau", 2024.

Canals

2025 Grade: D+

Executive Summary

Utah's canal systems largely consist of earth embankments and cut ditches. These canals' primary historical purpose was private irrigation systems, but their role is increasingly shifting towards stormwater conveyance and flood management, representing a unique challenge to canal owners, municipalities, and state entities. Canals serve as lifelines for water distribution across diverse landscapes, necessitating robust oversight and preventative measures to ensure water quality and system integrity. While state leadership maintains an inventory of Utah's canals, the condition or risk of private entities remains largely unknown, namely risks from extreme weather or events. This report, as part of the 2025 Utah Infrastructure Report Card, advocates for comprehensive oversight of water quality, coupled with proactive measures to prevent breaches and contamination. Prioritizing preventative measures and robust oversight of water quality are paramount to safeguarding the integrity and functionality of Utah's canal systems. By evaluating risks, allocating appropriate funding, and integrating preventative measures into development processes, Utah can mitigate potential threats and protect water quality for the benefit of all stakeholders. Through collaborative efforts, Utah can strengthen the resilience of its canal infrastructure and ensure sustainable water management for future generations.

Condition and Capacity

According to the Utah Geospatial Resource Center, it is estimated that there are 12,970 canals in the state of Utah that span approximately 1,400 miles. The Utah Division of Water Rights maintains an inventory of all canals within the state that have a design capacity of at least 5 cubic feet per second (cfs). These canals are owned and operated by 204 private owners and 1,156 canal companies/municipalities. Most of the canals are located along the Wasatch Front. Some of the canals are enclosed or piped (see Figure 1, red lines), but most of the canals are open systems (see Figure 1, blue lines).

Many of these canals were built in the 1800's for irrigation, pre-dating current construction methods. In the modern era, their importance and use is expanding. Increases in development and urbanization have put pressure on existing systems to serve as stormwater runoff collection in addition to their historic agricultural use. The irrigation canals were designed for distribution, not collection, getting smaller downstream. But with modern stormwater collection demands, flow increases downstream in direct opposition to their original design. As a result of these changes, Utah's canals represent some of the highest risk infrastructure assets in the state.

In major canals, restricted stormwater release is evaluated and approved by municipalities after capacity studies have been conducted by licensed engineers. But, smaller canals and/or individual owners may not have the resources to perform these assessments, or may not be notified by individual land-owners who increase runoff to these systems. Therefore, they can become increasingly strained with a heightened risk of flooding threatening life, property, and the natural environment. Canal owners, municipalities, and state entities risk liability in the case of failure as legal precedent is relatively unknown.

The condition of the canals is difficult to assess due to private ownership. In accordance with Utah Code 73-10-33, a management plan must be submitted to the Board of Water Resources for any water conveyance facility seeking a grant or loan from the state for repair or improvements. This plan is reviewed by a legal team for completion of the items stipulated by state code (evaluation of slope instability, maintenance and improvement plan, emergency response plan, etc.). However, no technical review of this plan is conducted, and the status of maintenance and overall condition of these infrastructure systems are not evaluated by public entities. This approach shields public entities from potential liability of private systems. To date, the Utah Division of Water Rights reports the Board of Water Resources has received management plans from 86 canal companies since the adoption of Utah Code 73-10-33 in 2014.

Similarly, the State Engineer has the authority to examine and inspect any ditch or other diverting works and order additions or alterations to assure public safety under HB 370, but no regular inspection schedules are required under this bill.

Increased pressure on these systems to convey more water, more efficiently, with minimal resources and oversight, shifts this infrastructure increasingly towards a high-risk category. This risk is recognized by state legislators and state officials and will be represented in ongoing discussions of the state's water resources.

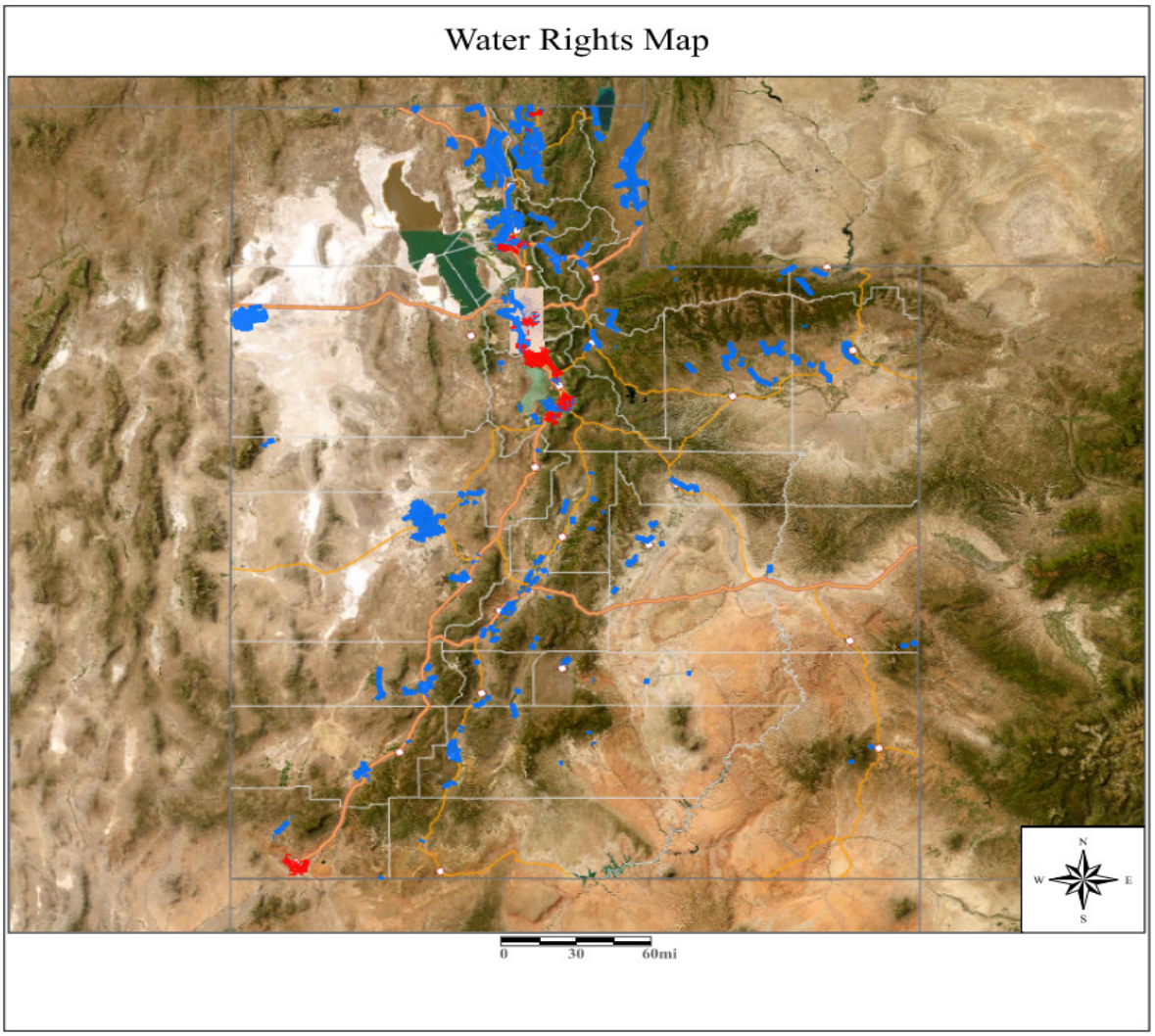


Fig.1 Water Rights Map. Source: Utah Division of Water Rights

Operation and Maintenance, Funding, and Future Need

The operation and maintenance of Utah's canals entail significant financial commitment. The Department of Water Resources regularly seeks ongoing funding, historically requesting a minimal $3.8 million annually in the governor's budget. However, recognizing the growing demand for canal upkeep, this request has been increased to $10 million per year. Additionally, one-time appropriations have been allocated, evidenced by a $25 million one-time allocation from the governor's office in the previous fiscal year.

While specific financial needs for individual canals and their owners are not publicly disclosed, state legislation mandates that canal owners inform the government of potential financing sources for maintenance and improvements under a designated plan. This provision, outlined in Utah Code 73-10-33, underscores the importance of financial transparency and accountability in canal management.

Privately or corporately owned canals exist in the state, necessitating an owner-based approach to funding maintenance and repairs. The Division of Water Resources receives funding requests from canal owners for maintenance and repair projects. Recent initiatives, such as an estimated 19 canal piping projects in Weber and Davis Counties, as well as segments of the Hyrum/Blacksmith Fork Irrigation Company canal, have been financed through US Bureau of Reclamation (USBR) WaterSMART grants. These grants play a crucial role in supporting vital infrastructure improvements across the state.

Efforts to monitor compliance with canal management plans are underway, with the Division of Water Rights maintaining an inventory of canal companies that certify having such plans in place. Currently, 69 canal companies have entered contracts with the Board of Water Resources since 2013, obliging them to certify the existence of a management plan (Inquiry on Utah Canal Resilience 2024). However, the actual number of companies with such plans likely exceeds this figure, as awareness is limited to those seeking funding from the state.

Maintaining and improving Utah's canals require substantial and sustained funding, with ongoing efforts to enhance transparency and accountability in canal management. While challenges exist in quantifying maintenance needs and ensuring plan compliance, collaborative efforts between canal owners, government agencies, and grant programs are essential in safeguarding vital water infrastructure across the state.

Public Safety and Resilience

Historic failure events most accurately represent the risk these systems pose to public health and safety. Several notable canal failures across densely populated corridors caused millions of dollars in damage and even loss of life.

1983 - Canal break in Delta. Federal disaster was declared as 450 homes and thousands of acres of farmland were under 3 feet of water. (Delta Source)

1997 - Canal Break in Vernal caused significant erosion. (Vernal Source)

1999 - Davis/Weber Canal failure in Riverdale. The largest failure in state's history, releasing 70,000 acre-feet of water and about 450,000 cubic yards of mud.

1993, 1999 - Draper Irrigation Canal failure.

2009 - Logan. The Logan canal breach resulted in two civil lawsuits against the city, the Utah Department of Transportation, and the canal company.

In recent history, minor failures are more notable. In April of 2024 a minor failure occurred in Highland, when a manway cover on the outfall of the Murdock Canal failed and flooded homes in the area (Highland source). Though the incident was minor, it illustrates the impact that even a minor failure can cause in increasingly urbanized areas. As Utah continues to develop without canal oversight and regular maintenance, the threat to public safety increases.

Likewise impactful are the concerns posed by canal systems' water quality. Privately-owned systems make it difficult to enforce pretreatment standards for water that ends up in the canals. Proper maintenance and responsible agricultural practices are paramount to preventing contamination. Potential pollutants include nitrogen, phosphorus, pesticides, sediments, heavy metals, dissolved salts, total dissolved solids, oil, and grease. The Department of Water Quality conducts routine water quality monitoring across the state, but it can be difficult to monitor private canals. Often the DWQ must be allowed access to private property for voluntary environmental monitoring or reach cooperative agreements with private landowners, unless there is significant suspicion that an area is contributing to impaired water quality. If there are significant water quality concerns, the Clean Water Act and Water Quality Act grant the state authority over private waters when they impact the broader environment, public health, or downstream water users. Broader studies of canals' impact on water quality may be helpful for a more comprehensive understanding of how these play a greater role in Utah's water quality, but it is recognized that this will be difficult with the legal constraints intended to protect private property.

Innovation

The Utah office of the United States Geological Survey (USGS) is exploring using Green LiDAR to survey stormwater conveyance systems in the state. Green lasers can penetrate the water and provide topography data of streams, canals, shallow reservoirs; even floodplains during flood events. This technology would be significant if made available to canal studies. It could help determine the capacity and condition of canals across the state, where data is lacking.

D+

Recommendations to Raise the Grade

- Prepare a comprehensive risk assessment to identify vulnerabilities and prioritize preventative measures to ensure a resilient canal system. The State Engineer, in collaboration with relevant agencies, should conduct thorough evaluations to understand the potential risks to water quality and system integrity.
- Prioritize canals identified as 'high risk' or with significant impacts to nearby communities for study and be required to complete annual inspections. As canals require considerations by multi-disciplinary teams, these studies and inspections must include hydraulic, geotechnical, and structural engineers as well canal maintenance and operations.
- Use public-private partnerships to facilitate knowledge sharing, resource mobilization, and implementation of best practices in canal management and water quality oversight.
- Allocate funding to support preventative maintenance and infrastructure upgrades. Increased, consistent funding should be provided to the Board of Water Resources for canal maintenance and repair grants/loans.
- Monitor canal capacity and water quality on a state level. This could be accomplished by regular inspections by the office of the State Engineer and/or stream gauges monitored by USGS. USGS currently monitors 357 sites for rivers, creeks, and lakes in Utah but does not monitor canals. The State Engineer should establish stringent monitoring protocols and standards for water quality, requiring regular testing and analysis of canal water at multiple points along the network. By investing resources commensurate with the risks associated with canal breaches and contamination, Utah can mitigate potential threats and protect public health and the environment.
- Direct developments draining into canal systems to meet strict permitting requirements set by governing municipalities, including provisions for ongoing water quality monitoring and mitigation measures. This includes allocating

funds for environmental impact assessments, infrastructure upgrades, and regular maintenance to mitigate risks and prevent breaches. By integrating water quality oversight into development processes, Utah can ensure that the burden of monitoring is shouldered by entities responsible for potential impacts on water quality and developers are incentivized to adopt sustainable practices and minimize adverse impacts on canal systems. Moreover, private canal owners should be subject to similar oversight requirements, with provisions for funding allocated to ensure the integrity and resilience of their infrastructure.

- Provide incentives by the Board of Water Resources for projects that consider sustainability, support the local ecosystem, increase resilience to a changing climate, and improve the project outcome for all stakeholders. It is recommended to use the evaluation criteria established by the Institute for Sustainable Infrastructure (ISI)'s Envision Program.
- Increase use of monitoring technologies through research and development to enhance early detection of potential threats and enable proactive interventions to prevent breaches and contamination events.

Sources

Interview with Safely, B., & Riley, J., Division of Water Quality - Stormwater and Canals in Utah, (Lisonbee, A., Hanks, T., Interviewers), 2024, March 8.

Interview with Safely, B., Hasenyager, C., De Bernardi, S., & Williams, J., Inquiry on Utah Canal Resilience - Division of Water Resources, (Lisonbee, A., Hanks, T., Interviewers), 2024, February 2.

The Washington Post, "Man Lost, Homes and Farms Awash as Dam Bursts", 1983.

Utah Department of Natural Resources - Utah Geological Survey Division, "Technical Reports for 1997 Applied Geology Program", 1997.

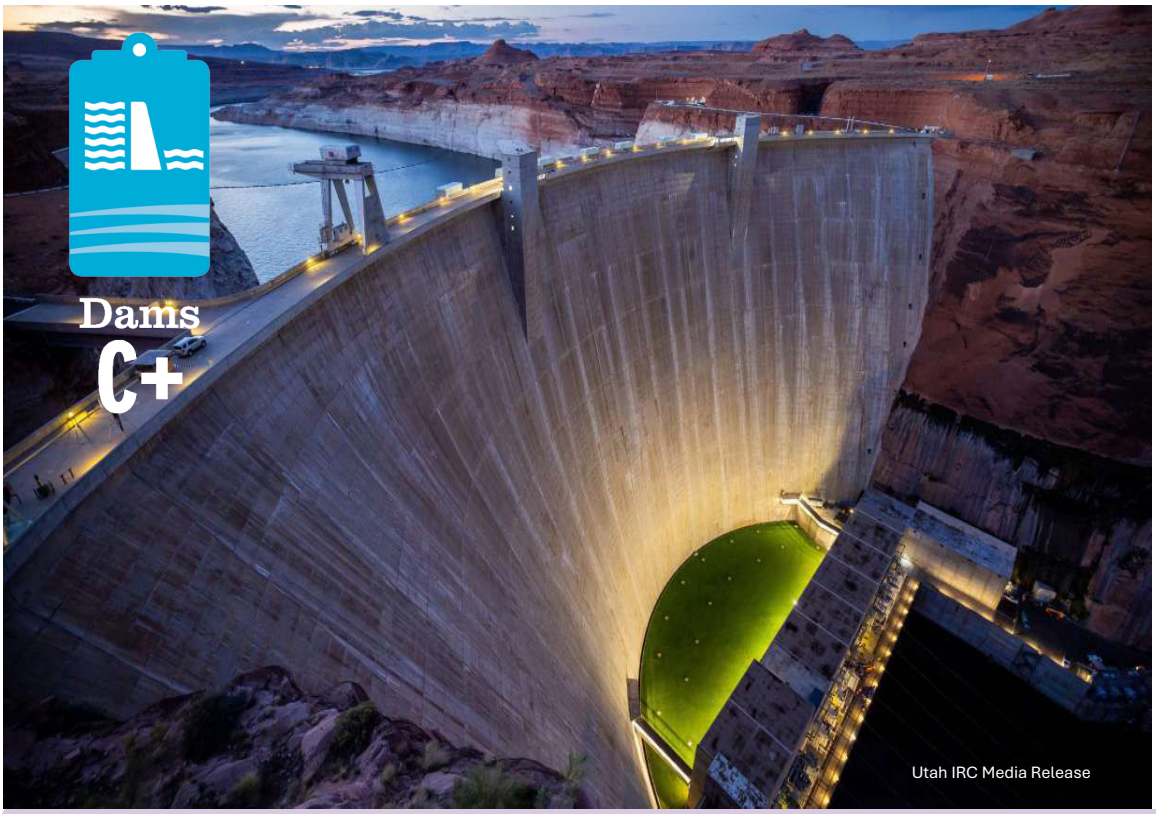
Deseret News, "Breached Ditch Devastates Draper Homes", 1997.

Deseret News, "Digging out and pitching In Riverdale gets lots of help in recovering from canal disaster", 1999.

Deseret News, "Three presumed dead after Logan canal breaks, flooding homes", 2009.

KSL News, "Lawsuits in Logan canal breach settled", 2011.

KUTV News, "Utah County neighborhood hit with flooding after apparent irrigation pipe malfunction", 2024.



Dams

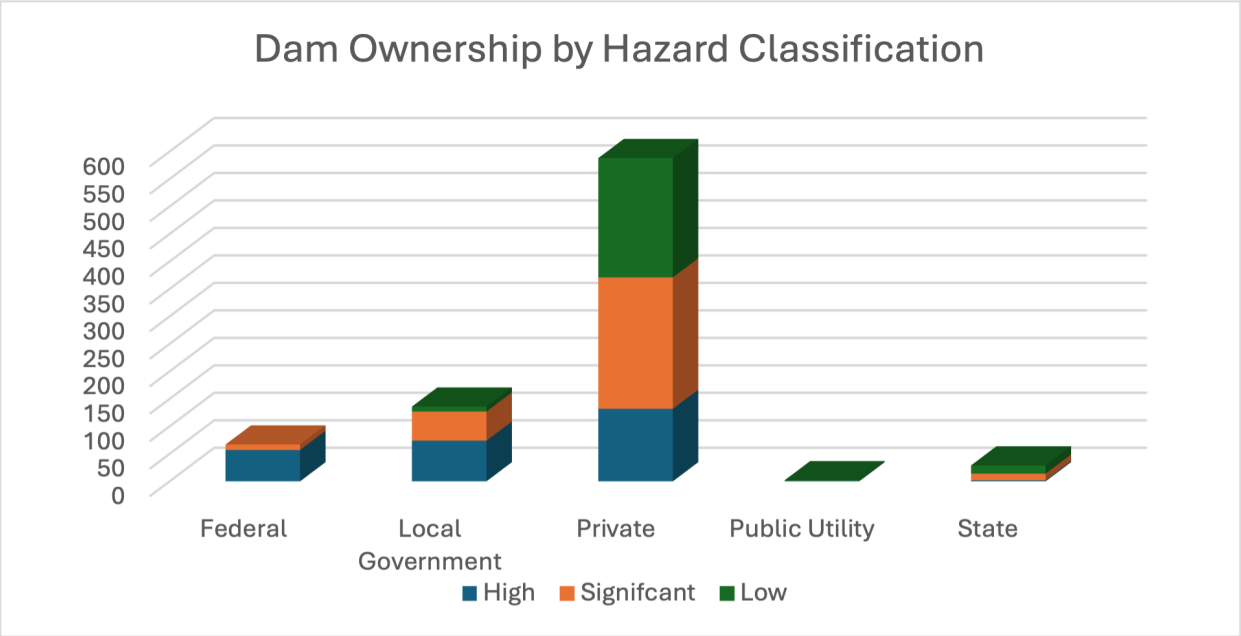
2025 Grade: **C+**

Executive Summary

The western region of the United States continues to receive pressure to provide stable water resources amidst challenges associated with aging infrastructure, drought, and climatic changes. States will need to be innovative in their efforts to meet future water demands including maintaining, rehabilitating, and constructing dams. There are 870 dams in Utah listed in the National Inventory of Dams. The life expectancy of dams can range from 50 to 100 years. The average age of dams in Utah is 64 years. In addition to aging infrastructure, drought, and climatic changes, Utah faces unique dam safety challenges regarding seismic risks near major population centers and a continuing trend of population growth into breach inundation zones..

