SOUTHERN NEVADA WATER AUTHORITY®

Water Conservation Plan

2014-2018

MAY 2014

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OVERVIEW OF THE SOUTHERN NEVADA WATER AUTHORITY

The Southern Nevada Water Authority (SNWA) was formed in 1991 by a cooperative agreement among seven water and wastewater agencies in Southern Nevada:

- Big Bend Water District
- City of Boulder City
- City of Henderson
- City of Las Vegas
- City of North Las Vegas
- Clark County Water Reclamation District
- Las Vegas Valley Water District

Collectively, these agencies provide water and wastewater services to nearly 2 million Southern Nevada residents and 40 million annual visitors.

As the wholesale water provider to Southern Nevada's municipal water agencies, the SNWA is responsible for managing the region's current and future water resources. This includes managing all water supplies available to Southern Nevada through an approved water budget; managing regional water resources and conservation programs; ensuring regional water quality meets or exceeds state and federal standards; allocating and distributing regional water resources among its member agencies; water-resource planning; presenting a unified position on water issues facing Southern Nevada; and building and operating regional facilities to provide a reliable drinking water delivery system to all member agencies.

Although the SNWA plays a critical role in managing water, it does not have the authority to regulate water use by end users or to establish customer rates. Such policies, codes and regulations are implemented through its member agencies. In terms of regulatory issues, the SNWA's role is to facilitate information sharing and collaboration. This has resulted in the creation of successful community-wide water-efficiency policies, such as permanent mandatory watering restrictions and limitations on lawn installation in new construction. Education, outreach and incentive programs are largely managed by the SNWA through committed involvement from its member agencies, community stakeholders and the public.

THE ROLE OF CONSERVATION IN RESOURCE PLANNING

Water conservation plays a critical role in water resource planning and management efforts; the ability to increase efficient water use and reduce water waste has a direct impact on the amount of resources that will be needed in the future. The more successful a community's conservation achievement becomes, the lower the community's projected demand for water (relative to levels that would have occurred in the absence of conservation).

To support its water planning and management responsibilities, the SNWA developed and maintains a Water Resource Plan. The SNWA Water Resource Plan projects demands and identifies a portfolio of existing and planned water supply options available to meet those demands over time. The plan, first developed in 1996, is reviewed annually and updated as needed. As demonstrated in past revisions, adjustments to the plan are made to account for various uncertainties such as drought, conservation

achievements, resource availability and changes in population and demand projections. The last major update to the Water Resource Plan was in 2009. SNWA is planning the next significant update of the Water Resource Plan following the Integrated Resource Planning Advisory Committee process, which should conclude in late 2014 or early 2015.

The SNWA has worked to develop and manage a flexible portfolio of diverse water resource options. This approach is commonly used in the field of resource planning and is essential in responding to future conditions that may result from drought or other conditions that may limit the availability of resources. The portfolio approach allows the SNWA to assess its overall resource options and make appropriate decisions regarding what resources to bring on-line when necessary. The SNWA Water Resource Plan includes water conservation, reclaimed water, Colorado River water, in-state water resources and groundwater in its portfolio of current and future resources that will be used to meet demands as needed.

Water conservation is a key resource in the SNWA Water Resource Plan, helping lower projected demands and extend the availability of current and future water resources. The plan projects an estimated saving of 276,000 acre-feet of water in 2035 by achieving its current water conservation goal. Gradual savings increases are estimated to occur in following years.

While conservation is an important water management tool, the more aggressive and responsive a community is to the call for conservation, the more difficult it becomes to realize additional conservation gains. This phenomenon of diminishing returns is referred to as "demand hardening." For communities such as Southern Nevada where a majority of the water supply comes from one source, the prospect of demand hardening requires development of additional alternative water supplies regardless of conservation levels achieved.

This concept has become increasingly important in recent years. The Colorado River, which provides approximately 90 percent of Southern Nevada's water supply, continues to experience serious and sustained drought conditions. As a result, Lake Mead's water levels have dropped more than 100 feet since January 2000, and Lake Mead is at less than half of capacity. Mandatory water shortages and critical infrastructure outages are possible should these conditions persist. As a result, the SNWA has aggressively pursued development of non-Colorado River in-state resources, worked with the Colorado River Basin States on management strategies to offset the risk of further surface level declines, and is completing the construction of a new Lake Mead intake to preserve system capacity.

INTEGRATED RESOURCE PLANNING ADVISORY COMMITTEE

An SNWA stakeholder group comprised of nearly two dozen citizens representing a broad spectrum of community interests has been meeting since 2012 to address water resource and funding issues in Southern Nevada. The Integrated Resource Planning Advisory Committee (IRPAC) divided its work into two phases. The IRPAC met 14 times between June 2012 and September 2013 to discuss funding-related matters. The second phase, which began in February 2014, is focusing on the development of recommendations for conservation, water resources, facilities and water quality. The citizens' advisory committee is expected to complete the second phase in late 2014 or early 2015.

When IRPAC completes its work, the committee may provide recommendations to the SNWA Board for conservation programs or goals. Because this Conservation Plan is due in spring 2014, SNWA is updating this plan based on best management practices. The SNWA Board is expected to receive the IRPAC recommendations in early 2015 and may direct staff to implement them at that time.

CONSERVATION ACHIEVEMENTS

The SNWA has developed and implemented one of the most progressive and comprehensive water conservation programs in the nation. Conservation success is measured through the achievement of regional conservation goals. Since adoption of the first goal in 1991, the SNWA has consistently exceeded all adopted conservation goals and subsequently adopted more aggressive targets.

During the mid-1990s, the SNWA purveyor members agreed to follow a series of conservation "best management practices" published by the Bureau of Reclamation. The agreement was an important first step in implementing more consistent conservation measures across the service boundaries of SNWA purveyor member agencies. The agreement was updated in 1999 and a comprehensive five-year Conservation Plan was approved by the SNWA Board of Directors. An update to the Conservation Plan was submitted to and approved by the Bureau of Reclamation in 2004 and again in 2009.

What is GPCD? GPCD is a metric used by some communities to measure water consumption. For the SNWA, it provides a general means of monitoring water-use trends and for tracking conservation progress. A variety of factors influence GPCD including climate, population dynamics, water-use accounting practices and economic conditions. SNWA calculates "gross" GPCD by totaling water diversions, which includes direct and indirect reuse, by its member agencies, adjusting the water use for weather variations, and then dividing the total diversion by the estimated SNWA population served by SNWA's member agencies. That number is then divided by 365 – the number of days in a year.

"Net" GPCD refers only to the portion of water that is consumptively used since direct and indirect reuse allows the water to be used more than once. The concept of consumptive use is a tenet of water law used by both the State of Nevada and U.S. Bureau of Reclamation.

When calculating population, the SNWA does not include the approximately 40 million annual visitors to the region. This visitor load is equivalent to more than 465,000 additional people supported by the water system each day.

Southern Nevada made consistent progress towards its conservation goal throughout the 1990s. However, beginning in 2000, the pace of conservation began to slow. In response, the SNWA and its member agencies launched a conservation strategic planning process in 2001. In 2002, as drought conditions in the Colorado River Basin became more severe, the SNWA member agencies recognized that an immediate and actionable community response was necessary. As a result, the conservation strategic planning effort evolved to address drought conditions and ultimately set the stage for development of the SNWA Drought Plan, which was approved by the SNWA Board of Directors in February 2003 and implemented thereafter by SNWA's member agencies.

Following the implementation of the Drought Plan in 2003, conservation and drought savings rebounded with a 23.1 percent savings for that year. In 2004, Southern Nevada achieved its goal of 25 percent conservation by 2010 originally established in the mid-1990s. This is equivalent to roughly 280 GPCD.

In an effort to maintain and build upon this success, a citizens' advisory committee recommended that the SNWA pursue a strategy to decrease total water demand from 2004 levels to 250 GPCD by 2010 and to 245 GPCD by 2035. The SNWA Board of Directors adopted this goal in 2005.

