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# WATER SECURITY

THE BUSINESS IMPERATIVE  
TO CHANGE BEHAVIOR

As of September 22, 2022



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# Overview: MGM Resorts and the Colorado River Water Supply System



1983



2021

“ Drought and climate change have caused Lake Mead to drop nearly 150 feet. ”

Southern Nevada Water Authority

## Company Review

As a major operator of hotels and resorts, many of which are in the desert destination of Las Vegas, water is a critically important resource for MGM Resorts International (“MGM”, “MGM Resorts”, “Company,” “we,” or “us”).

### General Information

**Activities:** MGM Resorts is a Delaware corporation incorporated in 1986 that acts largely as a holding company and, through subsidiaries, owns and operates 33 integrated casino, hotel, and entertainment resorts and venues across the United States and in Macau.

**Markets:** The Company has aggregated its operating segments into the following reportable segments: Las Vegas Strip Resorts, Regional Operations and MGM China.

**Strategic Pillars:** Our vision is to be the world’s premier gaming entertainment company. To achieve our vision, we developed a multi-year strategic plan, which centers on four pillars:

- Strong People and Culture
- Customer-Centric Model
- Operational Excellence
- Disciplined Capital Allocation to Maximize Shareholder Value

**Revenue:** In 2021, consolidated net revenue was approximately \$9.6 billion, comprised of \$4.7 billion from Las Vegas Strip Resorts, \$3.4 billion from Regional Operations, and \$1.2 billion from MGM China. The remainder is from corporate and other revenue streams (e.g., cost reimbursements) (MGM Resorts Annual Report, 2021).

**Material ESG Issues:** In 2019, MGM Resorts established an ESG taskforce comprised of executives from strategy, investor relations, risk, finance, purchasing, facilities and other functions. The taskforce’s mandate was to understand the ESG landscape and strengthen our ESG disclosures. Subsequently, the taskforce initiated a formal materiality assessment to obtain internal and external stakeholder input on priority ESG issues, which was completed in 2020. External stakeholders represented convention clients, investors, NGOs and sustainability experts, suppliers, regulators and entertainment organizations. The assessment concluded with 15 material ESG issues, mapped according to priority (See Appendix G).

Climate Change Strategy, Human Capital Management, Diversity & Inclusion and Governance & Ethics were identified as the top issues for MGM Resorts. The findings from the assessment helped us refine and augment our strategy and triggered a significant increase in the scope and scale of metrics included in our Social Impact & Sustainability disclosures.

While identified in the top 15 ESG topics, Water, in 2020, was considered a “middle-of-the-road” issue for MGM Resorts among these key topics. As a best practice, materiality assessments are updated every two to three years. Water is expected to significantly increase in importance among internal and external stakeholders in the next MGM Resorts materiality assessment.

## Environmental Information

**Water-Related Risk Exposure:** Our operations or the operations of critical suppliers could be adversely impacted by drought or other causes of water stress or shortage. A severe drought of extensive duration experienced in Las Vegas or in the other regions, in which we operate or source critical supplies, could adversely affect our business.

**Legal Environmental Requirements:** We are subject to certain federal, state and local environmental laws, regulations and ordinances, including the Clean Air Act, the Clean Water Act, the Resource Conservation Recovery Act, the Comprehensive Environmental Response, the Compensation and Liability Act and the Oil Pollution Act of 1990.

**Environmental Inputs:** The following volumes of electricity, natural gas, other fuels and water were used in MGM Resorts' direct operations in CY2021. See Appendix F for additional water-related disclosures.

- Total Municipal Water (kgal): 4,013,694
- Total Well Water (kgal): 449,944
- Total Electricity Use (MWh): 1,363,329
- Total Natural Gas (or equivalent) (MWh): 837,473
- Total Other Fuel Use (MWh): 143,675

**Environmental Targets:** In figures 1.1 and 1.2, MGM Resorts' two sets of environmental-related metrics, goals and targets are outlined. Our primary set focuses on absolute scope 1 and 2 emissions reduction and sourcing renewable electricity by 2030 (2019 baseline), and a secondary set covering operational efficiency for carbon emissions, energy, water and materials & waste by 2025 (2007 baseline). We also recognize that our corporate carbon footprint extends to our value chain. We have submitted a scope 3 emissions target – 30% reduction across our significant scope 3 categories by 2030 – to the Science-Based Targets Initiative (SBTi) and are awaiting potential approval.

Figure 1.1: 2030 Metrics, Goals & Targets, MGM Resorts

2030 Goals & Targets (2019 Baseline)							
Metric	Goal	2019 Baseline	2021 Performance	2030 Target	Change Needed from Baseline	Change Achieved by 2021	Progress to Target
Absolute carbon emissions, adjusted (global), MTCO <sub>2</sub> e (Scope 1 and 2)	50% reduction	938,044	729,572	469,022	(469,022)	(208,472)	44.4%
Renewable electricity (U.S.), %	100%	17.6%	20.7%	100%	82.4%	3.1%	3.8%
Renewable electricity (global), %	80%	16.0%	18.7%	80%	64.0%	2.7%	4.3%

Figure 1.2: 2025 Metrics, Goals & Targets, MGM Resorts

2025 Goals & Targets (2007 Baseline)							
Metric	Goal	2007 Baseline	2021 Performance	2025 Target	Change Needed from Baseline	Change Achieved by 2021	Progress to Target
Carbon emissions intensity, lbs CO <sub>2</sub> e/sf	45% reduction	30.5	17.3	16.8	(13.7)	(13.2)	96.2%
Energy use intensity, kWh/sf	25% reduction	31.2	23.7	23.4	(7.8)	(7.4)	95.6%
Water withdrawal intensity, gal/sf	33% reduction	76.4	48.1	51.2	(25.2)	(28.2)	112.0%
Materials disposal intensity, lbs/sf	30% reduction	3.34	1.51	1.34	(2.00)	(1.82)	91.1%



## The State of Water in MGM Resorts Jurisdictions

Understanding the conditions of the water basins where we do business is critical to securing our water future. According to The Sustainable Water Partnership (SWP), water security is “the adaptive capacity to safeguard the sustainable availability of, access to, and safe use of an adequate, reliable and resilient quantity and quality of water for health, livelihoods, ecosystems and productive economies.” (Viala, n.d.). Given MGM Resorts’ concentration on the Las Vegas Strip, water security is highly important for our Company given the worsening conditions of the community’s main water supply system – the Colorado River and Lake Mead. While water as a business issue is highly important for our Las Vegas portfolio given our presence in Nevada, water risks occur to varying degrees in other operating jurisdictions and in our supply chain.

Figure 1.3: Map of the Colorado River



### Las Vegas Strip Resorts

Water is a local issue in how it manifests and in its management. For MGM’s Las Vegas Strip Resorts, the primary water issue is supply availability. Drought, climate change, and greater competition for Colorado River water is exposing Las Vegas and other communities reliant on Colorado River water to higher levels of future water stress. Fortunately, water authorities in our community, namely the Southern Nevada Water Authority (SNWA), have made Southern Nevada one of the most well-prepared communities to adapt to declining conditions at Lake Mead and across the Colorado River water supply system.

### Primer on the Colorado River

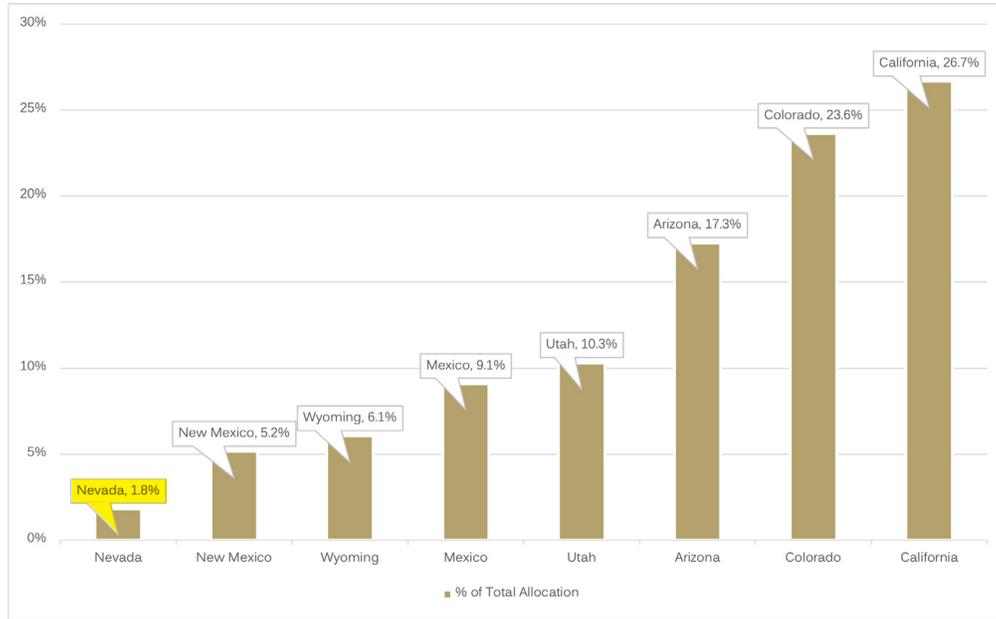
The Colorado River, which spans 1,450 miles, serves approximately 40 million people in Mexico and the United States, including the states of Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming. Across these jurisdictions, Colorado River water is used for agricultural, residential, commercial and industrial activities. Unfortunately, the river is in crisis as there is more water leaving the watershed than entering it. In response, the federal government sounded the alarm on a water shortage in the region and water allocations have been adjusted accordingly.

### *River Oversight*

The Law of the River – a collection of federal laws, compacts, an international treaty and other regulatory guidelines – regulates the Colorado River, including the apportionment across the seven states and Mexico. In particular, the 1922 Colorado River Compact, 1928 Boulder Canyon Project Act and the 1948 Upper Colorado River Basin Compact inform the river’s current apportionment. Through the Department of the Interior, congress funds and oversees management of basin facilities, allocation of Colorado River water and the authority over water shortage mitigation (Stern & Sheikh, 2022).

Within a state’s apportionment, the right to divert and consumptively use Colorado River water is determined through water entitlements which are obtained primarily through contracts with the Secretary of the Interior pursuant to Section 5 of the 1928 Boulder Canyon Project Act (Bureau of Reclamation, n.d.). In Nevada, both the SNWA and Las Vegas Valley Water District hold water entitlement contracts.

