2025 REPORT CARD FOR NEVADA'S INFRASTRUCTURE

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

INFRASTRUCTUREREPORTCARD.ORG/NEVADA

About ASCE Nevada Section

The Nevada Section of ASCE was formed over 60 years ago and is comprised of three branches: Southern Nevada Branch, Truckee Meadows Branch and Capital Branch. The Nevada Section has over 1500 active members who participate in over 50 different committees throughout both Southern and Northern Nevada. The Nevada Section board members represent both ends of the state and help provide technical resources, continuing education and community outreach opportunities to both our membership base, as well as the general public.

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INFRASTRUCTURE GRADES BY CATEGORY

2025 REPORT CARD FOR NEVADA'S INFRASTRUCTURE

Introduction

As Nevada grows, the existing infrastructure is becoming taxed, and new facilities are needed across the entire state. Geographically, Nevada is the seventh largest state in land area, but 32nd largest in population,with over 90% of the state's residents in Las Vegas and Reno. Furthermore, 90% of the state is considered rural and over 80% of the land is owned by the Federal government. Nevada is also one of the driest states in the country, with annual rainfall of five inches or less, meaning a majority of the state's water supply is dependent on snowmelt from mountain ranges within Nevada and neighboring states. The state's largest city, Las Vegas, has grown rapidly over the past 25 years, meaning the city tends to house some of the state's newest infrastructure systems and has a larger share of infrastructure versus other areas of the state. In contrast, other areas, including Reno, Elko, Ely and Tonopah, are home to older and aging infrastructure systems. However, these areas are also steadily growing and require both new construction and regular maintenance to keep up with the community's needs.

The 2025 Report Card on Nevada's Infrastructure is the fourth edition developed by ASCE's Nevada Section since 2007. This report covers eight categories – Aviation, Bridges, Dams, Drinking Water, Energy, Public Parks, Roads, and Wastewater. We are pleased to report an improvement in Nevada's infrastructure from a C in 2018 to a C+ in 2025.

About The Report Card for America's Infrastructure

Every four years, America's civil engineers provide a comprehensive assessment of the nation's 18 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 is made up of 52 dedicated civil engineers and infrastructure professionals from across the country, with decades of expertise in all categories, who volunteer 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 to 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 prepare state reports on a rolling basis. Visit **InfrastructureReportCard.org** to learn about your state's infrastructure.

The 2025 Report Card for Nevada's Infrastructure

Aviation
C+

Bridges
B-

Dams
C-

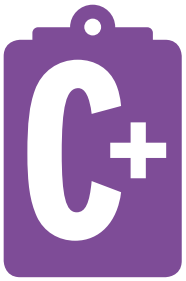
Drinking Water
C-

Energy
C+

Parks
C+

Roads
C

Wastewater
B-



OVERALL GPA

Aviation

C+

GRADE COMPARISON

NV: C+

Nat'l: D+

AVIATION

EXECUTIVE SUMMARY

Nevada's economy relies heavily on tourism, and most visitors use air travel to visit the state. Efficiently functioning airports are essential to keep the state thriving. The COVID-19 pandemic seriously impacted air travel in Nevada, with effects across the economy and airlines in the state. Air travel to Nevada didn't recover until 2022, when numerous international airlines resumed service to the state.

In 2024, over 60 million passengers utilized Nevada's largest airports – the Reno-Tahoe International Airport and Harry Reid International Airport in Las Vegas – placing a heavy strain on existing facilities and requiring constant maintenance. To accommodate current and future passenger volumes, Reid expanded the Henderson Executive Airport and will be starting an environmental analysis for the Southern Nevada Supplemental Airport (SNSA). Reno-Tahoe is in the middle of a $1.1 billion expansion and improvement program, MoreRNO, which broke ground in 2019. Nevada's general aviation airports received over $27 million in Federal Aviation Administration (FAA) Airport Improvement Program (AIP) grants in 2024 and also receive state apportionment and discretionary funding from the FAA. Nevada airports also have access to matching funds through the Nevada State Infrastructure Bank.

CONDITION & CAPACITY

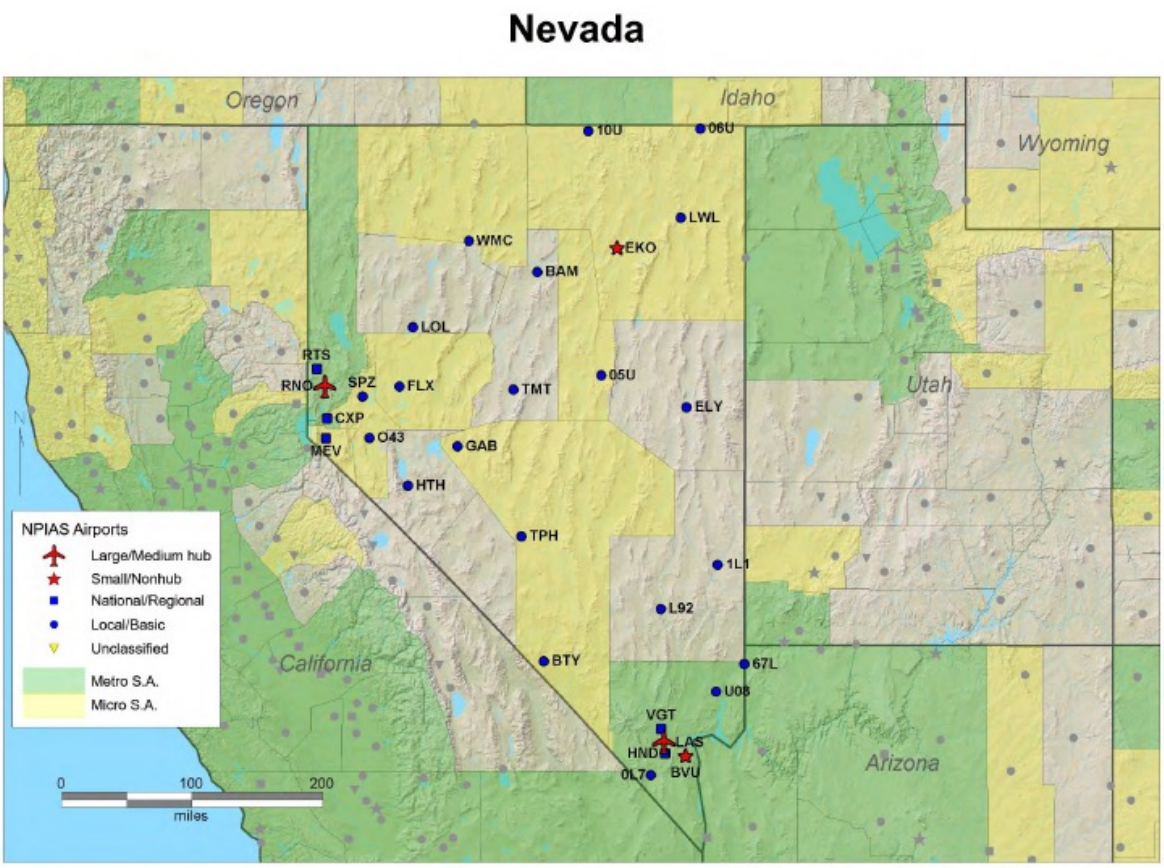
Nevada has 51 system airports and 63 heliports. The two largest cities contain the state's only international airports, the Reno-Tahoe International Airport in Reno, and Harry Reid International Airport in Las Vegas. There are three additional commercial service airports located in the state, three reliever airports, and 22 regional general aviation (GA) facilities. Each of these airports is included in the FAA's National Plan of Integrated Airport Systems (NPIAS) report from 2023, which means that they have been considered significant to national air travel and therefore are eligible to receive federal grants under the Airport Improvement Program (AIP).

Between Reno and Las Vegas, there were approximately 26.7 million enplanements in 2022, including 24.6 million from Reid and 2.1 million from Reno. In 2022, Reid saw over 52.6 million total passengers and Reno traffic topped 4.2 million. The term "enplaned passenger" is widely used in the aviation industry and is loosely defined as a passenger boarding a plane at a

particular airport. It differs from total passenger count, as it measures revenue-generating passengers and does not include layover or round-trip passengers. It is expected that travel to Las Vegas will continue to grow with the addition of four professional sports teams and the Formula One race. The number of enplanements is expected to increase with Nevada's population growth projected to be approximately 227,000 through 2025 (an estimated 186,000 in Clark County alone).

AIRPORTS IN NEVADA

National Plan of Integrated Airport Systems (2023-2027)



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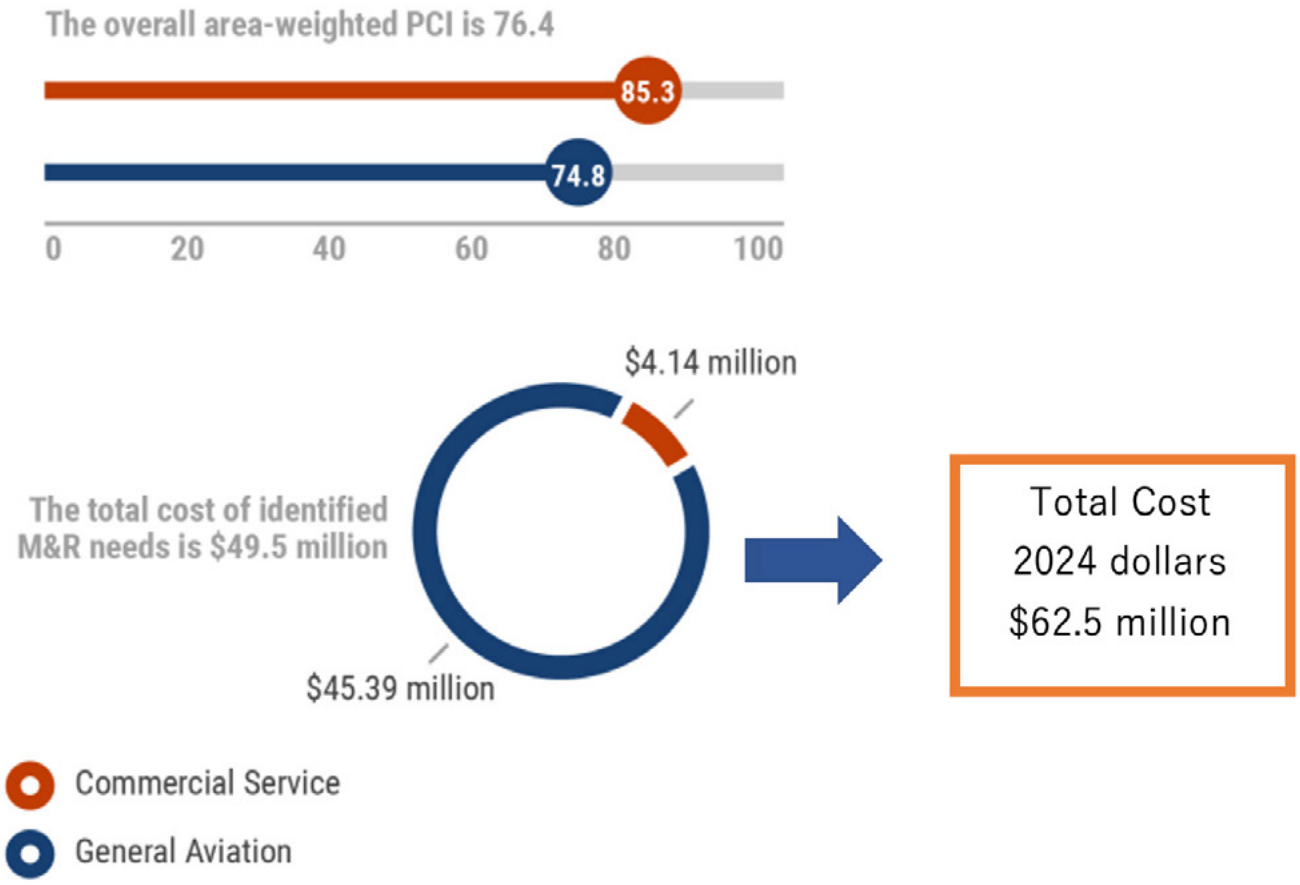
Because Reid is essentially "landlocked" and unable to expand, an Environmental Impact study will be starting for a new airport, the SNSA, in Ivanpah Valley south of the Las Vegas metropolitan area. It is expected that the SNSA will accommodate international travelers and the bulk of cargo traffic in the future. Currently, the international gates are in the newer Terminal 3 so the original international gates in Terminal 2 will be upgraded and combined with Terminal 1 domestic gates. This upgrade will increase the Terminal 1 gates to 67 total. Reno is in the midst of a project that includes construction of a new car rental and transportation facility and the expansion of the B & C concourses to allow larger planes, the addition of six new gates, and the doubling of retail space to 50,000 square feet. Additionally, 17 new passenger boarding bridges are expected to be replaced with the new concourse construction.

At both airports, cargo handling has become a standard part of daily operations. Between the two airports, there were over 390 million pounds of cargo moved in 2022. While this is good for Nevada's commerce and economic vitality, increased cargo volumes put additional strain on the airport systems and facilities.

These two airports also have landside capacity issues for parking and the circulator road system. The car rental and transportation facility will free up 700 parking spaces in the existing garage. Reno has completed improvements to its loop road system. Reid added parking to the

ground floor of the east garage that was lost to rideshare operations on its second floor and moved Economy parking to an improved area adjacent to the garage. With Harry Reid International Airport being over capacity in recent years, local reliever airports, North Las Vegas Airport and Henderson Executive Airport could see additional improvements to assist with GA capacity as Las Vegas tourism numbers continue to grow as new sporting events and entertainment venues are being added.

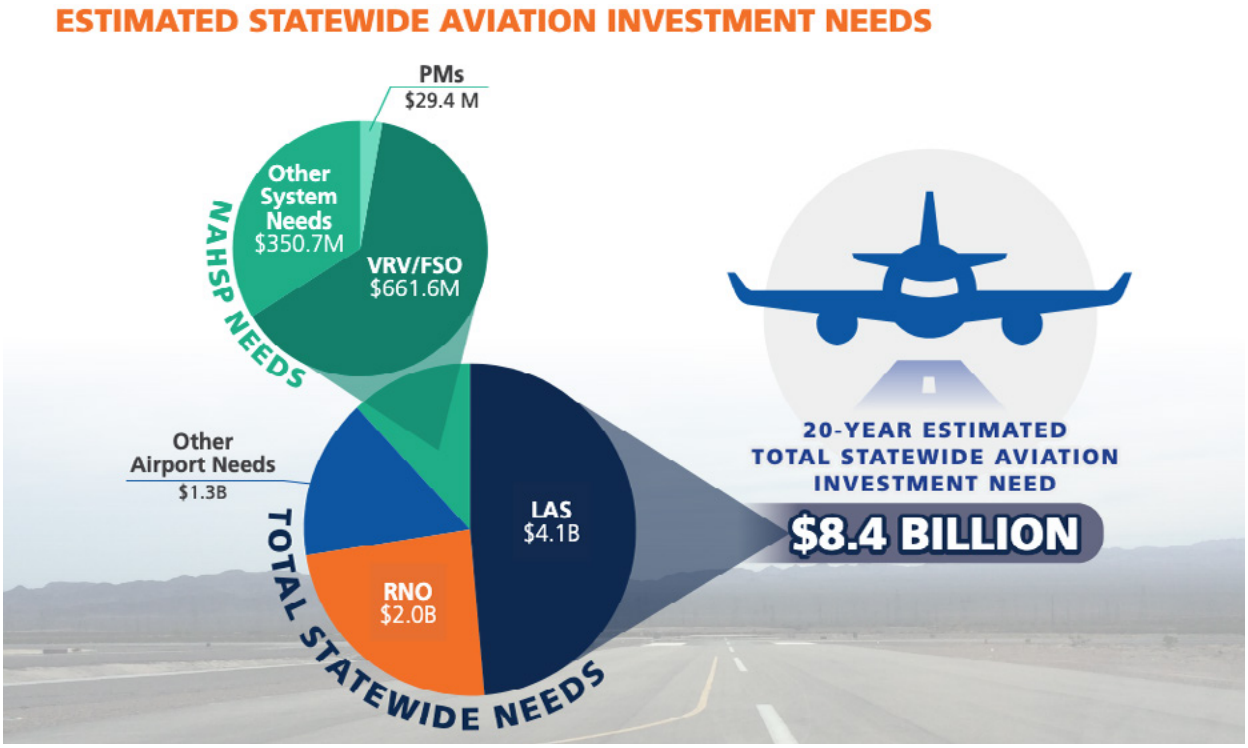
Another critical aspect of all Nevada's airports is pavement condition. The Nevada Department of Transportation (NDOT) conducts periodic pavement condition assessments for most general aviation and air carrier airports under a statewide airport pavement management system (APMS). In 2018, NDOT performed a comprehensive pavement condition assessment of 22 of the 23 NPIAS-listed regional airports. The condition assessment is performed according to FAA guidelines and classifies pavement using the Pavement Condition Index (PCI) procedure. The PCI is used to calculate a composite index for the overall pavement condition, which ranges from 0 (failed) to 100 (excellent). The study found that 20% of the state's airport pavements need reconstruction or rehabilitation. The chart below shows the overall-weighted PCI is 76.4 for Nevada with an approximate total cost of nearly $50 million (2018 costs) identified. Accounting for a cumulative inflation of 25% since 2018 the approximate cost would be $62.5 million. Ninety-one percent (91%) of the pavement maintenance and rehabilitation needs are at the GA airports.



Nevada Airport Pavement Management System Update, NDOT, May 2019

FUNDING & FUTURE NEED

While large commercial airports have multiple streams of revenue, smaller airports don't have as many options. The 2022 Nevada Airport and Heliport System Plan (NAHSP) has identified the statewide aviation investment needs for the next 20 years as $8.4 billion.



In June 2023, Assembly Bill 58 was signed into law and appropriated $2 million into the Nevada Fund for Aviation. This fund is available to the general aviation airports to help with matching funds for FAA grants. It's estimated the $2 million can be leveraged for over $32 million in FAA AIP grants for local airport projects. General Aviation airports received $28 million in AIP grants in 2023. Also, recent Nevada Legislative session introduced Assembly Bill 100 to help with funding for the Reno-Tahoe International Airport future improvements.

Though our major airports are essentially land-locked and unable to expand, there have been studies to add a new international hub south of Las Vegas, but construction may be many years in the future. As for the rural and general aviation airports, they are functioning as intended. The focus going forward will be sustaining operations and maintenance (O&M) budgets to keep them at this status.

OPERATION AND MAINTENANCE (O&M)

Both the Reid International and Reno-Tahoe International airports have their own operation and maintenance (O&M) budgets. These are primarily funded through Passenger Facility Charges - federally capped at $4.50 per passenger - and other revenue sources such as parking. However, the remaining GA airports across the state do not have the same luxury and rely on NDOT securing Airport Improvement Program (AIP) grants to supplement their O&M needs. In 2023, Nevada received $28 million in federal grants, which was disbursed to 16 of our 22 general aviation airports for various O&M projects.

The state has a source of funding for O&M that was created in 2001, called the Nevada Fund for Aviation, which is intended to improve the state's airport system.

In 2015, the law was revisited and reestablished under Senate Bill 514 and set the fund at $100,000 per year. These monies are primarily used to subsidize grants for airports that fall within the NPIAS, matching up to 6.25% for any grant issued by the AIP. While this program does provide valuable financial support, it is quickly allocated when disbursed across the state.

Both Reno-Tahoe Airport Authority (RTAA) and the Clark County Department of Aviation have ongoing sustainability programs in place. These programs are administered by an inter-departmental committee responsible for the creation and implementation of sustainable actions. The Reno-Tahoe Airport Authority has adopted the Airports Council International's EONS approach to help guide their sustainability efforts.