The following years witnessed extraordinary conservation achievements. Participation in the SNWA's rebate programs realized significant results, including peak participation levels in almost every area. A summary of key SNWA conservation accomplishments is provided in **Appendix A.**

These conservation efforts resulted in a reduction of Southern Nevada's annual water consumption by nearly 29 billion gallons (between 2002 and 2012), despite a population increase of more than 400,000 people during that span. In 2008, the SNWA achieved its 2004 conservation goal of 250 GPCD – two years ahead of schedule. While some of the reductions in water use can be attributed to the economic downturn in recent years, there is no question the community's conservation efforts played a critical role.

These past achievements provide the basis for current efforts. The following sections provide an overview of the SNWA's current conservation goal and a description of how the SNWA will make progress toward this goal during the five-year planning period. A table with discussion and analysis also is provided in **Appendix B.**

The 2014-2018 Conservation Plan will be submitted to the U.S. Bureau of Reclamation in fulfillment of the requirements for Section 210(b) of the Reclamation Reform Act of 1982 and to the State of Nevada Department of Conservation and Natural Resources, Division of Water Resources in fulfillment of the requirements for Nevada Revised Statutes Chapter 540.

CONSERVATION GOALS

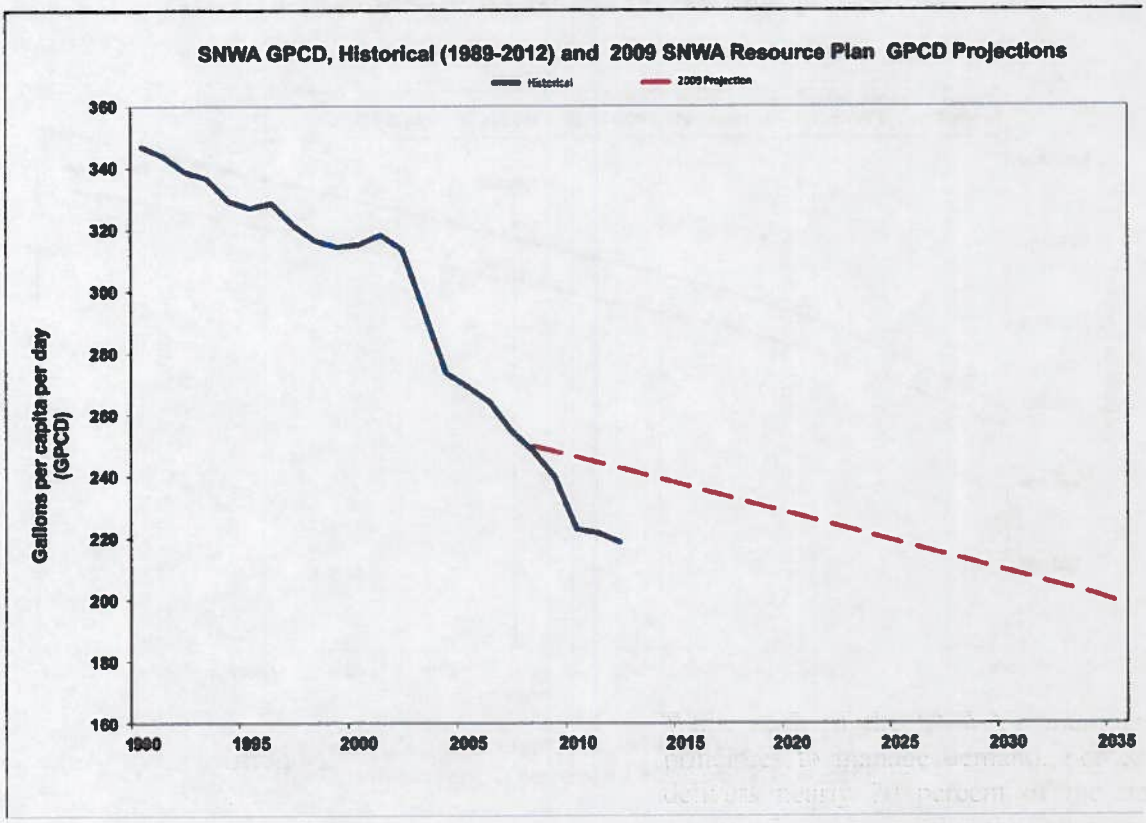
Building upon previous success, the SNWA Board of Directors in 2009 adopted a new conservation goal for the community of 199 GPCD by 2035. **Figure 1** outlines the SNWA's previous conservation achievements (described above) and provides projected achievements through the year 2035.

In 2009, SNWA and its member agencies, recognizing the ongoing drought, adopted permanently the major drought alert demand reduction measures identified in the SNWA's Drought Plan. These include landscape development restrictions limiting most turf installations in new development, watering restrictions, golf course water budgets, and increased fines for water waste. Further contingency plans for assuring reliability of supply are found in Chapter 4 of the 2009 Water Resource Plan.

The Southern Nevada community has been reducing its overall water use faster than originally anticipated in order to meet the 199 GPCD goal. For example, the 2009 SNWA Water Resource Plan projected a community GPCD of 243 in 2012, however the actual GPCD was 219 in that year.

Several factors may have contributed to this rapid reduction in water use, including the impacts of a slow economy, a stabilization in population and participation in SNWA Conservation programs. Southern Nevada has successfully achieved conservation goals in the past, and the SNWA will continue to monitor and track the community's progress in achieving 199 GPCD by 2035.

Figure 1 – Conservation Achievements (1990-2012) and Projections (2008-2035)



The SNWA estimates that more aggressive conservation outreach and education, and continuance of incentive programs, rate setting and regulation will yield these additional GPCD savings. **Figure 2** and **Figure 3** compare the estimated volume of water that would be saved by conservation pre- and post-adoption of the SNWA's current conservation goal. A table with projected annual GPCD reductions for the 2014-2018 planning period is provided in **Appendix C**.

FIGURE 2 – SNWA Water Demands and Conservation
(250 GPCD by 2010 and 245 GPCD by 2035 Conservation Goals)

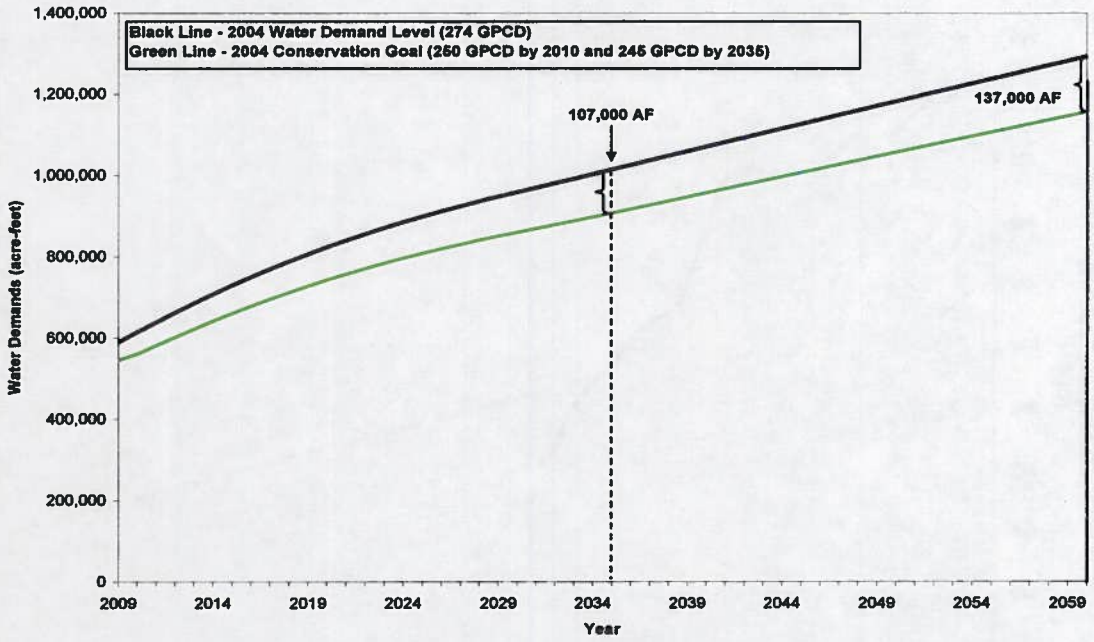
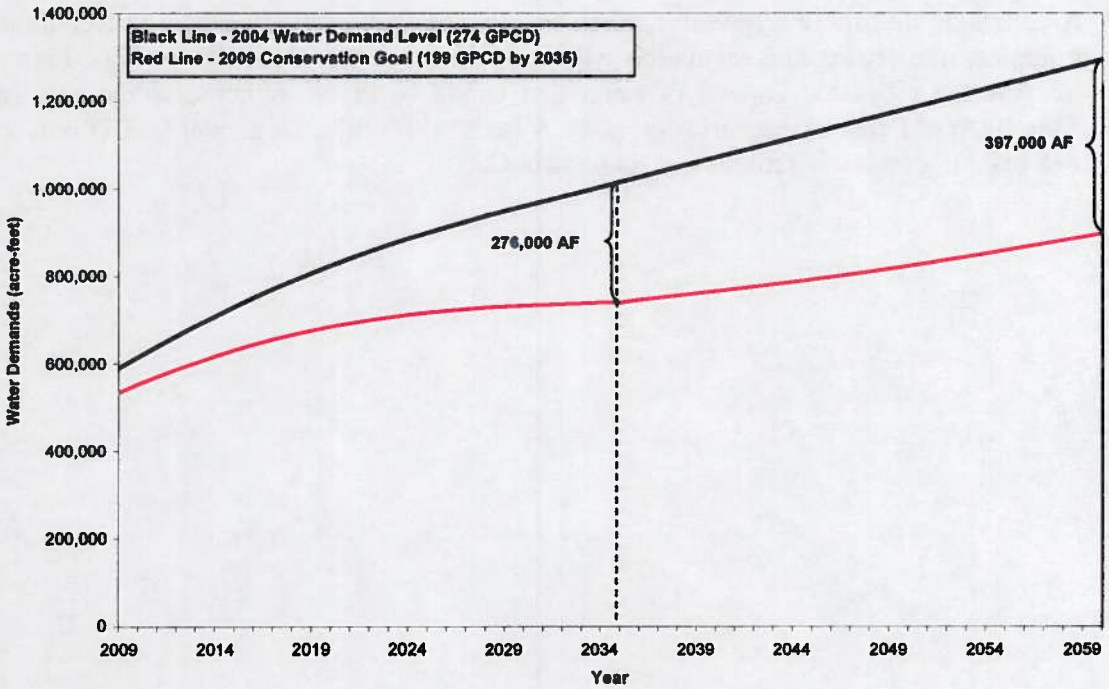