Condition

Dams are assigned a hazard rating based on the consequence of a failure. A high hazard potential identifies the possibility of loss of life in a failure event. Significant (moderate in Utah) hazard dams are associated with significant property damage in a failure event. Low hazard dams are expected to pose no significant property damage due to a dam failure. Of the 277 high hazard potential dams in the State of Utah listed in the National Inventory of Dams, 227 are regulated by the State and 53 are under federal regulation. Over 100 of these dams need some level of rehabilitation effort to meet current standards. Ownership of dams in the state is shown in the figure below for high, significant (moderate), and low hazard dams.



In addition to hazard rating, dams are given a condition assessment based on the performance of the structure with the following definitions:

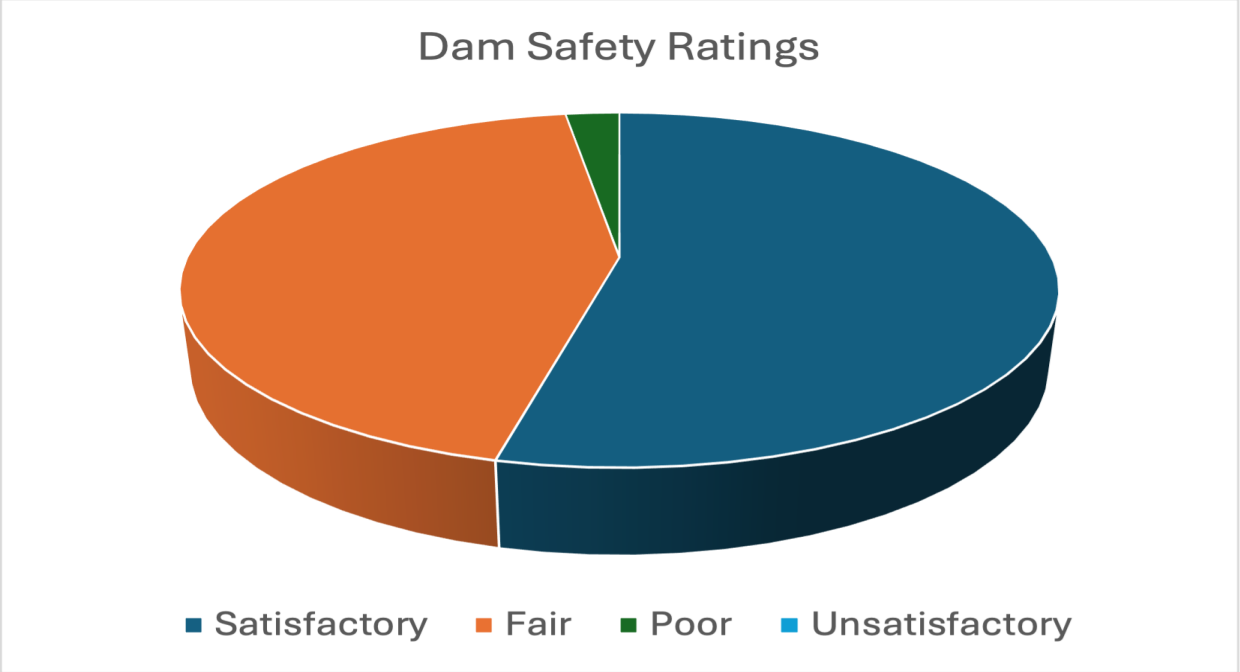
Satisfactory - No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions in accordance with the minimum applicable state or federal regulatory criteria.

Fair - No existing dam safety deficiencies are recognized for normal operating conditions.

Poor - A dam safety deficiency is recognized for normal operating conditions which may realistically occur.

Unsatisfactory - A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

Approximately 52 percent of high hazard potential dams meet current safety standards and are classified as being in satisfactory condition with another 44 percent being classified as in fair condition needing rehabilitation to meet current seismic and hydrologic standards. Impressively, 98 percent of the state regulated high hazard dams have an emergency action plan in place. The following graphic shows the current condition assessment of the high hazard dams in the state.



Capacity, Operation & Maintenance, Funding, And Future Need

With continued migration into the state, additional water supply will be required on an already taxed water resource. Utah's dams and reservoirs are a critical component to providing a stable and reliable water supply to state residents and visitors. As one of the driest states in the nation, Utah relies heavily on reservoir storage to provide adequate water supply during times of drought.

Utah provides approximately $3.8 million of funding each year for high hazard potential dam rehabilitation projects. The funding program has been in effect for almost 30 years and 46 dams have been rehabilitated to meet current safety standards. Over the last two decades, an additional 18 dams have been partially rehabilitated but need another phase of rehabilitation to complete the work. Approximately 100 dams still need rehabilitation to meet current standards. As infrastructure ages, more funding will be needed to keep these dams operational and mitigate sediment accumulation, wear and tear on outlet systems, and upgrades to meet seismic and hydrologic standards.

Utah received an additional $7.3 million of funding from FEMA's High Hazard Potential Dam Rehabilitation Grant Program. This one-time grant will help upgrade Utah dams. More grant funding will continue to be sought in the future. Although grants provide welcome funding supplies, they cannot meet the full needs of the State dam safety requirements.

Historically, the cost of each dam safety project has averaged about $2-3 million. The cost varies depending on the size of the dam and the extent of the deficiencies with recent projects costing tens of millions of dollars. These costs will continue to increase over time as inflation decreases the value of the dollar. With each passing year, inflation chips away at the dollar's buying power and the ability to complete projects and protect public safety in a timely manner diminishes. Utah's original dam safety program received about $4.2 million annually in state funding in the 1990s. During the 2008 recession, this amount was reduced to $3.8 million and has not increased since then. Inflation has eroded the real value of the funds, making it harder to complete necessary dam safety projects.

According to the U.S. Bureau of Labor Statistics, the cumulative inflation rate from 2008 to 2022 is approximately 36 percent. The value of $3.8 million in 2022 only covers approximately $2.6 million when adjusted for inflation compared to 2008. This decline in real value illustrates how inflation has reduced the effectiveness of funding over time, making it more difficult to maintain the same level of dam safety efforts.

The Utah Divisions of Water Rights and Water Resources have been successful in making improvements to the condition of dam infrastructure. The divisions have essentially done more with less, because current funding remains steady and does not account for inflationary costs of materials and construction. This lack of dam rehabilitation funding is a key consideration in the condition of dam infrastructure. The program needs additional financial support to complete current work and to address the current and increasing number of high hazard potential dams caused by urban growth and the resultant hazard creep.

An estimated $450 million is needed to bring the remaining high hazard potential dams up to minimum safety standards. At the current funding rate, the rehabilitation will take over 100 years. If funding were increased from $3.8 million to $10 million per year, the dams could be upgraded in approximately 45 years.

The Dam Safety Program focuses on high hazard potential dams. The state inspects and enforces safety requirements maintenance and operation of moderate and low hazard potential dams remains that must be addressed by private owners. Many of these dams were once remote, but are now

impacted by growth and have become moderate/significant dams. The state may need to help these owners address issues through grants and loans. Enforcement often includes fill limits, which impact water supplies and often leads to political intervention and funding. A mechanism for funding these private dam repairs is not currently in place. The 2024 Parowan Dam incident is an example of State aid on private facilities where the privately owned dam will receive state funding for needed repairs.

ASCE is currently investigating the possibility of including low-head dams in the national inventory, which may eventually lead to requirements for operation and maintenance procedures. It is likely that there are hundreds or thousands of these smaller dams within the State. Adding these dams to a national registry will allow evaluation of the condition of the dams and help identify risks associated with these facilities leading to better decision making regarding public safety and water supply reliability. The inspection and enforcement of safety requirements on these facilities may also require funding.

Public Safety, Resilience & Innovation

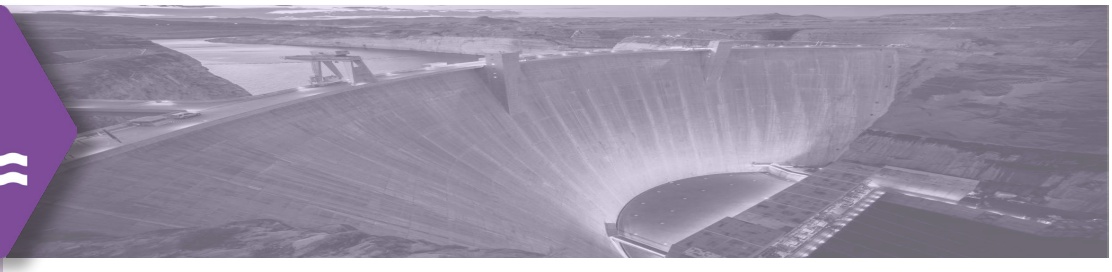
Due to increasing water demands, dam construction and rehabilitation continue at a steady pace within the state. As population encroaches on dams and reservoirs, the hazard rating of these structures is increased. A key component of managing risk associated with dams is an emergency action plan (EAP). The EAP is a formal plan that identifies potential emergency conditions and provides procedures to minimize property damage and loss of life in a failure event.

Utah's dam safety program has the equivalent of six full-time employees, with approximately 873 regulated dams, so each employee oversees approximately 145 dams. Despite limited resources, 98

percent of state regulated, high hazard dams have an EAP in place and 162 out of 325 moderate hazard dams have an EAP. Low hazard dams are not required to have EAPs. Utah's dam safety program has an annual budget of just over $1 million.

The Utah Division of Water Rights currently has two dams being rehabilitated. One project has been approved but not started. Five additional projects have been notified to begin the rehabilitation evaluation and design process.

The State has also taken advantage of collaborative funding through partnerships with federal agencies to accomplish much more than state funding alone would have allowed. The dam safety program has accomplished, and continues to accomplish, a significant amount of work that results in a tremendous risk reduction to the people of the State.



C+

Recommendations To Raise The Grade

- Increase funding of the Dam Safety Program to at least $10 million per year to rehabilitate all dams within 50 years. An increase to $20 million per year would allow faster repairs, but could still require 25 years for all required repairs. The rate of rehabilitation for dams within the State is lower than needed due to current funding levels.
- Determine the true impact of moderate/significant dams on loss of life and damages to communities. Evaluate whether a state fund is required to provide private owner grants or loans to fund dam safety requirements.
- Evaluate impacts to dam safety enforcement programs if low head dams are added to the National Inventory of Dams.
- Target satisfactory condition assessments for high hazard dams through the program to rehabilitate existing high hazard dams to meet current safety standards for the remaining dams within the next 45-50 years. When all facilities are up to satisfactory condition, a funding program to maintain this condition level should be considered.

Sources

Utah Division of Water Rights, "*Dam Safety Information*", 2024.

Association of State Dam Safety Officials, "*The Cost of Rehabilitating Dams in the U.S.: A Methodology and Estimate*", 2023.

National Inventory of Dams, "*NID Dashboard*", 2024.

Utah Department of Natural Resources, "*FEMA Allocates $7.2 Million to Utah for Dam Safety Upgrades*", 2024.

Association of State Dam Safety Officials (ASDSO), "*DamSafety.org",* 2024.

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Drinking Water

2025 Grade: **B-**

Executive Summary

Utah faces serious challenges to its drinking water networks due to a rapidly growing population, aging infrastructure, and seismic risk. The state's population is projected to increase 66 percent by 2060, which amplifies existing water supply challenges and highlights the need for substantial funding and seismic preparedness. The Utah Division of Water Resources (DWRe) and other governmental bodies have initiated efforts to reduce residential per capita water usage, resulting in a 20 percent decrease over the past two decades. While the transmission and distribution infrastructure in Utah is generally newer compared to drinking water systems in the Eastern United States, much of the state's infrastructure is more than 50 years old and exceeding expected design life. The Utah Legislature now mandates that the state's Conservancy Districts establish and maintain System Asset Management Programs (SAMPs) which streamline asset management and enhance the resilience of Utah's drinking water infrastructure. Earthquakes pose a significant threat to the state's water supply networks, particularly the transmission

lines that traverse the Wasatch Fault, linking the mountain water sources to the densely populated valleys. In response, some systems have developed contingency plans for seismic events, aiming to promptly respond, repair, and restore system functionality. Utah's Prepare 60 drinking water plan, established by Utah's four largest water conservancy districts, offers a well-supported roadmap for optimizing water sources and promoting conservation. A unique challenge is the need for both drinking water and agricultural sectors to reduce their consumption to provide restorative flows to the rapidly diminishing Great Salt Lake. At present, solutions to these challenges are unknown and subject to state-funded investigations.

Background

The provision of water for residential, commercial, and industrial customers falls largely within the service areas of the following agencies:

Central Utah Water Conservancy District (CUWCD)*

Jordan Valley Water Conservancy District (JVWCD)*

Weber Basin Water Conservancy District (WBWCD)*

Salt Lake City Public Utilities Department* (supplies drinking water to many areas outside of the Salt Lake City Limits)

Washington County Water Conservancy District (WCWCD)

Metropolitan Water District of Salt Lake and Sandy

*Indicates entities that were interviewed for this section of the Utah Infrastructure Report Card

Conservancy and water districts own significant transmission infrastructure which conveys water from remote sources to the population centers, which are mainly located in the northern part of the State. The "last mile" of water distribution is generally covered by public water utilities owned and operated by Cities and Counties.

The Utah Division of Drinking Water (DDW) is engaged in a variety of activities related to the design and operation of Utah's public drinking water systems – those parts of water systems that directly interface with the consumer. In calendar year 2023, Utah had 916 active public water systems:

48 percent are community water systems – serving at least 15 connections or 25 year-round residents

44 percent are transient non-community – systems that do not serve at least 25 of the same people over six months per year (e.g., campgrounds and highway rest stops)

8 percent are non-transient non-community – systems that serve at least 25 of the same people over six months per year (e.g., a school or factory with its own water source)

Capacity

Utah faces major challenges in water supply due to its arid climate, so building and maintaining infrastructure to transport water supplies is crucial for Utahns. Most water supplies in Utah originate from remote locations, such as snowpack and snowmelt from mountains. Ninety percent of the state's urban population resides in Northern Utah where water sources extend from the adjacent Wasatch Range to the mountains of Eastern Utah, including some that involve diversions from the Colorado River watershed. Utah's population is projected to grow by 66 percent from 2020 to 2060, increasing from 3.3 million to 5.5 million residents by 2060. This population growth will place increased demands on water supplies, especially if drought conditions continue.

Utah's water systems also face a significant threat from climate change. Although the full impact of climate change on Utah's water supply is not yet known, there is a general model forecast indicating a northward shift in climate conditions in the Southwestern United States, leading to reduced snowpack. This translates to a potential decrease in water supplies, especially for the population centers in Northern Utah. Recent weather has provided above-average snowpack conditions, which occur every 11-12 years, but several more winters with above-average snowpack are needed to refill and recharge all of Utah's water supplies and provide for sufficient flows to satisfy the restoration of the Great Salt Lake. The Bear River Development study project, initiated in 1991, plays a vital role in securing future water resources for northern Utah by developing surface water from the Bear River and its tributaries. However, the critical need to restore the Great Salt Lake has aroused concern that this project could be counterproductive unless other sources of water supply are found.

Southern Utah continues to experience severe limitations in water supply, primarily due to population growth and precipitation deficiencies. As the state's fastest growing population center, the increasing population will place demands on existing water supplies that cannot be met. Fortunately, water conservancy districts in Southern Utah are actively prioritizing future planning. For instance, the Washington County Water Conservancy District (WCWCD) is currently managing a water conservation plan, last updated October of 2021, with another update expected in 2026. Even with increasing population, this plan has helped reduce water usage by more than 30 percent since 2000.

Water conservation efforts have been instrumental in postponing the need for new water sources and additional transmission infrastructure. Through initiatives undertaken by the Utah Division of Water Resources and other state, regional, and local agencies, significant reductions in water use have been achieved. Residential per capita water use has decreased by approximately 20 percent over the past two decades. The collaborative effort known as Prepare 60, led by the Utah Division of Water Resources and major water conservancy districts, provides a well-supported path for optimizing water sources and promoting conservation. A statewide conservation plan designed to meet the needs of the population growth includes 25 percent to 35 percent conservation, with plans to add additional water sources from the Bear River and Colorado River (via the Lake Powell Pipeline). Yet, as pointed

out above, the Bear River Plan will likely be restricted by its perceived potential for a negative impact on the Great Salt Lake. Further, getting more water from the Colorado River Basin is no longer feasible, meaning the Lake Powell Pipeline may now be a "pipe dream." Conservation will be increasingly critical if no new water sources can be developed.

Several hundred thousand residential connections also use untreated secondary water for outdoor irrigation. Some time ago, the Weber Basin Water Conservancy District initiated a program to install meters on previously unmeasured secondary water use systems. Their initial purpose was to inform secondary water users about their use of irrigation water; charging for secondary water has not yet been implemented. However, homeowner recognition of overuse has resulted in reductions in residential secondary water use, and these reductions could be used to supply increases in new municipal and industrial (M&I) demands and/or to maintain in-stream flows. In 2022 and 2023, the State Legislature passed bills which require that all secondary pressurized connections in the State be metered by January 1, 2030.

Condition

Utah has a long history of constructing and maintaining drinking water infrastructure, with public works professionals engaging in these efforts for almost 150 years. Much of the system infrastructure in the state is more than 50 years old and exceeding expected design life spans. In discussions with the large conservancy districts (who manage nearly all of the conventional and advanced treatment infrastructure in the state), managers are generally comfortable with the level of investment for treatment plant maintenance and upgrades. While the age of some treatment and distribution infrastructure in the state's systems is a concern, it's worth noting that infrastructure in Utah is generally newer compared to drinking water systems in the Eastern United States. A study provided by Utah State University surveyed over 400,000 miles of pipe across 800 different utilities in the United States and

Canada. Findings from this report show that approximately 20 percent of pipes across the United States and Canada are beyond useful lives. One-third of pipes are over 50 years old with the average age of water pipes being 53 years old. This represents a growing concern that pipes are not being replaced when needed due to a lack of planning and funding.

To address the issue of aging infrastructure, Utah's water conservation districts and public utility systems are actively investing in improvements and maintenance. About $850 million has been allocated to 1,500 projects throughout the State to improve safety and efficiency, develop new water projects, and refurbish aging infrastructure since the Department of Water Resources State Revolving Fund was established in 1947. Similarly, the Drinking Water State Revolving Fund was established in 1996, and $308 million has been spent on projects from 1997 to – 2022. As part of the improvements, water districts are beginning to implement the integration of artificial intelligence. This integration improves operational efficiencies and conservation; however, implementation is in its early stages and will take some time to perfect. In addition, several seismic upgrades are being completed throughout the state to mitigate the impact of expected large-scale earthquakes highlighting a proactive and responsible approach to both maintenance and replacement.

However, the recognition of the imperative for infrastructure improvements carries with it a price tag. The 3R's (repairing, restoring, and replacing) cost money. For example, the costs of large-sized pipelines have more than tripled in the past 5-10 years, and improvement efforts are being constrained due to pressures to limit consumer charges.

Operation and Maintenance

Due to the criticality of water supply in Utah, effective planning and infrastructure maintenance are of utmost importance. The Utah State Legislature has demonstrated commendable efforts in promoting and enforcing responsible operation and maintenance of drinking water infrastructure. State regulations mandate the use of GIS water modeling and utility-level plans, which complement the comprehensive planning conducted by Water Conservancy Districts, as discussed below. Furthermore, cities with a population of 500 residents or more are required to develop conservation plans.

The Utah Legislature has implemented a requirement for Conservancy Districts to establish and maintain System Asset Management Programs (SAMPs). Additionally, these Districts must guide the public water systems within their service areas in developing local SAMPs. As a result of this mandate, major public water systems in Utah diligently engage in systematic monitoring and employ the principles of "the 3 R's". Although certain segments of the systems may be aging, they undergo regular assessments, and appropriate maintenance and replacement schedules are established.

SAMPs necessitate the estimation of future expenses for each component of the water systems. By adhering to this practice, Utah's drinking water entities are better prepared to manage technical and economical aspects of maintaining their systems in the present and future.

It should be noted that smaller systems often face deficiencies in planning, management, operation, and financing, resulting in undesirable outcomes. One contributing factor is the perceived inadequacy of Utah's requirements for basic Operator Certification to ensure competent water system operation and maintenance. Another factor is the lack of system maintenance due to insufficient funding from user rates, which have not kept pace with the increasing cost requirements of the systems.

Funding and Future Need

According to the U.S. Environmental Protection Agency (USEPA)'s 7th Drinking Water Infrastructure Needs Survey, Utah drinking water infrastructure will need $5.24 billion over the next 20 years.The biggest category of needs is in transmission and distribution; $3.29 billion is reported. The Utah Statewide Water Infrastructure Plan finds that $38.2 billion should be spent by 2060, including $20.6 billion for repair and replacement and $17.6 billion for new infrastructure, water supplies, and water supplier conservation costs. Additionally, an estimated $9.5 billion in conservation costs will be paid by business and homeowners.

Funding for the planning, management, operation, and maintenance of Utah's water supply systems comes from a variety of sources: local (including rates and property taxes), regional (conservancy districts), state, and federal. The average Utah household's water bill is $38/month, which is 17th most expensive in the US and above the median of $32/month. Large metropolitan areas including Salt Lake City are routinely assessing needs and raising rates when necessary. With recent and projected population growth, drought conditions, and aging infrastructure, it is reasonable to assume that water rates will need to be increased to accomplish proper planning and maintenance.