Inside the passenger terminals, recycling is in place for passenger waste such as bottles, plastic, aluminum cans, and paper. Reid airport annually recycles over 1,900 tons of aluminum, plastic, and cardboard. On the operations side, waste oil, carpet, scrap metals, batteries, toner cartridges, tires, and construction materials are also recycled. Other materials have been donated to local charities for re-use. The terminals have installed water stations that allow passengers to refill water bottles.

Airports are critical to the movement of people, goods, and medical supplies. Therefore, it's critical that airports remain functional after catastrophic events, such as extreme weather, earthquakes, or other disasters.

PUBLIC SAFETY

The most active airports in Nevada are near urban centers and are in close proximity to residential and commercial areas. All of the urban airports and many of the rural GA airports have FAA-required monitored access and required fencing around the airport property to prevent unauthorized pedestrian access to the airfields.

Transportation Security Administration (TSA) officers are present at the three commercial airports. The Reno-Tahoe Airport maintains its own police department and will be constructing a new police station on site, while Reid airport has a security force supplemented by a substation of the Las Vegas Metropolitan Police Department. Reid is also upgrading numerous controlled access areas with new fencing, railings and crash resistant gates and fencing.

Weather in Nevada can also be a challenge, with strong winds one of the most predominant weather patterns. In the winter, the northern parts of the state are subject to snow and ice, while in southern Nevada, the summer season brings two conditions – potentially heavy thunderstorms and high heat. The high summer heat reduces an airplane's lift, requiring longer takeoff lengths. Two of the four runways at Reid Airport have lengths between 10,000 and 14,000 feet to allow for the longer takeoff requirements in the summer months. The airport shuts down during heavy thunderstorms. The Reno-Tahoe International Airport maintains de-icing operations for the freezing temperatures.

RESILIENCE

Airports are critical to the movement of people, goods, and medical supplies. Therefore, it's critical that airports remain functional after catastrophic events, such as extreme weather, earthquakes, or other disasters. Since Nevada is a highly active seismic and wind area, all airport facilities are designed and constructed for earthquakes and high winds. In both northern and southern Nevada there are military airfields near – Naval Air Station Fallon near Reno and Nellis Air Force Base in Las Vegas. Both of these airfields can be used by commercial aircraft in case of emergencies. Reno and Reid Airports maintain emergency contingency plans.

INNOVATION

In 2013, Nevada was selected by the FAA as one of six locations for testing and research of Unmanned Aircraft Systems (UAS). This effort is led by the Nevada Institute for Autonomous Systems and both the University of Nevada, Reno, and University Nevada, Las Vegas, offer degrees in UAS. Nevada has numerous locations that are officially designated as UAS test locations to conduct research, testing, and business development. Nevada has conducted several test demonstrations of UAS in different areas of the state over the past three years. These areas include the Reno-Stead Airport (home of the Reno Air Races), Hawthorne Advanced Drone Multiplex, Mesquite UAS test range for testing large vehicles over 55 pounds, and Boulder City, where the Eldorado Droneport is being developed.

At both the Reno-Tahoe and Reid Airports, terminal and airfield lighting has been modernized and solar generation has been installed to reduce energy consumption. Turf grass has been replaced with xeriscaping to minimize water usage.

Reno Airport estimates that they have saved approximately $250,000 by installing LED light fixtures in both the airfield and terminal and saved another $200,000 in energy and operational costs by upgrading parts of their HVAC system. By installing a 135 kilowatt (kW) solar photovoltaic system at the RTIA Aircraft Rescue facility, they have reduced the electricity usage by 260,000 kWh. The new B & C Concourses will be powered by a Geothermal Centralized Utility Plant, which is currently pending award for construction.

Reid Airport installed digital controls and a monitoring system to run HVAC equipment more efficiently during operations. They coated 115 jetways with a ceramic coating to better reflect heat and installed more efficient cooling units at each jetway to achieve 15% more cooling efficiency. The installation of high-efficiency filters reduced air filter changes from every three months to every 16 months. By installing LED fixtures in the terminal and on the airfield, Reid airport achieved a 50% energy reduction by one million kilowatt-hours (kWh) annually and saved $100,000 in maintenance costs annually.

In addition, Reid Airport is a test location for TSA pilot programs. TSA checkpoint innovations such as new self-service screening. The new system is being tested at the TSA Innovation Checkpoint in Terminal 3 at LAS. The self-service screening concept is for improved customer experience while not sacrificing security. Pre-check passengers can complete the security screening on their own by confirming their identification and flight reservation with facial recognition in addition to placing bags onto a conveyor belt to be screened before walking through a scanner. The scanner searches for items that shouldn't be there and tells the traveler to remove the item from their pockets before proceeding. If passengers have any questions, they can interact with TSA officers via touch screen monitor.

RECOMMENDATIONS TO RAISE THE GRADE

While Nevada has many positives in aviation, there are still some items for improvement.

- Expand sustainability programs across the state. The two largest airport authorities in Reno and Las Vegas have robust sustainability programs with realized benefits. Many of the rural GAs have land that could easily be utilized for solar power generation and possibly geothermal energy generation.
- Support testing of autonomous ground vehicles. Rural airports have unused runways and taxiways that could also be used for this purpose.
- Encourage new funding via legislation to increase the cap on the Passenger Facility Charge.
- Support funding to accelerate implementation of the Next Generation Air Transportation System (NextGen) to improve aviation safety within Nevada.

SOURCES

ASCE, Public Policy Statements, 2025.

ASCE, Report Card General Recommendations, 2025.

ASCE, Aviation Chapter with Category-Specific Recommendations, 2025.

Nevada Department of Transportation, Pavement Management System Update, 2023.

Nevada Department of Transportation, Nevada Airport and Heliport System Plan, 2022.

Reid International Airport, Reid International Airport Website.

Reno-Tahoe International Airport, Reno-Tahoe International Airport Website.

Bridges

B-

GRADE COMPARISON

NV: B-

Nat'l: C

BRIDGES

EXECUTIVE SUMMARY

With only 1.5% of Nevada's 2,128 bridges rated as structurally deficient, the network is one of the best in the country. However, 26% of the bridges in the state are over 50 years old and another 12% will reach their 50-year design life by 2030. Older bridges are often costlier to maintain and will eventually require replacement. Meanwhile, available funding is insufficient to address future needs. Nevada spends approximately $17 million per biennium on bridge preservation, with revenue from a combination of federal funds, fuel taxes, and registration fees. Nevada's current backlog of bridge preservation work, such as corrective maintenance, rehabilitation, and replacement, is approximately $133 million.

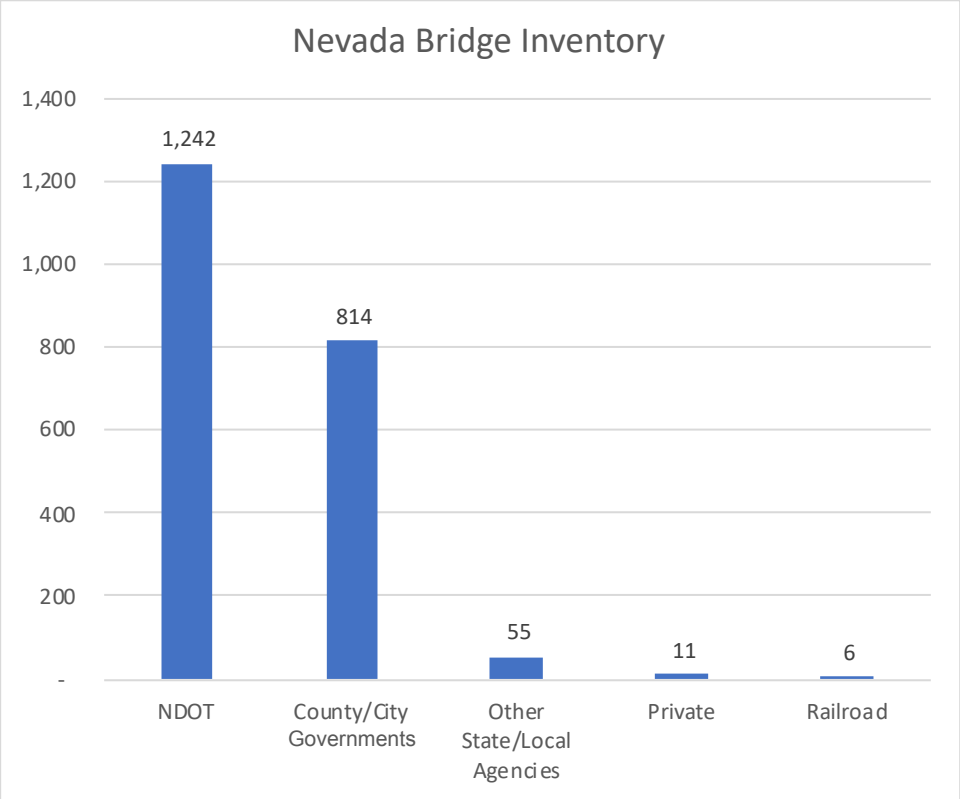
BACKGROUND

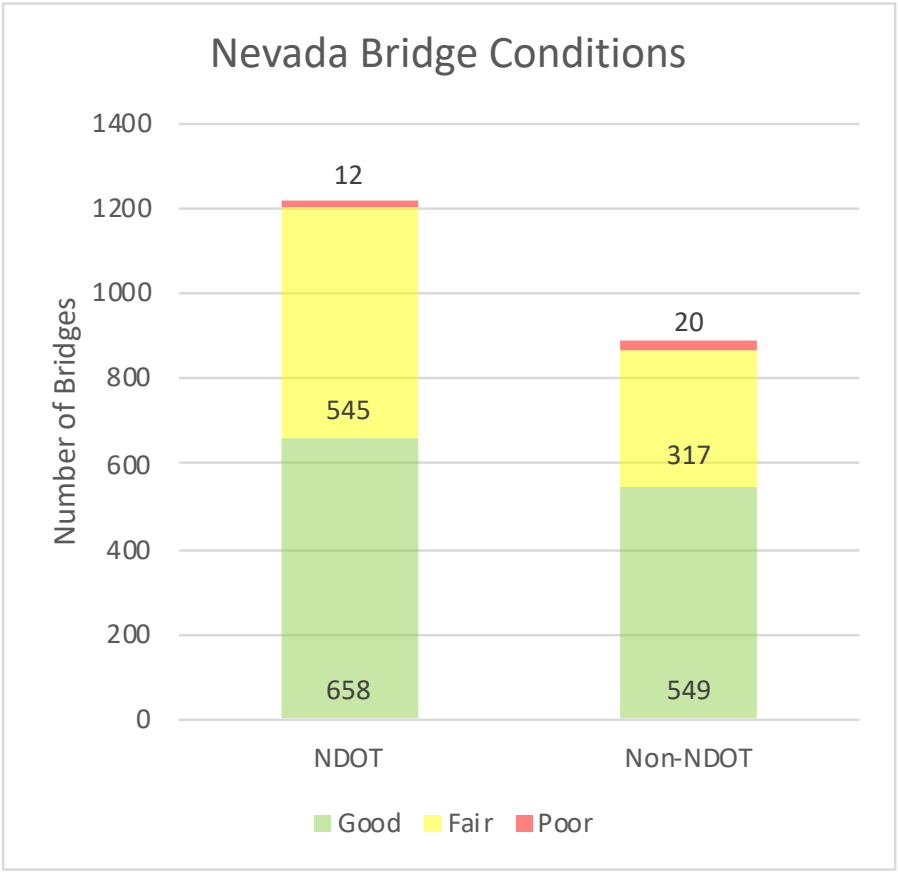
Nevada's unique geography presents challenges to bridges and roadways. Nevada is the 7th largest state by geographic area at 110,679 square miles and is the most mountainous state in the U.S, with over 150 separate mountain ranges. Meanwhile, Nevada is only the 32nd most populated state, with just over 3.1 million residents. Over 88% of the state's residents live in two metropolitan areas – Las Vegas (2.2 million people) and Reno-Sparks (490,000 people). Nevada has a total of 2,128 bridges throughout the state, ranking 43rd in the U.S. for number of bridges. Similar to the population demographics, 53% of all bridges are located in the Las Vegas/Clark County area and another 15% are located in the Reno-Sparks/Washoe County area. The remaining 32% of bridges are distributed in rural areas of Nevada.

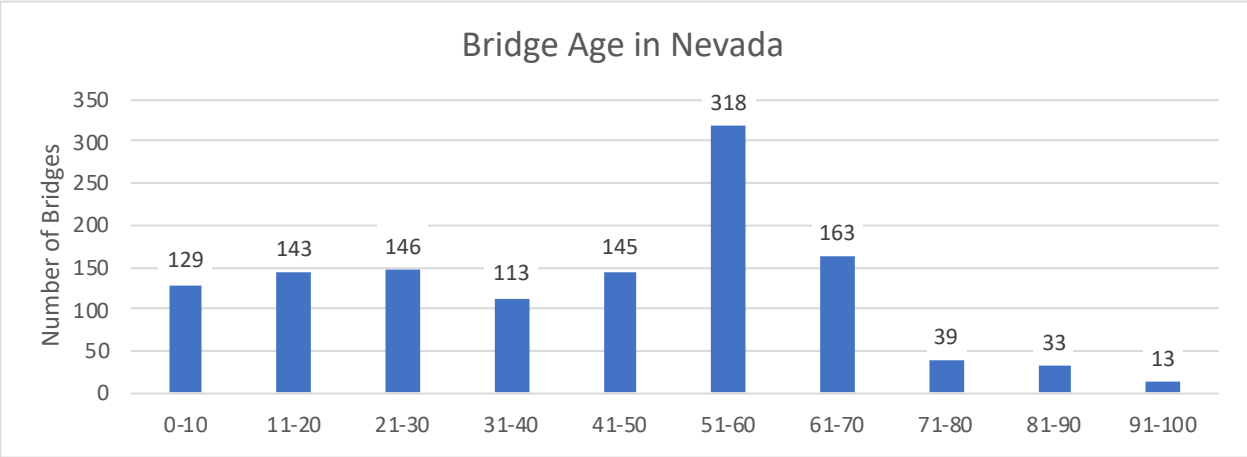
The two heaviest-traveled corridors are Interstate 80 through Reno in Northern Nevada and I-15 through Las Vegas in Southern Nevada. Both corridors are vital links to some of the largest cargo ports in the U.S. – Oakland, Los Angeles, and Long Beach – in addition to being favored routes for tourism and recreation. I-80 in Reno carries 100,000 vehicles per day, while I-15 in Las Vegas can carry over 250,000 vehicles per day. Because these routes are so heavily traveled, any bridge issues could have a major impact on traffic. Meanwhile, in the rural parts of Nevada, a bridge shutdown can result in detours of more than 100 miles due to a sparse roadway network.

CONDITION & CAPACITY

Nevada has a total of 2,128 bridges statewide. The Nevada Department of Transportation (NDOT) maintains 58% of those bridges and other agencies maintain the remaining 42%. Nevada will face significant challenges in the future, as 26% of the bridges in the state are now over 50 years old and another 12% will reach their 50-year design life by 2030. However, 75% of all bridges in Nevada have a good condition rating, while only 1% are rated in poor condition. Generally, bridges in good condition have a Sufficiency Rating of 80 or greater. A fair condition is a rating between 50 and 80, while the poor condition is below 50.

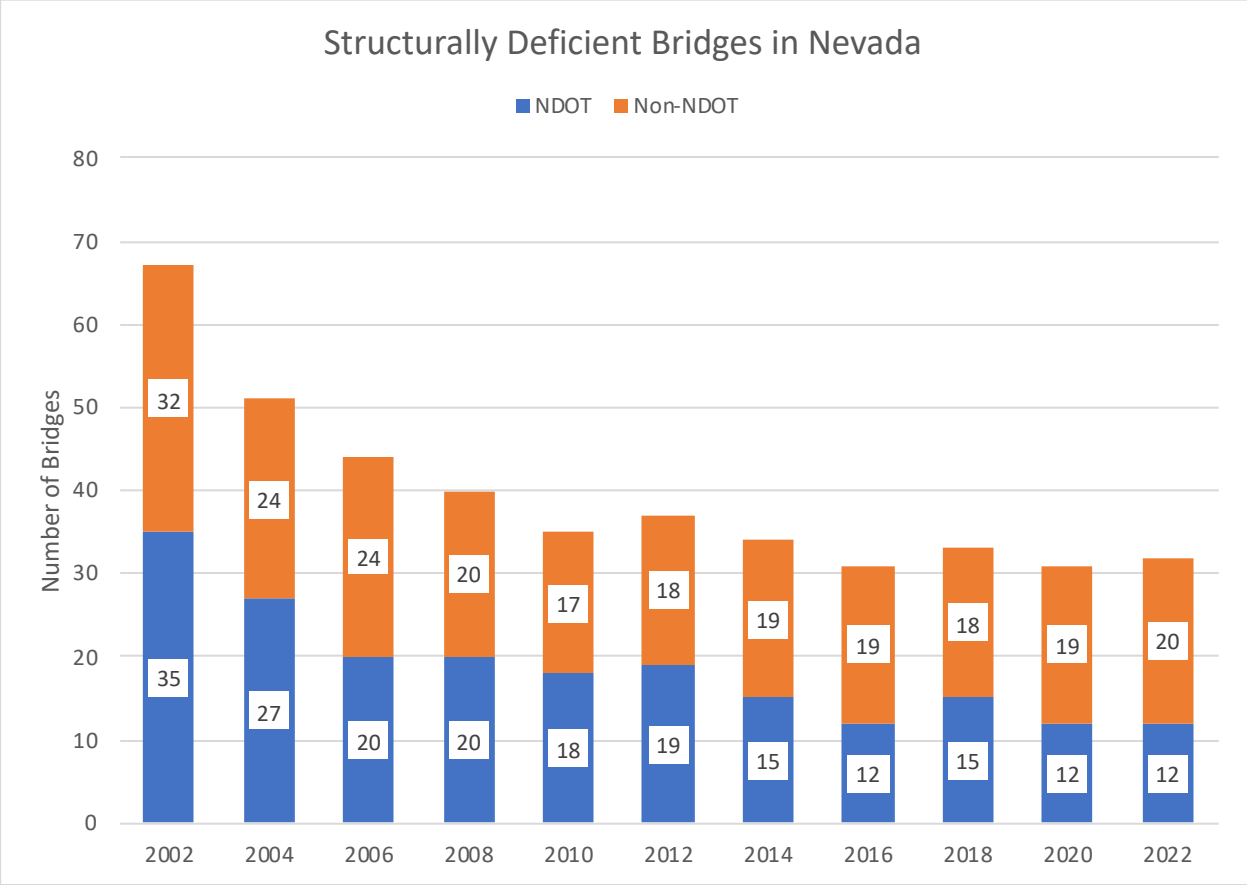

Nevada Bridge Inventory
1,400
1,200
1,000
800
600
400
200
-
1,242
814
55
11
6
NDOT
County/City Governments
Other State/Local Agencies
Private
Railroad


Nevada Bridge Conditions
Number of Bridges
1400
1200
1000
800
600
400
200
0
12
545
658
20
317
549
NDOT
Non-NDOT
Good
Fair
Poor



Approximately 1.5% of Nevada's bridges are structurally deficient, while nationally 7.5% of all bridges are considered structurally deficient. A structurally deficient bridge is defined as a bridge that has one of the key structural elements – deck, superstructure, substructure or culvert - found to be in poor condition. Structurally deficient bridges are not inherently unsafe, but they are in need of repair or rehabilitation and are inspected more frequently than other bridges. Since 2002, NDOT has decreased the number of structurally deficient state-owned bridges from a peak of 35 to 12 bridges. During the same period, non-state owned structurally deficient bridges decreased from a peak of 32 to 20. This is positive progress, but challenges loom. Many of the bridges in Nevada were constructed between 1960 and 1980 and will be approaching their 50-year service life within the next 12 years. Older bridges built in the 1980s and prior have a shorter expected service life of 50 years compared to new bridges, which have a service life of 75 years. It is expected that most bridges approaching 50 years old will require major rehabilitation or replacement soon. While the lifespan of a bridge can be extended with regular maintenance and rehabilitation, such action requires significant funding.