FIGURE 3 – SNWA Water Demands and Conservation
(199 GPCD by 2035 Improved Conservation Goal)

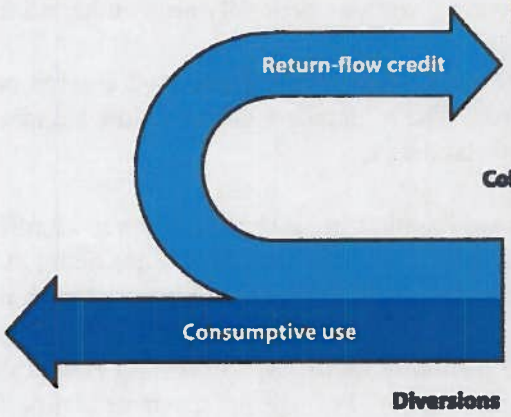


CONSERVATION STRATEGIES

Although the SNWA supports and promotes water conservation both indoors and outdoors, significant effort goes into promoting more efficient water use outdoors. Approximately 60 percent of the water delivered to customers is used consumptively, meaning it can be used just once. Landscape irrigation is collectively the single largest consumptive water use.

In Southern Nevada, nearly all indoor water use that reaches the sanitary sewer is reclaimed. It is either returned to the Colorado River, or delivered to other municipal uses, such as golf course irrigation or power plant use. In accordance with Bureau of Reclamation return-flow credit policy, the SNWA receives credit to withdraw one acre-foot of water from the Colorado River for every acre-foot of Colorado River water that is treated and returned (**Figure 4**). Since this water is already fully reused, additional reuse efforts and indoor conservation measures do not enlarge the SNWA's resource portfolio.

Figure 4 – Return-Flow Credits



Throughout this plan, gross GPCD is expressed as a measure of total diversions, as defined on page 4. Since Southern Nevada directly and indirectly reuses nearly all treated wastewater effluent, the consumptive impact on the Colorado River and groundwater resources is much lower. For example, in 2012 the SNWA's gross demand was approximately 219 gallon per capita per day, but the net consumptive portion was just 129 GPCD.

The SNWA's conservation success is partly dependent upon the water management and business practices of its individual member agencies. There are three key areas related to demand management that are within the purview of the member agencies: metering, managing non-revenue water and tiered water rates. The SNWA and its member agencies will continue to use these base water management practices to sustain previous GPCD reductions and achieve future gains.

Metering – Metering is the foundation of sound demand-management programs. SNWA member agencies fully meter all customer connections for all classes of water in accordance with American Water Works Association standards.

All purveyors operate on-going meter maintenance and replacement programs. Meters are read monthly and data is classified and retrievable on the basis of customer class, meter size, land use and other relevant variables. Purveyors have the ability to identify unusual water use patterns, such as spikes in consumption due to leaks, and to notify customers of unusual account activity. In addition, the three largest purveyors, Las Vegas Valley Water District (LVVWD), City of Henderson and City of North Las Vegas have implemented automated meter reading (AMR) systems. AMR systems eliminate the need for individual manual reads, improve meter-reading efficiency and provide customers with improved billing processes.

Non-Revenue Water – All water delivery systems experience losses. In the water industry, these losses are known as non-revenue water or unaccounted-for-water. Non-revenue water losses are predominantly associated with leaks, variations in meter accuracy and theft. Compared to similar communities in the United States, the SNWA and its member agencies have a low rate of non-revenue water.

The SNWA and its member agencies have a variety of active programs to more effectively account for the total water production. While these ongoing efforts will continue to improve accounting accuracy for and minimize loss of non-revenue water, measurable GPCD savings are not attributed to this management tool. The following programs generally are conducted throughout the region:

- The SNWA's member agencies have created and adopted the Uniform Design and Construction Standards. These detailed construction standards assure that delivery systems meet or exceed industry standards.

- Efforts are ongoing in all service areas to identify older infrastructure deemed susceptible to leaks. For example, most cast iron mains are being systematically replaced, as are polyethylene service connections that do not appear to be meeting longevity expectations.

- Prior to installing facilities, soil testing is conducted to identify potential threats to the distribution system's integrity. For example, where testing indicates that soil chemistry will be destructive to copper piping, plastic sleeves are installed over the service line to prevent corrosion.

- Reservoirs are thoroughly inspected at regular intervals to assure their integrity; special monitoring devices beneath each reservoir detect and report leakage.

- Production meters are regularly maintained and calibrated.

- Customer meters are monitored for consumption anomalies. Small customer meters are subject to a planned replacement program based upon life expectancy and large meters are regularly maintained and calibrated.

- A substantial portion of purveyor distribution lines have permanent listening devices installed that can signal patrolling employees of leaks that fail to surface and assist in accurately determining the leak location for excavation.

- Interagency collaboration speeds leak repairs through fast-tracking line location ("call-before-you-dig") and prompt repair. Records are kept of the estimated system loss for each leak repaired.

Water Rate Setting – All potable water purveyors will continue to use multi-tier increasing block rate structures. These pricing structures provide financial incentive for all water users to implement and participate in conservation measures.

Over the years, local purveyors have implemented major rate restructuring and increases specifically for the purpose of accelerating conservation. This restructuring involved significant price increases in the higher tiers and a compression of tier thresholds. The impact of water rates on GPCD reductions is discussed in "Water Pricing".

CONSERVATION MEASURES

In addition to municipal water management practices discussed in the preceding section, the SNWA and its member agencies will continue to utilize a variety of demand-management measures to promote conservation and reduce overall water use. These include a combination of the following:

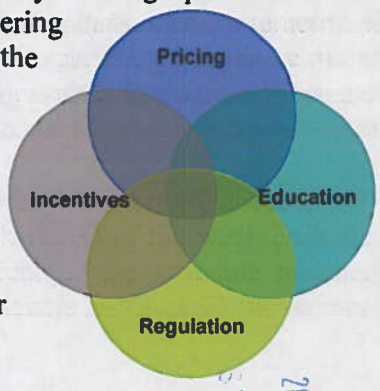
- Water Pricing: tiered-rate structures charge higher rates as water use increases. These rate structures encourage efficiency, while ensuring the affordability of water for essential uses.