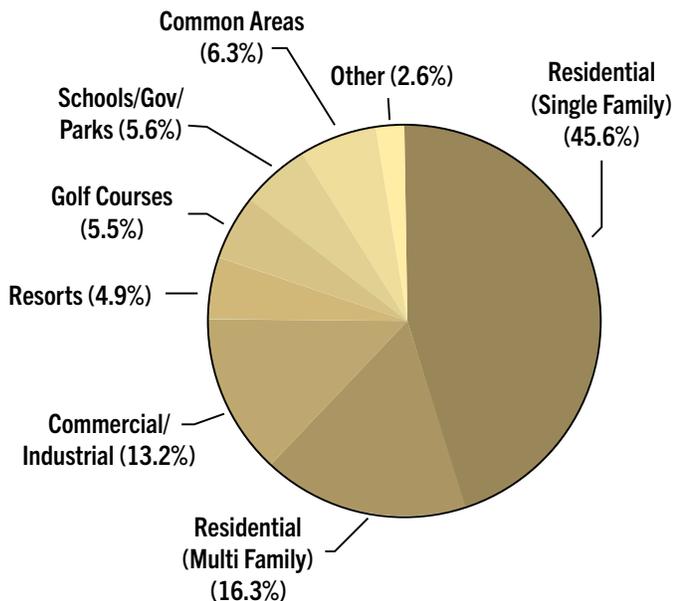
Figure 1.4: Colorado River apportionment (%), SNWA



#### Water Apportionment

Of the 16.5 million acre-feet per year that are apportioned for the seven U.S. states and Mexico, Nevada was originally allocated 300,000 acre-feet per year – the smallest allocation among all U.S. states (see figure 1.4 and Appendix H). The SNWA entitlement is 276,205 acre-feet per year, meaning Southern Nevada uses the vast majority of Nevada’s apportionment and it is the region’s primary water supply. Based on these allocations, Southern Nevada is entitled to less than 2% of the river’s water supply. Furthermore, in 2020, Resorts, including all MGM Resorts properties in Las Vegas, consumed less than 5% of that allocation (Southern Nevada Water Authority, 2021). See figure 1.5. In 2019, resorts consumed less than 7%.

Figure 1.5: 2020 Municipal Metered Use in Southern Nevada (SNWA, 2021)



#### Causes of Declining Conditions

The declining conditions of the Colorado River system are reflected in Lake Mead water levels. However, the cause of the system’s declining conditions is the result of several factors. First and foremost, climate change is driving a decades-long drought in Colorado and the American West through extreme heat. This causes greater evaporation of surface water and more absorption from drier soils, which affects stream flow levels and lessens the amount that enters lakes Mead and Powell. At the same time, population growth and competition for water from other river users is exacerbating water supply issues. Water needed for agricultural and residential purposes are primary sources of water use. In turn, other related physical water risks and transition risks are being triggered as well. These associated risks include declining water quality and regulatory uncertainty, among others, and have repercussions for those reliant on Colorado River water as their source for water.

#### Current State of Lake Mead (As of June 2022)

According to the U.S. Bureau of Reclamation, Lake Mead reached 1,065 feet – the lowest point since the lake began filling in the 1930s – in 2021. And according to figure 1.6, elevation levels continued to decline to 1,043 feet in June 2022. Current and forecasted conditions indicate the high probability that water levels at Lake Mead will continue to decline. Within a decade, lake levels could reach an elevation below 1,000 feet by 2031 (SNWA, 2021). Below an elevation of 895 feet at Lake Mead, Hoover Dam can no longer deliver Colorado River water to downstream users.

Declining water levels at Lake Mead destabilize water security in Southern Nevada beyond water supply availability. Water facilities, water demand, and electricity generation are also affected by the declining elevation at Lake Mead. Declining water quality is also exacerbated by rising stream flow, changes in temperature, and changes in reservoir volumes.

## Responses to Drought in the Southwest

### Federal Response

As a result of these ongoing conditions, the U.S. Department of the Interior on August 16, 2022, declared the first ever Tier 2 Shortage Condition mandating the following reductions only to select lower basin state Colorado River allotments beginning in January 2023:

- Arizona – 592,000-acre feet or 21% of its total allotment
- Mexico – 104,000-acre feet or 7% of its total allotment
- Nevada – 25,000-acre feet or 8% of its total allotment

This follows an initial shortage condition declared by the Department of the Interior in August 2021. As such, Nevada will be allotted 275,000 total acre feet beginning in 2023 (down from 279,000 for 2022 and 300,000 as its baseline). For comparison, in 2021 Nevada utilized a total of 242,000 net acre feet of the Colorado River system.

### Drought Response Funding in Federal Legislation

**Infrastructure Investment and Jobs Act:** On November 15, 2021, President Biden signed a historic bill into law, following votes from the House and Senate. The Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law, is a \$1 trillion investment in infrastructure with \$550 billion positioned for spending over five years. Within overall funding is an allocation of **\$8.3 billion** for Bureau of Reclamation water infrastructure projects (U.S. Department of the Interior, 2022). This funding is allocated specifically in drought resilience and water management such as repairing water delivery systems and securing dams, among others. This investment aims specifically to help communities reduce their vulnerability to drought.

**Inflation Reduction Act:** In addition to the Bipartisan Infrastructure Law, **\$4 billion** has been allocated by the federal government for projects to support the Colorado River basin and other areas experiencing similar levels of drought. This allocation comes through the Inflation Reduction Act, which includes funding for water supply system management, infrastructure modernization, and water conservation. The Act specifically mentions three forms of drought response funding (H.R.5376, 2021-2022). They include:

1. Compensation for voluntary reductions in diversion of water or consumptive water use
2. Funding for projects to help improve water levels in the Colorado River system
3. Environmental restoration projects in areas damaged by drought conditions, such as ecosystem and habitat restoration

Figure 1.6: Lake Mead Monthly Elevation at Hoover Dam



### Southern Nevada Response

Given that Lake Mead is in Southern Nevada, local water authorities, namely the SNWA, have been adapting to the megadrought for several decades. This has positioned Southern Nevada very well relative to other Colorado River users. Furthermore, the SNWA is recognized as a global leader in water resource management and conservation.

### Background of the Southern Nevada Water Authority

The SNWA was formed in 1991 by seven local water and wastewater agencies to address water issues on a Nevada-regional basis rather than on a local individual water purveyor basis. These agencies include:

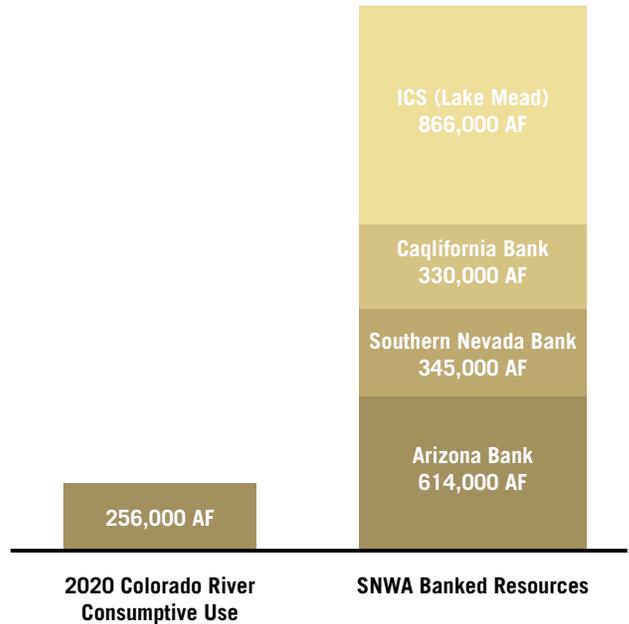
1. Big Bend Water District
2. City of Boulder City
3. Clark County Water Reclamation
4. City of Henderson
5. City of Las Vegas
6. Las Vegas Valley Water District
7. City of North Las Vegas

The SNWA is governed by a Board of Directors comprised of representatives of each of the above member agencies. An SNWA Executive Team oversees daily operations. As of September 2022, John J. Entsminger serves as General Manager.

Most notable about the SNWA are its achievements in regional water reuse. The SNWA implemented a unique wastewater treatment facility where a substantial portion – approximately 40% --of total local water use is captured, treated, and returned to Lake Mead. This means that every gallon that is returned to Lake Mead allows another gallon to be taken out in the form of return-flow credits. This system stretches the limited water supply in Southern Nevada, allowing for greater withdrawals than Nevada's gross allotment without overuse.



Figure 1.7: SNWA Banked Supplies through 2020



**Adaptive Management in Southern Nevada**

As the wholesaler of water to the region, the SNWA has the duty to anticipate future demands and take steps to meet those demands. For several decades, the SNWA has pursued ongoing efforts to establish and manage a flexible portfolio of water resources and implemented innovative water conservation and resource strategies that have helped Southern Nevada adapt to the drought conditions experienced by the Colorado River, including Lake Mead.

The SNWA has pursued efforts primarily in three areas: Lake Mead facility improvements, water conservation, and interstate collaboration.

1. **Lake Mead facility improvements** include constructing a new intake and pumping station at Lake Mead to allow the SNWA to pump from a Lake Mead elevation of 875 feet – approximately 20 feet below the minimum elevation that Hoover Dam can release water downstream.

2. The SNWA has yielded significant water savings over the past 20 years by implementing one of the most progressive **water conservation** programs in the United States. Continued water conservation will remain a critical priority for the SNWA in the years ahead. Water service providers, such as the City of North Las Vegas, are also taking action to enforce water conservation.

3. Through **interstate collaboration**, the SNWA entered into three agreements with federal, state and philanthropic organizations, and other Colorado River water users to help mitigate the impacts of ongoing drought and bolster reservoir elevations. These efforts help protect against critical reservoir elevations that threaten hydropower generation at Glen Canyon and Hoover Dams and preserve access to water supplies for millions of Lower Basin water users.

**Water Banking Efforts**

The Southern Nevada Water Bank, other water banks in Arizona and California and Lake Mead all currently have banked SNWA water resources. See figure 1.7 and appendix D. In Lake Mead, the banked resources are in the form of **Tributary Conservation Intentionally Created Surplus (ICS)**. This provides increased access to banked supplies and enhances operational flexibility for the SNWA and other Colorado River users with banked resources in the lake. The SNWA intends to continue its banking efforts to build temporary reserves while also helping to stabilize Lake Mead water levels.

**Meeting Future Demand**

Beyond conservation and safeguarding current suppliers, the SNWA is also exploring future resources to secure Southern Nevada’s water destiny. The primary future resources expected to be available include Colorado River transfers and exchanges, Colorado River augmentation, and in-state groundwater. River transfers and exchanges involve moving water resources from willing sellers to willing buyers. In the case of the SNWA, desalination and Colorado River partnerships are key focuses areas. This area, as compared to augmentation and in state groundwater, is the most critical future resource area.

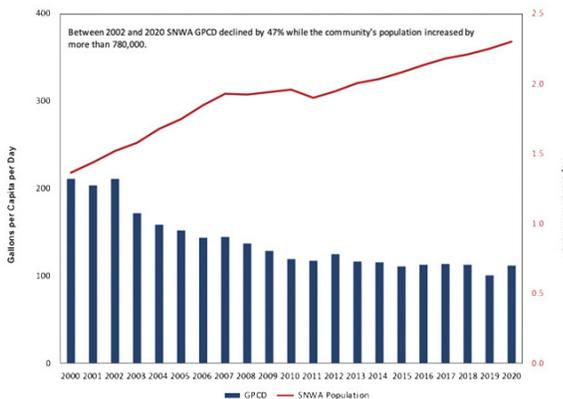
**Desalination** involves removing salts, minerals and contaminants from seawater, brackish water, and wastewater effluents. This process is an increasingly common solution to obtain fresh water for human consumption and domestic and industrial uses (Bastani et al, 2017). At the time of the 2021 SNWA Water Resource Plan, published in early 2022, the SNWA indicated it is actively involved in desalination projects in the state of California and Mexico. This involvement, which is in the form of investment, is to provide Nevada with greater access to Colorado River water. According to Colby Pellegrino, assistant General Manager of the SNWA, “it would take at least 10 desalinations plants just to supply an amount equal to the current water use of Las Vegas.” Nevertheless, the SNWA is engaged with other Colorado River Basin states and water users, the U.S. Bureau of Reclamation and Mexico to actively explore and investigate potential seawater and brackish water desalination projects. For example, SNWA has offered to put \$750 million into a \$3.4 billion water treatment plant proposed for Southern California. In return, Nevada would be able to boost its yearly draw from Lake Mead by an additional 10 percent.