The G-947 viaduct in downtown Las Vegas along U.S. Route 95 exemplifies Nevada's aging bridge inventory. Constructed in 1968, this viaduct represents 8% of the total bridge deck area in the entire state, has a Sufficiency Rating of 64, and it carries 250,000 vehicles per day. Should a portion of the bridge need to be shut down for emergency repairs, it would likely impact 100,000 vehicles each day it was out of service. This structure is within a recently cancelled NEPA study called the Downtown Access Project, which proposed to replace this bridge, but now it will need to be maintained indefinitely.



OPERATION & MAINTENANCE, FUNDING, AND FUTURE NEED

Nevada's current backlog of bridge preservation work is approximately $133 million for efforts such as corrective maintenance, rehabilitation and replacement. Nevada spends approximately $17 million per biennium on bridge preservation and is funded with a combination of federal funds, fuel taxes, and registration fees. Voters in Washoe and Clark Counties approved fuel tax hikes in 2010 and 2016, respectively, initially allowing an increase up to 10 cents per gallon, while allowing the fuel tax to be adjusted to inflation through 2026. These ballot measures provide several hundred million dollars annually for bridge and road repairs. During the Nevada Legislature's 2017 session, Clark County's Fuel Revenue Indexing was extended for 10 years, with a portion allocated to NDOT for state road projects including bridges.

Another positive item for funding occurred during the 2021 legislative session, when the state legislature authorized the sale of $75 million of state general obligation bonds to fund the State Infrastructure Bank for public works, affordable housing, and charter school projects. The legislation authorized a split of the bonds at $40 million for public works infrastructure, $20 million for affordable housing projects, and $15 million for charter school infrastructure. With help from the State Infrastructure Bank, many municipalities in Nevada will be better able to leverage local or state funding to match federal funding.

The additional funding from voter-approved ballot measures, as well as potential financing from the State Infrastructure Bank, can go a long way towards addressing Nevada's bridge needs, but challenges remain. The total estimated cost to replace bridges in Nevada that are currently over 50 years old is $1.1 billion. Ten years from now, this number will grow to $1.8 billion, as many more Nevada bridges exceed the 50-year mark. Approximately 18% of bridges in Nevada were

constructed between 1960 and 1970, meaning they have already exceeded their 50-year design lives and will need replacement or increased maintenance. Another 12% of Nevada bridges were constructed in the 1970s, so the trend of bridges exceeding the 50-year design life will continue for the next 20 years. Maintaining bridges that have exceeded their lifespans is often costly, but replacement is expensive, too. Annually, Nevada replaces an average of two bridges that have exceeded their design lives, a rate that is not enough to keep pace with the future number of bridges approaching 50 years or more.

Annually, Nevada replaces an average of two bridges that have exceeded their design lives, a rate that is not enough to keep pace with the future number of bridges approaching 50 years or more.

PUBLIC SAFETY & RESILIENCE

Nevada has been addressing seismic vulnerability for the past 20 years. NDOT has engaged in a bridge seismic retrofit program during this time and has performed seismic retrofits on more than 150 bridges, with another 82 bridges considered high priority. As an added measure of safety, for the past two decades, NDOT has required that all new bridges are designed to withstand a minimum of the third-highest level Seismic Design Category "C" regardless of the bridge's location in the state. NDOT has also adopted the use of the AASHTO Guide Specification for LRFD Seismic Bride Design on several projects to further reduce critical infrastructure's vulnerability to seismic activity.

INNOVATION

Nevada has utilized several innovative bridge technologies. For example, improvements to exit 120 on I-15 in Mesquite, utilized a bridge slide to replace the existing bridges in this service interchange to minimize the traffic impacts to I-15. Meanwhile, the Galena Creek Bridge on I-580 uses pop-up de-icing sprayers in the bridge deck to prevent icing of the bridge, which crosses the Galena Creek and is subject to freezing temperatures and wind gusts over 100 miles per hour.

On the Virginia Street Bridge over the Truckee River in downtown Reno, the contractor constructed the tied arches on the river bank and slid them across the river. This was done to avoid the possibility of floodwaters collapsing the falsework in the river if the bridge had been constructed in place and provided an easily accessible work area instead of over the river.

RECOMMENDATIONS TO RAISE THE GRADE

While Nevada bridges have been rated as one of the best systems in the entire country, there are several areas of potential improvement.

- Direct additional funding to bridge maintenance and replacement efforts through the Nevada State Infrastructure Bank since a higher number of bridges will reach 50 years of age or greater during the next 10-20 years.
- Develop and implement a program and secure funding sources specific to bridge repair and replacement. Nevada will need a solid funding strategy to deal with the dual issue of steadily aging bridges and the potential increase in new bridges and roads with population growth especially with an increasing number of bridges reaching their 50 year design lives. This may become necessary as Nevada implements the new I11 corridor from Las Vegas to Reno, which could draw funds away from bridge repair and replacement.

SOURCES

ASCE, Report Card General Recommendations, 2025.

ASCE, Bridges Chapter with Category-Specific Recommendations, 2025.

Nevada Department of Transportation, State Highway Preservation Report, 2023.

FHWA, National Bridge Inventory System, 2024.


Dams
C-
GRADE COMPARISON
NV: C-
Nat'l: D+

DAMS

EXECUTIVE SUMMARY

There are 673 state regulated dams in Nevada, 508 of which are accounted for in the U.S. Army Corps of Engineers' National Inventory of Dams (NID). Approximately 94% of the state regulated high-hazard dams have an Emergency Action Plan (EAP) in place. According to the NID, about 66% of these dams were given a Satisfactory or Fair condition assessment. Approximately 30% of these dams were rated as being in Poor or Unsatisfactory condition. Unfortunately, when considering services like inspections, laws, and EAPs, the dam safety budget for high hazard potential dams is approximately half of the national average. Additionally, there are about half as many agency employees per high-hazard dam as there are nationwide.

CONDITION & CAPACITY

For residential, business, irrigation, and recreational uses, communities in western states like Nevada depend on a steady, dependable supply of water. The dams in Nevada not only supply water for these uses, but they also significantly contribute to waste impoundment, debris and flood control, and power generation systems.

Private companies are the largest owners of dams in Nevada, followed by local governments, federal agencies, utilities, and the State. The bulk of these dams, over half of which are used for irrigation and flood control, are earthen dams, according to the U.S. Army Corps of Engineers' National Inventory of Dams (NID). The remaining dams serve a variety of functions, including impounding mine tailings, and water storage & supply.

Dams are reported to the NID by federal, state, and local regulatory organizations. Based on the dam height, total storage, and risk for damage to downstream areas in the event of a failure, dams are divided into three risk categories by the NID: high, significant, and low hazard potential. A high hazard potential dam failure would likely result in loss of human life. A significant hazard potential dam failure would have less potential for loss of human life, but economic loss, environmental damage, disruption of lifeline facilities, and non-life-threatening impacts would occur. Any other dams would be classified as low hazard. The NID contains the 508 state-regulated dams in Nevada. One-hundred and fifty-eight are classified as high hazard, 86 as significant hazard, and 264 as low hazard.

Since the majority of Nevada's dams were built after 1950 and have normal design lives of 50 to 100 years, ongoing inspection and maintenance programs are now more crucial to ensuring the continued safe

operation of these dams. The Association of State Dam Safety Officials (ASDSO) published a condition rating assessment for the state of Nevada, and it found that 90% of the state-regulated dams with a high hazard potential had a condition assessment rating in the NID. About 75% of these dams were given a Satisfactory or Fair condition assessment. Approximately 18% of these dams were rated as being in Poor or Unsatisfactory condition. While there have been at least two major dam failures with associated fatalities in Nevada's history, most failures have only resulted in property damage downstream. As these are generally not reported in the media, the general public's knowledge of dams is limited. For state officials to continue working with dam owners regarding the inspection and ongoing maintenance of these dams, as well as raise public awareness of the risks associated with dams, it is crucial that the state has an adequate staffing level for its dam officials.

MAP OF NEVADA'S DAMS

Source: National Inventory of Dams

O&M, FUNDING & FUTURE NEED

Although the majority of Nevada's dams have received fair to satisfactory ratings, it is anticipated that the state's most important dams will require repair and upkeep by 2029 that will cost more than $80 million. As of 2023, Nevada's state budget to operate the dam safety program was only $350,000. This money can only be used for administration of the dam safety program and undertake inspections on the dams that have been listed and are subject to state regulation. Over half of the dams in Nevada are privately owned, and account for a majority of the additional 165 state-regulated dams not included in the NID. As each year passes, rehabilitation will become critical and federal funding will be required to close the gap.

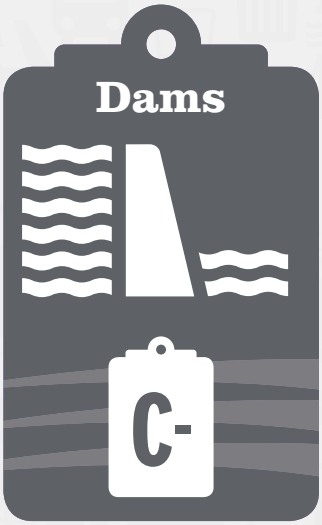
PUBLIC SAFETY, RESILIENCE, & INNOVATION

Emergency Action Plans (EAPs) describe the circumstances at a particular dam and the predetermined steps that should be taken to reduce fatalities and property damage in the event of a failure. EAPs also outlines the steps that the owner must take to moderate or mitigate any problems at their dam. To create new and improve current EAPs, state officials must collaborate with dam owners and other local stakeholders.

As of 2022, approximately 94% of Nevada's 158 High Hazard Potential Dams have EAPs in place. Additionally, since 2018, 469 of Nevada's 508 dams have undergone an inspection and received an updated condition rating. This is an improvement from the previously reported data in the 2018 Nevada Infrastructure Report Card.

Dam safety for the 627 state-regulated facilities in Nevada is handled by the State Engineer through the State of Nevada Division of Water Resources. Sixty-two dams in the state are also under the control of the federal government, which is represented by the US Army Corps of Engineers, Bureau of Indian Affairs, and Bureau of Reclamation. The goal of Nevada's dam safety program is to lessen the dangers associated with dams to people and property.

The dam safety program in Nevada, however, only has five full-time employees (FTE), which is below the national average for the number of state-regulated high-hazard potential dams per FTE. Additionally, both the budget per regulated dam AND the budget per regulated high hazard potential dam in Nevada are significantly lower than the national average. To assist with ongoing inspection, legislation, EAPs, and outreach programs, more personnel and funding are required.



RECOMMENDATIONS TO RAISE THE GRADE

- Enhance public knowledge of risks associated with dams aligned with a key objective of Nevada's dam safety program. Dam owners and operators should be held accountable for any damages brought on by negligence or inattention and should be informed of Nevada's dam safety laws and regulations.
- Establish a state grant for dam repair to assist dam owners with regular inspection and maintenance.
- Promote re-allocation of current dam storage fees to support the dam safety program rather than all of it going to the general fund.
- Increase funding to close the gap between the state's budget for dam safety and the national average.
- Expand staffing and offer the general public and other organizations more services. This funding can also be used to learn more about the number and state of privately held facilities in Nevada.
- Prioritize the 18% of state-regulated high hazard dams with a poor condition assessment to implement repair and/or rehabilitation projects, versus relying on risk mitigation measures. Advocate for increased and consistent funding for the High Hazard Potential Dam Grant program.

SOURCES

State of Nevada Dept. of Conservation and Natural Resources, Strategic Plan for Fiscal Years 2023 Through 2027, 2023.

Federal Emergency Management Agency, National Dam Safety Program.

U.S. Army Corps of Engineers, National Inventory of Dams.

Association of State Dam Safety Officials, Nevada Dam Safety Information.

Association of State Dam Safety Officials, Nevada Dam Safety Performance Report, 2023.


Drinking Water
C-
GRADE COMPARISON
NV: C-
Nat'l: C-

DRINKING WATER

EXECUTIVE SUMMARY

As with many western states, water is a critical resource. While conservation programs in Nevada are some of the most effective in the country, supply is only one part of the equation. Rapid population growth in Nevada has remained constant for the past several decades and it is projected to continue. The 7th Drinking Water Infrastructure Needs Survey and Assessment issued by the Environmental Protection Agency (EPA) reported that Nevada will require $6.4 billion for water system improvements over the next twenty years, nearly two thirds of which will be needed for distribution and transmission projects.

CONDITION AND CAPACITY

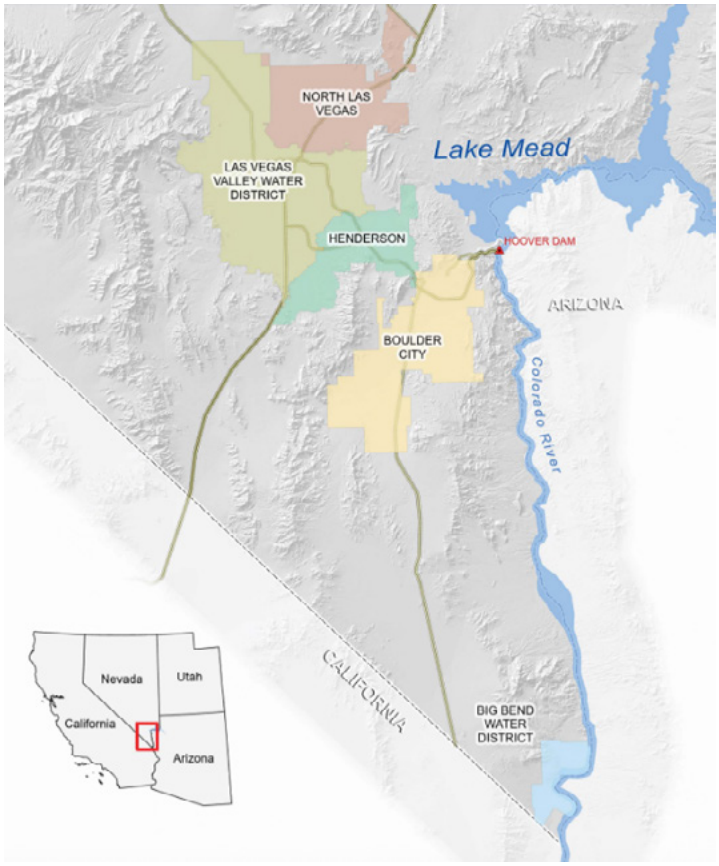
Nevada's drinking water infrastructure is made up of 194 public water systems, 242 non-community public water systems, and 158 transient public water systems. Approximately 97% of the state's total population of 3,144,000 rely on community drinking water systems to protect human health and deliver safe drinking water. In contrast, approximately 2.5% of the population rely on private well systems.

Nevada's drinking water infrastructure can be divided into three main regions: Southern Nevada, Northern Nevada, and Rural Nevada. Each region faces unique challenges based on its resources, population, and funding.

SOUTHERN NEVADA

The Southern Nevada region, including the greater Las Vegas area, is primarily served by the Southern Nevada Water Authority (SNWA). SNWA was formed in 1991 to address water issues in the region. SNWA has seven member agencies: Big Bend Water District, Boulder City, Clark County Water Reclamation, City of Henderson, City of Las Vegas, Las Vegas Valley Water District, and City of North Las Vegas. SNWA and its member agencies serve more than two million residents. Figure 1 shows SNWA service area.

FIGURE 1. SNWA SERVICE AREA



https://www.snwa.com/assets/pdf/water-resource-plan-2023.pdf

SNWA owns and operates two drinking water treatment plants that treat and distribute water to its member agencies: the Alfred Merritt Smith Water Treatment Facility and the River Mountains Water Treatment Plant. The water for the drinking plants is sourced from the Colorado River. In addition to water from the two SNWA treatment plants, member agencies supplement water supply with groundwater wells that are typically filtered and disinfected inline. Table 1 summarizes the drinking water treatment plants in the Southern Nevada region.

TABLE 1. MAJOR WATER TREATMENT PLANTS IN SOUTHERN NEVADA

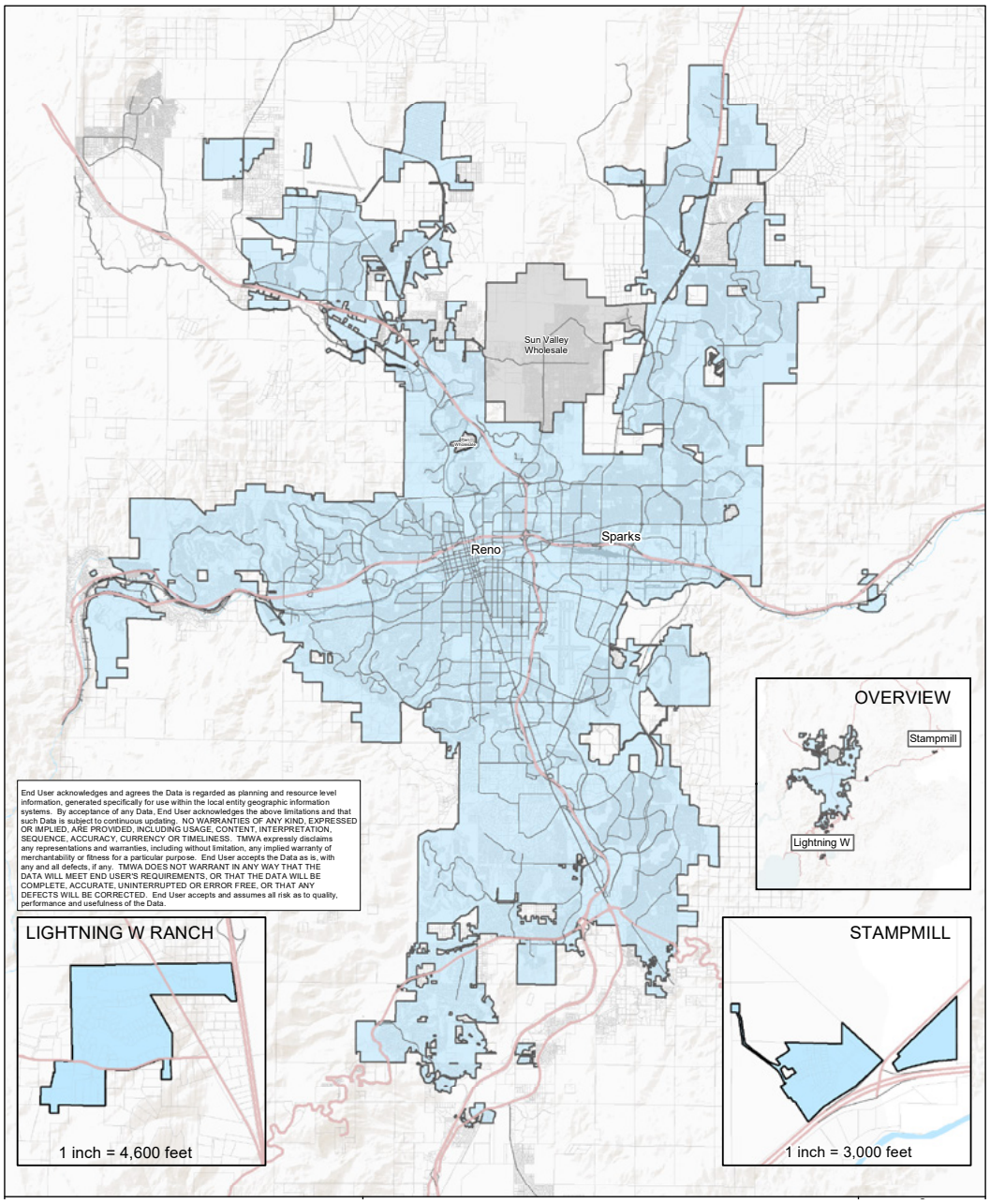
Name	Year Built	Buildout Capacity (mgd)
Alfred Merritt Smith Water Treatment Facility	1971	600
River Mountains Water Treatment Plant	2002	300
Big Bend Water Treatment Facility	1990	15
City of Henderson Water Treatment Plant	1994	15

Within the service area, there are over 85 storage facilities (reservoirs and tanks), 55 pumping stations, 10,000 miles of water transmission and distribution lines. The distribution systems have assets that have reached the end of their useful life and are over 50 years old. Capital improvement plans are drafted at least every 10 years by SNWA and member agencies to analyze when to replace parts within the system.