- Incentives: incentives are flexible tools that invite the community to participate in the conservation effort. The SNWA has a number of "water smart" programs that are critical to achieving its conservation goals.

- Regulation: city and county governments have adopted a variety of land-use codes and water-use ordinances to promote the efficient use of Southern Nevada's water resources.

- Education: the SNWA's public-education programs are designed to elicit buy-in from the community and help residents understand that responsible water use is a critical part of living in a desert environment.

These measures work in conjunction with one another to promote efficient water use. For example, water pricing (including water rates and water-waste fees) provides a financial signal for customers to reduce water use, which in turn, may lead some customers to improve efficiency. Through passive and active education, customers learn about regulations (such as day-of-week watering restrictions) and incentive programs, which, when acted upon, help the customer save water, and therefore reduce the impact of rates. Ideally, these measures all drive customers to higher levels of efficiency.



The complex and inter-related nature of these conservation measures makes it difficult to attribute specific GPCD reductions to any single measure. A table of the estimated GPCD reduction, and the amount of water estimated to be saved each year over the five-year planning horizon, is included in **Appendix B**.

The following sections detail how the SNWA will utilize each of these conservation measures to achieve its conservation targets throughout the five-year planning horizon.

Water Pricing

Price can be an effective instrument for reducing water demand. Research has consistently shown that water users respond in an inverse manner to changes in the price of water – in general, as the price of water increases, water use decreases. This principle, however, may only hold true for discretionary water use, the portion of a person's water use beyond what is necessary to meet their perceived basic needs.

Economists measure the relationship between pricing and demand as Price Elasticity of Demand (PED). Water PED measures the degree of customer water demand responsiveness due to changes in water rates, holding all other factors constant. Mathematically, PED is the percent change in water demand divided by the percent change in water rates. Water is typically considered relatively inelastic; that is, the response to

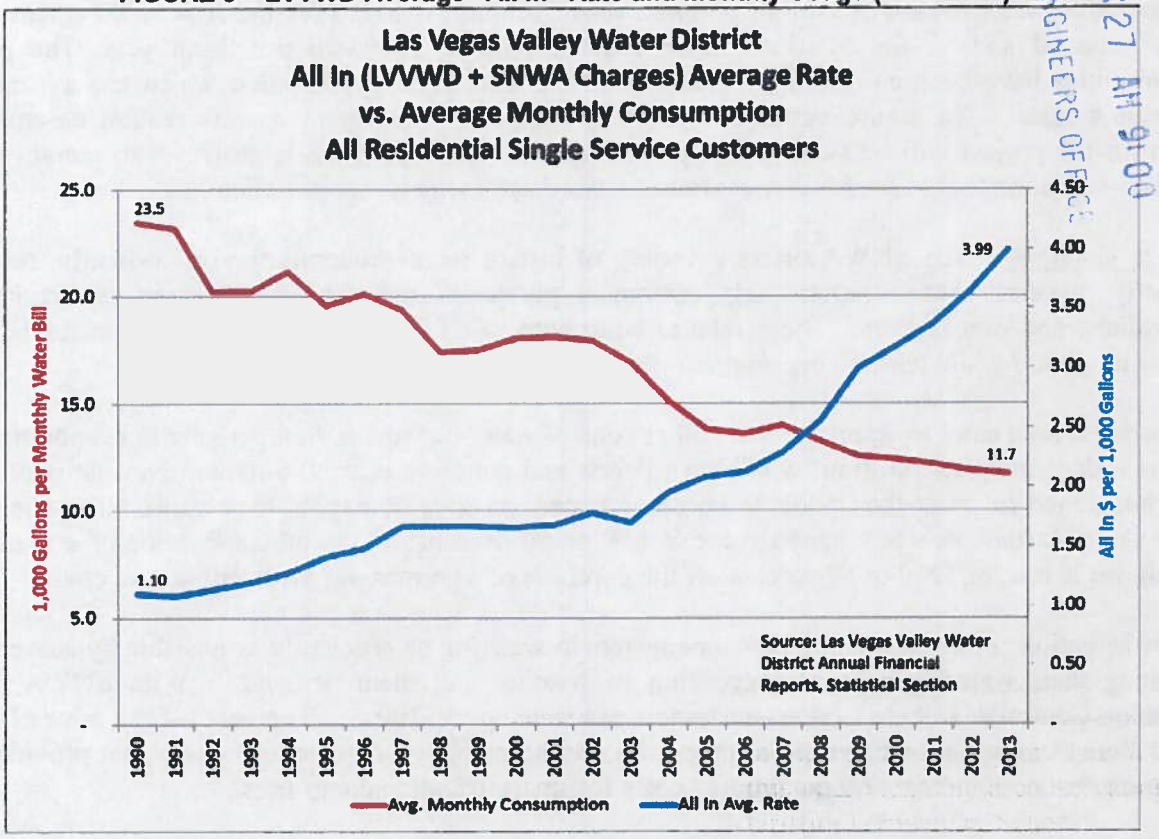
a change in price is less than the degree of the price change. PED can only be estimated in retrospect and can be substantially influenced by economic conditions in the community, including income levels and other factors.

Water users respond to changes in water rates by changing water use practices and implementing available water conservation measures. In the short-run, water users may respond by reducing car washing or their showering time. This short-run response is difficult to quantify and may not be permanent as customer water-use patterns change over time. For the longer term, water users respond to rates by taking advantage of water conservation measures. These measures may include replacing fixtures and appliances with more efficient devices or participating in incentive programs, such as the SNWA's Water Smart Landscapes Rebate Program. In fact, research shows that water bills are a principal reason for customer participation in incentive programs.

A common strategy for managing demand through pricing is the use of increasing block rates. The increasing block rates encourage water conservation by charging water users higher rates for higher volume use. Since 1995, SNWA member agencies have subscribed to a Memorandum of Understanding in which they agree to utilize progressive rate structures to manage demand. All SNWA member agencies currently use increasing block rates to encourage water conservation among high water users, while maintaining overall affordability. In 2005, the SNWA adopted the recommendations of a citizens' advisory committee to promote water rates that sustain and advance conservation achievements by ensuring water rates keep pace with inflation.

While each of the SNWA's member agencies set water rates independently, all utilize similar rate principles to manage demand. For example, the Las Vegas Valley Water District (LVVWD), which delivers nearly 70 percent of the public water supply in Southern Nevada, has a long history of encouraging conservation through water rates. **Figure 5** illustrates that as water pricing increased over the past two decades, water use has declined significantly as a result of conservation and pricing.

FIGURE 5 – LVVWD Average "All In" Rate and Monthly Usage (1990-2013)



The SNWA's conservation goal of 199 GPCD by 2035 is predicated upon continued performance in all conservation measures. Because SNWA and its member agencies operate some of the most aggressive regulatory, education and incentive programs in the nation, these programs may approach their practical limitations over the planning period. Rates, on the other hand, have long-term potential to continue to influence demand as needed. As such, SNWA member agencies recognize the influence of pricing on water demands and will consider conservation when adjusting rates to a level necessary to meet its conservation goal.

While rates are an important conservation measure, public water agencies also have an obligation to the well-being and vitality of the communities they serve, thus pricing must be appropriate and balance the need for conservation and the community's economic health.

Incentives

The SNWA recognizes that long-range demand management requires not only implementing progressive conservation strategies for new customers (such as landscape codes for new development), but also creating incentives for existing customers to improve water efficiency. The SNWA is nationally-renowned for its customer-incentive programs. The following incentives will continue to play a significant role over the next five years in helping the community meet its water conservation goal.

Water Smart Landscapes Rebate Program – The Water Smart Landscapes (WSL) Program offers financial incentives to residents who replace water-thirsty lawn with water-efficient landscaping. Since the majority

of Southern Nevada's water is used outdoors on landscaping, the WSL program targets the largest consumptive water uses. The current program rebate amount is $1.50 for the first 5,000 square feet of lawn removed and $1 for additional lawn removed, up to $300,000 per fiscal year. The program opportunities have been enhanced by grants from the Bureau of Reclamation which has expanded the program's reach. To assure sustained results, participants must grant a conservation easement that promises the project will be sustained in perpetuity. The WSL program is projected to remain a major demand-reduction tool as the SNWA continues toward achieving its conservation goal.

