Infrastructure serves as the backbone of Washoe County's thriving community, facilitating essential services and contributing to the overall well-being, quality of life, and prosperity of its residents. As the demands of our modern society continue to evolve, the condition of infrastructure becomes a paramount concern that directly impacts the safety, connectivity, sustainability, and economic growth of our communities. This report aims to shed light on the current state of our infrastructure, examining its critical role in supporting businesses and fostering a resilient society. By understanding the challenges and opportunities in maintaining and improving infrastructure, we can forge a path towards a more sustainable, interconnected, and vibrant future for our community.

You and I come by road or rail, but economists travel on infrastructure.

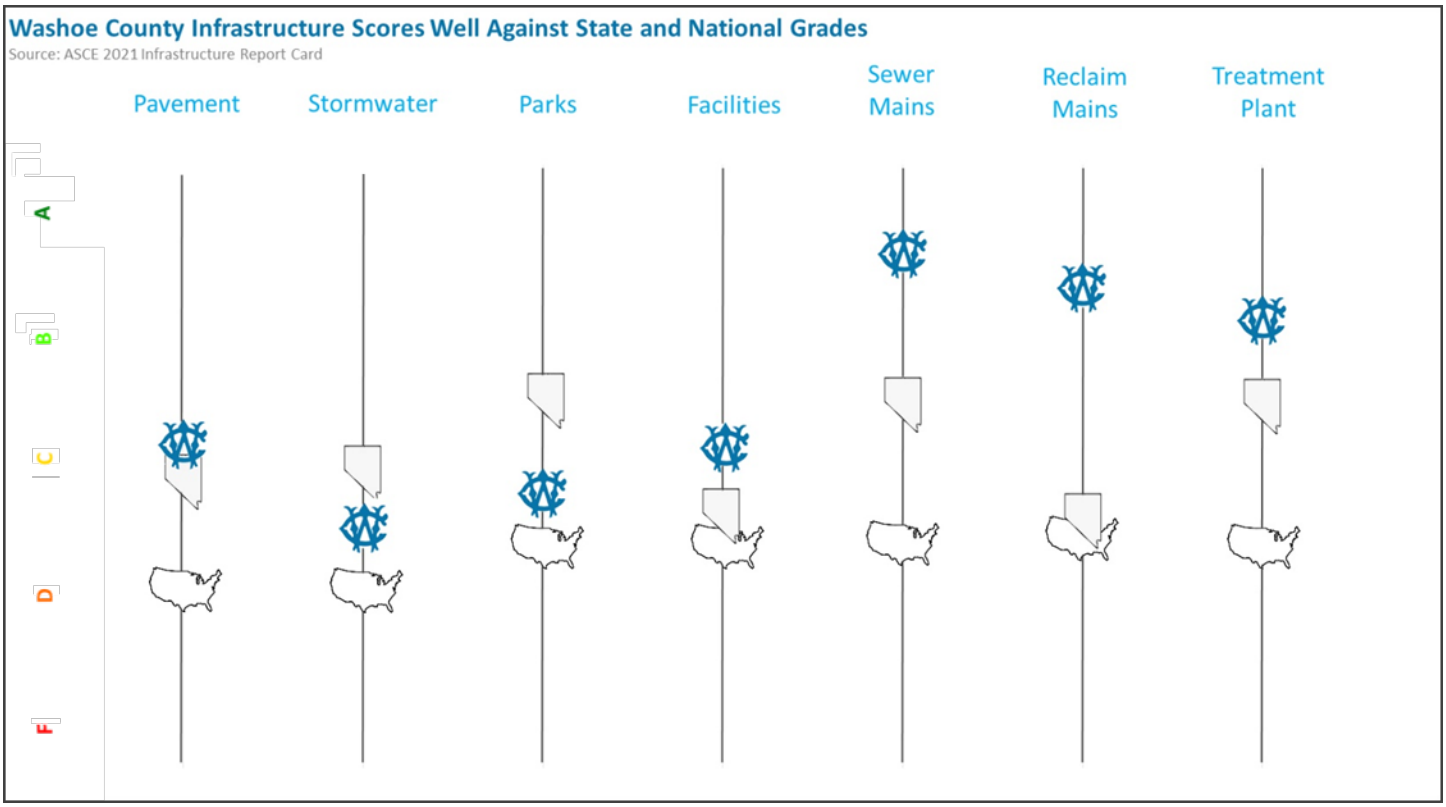
-Margaret Thatcher

Contents

Result Matrix

	Capacity	Condition	Funding	Future Need	O&M	Public Safety	Resilience	Innovation	Overall Grade
Road Pavement	A	C+	D+	D-	C-	A-	A-	B-	C+
Stormwater	C+	C	D	F	C-	B	C	B	C-
Parks	B+	C	C	D	D	B+	B-	B	C
Facilities Building	B+	C-	B+	D	D-	B-	A	B-	C+
Fleet	B	C	A-	A-	A	A	A	B+	B+
Sewer Collection	A-	A-	A-	A-	B+	A+	A-	A-	A
Reclaim Water	B+	A	A-	B	A-	A	B+	B+	A-
Sewer Treatment	B+	B	A-	A-	B+	B+	B	B+	B+

Benchmarked Results



115.7 million Square Feet
740 Lane Miles of Paved Road

Commerce, tourism, and area transportation needs are supported by the care and hard work that goes into keeping pavement safe, available, and in optimal condition. Washoe County maintains and preserves the transportation infrastructure throughout the unincorporated portion of Washoe County from the Oregon border to, and including, Incline Village. Washoe County has a mature Pavement Preservation and Asset Management Program where capacity, condition, levels of service, and life cycles are well understood and optimized. The condition of road pavement has historically been above average but has fallen below expectations due to fuel tax revenue not keeping pace with increasing materials, labor costs, and a growing number of assets reaching the end of their useful life. Opportunities exist in addressing and planning for the growing road reconstructions needs.

Capacity A

County roads are typically local and collector streets, where capacity needs are generally met "on-demand" and supplied directly through development activity. Population, housing occupancy, and persons per unit have increased the use of roads but congestion and traffic issues on County roads are rare. Capacity for most area highways and arterial streets are planned for by, and are the responsibility of, the Regional Transportation Commission and Nevada Department of Transportation.

Source: RTC, Washoe County Pavement Preservation Program Stakeholders.

Condition C+

The Pavement Condition Index (PCI) is a standard scoring methodology developed by ASTM and used to rate each section of pavement. Washoe County assesses each road segment once every three years and has done so since 1997. County commissioners have defined the level of service expectation at an average PCI score equal to, or greater than, 73, which is in the "Satisfactory" category. The average PCI score has been decreasing in recent years at a rate of one point per year. The current PCI is 71.3 with 22.5 miles of priority 1 roads in “very poor” or worse condition, in need of full reconstruction.