In February of 2023, USEPA announced over $12 million for clean water infrastructure. This funding will go to support communities throughout the State to upgrade critical water, wastewater, and stormwater infrastructure.Many localities bond to invest in their water facilities – these bonds are frequently paid back by user fees.

With the allocated funds, both districts and smaller systems are actively pursuing the implementation or enhancement of treatment facilities to adhere to existing and upcoming regulations, including those pertaining to PFAS and the updated Lead and Copper Rule. However, the feedback received indicates that despite the availability of funding, many systems continue to face financial constraints that hinder their ability to develop comprehensive long-term plans for complying with these new regulations.

Research for previous Infrastructure reports showed that about half of the 20-year future expenditures will be in the private sector (i.e., construction related to new developments by their developers). The other half will be normal SAMPs-expenditures by water supply entities, derived from a variety of user fees. In the case of a major seismic event, that situation could require substantial injections of funds from public entities, very much like current government subsidies to address some of the financial impacts of the COVID-19 pandemic.

HB12, passed by the Utah Legislature and signed into law by Utah Governor Cox in 2024, permits the infrastructure of new residential projects to be funded up-front with Tax-Exempt bonding. This can significantly reduce the cost of new infrastructure, such as water lines, and in so doing reduce the costs to the new residents. This law may also enable development of additional affordable housing and has the potential to alleviate the rising costs of many other water system elements.

Based on previously estimated future water infrastructure financial requirements, updated to 2024 prices, it is estimated that the next 20-year period will require the following investments:

Repair, Restore & Replace (3 R's) Existing Infrastructure: $9.5 Billion

New Infrastructure needed for Population Growth: $9.7 Billion

For existing systems, the estimated unit cost for the 3 R's is nearly $400 per year per household. The cost of new water infrastructure is usually bundled into the price of the new residence, although portions are borne by the various distribution system components.

Public Safety

The Utah Division of Drinking Water (DDW) has primacy under the Safe Drinking Water Act and regularly monitors Utah's public water systems to maintain system integrity and the physical, chemical, and biological safety of the water supply. Under the Utah Improvement Priority Systems (IPS) Rule, each system is assigned a numerical score based on their compliance with drinking water standards and operational criteria. These scores help prioritize systems for regulatory attention and technical assistance. Currently (2024), the 916 active public water systems are categorized as follows:

Approved: 886 systems (97 percent)

Corrective Action: 20 systems (2 percent)

Not Approved: 10 systems (1 percent)

All of the non-approved systems are very small systems serving fewer than 500 people, with most serving fewer than 100 people.

In 2023, DDW reported 901 violations at public water systems, with 261 of the violations being resolved within the year. Most unresolved violations were due to failure to monitor and/or report, although there were 42 unresolved maximum contaminant level (MCL) violations and 104 unresolved treatment technique violations.

Resilience

If a major earthquake were to occur along the Wasatch Fault, it would severely impact water supply systems and could potentially leave some systems unable to provide residents with safe drinking water for an extended period at the time they are most critical. This threat encompasses three main components: damages, response and restoration time, and associated costs. In response to legislative requirements, both Conservancy Districts and select public water systems in their respective regions have developed contingency plans that address the most likely seismic event scenarios with some systems updating plans since the 2020 earthquake in Magna, UT. These plans not only address potential damage, but also consider various human factors such as transportation, response, and communication among personnel. Additionally, these entities have gathered the necessary equipment and materials for a prompt and efficient response, repair, and restoration . However, it is important to note that many smaller systems have yet to adequately prepare in this regard to mitigate potential consequences effectively.

Innovation

By leveraging advances in technology and artificial intelligence, districts and systems are implementing creative methods to monitor water consumption and minimize loss. Park City, for instance, has implemented a real-time water loss tracking system that divides their extensive pipeline network into 40 subzones. Each subzone calculates the amount of unaccounted water lost on a daily basis. Additionally, Park City conducted an internal rate study, which was validated by an external consultant and

resulted in a novel tiered water rate system based on usage and location, with an energy surcharge added for pressure zones at higher elevation that require additional pumping. Similarly, other districts and systems are either currently developing or have already implemented user-friendly systems that allow homeowners to track their water usage, helping them identify excessive consumption levels.

B-

Recommendations to Raise the Grade

- Encourage state investment in future water supply options due to its rapid population growth, which often requires shorter advance planning time.
- Support state-specific funding to explore alternative long-range water supply options, considering the uncertain effects of climate change on its snow-dependent water sources. One option is considering Trans-Basin water sources. These would need to be planned in cooperation with other states, such as Idaho, Montana, or Wyoming.
- Implement water conservation plans and update as water supply and demand conditions evolve, and water systems should investigate reallocating secondary irrigation water to M&I and in-stream flow uses.
- Collaborate between tate agencies and other stakeholders to ensure the Great Salt Lake is restored to healthy conditions.
- Prioritize the potential impacts of major seismic events, and supporting state funding for contingency planning and construction measures to protect vulnerable water supply conduits.
- Apply state funds for the expansion of System Asset Management Programs (SAMP) programs for smaller water systems, including technical assistance.
- Conduct a comprehensive analysis of future financial requirements for the increasingly-strained water system due to rapid population growth and urban development. Water systems must raise water rates as needed and the state should consider providing a consistent financial support to water supply and distribution entities, similar to current practices in transportation funding, such as UDOT's freeway construction.

Sources

Salt Lake Tribune, "*Bear River pipeline no longer an option to aid in northern Utah growth", 2024*.

Utah State University, Utah Water Research Laboratory, "*Water main break rates in the USA and Canada: A comprehensive study", 2023*.

Kem C. Gardner Policy Institute, "*Insight: New 2020 Census urban areas released*", 2023.

Forbes, "*Monthly utility Costs in the U.S. by state", 2024*.

Kem C. Gardner Policy Institute, "*Utah population to increase by 2.2 million people through 2060", 2022*.

Park City, "*Water Consumption Rates*", 2024.

Prepare 60, "*Prepare 60 - Securing Utah's Economic Future*", 2024.

United States Environmental Protection Agency [USEPA], "*Biden-Harris Administration announces $12,226,000 for Clean Water Infrastructure upgrades through the Bipartisan Infrastructure Law in Utah", 2023*.

USEPA, "*Drinking Water SRF Program Information for the State of Utah", 2023*.

USEPA, "*EPA's 7th Drinking Water Infrastructure Needs Survey and Assessment", 2024*.

Utah Department of Environmental Quality, "*Environmental Interactive Map*", 2024.

Utah Division of Drinking Water [DDW], "Enforcement: DDW Rules", 2024.

Utah Division of Water Resources [DWRe], "*Secondary irrigation system metering*", 2024.

Utah Division of Water Resources [DWRe], "*Board projects*", 2024.

Washington County Water Conservation District [WCWCD], "*Water Conservation Plan*", 2022.

Utah IRC Media Release

Hazardous Waste

2025 Grade: **C+**

Executive Summary

Utah's hazardous waste infrastructure is regulated under the federal Resource Conservation and Recovery Act (RCRA), and includes various entities managed by the Utah Department of Environmental Quality (UDEQ). The UDEQ's Division of Waste Management and Radiation Control (DWMRC) and Division of Environmental Response and Remediation (DERR) oversee hazardous waste management and cleanup to protect public health and the environment. Nationally, Utah ranks 36th in hazardous waste generation and 12th in the quantity of imported hazardous wastes. Utah has 163 large quantity generators, 278 small quantity generators, and several thousand conditionally exempt small quantity generators. Operation and maintenance of hazardous waste facilities are funded by private and local government entities, while state agencies manage regulatory oversight. Brownfield redevelopment efforts, supported by the EPA Brownfields and Land Revitalization Program and local voluntary cleanup projects, have previously successfully rehabilitated sites like Provo Ironton Steel Mill and the former union stockyards in Ogden.

The Division of Waste Management and Radiation Control (DWMRC) has initiated programs to help small businesses comply with hazardous waste regulations. Recent regulatory changes require the Division of Oil and Gas Mining (DOGM) to work with DWMRC on managing waste from oil and gas production. Key recommendations for improving Utah's hazardous waste management include public education on waste disposal, promoting sustainable manufacturing, and updating rules for oil and gas exploration and production.

Background

Hazardous waste infrastructure in Utah includes small and large quantity generators, handlers, and transporters of hazardous waste regulated by the federal RCRA. The UDEQ is the primary state agency overseeing rulemaking and cleanup of hazardous waste. Within the UDEQ, the DWMRC supports entities to enhance understanding of what is required to effectively manage hazardous waste streams, including treatment, storage, transport, and disposal. Additionally, the Division of Environmental Response and Remediation is charged with protecting public health and the environment through environmental cleanup of chemically contaminated sites, ensuring the proper use of underground storage tanks, and by providing chemical usage and emission information to the public and local response agencies.

Condition & Capacity

Hazardous waste generators are categorized based on the amount of hazardous waste produced each month. According to the UDEQ (2024) Utah has 163 large quantity generators (generating greater than 2,200 lbs/month), 278 small quantity generators (generating between 220 and 2,200 lbs/month, and an estimated few thousand conditionally exempt small quantity generators (generating less than 220 lbs/month). The last published statistics indicate that nationally Utah ranks 36th in hazardous waste generation (34,355 tons), 20th in hazardous waste management (152,744 tons), and 12th in quantity of imported hazardous wastes despite accepting just 3 percent of the total interstate movements of these wastes.

In Utah, emergency response to potentially hazardous chemical or toxic releases is coordinated between the Department of Public Safety (DPS), UDEQ DERR, and the Division of Emergency Management to assist Local Emergency Planning Committees (LEPCs). LEPCs consist at a minimum of both local officials and representatives of facilities subject to emergency planning requirements. LEPCs must develop an emergency response plan, review it at least annually, and provide information about chemicals in the community to citizens.

Operation and Maintenance; Funding and Future Need

Operation and maintenance costs of existing hazardous waste facilities are typically funded by private or local government entities, while state agencies are responsible for facility permitting, educational outreach, inspection, and regulatory oversight. These operations are technically complex and are designed to both mitigate the hazardous nature of the waste and to store or manage it to reduce risks to the public and the environment.

The Hazardous Substance Mitigation Fund (HSMF) current revenue sources are from voluntary contributions dedicated to cleanup of hazardous substance facilities, appropriations made by legislature, and funds incoming due to liable parties in hazardous material release. The HSMF is used to finance emergency actions following hazardous material release, conducting remedial investigations, and providing state match due to cleanups under the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or for leaks in Underground Storage Tanks. However, during the period of 2012-2020 the average annual income for the fund was approximately $824,300, while the mean annual expenditure was $2,272,700. With the average deficit of $1,448,400 yearly in that period, this is proving to be unsustainable, and the department projects that this fund will become insolvent in 2030 (UL-COBI, 2023). The Environmental Quality Restricted Account (EQRA) provided the HSMF with a yearly $200,000 value for administration, emergency response and state cost share for cleanup of hazardous substance facilities, from July 2018 to June 2022, which is now depleted. Even with this aid, expenditures still exceeded appropriations during that period. The amount appropriated in fiscal year 2023 was $330,700, about $100,000 less than fiscal year 2022.

While cleanup and rehabilitation of brownfield locations are expected to be costly, the EPA Brownfields and Land Revitalization Program (EPA-BLRP) has cleaned over 2,000 proprieties in the U.S. and leveraged about $20.13 for every $1 of brownfield funds spent through the many benefits it creates. Collaborations through the UDEQ/DERR's voluntary clean-up project (VUP) and the EPA have produced positive rehabilitation cases such as the Provo Ironton Steel Mill, the Premium Oil Gas Station in Green River, and the former union stockyards in Ogden, while providing over 200 proprieties in Utah with assessment grants. In 2023, the EPA-BLRP granted the Salt Lake City Corporation a $1,000,000 grant for brownfields assessment activities and a $495,200 grant for clean-up activities. Assessment activities will focus on the Main Street Corridor, the Guadalupe neighborhood, and the Poplar Grove intersection in Magna Township, and clean-up efforts will be employed in the Former Schovaers Electronics site at 22 South Jeremy Street in the City of Salt Lake.

Public Safety; Innovation; and Resilience

Effective hazardous waste management is crucial for public safety, as improper handling and disposal can negatively affect the environment and community health. Strengthening resilience in hazardous waste infrastructure ensures communities can minimize risks and protect health and safeguard ecosystems. Thus, hazardous waste management is critical for ensuring longevity and safe operation of critical assets. Support for local small businesses ensures compliance with hazardous waste practices, reducing the risk of accidents and enhancing community safety. Recent regulatory changes in oil and gas, mining industry oversight, and the promotion of recycling and circular economy policies all contribute to a more resilient hazardous waste infrastructure, safeguarding public health and environmental integrity in Utah.

Local Support for Small Businesses

The UDEQ, DWMRC has created an outreach program to facilitate compliance of small businesses with hazardous waste management. Their set of goals are tailored for businesses that generate less than 2,200 pounds of hazardous waste per month. Companies are provided with a checklist to assist with hazardous waste management practices, alongside additional inspection sheets, factsheets, basic hazardous waste training sessions (for businesses), and presentations on hazardous waste management and pollution prevention for schools (all levels) and community groups. Approximately 50 companies engage in this program each year.

Recent Changes in the Regulatory Oversight of Oil and Gas Exploration and Production

The Utah Department of Natural Resources' (UDRN) DOGM provided oversight for waste generated from oil and gas exploration, and because certain wastes from the exploration and production of oil and natural gas are excluded from hazardous waste regulations under Subtitle C of RCRA they were

not included in the Solid and Hazardous Waste Act until 2019, when significant changes to legislation occurred in Utah as a response to EPA's requirements. This affected how oil exploration and production (E&P) waste management is regulated, and in turn the DWMRC and DOGM created an outline program for complying with the required changes. The DOGM will continue to regulate operations and activities that do not fall within the Solid and Hazardous Waste Act. The DWMRC will participate in some approval actions for companies under the DOGM and will regulate management and disposal of solid and hazardous wastes from E&P. The DWMRC is currently working on rules that focus specifically on E&P Wastes to provide clarity for industry. Some changes are expected to be significant, including closure requirements. Dates for the discontinuation of DOGM's existing landfarm and disposal evaporation facility programs, as well the date facilities are expected to comply to the new requirements could be as early as 20 months from the publication of the outline (March 29th, 2023), or the year end of 2024. Due to the necessity of newer and better specific regulations regarding E&P wastes, and the relative novelty of this endeavor to the UDEQ, the DWMRC stated that they will engage in an outreach to E&P waste management companies existing in the state, placing great value on the experience of these seasoned professionals to help them achieve this goal.


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The State of Toxic Waste Production in Utah's Mining Industry

Utah state has, in recent years, risen in the national ranks of toxic material release, from 17th in 2005 to 4th place in 2015, according to the EPA. This was not due to an increase in releases by Utah, but rather due to a decrease from all other states, currently sitting behind Alaska, Nevada, and Texas. In 2022, Utah placed 5th compared to all total releases per square mile.

The vast majority of releases in the state come from the Kennecott Copper Mine, reportedly generating 91 percent of the state's total. According to the EPA, the Kennecott Copper Mine is the 2nd largest source of toxic release in the country. A spokesperson for the Mine in Utah stated that they actually release a minimal amount of waste per extraction; however, the sheer amount of ore that is extracted is what contributes to such a high quantity of releases: "*For every one ton of ore, we release less than one ounce of lead … it is the sheer amount we're moving that makes that add up…*" They do not feel that these releases are harmful for Utahns and claim to be transparent in their reports on toxic waste release.

Recycling, Circular Economy Policies and Waste Reduction Guidelines

There have been significant policies and measures taken by the State of Utah regarding recycling and circular economy incentives, such as DWMRC programs in handling household hazardous waste and other various programs for businesses to reduce and recycle their waste, and attentive guidelines and incentives for proper electronic waste disposal such as manufacturer "takeback" programs. In other sectors of waste management, Utah has become the 22nd state in the union to enact legislation that regulates advanced recycling as manufacturing. The bill in question, HB 493, will justify and encourage investments in advanced recycling facilities, and if the state converts 50 percent of its landfilled plastic waste, these facilities can generate nearly $156 million in economic output per year and up to 600 manufacturing jobs for the state.

Additionally, the UDEQ has been awarded a Solid Waste Infrastructure for Recycling (SWIFR) Community Grant by the EPA, by conducting the state's first ever waste characterization study, in efforts to set up policies and long-term planning for sustainable material management practices. Combined with this study, the state's Solid Waste Management Plan will also be updated. Utah also plans, under this grant, to update electronic data collection to not only justify their new management strategies but also make it available to the general public.

C+

Recommendations to Raise the Grade

- Educate the public about proper disposal programs and processes for disposing of household hazardous waste.
- Implement a coordinated public commitment to achieving sustainable, circular electronics and manufacturing lifecycles which reduce waste, increase opportunities for manufacturers to recycle and reuse valuable materials, and eliminate toxic processes and byproducts whenever possible.
- Engage electronics manufacturers, retailers, and recycling service providers to develop a robust electronics takeback and recycling program available statewide.
- Set policies which help to develop strong local recycling markets in Utah.
- Encourage toxic material and chemical reduction or substitution in consumer products and industrial processes whenever suitable alternatives can be identified.
- Establish effective rules for oil and gas exploration and production waste.
- Maintain or expand funding for innovative brownfields redevelopment programs which prioritize serving low-income or otherwise historically disadvantaged communities.
- Continue to engage private partners in voluntary cleanup and monitoring of potentially contaminated property before resale, redevelopment, or transfer.
- Provide additional funding to the HMSF to guarantee a sustainable and reliable emergency response action, remedial investigations, and site cleanups for potential hazardous substance releases.

Sources

Utah Division of Environmental Quality Division of Waste Management and Radiation Control, “Annual Report”, 2019.

Utah Department of Environmental Quality Division of Environmental Response and Remediation, “Mission”, 2019.

Utah Department of Environmental Quality Division of Environmental Response and Remediation “Utah Tank News”, 2020.

Utah Division of Environmental Quality Division of Waste Management and Radiation Control, “Utah Hazardous Waste Generation and Management 2017”, 2017.

Utah Legislature Compendium of Budget Information, “Hazardous Substance Mitigation Fund”, 2023.

United States Environmental Protection Agency, “Brownfields and Land Revitalization Program Impacts”, 2020.

United States Environmental Protection Agency, “From Idle to Active – Brownfields Programs Spark Redevelopments in Utah”, 2023.

United States Environmental Protection Agency, “Brownfields 2023 Assessment Fact Sheet – Salt Lake County, UT”, 2023.

United States Environmental Protection Agency, “Brownfields 2023 Cleanup Fact Sheet – Salt Lake City Corporation”, 2023.

Utah Department of Environmental Quality – Waste Management and Radiation Control, “Hazardous Waste Management Program”, 2024.

Utah Department of Environmental Quality – Waste Management and Radiation Control, “Small Business Assistance Form”, 2024.

Utah Department of Environmental Quality – Waste Management and Radiation Control, “Oil and Gas Exploration and Production Waste Management”, 2024.

Utah Division of Oil, Gas and Mining – Utah Department of Environmental Quality – Waste Management and Radiation Control.,“DOGM - DWMRC E&P Waste Outline”, 2023.

United States Environmental Protection Agency, “U.S. EPA Toxic Release Inventory.” United States Government, 2017.

The Salt Lake Tribune.,“Utah, Kennecott Rank High in EPA’s list on Toxic Materials”, 2017.

Utah Department of Environmental Quality – Waste Management and Radiation Control, “Recycling/Waste Reduction/Reuse”, 2024.

Utah Department of Environmental Quality – Waste Management and Radiation Control, “Adopting a Recycling Program”, 2024.

Utah Department of Environmental Quality – Waste Management and Radiation Control, “Recycling Electronics Responsibly”, 2024.

American Chemistry Council, “Utah Becomes 22nd State to Enact Advanced Recycling Legislation to Help End Plastic Waste”, 2023.

Utah State Legislature, “H.B. 493 Solid Waste Management Amendments”, 2023.

United States Environmental Protection Agency, “Investigating America through the Bipartisan Infrastructure Law – Solid Waste Infrastructure for Recycling – State and Territory Grant Fact Sheet – Utah”, 2023.

Utah Department of Environmental Quality, “Hazardous Waste: DEQ Protects the Public through Inspections, Education”, 2024.

Utah Department of Public Safety, “Local Emergency Planning Committees (LEPC)”, 2024.

United States Environmental Protection Agency, “TRI National Analysis”, 2022.

Levees

2025 Grade: **D-**

Executive Summary

Utah has nearly 100 miles of levees that have an average age of 63 years. Due to the age of the levees there is a lack of data on the condition of this flood control infrastructure. As urban growth continues, levees are even more critical to the 126,000 residents and $13.4 billion in infrastructure they protect.