Other Colorado River partnerships include supporting major water reuse programs, such as a full-scale regional recycled water program by the Metropolitan Water District of Southern California (MWD) (SNWA, 2021). Other resources available to the SNWA include water rights at Virgin River, Garnet and Hidden Valleys, Three Lakes Valley and Tikaboo Valley, among others.

## SNWA Conservation Goals

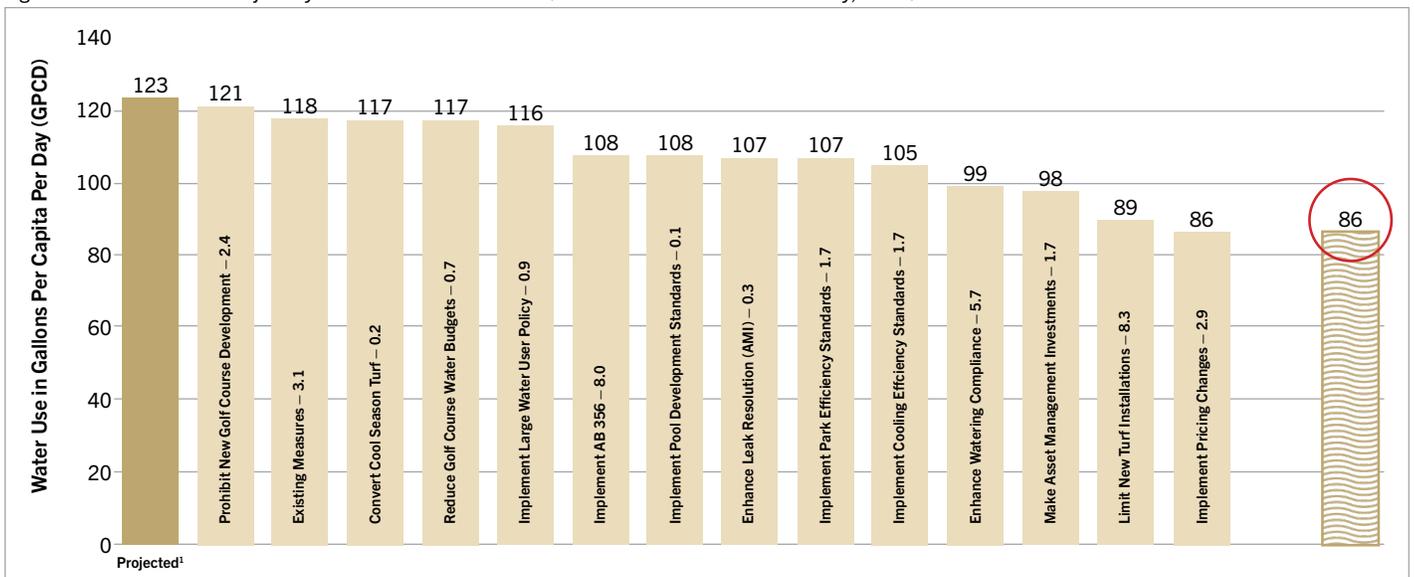
Since its inception in 1991, the SNWA and its member agencies have worked collaboratively to set and achieve aggressive water conservation goals. Per capita water use in Southern Nevada decreased by 47% between 2002 and 2020, even as the population within the SNWA service area increased by approximately 52% during the same timeframe (SNWA, n.d.). However, the most significant conservation gains occurred between 2000 and 2010; per capita water use has remained relatively flat in the years since as shown in the following figure.

Figure 1.8: SNWA Gallons per Capita per Day, 2000-2020



On a per capita basis, the SNWA discovered that daily per capita water use in 2020 was 112 gallons. Factoring in upward pressure from climate change and system age, the 2020 gallons per capita per day (GPCD) projections were above 123. The new daily per capita conservation goal is 86 gallons. The below figure demonstrates how the SNWA aims to achieve its new water conservation goal from the projected 123 GPCD to 86 GPCD.

Figure 1.9: Conservation Trajectory with Additional Measures (Southern Nevada Water Authority, 2021)



The following are highly prioritized tactics to drive this further reduction:

- No new golf course development
- Heightened requirements for high-efficiency cooling
- Restrictions on grass in development
- Large water user policy to minimize consumptive water use and provide benefits to the community
- Incentives to help properties using septic systems convert to the municipal sewer system

## Legal Ramifications for Non-Compliance

Non-compliance with drought restrictions may result in legal ramifications. The most common forms are penalties and service disconnections. The SNWA notes that non-compliance with rules and ordinances will be monitored and corrected by water providers. For example, the North Las Vegas Municipal Code, section 13.08.110, outlines that violators of water conservation measures will receive violation letters and penalties between \$80 and \$5,120. Continued non-compliance may result in service disconnection (City of North Las Vegas, 2021). Additionally, more stringent penalties should be expected as further regulatory pressure falls on water service providers. Litigation could also be a form of legal ramification for non-compliance.

The SNWA is also developing a large water user policy. This policy will enforce measures that reduce, mitigate, and prohibit consumptive use of Southern Nevada's largest water users. The proposed policy and financial or legal ramifications are not currently disclosed; fines and penalties for non-compliance should be expected. It is worth noting that the policy will likely target the top 2% of water users in the community (Southern Nevada Water Authority, 2021).



### Other Colorado River Users

The Colorado River Basin states are comprised of seven states, categorized into Upper Basin (Colorado, New Mexico, Utah, Wyoming) and Lower Basin (Arizona, California, Nevada). See figure 1.10. Mexico also withdraws water from the Colorado River.

### Upper Basin States

One of **Colorado's** key approaches to drought response is assisting water providers with local drought planning. According to Drought Management Planning: A Guide for Water Providers, planning falls into two categories: supply-side and demand-side mitigation. Supply-side mitigation refers to the management of current water supply systems and the derived suppliers. Notable strategies include infrastructure upgrades, new source identification, and increased water use efficiency, among others. Strategies within demand-side aim to curtail water demand with a heavy focus on inefficiencies and water waste. Similar to Nevada, stopping turf irrigation and installing low volume irrigation systems are one example to reduce water use. In assisting key stakeholders like water service providers, water authorities leverage and encourage the use of institutional tools (i.e., public outreach, funding, collaboration groups), planning tools (innovation, land and water use planning integration), and on-the-ground tools (e.g., water storage, flow enhancement, collaborative water sharing agreements) (DNR, 2022).

**New Mexico**, in its 2018 Drought Plan, outlines its approach to drought with a focus on drought-wildfire-flood interconnectedness. In the top 10 mitigation actions – of a total of 42 actions – 9 involve watershed treatment, wildfire risk reduction, or enhanced water supply (NMOSE & NMWRRI, 2018). Below are New Mexico's 10 highest priority drought mitigation actions:

1. Increase Number of Firewise/Fire-Adapted Communities
2. Study Impact of Post-Fire Flooding/Debris Flow
3. Water Supply/Drought Vulnerability Assessment
4. Public Education/Outreach
5. Improve Forest/Watershed Health
6. Defensible Space Around State Facilities
7. Reduce Combustible Fuel Around Critical Facilities
8. Centralized Hazard Mapping
9. Drought Mitigation in Range Plans
10. Increase Number of Community Wildfire Protection Plans

Historically, **Utah** has pursued less ambitious drought mitigation efforts as compared to other Colorado River basin states. However, declining water levels at the Great Salt Lake have triggered a paradigm shift in both mindset and response to drought conditions in the state. As such, state legislators secured \$500 million in funding for water-saving measures. The state is also focusing on agricultural optimization. For example, HB33 was passed in 2022 to address agricultural water waste by allowing farmers to leave unused water in streams without adjustments to their future allotments (Utah Gov. Spencer J. Cox, 2022).

**Wyoming**, as part of the Upper Division States 5-Point Plan, has committed to water conservation and protecting the Upper Basin's critical water infrastructure. The components of the proposed plan for additional actions to safeguard Colorado River water are as follows (Upper Colorado River Commission, 2022):

1. Revitalize the System Conservation Pilot Program
2. Commencement of a 2023 drought response operations Plan
3. Consider an Upper Basin demand management program
4. Implement the *Bipartisan Infrastructure Law for Upper Basin Drought Contingency Plan funding*
5. Continue strict water management, including intrastate water conservation programs, regulation and enforcement

The 5-Point Plan was submitted to Commissioner Touton on July 18, 2022, by the Upper Colorado River Commission, on behalf of the Upper Division States of Colorado, New Mexico, Utah, and Wyoming.



Figure 1.10: Map of Colorado River Basin States

<sup>1</sup> One acre-foot equals approximately 326,000 gallons

## Lower Basin States

In **Arizona**, a notable drought preparedness measure is the Pilot System Conservation Program. This program is a joint agreement to fund conservation projects that benefit the Colorado River system. Another notable measure to adapt to drought in Arizona is the Lower Basin Drought Memorandum of Understanding (MOU). This agreement aims to generate excess water to be left in Lake Mead to mitigate Lake Mead water levels from reaching critical reservoir elevations. The pilot program in the lower basin aimed to create 175,347 acre-feet of system conservation in Lake Mead by 2035 (ADWR, 2021). Additionally, Arizona is engaged in drought contingency planning in collaboration with other Colorado River Basin states, the federal government, and Mexico.

**California** published its Water Supply Strategy in August 2022, outlining the current and planned actions to secure its future water supply. In its drought mitigation strategy are four primary actions. They include (1) creating storage space for up to 4 million acre-feet of water to capitalize on big storms; (2) recycling and reusing at least 800,000 acre-feet of water per year by 2030; (3) releasing 500,000 acre-feet of water through enhanced efficiencies and conservation; and (4) securing new water supplies by capturing stormwater and desalinating ocean water and brackish water in groundwater basins (State of California, 2022). Additionally, agriculture incentives are available. As part of the \$38-million program funded by the federal Bureau of Reclamation, the Metropolitan Water District of Southern California and other water agencies in Arizona and Nevada farmers are paid up to \$925 a year per unused acre to leave a portion of their lands dry and fallow. The water saved over the next three years is expected to translate into three feet of additional water in Lake Mead.

### Mexico

Like the Colorado River basin states, Mexico has also undertaken initial steps to adapt to and mitigate water stress driven by Colorado River drought. Some examples of drought mitigation actions include exploring desalination in collaboration with Southern Nevada, conservation incentives, and rainwater harvesting. For example, over 20,000 rainwater harvesting systems have been installed in Mexico City resulting in approximately 230 million gallons of annual harvested rainwater.

## Water Risks in Other MGM Jurisdictions

### Exposure for Regional Operations

According to a climate risk research study by S&P Global Trucost (2021), the New York City region, including Westchester County, faces a high risk in terms of water stress. The data also identified Summit County in Ohio, Atlantic County in New Jersey and Prince George's County in Maryland to have moderate or high levels of water stress risk by 2050. MGM Resorts operates in each of these jurisdictions.