Source: Pavement Lifecycle Modeling Software, Paver, and inspection. (Pavement Condition Index)

Funding D+

To maintain current levels of service, Washoe County engineers, using pavement lifecycle modeling software, report a pavement preservation funding gap of $4.2 million in addition to the unfunded end-of-life road reconstructions needs of $10.5 million. Half of County roads were constructed more than 25 years ago and 4.5 million square feet are candidates for full reconstruction. The factors influencing this funding gap are the cost of materials and labor, competing priorities, and ageing infrastructure. Goods and materials, such as asphalt and emulsion, recently increased by 60%, which decreased the amount of pavement that could be included in the annual slurry seal contract. Stormwater and snow removal needs have also increased, which pulls resources from pavement.

“lifecycle modeling software report a pavement preservation funding gap of $4.2 million in addition to the unfunded end-of-life road reconstructions needs of $10.5 million. Half of County roads were constructed more than 25 years ago and 4.5 million square feet are candidates for full reconstruction”

Source: Pavement Lifecycle Modeling Software, Paver, and Road's Fund Accounting. (Actual Annual Spending ÷ Needs)

Future Need D-

Washoe County Roads Fund utilizes gasoline tax revenues for road maintenance and repair but there is a growing gap between capital needs and revenue. To regain a PCI of 73, pavement lifecycle modeling software prescribes $13.7 million per year, for the next 5 years. Only 37%, $5.1 million, is expected to be available annually. Fuel tax revenue is tied to fuel consumption and not tied to fuel prices. Fuel consumption per mile of road usage has decreased due to the increased use of electric and higher fuel-efficient vehicles, as well as higher fuel prices. The demand for capital investment is projected to rise significantly, driven by both the increased utilization of our roads and the substantial number of roads constructed 30 to 40 years ago. These roads are reaching the end of their useful life and require more expensive reconstruction treatments to maintain their PCI and expected levels of service. Preservation treatments on these older roads would be a stop gap. Reconstruction is a better long-term investment but is more expensive and currently not being funded.

Source: Pavement Lifecycle Modeling Software, Paver, and Road's Fund Accounting. (Projected Actual Spending ÷ Projected Needs)

Operation and Maintenance C-

In 2022 more than 5 million square feet of pavement was patched or sealed by the Road's Department and contractors, but there remains 29% of maintenance being postponed due to higher priority tasks. High priority maintenance, such as potholes and wide cracks, was kept within levels of service but lower priority shoulder repair and crack sealing have been deferred.

Source: Pavement Preservation Program Stakeholders, Maintenance Management Software, Asset Essentials (deferred pavement maintenance, work order accomplishments)

Public Safety A-

Public safety is a top priority, and the community is kept safe through prompt responses to roadway debris, snow clearing, emergency maintenance, and relatively smooth pavement. Pavement condition and smoothness factor into vehicle crash rates and is not currently a concern but has recently trended downward. Citizen and roadway needs are triaged through a 24/7 call line and a maintenance supervisor is always on-call. In the winter of 2022-23, snowplow operators cleared more than 30 feet of snow that fell in Incline Village. At one point, snowplows operated 22 days straight with only 1 day off.

Source: Preservation Program Stakeholders. Average Stakeholder Score

Resilience A-

Washoe County Roads Division is well prepared for a rapid response to emergency events. This is accomplished through a 24/7 call line, on-call maintenance supervisor, and well-defined processes. Reactive activities are well prepared for but extreme weather events from changing weather patterns pose additional risk. Excessive heat expands and buckles pavement, rapid freeze and thaw events causes cracks, and rapid snow melt and flash floods causes road base erosion.

Source: Preservation Program Stakeholders. Average Stakeholder Score

Innovation B-

Asphalt treatments are driven by leading pavement material science, pavement lifecycle modeling software, and evidence-based practice. A computerized maintenance management system is in place to track needs, problem areas, defects, and work history. Vehicle telematics are also used to track the use and service of the heavy equipment.

Source: Preservation Program Stakeholders. Average Stakeholder Score

+ 1,140 Miles of Conveyance Assets (ditch & pipe)
+ 8,000 Treatment Assets

Stormwater systems are typically designed to convey runoff from "every-day," minor storm events. Stormwater assets protect the road traveling public, property owners, and businesses from the consequences of uncontrolled stormwater. Washoe County is responsible for cleaning and repairing stormwater facilities within Washoe County right-of-way or Washoe County maintained drainage easements. In the Lake Tahoe Basin, Washoe County uses best management practices to also treat and filter stormwater. This minimizes the amount of fine sediment that makes its way into Lake Tahoe and improves lake clarity. In May 2009, Washoe County qualified to be part of the FEMA Community Rating System (CRS). The program rewards communities that exceed National Flood Insurance Program requirements, which help citizens prevent or reduce flood losses. Washoe County qualified for CRS Class 5 which provides the unincorporated Washoe County residents a 20% discount on flood insurance premiums. Stormwater responsibilities are mostly funded through fuel tax. Only North Spanish Springs and Truckee River floodplains have a coordinated Stormwater and Flood Detention Utility. Opportunities exist for addressing the funding disconnect between fuel tax and stormwater treatment services, and executing a condition and risk based preventative capital replacement plan.

Capacity C+

Capacity is highly affected by sediment and debris filling pipes and blocking their ability to function. During the 2023 stormwater condition inspection, pipes in open ditch systems were found to be 16.7% full, on average. Pipes in buried systems, like you find in denser subdivisions, were 5.8% full, on average. Sediment and debris removal is included in the Road Crew's preventative maintenance plan but is resource intensive. 7.8% of Truckee Meadow's ditches and pipes are cleared annually. Under-sized pipes can also impact capacity. In 1994, Formal Development Standards for Storm Drainage were adopted. There are 6,332 conveyance pipes in service that were installed prior to these standards.

Source: Asset Inventory (% of inventory not meeting current design standards, known problem areas)

Condition C

"Based on pipe material, pipes are almost halfway, 42%, through their expected useful life."

The 2023 stormwater condition inspection scored assets on remaining useful life, defects, and deterioration. Pipes scored 'fair' overall in the areas of structural degradation, pipe distortion, pavement, and headwall condition. Based on pipe material, pipes are almost halfway, 42%, through their expected useful life. Problem areas are identified regularly during maintenance and trends are reviewed as part of the FEMA Community Rating System (CRS), but improvements often lack funding.