NORTHERN NEVADA

The Northern Nevada region primarily includes the greater Reno area and is served by the Truckee Meadows Water Authority (TMWA). Figure 2 shows the TMWA service area.

FIGURE 2. TMWA SERVICE AREA



TMWA currently owns and operates two water treatment plants: the Chalk Bluff Water Treatment Plant and the Glendale Water Treatment Plant. The water treatment plants treat water from the Truckee River. The entire system is supplemented by groundwater wells, which account for approximately 33% of total water production per day. Table 2 summarizes the characteristics of each water treatment facility.

TABLE 2. MAJOR WATER TREATMENT PLANTS IN RURAL NEVADA

Name	Year Built	Buildout Capacity (mgd)
Chalk Bluff Water Treatment Facility	1971	600
Glendale Water Treatment Plant	2002	300

TMWA's water distribution system serves over 440,000 customers. There are approximately 1,900 miles of water main, 93 booster pump stations, 140 pressure regulator stations, 92 storage tanks, and two treated water reservoirs owned and operated by the entity. Although the distribution system has parts that have reached their useful life, are over 50 years old, and will need to be rehabilitated soon, TMWA produces a master plan every four years to prioritize upgrades.

RURAL NEVADA

The Rural Nevada Region includes water systems outside the SNWA and TMWA service areas and is estimated to account for over 600,000 people's water supply. The water systems in Rural Nevada generally serve a small population (hundreds to tens of thousands of people) and struggle to find qualified personnel to operate the system's assets. In April 2023, the Nevada Division of Environmental Protection (NDEP) Bureau of Safe Drinking Water (BSDW) released a non-compliance summary report for primary and secondary drinking water standards. The report concluded that 17 public water systems were out of compliance with primary drinking water standards and 13 water systems were out of compliance with secondary drinking water standards. Table 3 provides additional details about the type of compliance issues faced.

Rural Nevada water systems typically rely on groundwater wells as their drinking water supply. These systems typically provide limited treatment to water prior to being sent to the distribution system. Distribution systems typically contain aged assets (potentially over 50 years old) and pipe material like Schedule 40 PVC and asbestos cement pipe.

TABLE 3. NEVADA DRINKING WATER NON-COMPLIANCE SUMMARY TABLE

Primary Drinking Water Standards		
Parameter	**Number of Systems Out of Compliance**	**Average System Population**
Lead Action Level	1	400
Copper Action Level	2	215
Nitrate Maximum Contaminant Level	2	513
Arsenic Maximum Contaminant Level	4	159
Ground Water Rule treatment technique requirements - Failure to address significant deficiency	10	497
Secondary Drinking Water Standards		
Parameter	**Number of Systems Out of Compliance**	**Average System Population**
Odor	4	5,468
Total Dissolved Solids	1	4,200
Fluoride	2	95
Iron	4	338
Manganese	3	164
Color	1	1,051

FUNDING AND FUTURE NEED

SNWA uses funds from bond proceeds, water user infrastructure, commodity charges, developer connection fees, sales tax proceeds and the Southern Nevada Public Lands Management Act to finance capital projects associated with system improvements, maintenance and expansion, These revenue streams provide funding for improvements and reduce interest costs, a benefit of SNWA's credit ratings (AA+ Standard & Poor's and Aa1 Moody's). With the economy thriving again after the covid downturn, SNWA's Capital Improvement Projects are valued at $3 billion over a 10-year period planning horizon for new facilities such as reservoirs, pumping stations, pipelines, and asset management to include rehabilitation, and water quality and future water resources through banking and acquisitions.

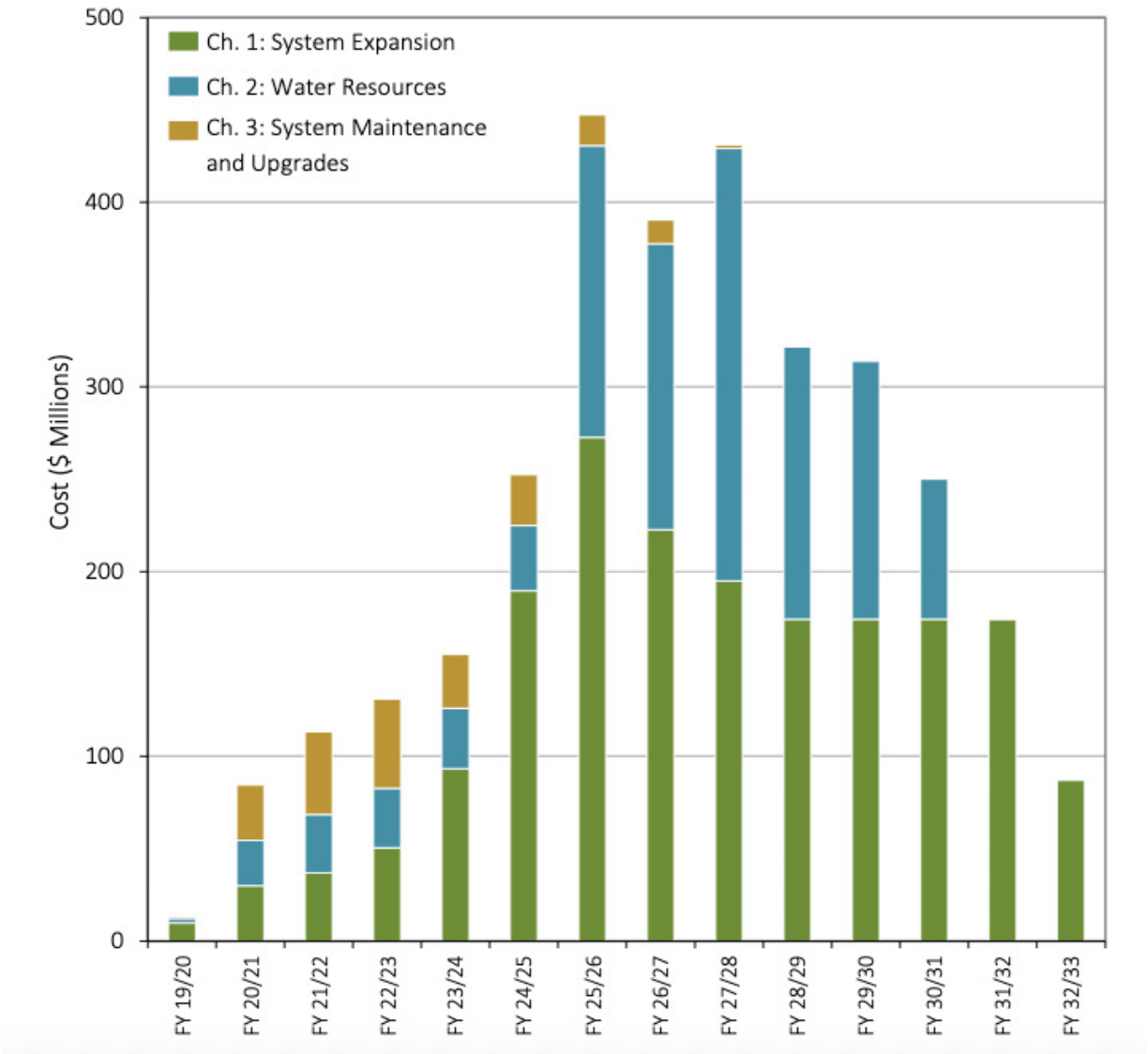
SNWA's mission is to manage the region's water resources and develop solutions that will ensure adequate future water supplies. In terms of growth:

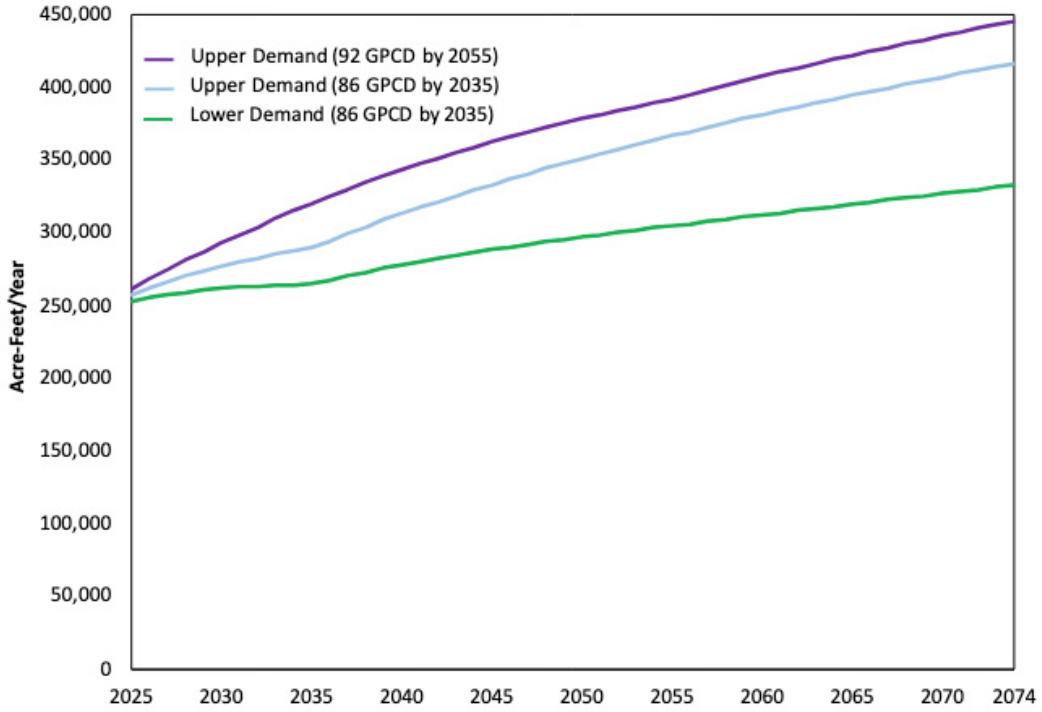
- Southern Nevada population: 1.6 percent in 2024 and 1.4 percent in 2025
- Tourist Volumes: 4.7% in 2024 and 3.6 percent in 2025

Comprehensive capital plans were developed in conjunction with financial plans that utilize practical methods of paying for future capital expenditures and debt service obligations to accomplish this. SNWA's Finance Department models identified capital projects plans costs to project the size and timing of future bond issuances, as well as probable revenue enhancements that would be needed to pay for these future costs. To keep pace with future needs, SNWA identifies capital project improvements to facilities that provide treatment and delivery of water supplies for its member agencies. The improvements include new facilities to expand or enhance treatment and distribution capabilities; new water resources to expand or extend available water supplies; repair, upgrade or replacement of existing facilities.

APPENDIX A: Cash Flow

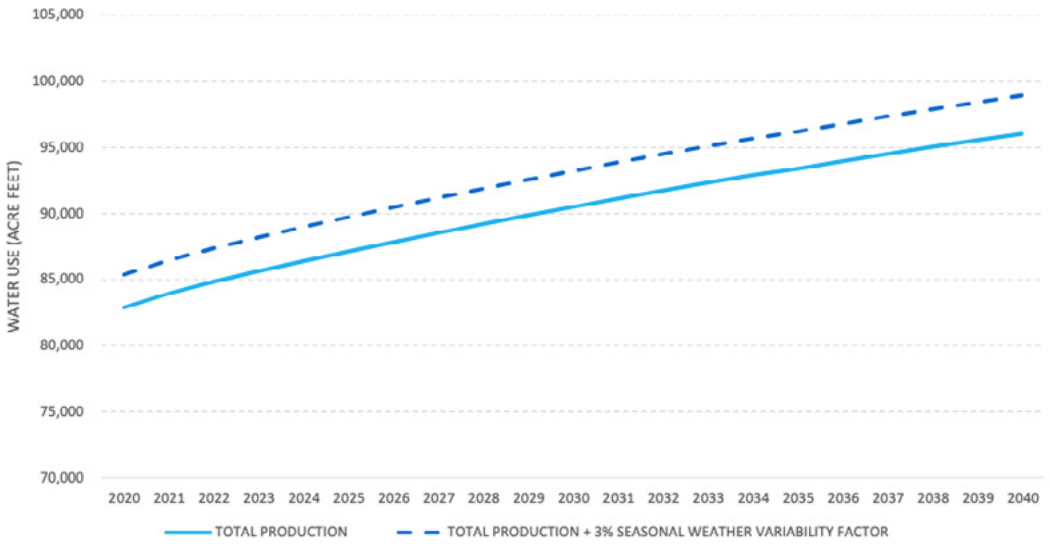
MCCP Projected Cash Flow





TMWA uses funds from revenues generated from water sales, hydroelectric sales, developer fees, developer contributions and reimbursements, sustainability fees, grants and loans to finance capital projects associated with water system improvements, maintenance and expansion, hydroelectric improvements and additional water rights. The revenue, grants, and loans provide funding for improvements and reduce interest costs resulting in TMWA's financial ratings (Aa2 Moody's AA+ Standard & Poor's and AAA Fitch). TMWA's Capital Improvement Projects are valued at $632 Million over a 5-year planning period for new water system capacity projects, upgrading and/or replacement of existing infrastructure, retrofitting of unmetered services and acquisition of potential water rights.

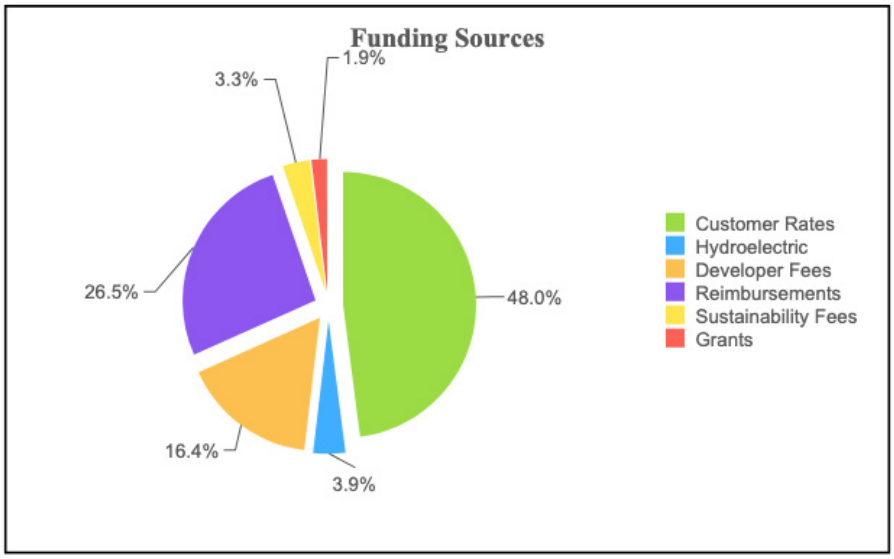
In terms of growth, TMWA creates water demand models using data sources from Washoe County Population, historical water services in TMWA's service area and historical water use data. TMWA's 20-year water demand projection estimates that water demand will increase 14% from 83,000 acre-feet (AF) in 2020 to 96,000 AF in 2040.



Truckee Meadows Water Authority FY 2025-2029 Capital Improvement Plan

PRELIMINARY FUNDING PLAN
FUNDING SOURCES
(Amounts in thousands of dollars)

Summary of Funding Sources	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	CIP Total
Customer Rates	71,532	60,367	62,695	62,150	46,609	303,353
Hydroelectric	2,000	11,865	10,275	290	300	24,730
Developer Fees	14,353	27,491	31,189	14,747	16,156	103,936
Reimbursements	16,460	62,240	59,700	28,900	—	167,300
Sustainability Fees	880	7,872	8,410	3,552	250	20,964
Grants	6,000	500	3,781	1,781	—	12,062
Total Projected Capital Spending	**111,225**	**170,335**	**176,050**	**111,420**	**63,315**	**632,345**



PUBLIC SAFETY

Nevada drinking water systems typically provide quality drinking water to residents; however, in 2022, there were approximately 166 boil water notices issued. As shown in Table 3, systems with compliance issues are typically small and serve a small population. Additionally, dependance on groundwater in Rural Nevada is being monitored as groundwater resources are depleting.

RESILIENCE AND INNOVATION

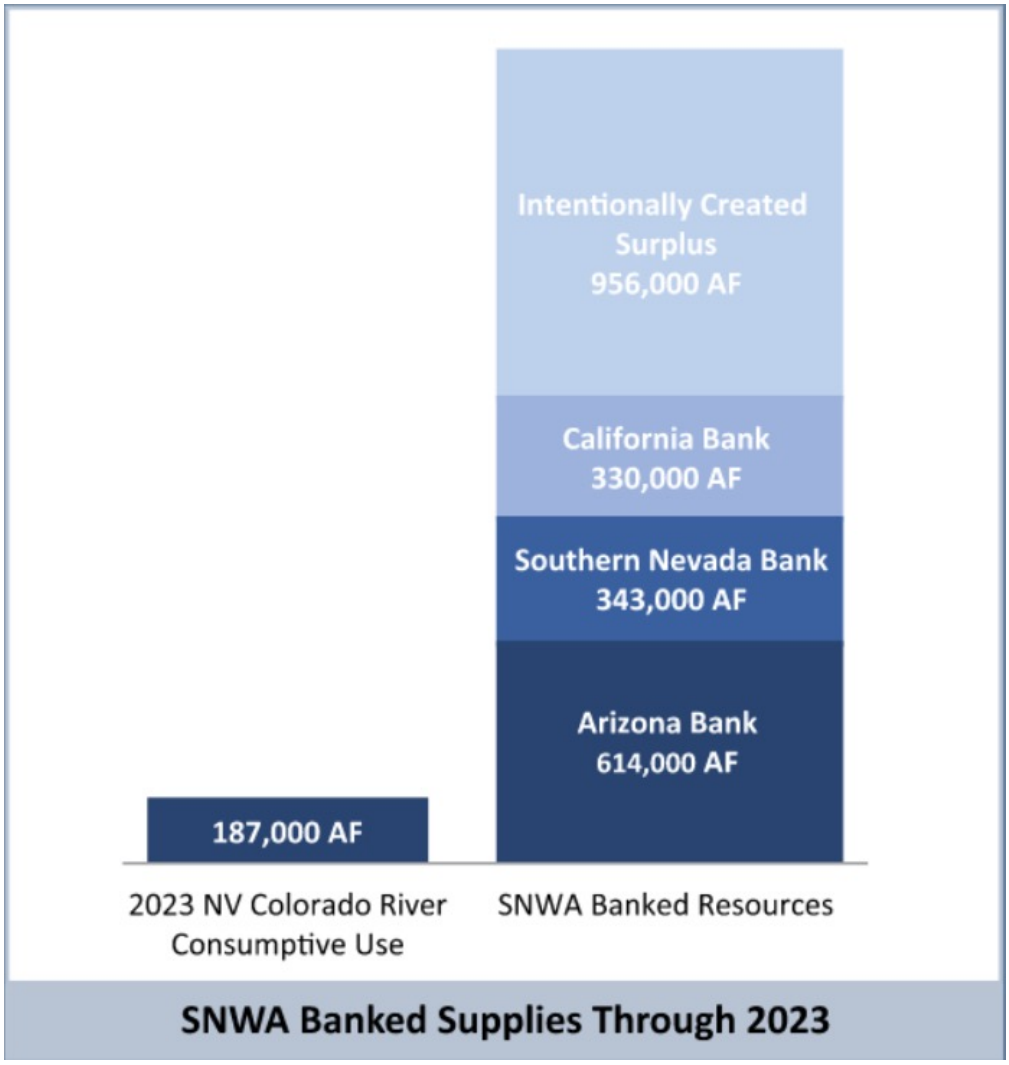
Nevada is the driest state in the United States, and it is incredibly important that water resources are properly managed. Water treatment and distribution systems in all regions of Nevada must carefully assess allocations to ensure water resources are protected.