Utah has created mitigation strategies for flood events, but current funding for improving levees is very limited. Several critical levees do not meet current Army Corps of Engineers standards and are at risk of being delisted. If these levees are delisted and FEMA mapping is updated, the Salt Lake International Airport and Provo City Airport will be reclassified to be considered in flood plains. Per Utah Department of Public Safety, Division of Emergency Management, levee operation and maintenance is the responsibility of the Owners, which is often either a City, County, a Water Resource District, or a private owner.

Utah's levee infrastructure is rapidly reaching a point of failure in sections of our highly urbanized areas. We strongly recommend that our state and local government agencies address the funding shortfalls and improve the condition of our levees before the most densely populated areas of our state become classified as flood plains, which will dramatically alter how they are perceived and insured.

Condition and Capacity

In Utah, most levees were constructed using non-engineered earthworks, which may have been adapted from old irrigation channels, and are occasionally strengthened with concrete barriers. These structures are, on average, 63 years old, and due to their age, details about their original construction techniques and materials are mostly unknown. The National Levee Database records 45 levee systems spanning 75 miles, yet an additional estimated 25 to 35 miles of levees remain unmonitored by the U.S. Army Corps of Engineers (USACE). The lack of comprehensive data on the state's levee conditions, combined with FEMA's updated flood maps, raises questions about whether the levees meet essential flood control standards, such as those required for a 100-year flood event. As FEMA expands floodplain designations due to levee shortcomings, homeowners could be burdened with expensive insurance premiums and are at risk of being ineligible for federal disaster relief funds in the event of a flood.

The levee infrastructure in Utah is showing signs of disrepair, casting doubt on its ability to operate safely and effectively during flood events. and their location near densely populated zones, including key facilities like the Salt Lake City airport, is worrisome. The absence of engagement in the USACE's levee repair program casts uncertainty on their ability to endure significant flood events, such as those occurring every 20, 50, or 100 years.

Utah's levee situation highlights a critical need for a thorough evaluation and possible enhancements to fortify against floods, especially considering the uncertainties about their construction and composition. With crucial city areas in jeopardy and many levee systems lacking detailed risk assessments, it's imperative to take preemptive actions to reduce potential harm caused by flood events. Initiatives to improve the monitoring, assessment, and restoration of these levees are vital to protect communities and essential infrastructure from the catastrophic effects of flooding. As urban growth continues, the financial implications of levee failures, maintenance, and resolving property rights disputes are mounting, prompting concerns over the risk ratings of numerous state levees due to scant records and escalating damage costs.

Funding and Future Need

Funding for levees in Utah is very limited and mostly comes from annual Public Works budgets that are used for all public works funding. No specific, recurring funding for levees was identified during the research and literature review phase of the report card.

Salt Lake County secured $12.3 million of American Rescue Plan Act (ARPA) funding in 2021 from the state of Utah for Public Works projects (not levees) enabling them to reappropriate county budget money for one-time funding to improve the Surplus Canal levees. Annual funding specifically for levees is rare to find, and typically inadequate for the system needs.

This condition is not unique to Salt Lake County, and other cities and counties in Utah are in similar situations. According to preliminary findings from the *Provo River Levee & Utah Lake Flood Risk Study* conducted by Provo City, non-certified levees could increase the flood risk to the Provo City Airport.

FEMA has announced that 2024 will be "FEMA's Year of Resilience." FEMA's Building Resilient Infrastructure and Communities (BRIC) funding supports states and local communities to develop mitigation plans and install infrastructure for floods and other natural disasters. Currently FEMA has $800 million for flood mitigation assistance with Utah receiving $300,000 of the BRIC Grant funding that is being used for a geotechnical report.

The Federal Infrastructure Investment and Jobs Act (IIJA) that was signed into law in 2021 has provided significant funding to America's infrastructure. Utah has received funding for the state's infrastructure, but none of the IIJA funding has been applied to levee projects. Two projects in Utah have received Flood Mitigation or Prevention funding, but neither of them are for levees.

Watershed and Flood Prevention Operations: Duchesne County WCD

Flood Mitigation Assistance Grants: Moab Detention Basin Project, Cache County Hyrum Slough Flood Mitigation

Utah is at significant risk of mapping changes of FEMA Floodplains that will impact two international airports and require residents of major urban areas to purchase flood insurance. Flood Mitigation and Prevention funding is needed on an annual basis to meet current and future needs for Utah's levees.

A significant barrier to levee repair is long timelines for construction permit applications from the US Army Corps of Engineers (USACE). USACE receives many applications and must thoroughly review the impacts of proposed designs, often with limited funding. Current estimates for permit applications can be up to three years. Funding for this process comes from the Section 408 Program, and when that funding runs out (as has occurred in recent years) the review process may halt altogether, causing more delays. Larger allocations from Congress to the Section 408 Program of the USACE would give the USACE greater resources for reviewing these applications, enhancing the timeline for making necessary repairs.

Operation and Maintenance

Funding for levee Operations and Maintenance (O&M) mainly comes from general flood control or Public Works budgets within agencies. Most agencies with stewardship over levees are cities and counties where funding is already limited. Maintenance operations are typically limited to repairing damage from flood or breach events.

The Utah Department of Public Safety has developed mitigation strategies for flood events and has developed actions specific to a levee management plan for Utah. The actions recommended in the mitigation strategies mainly focus on creating inventories, databases, aerial surveys, and flood protection zones for levees (See Figure 1). This is a good first step to improve the O&M for levees so that the weak points in these systems can be identified for the next step, funding acquisition.

Figure 1 - Utah Flood Control Mitigation Plan

OBJECTIVE: Develop a Utah levee management strategy.

Actions	Priority	TIme	Responsible Agencies	Potential Funding Sources
1. Inventory, evaluate and repair Utah's existing levee system to compile existing subsurface data, collect new subsurface data and build a nGIS-based platform containing all the relevant levee information.	Medium	Ongoing	DEM, DWRe, RiskMAP, local gov'ts	state funds, RiskMAP, local funds, DWRe
2. Initiate development of a state-of-the-ard levee database for the purpose of better understanding and mapping levees in Utah.	Medium	Ongoing	DEM, DWRe, RiskMAP, FEMA Map Modernization Program, local gov'ts	state funds, RiskMAP, local funds, DWRe
3. Initiate an aerial levee survey project.	Low	Ongoing	DEM, DWRe, RiskMAP, local gov'ts	state funds, RiskMAP, local funds, DWRe
4. Create levee flood protection zones with DWR and develop a web-viewer that will enable property owners to locate their properties.	Low	Ongoing	DEM, DWRe, RiskMAP, local gov'ts	state funds, RiskMAP, local funds, DWRe
Efforts & Progress: **Provo City and Salt Lake County have currently submitted mitigation grant proposals for federal funding to evaluate the structures of existing levees in their respective areas.**				

In Salt Lake County the Surplus Canal levees were evaluated in 2017 and received an unacceptable rating by the U.S. Army Corps of Engineers (USACE). The evaluation identified over 300 locations along the levee system that needed improvements to meet the PL84-99 requirements for emergency funding. As a result, the Surplus Canal was delisted by the USACE. Because of the delisting a large portion of the west side of the Salt Lake Valley, including the Salt Lake International Airport, could be mapped as Floodplain by FEMA, which would in turn require property owners with mortgages to purchase flood insurance. If flooding occurs while the Surplus Canal is delisted the area may not qualify for federal recovery funding. Salt Lake County developed an O&M manual and a System-Wide Improvement Framework plan to address the violations, but it does not have a recurring funding source to perform the improvements identified in the plan based on the USACE evaluation.

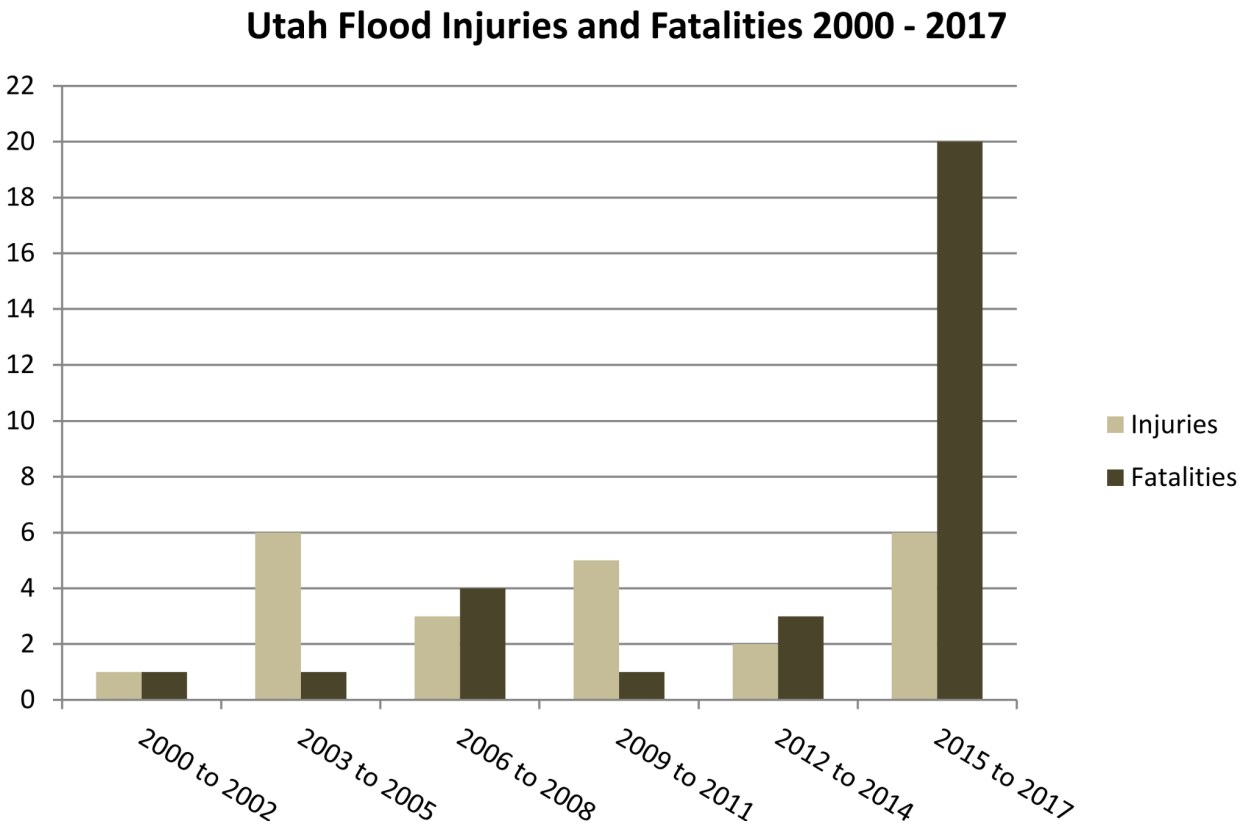
Levee operation and maintenance is the responsibility of the owners, which is often either the Water Resource District or a local owner according to the Utah DPS Division of Emergency Management.

Public Safety

Levees are essential for public safety and resilience against floods. The National Levee Database (USACE NLD) protects about 126,000 people across 45 levees, reducing risks to homes, airports, schools, and more, totaling around $13.4 billion.

There have been 23 recorded injuries and 30 recorded deaths in Utah from floods since 2000. In 2017, there were 20 fatalities from floods, the most of any year in Utah. Figure 2 (Utah Division of Emergency Management, 2019) summarizes these risks and further illustrates how risks from flooding are growing over time. Considering the increase in frequency of extreme events in recent history and the potential for additional events related to climate change in the future, the risk and associated costs associated with flooding will only continue to escalate.

Figure 2 – Utah Flood Injuries and Fatalities from 2000 to 2017 (Utah Division of Emergency Management, 2019)



Resilience

Flood control design is largely managed by local municipalities and property owners. Coordination at a State level is largely not overseen by a particular organization, but instead defers oversight to FEMA and the flood insurance program, which rely almost exclusively on federal funding.

Due to the age and poor physical conditions of the Surplus Canal and Provo River levees in the Salt Lake City and Utah County areas they have been decertified by the ACOE. The poor physical conditions of the levees pose a risk for two airports, residential and commercial areas. The decertification also triggers a remapping of FEMA's Flood Insurance Rate Map. This remapping is poised to designate numerous properties within a flood zone, impacting the value of properties and increasing insurance status significantly.

Currently, no planning exists for emergency action plans from a levee breach in much of the State of Utah. This means that if a levee fails, no written or approved in-place plans and supplies are available for implementation. During a flood event, this absence of coordination means a greater impact to the public and increased costs of damage and repair. These flood events pose a significant hazard in terms of injury and even fatalities to Utahns.

Innovation

Several federal initiatives are underway to reframe how we evaluate the safety of our flood control infrastructure. A few with direct impact on existing levees are the FEMA Future of Flood Risk Data (FFRD Initiative), the Safeguarding Tomorrow Revolving Loan Fund Grant Program, and NOAA's Atlas 15.

The FFRD Initiative is part of FEMA's 2024 Year of Resilience, funded in part by IIJA. This program includes a collaboration with the US Army Corps of Engineers to modernize available floodplain data and shift the reported floodplain risk from a discrete mapping model (in and out of the 100-year floodplain) to a continuous mapping model (range of flood risk zones reporting the 5 to 200-year floodplain). See Figure 3 below published by FEMA illustrating the granularized risk approach. The continuous model in the FFRD Initiative will more accurately communicate ranges of flooding risk to the public and aid engineers in their site design. This program is in year two of four.

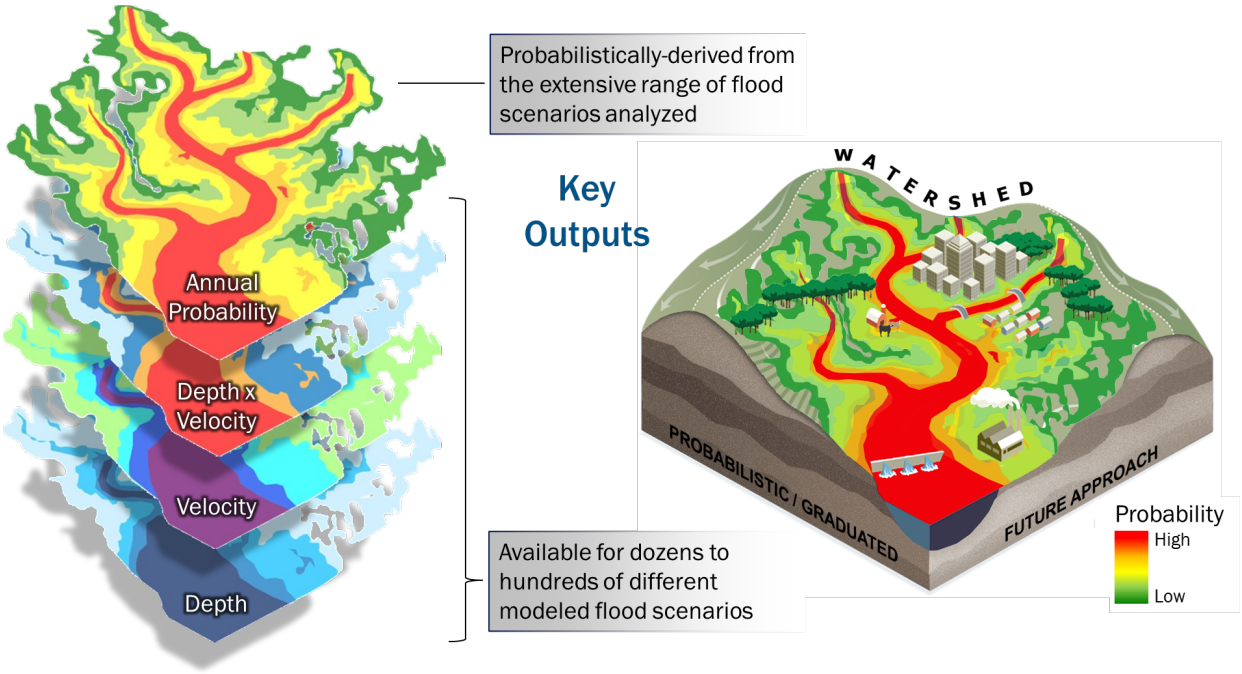


Figure 3 – FEMA FFRD Initiative Continuous Mapping Illustration (USACE, 2023)

Likewise, the Safeguarding Tomorrow Revolving Loan Fund Grant Program is overseen by FEMA with flood resilience as its focus. In 2023, the Biden-Harris administration announced $150 million in funding for low-interest loans to fund preventative hazard mitigation projects. The first application period has just ended and these funds will be awarded shortly to the selected communities.

NOAA has similarly received funding in recent years from IIJA to study precipitation across the country. This study will replace decades-old data and establish an updated National Precipitation Frequency Standard. NOAA is in the development stage of Altas 15, a publication which will incorporate this data to provide the public with more accurate precipitation estimates for their regions. NOAA Atlas 15 Volume 1 will report historical precipitation estimates, and NOAA Atlas 15 Volume 2 will report projected estimates that include modeling for anticipated increases in storm intensity due to our changing climate. This data will better inform engineers on capacity and resilience of existing and future stormwater treatment and flood-prevention infrastructure.

Once the data from FEMA and NOAA are available, it is anticipated that it will be used to re-evaluate minimum building standards. FEMA reports minimum construction standards are five decades old. Outdated safety standards may pose a risk to the communities our infrastructure is intended to protect. More accurate data may more fully characterize flood risks in our communities and necessitate examination of current building practices.

D-

Recommendations to Raise the Grade

- Assess levees using updated hydrology and hydraulic analyses that incorporate the impact of urbanization and climate change.
- Assess updated levee flood zones and their impact on surrounding infrastructure.
- Identify levees across the state of Utah. Define private vs public levee systems and their risk levels.
- Create a toolkit for agencies to prepare feasibility studies for levees and prepare funding applications.
- Create a flood hazard reduction program , similar to NEHRP and NWIRP. NOAA estimates “Approximately seventy-five percent of all Presidential disaster declarations are associated with flooding.” This estimate includes all instances of flooding, including levee breaks.
- Create a streamlined process for USACE permits to benefit levee management. Current permit timeline estimates are up to three years. It is recommended that Congress increase USACE Section 408 funding to allow them to review the permits.

Sources

Salt Lake County, "*Surplus Canal Deficiency Rehabilitation Project*", (n.d.).

US Army Corps of Engineers, "*National Levee Database*", 2024.

American Society of Civil Engineers, "*2020 Utah Infrastructure Report Card*", 2020.

Federal Emergency Management Agency, "*Building Resilient Infrastructure Communities*", 2024.

Federal Emergency Management Agency, "*FEMA Administrator Attends COP28 for the First Time in FEMA's History, Announces 2024 as 'Year of Resilience' for Agency*", 2023.

Federal Emergency Management Agency, "*Utah – Risk Rating 2.0*", 2021.

HEC Newsletter, "*FEMA's Future of Flood Risk Data Initiative,* 2023.

Federal Emergency Management Agency, "*Fiscal Year 2024 Notice of Funding Opportunity Safeguarding Tomorrow through On-going Risk Mitigation Revolving Loan Fund Program*", 2024.

National Oceanic and Atmospheric Administration – Office of Water Prediction, "*NOAA Atlas 15: Update to the National Precipitation Frequency Standard", 2024.*

US Army Corps of Engineers, "*The Section 408 Program*", 2024.

Utah Division of Emergency Management/RISL MAP Program, "*Provo River Floodplain Mapping: 2014-2024", 2024.*

Utah Department of Public Safety – Division of Emergency Management, "*Quick Guide, Floodplain Management in Utah", 2020.*

Roads

2025 Grade: **B+**

Executive Summary

Between 2020 and 2023, the population of Utah grew by an estimated annual average of 1.7 percent, equating to an estimated population growth of 171,659 new residents. Over the last 10 years Utah grew from 34th to 30th place of most populated states, outnumbering Arkansas, Mississippi and Nebraska to rank firmly in the middle third for the first time in the state's history. Utah is consistently adding capacity to the roadway network and promotes an "all users" mindset to provide a safer, more equitable system for everyone that uses a road. In 2024, the State budgeted a total of $3.3 billion for UDOT, which includes $1.3 billion in one-time funding. In 2023, Utah also approved the largest transportation program in State history, valued at more than $14.3 billion over six years and representing a substantial expansion in scope. UDOT uses a Transportation Asset Management Plan (TAMP) to proactively and reactively manage the state's roadways.

Utah is committed to public safety and UDOT's Zero Fatalities program to significantly reduce fatalities and serious injuries on Utah's roadways. In 2024 Utah implemented a new program to reduce instances of road rage and promote mutual respect between drivers to improve public safety. Utah also promotes innovation in the roadway system by implementing several innovative cost saving improvements to the roadway network. Resilience is a critical component of Utah's roadway network, and UDOT's Resilience Improvement Plan (RIP) identifies vulnerabilities in the system and recommendations to reduce risk.

Capacity

Utah is consistently adding capacity to the roadway network year after year. Notable capacity improvements that are completed or under construction are listed in the table below.