Beyond water stress, sea level rise is another water-related risk facing MGM Resorts' U.S. regional operations. Beau Rivage Resort & Casino in Biloxi, Mississippi has a high exposure to sea-level rise according to our detailed climate risk assessment. Extensive measures are in place to help mitigate this risk. Examples include building the main floor and casino level at an elevation of 20 feet above sea level, setting the casino and selected food and beverage outlets as floating structures atop interconnected barges, and maintaining emergency backup generators and a robust hurricane preparedness and recovery plan.

### MGM China

The Macau Special Administrative Region of the People's Republic of China, where MGM Resorts operates MGM Cotai and MGM Macau, has low exposure to water stress risk (S&P Global Trucost, 2022). Similar to Biloxi in Mississippi, Macau is also exposed to sea-level rise. Similar approaches to safeguard against unlikely business interruptions have been implemented as a preparedness measure. Another water-related risk that our Macau properties are exposed to are declining water quality, according to the WRI Aqueduct Water Risk Atlas. In response to this risk, our properties engage an external contractor to examine water quality on a monthly basis, ensuring water safety across the properties for our guests and employees.





# MGM Resorts'

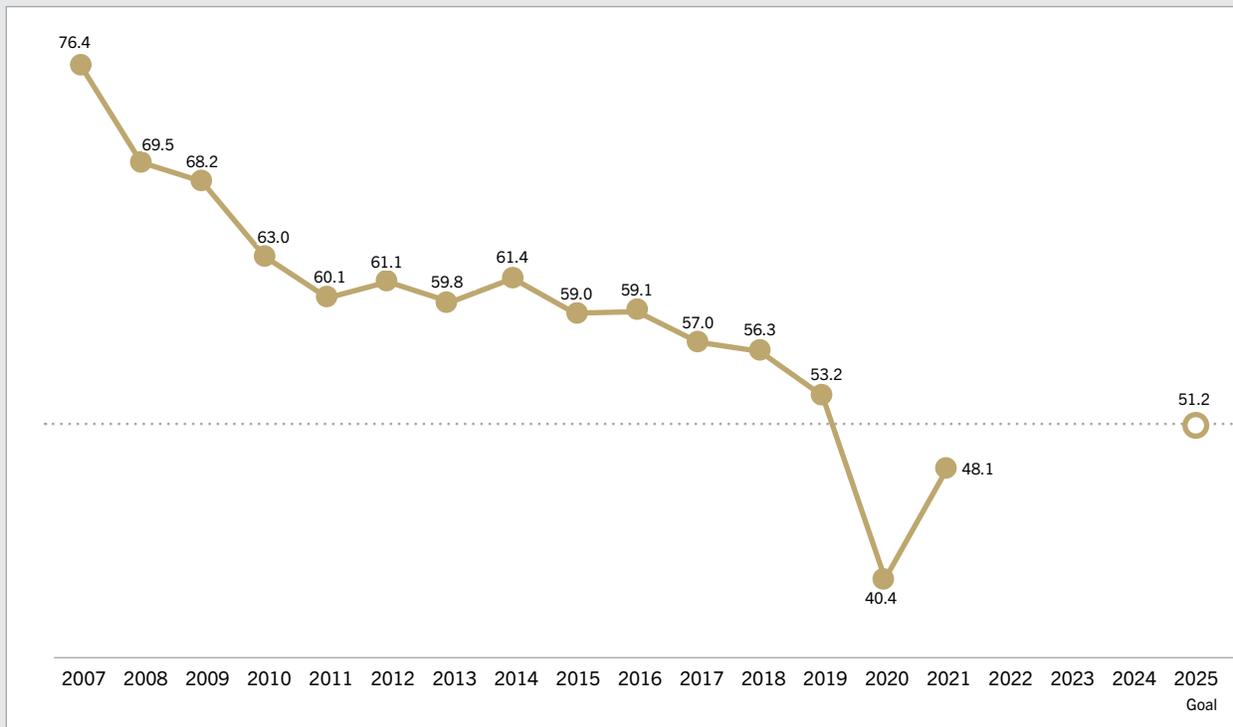
## Water Footprint & Risk Exposure

Addressing water stress is essential for MGM Resorts, given the heightening regulatory attention on water use in Southern Nevada and our business being highly concentrated on the Las Vegas Strip. This section outlines MGM Resorts' water footprint, current management approach to water conservation, and key findings from third-party assessments.

### Water Use at MGM Resorts

In 2017, MGM Resorts set a Social Impact & Sustainability goal to reduce water withdrawal intensity per square foot by 30% (2007 baseline). This was achieved by the end of 2019, and the goal has since been revised to 33% from the same baseline year. At 48.1 gallons per square foot in 2021, we are still below our new 2025 reduction target of 51.2 gallons per square foot -- a 33% reduction against our the 2007 baseline. However, as business volumes return following the COVID-19 pandemic, we expect to see an increase in water use.

Figure 2.1: Enterprise-level water withdrawal (Gallons per square foot)<sup>2</sup>



<sup>2</sup>Water withdrawal includes utility water and well water



### **Well Water Rights**

Approximately 90% of water withdrawals comes from municipal sources via the SNWA member agencies with 10% coming from company-owned well water rights. Well water rights are administered by the State of Nevada Division of Water Resources – properties must demonstrate ongoing “Proofs of Beneficial Use” to maintain. For example, the Bellagio Fountains are fed from two sources: 1) The “O” Show pool drainage twice per year, 2) well water rights controlled by Bellagio.

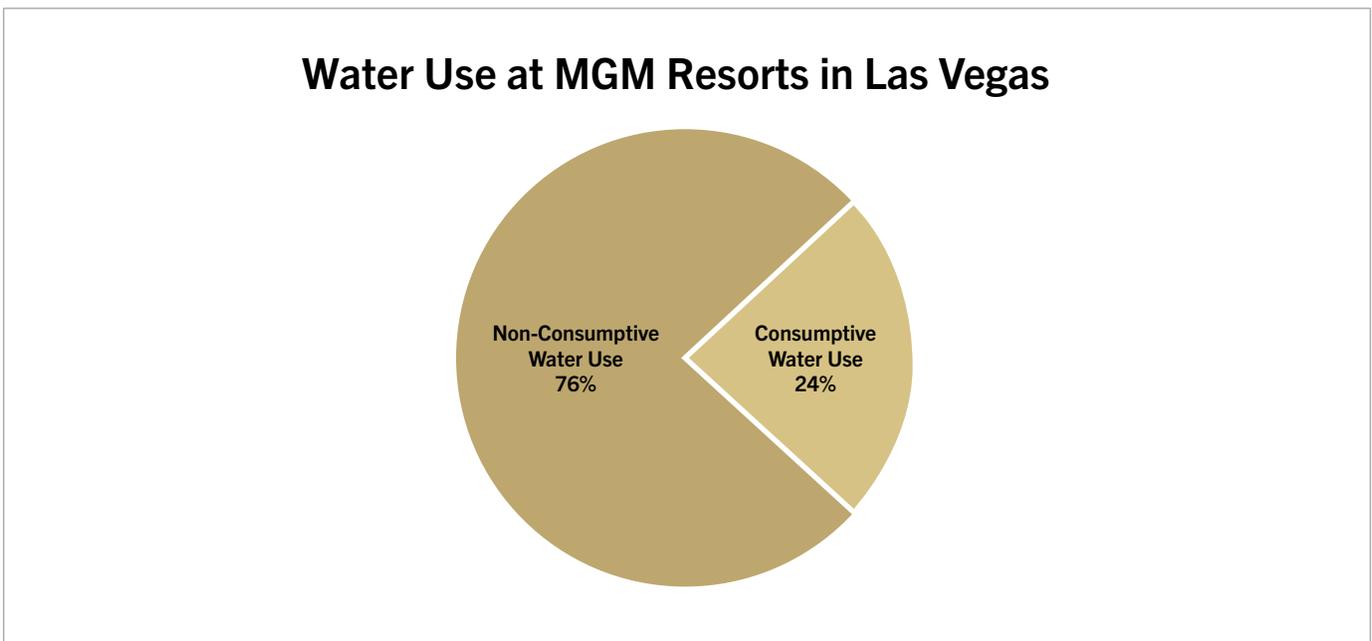
### **Consumptive vs. Non-Consumptive Water Use**

Once withdrawn, water can be used consumptively or non-consumptively. Consumptive water use eliminates the possibility that water can be used again in the local watershed; it is the part of total water withdrawal that is lost to evaporation, transpiration, finished products and crops and human or animal consumption. Non-consumptive water is returned to the system for future use and does not cause a reduction in source supply.

Distinguishing consumptive from non-consumptive usage and volumes is particularly important for regions facing water stress and scarcity. In Las Vegas, water used indoors is treated and returned to its source (non-consumptive), while water used outdoors is typically evaporated or absorbed (consumptive). The ability to reuse the same gallon of water is unique to Southern Nevada due to the advanced water infrastructure to collect, treat and distribute water across the region. The past and future growth of Las Vegas is only possible because of the water recycling programs that redeposit water into Lake Mead.

Given its significant presence in Southern Nevada, MGM Resorts’ water conservation strategy is structured around consumptive and non-consumptive opportunity areas. The chart below breaks down consumptive and non-consumptive water use at MGM Resorts’ Las Vegas resorts.

Figure 2.2: Consumptive Water Use Analysis at MGM Resorts (Water Foundry, 2021)



## **Current Focus Areas**

MGM Resorts' approach to water stewardship focuses on both Design & Development and ongoing operations. Across these business activities, we enable progress on our water goals through monitoring and data collection, non-consumptive water conservation and consumptive water conservation.

### **Monitoring and Data Collection**

#### ***Utility-Level Reporting***

Effective water management requires a systems approach to understand water use in individual facilities and organizations. To enable utility-level visibility to facilities personnel, MGM Resorts utilizes Resource Advisor – a centrally managed database from Schneider Electric – which captures utility invoice data and readily shows spend and volume trends.

#### ***Building System Monitoring***

In addition to utility-level reporting, systems-level metering is necessary to provide critical end-user data to identify additional areas of opportunity and water-use hotspots. MGM Resorts has conducted pilot submetering programs such as the pool monitoring project at Bellagio that have resulted in water savings and real-time consumption insights. MGM Resorts is currently in the process of installing advanced submeters on the inflow and outflow points of all Las Vegas cooling tower banks to quantify evaporative water loss from cooling towers reliably.

### **Non-Consumptive Water Conservation**

#### ***Water Efficient Fixtures***

MGM Resorts has made considerable progress with the installation of water efficient fixtures across all of our properties. Low flow fixtures have been installed in both new development projects and existing property retrofits and have played a role in reducing MGM Resorts' water withdrawal intensity by 37% since 2007. In addition, touchless fixtures are widely installed in both front- and back-of-house areas, further driving savings. Maintaining this progress has required the integration of fixture upkeep in the Zone Maintenance Program of each property to ensure connections do not leak and that timers and sensors are correctly calibrated.

#### ***Water Efficient Housekeeping***

Housekeeping and laundry operations are a very visible piece of MGM Resorts' water footprint and one area where guests can have a direct impact on water consumption. MGM Resorts' opt-out programs allow guests to reuse their towels and bedding and save water by reducing

laundry volumes. Guest room attendants also play a role in overall water efficiency by only flushing toilets and running sinks and showers when necessary to clean them. Ongoing training of guestroom attendants ensures these guest-facing water savings continue.