Source: Asset Inspections. (Deterioration Model, Remaining useful life, Age, Material, Culvert % Ful

Funding D

Washoe County Stormwater asset maintenance and capital improvement funding is predominantly sourced through fuel tax, which also competes with other Road maintenance needs, such as pavement preservation maintenance, snow removal, signage, and traffic control. 50% of stormwater maintenance is being deferred because of higher priority tasks. Capital improvements do not have dedicated funding and compete with other CIP needs. North Spanish Springs Floodplain Detention and Truckee River Flood Management are the exceptions, being funded through rate payers and sales tax.

Source: Road's Funds Accounting. Stormwater Engineer and Operator Stakeholder Analysis.

Future Need F

"Due to the nature of fuel tax funding, stakeholders expect funding to decrease by 15% and maintenance needs to grow by 26%."

A long-term fiscally sustainable funding model is needed to keep up with the growing maintenance and capital replacement demand. Due to the nature of fuel tax funding, stakeholders expect funding to decrease by 15% and maintenance needs to grow by 26%. Deferred capital needs are expected to compound and increase reactive maintenance costs as assets reach the end of their useful life. The long-term strategic goal is to implement a stormwater and flood mitigation funding model with policies in place to address historic problem areas where there is inadequate stormwater and flood mitigation infrastructure.

Source: Stormwater Engineer and Operator Stakeholder Analysis. (Projected unfunded stormwater maintenance growth rate, average stakeholder score, potential for secure funding)

Operation and Maintenance C-

In 2022, more than 80 miles of stormwater ditch and pipe were preventatively maintained by the Road's Division, 7% of the inventory. At this pace it would take nearly 15 years to complete a full preventative maintenance cycle. Road Supervisors state that 51% of preventative maintenance is being postponed. Instead, only high priority assets are maintained. This is contributing to an increase in reactive maintenance. Deep flooding events are relatively rare, with some notable exceptions, but localized shallow flooding is becoming more common. Historic problem areas are tracked and identified for potential capital projects, but resources to resolve these are limited to those with extremely high risk. Opportunities exists in investing in infrastructure upgrade projects that have positive return on investment through reoccurring reactive maintenance costs saving.

Source: Asset Essentials (CMMS) & Stormwater Engineer and Operator Stakeholder Analysis. (% of needed maintenance not deferred + 10%, acceptable benchmark)

Public Safety B

The risk to public safety is not currently very high, however, as assets age and maintenance backlogs build, the probability of negative consequences increase. Direct consequences posed by an overwhelmed or inadequate stormwater system include roadway collapse, property damage, business interruptions, and life safety. Secondary risks include inflow into sanitary sewer systems and pollution. It is reasonable to expect some localized flooding during storm events including thunderstorms, micro-bursts, etc. In 2021, 7% of Road's operational costs were flooding related, and in 2023 it was 14%. Public safety is top priority in Road Operations and is controlled through emergency event response training, processes, and policies. Citizen and roadway needs are triaged through a 24/7 call line and a maintenance supervisor is always on-call.

Source: Asset Essentials, CMMS, & Stormwater Engineer and Operator Stakeholder Analysis. Deferred maintenance, average stakeholder score

Resilience C

Road supervisors are experiencing more frequent, localized heavy rain events. These events transport more sediment into the assets, increase maintenance demand, and increase risk of undermining road pavement. Current development codes and assets are not engineered to absorb the impact of these more frequent, 100-year flood events. Opportunities exist in dedicating resources to studying and mitigating this risk.

Source: Stormwater Engineer and Operator Stakeholder Analysis. Average stakeholder score

Innovation B

Washoe County uses state of the art street sweepers to keep sediment out of the stormwater conveyance system. Fine sediment from stormwater runoff decrease Lake Tahoe clarity. Washoe County has partnered with a local organization to implement innovative assets, policies, and procedures to address this. A notable example is the implementation of several high flow pretreatment and membrane filtration vaults (Jellyfish), stormwater catch basins, and BMP RAM standards.

Source: Stormwater Engineer and Operator Stakeholder Analysis. Average stakeholder score

+ 13,000 Acres of Parks and Open Space, 161 Acres of Turf

+ 10,000 Ornamental Trees, + 170 Playground Structures, + 87 Miles of System Trails

Outdoor recreation and access to parks and open space is integral to Washoe County residents' quality of life and has been shown to dramatically improve mental and physical wellbeing. This was extremely evident during the COVID-19 pandemic, where park attendance increased by more than 60%. The Washoe County Regional Parks and Open Space Program (Parks Program) contributes to a healthy community by providing 10 regional parks, 39 community and neighborhood parks, 7 special use parks, 70 open space properties and 87 miles of trails. The scope of maintenance and capital planning responsibilities are wide and include turf, trees, landscaping, trails, playgrounds, trailheads, picnic shelters, restrooms, a museum, a swimming pool, splash pads, a campground, a shooting facility, an archery facility, golf courses, visitor centers, rentable facilities, and much more. The Parks Program mission is being challenged by the needs of a growing population, the responsibilities that go along with it, and a backlog of capital and maintenance projects left over from the Great Recession. Compared to other counties nationally, Washoe County parks are in the lowest 25% of park funding per citizen. Park availability and access meets demand but the capital replacement funding gap has left some assets in disrepair. Opportunities exist in the areas of an urban forestry program, pavement preservation, noxious weed mitigation, open space acquisition, and amenity preventative replacement.

Capacity B+

In 2020 and 2021, use of parks increased by more than 1 million additional visits. Visitation has continued to increase and has doubled in the last 5 years, from 1,842,000 in 2018 to 3,576,000 in 2022. Both population and attendance have increased, but availability had remained robust. Washoe County has 8.2 acres of parkland for every 1,000 residents. The National Recreation and Parks Association (NRPA) benchmark is 9.2 acres/1,000 residents. The large amount of BLM, Forest Service, and dedicated open space makes up the difference between available parkland and the benchmark. Infill development and equal access are logistically, and financially challenging but underserved areas are analyzed by Park Planners and identified in the Parks Master Plan.

Source: NRPA Acres per Capita Benchmark, 2020 (Acres per 1,000 residents ÷ benchmark)

Condition C

Recent increases in funding have not translated to improved conditions due to the competing capital project priorities and limited Park project delivery. Only 1.1% of 2023 Park Asset Renewal Projects were delivered. A comprehensive condition assessment of park amenities was conducted in the summer of 2020. This included assessment of assets such as picnic tables, benches, and trash cans. The result was an average score of B-. Parks' operational staff have implemented high priority infrastructure renewal projects but larger needs, such as pavement reconstructions, have been left incomplete. Parks' asphalt roads and parking lots, an asset class valued at $20 million, are assessed every 3 years. The July 2024 Pavement Condition Index (PCI) of 61.2 equates to a grade of D+, indicating the need for maintenance and improvements in the road infrastructure. Of those, 5.1 acres of pavement is in Serious or Failed condition, equal to a PCI of 25 or less.