NATURAL DISASTERS AND EXTREME WEATHER

Drought poses the biggest threat to Nevada's water resources. The Colorado River supplies the SNWA service territory with 90% of its water supply, and the other 10% is supplied by groundwater. Similar to many rivers in Nevada, flows from the Colorado River and

Truckee River are based on snowmelt and runoff from nearby basins. Since temperatures in the region are anticipated to warm, less snow may be expected, and peak runoff may occur at different times.

The SNWA began storing or "banking" water in the Las Vegas Valley in the late 1980s. In Southern Nevada, banking is accomplished through artificial recharge or in-lieu recharge. Artificial recharge involves direct injection of treated unused Colorado River water into the local groundwater aquifer; in-lieu recharge is accomplished by not pumping non-revocable groundwater rights to acquire storage credits that are available for future use. Through various programs and agreements, the SNWA has expanded banking efforts to include storage in the Arizona Water Bank and California Water Bank, and in Lake Mead in the form of intentionally created surplus or ICS. The 2019 Drought Contingency Plan or DCP and associated agreements expanded Lake Mead water banking opportunities for Southern Nevada with the authorization of a new SNWA Extraordinary Conservation ICS project that allows the SNWA to leverage its past and future conservation savings and forgone banking to obtain ICS credits. Ongoing accruals are based on conservation achievements since 2002. Subject to certain conditions, provisions for the recovery of stored ICS credits also were expanded to allow for greater flexibility and use of ICS resources during a declared shortage. Through 2023, the SNWA has accrued more than 2.2 million acre-feet of water. This amount is twelve times Nevada's 2023 consumptive Colorado River water use.



CONSERVATION

SNWA and TMWA both provide many suggestions to water users on how to conserve water and the benefits of conservation. These tips include specified watering days, reducing water use or waste, providing low-water-use plants, and more. Due to the Lake Mead water level dropping in recent years, the federal government announced a tier two water reduction on the Colorado River in August of 2022 which will limit what SNWA can pull from Lake Mead. SNWA was able to reduce water use per person by 48% even though the population has increased by 750,000 people since 2002. SNWA and the surrounding Las Vegas communities are working to implement Nevada Assembly Bill 356, approved by the Nevada State Legislature in June 2021, which prohibits the use of Colorado River water to irrigate non-functional grass in non-single family residential applications by January 2027 to reduce water waste even further.

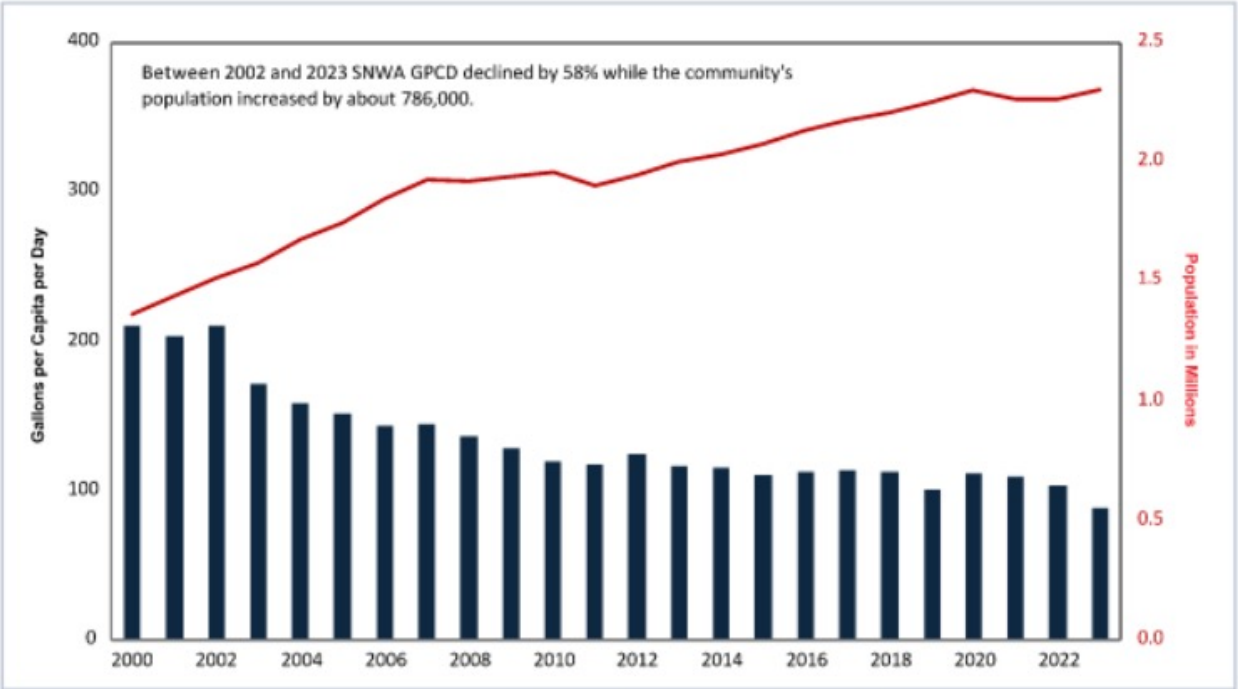


FIGURE 3.4 **Population & Per Capita Water Use**

Additionally, SNWA recycles 99% of all indoor water use for the service area, accounting for 40% of all water use, through direct or indirect potable reuse. Indoor wastewater is captured, collected, treated to high standards, and used for irrigation or returned to the Colorado River via the Las Vegas Wash. All uses provide SNWA with return-flow credits which allows SNWA to balance their limited allocation from Lake Mead and growing population.

INNOVATIVE FINANCE AND PROJECTS

The NDEP Office of Financial Assistance manages the Drinking Water State Revolving Fund (DWSRF) provided by the United States Environmental Protection Agency (EPA) through amendments to the Safe Drinking Water Act in 1996. The Nevada DWSRF provides loans (including principal forgiveness loans for disadvantaged communities) for projects ranging from arsenic, nitrate, and manganese treatment to distribution system rehabilitation to meter installations. The Nevada DWSRF can also provide funding for the planning, design, and construction phases of water infrastructure improvement projects. In June of 2023, 177 projects applied for funding and were listed on the priority list. Approximately 73% of the projects are for disadvantaged systems, and approximately 82% of the projects are for communities with a population of less than 10,000 people. The DWSRF and similar grant and

loan programs provide water systems, especially in rural Nevada, with funds to improve critical infrastructure.

Along with infrastructure improvement projects included in SNWA's Capital Improvement Plan, three large, infrastructure projects are crucial to SNWA's continued operation: the Intake 3, the Low Lake Level Pumping Station and the Horizon Lateral. The Intake 3 and Low Lake Level Pumping Station help address drought concerns in the Colorado River Basin and Lake Mead. The Intake 3 was constructed from 2008 to 2015 and began supplying water to treatment facilities in 2015. The Low Lake Level Pumping Station is supplied with water by Intake 3 and can deliver 900 million gallons per day to SNWA treatment facilities. The project was completed in 2020 and began operations in 2022 due to a substantial drop in lake levels. The Horizon Lateral project will provide redundancy to the existing, large transmission main installed in 1990 and called the South Valley Lateral. The Horizon Lateral will include 30 miles of pipeline, two pumping stations, and a 40-million-gallon reservoir. The project is still in the design phase and two alignments are being evaluated. The project is estimated to cost between 1.5-2 billion dollars. The project is funded by SNWA's bond proceeds, water user infrastructure, commodity charges, developer connection fees, sales tax proceeds and Southern Nevada Public Lands Management Act funds.

In addition to many water improvement projects identified in TMWA's Capital Improvement Plans, three projects are representative of TMWA's innovation and responsibility: the American Flat Advanced Purified Water Demonstration Project, the Mount Rose Water Treatment Plant, and the Arrowcreek Drought Response Phase 1 Project. The American Flat project is managed by One Water Nevada which includes representatives from City of Reno, City of Sparks, Washoe County, TMWA, Truckee Meadows Reclamation Facility, Northern Nevada Water Planning Commission, Western Regional Water Commission, and the University of Nevada, Reno. One Water's mission is to determine and address northern Nevada long-term water reliability needs. The project is studying the advanced treatment of reclaimed water to drinking water standards for aquifer storage and recovery through advanced treatment, natural groundwater filtration, and storage. A successful pilot study and injection feasibility study were performed at the Reno Stead Water Reclamation Facility and American Flats. The project received the first Category A+ groundwater injection permit for the State of Nevada and it was determined that two million gallons per day of Category A+ water could be recharged for 25 to 50 years if an equivalent amount is pumped from the aquifer. The City of Reno and TMWA are leading the next phase of the project to begin operating at two million gallons per day. The project will include improvements to the reclamation facility, an advanced purified water facility, pump station, conveyance infrastructure, polishing infrastructure, injection, monitoring, and extraction wells. The Mount Rose Water Treatment Plant and Arrowcreek Drought Response Phase 1 projects both attempt to mitigate declining groundwater levels in well-dependent communities in the service area. By supplementing groundwater with treated surface water, aquifers are allowed to rest and recharge, supporting sustainability and resilience. Additionally, TMWA prioritizes repair of hydroelectric facilities along the Truckee River to support clean energy and lessen energy costs for the agency.

RECOMMENDATIONS TO RAISE THE GRADE

- Continue implementation of conservation efforts that rate increases for amount of water used.
- Apply creative and innovative strategies to ensure established funding sources remain available for capital improvement projects. These may include sales tax, commodity developer contributions, bonding, or collaboration with other government agencies.
- Address drinking water standards to meet federal compliance standards in rural communities through alternative and/or additional treatment methods.

SOURCES

Southern Nevada Water Authority, Water Resource Plan, 2023.

Truckee Meadows Water Authority, TMWA Service Area Map.

Southern Nevada Water Authority, Official Website.

Truckee Meadows Water Authority, Official Website.

Nevada Division of Environmental Protection, Drinking Water Program.

Nevada Division of Environmental Protection, Drinking Water State Revolving Fund Loans.


Energy
C+
GRADE COMPARISON
NV: C+
Nat'l: D+

ENERGY

EXECUTIVE SUMMARY

Nevada's current energy needs are being met, but dependence on outside resources is heavy. Greenhouse gas emissions are substantial and declining slowly. The NV Energy utility generates, transmits, and distributes about 90% of the state's electrical power, serving more than 1.3 million customers and tens of millions of visitors annually. The utility Southwest Gas along with NV Energy supply natural gas to Nevada consumers. Nevada has adopted a Renewable Portfolio Standard which mandates that a significant fraction of electricity sold to retail customers come from renewables but it stops short of the global goal of reaching net zero emissions by 2050. Its high solar insolation means low costs for solar power generation, which is expanding rapidly. The state has been ranked first nationally for installed geothermal per capita, and more capacity is in development. Looking ahead, Nevada can enhance human well-being and productivity while benefitting both ecologically and economically through the development of more in-state capacity to generate electricity using renewables, reducing dependence on coal and natural gas, continuing to develop and harden transmission systems, incentivizing improvements in energy efficiency, and promoting low-carbon means of transportation.

CONDITION & CAPACITY

According to the US Energy Information Administration, in 2020, 32% of Nevada's energy usage was devoted to transportation, 22% to industry, 26% to residential, and 20% to commercial uses. Nevada is a net importer of energy; it uses about six times more energy than it produces. In-state production is almost completely via renewables.

ELECTRICITY

Sixty-three % of Nevada's electricity generation comes from natural gas, nearly all of which comes by pipeline from outside the state. Renewables account for 31% of the state's electricity generation, the major contributors being solar, geothermal, and hydroelectric. The remaining 5% comes from imported coal (Governor's Office of Energy, Jan. 2023).

Nevada's last coal-fired power plant is scheduled to be shut down by 2025. Although reliance on natural gas will continue, production of electricity from renewables is growing rapidly. Renewable energy production statewide has more than tripled since 2011. Besides addressing in-state needs, this trend diversifies the state's economy by producing a commodity for export to other states. Storage capacity of renewable-generated energy is also growing. Nevada is also currently the only US producer of lithium used in rechargeable batteries.

NV Energy, a regulated utility owned by Berkshire Hathaway Energy, generates, transmits, and distributes electricity for about 90% of the state, serving more than 1.3 million customers and tens of millions of visitors annually. Its owned and contracted generation capacity exceeds 11,200 MW, more than 5,000 MW of which comes from non-carbon and renewable sources. Its renewables portfolio includes 57 large-scale geothermal, solar, solar plus storage, hydro, wind and biomass projects, in-service and under development. The largest recent advances in renewables have come from solar. Since 2018, NV Energy has brought forward 14 projects totaling 3,200 MW of solar generation with more than 1,500 MW of integrated battery storage systems.

With increased electrification comes an increased need for transmission lines. A key component of the transmission system is the new project One Nevada transmission line, in partnership with LS Power and DesertLink, which connects the northern and southern parts of the state.

The remaining 10% of Nevada's electricity service is provided through distributed rural associations which cover large geographical areas that are sparsely populated.

With increased electrification comes an increased need for transmission lines. A key component of the transmission system is the new project One Nevada transmission line, in partnership with LS Power and DesertLink, which connects the northern and southern parts of the state. Also planned or in development are the extensive Greenlink Nevada Transmission Project, which is anticipated for 2026-2028, the Transcanyon CrossTie Transmission Line Project connecting Nevada with PacificCorp energy systems in Utah and Pacific Northwest, and the newly approved TransWest Express DC line which will supply wind-sourced power from Wyoming mainly to California but also sharing some electricity to southern Nevada. The fact that this line has been more than a decade in planning calls attention to systemic inefficiencies and challenges that impede timely permitting of energy infrastructure projects.

The State of Nevada created a task force in 2021 (Regional Transmission Coordination Task Force) to address energy transmission coordination across Western states. NV Energy is mandated to join a Regional Transmission Organization by 2030. Goals of market expansion include minimizing costs, enhancing reliability, decarbonization, and transparency of communication. The task Force also emphasizes coordination with indigenous tribes. This is one of various collaborations Nevada participates in across state lines to balance supply and demand.

Following federal guidance, the State has proposed plans to better support disadvantaged communities, vulnerable populations, and indigenous tribes, it reducing the likelihood of disruptive events and improving financing for clean energy. As of 2022, the state's Lower Income Solar Energy Program has distributed more than $10 million to 49 qualified entities.

TRANSPORTATION ELECTRIFICATION

Of all greenhouse gas emissions in Nevada, 32% are attributed to transportation. Work is underway in Nevada to enable transportation electrification for both private and public entities, though a comprehensive plan has not been articulated. A Nevada State Plan for Electric Vehicle Infrastructure (NEVI) Deployment is in place to deploy electric vehicle charging stations across the state. Current capacity is sufficient to allay driver anxiety while traversing the long, open stretches of major highways in the state, but much wider and denser coverage is needed. The first electric school bus in Nevada was unveiled in 2023. Transportation planners are slowly increasing emphasis on alternative low- or non-carbon means of transportation in urban areas. The long-anticipated high-speed rail line between Las Vegas and Los Angeles which has now broken ground will likely benefit travelers while cutting carbon emissions.

NATURAL GAS

In Nevada, natural gas and oil reserves are small, and no coal is produced. Governor Lombardo's energy policy calls for a diverse approach that embraces natural gas. Most of Nevada's large power plants are fueled by natural gas. Approved in 2023, a new peaker plant for southern Nevada will be the first natural gas fueled power plant to be built in Nevada in 15 years. Besides being the main source for electricity generation, natural gas heats more than half of Nevada's homes.

Most customers are served by one of two investor-owned utilities, Southwest Gas and Sierra Pacific Power Company, a subsidiary of NV Energy. An extensive network of natural-gas pipelines crosses the state. The fuel is transported from sources and trading hubs in Texas, New Mexico, Wyoming, Idaho, and Oregon. Most of it passes through to other states, primarily California.

RENEWABLE ENERGY

Nevada was an early adopter of the Renewable Portfolio Standard (1997) which sets the percentage of electricity sold to Nevadans that must come from renewable energy or be conserved through efficiency measures. In 2019, it was set at 29% in 2023, 34% through 2026, 42% through 2029, and 50% by 2030. So far, the targets are being met. The State has not signed on to the global goal of net zero by 2050.

The largest renewable sources contributing to Nevada's utility-scale electricity generation are geothermal and solar. Nevada has been ranked first nationally for installed geothermal per capita, and more projects are planned. Nevada's high solar insolation yields favorable solar capacity factors – energy generated per installed element – and therefore low costs. The governor's office lists 45 solar, 24 geothermal, six hydroelectric, two biomass, one wind, and one waste heat projects in Nevada as of 2022, totaling more than 7,000 MW capacity from renewables.

The State operates a Renewable Energy Tax Abatement program that approved 60 projects between 2010 and 2022. The program was recently expanded to incentivize energy storage solutions.

ENERGY EFFICIENCY

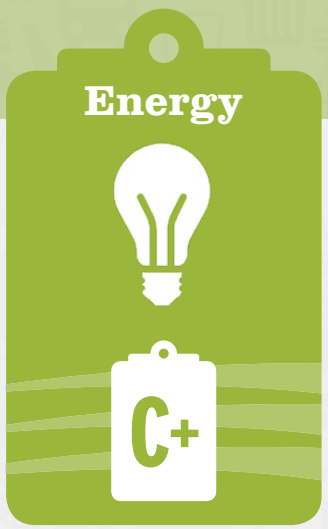
The 2018 International Energy Conservation Code (IECC) is adopted in 47% of Nevada's local jurisdictions, representing almost 97% of the state's population. By law, the next IECC will automatically be adopted by the State in 2024. The State's current Renewable Portfolio Standard rewards energy efficiency measures.

O&M, FUNDING & FUTURE NEED

Nevada's current energy needs are being met. Attention is being paid to improving capacities, improving system redundancies, improving customer experiences while managing costs, and limiting environmental impact. Because most of Nevada's energy infrastructure is quite young (consider that the state population has increased six-fold in the past fifty years), operations and maintenance costs have been reasonable. The utilities are not on pace with demand, which is growing from both industrial and residential sectors. Dependence on gasoline, natural gas and electricity imported from out of state will continue for the foreseeable future.

PUBLIC SAFETY, RESILIENCE, & INNOVATION

A State Energy Security Plan is in place and was refreshed in 2022. Key components address energy assurance and emergency response. Funding is targeted for maintenance of older equipment, vegetation management, installing weather stations, improving insulation on power lines, burying power lines, and hiring meteorologists and fire experts to help with response to natural disasters. Besides seismicity, the State's natural hazards include high winds, heat, drought, wildfires, erosion and landslides, and flooding, all of which are exacerbated by climate change. Nevada continues to build redundancy and new capability in its energy transmission network. The NV Energy utility embraces modern technology that enhances public safety, resilience and sustainability while also managing costs. It has been highly ranked among electric utilities nationwide for service reliability. The Southwest Gas utility has received top ranking in the western U.S. for customer satisfaction.



RECOMMENDATIONS TO RAISE THE GRADE

Nurture and grow renewable energy in Nevada:

- Reduce dependency on fossil fuels by developing Nevada-generated renewables. Capitalizing on the State's rich potential for renewable energy improves economic outlook by reducing energy costs, which directly benefits residents, attracts business, and produces a valuable commodity for export. Enhanced energy independence also builds flexibility and resilience.
- Collaborate with federal lands managers, community members, and other interested parties to ensure that utility-scale renewable-power development minimizes ecosystem impacts, or find ways to benefit it.
- Expand programs that bring benefits (i.e.. reduced costs, less pollution) and incentivize development of renewables to underserved populations.
- Improve transparency of current fees and costs for residents and businesses, and expectations of future fees and costs.
- Improve permitting practices so that critical transmission lines to meet these recommendations can be met in a timely manner.