#### ***Water Efficient Chemical Management***

Pools, cooling towers and other water bodies must be filtered and chemically treated to prevent the buildup of particulate matter and harmful organic compounds. As demonstrated by the pool metering project at Bellagio, significant water savings can be realized by ensuring pools and other water bodies are not prematurely flushed, sending thousands of gallons down the drain. In cooling towers, water leaves behind a concentration of dissolved solids (e.g., mineral deposits) and process chemicals as it evaporates. These deposits reduce the tower's cooling efficiency and eventually must be flushed and the water replaced. MGM Resorts works closely with its chemical and water treatment partners to ensure cooling tower water is optimized for as long as possible before replacement.

### **Consumptive Water Conservation**

#### ***Water Efficient Irrigation***

The lush landscapes across MGM Resorts properties are a visible point of water consumption. All the water used in landscaping is consumptive and removed from municipal water systems via evaporation, transpiration and absorption. MGM Resorts has replaced over 200,000 square feet of grass with artificial turf and drought-tolerant plants to ensure these losses are as small as possible. Horticulture programs across the resorts utilize native and adapted plants to further reduce irrigation demand. Non-functional turf in MGM Resorts' premier Las Vegas golf course, Shadow Creek, is currently being examined for potential alternatives to reduce the golf course's water consumption.

#### ***Water Efficient Evaporative Systems***

The mechanical systems used to heat and cool resorts significantly impact water efficiency. MGM Resorts' large-scale cooling applications use cooling towers, which by design evaporate water to extract heat energy and release it into ambient air. Since evaporation is the primary function of a cooling tower, reducing water volumes lost to evaporation is not typically targeted in water conservation efforts. Drift, the quantity of water carried away as mist or water droplets before it can evaporate, is a form of cooling tower water loss that can be targeted with drift eliminators as part of a water conservation program. MGM Resorts is working toward replacing cooling towers at their end-of-life with models that can drastically reduce drift losses.



### **Water-Related Memberships & Past Conferences**

On October 12, 2021, MGM Resorts hosted the SNWA Water Stewardship Executive Summit at Bellagio Hotel and Casino. The summit's purpose was to ask for commitment, collective action, and leadership on the critical water issue. The summit included key executive leadership in Southern Nevada, hospitality peers and other large organizations in the data warehousing industry. During this one-hour event, SNWA staff, including John Entsminger (General Manager, Las Vegas Valley Water District and SNWA), updated attendees on the status of our water resources, discussed key conservation-related initiatives and solicited ideas on how to optimize the use of our community's water supply.

### **Third-Party Findings**

Between 2020 and 2022, MGM Resorts engaged two third-party experts to conduct detailed assessments related to water – S&P Global Trucost and Water Foundry.

#### **S&P Global Trucost: Enterprise-Level Water Risk Assessment**

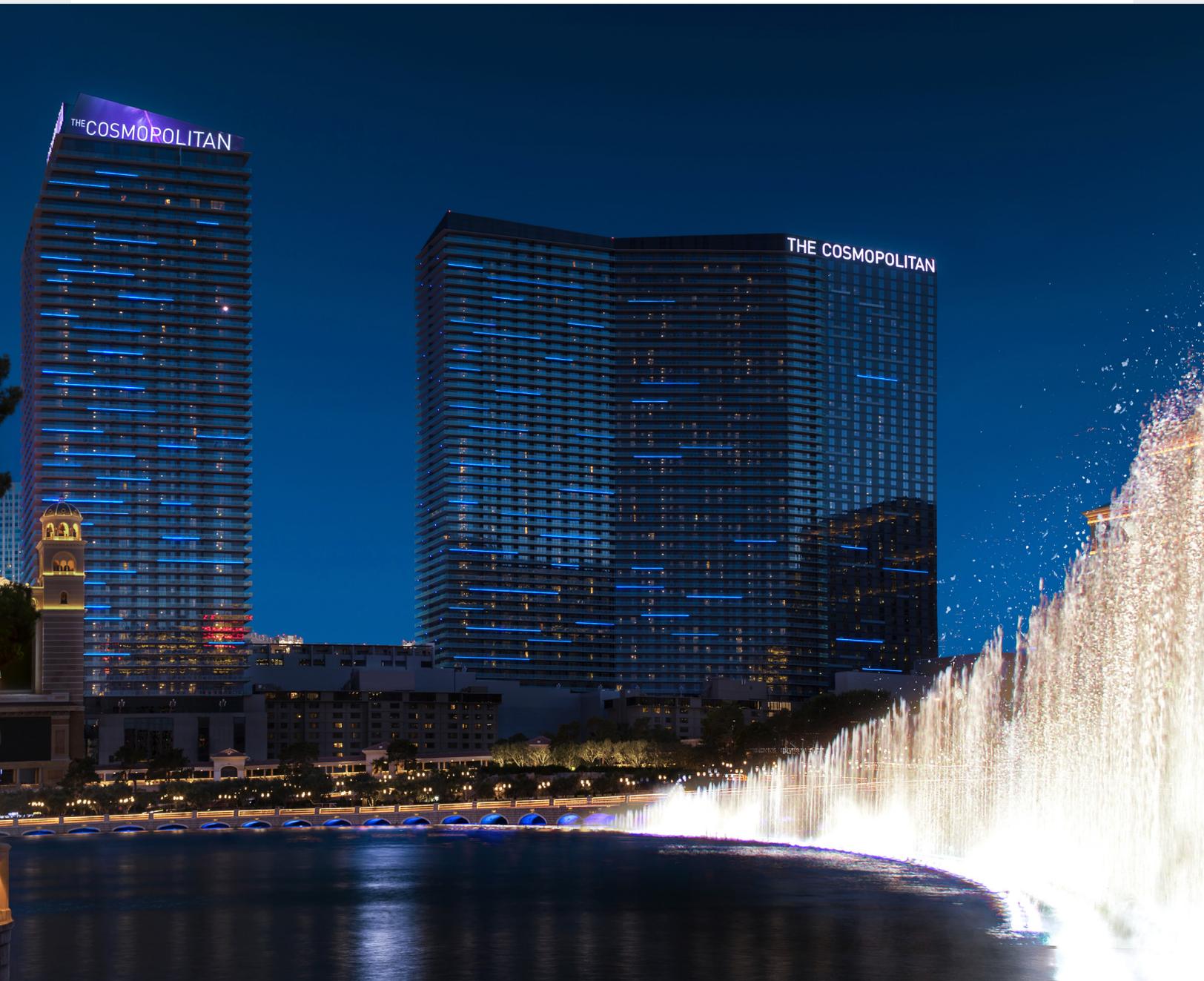
In 2022, MGM Resorts engaged S&P Global Trucost, a leader in environmental data and risk assessment, to conduct a detailed climate risk and opportunity assessment. The assessment utilized the World Resource Institute (WRI) Aqueduct Water Risk Atlas data and SNWA regional data. According to the WRI, in 2040, under a business-as-usual scenario, Las Vegas will experience a 1.2x decrease in water supply while water demand will remain normal.

Considerations include the WRI's data showing the Las Vegas region shows flat demand; however, this could change in the case that population growth outpaces water conservation. Our Northfield Park and Yonkers locations are exposed to high water risk under a moderate scenario for 2050, and Las Vegas properties are exposed to a moderate/high supply risk in relation to water. SNWA highlights the risk of shortage, which remains high in subsequent years and is consistent with the overall trend as shown by WRI. Possible mitigation approaches include enhanced metering and smart building monitoring, retrofitting for water efficiency, equipment cooling and water reuse and recovery such as cisterns and rainwater capture.



### **Water Foundry: Consumptive Water Analysis in Las Vegas**

In 2021, MGM Resorts engaged Water Foundry, an independent water expert, to provide a Water Withdrawal and Consumption Quantification report for our Las Vegas resorts. We were particularly interested in quantifying water use within the resorts and understanding the ratio of consumptive to non-consumptive water use across our properties. This engagement aimed to identify key water usage drivers and develop a comprehensive water strategy to differentiate MGM Resorts as a leader in water. The report provided was phase one of three, which focused primarily on developing a detailed understanding of our water footprint at the property and portfolio level. The two forthcoming phases are to develop a detailed water implementation plan and to prioritize water initiatives. The methodology consisted of findings from four properties and an extrapolation for the remaining properties to provide Las Vegas Resorts portfolio-level results. The report found that 76% of our water use in Las Vegas is non-consumptive, and 24% is consumptive. Key findings were that a significant portion of our consumptive water use was driven by HVAC, followed by irrigation and pools and water features.



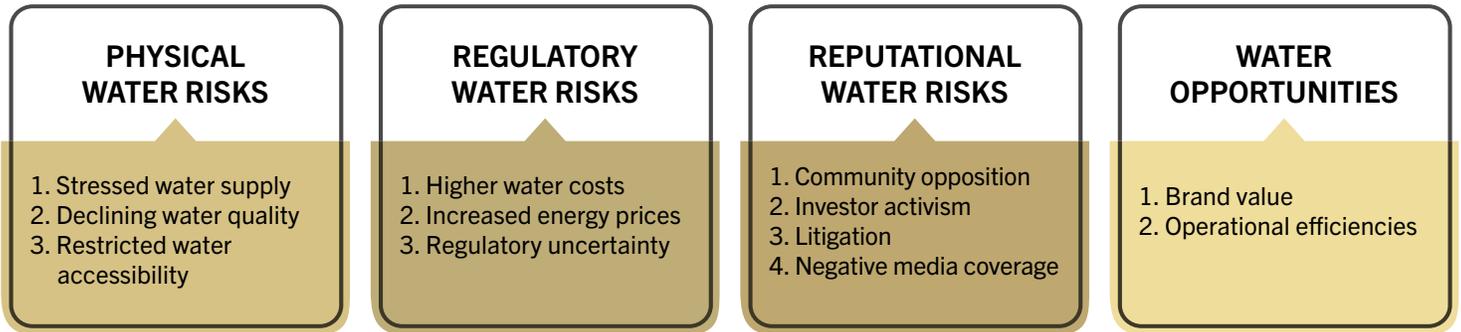


# MGM Resorts'

## Approach to Water Stewardship

### Potential Water-Related Business Impacts

Based on the interconnectedness of water risks, it is recommended that this proposed water stewardship approach reflect water risks beyond water supply availability. MGM Resorts' approach to water stewardship should cover other aspects of physical water risks as well as regulatory and reputational risks. Furthermore, the situation in Southern Nevada presents MGM Resorts with the unique opportunity to craft significant long-term brand value as a global corporate steward for water conservation.