Source: Condition Inspection Scoring, Pavement Inspection Program (Average Amenity Condition Score, Pavement Inspection Program

Funding C

Short term funding has improved dramatically due to Washoe County Commissioners' support of Infrastructure Scorecard projects and their $38 million general fund transfer to the Capital Improvements Plan (CIP) fund. The County's CIP is a five-year plan for maintaining existing infrastructure and buildings or acquiring new facilities to meet demands from growth, legal mandates, and health and safety issues. Parks' 5-year CIP funding increased 64% since 2021. Most of this increase is for projects targeted for future years, 2 to 5 years out. "This year" project funding has been within ±10% of average for the last 4 years. Additional challenges exist with the operational funding. Parks Program's operational budget hasn't even fully recovered from the Great Recession when the budget was cut by more than half. Fifteen years later, the budget is still only at 65% of what it was pre-recession.

"Parks Program's operational budget hasn't even fully recovered from the Great Recession when the budget was cut by more than half. Fifteen years later, the budget is still only at 65% of what it was pre-recession."

Source: NRPA Acres per Capita Benchmark, 2020 (Expenditures per capital ÷ benchmark)

Future Need D

The growing and changing needs of the community are expected to continue to defer Park CIP projects. Between 2023 and 2024, $7.9 million in funded Parks projects were carried over into the next fiscal year, causing them to need funding in future years. Capital needs are expected to grow by 5.5% annually. The consequence is a backlog of projects that are subject to inflation-based scope erosion or higher costs. If the funding trend continues for another 20 years, the infrastructure renewal and operational budget gap could grow by another $94 million-dollars, creating a $142 million-dollar gap over a 30-year period.

Source: Washoe County Regional Parks & Open Space Master Plan, Stakeholder Analysis (Budget Analysis, Unfunded capital improvement projects growth expectations

Operation and Maintenance D

Devoted maintenance staff have a lot of pride in Washoe County Parks. With the addition of 2.75 new full time equivalent maintenance positions, these folks were able to slow the growth of deferred maintenance, 53% in 2021 to 47% in 2023. Increased attendance has increased trash and demands on ranger staff. Responding to reactive repairs increase as infrastructure is operated beyond its useful life. 98.9% of funded Park CIP projects and asset renewals were carried over into 2024. These projects help to minimize reactive maintenance and improve the overall condition. Opportunities exist around developing an urban forestry program, investing in trail interconnectivity, improving revegetation, and expanding the noxious weed mitigation program.

Source: Stakeholder Analysis (Deferred maintenance %)

Public Safety B+

Dedicated Park Ranger staff patrol park and recreation areas advising visitors of rules, regulations and policies. Parks had only 2.48 personal injury claims (SAF7) per 1M attendees in 2022, which is well below the benchmark of 26.89. Critical assets like playground structures are inspected routinely. An on-staff Certified Playground Safety Inspector is absorbing a backlog of maintenance needs and inspection compliance was 100% in April of 2023. Opportunities exist in implementing a preventative tree pruning and urban forestry program, which would reduce risk of falling tree limbs.

Source: Asset Essentials, CMMS (Tree pruning, Playground Inspection). Risk admin and car counter (SAF7 Reports, personal injury claims ÷ total park visitor)

Resilience B-

Due to drought conditions and budget restrictions, the Parks Program has adopted more drought-tolerant assets and policies. Through smart design, turf removal, and reclaim water usage Washoe County parks are more resilient. There are opportunities to improve resiliency, specifically with water resource conservation and sourcing additional water from recycled means. Parks used 29 million gallons of reclaimed water in 2022. In most cases, the cost of reclaim water infrastructure construction is too high for a strong business case for migrating away from TMWA sources. Hidden Valley Regional Park is a recent exception and will be the newest benefactor of reclaim water. New infrastructure will supply 8 million gallons of "recycled" water per year. Opportunities exist in planning for the impacts of climate change.

Source: Water billing (% of turf using recycled water)

Innovation B

The average park stakeholder scores an 84% in research and implementation innovative park maintenance & CIP methods, processes, policies, and technologies. The implementation of an online reservation and point of sale system has improved the Park Program's ability to recover the cost of services. Smart, central irrigation controls and use of a maintenance tracking system also contribute to this high score.

Source: Stakeholder Analysis (Average Stakeholder Score)

>2 Million Square Feet of Facilities

>300 structures, >2,000 Heating and Cooling Assets

Washoe County provides many regional services in Northern Nevada, which serve not only Washoe County citizens but those of neighboring counties, cities, and other agencies such as fire districts. Most services provided, ranging from Child Protective Services to Wastewater Treatment, require a safe, available, clean, and comfortable physical space to effectively operate. The Washoe County Facilities Management Division is responsible for managing the maintenance, infrastructure preservation, energy conservation, custodial services, landscaping, and snow removal for all County facilities, working together with the Capital Projects team, who is responsible for the inventory, construction, major repair, and execution of the Capital Improvements Program (CIP). Both teams play important roles and directly influence the condition of Facility infrastructure. County Facilities score high in the areas of Capacity, Resilience, and Innovation but opportunities exist in the areas of Operation and Maintenance and Future Funding. Maintenance needs are slowly rising as assets age and the gap between needed asset renewals and actual asset renewals grows. This gap can be attributed to Facility CIP projects being postponed for higher priority projects, such as functional improvements, county service expansions, remodeling, and wastewater treatment capacity expansion.

Capacity B+

Prior to the COVID-19 pandemic, an estimated 75,893 additional square feet was projected to be needed by 2040. This is currently being reevaluated as workplace and office environment demands change. Flexible workspaces, office “hoteling,” and digitizing physical files are helping to maximize an efficient use of space, reduce overhead costs, and reduce the need for additional space. Current capacity needs are, in general, being met. New construction at the Sheriff's Office, Mills Lane Justice Center, Our Place campus, and others have met the need of a growing population.

Source: Facility Master Plans (SF needs), EDAWN EPIC Report (Population)

Condition C-

Facility condition significantly affects the success, safety, and quality of life for the public, staff, and regional partners. Facility Condition Index (FCI) is an industry standard metric of condition and is calculated using the costs of renewing an asset divided by the cost of replacement. FCI is considered “New” at 0.00, "Critical" at > 0.30, and "Failing" at > 0.50. Washoe County FCI is 0.25. Recent Capital Improvement Plan (CIP) funding has stabilized overall condition decline, but project delivery has become the key constraint in translating funding into improved conditions. At historic project delivery levels, condition simulations predict an average FCI of Critical in less than 8 years.