Rebate Coupons – The SNWA offers a variety of instant rebate coupons for single-family, residential property owners. These coupons help customers purchase swimming pool covers, smart irrigation controllers, and rain sensors. These rebates contribute to GPCD reductions and offer customers' easy access to rebates while minimizing program management costs to SNWA.

An exposed pool can lose approximately 50 gallons of water per square foot per year to evaporation. Pool covers reduce evaporation, limit windblown debris and conserve energy. Southern Nevada pool owners are encouraged to cover their pools to conserve water and save money on their water bills. The SNWA Pool Cover Instant Rebate Coupon value is $50 or 50 percent off the purchase price of a pool cover, whichever is less, or $200 or 50 percent off the purchase of a permanent, mechanical pool cover.

Smart irrigation controllers can assist homeowners in watering as efficiently as possible by automatically adjusting their watering schedule according to weather and plant demands. With SNWA's Smart Irrigation Controller Rebate Coupon customers can save up to $200 or 50 percent off the price of a smart controller. An option for commercial properties and homeowners associations exists that provides up to $40 per valve or 50 percent off the product costs for smart irrigation controllers.

Rain sensors shut down irrigation systems during and after rain. The Rain Sensor Rebate Coupon provides up to $25 or 50 percent off the purchase price of a rain sensor.

Water Efficient Technologies – The Water Efficient Technologies (WET) Program offers financial incentives to commercial and multi-family property owners who install water-efficient devices that save at least 250,000 gallons annually. The SNWA offers a menu of pre-approved water-saving technologies with predictable savings and a defined monetary incentive, including high-efficiency toilets, showerheads, and urinals; converting a grass sports field to an artificial surface; converting from old water cooled ice machines to air-cooled machines; and retrofitting standard cooling towers with high-efficiency drift elimination technologies. Additionally, businesses can work directly with the SNWA to implement a custom technology that meets their needs. Currently, the SNWA offers a rebate of up to $8 per 1,000 gallons conserved annually for reducing nonconsumptive-use water or $25 per 1,000 gallons conserved annually for reducing consumptive-use water through technology improvements.

Single-family Indoor Retrofit – SNWA provides free retrofit kits to service area homes that include a premium high-efficiency showerhead, aerators, a fixture flow tester, and toilet leak detection tablets. Retrofit items are WaterSense labeled and exceed applicable efficiency codes and standards.

Regulation

The SNWA works collaboratively with its member agencies to develop and implement regulations that promote water conservation.

Development Codes and Policies – Member agencies adopted landscape and plumbing codes in the mid-1990s to limit water use. Under the 2003 Drought Plan, all agencies adopted more stringent policies for landscape watering, vehicle washing, lawn installation, mist systems and golf course water budgets during declared drought. In 2009, based on input from a citizens' advisory committee, SNWA and member agencies permanently adopted these drought restrictions as a way to help meet long-term resource needs for the community. These policies and previously adopted development codes, which are among the most stringent in the United States, include:

- Landscape watering: watering groups are mandatory and limit watering to one day a week in winter, three days a week in spring and fall, and prohibit watering from 11 a.m. to 7 p.m. from May through September.
- Vehicle washing: a positive shutoff nozzle is required for residential vehicle washing. Commercial vehicle washing is prohibited unless water is captured to the sanitary sewer where that water can be treated and reused.
- Lawn installation: turf installation is generally prohibited in new residential front yards and is limited to a maximum of 50 percent the landscape area in backyards. The use of turf is prohibited in non-residential development.
- Mist systems: commercial use of mist systems is limited from May through August from 12 p.m. to 12 a.m.
- Golf course water budgets: golf courses are subject to mandatory water budgets (6.3 acre feet of water per year per irrigated acre).
- Fountains and ornamental water features: the development and use of water features is restricted in all jurisdictions.
- Water waste: ordinances and service rules prohibit water waste (allowing water to leave the property or violating watering schedules). Fees double with subsequent violations.
- Plumbing fixtures: each new, remodel or replacement of plumbing fixtures in residential or commercial buildings incorporate standards for plumbing fixtures, including water-use standards for toilets, faucets, showerheads and urinals.

Education

In addition to extensive conservation and incentive programs, the SNWA continues to maintain an education and public outreach campaign to assist residents and businesses with conservation efforts. Currently, the campaign utilizes a variety of media to educate customers on the need for conservation, to provide practical tips on how to conserve, and to put customers in touch with SNWA experts who can help them reduce water use at their properties. The efforts include advertising, community events, publications, an interactive website, public-private partnerships, and demonstration gardens to inspire water-efficient landscape designs. Education is an ongoing initiative for the SNWA that will contribute to GPCD reductions during the five-year planning period.

The SNWA believes education and outreach help drive the community towards its incentive programs where specific reductions are measurable. Without education and promotion, these programs are not likely to have realized the level of conservation gains achieved to date or that are projected in future years.

The following section describes education and public outreach initiatives employed by the SNWA. While actual products and services may vary among member agencies, the SNWA expects to continue to provide this type and level of service throughout the five-year planning horizon.

Demonstration Gardens – Through the combined efforts of the SNWA and its member agencies, there is a demonstration garden in every part of the valley. The SNWA also promotes visits to the Springs Preserve, a 180-acre facility that offers hundreds of examples of water-efficient landscaping, as well as classes by master gardeners and horticulturists. Advice from the Springs Preserve staff is available seven days a week. Free tours also are available for area students.

The SNWA supports development of smaller demonstration projects throughout the Las Vegas Valley to show the public that water-smart landscaping is attractive and the most water-efficient choice for Southern Nevada. Currently, schools may apply for SNWA conservation grants of up to $5,000 annually to develop demonstration projects for their own campuses. Grants also are available for conservation-related curriculum programs or other approved activities.

Public Outreach – The SNWA employs a variety of community outreach efforts to educate customers on the need for conservation and about available programs and services. Customers may easily access this information through the Conservation Helpline, a phone center that connects customers to rebate and conservation program information and provides free landscape publications, landscape watering schedules, and a place to report water waste. The same information is available online at **snwa.com**. The SNWA's website includes interactive features such as the online watering schedule application that allows customers to enter their address and receive the landscape watering schedule based on their assigned watering days. Other interactive features include online rebate program applications, water-smart landscape photo galleries, a database of drought tolerant plants, and multimedia demonstrations for setting irrigation clocks and finding and fixing leaks. In addition, the SNWA produces a variety of outreach materials to educate consumers. These include:

- Landscape Watering Schedule: This schedule explains mandatory watering restrictions, illustrates which day(s) of the week each watering group may water, and offers practical tips for irrigating efficiently. The schedule has been included with customer water bills, published in SNWA newsletters and is available on member agency websites.

- Water Smart Living: This tri-annual publication is mailed to more than 700,000 single- and multi-family homes in Southern Nevada. It includes drought updates, information on conservation programs and incentives, and tips for landscape care and using water more efficiently outdoors.

- Sample Landscape Designs: The SNWA teamed with the American Society of Landscape Architects to produce six sample landscape designs. The designs include a variety of water-efficient plants to help homeowners convert their existing landscape or to install the right landscape from the start. The designs are available on snwa.com.

- Water Smart Calendar: This annual publication enables the SNWA to provide information on water-smart plants and conservation tips, and keeps that information in front of customers year-round. The twelve-month calendar is available free of charge in all customer service lobbies of SNWA member agencies and includes landscape watering restrictions and water-smart landscape inspiration.

- Water Ways: This monthly television program airs on local government cable channels and includes segments focusing on water conservation. The program airs daily.

- Videos and Multimedia: Instructional videos are available free of charge to customers, and snwa.com features how-to multimedia demonstrations to help people learn how to find and fix leaks, convert grass to a water-efficient landscape and set their irrigation clocks.