Project	Location	Completion
South Weber I-15 Express Lanes	Weber/Davis Counties	2022
US-191 Widening	Moab	2022
I-80/I-215 Upgrades	Salt Lake County	2023
Vineyard Connector	Utah County	2023
US-89 Reconstruction	Davis County	2023
West Davis Highway	Davis County	2024
Mountain View Corridor	Utah/Salt Lake Counties	Ongoing
I-15 Shepard Lane Interchange	Davis County	Ongoing
SR-30 Reconstruction	Cache County	Ongoing
Springville 1600 S Interchange	Utah County	Ongoing
Roy 5600 S Widening and Interchange	Weber County	Ongoing
Bangerter Freeway Interchanges	Salt Lake County	Ongoing

The Utah Department of Transportation (UDOT) now promotes an "all users" mindset in transportation planning and decision making, addressing the need for a safer, more equitable system for everyone who uses a road. In addition to vehicular capacity, UDOT is proactively adding active transportation and transit capacity to roadways. The Utah Trails Network (UTN) is a program within UDOT to plan, design and construct a statewide multi-use trail backbone to allow active transportation modes to travel across the state. UDOT is also addressing busing capacity on state roads in partnership with Utah Transit Authority's Bus Speed and Reliability Program (BSRP) and coordination with Connect Transit, formerly known as Cache Valley Transit District.

Between 2020 and 2023, the population of Utah grew by an estimated annual average of 1.7 percent. This equated to an estimated population growth of 171,659 residents. As the state grows, expanding the road network will become increasingly costly and inefficient, and capacity will need to be added in more efficient modes such as transit and active transportation.

Condition

Since the 2020 Utah Infrastructure Report Card, pavement condition has improved year over year, with 95 percent of pavement in good or fair condition as of 2022 . In addition to meeting federal pavement management requirements, UDOT prioritizes maintenance of high-volume pavements, which is any road with an Annual Average Daily Traffic (AADT) volume of 1,000 or higher . This strategy allows the department to focus the most funding where the majority of the traveling public is located.

The UDOT Transportation Asset Management Plan (TAMP) has four objectives:

1. **Formalize a data-driven, performance-based approach** for allocating transportation funds to manage pavements, bridges, ATMS (ITS), and signal devices.
2. **Incorporate asset management** into the intermediate and long-range planning processes.
3. **Incorporate risk management** into resource-allocation decisions.
4. **Provide a valuable asset-management tool** with dynamic data connections.

The TAMP categorizes assets based on a tiered system of criticality, where some assets are proactively managed and some are reactively managed. This provides for a more efficient use of resources depending on risk and impact to the traveling public.

Funding and Future Need

In fiscal year 2024, UDOT had a total budget of $3.3 billion, which includes $1.3 billion in one-time funding. In 2023, Utah also approved the largest transportation program in State history, valued at more than $14.3 billion over six years and representing a substantial expansion in scope. Sustainable sources of federal, state, and local funding to meet Utah's transportation needs will continue to be an important part of public conversation.

While federal fuel tax funding has historically been a key component in expanding and maintaining the Interstate Highway System, the Congressional Budget Office anticipates that the Highway Trust Fund will be depleted by 2028, and the federal gas tax has not been increased since 1993. Utah increased the state gas tax in 2023, but fuel tax increases are a short-term fix as gas vehicles become more efficient and electric vehicles become more common. The *Get Connected* report by the Alliance for Automotive Innovation found that Utah had 8.93 percent EV market share, ranking 16th in the nation (2024, Q2).

On January 1, 2020 Utah became the second state alongside Oregon to operate a permanent road usage charge program for alternative fuel vehicles. More than 5,000 vehicles were enrolled as of December 2023. Lessons learned from Utah's innovative road usage charge program can serve as a model for other states considering similar per-mile user fees as part of a long-term source of sustainable transportation funding in the future which could replace the diminishing power of fuel taxes.

As the population of Utah continues to grow, the state will need to adapt to ongoing maintenance needs in addition to adding more transportation capacity through roadway and multi-modal capacity projects. Further optimizing the use of existing roadway capacity through technologies like ramp metering, transit signal prioritization, and other operation strategies can also reduce capital infrastructure costs but may result in unique operation and maintenance expenses. Building and maintaining the diverse, dynamic, and connected roadways of the future will therefore continue to require sustainable sources of funding.

During the 2023 legislative session, Utah passed Senate Bill 185, which sets aside funding for the development of the Utah Trail Network (UTN). The bill allocated $45 million in one-time funding, and up to $45 million in ongoing annual funding to connect existing trails and create a new trail backbone across the state.

Operation and Maintenance

The responsibility for operation and maintenance of the 49,000 centerline miles of public roads, which facilitate an estimated 34.3 billion (B) Vehicle Miles Traveled (VMT) in Utah, is divided between state, county, city, federal and other jurisdictions. UDOT is responsible for operation and maintenance of 5,897 centerline miles (25,229 lane miles) which includes the Interstate system, the National Highway System (NHS) as well as other state highways which support an estimated 23.4B VMT. Utah's 29 counties are responsible for 24,056 miles which accommodate 2.3B VMT annually. Utah's 258 cities are responsible for 12,410 miles (8.4B VMT) and the remaining 6,636 miles (0.1B VMT) are maintained by federal and other agencies. Generally, each county and city operate and maintain the public roads within their jurisdiction that aren't designated as state highways or maintained by federal agencies. Across Utah agencies are migrating their roadway data onto GIS platforms that can be easily accessed and shared electronically between partner agencies. These platforms allow georeferencing of infrastructure information, which is critical in analyzing and monitoring the performance of roadway operation and maintenance.

Funding for operation and maintenance of county and city roadways is known as the "B&C Road Fund" and is distributed based on a formula using centerline mileage and surface type. UDOT maintains the authoritative record of centerline mileage for 258 cities and 29 counties using GIS data submitted by the local governments and verified by UDOT. In 2023 $217.4M was distributed to local governments through this process. For reference, the largest distribution was $6,600,000 to Salt Lake City, and the smallest distribution was $7,900 to Scofield Town. 206 Cities and Counties received less than $0.5M dollars, 57 received between $0.5-2.0M and 24 received more than $2M each. This distribution is essential for the maintenance and operation of the public road network.

UDOT has implemented AASHTO's Transportation Performance Management framework and employs the "good roads cost less" approach in order to more effectively manage the $62.4B worth of assets they maintain throughout the four UDOT Regions. In 2023 UDOT updated its Transportation Asset Management Plan (TAMP) which uses a three-tier system to manage similar types of assets. Tier 1 assets ($44.6B) are the highest priority assets to the department and are managed using condition and risk-based prioritization. Tier 1 assets include pavements, bridges, signal systems, pavement striping and ITS devices. Pavements account for roughly $31B of the total asset value maintained by UDOT. Tier 2 assets ($17.3B) include culverts, walls, signs and barrier and are managed using an interval-based approach. Tier 3 assets ($0.5B) include fences, pavement messages, curb and gutter, interstate lighting, cattle guards and rumble strips and are managed based on a reactive-based approach.

UDOT performs an annual pavement condition evaluation utilizing automated pavement imagery and LiDAR scanning of the entire state highway system, and approximately half of the federal-aid eligible system maintained by local governments. By implementing recommendations that are closely aligned with the dTIMS model, UDOT is able to improve and maintain pavement conditions which extend the life of UDOT's highest value asset. Similar management approaches are used for each of the other Tier 1 assets UDOT maintains. Since 2019 the pavement condition index has been maintained at a steady level and should continue at these levels based on projected funding and condition information. UDOT collects data for approximately 20 assets including pavement condition data representing the entire federal-aid eligible network on an annual basis through a contracted vendor.

Public Safety

UDOT has established the Utah Strategic Highway Safety Plan which includes three strategic goals. These strategic goals include Zero Fatalities, Optimize Mobility, and Preserve Infrastructure. As part of the Zero Fatalities goal, UDOT tracks the safety of Utah roadways. The data shows that after peaking in 2021, traffic fatalities in Utah have fallen. In 2024, there were 277 traffic fatalities, down from a peak of 332 fatalities in 2021. Serious injury crashes have increased from 1,738 in 2021 to 1,925 in 2024. The Historical Safety index reflects the safety of Utah roadways, and has been steadily increasing from a score of 50 in 2021 to 86 in 2023. In early 2024, UDOT and the Utah Department of Public Safety (DPS) announced a new campaign targeted at reducing instances of road rage and promoting mutual respect between drivers to improve public safety. Utah recognizes the importance of multi-modal facilities for all users, and in 2023 the state funded the Utah Trail Network (UTN). This network will create safe infrastructure for walking, biking, or scooting, and will connect Utahns of all ages and abilities to their destinations and communities. Utah also leads the nation in deploying accessible pedestrian signals (APS) which are radar-activated, touchless, and app-integrated. UDOT has installed more than 1000 APS devices at nearly 250 signalized intersections and plans to expand this technology to every signalized intersection on state routes by 2033.

Resilience

According to FHWA, the term "resilience," with respect to the highway system, means the ability to anticipate, prepare for, or adapt to conditions or withstand, respond to, or recover rapidly from disruptions, including the ability to:

- Resist hazards or withstand impacts from weather events and natural disasters by creating more robust assets.
- Reduce the magnitude or duration of impacts of a disruptive weather event or natural disaster with a rapid recovery approach.
- Have absorptive capacity, adaptive capacity, and recoverability to decrease system vulnerability to weather events or other natural disasters.
- The consideration of incorporating natural infrastructure.

Utah regularly experiences significant wildfires, snow storms, spring runoff, rainfall and high wind events that test the resiliency of the highway system. Utah is also at significant risk for earthquake damage. UDOT employs 1,258 career service employees and an additional 529 temporary/seasonal employees, of which 40 percent work in Maintenance. The roughly 715 maintenance workers that UDOT employs along with the $205M in equipment that UDOT owns and operates represent a significant investment in Utah's ability to respond to adverse events. UDOT's fleet of 571 snow plows, 330 trailers, 709 light duty vehicles, 43 boom trucks, 442 pieces of construction equipment and various other equipment allow workers to be responsive and reduce the duration of disruptions to the highway system. In 2024 UDOT published the UDOT Resilience Improvement Plan (RIP). This plan strategically addresses vulnerabilities in Utah's transportation systems due to current and future weather events and natural disasters. This plan also enhances understanding of these vulnerabilities, informing decision-makers and strategic planners to strengthen infrastructure resilience. It provides a framework to assess risks, prioritize resources, and implement both immediate and long-range resilience measures. UDOT's RIP is integrated with Utah's long-range transportation plan and ensures robust, effective and compliant resilience efforts, reinforcing UDOT's commitment to safeguarding Utah's transportation infrastructure.

Innovation

In 2023, UDOT implemented 61 innovations to improve Utah's roadway network. These innovations include the following:

- Wrong-Way Driving Project. The system includes a series of radar, HD/infrared cameras, and a series of "Wrong Way" warning signs equipped with LED lights.
- Snowplow Signal Preemption using Vehicle-to-Everything (V2X) Technology. This will enable more green light time at signals for snowplows.

- Multi-modal Transportation Hub around Vineyard Frontrunner Station. This will help Vineyard City meet their vision of becoming a high-density walkable community.
- Highly Modified Hot-Mix Asphalt (HMHMA). This material uses an asphalt binder containing more polymer than traditional binders. This results in asphalt with fewer voids that is easier to compact and less permeable to water.

Utah experienced several benefits from these 61 innovations, including savings of over $28 million and 222,000 hours during the expected lifespans of the projects. UDOT completed a benefit/cost analysis of their research program that develops these innovations and found a 26:1 benefit/cost ratio for 57 projects over three program years.

V2X Technology has been implemented on Redwood Road in Salt Lake County to improve transit efficiency, and Utah is continuing to construct V2X infrastructure using a $20 Million grant from the U.S. Department of Transportation. This technology uses sensors and wireless connectivity to allow vehicles to connect to and communicate with drivers and their surroundings to improve mobility, safety, and efficiency.

B+

Recommendations to Raise the Grade

- Continue diversifying transportation options for “all users” as the state grows and densifies
- Continue investing in multimodal transportation capacity projects and innovative corridor management practices to optimize existing roadway infrastructure
- Secure additional sustainable sources of funding for transportation and increase the value of these investments through alternative project delivery strategies and project bundling.

Sources

Utah Department of Transportation, "ALRS Annual Road Mileage", 2018.

Utah Taxpayers Association , "Heads Up: Even With A Surplus A Gas Tax Increase of 14 percent Is Coming January 1, 2023 | Utah Taxpayers", 2023.

KJZZ News, "UDOT installs touchless crosswalk buttons, making streets more accessible for pedestrians", 2024.

ABC4 Utah, "UDOT announces 2023 construction totals", 2024.

Utah Department of Transportation, "Federal Performance Measures", 2024.

Reason Foundation, "Utah Ranks 10th in the Nation in Highway Performance and Cost-Effectiveness - Reason Foundation", 2023.

The Herald Journal, "UDOT project to improve SR-30 over the next few years", 2023.

Utah Unified Transportation Plan, "Funding the Plan - Utah Unified Transportation Plan", 2023.

Alliance for Automotive Innovation, "Get Connected: Electric Vehicle Quarterly Report 2024 (Q2)", 2024.

Utah Department of Transportation, "Getting to know UDOT", 2023.

Federal Highway Administration, "Highway Statistics 2022 - Policy", 2022.

Deseret News, "Opinion: Utah is growing ... and we have a plan", 2023.

Deseret News, "Northern Utah waits for celebration to kick off a new western corridor", 2024.

Committee on Transportation and Infrastructure & U.S. House of Representatives, Before the Subcommittee on Highways and Transit, "The status of the Highway Trust Fund: 2023 update", 2023.

Kem C. Gardner Policy Institute, "State and County Archives", 2020.

Utah Department of Transportation, "UDOT and DPS release preliminary 2023 traffic fatality numbers and launch new road rage campaign", 2024.

Utah Department of Transportation, "UDOT announces year-end construction totals for 2022", 2023.

Utah Department of Transportation, "UDOT announces year-end construction totals (2024)", 2024.

Utah Department of Transportation, "UDOT Hub", 2019.

Utah Department of Transportation, "UDOT Pavement Information - Statewide Condition", 2023.

Utah Department of Transportation, "UDOT Pavement Information - Strategy", 2019.

Utah Department of Transportation, "UDOT Preserve Infrastructure", 2019.

Utah Department of Transportation, "UDOT Road Usage Charge", 2024.

Utah Department of Transportation, "UDOT Strategic Direction", 2019.

Utah Department of Transportation, "UDOT Transportation Asset Management Plan 2023", 2023.

Utah Department of Transportation, "UDOT to 'Connect the West' with Major Federal Grant", 2024.

Utah Department of Transportation, "Utah Fatality Statistics", 2024.

State Smart Transportation Initiative, "Utah leverages value capture to fund transportation", 2022.

KSL News, "Utah to start planning statewide trail network after initial $90M investment", 2023.

Solid Waste

2025 Grade: **B-**

Executive Summary

Municipal Solid Waste (MSW) is increasing at a rapid pace (when considering both the per capita rate and total tonnage). With a robust network of landfills throughout the state, most with decades of capacity remaining, Utah seems to be well positioned in terms of being able to manage its solid waste. However, with a Solid Waste Master Plan that hasn't been updated in almost 20 years, coupled with recycling rates below the national average, there is room for improvement.

Condition and Capacity

According to the Resource Conservation and Recovery Act (RCRA), solid waste includes garbage, refuse, sludge from wastewater treatment plants, water supply treatment plants, or air pollution control facilities, and other discarded material resulting from industrial, commercial, mining and agricultural operations, and from community activities.

Residents of Utah generated 3.3 million tons of Municipal Solid Waste (MSW) in 2021 which is a 20 percent increase from the 2.75 million tons generated in 2017 (Utah's population increased 7.6 percent during this same period). The 2021 figure translates to 5.4 lbs of MSW/person/day, which is higher than the national average of 4.9 lbs/person/day.

Landfills are by far the most commonly used method to manage solid waste in the state of Utah, and these facilities are divided into six categories/classes;

Class I Facilities (process more than 20 tons per day)

Class II Facilities (process less than 20 tons per day)

Class III Facilities (process industrial solid waste)

Class IV Facilities (process construction and demolition (C&D) waste)

Class V Facilities (private facilities)

Class VI Facilities (private facilities that process C&D waste)

The State of Utah has 162 public facilities for landfilling waste, which has increased from 122 in 2019. There are currently 23 Class I facilities and 10 Class II facilities. In 2021 there were 21 transfer stations and 32 recycling/composting stations in the state. Currently, there are no general solid waste incinerators in operation, but there is one commercial incinerator used for hazardous and industrial waste disposal.

Individuals and businesses are only permitted to dispose of or incinerate solid waste at facilities complying with Utah's solid and hazardous waste rules. There are no known non-permitted landfills or incineration facilities in the state.

Most of the Class I landfills in the state have enough capacity to keep receiving MSW for well over 15 years (many have enough capacity for 50-100 years). The exception is the Summit County 3 Mile Canyon Landfill which currently has only eight years of capacity remaining.

There are both publicly and privately owned landfills in Utah. Per state law, all landfills, whether publicly or privately owned, must be permitted.

There are currently 32 material recovery facilities (MRF) in the state. These facilities handle recycling and composting functions. In 2021, 432,540 tons of MSW were diverted to composting facilities and 258,246 tons to recycling facilities. This translates to about 20.8 percent of MSW that is diverted to MRF. This is significantly below the national average where recycling and composting rates are about 32.1 percent of MSW.

There currently is no MSW in Utah that is burned and converted to energy. This is most likely due to abundant landfill capacity, low energy costs, and air quality concerns.

There are not any landfills which are currently permitted to receive solid waste from other states. However, the owner of the Promontory Point Landfill is seeking permits to do so and the application is being reviewed by the Utah Department of Environmental Quality.

Operation and Maintenance; Funding and Future Need

The State of Utah has a good Operations and Maintenance plan for landfills as found in the Utah Administrative Code Section R315. These regulations require the owner or operator to maintain a Plan of Operation approved by the Division Manager and ensure that their daily operations are carried out per the approved plan. This plan must include a description of solid waste handling procedures; a schedule for conducting inspections and monitoring for the facility; contingency plans in the event of a fire or explosion; corrective action programs to be initiated if groundwater is contaminated; contingency plans for other contaminant releases; a plan to control fugitive dust generated from roads, construction, general operations, and covering of waste; a description of maintenance of installed equipment including leachate and gas collection systems and groundwater monitoring systems; procedures for controlling disease vectors; and other requirements related to the safe operation of a landfill facility.

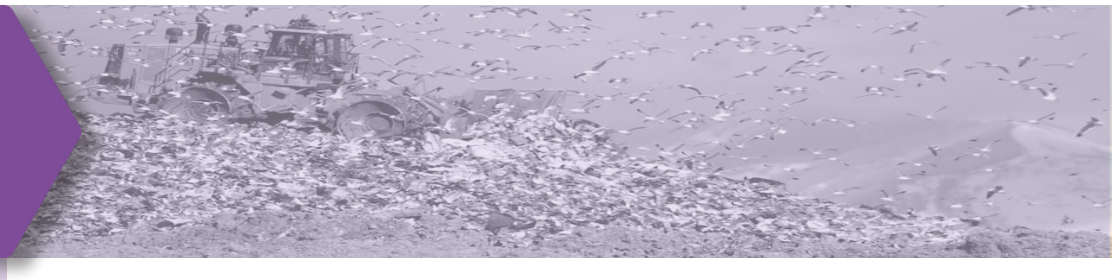
The primary source of funding for the Utah Department of Environmental Quality (DEQ) Solid Waste Division is through solid waste facility fees and permit/inspection fees. No funding comes from federal or state grants. The Utah DEQ complies with the Utah Solid and Hazardous Waste Management Act 19-6-119(7) for its quarterly reporting requirements and fee schedule, which requires owners and operators of commercial nonhazardous solid waste disposal facilities to pay the following fees for waste received for treatment or disposal: $0.13/ton for all municipal waste and municipal incineration ash and $0.50/ton for construction and demolition waste, yard waste, and all other nonhazardous waste. The Utah DEQ uses these funds for the operation and administration of the solid waste and hazardous waste programs as well as for the development and updating of a solid waste management plan.

Resilience, Innovation, and Public Safety

Resilience is defined as the ability of infrastructure to maintain operability when subjected to adverse conditions. Because the quantity and accessibility of disposal facilities in Utah provides a significant amount of redundancy within the system, should a catastrophic event occur, solid waste disposal should not be a major concern.

Innovation is defined as a new method, idea, or product implemented to improve operations and public safety or reduce costs. The current method of solid waste disposal and landfill design in Utah has been in place for decades with very little innovation. The fact is that landfills are a major contributor of methane (a potent greenhouse gas) into the atmosphere. While the EPA requires landfill gas (LFG) collection systems for larger landfills, most of these landfills simply flare off the gas collected. The Trans Jordan Cities Landfill and Weber County Landfill are currently extracting methane from their landfills and using this gas to generate electricity. Innovations such as this not only help minimize methane emissions from landfills but provide a renewable source of electricity. Other innovations that could help reduce Utah's above average rate of MSW being sent to landfills could include improved sorting technologies for recyclable materials and separate collection bins specifically for compostable materials.

Public safety is always important for any infrastructure, particularly solid waste due to its potential to adversely impact the environment and human health. Utah appears to be reasonably well protected with state laws and regulations pertaining to the transportation, classification, management, and employee training when handling solid waste. Utah Administrative Code Title 17-15-23 requires each county to submit to the Solid Waste Control Board a county solid waste management plan providing management info for all solid waste. Each county is required to review and modify its plan every five years and the plan must establish a county solid waste management plan for the next 20 years.