Source: Facility Condition Assessment (Degradation, Capital Needs), IFMA (FCI Benchmark), Risk Management Statement of Value (CRV), SAP (Spending), APPA (Reserve Level Benchmark)

Funding B+

Short term funding has improved dramatically due to Washoe County Commissioner’s support of Infrastructure Scorecard projects and their $38 million general fund transfer to the Capital Improvements Plan (CIP) fund. The County's CIP is a five-year plan for maintaining existing infrastructure and buildings or acquiring new facilities to meet demands from growth, legal mandates, and health and safety issues. This year $14.5 million in Facility CIP projects was funded, a vast improvement to the historic average of $4.5 million. The industry O&M and capital renewal benchmark is 3% of Current Replacement Value (CVR). In 2023 funding equated to 2.65% of CVR but actual project delivery lowered this number to 1.07% of CVR.

Non-CIP spending for facility maintenance, operations, administration, and infrastructure preservation is equal to $5.30 per square foot. The industry average is $6.04, and $7.50 or more for the top 25%.

Source: Asset Essentials (SF), Washoe County Budget Division's Capital Improvement Plan (FY2017- 2022)

Future Need D

"predictive modeling software forecasts an annual need of $17 million in CIP and IP project delivery."

To maintain current levels of service, predictive modeling software forecasts an annual need of $17 million in CIP and IP project delivery. Future funding levels are expected to rise slightly but not enough to meet this demand because of competing priorities and limited capital project throughput. As asset lifecycles are stretched, reactive maintenance costs increase, asset reliability decreases, and condition deteriorates exponentially. The gap between capital needs and funding is expected to increase as the population increases and the facilities degrade. New facilities being added to inventory have processes for capturing the costs of operation and maintenance, but capital replacement funding is not set aside by default. Opportunities exist in developing a sustainable, dedicated capital replacement funding source and transitioning away from a 'worst first' capital priority method to an asset specific, net present value optimized method.

Source: NCES (% CVS), Washoe County Risk Management Division Statement of Value (CRV), Washoe County Budget Division's Capital Improvement Plan, FY2019-2021 (CIP Spending)

Operation and Maintenance D-

A leading factor in O&M success is average asset age and capital replacement backlogs. In 2023, $14.5 million in Facility related asset renewal projects were funded through CIP, of those 82% were postponed into 2024. Asset renewal delays increase asset age and stretch asset lifecycles. Reactive maintenance needs, overall, are increasing at a rate of 1.5% per year, which pull resources away from preventative tasks and increase costs. On average, reactive repairs are 75% more expensive than planned repairs. The planned to reactive maintenance ratio for heating and cooling is 58.1%, which is better than industry average of 50% but is declining. Work request demand increased by 10.4% last year but reactive work increased by 27.1%. Planned work decreased by 1.7%. As maintenance technicians respond to increasing reactive repairs, planned work gets postponed. The on-time completion rate of planned maintenance is only 34.6%. The goal is 100%. Currently, each facility technician is responsible for 79,666 square feet, which is about 28,000 more than the industry average of 51,700 square feet per technician.

Source: Asset Essentials (PMP, PM Compliance). Reliabilityweb.com (PMP Benchmark). IFMA (FTE: GSF Benchmark)

Public Safety B-

Safety is a top priority. Physical security and life-safety related maintenance tasks are constantly being updated and improved. Currently safety checks are part of routine asset inspections and planned maintenance. Safety tasks that take unique and specific skills, such as fire suppression controls, sprinklers, and extinguisher charging, are outsourced to vendors and managed by a Washoe County Facilities Contract Services Supervisor. Asset conditions that affect public safety, such as fire suppression, walkway trip hazards, and pressure vessels, will be identified in the upcoming condition assessment. Regulatory records are kept current and reported to agencies such as the Nevada Division of Environmental Protection and Washoe County Health District.

Source: Maintenance Management System (Asset Essentials).

Resilience A

Resilience is protected though Emergency Response and Continuity of Operations Plans. These plans are in place for a wide range of emergencies and are rooted in facility availability and criticality. Emergency response plans have influenced asset configuration and redundancy so the County can continue to perform mission critical functions and keep the public safe during times of emergencies and disasters. Maintenance technicians are on-call 24/7 to respond to emergency needs and can troubleshoot and operate remotely using secure building controls.

Source: Stakeholder Analysis. Average Stakeholder Score

Innovation B-

The Facilities Division employs advanced tools that help minimize asset downtime and improve customer service. Advanced technology has been developed for building automation, asset diagnostics, work order management, natural resource usage tracking, and carbon footprint mitigation. Energy efficient modernization programs such as LED retrofitting and Variable Frequency Drive installations are ongoing. There are opportunities to resize or replace end-of-life assets, but stakeholders agree there is an average innovation research and implementation grade of B-. Opportunities also exist in exploring non-traditional shift schedules, which would extend the life of assets, and decrease O&M and utility costs.

Source: Stakeholder Analysis. Average Stakeholder Score

1108 Mobile Assets

$46 Million in Capital Value

The mission of the Equipment Services Division is to provide safe, reliable vehicles and equipment to Washoe County departments at low life-cycle costs. Fleet infrastructure includes three major categories: light fleet, which comprises passenger vehicles; heavy fleet, consisting of specialized equipment needed for road, stormwater, parks, and wastewater maintenance; and non-rolling stock, which includes attachments like snow plows, road sanders, and trailers. Government Fleet magazine recognized Washoe County Equipment Services Division in 2020 as a Notable Leading Fleet and that is mirrored in the relatively high infrastructure scores.

Capacity B

Due to the way Fleet is funded, capacity is expanded or contracted based on department specific business needs and available funding. Fleet utilization is a good indicator of whether supply match's demand. Utilization for light fleet, non-Sheriff has historically averaged 6,945 miles per vehicle annually. The Federal Government's, non-military, light fleet benchmark is 5,943 miles per vehicle. The total fleet also grew by 217 vehicles since 2021 but also suffers from supply chain issues and new vehicle deliveries. The reporting period was also affected by the pandemic when nonessential travel and in person meetings were discouraged.

Source: Flagship Fleet Management (miles/vehicle), U.S. GSA FY20 Federal Fleet Report Table 4-2 (miles per vehicle)

Condition C

Fleet condition is measured using a point score for age, usage, and repair to replacement cost ratio. The average score was 23.76 points, which equates to 76% of value remaining. Those points are broken down by general light fleet having an average of 19.98 points, Road's heavy fleet has 29.48 points, Sheriff's fleet has 31.89 points, and miscellaneous equipment has 20.60 points. Roads and the Sheriff's fleet saw the largest average condition decline, which can be attributed to delays in vehicle retirement and replacement, as well as supply chain challenges.

Source: Flagship Fleet Management (Point Scores, age, use, life repair cost)

Funding A-

Fleet has a relatively stable funding mechanism. The Equipment Services Fund (ESF) is operated as an internal service fund to track revenues and expenses for the purchase, maintenance, repair and replacement of fleet vehicles and specialized heavy equipment. The ESF invoices user departments for operation and capital replacement of vehicles. However, the average vehicle age has increased for Human Services Agency and Sherriff's Office, two of the largest fleet users. This indicates department level funding constraints.