### Key Water Conservation Focus Areas

Feasibility of Implementation ↑	<ul style="list-style-type: none"> <li>• Irrigation (Las Vegas Strip Resorts)</li> <li>• Leak Resolution</li> </ul>	<ul style="list-style-type: none"> <li>• Evaporative Cooling (Efficiency)</li> </ul>	
	<ul style="list-style-type: none"> <li>• Pool Filtration</li> </ul>	<ul style="list-style-type: none"> <li>• Surface Evaporation</li> <li>• Irrigation (Shadow Creek)</li> </ul>	<ul style="list-style-type: none"> <li>• Evaporative Cooling (Alternative)</li> </ul>

Reduction Impact on MGM Resorts' Colorado River withdrawals →





## Proposed Strategic Framework for Water Stewardship

Priorities	Description	Implementation Areas <i>(aligned with CEO Water Mandate)</i>		
<b>WATER MEASUREMENT</b>	Measures to monitor MGM Resorts' water inputs, outputs, and risk exposure	<b>Direct operations</b> <ul style="list-style-type: none"> <li>Data monitoring</li> <li>Submetering</li> </ul>	<b>Supply Chain</b> <ul style="list-style-type: none"> <li>Supplier risk monitoring</li> <li>Third-party ratings</li> <li>Regular updates</li> </ul>	
<b>WATER EFFICIENCY</b>	Measures to reduce water use in MGM Resorts' direct operations and across its supply chain	<b>Direct operations</b> <ul style="list-style-type: none"> <li>Evaporative cooling</li> <li>Irrigation</li> <li>Pools and water features</li> <li>Preventive maintenance</li> </ul>	<b>Supply Chain</b> <ul style="list-style-type: none"> <li>Sourcing new technologies</li> <li>Supplier screening and engagement</li> </ul>	
<b>WATER QUALITY</b>	Measures to maintain water quality standards	<b>Direct operations</b> <ul style="list-style-type: none"> <li>Advanced filtration</li> </ul>	<b>Supply Chain</b> <ul style="list-style-type: none"> <li>Alternative suppliers</li> <li>Supplier engagement</li> </ul>	
<b>WATER CITIZENSHIP</b>	Efforts to raise the ambition of water stewardship through stakeholder and community outreach	<b>Collective action</b> <ul style="list-style-type: none"> <li>NGO engagement</li> <li>Board membership</li> </ul>	<b>Public Policy</b> <ul style="list-style-type: none"> <li>Business statesmanship</li> <li>Policy advocacy</li> </ul>	<b>Community Engagement</b> <ul style="list-style-type: none"> <li>Philanthropy</li> <li>Sponsorship</li> <li>Community advocacy</li> </ul>
<b>WATER CULTURE</b>	Efforts to embed water conservation within MGM Resorts and demonstrate transparency in progress toward goals	<b>Direct operations</b> <ul style="list-style-type: none"> <li>Internal price on water</li> <li>Enhanced water targets</li> <li>Customer engagement</li> <li>Employee engagement</li> </ul>	<b>Supply Chain</b> <ul style="list-style-type: none"> <li>Supplier engagement targets</li> </ul>	



WATER  
MEASUREMENT



WATER  
EFFICIENCY



WATER  
QUALITY



WATER  
CITIZENSHIP



WATER  
CULTURE



# MGM Resorts

## Global Water Policy

MGM Resorts International (“MGM”, “MGM Resorts”, “Company,” “we,” “us,” or “our”) is committed to using water responsibly and continuing water leadership and stewardship across the Company and the supply chain.

### Purpose

The purpose of this policy is to codify and communicate our commitment to water stewardship. Since the start of MGM Resorts’ environmental program, the Company has found that a greener business is a better business. Additionally, we recognize that our Company relies on water as a critical resource for our direct and indirect operations. As such, the Company believes the implementation of this policy will directly support our commitment to water stewardship, action beyond compliance, and continuous improvement in the area of water.

### Scope

This policy applies to MGM Resorts’ global portfolio of integrated resorts and entertainment venues. MGM Resorts expects any parties who do business with or on behalf of the Company to conduct business in ways that uphold the principles of this policy. This policy is also encouraged and reinforced through our Supplier Code of Conduct.

### Water Policy

It is the policy of the Company to:

1. Apply transparent corporate water governance
  - Have board and executive level oversight of significant water-related issues (e.g., water stress, flooding, sea level rise)
  - Publish regular updates on the Company’s approach to water stewardship
  - Set water reduction targets for our global operations and disclose progress annually
  - Participate in third-party, water-related benchmarking initiatives and other assessments (e.g., CDP Water Security)
2. Comply with applicable water-related legal or regulatory requirements
3. Use water responsibly across our global operations
  - Ensure that our direct operations do not encroach on the human right to water and sanitation
  - Track and monitor property level water withdrawals
  - Explore best management practices to reduce waste discharge from entering the sewer system, helping to reduce water treatment burdens on municipalities
  - Ensure employees and guests have access to Water, Sanitation and Hygiene (WASH) services at our properties
4. Invest in water efficiency measures
  - Install water-efficient equipment and appliances where applicable
  - Endeavor to use native or adapted landscaping and/or responsible artificial alternatives
  - Address and reduce consumptive water use through smart water management
  - Increase diversification of water sources to lessen reliance on municipal water
5. Encourage guests, employees, suppliers, and partners to conserve water
  - Educate guests on responsible water practices
  - Encourage all suppliers to acknowledge the Supplier Code of Conduct
  - Train management employees on the importance of responsible water use in operations
6. Advocate for effective water policies
  - Actively participate in government policy efforts to support smart long-term water management
  - Participate in collective action that supports water stewardship initiatives

## Governance

Our governance of water-related risks and opportunities is embedded into our overall corporate governance. As of 2020, water-related risks are assessed as part of our formal enterprise risk management process. To manage these risks and opportunities, our board has well-defined oversight, and our management team helps to implement the decisions made to enable progress towards our water goals.

The Corporate Social Responsibility & Sustainability Committee of the MGM Resorts Board governs our Company's overall strategic Social Impact & Sustainability direction, including environmental sustainability. Our CEO and President oversees water-related matters on behalf of management.

## Approach

Two divisions collaborate to lead our overall approach to water: Social Impact & Sustainability and MGM Resorts Design & Development (MRDD). Our Chief People, Inclusion & Sustainability Officer, and President of Design & Development collaborate to champion progress toward interim and longer-term water goals. They are supported by goal champions and an ESG Taskforce comprised of executives from **finance, investor relations, legal, risk, facilities, global procurement and other key functions**. We align our approach to Social Impact & Sustainability with the United Nations Sustainable Development Goals (SDG). Our water efforts support SDG *Goal 6: Ensure access to water and sanitation for all*.

As part of MGM Resorts' Focused on What Matters Platform, Protecting the Planet is one of three key pillars. Water Management is one of three core strategies in this pillar, and our priorities through 2025 center on: (1) water-efficient equipment and appliances (including taps,

toilets, dishwashers, showers, and sinks); (2) smart water management (including sub-metering internal flows, intelligent landscaping); and (3) cooling tower and pool water management (including optimizing cycles of concentration in cooling towers, pool chemistry improvement and backwash modulation in pools).

## Forward-Looking Statements

This Water Policy contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 that involve risks and/or uncertainties, including those described in MGM Resorts' public filings with the SEC. MGM Resorts has based forward-looking statements on management's current expectations and assumptions and not on historical facts. Examples of these statements include, but are not limited to, statements regarding the achievement of the environmental goals. Factors that could cause actual results to differ materially from those indicated in such forward-looking statements are described in MGM Resorts' Form 10-K, Form 10-Q and Form 8-K reports (including all amendments to those reports). In providing forward-looking statements, MGM Resorts is not undertaking any duty or obligation to update these statements publicly as a result of new information, future events or otherwise, except as required by law. If MGM Resorts updates one or more forward-looking statements, no inference should be drawn that it will make additional updates with respect to those other forward-looking statements. In addition, while certain matters discussed in this policy may be significant, any significance should not be read as necessarily rising to the level of financial materiality used for when complying with the U.S. federal securities laws and regulations, even if we use the word "material" or "materiality."





# Appendix

## Appendix A: SNWA Water Resource Portfolio – 2021 Water Resource Plan, SNWA

Resource Type	Key Efforts
<b>Permanent Resources</b>	
Permanent resources are resources anticipated to be available for use over the 50-year planning horizon. These resources make up a base of supplies and can be used during any Colorado River operating condition, including shortage (subject to certain restrictions). Permanent resources include Colorado River supplies, Tributary Conservation Intentionally Created Surplus (ICS), permitted groundwater rights in the Las Vegas Valley and reuse, primarily through return-flow credits. The section below describes these resources and provides details about their availability and use.	
Colorado River Supplies	<ol style="list-style-type: none"> <li><b>1. SNWA Contract:</b> Colorado River entitlement</li> <li><b>2. Unused Apportionment:</b> Nevada is not currently using its full Colorado River apportionment due to community water conservation efforts. (Banked in Lake Mead and other banking programs.)</li> <li><b>3. Return-Flow Credits:</b> Consumptive use is water diversions minus any Colorado River water returned to the Colorado River. These returns are also called “return-flow credits.” Nevada’s Colorado River return-flows consist mostly of highly-treated wastewater returned to Lake Mead via the Las Vegas Wash.</li> <li><b>4. Flood Control Surplus:</b> Not assumed during the planning horizon</li> <li><b>5. Domestic Surplus:</b> Not assumed during the planning horizon</li> </ol>
Tributary Conservation Intentionally Created Surplus (ICS)	Tributary Conservation ICS and Imported ICS enable the SNWA to develop some of its surface and groundwater rights located in Nevada, near the Colorado River. The SNWA may develop these rights as needed by conveying them to Lake Mead in exchange for Tributary Conservation ICS and Imported ICS credits.
Permitted groundwater rights in the Las Vegas Valley	Of the seven SNWA member agencies, the LVVWD and North Las Vegas have permanent groundwater rights totaling 40,760 and 6,201 AFY, respectively. These rights are among the most senior groundwater rights in the Las Vegas Valley. As such, they are protected even though new rights were granted to other users. Las Vegas Valley groundwater rights remain a critical component of SNWA’s Resource Portfolio.
Reuse, primarily through return-flow credits	<p>The term water reuse generally means to recycle wastewater to support a secondary use. In the SNWA service area, nearly all water used indoors is recycled for either direct or indirect reuse.</p> <ol style="list-style-type: none"> <li>1. Direct reuse involves capturing, treating and reusing wastewater flows for non-potable uses such as golf course and park irrigation, and other uses.</li> <li>2. Indirect reuse consists of recycling water through treatment and releases to the Colorado River for return-flow credits.</li> </ol>