Energy efficiency and security:

- Incentivize energy conservation by enabling state and local governments to seek federal funding to improve energy efficiency, bury utilities in urban areas, and otherwise harden transmission infrastructure.

Demonstrate commitment, educate the public:

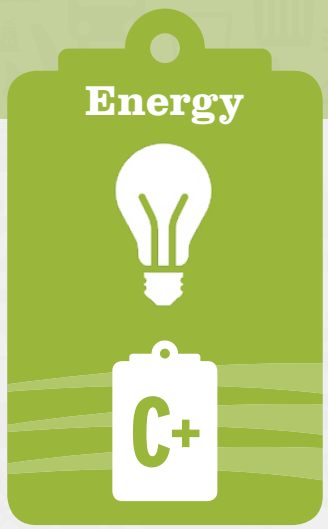
- Educate the population about the opportunities and pitfalls related to energy generation and use. Aid homeowners, small businesses, rural communities, and especially underserved populations in applying for federal programs addressing energy conservation and decarbonization.
- Pursue Envision or another sustainability certification for State infrastructure elements. Adopting these programs in full or even in spirit will raise awareness of issues related to environment and society that are applicable to energy infrastructure, often to economic benefit.

Exceed emissions standards:

- Exceed emissions metrics beyond federal standards especially considering Nevada's abundances in geothermal and solar energy.

Clean transportation:

- Develop a comprehensive plan to implement charging infrastructure along highways.
- Institute targets and specifications for reducing greenhouse gas emissions of public and commercial vehicles.
- Emphasize mass transit and low-energy transportation means in urban planning.



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Parks

C+

GRADE COMPARISON

NV: C+

Nat'l: C-

PARKS

EXECUTIVE SUMMARY

At 70.8 million acres, Nevada is the seventh largest state in the contiguous US, and with approximately 60 million acres of land owned by federal, state, and local governments, it is #1 in the contiguous US for both total and percentage of publicly owned "parkland." Even with a steadily increasing population, the per capita ratio of public land is more than 18 acres per resident. Nevada's protected parkland area has also increased, with over one million acres of dedicated conservations within the past few years. However, the increasing popularity of adventure tourism on top of growing resident populations has increased the demand for Nevada's parks. When coupled with more extreme climate conditions and the disproportionate rise in inflation relative to budget revenue, Nevada's park managers are becoming increasingly strained. As a result, funding for rehabilitating Nevada's existing recreation areas and new facilities to serve growing populations will continue to be the main challenge for local, state, and federal agencies that own and operate parks in Nevada.

CAPACITY

The Bureau of Land Management (BLM) owns 47 million acres of Nevada's land, which equates to approximately 67% of the state's total area. The U.S. Forest Service (USFS) manages 5.8 million acres (8%), the National Park Service (NPS) manages 3 million acres (5%), and the Nevada Division of State Parks (NDSP) manages 150,000 acres (<1%). The state has approximately 528,000 acres of recreational lakes and reservoirs; however, over half of this area comprises Lake Mead and Lake Tahoe, the largest reservoir in the US and the largest alpine lake in the US, respectively. Nevada also has several thousand miles of maintained multi-use trails, including 3 national historic trails that cross different parts of the state and hundreds of miles of master-planned urban trails within each metro area.

Generally, local municipalities have adequate capacity for the existing and future populations. The annual ParkScore report by the Trust for Public Land ranks the largest 100 cities in the US based on 14 measures across 5 categories: acreage, investment, amenities, access, and equity. In 2023, the cities of Henderson (COH; #19), North Las Vegas (CNLV; #37), Las Vegas (CLV; #48), and Reno (#70) received overall scores of 64, 56, 52, and 42 out of 100, respectively. Notable results from this report: an average of 71% of residents within the four cities live within a 10-minute walk of a park, and three of the four cities received scores of 100 for splashpads and spraygrounds per 100,000 residents. However, CLV and Reno received low scores, 20 and 16, respectively, for spending per resident at less than $65 per resident.

Nevada Public Recreation Areas (2023)	
Types of Recreation Areas	**Quantity**
National Parks	2
National Monuments	4
National Conservation Areas	5
National Forest Service Districts	7
National Historic Trails	3
National Recreation Areas	2
National Heritage Areas	1
National Natural Landmarks	6
National Wilderness Areas	75
National Wilderness Study Areas	57
State Parks	13
State Historic Parks and Sites	5
State Recreation Areas	6
State Wildlife Management Areas	13
Municipal Parks and Recreation / Special Use Facilities	1000+
Recreational Lakes and Reservoirs	18
USACE Recreational Reservoirs	2*
* Both USACE reservoirs are currently dry	

Nevada's parklands are growing, with over one million acres of federal land dedicated to conservation protections within the past two years:

- The Avi Kwa Ame National Monument (507,000 acres) is regarded as one of the most sacred places on Earth by many regional native communities, and it contains evidence of human occupancy reaching back more than 10,000 years.
- The 2023 National Defense Authorization Act designated 183,000 acres of new wilderness areas, 166,000 acres of National Conservation Areas, 217,845 acres of a Special Management Area for native cultural resources, and 18,000 acres of Special Protection Area also for indigenous communities.

While Nevada has large amounts of public space, certain state and federal parklands are starting to be squeezed by increased visitors who come to Nevada for outdoor recreation. Marketing campaigns for the vast public lands in Nevada, Utah, Arizona, and California have significantly increased visitation at the various parks across the region. Red Rock National Conservation Area is the most visited site managed by the BLM, with almost 4 million annual visitors; Lake Mead National Recreation Area is among the nation's top 10 most visited National Park Service sites, with more than 5 million annual visitors (increasing to over 7 million when water levels rise); and if Lake Tahoe were a national park, it would be the most visited nationwide, with over 15 million annual visitors. As a result, Lake Tahoe made Fodor's "no list 2023", citing traffic, overcrowding, and trash as items of concern, and indicated that the area is "being loved into a crisis". Many state and federal park sites in Nevada have instituted mandatory online reservations during peak months to better manage access to the parks and associated amenities. In addition, NDSP has made a focused effort to highlight the 24 parks located throughout the state in hopes that the distribution of visitors will help protect natural resources and enhance user experiences.

CONDITION AND OPERATION & MAINTENANCE

The condition and maintenance of Nevada's parks vary. Lake Mead National Recreation Area is one of the largest in the nation at 1.5 million acres and operates with one of the highest annual deferred maintenance backlogs at $580 million. The size of the recreation area is exacerbated by the fluctuations in water levels within the lake, decreasing by more than 170 feet over the past 20 years and increasing or decreasing by up to 20 feet per year. These fluctuations challenge park managers because the land area, which requires planning, oversight, and maintenance, has changed significantly. In addition, visitor revenue is directly impacted by the ability to use the lake for recreation, which has significantly decreased in the past several years, reducing visitor spending by over 20%. These sharp fluctuations are not easily predictable, putting further strain on available resources. However, Red Rock National Conservation Area, which is fairly small in comparison to its popularity, operates with an annual surplus and is constantly upgrading amenities and rehabilitating facilities. NDSP operates with a maintenance backlog of approximately $100 million, and local park managers maintain backlogs with constant demand for repairs.

In addition to recurring state-wide maintenance backlogs, costs of materials, labor, and equipment have increased sharply since the COVID-19 pandemic. These cost increases have resulted in delayed equipment purchases, delayed or reduced facility improvements, and delayed or reduced maintenance. Park managers' decreased spending power is also outpacing revenue increases, ultimately impacting the rate of deterioration given the unchanged demand for use.

FUNDING & FUTURE NEED

Several government agencies own and operate parks in Nevada, each with different funding sources, including general funds, federal grants, bonds, donations, and user fees. Nevada's budget for NDSP has increased 19% since the 2017-2019 biennium budget, and local government agencies have marginally increased funding for parks and recreation as tax revenues have continued to increase over the past several years.

At the federal level, the Great American Outdoors Act of 2020 is the single largest investment in public lands in US history. In conjunction with other recent legislation, such as the Infrastructure Investment and Jobs Act (IIJA), it created the National Parks and Public Land Legacy Restoration Fund to address deferred maintenance and repair backlog, and it created permanent, full funding for the existing Land and Water Conservation Fund (LWCF). However, the positive impact at the federal level has not been reflected in NDSP's budget, and annual federal funding has remained stagnant. Given the increasing demand for Nevada's parks, significantly more funding is needed, especially at Lake Mead.

Nevada has several programs that help generate revenue for public parklands. One of the most successful programs is the Southern Nevada Public Lands Management Act (SNPLMA), which uses proceeds from selling BLM land in Southern Nevada to fund conservation and public benefit projects across Nevada. Projects include the development of parks, trails, and natural areas, public infrastructure, conservation initiatives, multi-species habitat conservation plans, acquisition of environmentally sensitive land, hazardous fuels reduction projects, landscape restoration projects in eastern Nevada, and environmental restoration at Lake Tahoe. Over $4 billion has been generated to date, and the most recent round of funding in 2023 allocates $417 million to 47 different projects throughout the state.

Nevada's park owners are struggling to keep qualified staff, with a vacancy rate of approximately 25%, despite recent increases in funding and salaries for park employees. Some parks struggle due to their remote locations, while Lake Tahoe, which accounts for one third of all state park vacancies, struggles due to the high cost of living. As a result, some parks are forced to reduce services due to staffing shortages. Using Lake Tahoe as the example again, the Sand Harbor boat ramp was closed two days per week during the 2023 summer season due to staffing, forcing boaters to drive 14 miles away to the next closest ramp. At Lake Mead National Recreation Area, the 2024 fiscal

budget includes $150,000 to help offset the wage pay differential of existing employees. However, since this park is the only one in the NPS with unionized employees who collectively bargain outside the NPS, their annual wage increases have averaged more than other similar NPS employees, which reduces the purchasing power of the annual NPS budget. It is unknown if the proposed wage pay budget increase will be enough. With all labor markets being impacted by the demand for higher salaries and benefits, it is anticipated that recruiting and retaining park employees will continue to be a significant challenge in the coming years.

All municipalities in Nevada have goals to add more parkland per capita. Still, available land to construct new parks is becoming limited, so a priority shift is occurring at the planning level to provide better access to public amenities from all corners of the community, especially underserved neighborhoods. For example, the Regional Transportation Commissions of Northern and Southern Nevada (RTCNV and RTCSNV) are actively coordinating efforts with local municipalities to establish public transportation services to community parks from the various neighborhoods.

PUBLIC SAFETY& RESILIENCE

Nevada has experienced no shortage of drought, flooding, and wildfires. These environmental events impact parklands and park managers need to be prepared to respond accordingly. During the COVID-19 pandemic, water levels in lakes and reservoirs dropped to critical levels of concern while the demand for recreational opportunities skyrocketed. At Lake Mead, boat ramps were relocated to lower elevations or removed completely to limit access due to historically low water levels; however, the winter of 22-23 brought unpreceded rain and snow events which filled waterways and reservoirs to their rims throughout the state, bolstering recreational opportunities in places like Lake Mead while causing widespread flooding in others. The governor declared a state of emergency for 8 of the 17 counties and 2 tribes during the spring of 2023 due to the amount of flooding. Another state of emergency was declared in March 2023 for flood damage to the emergency spillway of the Echo Canyon Dam.

Park managers cannot handle events like dam failures on their own. The dam breach at Echo Canyon State Park is a good example. NDSP owns the dam, but they do not manage the associated water system, and the damage impacted both the park road and a nearby state route. Crews from NDSP, the Nevada Department of Transportation (NDOT), local entity road owners, and the dam manager worked together to save the dam and mitigate impacts to the park, highway system, and adjacent homes and farms.

Nevada's park owners are exploring resiliency efforts such as solar power generation and turf removal/conversions to reduce power and water demands. In other efforts, the City of Las Vegas created its own nursery to grow up to 250 different species of plants, the majority of which come from seed or cuttings, all used by the city in public spaces and parks. This program has greatly reduced the cost of sourcing mature trees and shrubs from third party vendors, and the availability of the plants is better managed to coincide with construction project schedules.

Nevada's park owners are exploring resiliency efforts such as solar power generation and turf removal/conversions to reduce power and water demands.

INNOVATION

Park managers of all types in Nevada are investing in technology for better user experiences and better management of services. NDSP has partnered with an internet satellite provider to ensure connectivity at all its park units. Additionally, they are moving away from the historic cash only pay model by installing digital pay stations at their most popular locations, and their online reservation system will ensure that significantly more permit fees are captured.

Since local neighborhood parks do not have fees or other mechanisms to properly track usage, municipal park managers are beginning to work with cell phone carriers to obtain metrics on people who visit neighborhood parks: how many, when, how often, and for how long. These statistics will help manage existing park amenities and help plan for new parks and amenities.

As mentioned, park managers throughout the state are working with various entities to ensure connectivity for all users by providing public transportation from various neighborhoods, especially underserved communities. This work, and the development of bike share opportunities in and adjacent to the park systems, will allow historically underserved communities opportunities to access Nevada's parks in an authentic manner.

RECOMMENDATIONS TO RAISE THE GRADE

- Ensure existing facilities receive adequate funding for maintenance and improvements as O&M remains the single biggest infrastructure challenge for parks.
- Create federal, state, or urban asset management plans allowing agencies to better allocate funding and resources for Nevada's vast array of public lands.
- Seek further innovative funding and visitation management solutions as demand for parks continues to increase and budgets are outpaced by inflation. The largest impact on Nevada's parks is through federal sources since most parkland is owned and maintained by federal entities; however, state and local budgets can make an impact through various tax and fee programs, specifically for visitors.
- Direct higher salaries with better benefits to improve employee recruitment and retention.
- Continue to seek innovative solutions for resilient infrastructure and vegetation to offset the impacts of extreme weather.
- Utilize data analytics and surveys to track how and when visitors use parks to optimize future planning of improvements.

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Roads
C
BROOKVILLE
GRADE COMPARISON
NV: C
Nat'l: D+

ROADS

EXECUTIVE SUMMARY

There are over 48,000 miles of roadway in Nevada. According to the U.S. Department of Transportation (DOT), the average condition of these roads is good to fair. Driving on deteriorating roads costs Nevada motorists $1.2 billion a year, equivalent to $576 per driver. The Infrastructure Investment and Jobs Act (IIJA), signed into law by President Joe Biden in November 2021, will provide $2.8 billion for highway and bridge investments in Nevada through 2026, representing a 39% funding increase. Federal funds currently support 55% of the state's transportation department spending on highway and bridge improvements.

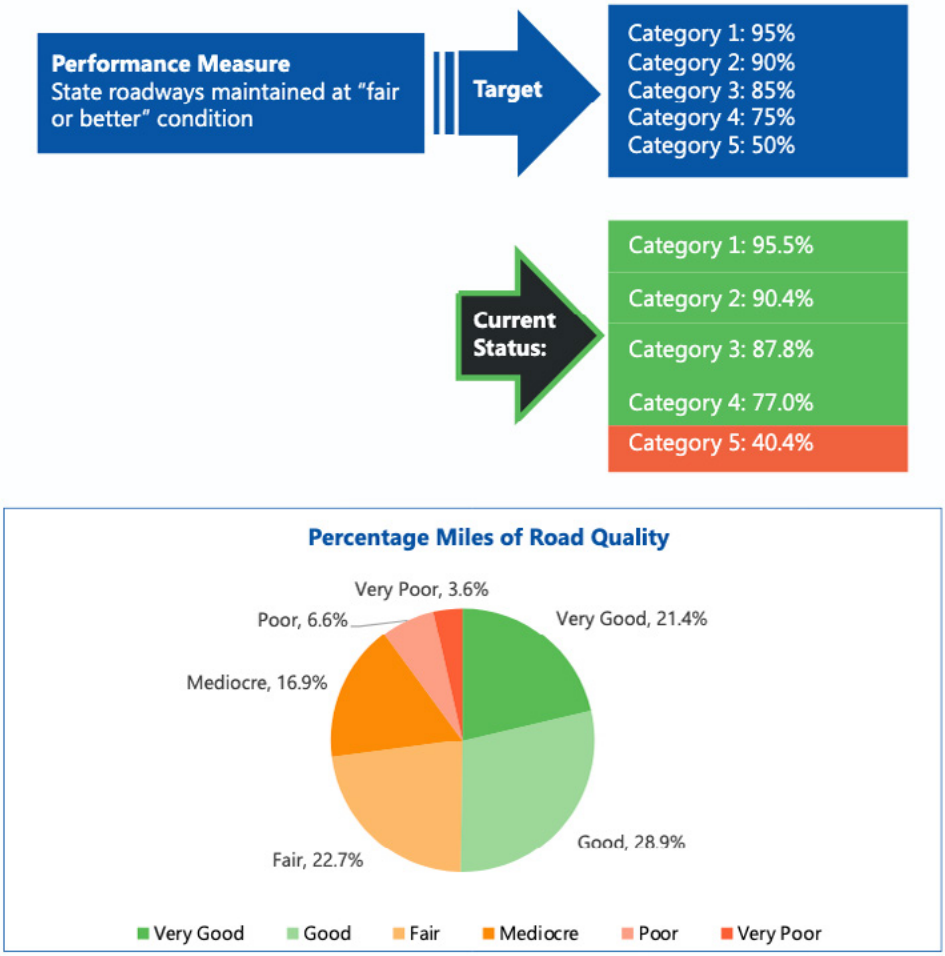
The Federal Highway Administration's (FHWA) National Highway Construction Cost Index (NHCCI), which measures labor and materials costs, increased by 28% during the first three quarters of 2022. Due to inflation and the increased use of electric vehicles (EVs), the state will need to consider long term funding solutions, as current funding remains heavily gas-tax dependent. Construction cost inflation, the erosion of motor fuel taxes due to inflation, improved fuel efficiency, and the adoption of hybrid and electric vehicles threaten the state's ability to keep pace with growing transportation needs. Transportation safety is also a major issue facing Nevada. Nevada has been identified as a Focus State under the FHWA's Focused Approach to Safety program. Based on the National Highway Traffic Safety Administration's (NHTSA) traffic crash cost methodology, estimates indicate that 416 fatal and serious traffic crashes in Nevada in 2022 caused a total of $16 billion in societal harm. This includes $4 billion in economic costs and $12 billion in quality-of-life costs.

CONDITION AND CAPACITY

Nevada has a population of 3.1 million 2.7 million registered active vehicles and 2.3 million licensed drivers. The Nevada Department of Transportation (NDOT) maintains 39,452 centerline miles, some 5,367 of which are state highways and 34,085 of which are maintained by local agencies. NDOT estimates that this is 27.6 billion vehicle miles traveled per year. State-maintained roadways carry 72% of all truck traffic and 81% of the heavy truck traffic.

NDOT classifies state roadways into five prioritization categories. Roadway Category One - Freeways, Two – Expressways, Three – Regional Highways, Four – Rural Highways, Five – Principal Arterials. Figure 1 shows the NDOT 2022 Performance Report.

FIGURE 1



Nevada's largest metropolitan areas, including Las Vegas, Henderson, North Las Vegas, and Reno, are where the majority of the population resides. The state's transportation system facilitates 28 billion miles of annual travel and $167 billion in commodity shipping. However, the system's condition is deteriorating due to insufficient state and federal funding to meet transportation improvement needs.

The transportation infrastructure supports around 29,000 full-time jobs in Nevada across various sectors. Additionally, approximately 699,000 full-time jobs in key industries like tourism, retail sales, agriculture, and manufacturing rely heavily on the state's transportation network.

Notably, the IIJA has allocated significant funds to address transportation challenges nationwide. The law provides up to $108 billion for public transportation, with $91 billion in guaranteed funding, representing the largest federal investment in transit history. This investment aims to enhance safety, modernize transit infrastructure, promote climate-friendly transportation, and improve equity in transit access.