Source: Washoe County Budget Book FY21/22. Fleet Stakeholder Analysis (Average Score)

Future Need A-

Equipment Services has established an equipment and vehicle replacement schedule that maximizes value while taking into consideration safety, efficiency, utilization and maintenance costs. The schedule is coordinated with a rate structure that adequately funds replacement or reconditioning of the assets. This structure provides long term funding stability, but is subject to budget approval, which is not always guaranteed.

Source: Washoe County Budget Book FY21/22. Fleet Stakeholder Analysis (Average Score)

Operation and Maintenance A

Planned maintenance compliance is high, at 94% completed on-time. Logistics play the largest role in the other 6% of maintenance delays. This focus on quality, on-time maintenance influences the fleet's average cost per mile, which is only $0.27 per mile, for light fleet. The federal benchmark is $0.59 per mile. The Preventative Maintenance to Repair Ratio is 1.4:1, which is much better than the industry standard of 1:1. Downtime for light fleet is excellent and has improved dramatically in recent years. In 2007 the average turnaround was 27 days, in 2020 it was 11.5, and in 2022 downtime had improved to only 6 days.

Source: Utilimarc 2019 Government Fleet National Survey (PM Compliance, $/mile). Flagship Fleet Management. (PM Compliance, $/Mile, turnaround times)

Public Safety A

The safety of the road traveling public, pedestrian, and drivers are a high priority for Washoe County. Every preventative maintenance task includes a 27 point safety inspection, which is conducted to insure vehicle and occupant safety. Compliance is high with air quality, OSHA, and hazardous waste disposal regulations. Washoe County's Risk Management Division maintains a Driver's Policy and conducts mandatory defensive driver training for all Washoe County staff every three years.

Source: Flagship Fleet Management (PM Ratio), Washoe County Risk Management Division, Stakeholder Analysis (Average Score)

Resilience A

Resilience is secured through redundancy of critical pieces of equipment, flexibility, and relationships with contractors. Fleet leasing is not a common practice, but processes are in place to quickly respond to emergencies. Opportunities exist in fuel-type diversification, especially with passenger vehicles and adoption of electric vehicles, protecting against fuel cost and supply risk.

Source: Stakeholder Analysis (Average Score)

"Opportunities exist in fuel-type diversification, especially with passenger vehicles and adoption of electric vehicles, protecting against fuel cost and supply risk."

Innovation B+

Equipment Services scores high in adoption of diagnostic, telematics, and Asset Management Software technologies. The Equipment Services Superintendent is a Certified Public Fleet Professional and keeps current with leading technology. Washoe County has carbon footprint monitoring software, is conducting a telematics pilot for fleet electrification, and is promoting forward facing camera technology.

Source: Stakeholder Analysis (Average Score), Flagship Fleet Management (electric count)

Sewer Collection A

312 Miles of Pipe 12 Lift Stations

The sanitary sewer collection system is a critical part of the wastewater treatment process. Every day, more than 5 million gallons of raw wastewater is collected from homes and businesses and transported to treatment plants. With more than 300 miles of sewer mains covering 22 square miles, Washoe County's Utility serves almost 30,000 parcels including customers in the City of Reno and City of Sparks. The collection systems represent a major capital investment in protecting the public's health and safety. The Utility Team is responsible for maintenance, inspection, and rehabilitation of the sanitary sewer collection system to prevent backups and overflows. The County performs well in all categories because of the long-term approach to asset management planning and fiscal sustainability.

Capacity A-

Sewer collection capacity is important for both adequately transporting peak flows to the treatment plants, and ensuring flows have a high enough velocity to avoid sedimentation, which can cause blockages. Capacity is highly affected by sediment and debris filling pipes and blocking their ability to function. Sewer main flushing has improved from 49% overdue in 2020 to only 13% in 2023. Growth in the region is high, and facility plans are in place for near- and long-term capacity needs identified. Updates to the plan include hydraulic modeling, which predicts the effects of new connections on capacity. New connections require reports and commercial businesses with high water uses require metering of flow. Opportunities exist in expanding this requirement. Recent improvements include modeling current customers, will serve, and remaining capacity.

Source: EPA CMOM Evaluation (Capacity)

Condition A-

Pipes and manholes account for the majority of collection system assets. Condition is affected by material degradation, construction defects, and maintenance compliance. The estimated remaining useful life of the sewer collection system is 80%, which is in the "excellent" category. Construction defects are prevented by thorough inspection of construction prior to acceptance. Groundwater infiltration and inflow issues have been mitigated through manhole sealing. Field crews regularly conduct visual condition assessments of manholes during flushing, but opportunities exist in additional pipe condition assessments.

Source: GIS Asset Inventory (Age; Material), American Water Works Association (Life Expectancy)

Funding A-

Sewer services have a stable funding mechanism through utility rate payers and a risk-based Capital Improvement Plan (CIP) provides for system repairs and replacements. Rates are calculated based on the cost of services, which is analyzed by an outside consultant every 3-5 years and adjusted annually using a Consumer Price Index. Costs are controlled through accurate budgeting, monitoring of spending, and accounting audits. There hasn't been a need for a base rate adjustment in the last 10 years.

Source: EPA CMOM Evaluation (Operation Budgeting; Maintenance Budgeting)

Future Need A-

Funding mechanisms are in place to pay for new construction and ongoing maintenance. New construction is funded through construction connection fees and ongoing maintenance is funded by rate payers. Long term cost controls and asset reliability is ensured through well-defined construction design standards, which are reviewed and inspected before acceptance. This ensures standardization of equipment and components to minimize risk and cost.

Source: EPA CMOM Evaluation (Operation Budgeting; Maintenance Budgeting; Operation Modeling; Engineering; Design; Construction)

Operation and Maintenance B+

The County scores slightly above average for operation and maintenance of the sewer infrastructure. Sewer main flushing is a large component of sewer collection preventative maintenance and a great effort has been undertaken recently to address the backlog of flushing needs. In June of 2020, 49% of mains were overdue for flushing and in December of 2022, that number has been reduced to 8%. Planned maintenance accounts for only 58% of all maintenance, which is an improvement, but is below the industry average of 63% below optimal. The Utility team shares responsibility with emergency response work, flooding, sewer treatment and reclaim distribution which contributes to lower-than-average staffing levels. The Utility team includes 2.37 Full Time Equivalent employees for every 100 miles of collection system maintenance. The average benchmark is 4.55.