B-

Recommendations to Raise the Grade

- Enhance initiatives to educate residents on what materials can be recycled and where. Further efforts should be implemented to expand compost collection.
- Ensure policies are in place to keep hazardous materials from entering landfills including those which contain per- and polyfluoroalkyl substances (PFAS), pharmaceuticals, and pesticides which have the potential for groundwater contamination.
- Encourage more extensive landfill inspections to minimize illegal dumping of dangerous materials; drones are one effective tool in this effort which can be used with minimal expense.

Sources

American Society of Civil Engineers, Utah Section, "Report Card for Utah's Infrastructure", 2020.

The Salt Lake Tribune, "Promontory Point Landfill Again Seeks Permit to Take Out-Of-State Waste", November 6, 2020.

Utah Department of Environmental Quality, "Disposal Facilities, Recyclers and Disposal Volumes: Solid Waste Program", December 13, 2023.

Utah Department of Environmental Quality, "Solid Waste Facilities and Fact Sheets", October 17, 2023.

United States Environmental Protection Agency, "Facts and Figures on Material, Wastes and Recycling", November 22, 2023.

Stormwater

2025 Grade: **C**

Executive Summary

Stormwater systems provide engineered management of stormwater runoff as well as flooding mitigation and water quality control. In Utah, storm drain systems are owned and operated by state, private, and municipal agencies. The Utah Storm Water Program regulates these systems as a part of the Utah Pollutant Discharge Elimination System's Municipal Separate Storm Sewer System (UPDES MS4) permit program, as referenced in Utah Code 19-5-108.5. In the last four years, tremendous efforts have been undertaken to improve the best management practices of these programs. Since 2020, the state and many municipalities have adopted Low Impact Development (LID) guidelines, updated Stormwater Pollution Prevention Plan (SWPPP) requirements, re-evaluated Total Maximum Daily Limits (TMDL) of potential contaminants, and improved data collection and stormwater modeling strategies. These efforts are being undertaken to minimize flooding potential, improve water quality, and lessen the impact of development on preexisting hydrology, though these measures have raised construction costs.

Despite significant efforts, the state's infrastructure is under pressure, with recent flooding events highlighting its remaining vulnerabilities. Utah's stormwater management systems face increasing strain due to rapid development and more frequent high-intensity storms. Funding for stormwater infrastructure has increased but still falls short of the $6.88 billion gap identified in the 2022 Clean Watersheds Needs Survey. The state has secured federal funding for upgrades, but much more is needed to address aging infrastructure and the growing risks posed by intense storms and snowmelt runoff. Efforts are underway to enhance stormwater quality, particularly to protect critical water bodies like the Great Salt Lake. Innovations in data collection, such as the upcoming National Oceanic and Atmospheric Administration (NOAA) Atlas 15 for precipitation data, alongside stronger local collaborations, are helping to guide future improvements in stormwater management. However, continued investment and updated infrastructure are essential to reduce flooding risks and ensure water quality across Utah.

Capacity and Current Condition

State DEQ/DWQ and Legislation

Currently, there are three stormwater coalitions operating within Utah: the Salt Lake County Stormwater Coalition, Utah County Stormwater Coalition, and Southern Utah Stormwater Coalition. The three stormwater coalitions were formed by local storm water management teams to work together to educate residents, contractors and businesses on storm water pollution prevention measures for clean storm water runoff. More than 40 municipalities have implemented stormwater impact fees, either through direct charges to residents or working on impact fee studies. This legislative framework empowers municipalities to secure additional funding crucial for enhancing drainage systems.

The Utah Department of Environmental Quality (DEQ) reports that as of June 2024 there are 351 94 total discharge facilities with operating Utah Pollutant Discharge Elimination System (UPDES) permits, spanning the majority of developed areas (see Figure 1). UPDES permits are the state version of the National Pollutant Discharge Elimination System, created by the US Clean Water Act. These permits regulate the pollutants discharged to water bodies with a purpose to prevent runoff from impacting the water quality of streams, rivers, and lakes.

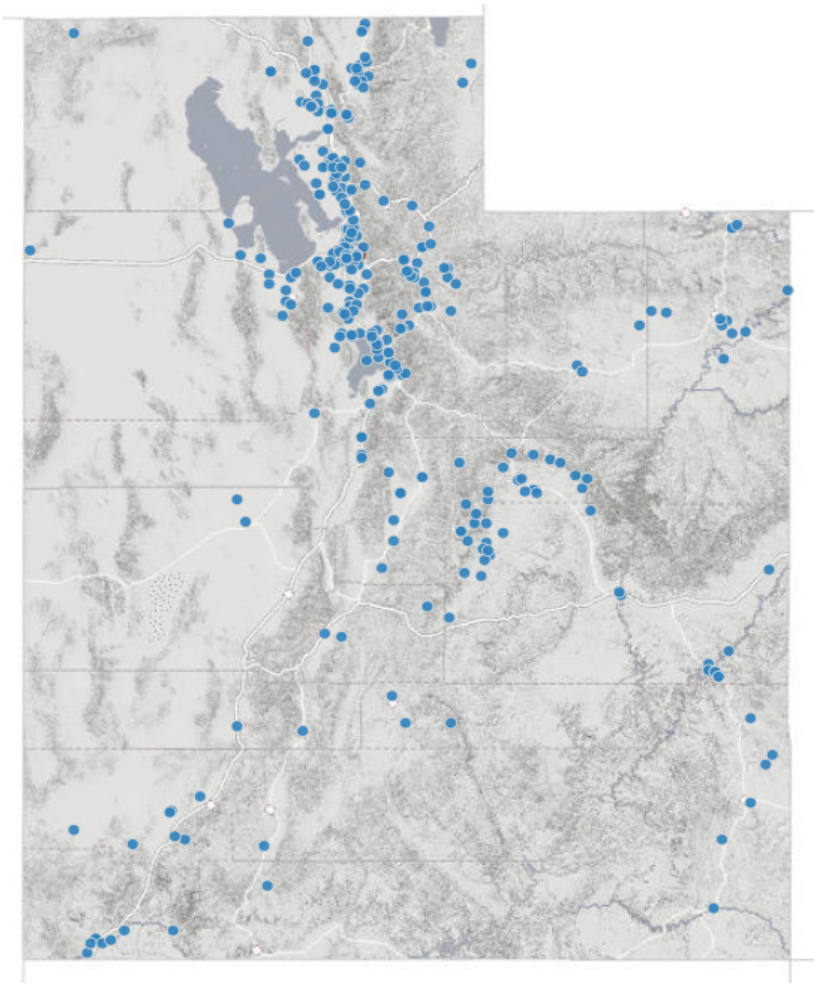


Figure 1: Utah UPDES Discharger Locations
(Source: Utah Geospatial Resource Center, EPA, and Utah DEQ)

Design Requirements

The Utah Division of Water Quality under the Department of Environmental Quality established Low Impact Development (LID) guidelines, suggesting an 80th percentile stormwater retention onsite for new developments exceeding one acre. Afterwards, municipalities adopted the 80th percentile stormwater retention to their drainage design standards, a measure enacted in July 2020. While this requirement has notably improved water quality, it has also increased construction costs. However, many municipalities do not require snow-water-equivalent calculations in pond sizing or the necessity for building pad elevation verification, leading to potential flooding issues during spring due to snow melt and monsoons. Moreover, the state's precipitation-frequency data, sourced from NOAA Atlas 14 Volume 1, has not been updated since 2004, a significant gap considering the increasing occurrences of high-intensity storm events. It is anticipated that the design will be improved after agencies and municipalities adopt NOAA Atlas 15 as soon as it is published.

Construction

In compliance with EPA and state/Municipal Separate Storm Sewer Systems (MS4) permit requirements, any land disturbance exceeding 1-acre mandates contractors to furnish Stormwater Pollution Prevention Plans (SWPPP). Both the contractor and municipal authorities are obligated to conduct regular onsite inspections, with Best Management Practices (BMPs) mandated for smaller disturbance areas. These construction protocols aim to mitigate erosion and water contamination risks. Presently, Utah has 1,011 registered stormwater inspectors and 133 registered stormwater reviewers/writers, as per Utah Local Technical Assistance Program (Utah LTAP) data, translating to approximately 30 and 4 professionals per 100,000 residents, respectively. Per Utah Admin Code R317-8-11, all municipalities under general MS4 permit are requiring SWPPP for construction projects over one acre and comprehensive BMPs for projects smaller than one acre, and it includes a comprehensive engineering review process and field inspection process conducted by both the contractor and the municipality. For municipalities that are not under a general MS4 permit, both review and inspection processes are handled by the state. Overall, currently it is the ordinance for all construction projects to provide BMPs or full set SWPPP with inspection reports prepared by Registered Stormwater Inspectors.

Unique Snow Conditions

Utah is renowned for its “Greatest Snow on Earth” moniker, accompanied by substantial snow water-equivalent depths. The US Department of Agriculture (USDA) records indicate that between 2020 and 2023, Snow-Water Equivalent (SWE) depths during February to April consistently exceeded 10 inches per month, peaking at 30 inches in April 2023 alone. The snow melting and spring precipitations impose additional strain on the state’s drainage infrastructure.

Operation and Maintenance

In the early 1990s, the MS4 initiative was introduced in two distinct phases. Phase 1 primarily targeted larger municipalities, while Phase 2 focused on smaller municipalities and other non-municipal entities. Utah Admin Code R317-8-11 mandates municipalities to develop a storm water management program, including a comprehensive planning process which involves public participation to reduce the discharge of pollutants to the maximum extent possible.

Under the MS4, municipalities were required to formulate comprehensive Stormwater Management Plans (SWMP) aimed at improving the quality of stormwater runoff. These plans encompassed various strategies such as Public Education and Outreach, Illicit Discharge Detection and Elimination, Construction Site Stormwater Runoff Management, Long-term Stormwater Management, and Pollution Prevention/Municipal Operations. Municipalities use SWMPs as Standard Operational Procedures.

As part of the MS4 and SWMP framework, municipalities established allowable discharge rates for developers connecting development drainage systems to public infrastructure. This proactive measure significantly alleviated strain on public drainage systems, effectively mitigating the risk of flooding and safeguarding both private and public infrastructure from damage.

Funding & Future Need

Funding for stormwater infrastructure is used for condition and capacity studies of existing systems, operations and maintenance of existing conveyance and storage systems, and construction of new systems for future development. Funding can derive from monthly fees to stormwater utilities; or from grants and loans from local, state, or federal agencies.

In 2022, Western Kentucky University compiled a Stormwater Utility Survey for the U.S. and Canada. A total of 73 Utah communities were included in this survey. It was reported that the average monthly single-family residential fee in Utah for stormwater utilities was approx. $6.18, similar to the national average of $6.01 and the regional average of $6.07. See Figure 2 for calculated averages of Western states reported in the 2022 Stormwater Utility Survey. This average monthly fee is a 69.3 percent increase from the last study in 2012, where the reported state average was $3.65 a month.

Figure 2: Stormwater Utility Average Monthly Single-Family Residential Fees for Western United States (Data Source: Western Kentucky University)

In April 2024 the Environmental Protection Agency (EPA) delivered the 2022 Clean Watersheds Needs Survey Report to Congress. This survey documents a reported need of $1.431 billion in Utah for gener-

al stormwater management. In the last Clean Watersheds Needs Survey report of 2012, that estimate was less than $500 million for stormwater infrastructure. Part of the increase in reported need may be explained by a broadening of project eligibility under the 2014 Water Resources Reform and Development Act (WRRDA). However, the increase is also attributable to higher stresses on existing stormwater management systems. The increased stress is primarily due to more frequent high-intensity storm events, as well as higher runoff from development and increases of impervious areas.

In response to accumulating data representing stormwater infrastructure needs, the EPA has announced funding for stormwater infrastructure specific to Utah in recent years. On February 20, 2024, the EPA announced $2.6 billion for Utah's Clean Water State Revolving Fund (CWSRF) for wastewater and stormwater infrastructure. The EPA also announced $248,000 in August 2023 for Utah's Sewer Overflow and Stormwater Reuse Municipal Grant program, funding for which was provided by the 2021 Infrastructure Investment and Jobs Act (IIJA). Each of these programs aim to target aging infrastructure and upgrade systems for higher storm intensities.

Though this funding is a significant investment, the funded programs are not exclusive to stormwater infrastructure and therefore do not meet the need reported in the Clean Watersheds Needs Survey Report to Congress. The Utah CWSRF and the EPA's Sewer Overflow and Stormwater Reuse Municipal Grants Program (SOSRMG) are directed to stormwater as well as wastewater infrastructure. The combined categories reported a need of $9.728 billion in the 2022 EPA Clean Watersheds Needs Survey Report to Congress. Therefore, an outstanding funding gap of $6.88 billion remains for Utah's stormwater and wastewater infrastructure.

Public Safety and Resilience

Flooding

Despite Utah's arid climate, flooding is a significant challenge in the state. The Utah Department of Public Safety (UDPS) has designated flooding as the number one disaster risk in Utah. Stormwater infrastructure protects life and property during large storm events. As Utah

continues to develop and high-intensity storm events become more frequent in a changing climate, the risk of infrastructure failure and subsequent flooding increases correspondingly.

In the Spring of 2023, a high-intensity storm event combined with above average snow melt runoff in northern Utah, resulting in major flooding. Both Salt Lake City and Salt Lake County issued states of emergency when the flooding damaged roads, bridges, homes, power lines, public facilities, and local businesses. Temporary residential evacuations were issued, and several roads were closed, resulting in transportation disruptions.

Southern Utah also experienced major flooding in August 2022 and the Spring of 2024. Moab City and the greater Grand County area saw flash flooding and water level elevations rose up to three feet in some areas. Bridges and homes were damaged, and erosion was significant in streams and fields.

Up-to-date monitoring of flood conditions provided by the US Geological Survey (USGS) National Water Dashboard and by the Utah Department of Public Safety helped mitigate the impacts of the emergencies, and coordinated efforts from state and local authorities saved many lives, homes, and businesses with their preemptive efforts and prompt emergency response. However, the condition and capacity of stormwater infrastructure must be improved to prevent future disasters. The resilience of existing and future systems must be analyzed with updated precipitation intensity data to assess the gap in available stormwater infrastructure.

Water Quality

Stormwater quality concerns are likewise impactful throughout the state. Nutrient pollution prevention, sediment control, and contaminant control have all been a major focus of initiatives in the last four years. Pre-treatment (treatment prior to stormwater release from the development site) and Low Impact Development Standards are increasingly recommended by municipal code, water conservation districts, and local authorities.

In recent years, stormwater quality has gained escalating public attention, particularly because of its impact on the water quality of the Great Salt Lake and Utah Lake. Along the Wasatch Front, municipalities have faced growing pressure to convey water to the Great Salt Lake following the drought conditions of 2022. The efforts to preserve the lake are multifaceted and will not be a focus of this chapter. However, a balance must be achieved between the quantity and quality of water conveyed downstream, and focus should remain on minimizing changes to natural hydrologic processes as recommended in the HB 429 GSL Stormwater Study. For example, the Utah Division of Water Quality (DWQ) reports that on-site stormwater retention has been criticized for its perceived withholding of

runoff, when Low-Impact Development practices have shown positive impacts on stormwater quality and groundwater recharge is a key factor in gradually replenishing the water levels of the Great Salt Lake. With a focus solely on discharge conveyance, alternative treatment options will be necessary to prevent further pollutant accumulation in the Great Salt Lake. Otherwise, pollutants pose a significant risk to public health as reported by the University of Utah. These factors ought to remain a consideration of engineers when evaluating the impact of water quality on the public's health and safety.

A main strategy for controlling potential pollutants is establishing a Total Maximum Daily Limit (TMDL). TMDLs are a regulatory tool created under the US Clean Water Act that define a maximum amount of a specific pollutant that a waterbody can receive while still meeting water quality standards. Common pollutants of concern are total phosphorus, total suspended solids, nitrates, ammonia, dissolved oxygen, and temperature. Some water bodies contain additional pollutants. For example, recent studies have targeted arsenic, antimony, copper, and other dangerous heavy metals in the Great Salt Lake for future TMDLs.

TMDLs are developed and implement on the state-level but require ultimate approval by the EPA. The Utah Department of Environment Quality published a 2024 Integrated Report on Water Quality, in which they assessed 918 rivers, streams, canals, lakes, reservoirs, and ponds. It was found that 28 assessed units are Class 4A, meaning they are impaired for a beneficial use (drinking water, recreation, aquatic life, and agriculture) and have a TMDL approved. 389 are Class 5, meaning they are impaired by a pollutant for a beneficial use and require a TMDL.

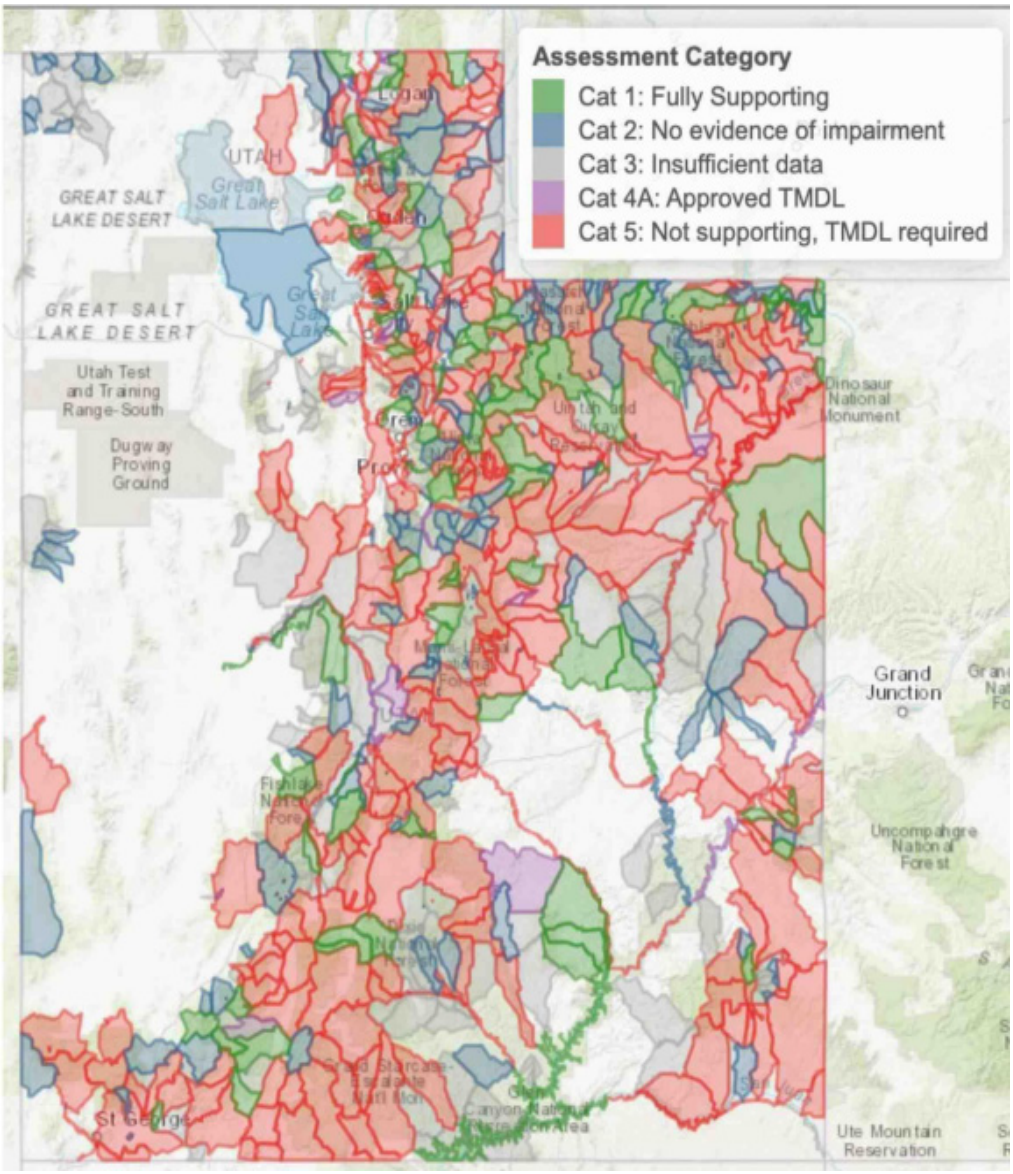


Figure 3: Integrated Report Map (Source: Utah DWQ)

Innovation

Local, state, and federal agencies are aware of the critical need for stormwater infrastructure improvements. In 2022, NOAA received its first-ever direct Federal funding from the IIJA to update precipitation estimates across the country. With this funding, NOAA is currently developing Atlas 15, an updated National Precipitation Frequency Standard. Atlas 15 will provide more accurate regional precipitation estimates that engineers rely on for sizing stormwater infrastructure. This planned update to Utah's precipitation data will better inform engineers when assessing the capacity and resilience of existing and future stormwater treatment and flood prevention infrastructure. The pilot was launched in 2024 in Montana, and NOAA estimates the complete Atlas 15 for all states and U.S. territories will be published in 2027.