- Interactive Website: The award-winning snwa.com features a wealth of information, videos, multimedia demonstrations, other features to help Southern Nevadans save water. Customers can find their watering group by typing in their address, submit a water waste report, sign up for rebate programs, print coupons, and calculate water savings by converting from grass to a water-smart landscape. The website also includes a database of nearly 1,000 drought tolerant plants with photos and information to help water users plan landscape upgrades and installations.

- Social Media: Through Facebook and Twitter, SNWA is engaging with customers on a daily basis with conservation tips, weather-related landscaping information and how-to photos and videos.

The SNWA also participates in a variety of community events to educate customers on conservation issues, and SNWA and member agency representatives provide valuable landscape and irrigation expertise through classes taught at several venues in Southern Nevada.

Advertising Campaigns – A long-term commitment to water conservation includes an aggressive advertising campaign utilizing television, radio and print advertisements to reach target audiences. Community advertising campaigns challenge homeowners, businesses and community associations to take conservation to the next level by taking control of their irrigation clocks and replacing more grass with water-smart landscaping.

The SNWA also created a bicultural campaign, which includes television, radio, and print ads designed specifically for the Spanish-speaking audience. This allows the SNWA to effectively communicate the need for conservation as well as inform residents of the rebate programs available to them.

Youth Education Programs – The valley's youth play an important role in SNWA outreach efforts and the SNWA is committed to educating the next generation on the importance of water resources and conservation. The SNWA has partnered with the Springs Preserve to develop a comprehensive education program known as H2O University for teachers in the Clark County School District with lessons and activities available online at H2OU.org. One innovative component of the program is the Youth Advisory Council, which allows select high-school students to pursue an interest in water-related issues and further develop leadership skills. Previous Youth Advisory Council projects include planting a demonstration garden at a local elementary school, helping to restore wetlands in the Las Vegas Wash and creating the first water-smart home with a local homebuilder.

In addition, the SNWA offers the Water Education Institute, a continuing education program for teachers. Elementary and secondary teachers attend 15 hours of training and earn a Professional Development Education credit. The Water Education Institute workshop includes field trips and takeaway lesson plans. More than 600 teachers have participated in the program.

Local and National Partnerships – The SNWA partners with the local private sector to promote conservation efforts, and it has teamed with the Environmental Protection Agency and other forward-thinking organizations to implement the annual WaterSmart Innovations Conference.

The SNWA hosts the annual WaterSmart Innovations Conference and Exposition held in Las Vegas each year. It is the largest urban-water efficiency conference in the world. Since inception in 2008, approximately 6,400 attendees from 45 states and 27 foreign nations have participated in the conference, which provides entrepreneurs with connections to some of the most innovative water agencies and market partners in the world. Each year, new water-efficient technologies are introduced at the conference and research results are shared with the conservation community.

Local partnerships include:

- Water Conservation Coalition (WCC): Established in 1995, the WCC is a group of local business and community leaders who help promote water-efficient practices in the Southern Nevada business community. WCC members speak to professional and civic organizations to explain the benefits of increased water-efficient practices, encourage other businesses within their industries to participate in SNWA incentive programs and identify water conservation projects within the community to organize and sponsor. In 2012, the WCC partnered with the Southern Nevada Regional Housing Authority to help low-income residents revitalize their neighborhoods with water-efficient landscapes. The WCC Safe Village project converted approximately 230,000 square feet of grass to desert landscaping, providing an estimated water savings of more than 12 million gallons per year. The WCC has participated in several large community projects such as this one, including a conservation upgrade project for the Boys Town Nevada campus and E.W. Griffith Elementary School.

- Water Upon Request: The Nevada Restaurant Association, WCC and SNWA partner with local restaurants, which agree to serve water only when patrons request it. This program saves participating restaurants water, time and money by eliminating unconsumed glasses of water. For every glass of water not served, as much as 1.5 to more than 3 gallons of water is saved. There are currently more than 250 restaurants participating in the program.

- Water Smart Contractor: The key to preventing many water waste problems is efficient landscape design. The SNWA provides a course in water-efficient landscape and irrigation design and installation for licensed landscape contractors. Contractors who complete the course and pass an exam become authorized as Water Smart Contractors. Classes are offered in both English and Spanish. More than 75 companies providing local service are participating in the program.

- Water Smart Home: The SNWA has partnered with the Southern Nevada Home Builders Association to develop a program that certifies new homes as water smart. Based on research conducted, these homes save over 90,000 gallons annually versus traditional residential development. This is the nation's largest program for water efficiency in new homes, with more than 10,000 water smart homes constructed so far.

  In addition, the SNWA consistently engages with the Environmental Projection Agency (EPA) in developing new national standards for WaterSense, a partnership program that provides information on products to save water and protect the environment. The SNWA's Water Smart Home program is the principal model for the WaterSense New Homes Program. In 2006, the

SNWA was the first water agency to receive the EPA's Water Efficiency Leadership Award for its comprehensive suite of progressive water efficiency programs.

- Water Smart Car Wash: This program encourages residents to use commercial car wash facilities instead of washing their vehicles at home by offering residents instant coupons on snwa.com for dozens of valley car washes. Water Smart Car Washes recover all of their wastewater for treatment and reuse. Water used at these facilities is either reused on site, or treated and returned to Lake Mead for return-flow credits.

- Linen Exchange: Nearly two dozen resorts and other leading properties participate in this voluntary program through which linens are changed only on the third day of a guest's stay, unless otherwise requested. The average savings is about 50 gallons per room each day.

RESEARCH

In addition to existing demand-management tools, ongoing research enables the SNWA to make informed decisions regarding water policy and programs. The SNWA recognizes the value and necessity for research and innovation in water conservation and has developed a number of research initiatives to foster cutting edge techniques and technologies. These research initiatives are expected to continue during the five-year planning horizon.

The following section outlines present research initiatives and their impacts to the community's water conservation efforts. A listing of completed research initiatives is included in **Appendix D**.

Current Research Initiatives

Water Use Calculator: SNWA has collected significant research on customers' usage, particularly in the largest using sector, single-family homes. Based upon a brief customer survey, this interactive web tool will estimate appropriate water use and illustrates the potential of additional conservation measures.

Innovative Conservation Program: The SNWA has partnered with Metropolitan Water District (MWD) of Southern California to sponsor the Innovative Conservation Program. This program encourages developments of new water efficiency technologies by providing grants of up to $50,000 for research and demonstration projects. MWD, SNWA, the United States Bureau of Reclamation, and the Central Arizona Project have combined resources to provide a total of $450,000 for such projects.

Golf Course Play Areas Study: Southern Nevada's golf industry has dramatically reduced water demand by limiting the use of turf in areas where golfers rarely play. In this study SNWA is providing golfers with GPS logging devices to identify where they actually travel on the golf course using a methodology developed by the United States Golf Association (USGA). The data provides detailed information to help distinguish functional and nonfunctional turf and aid in finding future areas for conversions.

Evaporative Suppressant Study: Open bodies of water lose significant water due to evaporation. Products are available to suppress evaporation by forming a one-molecule evaporation suppressing layer atop a water surface, called a monolayer. In this research, The Lakes Association, a vendor of a monolayer evaporative suppressant product, and SNWA have conducted research on suppression of evaporative losses at Lake Sahara with use of a suppressant. In addition to providing analyses of effectiveness, SNWA is providing water quality monitoring assistance for this research project.

CONCLUSION

The SNWA has one of the most dynamic and comprehensive water conservation programs in the nation. While the general strategies employed will continue to yield results, the SNWA constantly pursues refinement and innovation.

The 2009-2013 planning period witnessed significant conservation results that helped safeguard Southern Nevada's resources. Over the past five years, the community has lowered its GPCD from 248 in 2008 to 219 in 2012. Several factors may have contributed to this reduction in water use, including the impacts of a slow economy, a reduction in population and participation in SNWA conservation programs. Southern Nevada has successfully achieved conservation goals in the past, and the SNWA will continue to monitor and track the community's progress in achieving 199 GPCD by 2035.

To ensure Southern Nevada continues to move toward its 2035 conservation goal, the SNWA supports continuing cycles of program planning, implementation and evaluation. This on-going process allows the agency to succeed in meeting community needs under a diverse set of circumstances. These efforts are expected to yield new opportunities that may result in further improvement of this five-year plan.