Nevada's transportation infrastructure, which facilitates 28 billion miles of annual vehicle travel and $167 billion in commodity shipping, faces significant challenges due to deteriorating conditions and insufficient funding, yet supports approximately 29,000 jobs in its design, construction, and maintenance, and 699,000 jobs in key industries.

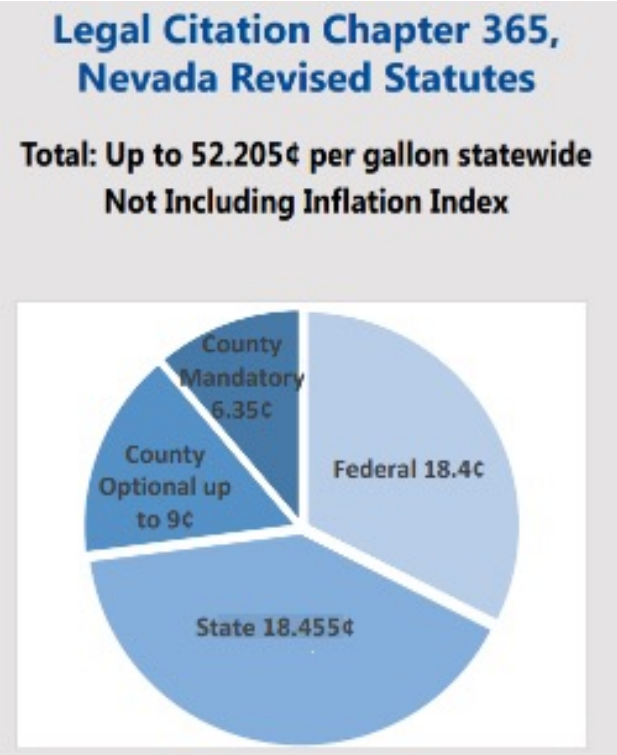
OPERATION & MAINTENANCE, FUNDING AND FUTURE NEED

FUNDING

Fuel taxes and other highway-user revenue collected by the federal government are placed in the Highway Trust Fund (HTF). The IIJA will provide $2.8 billion for highway and bridge investments in Nevada over the lifetime of the law, representing a 39% funding increase. Federal funds currently support 55% of the state's transportation department spending on highway and bridge improvements. Nevada has been successful in securing additional federal funding through discretionary grants. For example, the Regional Transportation Commission (RTC) of Washoe County is receiving $25 million in federal funding, via Rebuilding American Infrastructure with Sustainability and Equity (RAISE), for the Lemmon Drive Traffic Improvements and Resiliency Project. The Regional Transportation Commission of Southern Nevada received $5.9 million from the DOT RAISE grant program to plan for future high-capacity transit along Charleston Boulevard. The City of Las Vegas was awarded a $23.9 million grant award through the RAISE program.

Federal funds are available only for reimbursements of expenditures on approved projects. Federal aid is not available for routine maintenance, administration, or other non-project related costs. The majority of Nevada's State Highway Fund finances NDOT.

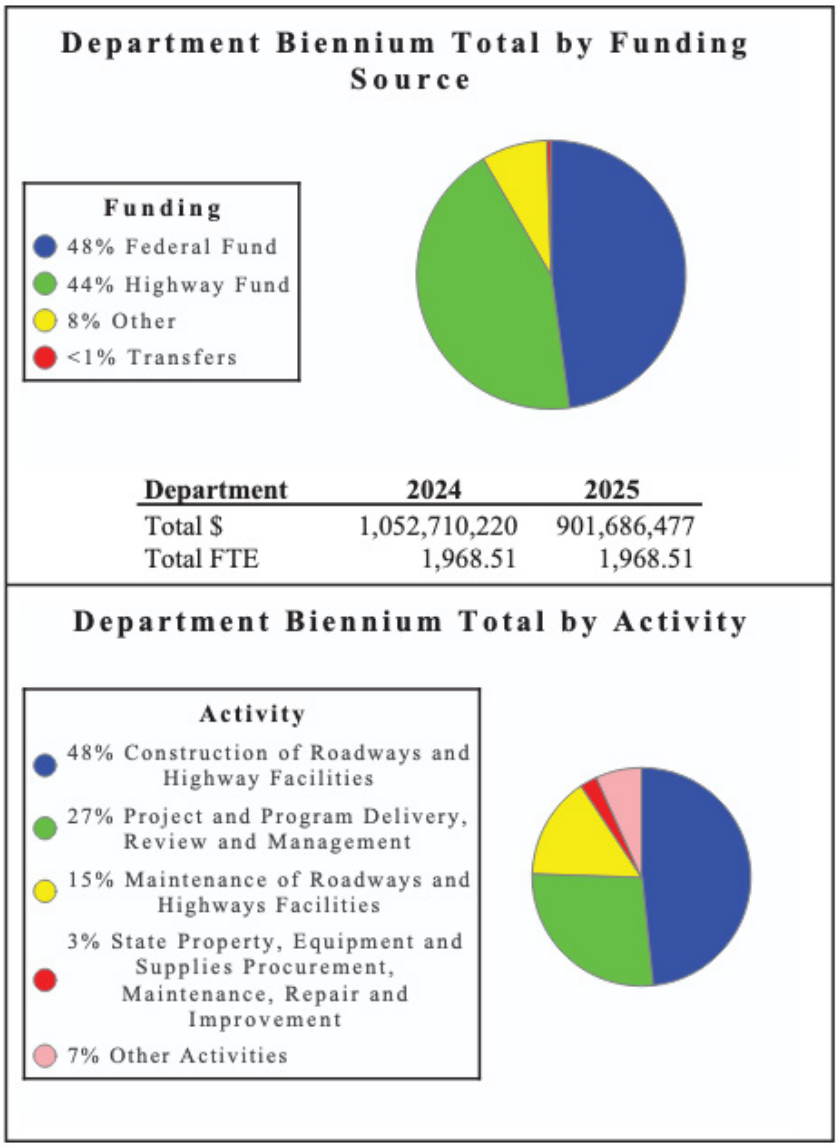
FIGURE 2



Estimates for a passenger car's operating costs, expressed in cents per mile of travel, is: average gas tax per vehicle-mile-traveled is approximately 2.0 cents, variable cost 27 cents, fixed cost 73.3 cents for a total operating cost of 100.3 cents per mile traveled.

Maintaining a safe, reliable transportation system through strategic investment in system preservation, maintenance, and long-range expansion requires appropriate levels of reliable, long-term funding. NDOT has submitted a biennial budget request totaling over $1.9 billion, with $1 billion allocated for 2024 and $901 million for 2025, to fund critical capital and maintenance projects focused on expanding and improving the state's roadway network.

FIGURE 3 (STATE OF NEVADA EXECUTIVE BUDGET, 2023)

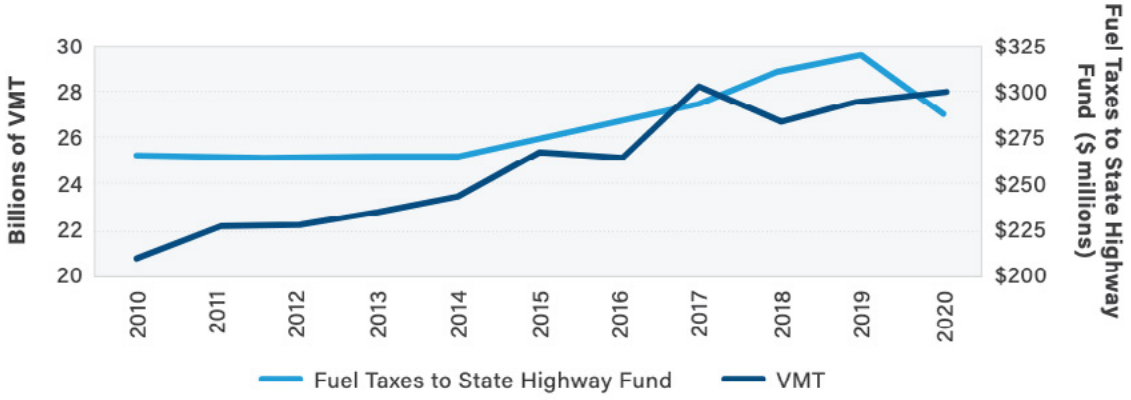


Determining a long-term funding source for Nevada's roadways will be critical to maintaining existing systems and developing safe infrastructure. Nevada's population boom continues at historic levels, placing ever greater demand for travel on the state's transportation infrastructure system. To meet these demands to maintain a safe, reliable transportation system through strategic investment in system preservation, maintenance, and long-range expansion, state and local governments require appropriate levels of dependable long-term funding. Statewide transportation projects, programs, and operations for the system managed by NDOT will require at least $16.9 billion over the next 10 years. Funding from state and federal sources are expected to cover approximately $10.7 billion of this amount, leaving a funding gap of at least $6 billion over this 10-year period. Local authorities also face growing transportation needs that outstrip available revenues. Collectively, Metropolitan Planning Organizations (MPOs) and county governments have annual unfunded transportation needs of over $500 million.

The federal, state, and county funding that Nevada relies on for its transportation system is derived

primarily from taxes on motor fuels. As the only usage-based transportation fee, fuel taxes provide sustainable revenue only if fuel (gasoline and diesel) consumption continues to grow. However, recent trends and near-term forecasts of the growth of EVs and more fuel efficient vehicles suggest the opposite will occur, causing revenue to decline and leading to an even wider gap between available funding and system needs. During the 2021 session, the Nevada Legislature approved Assembly Bill (AB) 413, which established an Advisory Working Group (AWG) charged with investigating the transportation funding needs of the state and providing recommendations for future sustainable funding options.

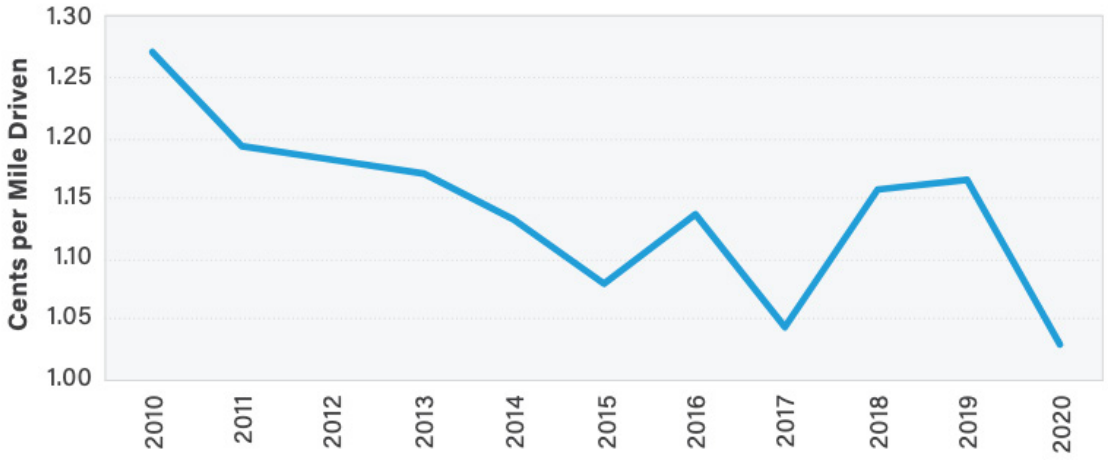
FIGURE 4 (CDM SMITH | MILESTONE SOLUTIONS, 2022)



Source: Consultant analysis of data provided by NDOT

Figure ES1: VMT compared to fuel tax deposits to the state highway fund

FIGURE 5 (CDM SMITH | MILESTONE SOLUTIONS, 2022)



Source: Consultant analysis of data provided by NDOT

Figure ES2: Cents of fuel per tax per mile driven to State Highway Fund

PUBLIC SAFETY

Transportation safety is also a major issue facing Nevada. Nevada has been identified as a Focus State under the FHWA's Focused Approach to Safety program. Based on NHTSA's traffic crash cost methodology, estimates indicate that fatal and serious traffic crashes in Nevada in 2022 caused a total of $16 billion in societal harm, which includes $4 billion in economic costs and $12 billion in quality-of-life costs.

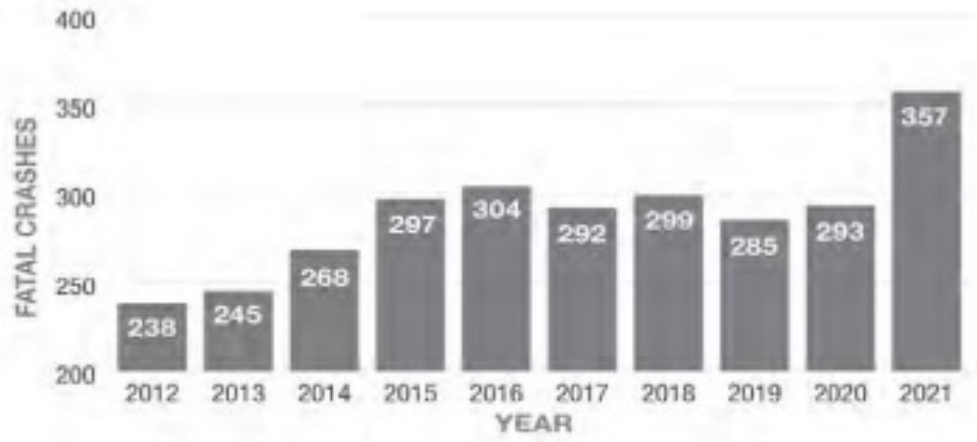
Nevada has coordinated with local agencies in a number of safety programs. They include the Zero Fatalities program to update the Strategic Highway Safety Plan (SHSP) focused on a Safe System Approach. However, do the number of fatal and severe crashes on Nevada roadways remains high at 416 fatal crashes in 2022. FHWA identified Nevada as a Focus State for traffic safety, particularly due to needed improvements associated with intersections and pedestrians. Additionally, the Regional Transportation Commission of Southern Nevada is identified as an MPO requiring focused efforts by FHWA.

The FHWA has designated Nevada as a Focus State for traffic safety due to its elevated traffic fatality rates. This designation is based on criteria such as a fatality rate of 11.64 deaths per 100 million vehicle miles traveled (VMT) in 2020, exceeding the national average of 11.04, and 330 traffic fatalities that year, representing a 5% increase from 2019. Nevada also experiences higher-than-average fatalities in specific categories, including pedestrian, bicycle, and speed-related crashes.

As a Focus State, Nevada receives increased technical assistance and resources from FHWA, including enhanced safety data analysis and evaluation, prioritized funding for safety-related projects, and collaborative efforts to develop targeted safety strategies. To achieve improved safety status, Nevada must demonstrate progress in reducing traffic fatalities and meeting specific safety performance targets. These targets include reducing fatality rates below the national average, decreasing the number of fatalities by 5-10% annually, implementing evidence-based safety countermeasures, and enhancing data-driven safety planning and analysis.

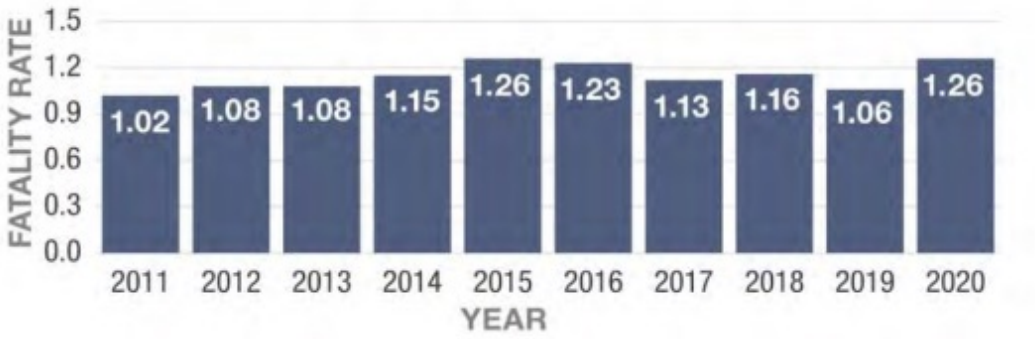
According to FHWA and NHTSA reports, Nevada's Focus State designation aims to address these safety challenges through focused efforts and resources. By working together with FHWA, Nevada can develop effective strategies to improve road safety and reduce traffic fatalities.

FIGURE 6



Source: 2012 to 2020 Fatality Analysis Reporting System, National Highway Traffic Safety Administration (NHTSA); 2021 Nevada Monthly Fatality Report

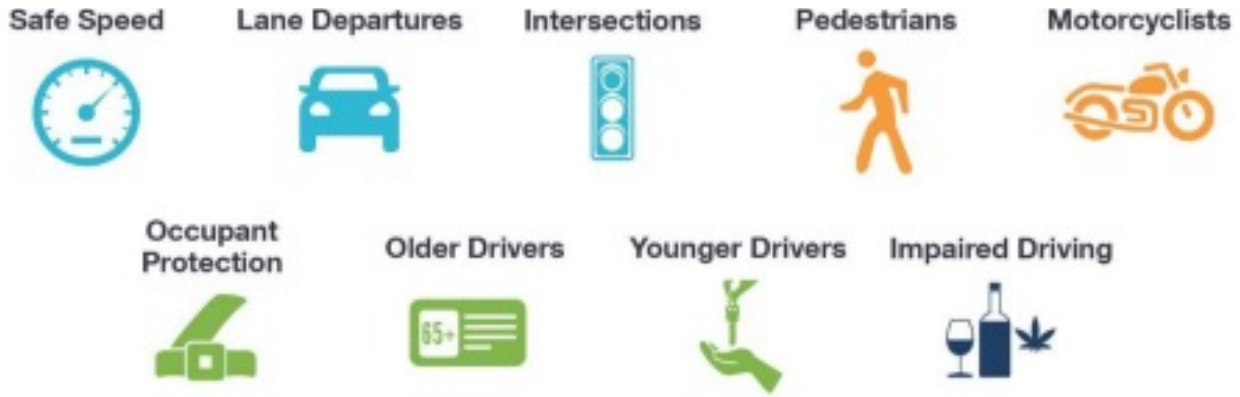
FIGURE 7



Source: Fatality Analysis Reporting System, NHTSA (2021 preliminary data not available)

The Nevada Advisory Committee on Traffic Safety (NVACTS) oversees the state's Strategic Highway Safety Plan (SHSP) and Traffic Records Coordinating Committee (TRCC), working closely with the NDOT and Nevada Department of Public Safety (DPS). The SHSP establishes statewide goals and strategies for nine critical emphasis areas: safe speed, lane departures, intersections, pedestrians, motorcyclists, occupant protection, older drivers, younger drivers, and impaired driving. Developed in consultation with federal, state, local, and private-sector stakeholders, these initiatives aim to eliminate traffic-related fatalities and serious injuries. Notably, the 2021-2025 SHSP sets an ambitious goal of achieving Zero Fatalities by 2050, guiding Nevada's efforts to improve road safety and minimize accidents through targeted measures and collaborative efforts.

FIGURE 8



The two primary factors tin crashes are speeding and impairment (alcohol and/or drugs). Speeding accounts for over 30% of Nevada's total fatalities, while impaired driving accounts for over 40%. While this growth mirrors a larger trend, Nevada's traffic fatality rate is higher than the national average (over 30% for impairment, and 30% for speeding) and calls for increased safety measures at state and local levels.

RESILIENCE

NDOT oversees the Freeway Service Patrol (FSP), which maintains the goals of enhancing safety, optimizing efficiency, improving travel time reliability, reducing greenhouse gas emissions, promoting customer service, and maximizing multijurisdictional collaboration with partner agencies. The goal of the FSP program is to clear traffic incidents including crashes, abandoned or disabled vehicles, debris, and scene safety for other situations such as fires or hazardous spills in under 15 mins. Incident clearance times in 2021 for Las Vegas and Reno satisfying this goal are 73.8% and 77.6%, respectively. Traffic Incident Management (TIM) for 2021 has resulted in travel delay reduction of 3.4 million and 687,126 vehicle hours for Las Vegas and Reno, respectively. In the last decade, Nevada has experienced 13 extreme weather events, costing the state up to $500 million in damages. The IIJA includes significant funding to enhance the nation's resilience against various threats, including climate change, extreme weather events, and cyber attacks.