> "In June of 2020, 49% of mains were overdue for flushing and in December of 2022, that number has been reduced to 8%"

Source: Asset Essentials (PMP, PM Compliance, FTE Hours); Collector (% flush overdue); EPA CMOM Evaluation; VEOLIA/WSSC Utility Benchmarking and Organizational Efficiency Review 2016 (FTE Benchmark); EPA Collection Systems O&M Fact Sheet

Public Safety A+

The mission of the wastewater collection system is to limit the public's exposure to untreated wastewater. Potential for exposure is commonly referred to as a Sanitary Sewer Overflow (SSO) event. American Water Works Association benchmark is 2.74 SSOs per 100 miles of pipe. In 2022, the County's Utilities field crew achieved an industry leading score 0.34. The County minimizes the likelihood of SSO events through maintenance and inspections, preventative flushing, and rapid emergency response. The County also has well-defined operating procedures, 24-7 on call technicians, and a public notification system to minimizes the impact of these events when they do happen.

Source: Asset Essentials (SSOs), AWWA (SSO Benchmark, West Region)

Resilience A-

The resilience of the County sewer collection infrastructure is ensured through emergency response and contingency plans. These plans take into account vulnerability analysis, critical system component redundancy, and the effects of natural event, vandalism, and third-party events. Staff is trained on event response procedures and take part in response simulations. Opportunities exist in improving formalized root cause analysis, updating plans more frequently, and improving asset specific risk analysis.

Source: EPA CMOM Evaluation (Emergency Preparedness and Response)

Innovation A-

The County benefits from mature mapping, predictive analytics, SCADA technology, and leading flushing technology. A Geographic Information System is utilized as the authoritative data source for linear asset inventory, condition scores, and risk modeling. Mobile field applications provide on-demand information and make data entry easier. The County also utilizes a Maintenance Management System to optimize preventative maintenance planning and execution. SCADA provides operational insight and has numerous sensors to alert staff of potential issues. The County regularly invests in research, training, and implementation of industry best practices.

Source: EPA CMOM Evaluation (Modeling; Internal TV Inspection; Survey and Rehabilitation; Performance Indicators)

Reclaim Water A-

46 Miles of Pipe 3,872 Assets

Washoe County provides an average of 800 million gallons of Class A reclaimed water every year and distributes it through 46 miles of pipe. The South Truckee Meadows Water Reclamation Facility, STMWRF, in South Reno supplies reclaimed water to irrigate landscaping, sports fields, and golf courses. These uses of reclaimed water help reduce the amount of potable water used by the community, thereby reducing our reliance on the Truckee River and local groundwater resources. The creation of an Effluent Management System Plan is underway. The purpose is to complete an effluent management and water balance plan to identify demands and water quality solutions over a 10-year planning horizon. The Utility Team is responsible for maintenance, inspection, and rehabilitation of the reclaim distribution system and performs well in all categories because of the long-term approach to asset management planning and fiscal sustainability.

Capacity B+

Reclaim water usage rates are increasing but production still exceeds usage, creating a surplus. The surplus is stored in Huffaker Hills Reservoir, which has no immediate threat of overflowing, but mean reservoir levels have been increasing. Efforts and planning are underway to encourage new customers. Between 2018 and 2021 reclaim water consumption increased 8% per year. Service to Washoe County's Hidden Valley Park is under construction and will relieve a portion of the excess surplus. Other large users are being explored.

"Reclaim water usage rates are increasing but production still exceeds usage, creating a surplus."

Source: SAP (Reclaim meter Readings), SCADA (Influent Flow MGD)

Condition A

Infrastructure is relatively new and in generally good shape and is being incrementally improved as issues are identified. The oldest main was installed in 1992 and the average useful life is 77 years. The estimated remaining useful life of reclaim mains is 75%, which is in the "excellent" category. Opportunities exist in improving the water quality through mitigating groundwater infiltration into the sewer collections system.

Source: Reclaim Main GIS (Age, Material), American Water Works Association (Life Expectancy)

Funding A-

Reclaim services have a stable funding mechanism through utility rate payers and a risk-based Capital Improvement Plan (CIP) provides for system repairs and replacements. Rates are calculated based on the cost of services, which is analyzed by an outside consultant every 3-5 years and adjusted annually using a Consumer Price Index. Costs are controlled through accurate budgeting, monitoring of spending, and accounting audits. There hasn't been a need for a base rate adjustment in the last 12 years but a reevaluation is currently being planned.

Source: EPA CMOM Evaluation (Operation Budgeting; Maintenance Budgeting)

Future Need B

Funding mechanisms are in place to pay for new construction and ongoing maintenance. New construction is funded through construction hookup fees and ongoing maintenance is funded by rate payers. Long term cost controls and asset reliability is ensured through well-defined construction design standards, which are reviewed and inspected before acceptance. This ensures standardization of equipment and components to minimize risk and cost.

Source: EPA CMOM Evaluation (Operation Budgeting; Maintenance Budgeting; Operation Modeling; Engineering; Design; Construction)

Operation and Maintenance B+

The utility has the ability to comply with all current regulations. Preventative maintenance compliance is high for reclaim flushing, valve turning, and PRV and AirVac inspection. A moderate amount of low priority tasks remains outstanding. Opportunities exist in dedicated field staff, which currently share responsible across sewer collection and treatment priorities.

Source: Asset Essentials and Collector (Outstanding issues, PM Compliance, Pressure Inspection History) Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Public Safety B+

There is very little risk to public safety. Reclaim water is produced in Class A quality, which is not consider hazardous, but is not safe for drinking. Inspections of customer locations and signage compliance is high. Uncontrolled discharge is rare. There are areas of improvement in improving asset and SCADA redundancy.

Source: Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Resilience B

Reclaimed water is a valuable asset for the community. When irrigation peaks in the summer, reclaimed water provides about 10% of the total water supply used in the region. Local water recycling is a growing and important part of the community's comprehensive water resource management strategy. The system is fairly new and designed well to help prevent significant hazards. Valve criticality is well understood. Opportunities exist in improving SCADA, adding valve redundancy, and replacing dead end runs system loops to maintain system pressure.

Source: Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Innovation B+

The County benefits from mature mapping and SCADA technology. A Geographic Information System is utilized as the authoritative data source for linear asset inventory, condition scores, and risk modeling. Mobile field applications provide on-demand information and make data entry easier. The County also utilizes a Maintenance Management System to optimize preventative maintenance planning and execution. SCADA provides operational insight and has numerous sensors to alert staff of potential issues.