As programs such as the Water Smart Landscapes Rebate peak in customer response, the SNWA will continue to consider progressive programs to ensure a strong community commitment to conservation. In addition, when the Integrated Resource Planning Advisory Committee completes its recommendations regarding water resources and conservation initiatives, the SNWA will review and integrate as appropriate recommendations into its conservation programs and long-term resource planning.

Appendix A
Conservation Achievements

The SNWA has achieved substantial conservation including the following noteworthy accomplishments since inception of its major initiatives:

- The Water Smart Landscape (WSL) Rebate Program has helped the community to upgrade more than 167 million square feet of lawn to water-efficient landscaping, saving more than 68 billion gallons of water since its inception. SNWA has provided more than 189 million dollars in rebates to customers to accomplish this. In terms of accomplishments, the WSL program is the largest water efficient landscaping program in the county.

- More than 32,000 coupons for more than 1.7 million dollars have been distributed to participants in the Pool Cover Instant Rebate Coupon Program, producing estimated savings of more than 2 billion gallons of water.

- Participating businesses in the Water Efficient Technologies (WET) Program have saved more than 6.5 billion gallons of water and received over 1.9 million dollars in rebates for their efforts.

- The SNWA's WaterSmart Homes Program is the most successful water efficiency home program in the country. More than 10,000 new Water Smart homes have been built producing an estimated savings of more than 750 million gallons annually compared to traditional residential developments.

- The Water Smart Innovations Conference and Exhibition (watersmartinnovations.com) has become the world's largest water conservation focused conference. In 2013 it drew nearly 900 participants from 35 states and 11 nations and featured over 100 professional sessions and 70 exhibitors.

- SNWA achieved per person demand reductions at a rate higher than anticipated. The projected weather adjusted 2012 GPCD in the 2009 Conservation Plan was 241. The achieved GPCD was 219. While many factors contributed to the reduction, it is clear that SNWA has made significant progress towards achieving the plan goal of 199 GPCD by 2035. Figure 2 and Appendix C demonstrate SNWA's successes in reducing per capita demand.

Appendix B
2014-2018 Conservation Plan Measures,
Estimated Annual Savings and Implementation Schedule

2014 - 2018

	Water Pricing Influence Coefficient	Water Pricing Influence GPCD	Education & Ethic Influence Coefficient	Education & Ethic Influence GPCD	Other Influence Coefficient	Other Influence GPCD	TOTAL REDUCTION (GPCD)
Water Smart Landscapes Program	40%	0.152	40%	0.152	20%	0.076	0.38
Water Efficient Technologies Program	40%	0.064	20%	0.032	40%	0.064	0.16
Coupon Programs	40%	0.016	30%	0.012	30%	0.012	0.04
Adoption of improved equipment, appliances and fixtures	25%	0.1875	25%	0.1875	50%	0.375	0.75
Landscape Development Codes	0%	0	0%	0	100%	0.35	0.35
Other	40%	0.068	40%	0.068	20%	0.034	0.17
TOTAL	N/A	0.49	N/A	0.45	N/A	0.91	1.85

Note:

Calculations assume a linear annual decrease in total GPCD consistent with achieving a 199 GPCD by 2035 conservation goal. Actual savings may be higher or lower in a given year.

As discussed on pages 9-10, these figures represent estimated savings based on SNWA demand-management measures. Water Pricing and Education & Ethic achievements are embedded in the total GPCD reduction. For the purposes of this plan, those estimated contributions have been outlined in the table above.

Appendix C
Historical and Projected SNWA Total Water Use
GPCD Estimates

YEAR	Estimated and Projected SNWA Population	SNWA Total Usage (acre-feet)	Historical SNWA GPCD	Projected SNWA GPCD
1989	708,704	276,407	348	
1990	750,621	291,760	347	
1991	790,099	304,435	344	
1992	839,295	318,650	339	
1993	886,207	334,282	337	
1994	954,106	352,107	329	
1995	1,002,411	367,244	327	
1996	1,075,331	395,908	329	
1997	1,123,316	404,626	322	
1998	1,193,489	423,182	317	
1999	1,265,475	445,853	315	
2000	1,364,248	481,798	315	
2001	1,439,973	513,580	318	
2002	1,517,885	533,154	314	
2003	1,577,737	519,376	294	
2004	1,679,845	515,025	274	
2005	1,747,536	526,995	269	
2006	1,846,561	546,516	264	
2007	1,930,414	550,955	255	
2008	1,922,069	534,776	248	
2009	1,938,407	520,624	240	248
2010	1,956,915	488,537	223	246
2011	1,901,945	472,329	222	244
2012	1,945,277	476,672	219	243
2013				241
2014				239
2015				237
2016				235
2017				233
2018				231

Note:
The SNWA considers weather adjusted water use in tracking water conservation and in long-term planning to account for variation in weather among years. Weather-adjusted GPCD for 2013 will be reported at a later date upon completion of 2013 data collection and verification process. Projected 2009-2018 SNWA GPCD corresponds with the SNWA's 2009 Water Resource Plan.

CHAPTER 4

Meeting Demands During Shortage

From 2000 to 2004, the Colorado River Basin experienced the most severe 5-year drought in recorded flows on the Colorado River. This extreme drought has been followed by recent years of average and below average Colorado River in-flows.

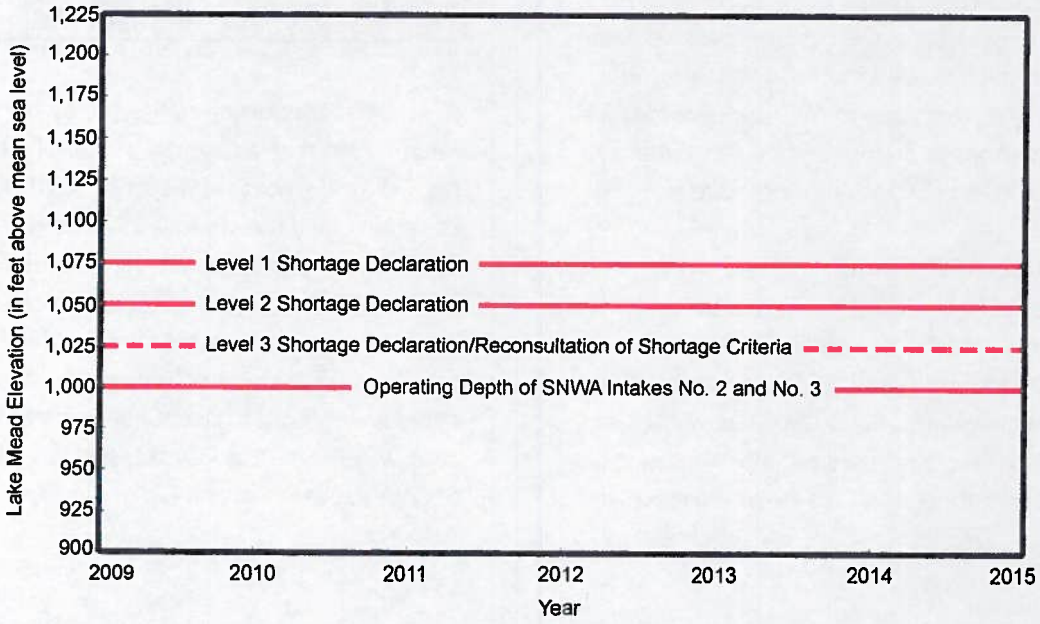
As a result, the water stored in Lake Mead and Lake Powell has declined to 52 percent of the total combined capacity. In early 2009, the surface elevation of Lake Mead was at 1,111 feet, down approximately 100 feet since the late 1990s.

These drought conditions may continue in the future, or may be further aggravated by the effects of climate change, which are not yet fully understood. For the SNWA, there are two primary consequences of continued declines in Lake Mead water levels: possible reduction of available Colorado River supplies and operating challenges associated with water intake facilities at Lake Mead.

This chapter describes how Colorado River shortages will be managed; the resources available to the SNWA during shortage; and what measures will be taken to ensure sufficient water resources are available to the SNWA in the event of supply reductions.