On the state level, in the last 5 years higher attention has been given to water usage and hydrologic patterns in Utah. In response, state agencies and local municipalities should be applauded for their efforts to identify infrastructure needs and magnify monitoring processes of both the quantity and quality of stormwater across the state. Below are a few examples of the efforts being conducted.

- The Colorado River Authority collaborated with many state agencies to conduct a Metering and Gaging Gap Analysis in September of 2023, summarizing existing and proposed gage locations in the Colorado River Basin. They suggested 182 locations for additional measurement infrastructure to gather data for stormwater improvements.

- The Division of Water Resources, Division of Water Rights, Division of Water Quality, and the newly established Office of the Great Salt Lake Commissioner published the Great Salt Lake Integrated Plan and the Great Salt Lake Strategic Plan in 2024. These plans call for groundwater studies, stormwater modeling, and flood analysis throughout the valley to understand impacts of development on natural systems.

- In 2020, the Utah Department of Environmental Quality Water Quality Division published an updated guide for developers, the "Guide to Low Impact Development within Utah." The updated guide changed focus from the 90^{th} percentile storm volume to the 80^{th} percentile storm volume. Utah's Small MS4 permits and Jordan Valley Municipalities MS4 permits require 80^{th} percentile storm volume retention as of July 1, 2020.

- Municipalities have adopted more rigorous construction site runoff controls, including stricter erosion and sediment control requirements, more detailed stormwater pollution prevention plans, higher inspection and maintenance requirements, and/or more requirements for post-construction stormwater management (most notably requirements for installation of permanent stormwater treatment devices).

- The Utah Stormwater Advisory Committee (SWAC), Utah Water Task Force, Utah Municipal Storm Water Program, Utah's stormwater coalitions, and many nonprofit organizations have worked diligently to improve collaboration between agencies and/or municipalities. Their combined efforts encourage innovation in stormwater infrastructure and management, stormwater master planning, and water quality initiatives.

- The Division of Water Quality published the 2024 Integrated Report, along with an interactive Integrated Report Map that summarizes assessment categories for Total Maximum Daily Load (TMDL) requirements for water quality pollution limits throughout Utah. Compared to the 2020 Integrated Report, 105 Assessment Units (AUs) were reclassified from Category 3 (no data) to other categories due to expanded data records. Of the 918 AUs reported, 216 AUs remain classified as Category 3 and require more data to evaluate.

• The efforts listed above are a non-exhaustive representation of the state's efforts to improve storm water quality and lessen the impact of development on hydrologic resources. However, there is great need to maintain the momentum of persistent maintenance and repair schedules, increased data collection, improved hydrologic studies, ongoing standard evaluations, and thoughtful implementations in stormwater infrastructure systems. These strategies are paramount to protect the safety and wellbeing of the public.

C

Recommendations to Raise the Grade

- Continue historic investment in infrastructure to meet the needs reported in the EPA 2022 Clean Watersheds Needs Survey Report to Congress.
- Encourage development of NOAA Atlas 15 data for Utah and plan now for recommendations to implement Volume 2, adjustment factors for a changing climate.
- Consider Stormwater Quality standards that are water body-specific for pollutants that threaten specific hydrologic systems.
- Evaluate pre-treatment requirements on a state or county level.
- Continue efforts to promote Low Impact Development where feasible and when prudent.
- Provide dedicated funding streams for stormwater utilities at the municipal level.
- Consider city or county participation in FEMA's Community Rating System (CRS).
- Consider joint municipal efforts for stormwater maintenance and master planning for shared watersheds.
- Continue to evaluate assessment units for TMDLs and gather data on Category 3 areas.

Sources

EPA, "*Biden-Harris Administration announces over $43M for Utah water infrastructure upgrades*", 2024.

EPA and the Utah Division of Water Quality, "*Utah UPDES Dischargers GIS*", 2025.

EPA, "*EPA offers Utah $248K for stormwater collection, sewer system upgrades*", 2023.

EPA, "*Clean Watersheds Needs Survey (CWNS) – 2022 Report and Data*", 2022.

EPA, "*Clean Watersheds Needs Survey (CWNS) – 2012 Report and Data*", 2012.

EPA, "*Nonpoint Source: Urban Areas*", (n.d.).

Utah DWQ, "*Water Quality Permits*", (n.d.).

Utah DWQ, "*Low Impact Development*", (n.d.).

Utah DWQ, "*A Guide to Low Impact Development within Utah*", 2020.

Utah DWQ, "*Utah's Integrated Report*", 2024.

Utah DWQ, "*Interview with ASCE Utah Infrastructure Report Card Committee*", 2024.

Western Kentucky University, "*Western Kentucky University Stormwater Utility Survey 2022*", 2022.

NOAA, "*NOAA Atlas 15: Update to the National Precipitation Frequency Standard*", 2024.

Utah DNR, "*HB 429 Great Salt Lake Stormwater Study*", 2024.

Utah's Local Technical Assistance Program, "*Registered Storm Water Inspectors*", 2024.

The Colorado River Authority of Utah, "*Volume 1: Report; Metering and Gaging Gap Analysis*", 2023.

Utah Department of Emergency Management, "*Flood Reference Guide for Community Officials*", 2024.

The Salt Lake Tribune, "*Deluge in Moab deemed a 100-year flood*", 2022.

KUER, "*Northern Utah braces for more flooding as Salt Lake declares state of emergency*", 2023.

Office of the Great Salt Lake Commissioner, "*Great Salt Lake Strategic Plan*", 2024.

U of U College of Science, "*Toxic Dust Hot Spots*", 2022.

Transit

2025 Grade: **B-**

Executive Summary

Public transportation is an important component of Utah's impressive transportation network. Currently, public transit service providers operate in the following counties:

Transit Agency	Service Area (Counties)	Service Types
Connect Public Transiit	Cache	fixed-route bus, microtransit, paratransit
Utah Transit Authority	Box Elder, Davis, Weber, Salt Lake, Tooele, Utah	fixed-route bus, microtransit, paratransit, light rail, commuter rail, fixed-route bus rapid transit

High Valley Transit	Summit, Wasatch, Salt Lake Counties	fixed-route bus, microtransit, paratransit
Park City Transit	Summit County	fixed-route bus, paratransit
Basin Transit Association	Uintah, Duchesne	fixed-route bus, paratransit
Cedar Area Transportation Service	Iron	fixed-route bus, paratransit
Moab Area Transit	Grand	fixed-route bus, microtransit, paratransit
SunTran	Washington	fixed-route bus, paratransit

Utah's public transit service providers covered 95 percent of Utah's population in 2023. In addition to these public transit agencies, there are 14 senior centers and nonprofits that receive funding through the Utah Department of Transportation (UDOT) Rural Public Transit (RPT) team. These Specialized Transit agencies primarily provide on-demand and paratransit services to seniors and persons with disabilities.

Public transit in Utah is steadily improving. A 2024 consumer affairs study found that Salt Lake was in the top ten cities in the nation for public transit. New services such as on-demand microtransit and bus rapid transit (BRT) provide added convenience and accessibility. Recent state investments in public transit include the creation of the Transit Transportation Investment Fund (TTIF). This funding allocates a percentage of state sales tax towards transit capital improvements and to improving first and last mile connections. Utah has many opportunities to continue improving public transit by expanding service and frequency along the Wasatch Front, increasing the supply of qualified maintenance technicians, improving or replacing facilities that are inadequate or operating at capacity, keeping public transit fleets in an acceptable state of good repair, and focusing on improving and expanding public transit throughout rural parts of the state. Utah's efforts to fund and expand public transit are critical to ease congestion from rapid population growth.

Condition and Capacity

Utah has seen a consistent year-over-year increase in population, with over 170,000 new residents between 2020 and 2023. The Kem C. Gardner Policy Institute predicts the population will increase by 2.2 million people by 2060, with much of the growth centered in Utah, Salt Lake, and Washington Counties. Utah must continue investing in transit capacity to keep up with population growth.

The Utah Transit Authority (UTA) is the largest transit agency in Utah with over 35 million boardings in 2023. UTA provides bus, light rail (TRAX), commuter rail (FrontRunner), bus rapid transit, paratransit, microtransit, and vanpool along the Wasatch Front. 80 percent of the population of Utah lives within UTA's service area. Public transit nationally saw severe drops in ridership due to the Covid-19 Pandemic. UTA ridership has made a sustained recovery, with 80 percent of pre-pandemic ridership in 2023, and 2024 ridership reaching 90 percent of pre-pandemic levels.

In 2023, UTA's first all-electric BRT line, the Ogden Express (OGX), was opened, allowing for easier access between Ogden Central Station, McKay-Dee Hospital, and Weber State University. OGX ridership has exceeded expectations, and four additional buses have been ordered to keep up with demand. OGX runs on 10-minute headways weekdays providing frequent and consolidated service through its high traffic corridor. Upcoming UTA capacity improvements include FrontRunner 2X, a strategic double tracking project which will double the frequency of regional rail trains, the Midvalley Express (MVX) BRT in the central Salt Lake Valley, and the return of BRT to the 3500 South bus lanes in West Valley City, where service was suspended due to decreased ridership during the Covid-19 pandemic.

Table 1: 2023 Transit Ridership

Agency	Region	2023 Ridership
Utah Transit Authority	Wasatch Front	35,059,930
Park City Transit	Park City	1,913,767
High Valley Transit	Summit/ Wasatch Counties (Wasatch Back)	1,181,485
Connect Public Transit	Cache Valley	967,171
Basin Transit Association	Duchesne/Uintah Counties	26,174
Cedar Area Transit	Cedar City	14,868
SunTran	St. George	no data
Moab Area Transit	Moab	no data
Total		**39,163,395**

Utah's smaller and rural transit agencies provide fixed-route bus and paratransit services for their communities. Rural public transit agencies face challenges due to the low population density of the regions they serve. Connect Public Transit, High Valley Transit, and Moab Area Transit rely on microtransit to meet the needs of their rural communities. These agencies report that microtransit has been successful and has increased ridership.

Operation and Maintenance

A recent legislative audit reported that UTA's FrontRunner service disruptions have more than doubled, increasing from 63 in 2021 to 136 in 2023. UTA's bus service interruptions also increased during this time, though significantly less than FrontRunner.

Internal UTA audits have discovered that many of their facilities are seismically unsound and operating over capacity, including the Frontline Headquarters (FLHQ) building and the Warm Springs Rail Service Facility.

In the Uintah Basin, Basin Transit Association (BTA) reports demand for more services and routes in their area but lack a facility to properly store and maintain their fleet. R idership has steadily increased since the Covid-19 pandemic and is anticipated to expand with a facility that could accommodate service expansions.

Despite challenges, Utah has its fair share of O&M successes and improvements. Connect Public Transit, Basin Transit Association, High Valley Transit, and Park City Transit all operate as fare-free systems. TRAX service disruptions have decreased over the past four years because of proactive maintenance and state of good repair projects. The UTA Bus Speed and Reliability Program (BSRP) is working with UDOT and local governments to implement signal prioritization and queue jump lanes in key locations to improve on time performance.

High Valley Transit, which has been operating out of a temporary facility since its founding in 2021, is nearing completion on a permanent facility for maintenance and administration. Connect Public Transit, formerly known as the Cache Valley Transit District, completed a larger operations and maintenance facility in early 2025, which will allow service expansions. UTA also recently completed the new Depot District Garage, a modern bus garage that can accommodate future growth.

Funding and Future Need

In 2022 the Utah Legislature established a Transit Transportation Investment Fund (TTIF) that appropriates a portion of state sales tax toward public transit capital development of new capacity projects and fixed guideway capital development projects as approved by the Utah Transportation Commission. This provides an additional source of funding for public transit in Utah and increases collaboration between elected officials, public transit providers, and UDOT.

With the passing of House Bill 434, municipalities within MPO boundaries are now required to create station area plans. These plans include high density and mixed-use development within a half mile radius of rail stations, and a quarter mile of BRT stations. Utah is proactively planning for strategic higher density growth near transit, and according to the Utah Unified Transportation Plan, expects to invest $10 billion and $19.3 billion into transit capacity and operations and maintenance projects respectively between 2023 and 2025.

UDOT also provides grant funding to eligible rural public transit agencies through its Federal Transit Administration (FTA) Rural Public Transit program. UDOT is the direct recipient of formula FTA funding for rural public transit operations, administration, capital, and planning needs and awards these funds to applicants (subrecipients) based on eligibility, risk, need, and funding availability.

Public Safety and Resilience

Buses and trains remain by far the safest modes of ground-based travel in Utah. This follows the national trend which placed death rates compared to cars at 20 times lower for buses, and 17 times lower for passenger trains.

Utah's public transit providers are focusing on improving customer experience and safety. For example, an ongoing UTA project is bringing 75-150 bus stops a year into compliance with ADA requirements, as well as adding seating and updated signage that is recognizable and easy to interpret. UTA also offers a complimentary Royale subscription on the nationally known Transit app, helping riders plan trips and see system delays more conveniently.

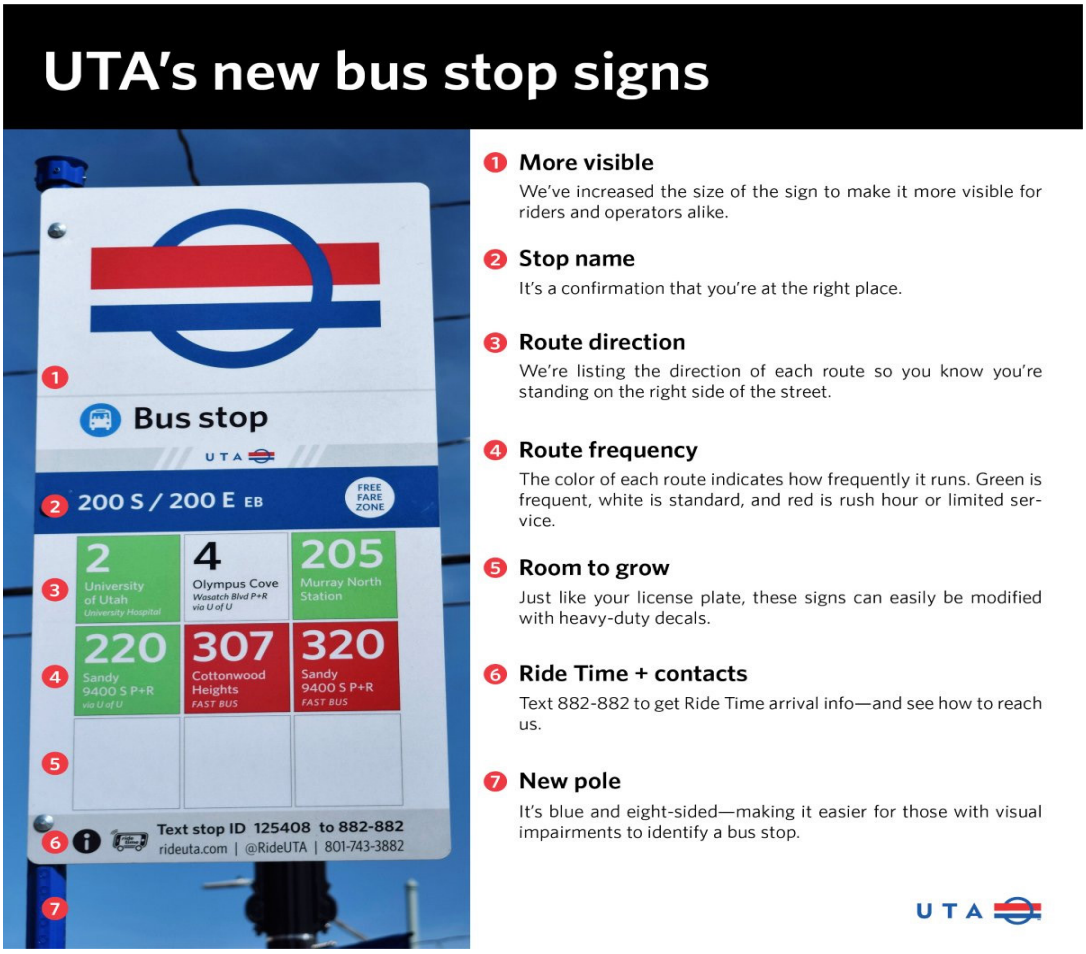


Figure 1: UTA Updated Signage, courtesy of UTA

In 2021, Utah's largest pedestrian bridge was constructed by UDOT in Orem. The Utah Valley University (UVU) pedestrian bridge crosses I-15 and connects the nearby campus with UTA's Orem Central Station. The $30.7 million project allows over 6,000 pedestrians per day to have easier and safer access to public transit and UVU. Pedestrian bridges were also constructed at Provo Central Station and near North Temple Station in 2023, providing safe crossing across Union Pacific and UTA tracks at these stations.

In 2022, Connect Public Transit installed new bus tracking and stop announcement technology on all of its buses. This technology enhancement provides real-time location information and automatic stop announcements to riders. As part of their recent rebrand from Cache Valley Transit District to Connect Public Transit, all bus stop signage was replaced with new and easy to read signage. Connect Public Transit is now focusing on improvements to its CCTV digital storage capacity to increase the effectiveness of its CCTV system.

Innovation

Utah is aggressively innovating transportation planning and development. Some new or unique innovations in Utah include:

- **Guiding Our Growth Survey:** A 2023 survey conducted in partnership with the state legislature, metropolitan planning organizations (MPOs), several state agencies, and nonprofit organizations asked Utahns how they wanted the state to grow. Decision makers are using survey results to guide growth and transportation together. Survey results have been instrumental in adding funding for transit agencies, first/last mile connection projects, and changing zoning to maximize the efficacy of transit networks.
- **Utah Unified Transportation Plan:** MPOs, cities, counties, transit agencies, and UDOT collaborate to identify transportation plans and needs for their areas. Projects are identified and prioritized into ten-year phases. This promotes guided, coordinated growth and allows for effective use of limited resources.
- **Housing, Transit, and Transportation Reinvestment Zones (HRTZs):** In 2018, 2019, and 2021 Utah passed legislation that allows public agencies to reap the benefits of mixed use and high-density developments near public transit facilities. The laws allow a portion of increased revenue from sales and property taxes to be used for development or transit improvement costs. The state also matches 15 percent of the incremental growth in sales tax in HRTZs and deposits it into the TTIF. Projects that involved HRTZs are given priority consideration for TTIF funding when it is allocated to projects.

B-

Solutions to Raise the Grade

While lacking in frequency and coverage when compared to large urban centers, public transit in Utah is well integrated into regional and state transportation plans, provides a good rider experience, and has consistent and stable funding. This foundation could be the beginning of much more comprehensive and effective public transit as Utah grows denser and more vibrant. Utah can raise its public transit grade and better prepare for the future by doing the following:

- Improve connections between the Wasatch Front to outlying communities such as Cache Valley, Summit and Wasatch counties (Wasatch Back).
- Continue to implement solutions outlined in the 2024 legislative audit of UTA, Unified Transportation Plan, and agency specific capital improvement plans.
- Increase coverage and frequency of the public transit network, especially in growing areas.
- Update seismically deficient and undersized facilities.

Sources

American Public Transportation Association, "2022 Q4 Ridership", March 1, 2023.
American Public Transportation Association, "Economic Impact of Public Transportation Investment".
American Public Transportation Association, "Public Transportation Fact Book", May 22, 2023.
American Public Transportation Association, "Utah Transit Links", October 19, 2022.
American Public Transportation Association, Osman, Marc, "Moving the Nation Through Crisis: Mobility Recovery & Restoration Task Force Report", December 30, 2020.
Centers for Disease Control and Prevention, "Stats of the State of Utah", April 9, 2018.
Consumer Affairs, "These U.S. Cities have the best public transit", 2024.
Federal Register, "Notice of Solicitation of Corridor Proposals and Funding Opportunity for the Corridor Identification and Development Program", December 20, 2022.
Federal Transit Administration, "Enhanced Mobility of Seniors and Individuals with Disabilities Fact Sheet (Section 5310)".
Federal Transit Administration, "Formula Grants for Rural Areas Fact Sheet (Section 5311)".
Governor Spencer J. Cox, "'Guiding Our Growth' survey shows Utahns want a range of housing options, more water conservation, transportation options and open spaces", October 19, 2023.
Harris, Emily, "State and County Population Estimates for Utah: 2023", December 2023.
Hess, Abigail Johnson, "Americans spend over 15% of their budgets on transportation costs—these US cities are trying to make it free", March 2, 2020.
High Valley Transit, "High Valley Transit Ridership Data".
ITS Deployment Evaluation, "First-of-its-kind DSRC corridor in Utah improves transit reliability by 12 percent, reduces late bus arrivals by 40 percent", February 21, 2019.
National Safety Council, "Deaths by Transportation Mode", 2023.
Office of the Legislative Auditor General, "A Performance Audit of the Utah Transit Authority: An Evaluation of the Efficiency and Effectiveness of UTA's Governance and Planning", 2024.
Park City, UT, "Park City Transit", December 2023.
Uintah Basin Association of Governments, "Public Transportation & Human Services Coordinated Plan".
Unified Transportation Plan, "Utah's 2023–2050 Unified Transportation Plan".
Utah State Legislature, "H.B. 434 Station Area Plan Amendments".
Utah State Legislature, "Public Transit Capital Development Modifications", 2022.
Utah Transit Authority, "2023 Budget Summary", 2022.
Utah Transit Authority, "2040 Strategic Plan", January 2018.
Utah Transit Authority, "Buy A Pass".
Utah Transit Authority, "Quality of Life", 2022.
Utah Transit Authority, "Safety".
Utah Transit Authority, "Services".
Utah Transit Authority, "UTA Funding", November 10, 2011.
Utah Transit Authority, "UTA Light Rail Strategic Plan", January 2023.
Utah Transit Authority, "UTA Reports & Documents".
Utah Transit Authority, "UTA School Pass Programs".
Utah Transit Authority, "UTA Service Impact Recognized Utah Transportation Conference", November 20, 2023.
Wasatch Front Regional Council, "Active Transportation".
Wasatch Front Regional Council, "Regional Zero-Fare Transit Study", 2022.