Source: EPA CMOM Evaluation (Modeling; Internal TV Inspection; Survey and Rehabilitation; Performance Indicators)

>5 Million Gallons Treated Per Day

>2,700 Planned Maintenance Tasks Per Year

Washoe County protects water quality and public health in Northern Nevada by providing high quality and effective treatment of wastewater generated by local residents. Washoe County's Utility treats an average of 5 million gallons of wastewater per day at three regional wastewater plants. The Utility's wastewater treatment systems include the South Truckee Meadows Water Reclamation Facility, STMWRF, and two smaller treatment facilities in the Cold Springs and Lemmon Valley hydrographic basins. The facilities utilize advanced biological nutrient removal processes to remove contaminants during the water purification process as well as recycling a large amount of the wastewater, providing a sustainable source of irrigation water. The Utility Team is responsible for maintenance, inspection, and rehabilitation of the sanitary sewer treatment plants to protect the health of the public and environment. The County performs well in all categories because of the long-term approach to asset management planning and fiscal sustainability.

Capacity B+

Wastewater Treatment capacity management is a component of the region's master plan. The region's projected growth and wastewater treatment demand is being ensured in advance through large scale expansions. The current expansion of STMWRF will increase the size of the existing plant by 48%, which will address the needs of the region's 2040 population projection. Changes to problematic capacity limits at CSWRF and LVWTF are in the planning phase and are expected to be resolved in the coming years.

> "The current expansion of STMWRF will increase the size of the existing plant by 48%, which will address the needs of the region's 2040 population projection"

Source: WC Board of Adjustments 6/3/21 presentation WSUP21-0010, Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Condition B

The condition of the largest treatment plant, STMWRF, was assessed by a consultant in 2019 and resulted in an overall score of 87% remaining useful life. Since then, expansion has added redundancy, capacity, and improved conditions. The two smaller treatment plants do not have objective condition assessments but are in good working order and are relatively new infrastructure. Inspections and predictive maintenance, such as vibration analysis, are increasing in use and give early indications of condition degradation.

Source: Jacobs Condition Assessment (Useful life), Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Funding A-

Sewer services have a stable funding mechanism through utility rate payers and a risk-based Capital Improvement Plan (CIP) provides for system repairs and replacements. Rates are calculated based on the cost of services, which is analyzed by an outside consultant every 3-5 years and adjusted annually using a Consumer Price Index. Costs are controlled through accurate budgeting, monitoring of spending, and accounting audits. There hasn't been a need for a base rate adjustment in the last 10 years.

Source: EPA CMOM Evaluation (Operation Budgeting; Maintenance Budgeting)

Future Need A-

Funding mechanisms are in place to pay for new construction and ongoing maintenance. New construction is funded through construction connection fees and ongoing maintenance is funded by rate payers. Long term cost controls and asset reliability is ensured through well-defined construction design standards, which are reviewed and inspected before acceptance. This ensures standardization of equipment and components to minimize risk and cost.

Source: EPA CMOM Evaluation (Operation Budgeting; Maintenance Budgeting; Operation Modeling; Engineering; Design; Construction)

Operation and Maintenance B+

92% of preventative maintenance work orders were completed on time in 2022. Reactive work is relatively flat but electrical issues are increasing. At CSWTF and LVWTF, maintenance needs are increasing as assets age and usage increases. The Utility is proactive in identifying capital replacement needs and addressing issues as early as possible.

Source: Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Public Safety B+

The Utility's mission is to keep the public safe and is ensured by limiting access, mitigating the consequence of asset failures and adhering to best-practice safety procedures. Asset failure is always a possibility and policies, procedures, and built-in redundancy are in place.

Source: Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Resilience B

The resilience of the treatment plants is ensured through emergency response and contingency plans. These plans take into account vulnerability analysis, critical system component redundancy, and the effects of natural event, vandalism, and third-party events. Staff is trained on event response procedures and take part in response simulations. Opportunities exist in improving formalized root cause analysis, updating plans more frequently, and improving asset specific risk analysis.

Source: EPA CMOM Evaluation (Emergency Preparedness and Response), Sewer Treatment Plant Infrastructure

Source: Stakeholder Survey Analysis (Average Score)

Innovation B+

Washoe County's wastewater biosolids program is industry leading. These nutrient-rich biosolids are a valuable resource capable of generating energy through the production of biogas (50-60% methane gas). The County also utilizes a Maintenance Management System to optimize preventative maintenance planning and execution. SCADA provides operational insight and has numerous sensors to alert staff of potential issues. Leading edge preventative vibration assessment and been piloted and has shown to be beneficial. Opportunities exist in expanding predictive condition and root cause analysis technology.

Source: Sewer Treatment Plant Infrastructure Stakeholder Survey Analysis (Average Score)

Methodology

American Society of Civil Engineers' approach and methodology was used. Each asset class receives an overall letter grade, which is calculated based on the weighted sum of the grade categories below. Each category grade is determined by asset specific performance metrics, stakeholder scores, and benchmarks, when available.

Grade Criteria

Capacity: Infrastructure's capacity to meet current and future demands, e.g. Supply ÷ demand + congestion issues

Condition: Infrastructure's existing and near-future physical condition, e.g. Deterioration value ÷ replacement value

Funding: Infrastructure's current level of funding compared to the estimated funding needs, e.g. Funding level ÷ calculated needs or benchmark

Future Need: Infrastructure's future level of funding compared to the estimated funding needs, e.g. Funding level ÷ calculated funding needs or benchmark

O&M: Owner's ability to comply with regulations and maintain the infrastructure properly, e.g. PM compliance % or Reactive $

Public Safety: Infrastructure's risk to public's safety, e.g. Likelihood of failure x consequence of failure

Resilience: Infrastructure's capability to prevent or protect against significant multi-hazard threats and incidents, e.g. % complete (Hazard plans, training, & asset redundancy) Resilient to changing climate

Innovation: Owner's use of new and innovative techniques, materials, technologies, and delivery methods are being implemented to improve the infrastructure, e.g. Benchmark against best in class

Grade Descriptions

A EXCELLENT, FIT FOR THE FUTURE

Generally, in excellent condition, typically new or recently rehabilitated, and meets capacity needs for the future. A few elements show signs of general deterioration that require attention. Facilities meet modern standards for functionality and are resilient to withstand most disasters and severe weather events.

B GOOD, ADEQUATE FOR NOW

The infrastructure in the system or network is in good to excellent condition; some elements show signs of general deterioration that require attention. A few elements exhibit significant deficiencies. Safe and reliable, with minimal capacity issues and minimal risk.

C FAIR, REQUIRES ATTENTION

The infrastructure in the system or network is in fair to good condition; it shows general signs of deterioration and requires attention. Some elements exhibit significant deficiencies in conditions and functionality, with increasing vulnerability to risk.

D POOR, AT RISK

The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of serious concern with strong risk of failure.

F FAILING/CRITICAL, UNFIT FOR PURPOSE

The infrastructure in the system is in unacceptable condition with widespread advanced signs of deterioration. Many of the components of the system exhibit signs of imminent failure.