# Appendix

## Appendix A: SNWA Water Resource Portfolio – 2021 Water Resource Plan (continued), SNWA

Temporary Resources	
<p>Through local and interstate arrangements, the SNWA has acquired a number of temporary resources that serve as an important management tool—these resources can be used to meet potential short-term gaps between supply and demand, serving as a bridge to meet demands while other future resources are being developed.</p>	
Southern Nevada Water Bank	The SNWA has stored more than 345,000 acre-feet of water in the Southern Nevada Water Bank through 2020 for future use under an agreement with LVVWD. The SNWA may recover water banked under this agreement in any water supply condition. This plan assumes a maximum recovery rate of 20,000 AFY.
California Water Bank	Between 2004 and 2012, the SNWA entered into various agreements that allow for the storage of Nevada’s unused Colorado River water in California. As of 2020, Nevada has banked more than 330,000 acre-feet of water in California. This plan assumes a maximum recovery of up to 30,000 AFY during normal and shortage conditions, subject to agreement terms.
Arizona Water Bank	Through 2020, the SNWA stored approximately 614,000 acre-feet of Colorado River water underground in Arizona’s aquifers for the SNWA’s future use. The SNWA can recover up to 40,000 AFY during any water supply condition and up to 60,000 AFY during a declared shortage.
Intentionally Created Surplus	<p>1. System Efficiency ICS: In 2007, the SNWA collaborated with the U.S. Department of the Interior and other project partners to fund construction of the Warren H. Brock Reservoir. This System Efficiency ICS project provides Southern Nevada with 400,000 acre-feet of ICS credits; no more than 40,000 acre-feet are available for consumptive use each year through 2036. These credits are stored in Lake Mead and are helping to bolster Lake Mead water levels.</p> <p>2. Extraordinary Conservation ICS: Water conservation initiatives have reduced Nevada’s Colorado River water use below the state’s apportionment and created the opportunity for the SNWA to store conserved water in one of its off-stream water banks. Tributary Conservation and Imported ICS credits are also converted to Extraordinary Conservation ICS credits if not used in the year they are created. These ICS credits are banked in Lake Mead and are subject to a one-time deduction of 10 percent for system benefit and evaporative loss. As of 2020, the SNWA has stored approximately 399,000 acre-feet of Extraordinary Conservation ICS.</p> <p>3. DCP Contributions and ICS: DCP contribution amounts vary by state and are based on Lake Mead water levels. Nevada’s DCP contribution ranges from 8,000 to 10,000 AFY. This volume of water is in addition to any mandatory reductions associated with a federally declared shortage. Mandatory shortage reductions cannot be recovered.</p> <p>4. Binational ICS: Minute 323 contains Mexico’s commitment to a Water Scarcity Plan that requires Mexico to store additional water in the United States as Lake Mead elevations drop. With approval and implementation of the DCP, Mexico will join Arizona, California and Nevada in required storage contributions designed to mitigate the impacts of ongoing drought and slow the decline of Lake Mead water levels.</p>
Future Resources	
<p>Future resources are resources expected to be available to the SNWA at some point during the planning horizon. In some instances, water resources are quantified subject to water right permitting, while the availability and development of others require further research, analysis and agreement.</p>	
Colorado River Transfers/Exchanges – involves moving water resources from willing sellers to willing buyers.	<p>1. <b>Desalination:</b> The SNWA is engaged with other Colorado River Basin states and water users, the U.S. Bureau of Reclamation and Mexico to actively explore and investigate potential seawater and brackish water desalination projects in the state of California and the country of Mexico.</p> <p>2. <b>Colorado River Partnerships:</b> e.g., full-scale regional recycled water program by the Metropolitan Water District of Southern California (MWD)</p>
Colorado River Augmentation	The SNWA was permitted 113,000 AFY of Virgin River water rights in 1994. Under an agreement, the SNWA transferred 5,000 AFY to the Virgin Valley Water District. In accordance with the 2007 Seven States’ Agreement, the SNWA has agreed to suspend development of these Virgin River surface water rights in exchange for agreement with the other Colorado River Basin States to cooperatively pursue the development of 75,000 AFY of permanent water supplies to augment the Colorado River for Nevada.
In State Groundwater	<p>The SNWA has permits and applications in southern and eastern Nevada based on applications filed by the LVVWD in 1989:</p> <ol style="list-style-type: none"> <li>Garnet and Hidden Valleys: 2,200 AFY</li> <li>Three Lakes Valley and Tikaboo Valley: 10,605 AFY</li> </ol>

# Appendix

## Appendix A: SNWA Water Resource Portfolio – 2021 Water Resource Plan (continued), SNWA

Water Conservation	
<p>Water conservation is a resource. However, unlike typical “wet” resources, which are acquired and conveyed to meet demands, conservation reduces current and future demands and extends available supplies.</p>	
Prohibit New Golf Course Development	In some jurisdictions, new courses are currently limited to 45 acres per 18-hole course, plus 5 acres for a driving range.
Reduce Golf Course Water Budgets	Golf courses are subject to mandatory water budgets that allow 6.3 acre-feet of water annually per irrigated acre. Future efforts to reduce existing golf course water budgets to 4.0 acre-feet of water per irrigated acre annually may include changes to service rules, codes and ordinances.
Convert Cool Season Turf	Limiting future installations of cool-season turf and expediting the conversions to warm-season turf at existing public facilities will help reduce consumptive use associated with turf irrigation while preserving functional turf in recreational spaces.
Implement Large Water User Policy	The SNWA continues to work with its member agencies to establish an efficiency review policy and process for new large water users that encourages efficient development and disincentivizes consumptive uses. In concept, the policy targets the top 2 percent of water users and encourages them to take actions that will reduce consumptive water use by 10 percent per year over initial planned usage.
Implement AB356 (Non-functional Turf Removal)	The Nevada Legislature passed AB356 in 2021, restricting the use of Colorado River water to irrigate non-functional turf in non-single family residential applications by the end of 2026. The new law targets turf found in streetscapes, medians, parking lots, traffic circles and other areas not used for recreation and play. There are approximately 5,000 acres of non-functional turf in the SNWA member agency service area. The legislation targets approximately 3,900 acres for removal.
Implement Pool Development Standards	Some private pools exceed 3,000 square feet and evaporate more than 145,000 gallons of water per year. Future efforts to limit the allowable pool size in new development may include changes to service rules, codes and ordinances. This measure will help reduce consumptive water use associated with evaporative water loss, targeting savings from the top 25 percent of new pools constructed.
Enhance Leak Resolution	As recommended by IRPAC 2020, SNWA member agencies, including the Las Vegas Valley Water District, City of Henderson and City of North Las Vegas, are working to deploy advanced metering infrastructure (AMI). This technology will significantly enhance the ability of local water providers to notify their customers of suspected leaks for faster leak resolution.
Implement Park Efficiency Improvements	<p>The SNWA offers incentives to public parks to convert cool-season turf, install sewer-connected splash pads and develop alternate amenities (such as basketball courts, tennis courts and other turfless play areas). As recommended by IRPAC 2020, the SNWA is evaluating changes necessary to reduce current and future consumptive water losses associated with evaporative cooling technology. Near-term efforts include research and pilot projects to inform best management practices, incentive programs and other policy changes.</p> <p>Near-term efforts include code changes that require high efficiency systems for new development. Future code changes may require property owners to replace evaporative cooling systems with water efficient models when existing equipment reaches the end of its useful life.</p>
Implement Cooling Efficiency Standards	<p>As recommended by IRPAC 2020, the SNWA is evaluating changes necessary to reduce current and future consumptive water losses associated with evaporative cooling technology. Near-term efforts include research and pilot projects to inform best management practices, incentive programs and other policy changes.</p> <p>Near-term efforts include code changes that require high efficiency systems for new development. Future code changes may require property owners to replace evaporative cooling systems with water efficient models when existing equipment reaches the end of its useful life.</p>
Enhance Landscape Watering Compliance	The SNWA maintains an active information and outreach campaign to promote landscape watering compliance, and SNWA’s member agencies conduct water waste enforcement.
Make Asset Management Investments	The SNWA and its member agencies implement several strategies to minimize water loss within their water distribution systems, but ongoing investment will be required as systems age.
Limit New Turf Installations	While rules vary slightly by jurisdiction, turf is also prohibited in multifamily and non-residential developments, except for parks and other community-use recreational turf areas (upon approval). Near-term efforts include changes to service rules, codes and ordinances that restrict turf installations in all new development except for parks and schools.
Implement Pricing Changes	Actions under consideration by some agencies include implementation of seasonal rates, excessive use surcharges, new tiers and tier compression.
Optimize Return-Flow Credit	The SNWA developed a Septic Conversion Pilot Program in 2021 that offers grant funding for septic users to abandon their septic systems and connect to the municipal wastewater system.

# Appendix

## Appendix B: Primary Water-Related Public Disclosures

### MGM Resorts Social Impact & Sustainability Metrics

Indicator	Metric	2019	2020	2021
MGM Metric	Utility water withdrawal (global), thousand gallons	4,667,626	3,338,461	4,013,694
MGM Metric	Well water withdrawal (U.S.), thousand gallons	423,101	407,333	449,944
MGM Metric	Water withdrawal, combined utility and well water (global), thousand gallons	5,090,727	3,745,794	4,463,639
MGM Metric	Water withdrawal intensity (global), gallons per square foot	53.2	40.4	48.1
MGM Metric	Water withdrawal per square foot change from 2007 baseline (global), %	-30.3%	-47.1%	-37.0%

### Sustainability Accounting Standards Board (SASB): Hotels & Lodging Standard – Water Management

Indicator	Metric	2019	2020	2021
SV-HL-140a.1(1)	Total water withdrawn (enterprise total), thousand cubic meters	19,270	14,179	16,897
SV-HL-140a.1(1)	Total water withdrawn (hotel allocation), thousand cubic meters	5,236	3,763	4,484
Supplementary Metric	MGM Las Vegas Strip resorts water withdrawn, thousand cubic meters	13,395	9,388	13,651
Supplementary Metric	MGM Las Vegas Strip resorts estimated water consumed, thousand cubic meters	3,159	2,214	3,219
SV-HL-140a.1(2)	Water withdrawn in regions with High or Extremely High Baseline Water Stress, % of total water withdrawn	0.0%	0.0%	0.0%
SV-HL-140a.1(2)	Water consumed in regions with High or Extremely High Baseline Water Stress, % of total water consumed	0.0%	0.0%	0.0%