Wastewater

2025 Grade: C

Executive Summary

Wastewater infrastructure is a term used to describe the entire wastewater treatment system. In general, it includes the system of pipes and pumps that collects used water and carries it to a treatment facility, which is a combination of physical, chemical, and biological processes to clean the water before release into the environment. Utah is one of the fastest growing states and has a population that is expected to go from 3.5 million in 2024 to 5.5 million in 2060.

Utah has 41 mechanical treatment systems and 75 permitted municipal lagoon systems. The State also permits large underground wastewater disposal systems (LUWD) and on-site septic systems which are not covered in this report. The Logan City and Salem City lagoon systems are being upgraded to mechanical systems. Twenty-six lagoon systems discharge into state waters. The remaining 49 are percolation/evaporation or land application systems that discharge into the groundwater. The estimated length of existing sewer pipe within the state is 12,200 miles.

The mechanical treatment and lagoon systems had a collective design capacity of 498 million gallons per day (MGD) in 2020 and were treating 320 MGD. However, at least 8 of the lagoon systems were receiving over 100 percent of the design flows.

Generally, the municipal wastewater treatment plants in Utah are meeting permit required technology limits. The impacts of nutrients from wastewater on surface water systems is being mitigated by stricter permit standards. Several treatment plant upgrades are under construction in Salt Lake, Provo, Orem, Spanish Fork, and Payson Cities. A growing number are at risk of slipping away from installed treatment capacity as their infrastructure ages beyond its expected useful life and communities continue to grow. Numerous treatment plants are approaching or have exceeded their expected 30-year useful and efficient operating life. In addition, there is significant deterioration of sewage collection systems that are 60-70 years old and beyond their expected useful life. There is an increasing trend in Utah of antiquated sewage collection and treatment systems. Wastewater agencies have not been able to keep up with repair and replacement let alone account for changing regulations and population growth. Aging infrastructure has progressively translated into declining surface water quality.

Capacity

Most municipalities in Utah depend on wastewater infrastructure to protect public health and the environment. Many rural communities still rely on septic systems. Most of the systems in the state are operating below design capacity and have enough for the near term. However, it is expected that an additional 260 MGD capacity will be needed in the next 40 years to accommodate continued growth. It is estimated that $4 billion will need to be spent on increasing the capacity over the next 40 years.

Salt Lake City will finish constructing an $800 million facility in 2025 to meet state water quality standards to replace the existing 55-year-old facility. In 2022, Logan City updated the lagoons to a mechanical plant to meet ammonia, total nitrogen, and phosphorous standards. Provo City is in the middle of constructing Phase 1 of a treatment plant upgrade focused on replacing the trickling filters to Membrane Bioreactor technology by mid-2024. The South Davis Sewer District will begin construction of the South Davis Sewer District North Plant Upgrade in 2024.

Many smaller and rural communities such as Park City/Western Summit County, Cedar City and St. George have made investments to meet growth and address strict nutrient limits. The small lagoon systems in Utah operate without excess capacity for any growth and could not meet any measure of nutrient limits. These communities routinely seek low-cost loans and grants from the State Water Quality Board to remedy a lack of investment in the collection and treatment infrastructure.

Condition

The mechanical wastewater systems were built in the 1950s through the 2010s, so all will need to be replaced or rebuilt by 2060. There are about 12,200 miles of sanitary sewers in Utah and by 2060 about 60 percent of them need to be replaced based on an estimated lifetime of 70 years for those pipes.

Funding

Eighty percent of Utah's population produces wastewater that is treated in publicly operated treatment facilities, constructed between the 1950s and 2010s. While these facilities have been well-maintained, they will need to be rebuilt or replaced over the next 40 years to ensure they continue to effectively remove pollutants and safeguard water quality. Currently valued at $4 billion, these facilities are projected to require over $5.3 billion for renewal and replacement costs in the next four decades, with an additional $1.3 billion allocated for new regulatory compliance and over $2.1 billion for accommodating future growth until 2060, resulting in a total forecast of $8.7 billion.

Rural Utah relies on sewer lagoon systems as the primary method for wastewater treatment. Despite their simplicity, these systems demand consistent maintenance to ensure they remain operational. The funding to renew or replace the existing 74 lagoon systems in Utah is expected to require approximately $250 million over the next 40 years. Potential regulatory adjustments could elevate this figure by an additional $182 million, potentially necessitating an annual average of over $10 million in loans or grants for these areas.

The wastewater collection systems of unseen pipes transport household wastewater to treatment facilities or lagoon systems. It is crucial for these pipelines to be well-maintained and watertight, preventing leakage of polluted water. With an average lifespan of 70 years, periodic replacement is necessary, especially with population growth potentially requiring expansions to handle increased flow. Utah's 12,200 miles of sanitary sewers, averaging 35 years in age, will require relining or replacement for about 60 percent of lines over the next 40 years, amounting to a cost exceeding $4.3 billion.

Among Utah's 142 wastewater systems, the financial structures vary significantly. A minority, 17 in total, operate without imposing any fees. A total of 31 systems relies solely on user fees, while 72 systems integrate user fees, impact fees, and usage taxes. Only two systems combine user fees with taxes. The majority of systems, 126 out of 137 surveyed systems, have revenue allocated to dedicated purpose or enterprise accounts. Of the system owners, 93 percent of respondents claim to collect 95 percent or more of their anticipated sewer revenue. Meanwhile, 89 percent of owners indicated that the systems meet the requirements for their Debt Service Reserve Funds.

However, challenges persist. Over ten percent of system operators, 18 out of 137, admit to lacking sufficient sewer revenue to cover costs over the next five years. Additionally, almost half of respondents are concerned about the adequacy of their projected capital improvements reserve funds for the same period.

Funding Sources

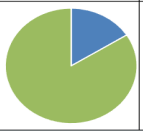
Fund	% of Use	Average	Median	Max	Min
User Fee 91%		$35.33	$31.21	$98.92	$8.33
Impact Fee 68%		$2,606	$2,200	$11,016	$113
Tax 16%		$2.2 mil	$674,847	$10.9 mil	$8,000

Table 1. Funding Sources

Future Need

The three types of wastewater systems in Utah have a total of $13.7 billion in spending estimated until 2060. An estimated $8.7 billion is needed for mechanical wastewater systems as most of these were built in the 1950s or 2010s and therefore will all need to be rebuilt or replaced by 2060. There is $5.3 billion needed for renewal and replacement of existing facilities, $1.3 billion for new or increased regulatory requirements, and then $2.1 billion for new treatment for the rise of population. Wastewater collection systems will need $4.3 billion, $2.9 billion of that for renewal and replacement of existing pipelines, and $1.4 billion for trunkline expansion to support population growth. There are about 74 wastewater lagoon systems in Utah primarily in small communities in rural Utah, with funding for replacement supported by affordable low-interest loans or grants. It is estimated that before 2060 about $250 million will be needed for operational costs and an additional $182 million on regulatory changes.

Operation and Maintenance

There are significant operation and maintenance challenges. These challenges include an aging workforce, a shortage of skilled workers entering the job market, evolving regulatory requirements, disengaged consumers, and rate structures determined by government leaders focused on minimizing initial costs rather than reflecting the comprehensive expenses of wastewater services. Many older wastewater treatment systems initially benefited from federal grants, low-interest loans, and state revolving fund allocations, contributing to insufficient operation and maintenance provisions. Consequently, sewer rates, established below actual operational costs during the facilities' inception, have become inadequate over time, necessitating substantial rate increases to align with the true cost of services. In the 2023 MWPP Survey of Utah stormwater plants, 126 of 137 respondents said they have revenue in a dedicated purpose/enterprise account for the program.

A quarter of system managers highlight staffing shortages that impede their ability to provide proper Operations, Maintenance, and Rehabilitation services. These findings underscore the diverse financial landscapes and ongoing operational challenges faced by wastewater systems across Utah.

WWTP Non-Compliance and SSO Overflows

Internal Division of Water Quality (DWQ) tracking of WWTP permit compliance was inconsistent prior to 2021. The EPA notified DWQ in the Spring of 2024, that the rate of Significant Noncompliance (SNC) among regulated industrial and municipal facilities was 5.3 percent. The SNC rate was 2.4 percent for effluent exceedances, which is below the national average. For reference, the national SNC rate at the time EPA reported Utah's values was 8.8 percent for all violations. The National SNC rate for effluent exceedances hovers closer to 4 percent. UPDES permits in Utah contain more compliance schedules, to allow permittees time to meet more stringent effluent limitations. Trends in the EPA ECHO database reflect that the number of facilities having violations is decreasing.

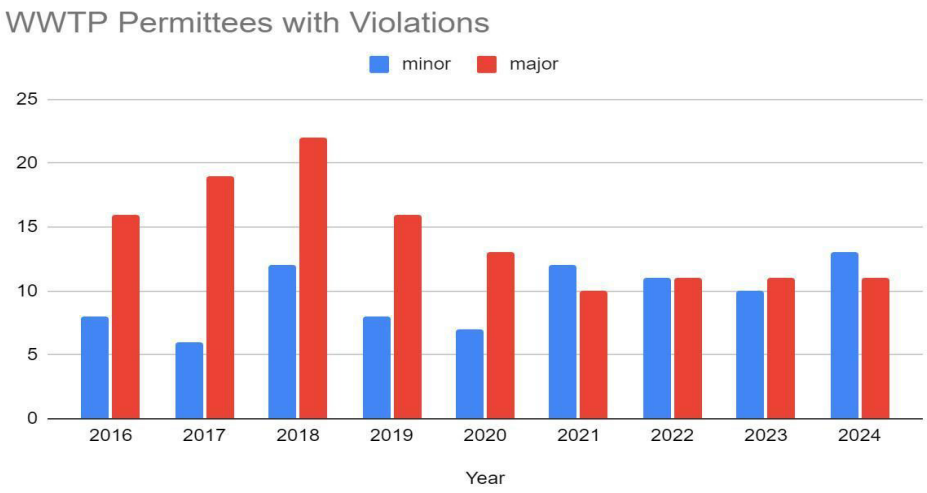


Chart 1. Number of WWTPs with violations by year (EPA's ECHO Database).

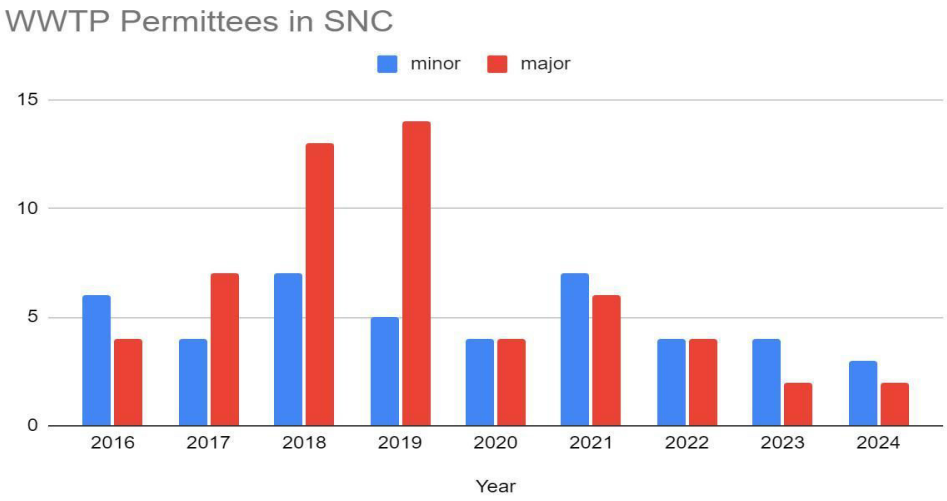


Chart 2. Number of WWTPs with SNC by year (EPA's ECHO Database).

The main causes of WWTP permit violations in the state are related to changing criteria. In general, WWTPs are now subject to more stringent effluent limitations due to new science, rule adoption, and the changing environmental landscape. Utah has also experienced some extreme weather events, such as drought and flooding, which may impact the ability of a facility to remain compliant. DWQ is working with permittees to avoid noncompliance utilizing various tools and providing Compliance Schedules to provide relief while facilities take action towards compliance. While limitations are becoming more stringent, the treatment technology is also advancing to handle these lower limitations. Facilities need the opportunity and funding to install and implement the technology. Some smaller facilities have resource issues and a lack of training and understanding of some reporting requirements.

Determining the number of SSOs is currently very difficult and may not be accurate due to reporting errors. Most of the SSOs in Utah are due to wet weather events or maintenance issues.

The sewer collection systems in Utah are required to have a maintenance schedule, which includes a list of areas that require more frequent cleaning due to past problems. Having the maintenance routines and systems in place often ensures SSOs do not occur due to plugged pipes. The systems in Utah also do an excellent job of cleaning and repairing the pipe systems, although sometimes issues arise during repair or due to user failures that result in SSOs. The requirements for maintaining and operating a sewer collection system in Utah are in R317-8-801. DWQ takes enforcement actions for SSOs that reach a water of the State. The numbers of SSOs between 2016-2020 and 2020-2024 are similar with reporting of these incidents being better due to the requirements in R317-8-801.

Enforcement (by DWQ)

In the fall of 2020, DWQ created a new enforcement section, consisting of four environmental scientists and a manager. This section manages all violations and enforcement under the Utah Water Quality Act, including WWTP permit violations. The mission and duty of the section is to ensure consistent and equitable enforcement across the regulated community. DWQ feels the framework has been successful and the current staff has managed the enforcement workload.

Recently, more funding has been available through the Utah Water Quality Board due to the Infrastructure Investment and Jobs Act (IIJA) and the American Rescue Plan Act (ARPA). The Water Quality Board still has more funding requests than funding. The most recent Clean Water Needs survey identified $8.2 Billion in wastewater infrastructure needs over the next 20 years.

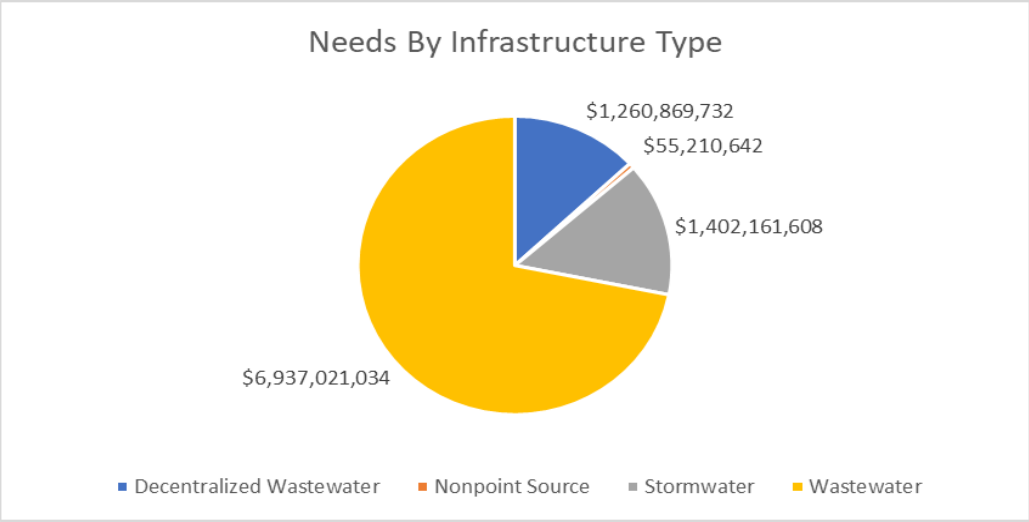


Chart 3. Clean Water Infrastructure Needs for Utah 2022-2042 (EPA, 2024).

DWQ has been working to improve compliance assistance through better communication, education, and resources for permittees.

Public Safety

Environmental and safety issues are emerging due to insufficient and consistent funding. Wastewater leakage from aging sewers is a new concern exacerbated by drought conditions, which lower groundwater levels, allowing wastewater to contaminate it. There are also risks associated with PFAS chemicals and personal care products coming through the wastewater systems without treatment and entering surface and groundwater systems used for potable water supply.

Additionally, in arid regions, there is a growing need to supplement drinking water and irrigation supplies with purified wastewater. However, in Utah, the lack of a regulatory framework and the high costs associated with treating wastewater for direct reuse pose significant barriers.

Resilience

Most of the mechanical treatment plants in the state are in some form of major construction to meet regulatory compliance requirements to treat phosphorus. Most of these system owners decided to upgrade their aging treatment infrastructure for the next 20 years growth horizon at this time. These improvements will utilize the latest building codes for earthquake resilience, evaluate expected growth, and consider site security.

Innovation

DWQ does not keep a searchable record of innovations being implemented or considered and the report is based on input from DWQ staff. This definition of innovation is subjective since what is innovative for Utah may have existed elsewhere for some time and may not be considered innovative there. Utah has established rules for the design of treatment works (Utah Administrative Code R317-3). Using technologies that comply with these requirements has a straightforward approval process. Us R317-3-1.12 includes a process for use of innovative technologies that requires project proponents to provide additional information for evaluation.

Many treatment facilities in the state are in the process of being upgraded and many of the entities doing these upgrades have chosen to include innovation where appropriate. DWQ does not dictate the technology that entities choose to utilize if it meets or exceeds minimum requirements. DWQ encourages entities to evaluate alternatives and choose what will work best given individual circumstances.

There is no database tracking the innovations in Utah regarding technology. The Technology-based Phosphorus Effluent Limits (TBPEL) that has been in effect since 2020 has resulted in enhanced nutrient treatment requirements at most discharging treatment plants throughout the State. Both IIJA and ARPA funding have been temporary sources of increased funding to Wastewater Infrastructure Projects.

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Solutions to Raise the Grade

Based on the comprehensive analysis of Utah's wastewater systems, several key recommendations emerge to enhance infrastructure, address capacity constraints, secure funding, improve operational efficiency, and mitigate risks to public safety and the environment:

- Invest in Capacity Expansion: Given Utah's rapid population growth, projections indicate a need for an additional 260 MGD in wastewater treatment capacity over the next 40 years. Strategic investments must be made in expanding existing treatment facilities and constructing new ones. This necessitates allocating funds amounting to an estimated $4 billion to increase capacity, ensuring that wastewater systems can effectively manage the rising demand.
- Prioritize Infrastructure Renewal: With a significant portion of Utah's wastewater infrastructure reaching or surpassing its expected useful life, prioritizing renewal and replacement efforts is crucial. Allocating resources to systematically upgrade aging infrastructure will mitigate the risks associated with deteriorating systems and ensure continued service reliability.
- Secure Adequate Funding: The estimated costs for renewing, replacing, and expanding wastewater infrastructure in Utah amount to $13.7 billion by 2060. Securing sufficient funding is imperative to address these financial needs effectively. This includes leveraging state and federal grants, low-interest loans, and potentially exploring innovative financing mechanisms to bridge funding gaps and support infrastructure projects across diverse communities.

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- Encourage wastewater system operators to increase fees to meet demands, consider fees that are inflation adjusted to account for changes in purchasing power over time.
- Enhance Operation and Maintenance Practices: Overcoming operational challenges, such as staffing shortages and evolving regulatory requirements, requires a proactive approach to maintenance and management. Investing in workforce development initiatives, adopting best practices for asset management, and implementing sustainable rate structures that reflect the true cost of services will contribute to the long-term viability of wastewater systems.
- Address Environmental and Safety Concerns: Prioritizing public safety and environmental protection requires upgrading treatment processes to address emerging contaminants and enhancing monitoring and enforcement mechanisms to safeguard human health and ecological integrity.

Sources

Environmental Protection Agency, "*2022 Clean Watersheds Needs Survey Report to Congress*", 2024.

Environmental Protection Agency, "*Enforcement and Compliance History Online (ECHO) Database*", 2024.

Littler-Woolf, L., "*Fwd: WWTP Permit Compliance/Enforcement* [Email]", 2024.

Reclaim60, "*Study of Wastewater System Needs in Utah*", 2020.

Provo City Public Works, "*Provo Wastewater Treatment Plant Upgrade Story Map*", 2022.

InstantMarkets, "*Notice of SOQ for South Davis Treatment Plant Construction*", 2024.

Salt Lake City Department of Public Utilities, "*Salt Lake City's New Wastewater Treatment Plant Won't Be as Smelly, Could Help the Great Salt Lake*", 2022.

Department of Environmental Quality, "*Municipal Wastewater Planning Program and Clean Water Needs Survey Results* [PowerPoint presentation by John Mackey]", 2022.

Davies, S., "*Re: Innovations in Wastewater* [Email]", 2024.