INNOVATION

Nevada continues to prioritize innovation and improvement in its transportation systems. Through collaboration among state, regional, and local agencies, Nevada aims to enhance safety and efficiency on its roads. One tool being utilized is Waycare, a data analytics platform that provides real-time insights on traffic accidents, congestion, and hazardous driving conditions. This technology enables quicker response times to incidents and more effective allocation of resources for traffic management and incident prevention. Southern Nevada has seen a 17% reduction in the number of primary crashes, the initial crash or incident that occurs on the roadway, as opposed to secondary crashes or incidents that may occur as a result of the initial incident and public safety partners are responding to incidents up to 12 minutes faster due to the use of this type of technology. MPOs and transportation agencies have been collecting detailed data on roadway assets using LiDAR scanning technology. This data is being integrated into comprehensive asset management systems to help maintain and manage existing road infrastructure. The Regional Transportation Commission of Southern Nevada Freeway and Arterial System of Transportation (FAST) has partnered with local agencies to conduct pilots on passive pedestrian detection, adaptive traffic signals, and advanced intersection analytics.

Nevada has received a few grants highlighting innovation. FHWA is awarding money as part of the RAISE discretionary grant program. DOT awarded a $5.3 million grant to the Regional Transportation Commission and City of Las Vegas to deploy an autonomous circulator between downtown Las Vegas and the Las Vegas Medical District. A federal demonstration project will improve transportation access for vulnerable populations in Southern Nevada. Funded by a $3.8 million Low or No Emission grant from the US Department of Transportation, the Regional Transportation Commission of Southern Nevada (RTC) will deploy two hydrogen fuel cell buses and install supporting hydrogen fueling infrastructure. The Federal Transit Administration (FTA) awarded $128,624 to the RTC to fund a mobile training lab to bring RTC mobility trainers and resources to members of the community, including veterans, persons with disabilities, and low-income populations. FHWA awarded $6 million in federal funding to the RTC, NDOT, and its partners for the expansion of emerging technologies along a five-mile stretch of U.S. 95 to mitigate traffic congestion and enhance road safety. The RTC is set to receive $2 million in federal funding as part of the DOT's Strengthening Mobility and Revolutionizing Transportation (SMART) Grants program, which is aimed at advancing transportation safety and efficiency.

RECOMMENDATIONS TO RAISE THE GRADE

- Evaluate to implement long-term funding sources for transportation network.
- Increase funding for road safety research and implementation to reduce traffic fatalities and severe injuries.
- Invest in transportation improvements at local, state, and federal levels to alleviate traffic congestion, enhance road, bridge, and transit conditions, improve safety, foster long-term economic growth in Nevada.
- Implement innovative traffic management systems that optimize traffic flow, reduce congestion, and decrease travel times.
- Evaluate and implement high-capacity transit options and expand transit programs to increase mobility and safe travel for all road users. Encourage transit-oriented development (TOD) by investing in mixed-use development projects that combine residential, commercial, and recreational spaces with public transportation hubs.
- Promote non-motorized transportation modes like walking and cycling by investing in pedestrian-friendly and bike-friendly safe infrastructure.
- Utilize more programs like Envision and Greenroads to increase the sustainability of road projects.

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Wastewater
B-
GRADE COMPARISON
NV: B-
Nat'l: D+

WASTEWATER

EXECUTIVE SUMMARY

Since Nevada is the driest state in the Union, water and water treatment have been prime factors in determining future growth potential for the state. Approximately 6,775 miles of sewer pipeline in Nevada connect to 50 different wastewater treatment facilities. Many of Nevada's collection systems are relatively new compared to other states. While the majority of Nevada's population is concentrated in the Reno and Las Vegas metropolitan areas and served by a few facilities, the majority of wastewater treatment facilities in Nevada serve rural communities. The 2008 recession had a large impact on the state's economy and rate of growth; new construction came to a halt and agencies prioritized rehabilitation of existing infrastructure. However, recent spending has ticked up. Federal grants and loans have leveraged state and local funds to upgrade facilities. The Environmental Protection Agency reported in 2022 that wastewater projects in Nevada required approximately $531 million, down from $3.08 billion in 2012. Nevada is the driest state in the USA, to support a growing population innovation and conservation have been essential to the state's success.

BACKGROUND

The origin of wastewater treatment in Nevada begins with Lake Tahoe before the Clean Water Act was passed in 1968. During the 1950s and 1960s the combined effects of leeching from residential septic tanks, discharge from sewage treatment plants, and accelerated development fueled by the construction of casinos, led to the degradation of Lake Tahoe. The visible impact of wastewater discharge prompted the local community to form the first wastewater agency in the state. Other agencies formed in Nevada over the next two decades.

There are two main population centers in Nevada, the Reno area in the northwest and the Las Vegas area in the south. In 2022 an estimated 3,177,772 people were residents of the state, with approximately 600,000 people living in rural communities. For this report, rural communities are defined as communities with less than 50,000 residents. Rural communities of Nevada face similar challenges and compliance requirements as the urban areas of the state, but with additional hurdles due to their small sizes and proportionally limited funding sources.

FIGURE 1. LAS VEGAS VALLEY WASH

Photo: lvwash.org

CAPACITY AND CONDITION

The majority of sewer pipelines are concentrated in the urban areas of Nevada of which the state has seen exponential growth since the 1950s making most of the older pipes only 70 years old. The majority of population growth has occurred in recent decades making much of Nevada's collection systems relatively new compared to other cities. In 2014, the largest wastewater utility in southern Nevada installed 13 miles of gravity interceptor sewer, the largest expansion in its history. Similar programs have been completed in Northern Nevada out of necessity to meet the needs of an expanding population.

The Clean Watersheds Needs Survey (CWNS), which is produced by the Environmental Protection Agency (EPA), is a voluntary assessment of the needs of local agencies to meet water quality and other water-related public health goals of the Clean Water Act (CWA). In Table 1 below, from the 2012 CWNS, 76% of all treatment facilities in the state were "no-discharge" facilities. No-discharge facilities provide a minor level of treatment to wastewater and typically store wastewater in lined ponds until all water evaporates. Figure 1 below is an example of a no-discharge facility located in Nevada. No-discharge wastewater facilities typically have minimal negative impacts on the local environment.

FIGURE 2. PANACA TREATMENT POND-ONE OF NEVADA'S COMMUNITIES THAT HAS BENEFITTED FROM THE CIRCUIT RIDER PROGRAM

The number of treatment facilities in Nevada is projected to remain generally unchanged, while the state population is anticipated to increase by up to 140% by 2032 as shown in Table 1. Table 1 also shows that Nevada's urban areas are projected to densify and become more populous. By 2032 approximately 89% of the state's population will be serviced by 20% of the treatment facilities in Nevada. All wastewater facilities in urban communities of Nevada have on-going plans for expansion to meet the needs of a growing population.

Table 1 demonstrates that the wastewater treatment plants in urban communities are treating effluent to an advanced level which includes nitrification, denitrification, and advanced filters. This highly treated water can be used for environmental uses, being returned to a natural stream, or economic uses, such as for irrigation. As noted previously, Nevada is the driest state in the US, treating and reusing wastewater has been an essential component of the state's growth.

TABLE 1. CLEAN WATERSHEDS NEEDS SURVEY NUMBER OF FACILITIES AND POPULATION OF NEVADA 2004-2032

Number of Facilities				Population Served				
				#	% Total	#	% Total	
Treatment Level	2004	2012	2032*	2004		2012		2032
X< Secondary	0	0	0	0	0	0	2%	0
Secondary	8	3	3	200,000	13%	<0.1		<0.1
Advanced	3	9	10	900,000	60%	2,600,000	87%	4,000,000
No Discharge	44	38	38	300,000	20%	300,000	10%	500,000
Partial Treatment	0	0	0	0		0		0
Total	55	50	51	1,500,000	93%	3,000,000	99%	4,400,000

Notable examples of rural communities that have upgraded their infrastructure with federal United Stated Department of Agriculture (USDA) grants, state, and local funds are the city of Winnemucca and Boulder City, which both recently completed advanced treatment facilities with capacities three times their current average daily use rates.

TABLE 2. NPDES PERMIT VIOLATIONS IN NEVADA FROM 2015-2018

Area	Average # of Quarters in Non Compliance	Effluent Violations	Number of Inspections	Formal Enforcement Actions
North	3	16	7	0
South	3	6	6	2
Rural	1.3	40	15	0

Table 2 was developed from the EPA's Enforcement and Compliance History Online (ECHO) tool. Six facilities in rural areas, one serving a population of 16,000, one in the north, and one in the south, have been cited by EPA Region 9 for violating their respective national Pollution Discharge Elimination System (NPDES) permits over a three-year period from 2015-2018.

Overall, the effectiveness of wastewater treatment facilities in Nevada have met and exceeded EPA and NDEP guidelines with only 16% experiencing any type of violation in a three-year period. The number of sanitary sewer overflows (SSOs) in the state could not be verified as only paper records are kept, although the system is transitioning to an electronic format.

The average number of residents in each city that are still on septic systems and not connected to treatment facilities is estimated between 1% and 5%. The state-wide septic program is monitored by the NDEP and requires a permitting process and regular maintenance.

FUNDING AND FUTURE NEEDS

In Nevada's urban areas, funding for wastewater utilities is typically collected through a sanitation fee on all customer's bills in addition to new connection fees. The sanitation fee is stable relative to population while new connection fees fluctuate depending on economic conditions. The combined capital improvement budgets (of just the wastewater categories) of the five largest wastewater utilities in the state for fiscal year 2018 to fiscal year 2022 are approximately $762.6 million. Although not the $3 billion of projected need, the improving CIP budgets of utilities in the state indicates that utilities are prepared and planning for the future.

While the majority of Nevada's population is concentrated in the Reno and Las Vegas metropolitan areas and served by a few facilities, the majority of wastewater treatment facilities in Nevada serve rural communities. USDA's Community Programs provided $28 million worth of loan and grant funding to clean water and wastewater projects in rural Nevada. Funding was used to replace pipelines and pump stations, and as an example, connected the community of Gold Hill to the Virginia City wastewater system after its septic system failed. Funds are also dispersed through the EPA and NDEP through the Clean Water State Revolving Fund.

FIGURE 3. 2022 CWNS REPORTED NEEDS BY CATEGORY FOR NEVADA

Table B-1. 2022 CWNS Reported Needs by Category and State (January 2022 Dollars in Millions)

State	Needs Category										
	Total	I	II	III	IV	V	VI	VII	X	XII	XIV
Nevada	$531	$15	$120	$50	$59	NR	$4	$6	$273	$3	NR

Categories:

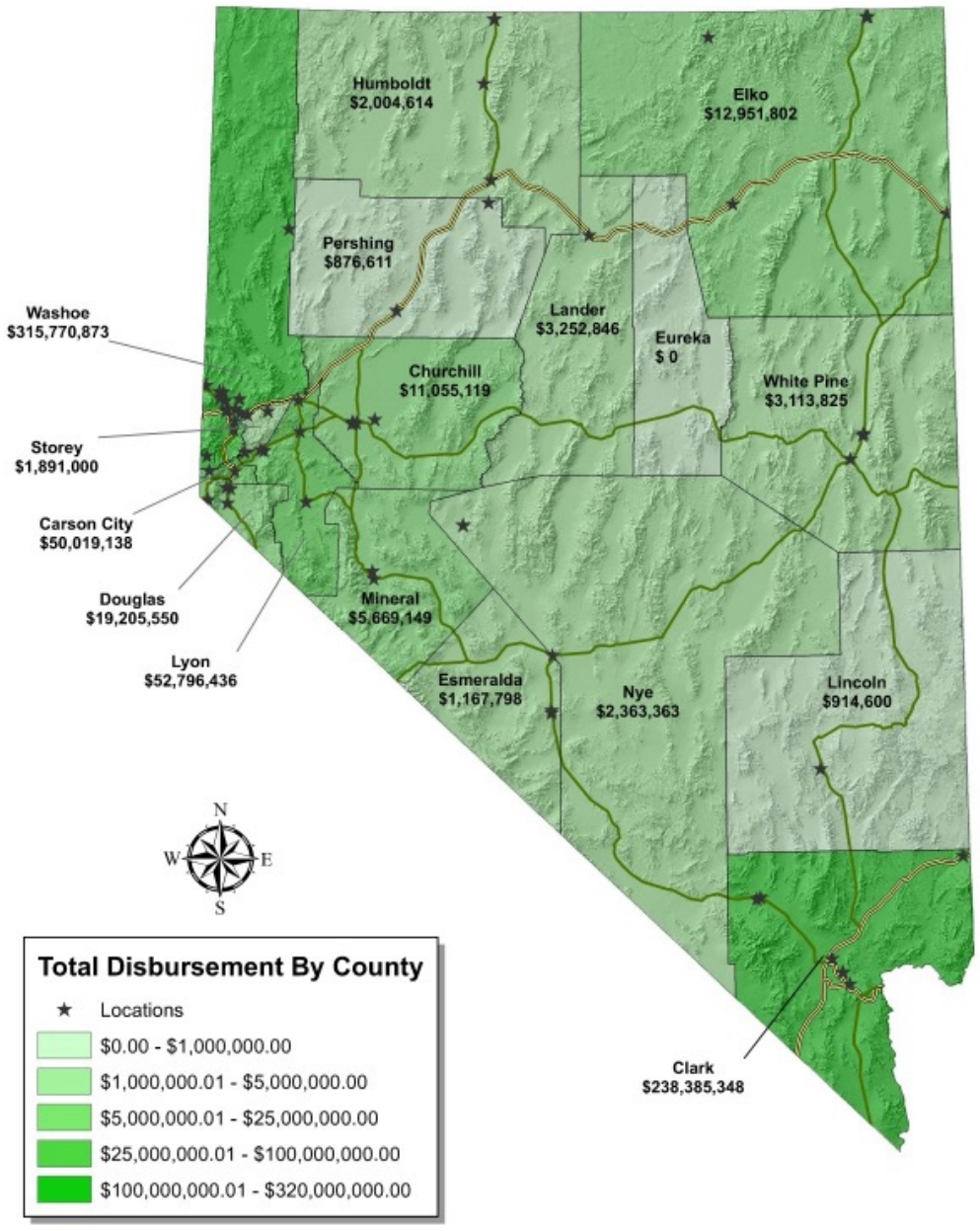
I	Secondary Wastewater Treatment	V	CSO Correction	X	Water Reuse
II	Advanced Wastewater Treatment	VI	Stormwater Management	XII	Decentralized Wastewater Treatment
III	Conveyance System Repair	VII	NPS Control	XIV	Desalination
IV	New Conveyance Systems				

Notes:

NR = not reported.

From the 2022 CWNS, the total financial needs for wastewater projects in Nevada were approximately $531 million with 23% of the total attributed to advanced wastewater treatment processes. The financial need of 2022 was reported significantly less than in 2012 as the larger municipalities have been building out major capital improvements. The Clark County Water Reclamation District's CIP shows a $549 million program through FY 2028/2029 but $439 million is scheduled to be completed by the end of 2026. The Clean Water State Revolving Fund provided $722 million worth of funds in 2024, which included $30 million through the IIJA.

Nevada Clean Water State Revolving Fund



Total Disbursement by CWSRF $721,438,072

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

Nevada Department of CONSERVATION & NATURAL RESOURCES

	Clean Water
Loan Commitments (in loans)	4
Loan Commitments (in dollars)	$18,965,159.88
Additional Subsidy Committed	$2,978,095.00
Project completions (in loans)	4
Project completions (in dollars)	$74,085,445.88
Binding Commitment Percent	273.09%
Federal Unliquidated Obligations	0.94%
Fund Utilization Rate	92.41%
Federal Return on Investment	273.59%
Sustainability (Interest on investment)	10.34%
Disbursement Ratio	2.09

Source: NV State Revolving Fund 2023

OPERATION AND MAINTENANCE; PUBLIC SAFETY

Rehabilitation of existing wastewater infrastructure is a priority for Nevada public wastewater agencies and is listed in the Capital Improvement Projects (CIP) of all agencies surveyed. Nevada utilities have taken proactive measures to extend the useful life of equipment, such as re-lining existing pipelines to extend life expectancy. The economic recession of 2008 and then COVID had a large impact on the state's economy as new construction came to a halt both times. Since then agencies have been prioritizing rehabilitation of existing infrastructure rather than focusing on new growth. The recession slowed the rate of population growth, which in turn extended the amount of time before facilities would meet capacity but that came back mostly. Even more so, rural areas in particular grew during COVID adding new planning dimensions and needs. Post-COVID there were also supply chain issues that created additional hurdles in new construction or maintenance.

From an operation standpoint, one challenge facing rural facilities is the need for qualified wastewater treatment operators. In order to receive a level 3 or higher certification, the operator must work in a facility of that level which are concentrated in the urban areas. NDEP has a circuit rider program where senior operators can travel to rural communities to provide assistance and training, but the need is greater than supply.

Awareness of public safety is important for wastewater treatment in Nevada as recycled water is used for multiple applications in the state and produced by every large wastewater utility. In the south, wastewater is treated and returned to Lake Mead which serves as a drinking water source to the Las Vegas Valley and multiple other communities. Ensuring only high-quality water safe for the environment and people is paramount to all utility operations. In 2018 Nevada State Legislature begin requiring all wastewater plant and collection system operators to take a certain number of continuing education credits each year to keep education levels high and ensure the best trained people are working in this field to maintain public safety. This is being expanded to include lab certifications as well.

RESILIENCE AND INNOVATION

Often Las Vegas is identified as a poster child for unsustainable development due to the limited amount of rainfall received in the state. However, due to good planning and resource management the Las Vegas Valley is able to use the storage capacity of Lake Mead as an almost infinite water source. Approximately 40% of all wastewater generated in the Las Vegas Valley is reused as drinking water. This return of effluent helps the Las Vegas Valley maintain water supplies within the limited water allocation of the Colorado River Compact by providing a consumptive credit, meaning that the returned flow is subtracted from the water pulled out of Lake Mead for treatment to drinking water standards. Producing high quality effluent is essential for the Las Vegas Valley to ensure a reliable supply of water into the future.

In the Reno-Tahoe area, proactive and stringent wastewater discharging rules have kept Lake Tahoe and the Truckee River pristine and reduced the many contaminant issues of the past. Since 2000, Washoe County provides an average of 800 million gallons of Class A reclaimed water every year. Communities across Nevada use treated wastewater as irrigation for crops and golf courses, which offsets the use of drinking water in their communities.

RECOMMENDATIONS TO RAISE THE GRADE

- Continue to implement funding for low-interest loans through the Clean Water State Revolving Fund
- Increase the volume of wastewater treated for return flow credits.
- Continue to encourage industrial, agricultural, and municipal partnerships to explore sustainability in each of its practices as it pertains to recovering resources from wastewater.
- Establish a statewide infrastructure needs inventory administered by the state's municipal planning organizations that would help increase public awareness of problems and needs facing the state's physical infrastructure and would help the State Legislature focus on programs devoted to long-term growth and productivity. Determine how best to carry out the task whether it be through the State Engineer or another responsible entity.
- Continue to fund research for new wastewater treatment technology.
- Ensure compliance with all pertinent federal, state, and local water pollution control laws and regulations.
- Coordinate and partner with other federal and state funding authorities to ensure systems receive as many resources as possible in funding their project. Coordination and communication on an as-needed basis to discuss projects and funding opportunities in the State with the United States Department of Agriculture – Rural Development (USDA-RD), United States Housing and Urban Development Community Development Block Grants (CDBG), and United States Indian Health Services (IHS).

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