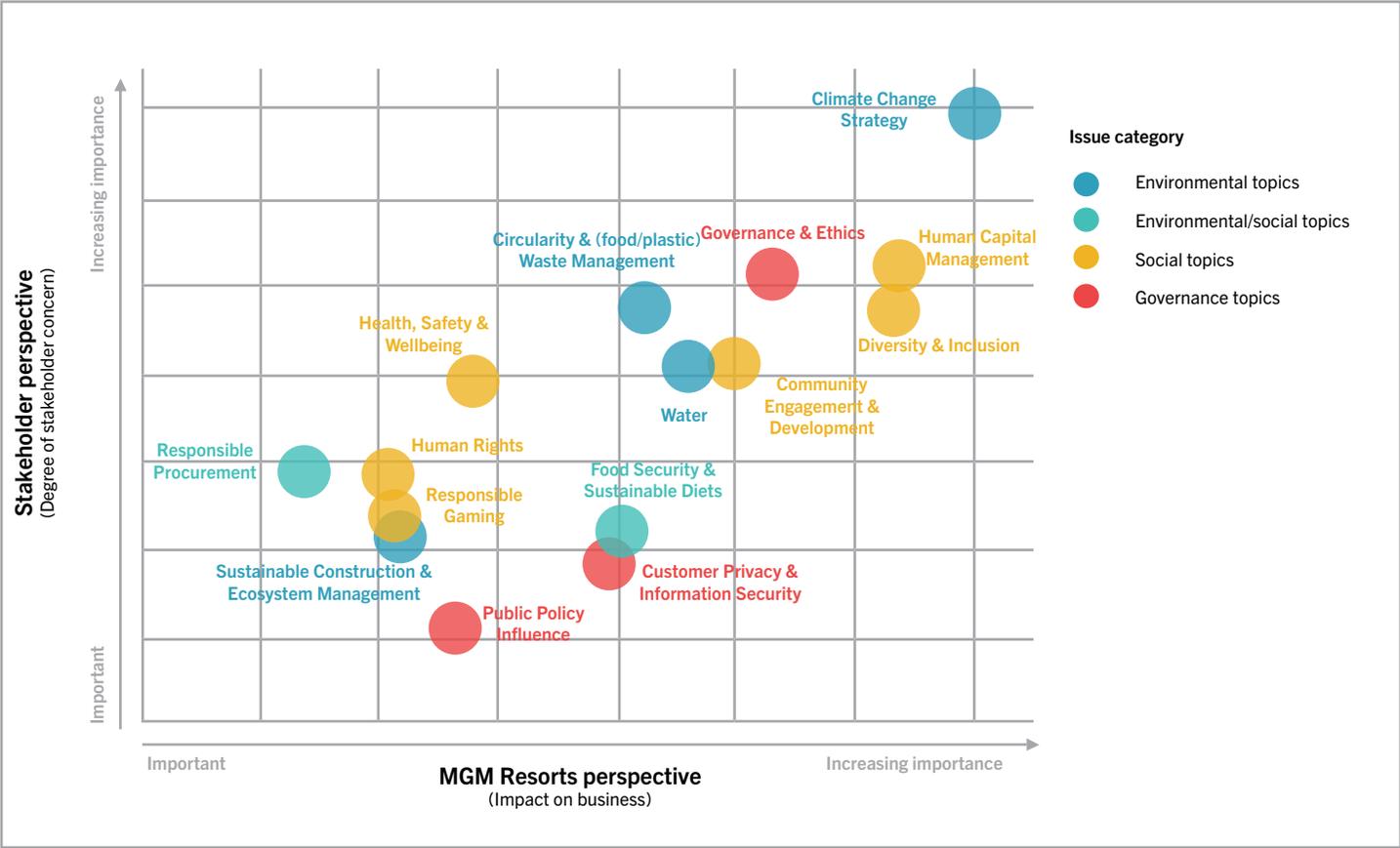
### CDP Water Security

Indicator	Metric	2019	2020	2021
W1.2b	Total withdrawals, megaliters	19,270	14,179	16,897
W1.2b	Total discharges, megaliters	N/A	N/A	12,072
W1.2b	Total consumption, megaliters	N/A	2,022	4,825
W1.2h	Total groundwater – renewable, megaliters	1,602	1,542	1,703
W1.2h	Total withdrawals from third party sources, megaliters	17,669	12,637	15,193
W1.2i	Total discharges to third party sources, megaliters	N/A	N/A	12,072



# Appendix

Appendix C: MGM Resorts Materiality Assessment (Completed in 2020)

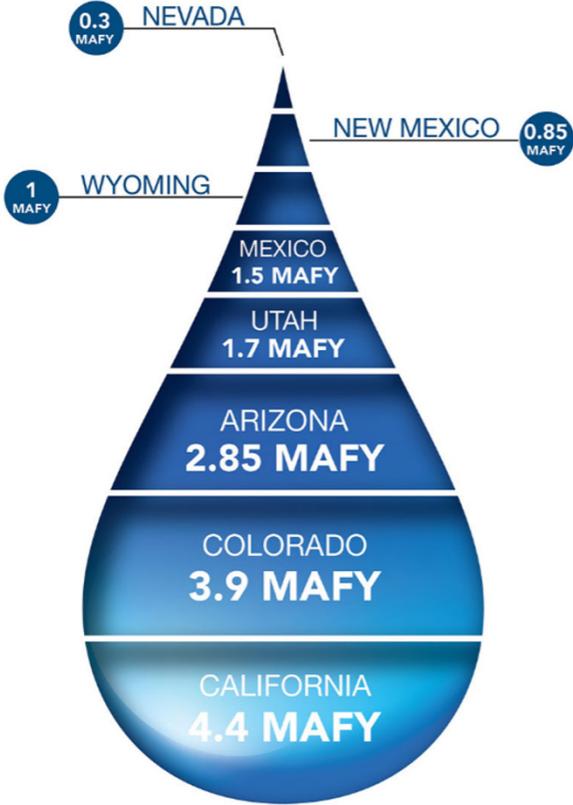




# Appendix

Appendix D: Colorado River Apportionment (Southern Nevada Water Authority, 2021)

## WHERE THE WATER GOES: Who Shares the Colorado River?



MAFY = million acre-feet per year





# Appendix

## Appendix E: References & Sources

- Adadollahi, M., Bastani, D., & Musavi, S.A. (2017). Enhancement of surface properties and performance of reverse osmosis membranes after surface modification: A review. *Desalination*. 420(15). p.330-383
- Arizona Department of Water Resources (“ADWR”). 2021. Arizona Drought Preparedness Annual Report 2021. Retrieved from [https://new.azwater.gov/sites/default/files/media/ADPAR\\_2021.pdf](https://new.azwater.gov/sites/default/files/media/ADPAR_2021.pdf)
- Boucher, E. (2022). What does the Inflation Reduction Act mean for rivers. *American Rivers*. Retrieved from <https://www.americanrivers.org/2022/08/inflation-reduction-blog/>
- Bureau of Reclamation. (n.d.). Lower Colorado River Water Delivery Contracts. Bureau of Reclamation. Retrieved from <https://www.usbr.gov/lc/region/g4000/contracts/entitlements.html>
- CDP. (2021). A Wave of Change: The role of companies in building a water-secure world. CDP. Retrieved from [https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/577/original/CDP\\_Water\\_analysis\\_report\\_2020.pdf?1614687090](https://cdn.cdp.net/cdp-production/cms/reports/documents/000/005/577/original/CDP_Water_analysis_report_2020.pdf?1614687090)
- CDP. (2021). MGM Resorts International – Climate Change 2021. CDP. <https://www.cdp.net/en/responses/11876>
- Ceres Feeding Ourselves Thirsty. (2021). Tracking Food Company Progress Toward a Water-Smart Future. Ceres. <https://www.ceres.org/user/login?destination=/resources/reports/feeding-ourselves-thirsty>
- Change The Course. (n.d.). Our Story. Change The Course. <https://www.changethecourse.us/about/>
- City of Las Vegas. (2022). Lake Mead Water Shortage. City of Las Vegas. <https://www.lasvegasnevada.gov/News/Blog/Detail/lake-mead-water-shortage>
- City of North Las Vegas. (2022). North Las Vegas Municipal Code. City of North Las Vegas. Retrieved from [https://library.municode.com/nv/north\\_las\\_vegas/codes/code\\_of\\_ordinances?nodeId=NORTH\\_LAS\\_VEGAS\\_NEVADAMUCO](https://library.municode.com/nv/north_las_vegas/codes/code_of_ordinances?nodeId=NORTH_LAS_VEGAS_NEVADAMUCO)
- DNR (Colorado Department of Natural Resources). 2022. 2023 Draft Colorado Water Plan. <https://dnrweblink.state.co.us/CWCB/0/edoc/217373/ColoradoWaterPlanPublicReviewDraft.pdf>
- Earth Observatory. (2022). Lake Mead Keeps Dropping. NASA. Retrieved from <https://earthobservatory.nasa.gov/images/150111/lake-mead-keeps-dropping>
- H.R.5376 - 117th Congress (2021-2022): Inflation Reduction Act of 2022. (2022, August 16). <https://www.congress.gov/117/bills/hr5376/BILLS-117hr5376enr.pdf>
- Laidlaw, J. & Lord, R. (2021). Flooding Isn't the Only Water-Related Climate Risk Facing New York City. S&P Global. <https://www.spglobal.com/esg/insights/flooding-isn-t-the-only-water-related-climate-risk-facing-new-york-city>
- MGM Resorts International. (2022). 2021 Annual Report. MGM Resorts International. [https://s22.q4cdn.com/513010314/files/doc\\_financials/2021/Annual-Report.pdf](https://s22.q4cdn.com/513010314/files/doc_financials/2021/Annual-Report.pdf)



# Appendix

## Appendix E: References & Sources (continued)

My Green Butler. (n.d.). What we do. My Green Butler.

<https://mygreenbutler.com/what-we-do/>

NWSE (New Mexico Office of the State Engineer) and NMWRI (New Mexico Water Resources Research Institute). New Mexico Drought Plan: 2018. Retrieved from [https://api.realfile.rtsclients.com/PublicFiles/5f809ddfc9864dad89f9d03375144a14/e4330c9e-dc1b-4177-9f86-2d5135ec050f/NMDP\\_2018\\_01092019\\_Final.pdf](https://api.realfile.rtsclients.com/PublicFiles/5f809ddfc9864dad89f9d03375144a14/e4330c9e-dc1b-4177-9f86-2d5135ec050f/NMDP_2018_01092019_Final.pdf)

Proulx, M. (2021). A Brand's Values Must Withstand The Pressure Of Politics. Forrester.

Retrieved from <https://www.forrester.com/blogs/a-brands-values-must-withstand-the-pressure-of-politics/>

S&P Global Trucost. (2022). MGM Climate Risk and Opportunity Assessment. S&P Global.

Southern Nevada Water Authority. (n.d.). Responding to Drought. Southern Nevada Water Authority.

<https://www.snwa.com/water-resources/responding-to-drought/index.html>

Southern Nevada Water Authority. (2021). 2021 Water Resource Plan. Southern Nevada Water Authority.

<https://www.snwa.com/assets/pdf/water-resource-plan-printable-2021.pdf>

Stern, C.V. & Sheikh, P.A. (2022). Management of the Colorado River: Water Allocations, Drought, and the Federal Role. Congressional Research Service.

Retrieved from <https://crsreports.congress.gov/product/pdf/R/R45546>

Southern Nevada Water Authority. (n.d.). Mission. Southern Nevada Water Authority.

<https://www.snwa.com/about/mission/index.html>

Southern Nevada Water Authority. (2021). SNWA Water Resource Portfolio. Southern Nevada Water Authority.

<https://www.snwa.com/assets/pdf/water-resource-plan-chapter-3-2021.pdf>

State of California. (2022). California's Water Supply Strategy: Adapting to a Hotter, Drier Future. Retrieved from

<https://www.gov.ca.gov/2022/08/11/governor-newsom-announces-water-strategy-for-a-hotter-drier-california/>

UN Global Compact. CEO Water Mandate – Six Commitment Areas. UN Global Compact.

<https://ceowatermandate.org/about/six-commitment-areas/>

UN Global Compact. Water Resilience Coalition – Pledging for Impact at Scale. UN Global Compact.

<https://ceowatermandate.org/resilience/sign-the-pledge/>

Upper Colorado River Commission. (2022). Upper Division States 5 Point Plan for Additional Actions to Protect Colorado Storage Project Initial Units.

Retrieved from <http://www.ucrcommission.com/wp-content/uploads/2022/07/2022-July-18-Letter-to-Reclamation.pdf>

U.S. Department of the Interior. (2022). President Biden's Bipartisan Infrastructure Law to Help Communities Reduce Vulnerability to Drought. U.S. Department of the Interior Press Releases.

Retrieved from <https://www.doi.gov/pressreleases/president-bidens-bipartisan-infrastructure-law-help-communities-reduce-vulnerability>



# Appendix

## Appendix E: References & Sources (continued)

Viala, E. (n.d.). What is Water Security? Global Waters.  
<https://www.globalwaters.org/resources/blogs/swp/what-water-security>

Water Foundry. (2021). MGM Water Withdrawal and Consumption Quantification. Water Foundry.

Wood and Intera. (2020). Drought Management Planning: A Guide for Water Providers. Retrieved from



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