As described in Chapter 2, the Secretary of the Interior's Record of Decision on Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead established shortage levels based on Lake Mead elevation (Figure 29). Based on these levels, and according to the shortage sharing agreement

FIGURE 29 – Shortage Declarations



between Nevada and Arizona (Figure 30), the SNWA will incur shortages when Lake Mead water levels drop below 1,075 feet. The volume of water available to Nevada and Arizona decreases as lake levels continue to decline. If Lake Mead reaches an elevation of 1,025 feet, the lower division states of Arizona, Nevada, and California will re-consult with the Secretary of the Interior to determine what additional measures are necessary to minimize further declines in Lake Mead elevation and preserve Lower Basin States' access to Colorado River water.

Figure 30 – Nevada Share of Shortage

Lake Mead Water Level	Nevada Shortage	Arizona Shortage
1,075 - 1,050 ft.	13,000 afy	320,000 afy
1,050 - 1,025 ft.	17,000 afy	400,000 afy
Below 1,025 ft.	20,000 afy	480,000 afy
	Reconsultation	

As detailed in Chapter 3, the SNWA has a number of water resource options available for use under normal (non-shortage) conditions. However, many of these resources depend on the operation of existing and planned water intake facilities at Lake Mead. As a result, the community's ability to utilize these resources may be diminished as lake levels decline. To this end, the SNWA committed to sharing in Colorado River shortages to maintain Lake Mead surface elevations at or above 1,000 feet – the operational level of SNWA's lower intake facilities.

SHORTAGE RESPONSE

As outlined in Figure 30, reductions to Southern Nevada's Colorado River consumptive-use apportionment could reach 20,000 AFY when Lake Mead water levels are above 1,000 feet. Analysis of Colorado River Basin uses and inflow indicate a 1 percent probability that Lake Mead will reach an elevation of 1,075 feet by 2011 and 1,025 feet by 2014.

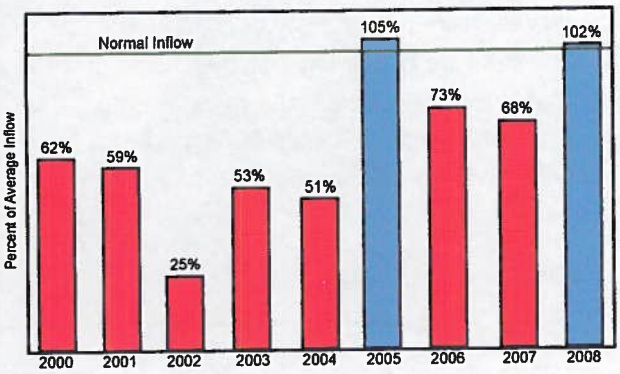
Figure 31 (page 46) displays one possible scenario for how the SNWA would adjust its water planning efforts to accommodate a long-term shortage through the year 2026.

The SNWA would continue to utilize tributary conservation and imported ICS water (Muddy/Virgin rivers and Coyote Spring Valley resources), but would be required to forego use of its System Efficiency ICS water (Drop 2 Storage Reservoir), which is restricted from use during a declared shortage. To bridge this gap, the SNWA could utilize temporary resources, including banked water supplies, until in-state groundwater is brought on-line.

SEVERE SHORTAGE RESPONSE

Between 2000 and 2008, the 9-year average historical inflow to Lake Powell was 66 percent of normal (Figure 32).

Figure 32 – Historical Lake Powell Annual Inflows



According to modeling conducted by the Bureau of Reclamation, with an average runoff of 69 percent of normal for the next six years (2009-2014), Lake Mead elevation could decline to 1,000 feet in as early as 2015. This elevation impairs the operational capability of SNWA intakes (Figure 33). Even more severe conditions, such as those experienced between 2000 and 2004 (50 percent of average) could cause Lake Mead water levels to decline even faster. In either case, water levels below 1,000 feet would impair SNWA's ability to access Colorado River water resources.

Figure 31 – Meeting Demands During Declared Shortage Conditions

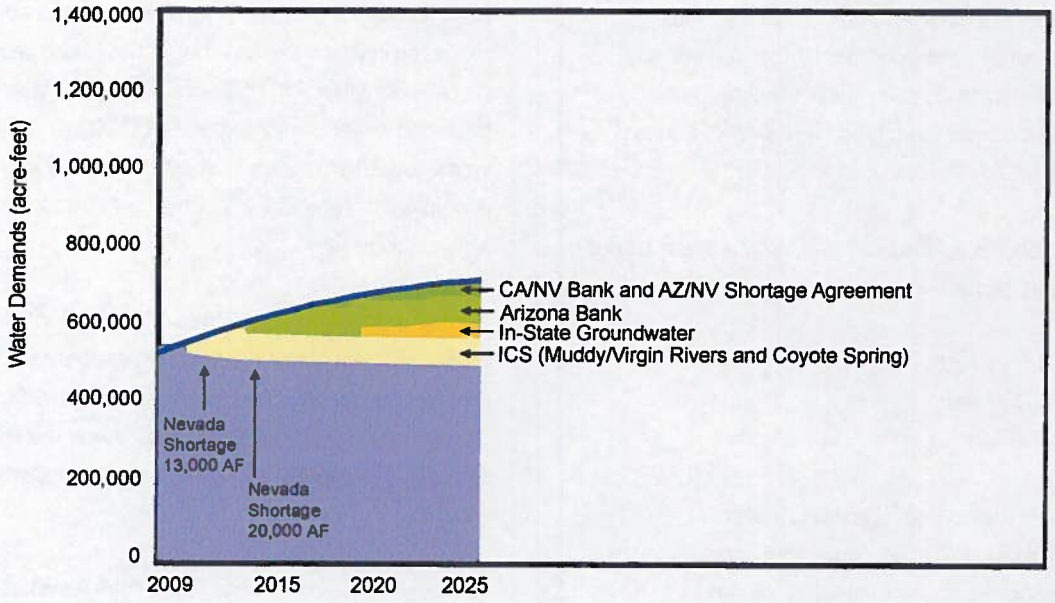
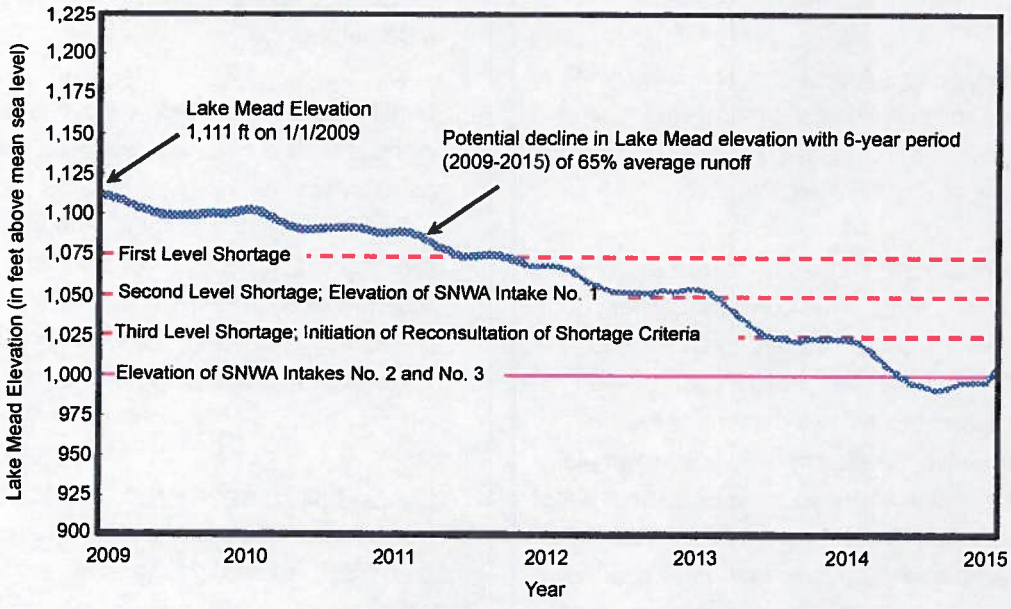


Figure 33 – Impacts to Lake Mead Intakes with Six Year Period of 65 Percent Average Runoff



The following section outlines SNWA's planned response to a "severe shortage." This response is intended to protect the SNWA by offsetting possible impacts of supply reductions and ensuring that sufficient resources are available to the community should the elevation of Lake Mead decline below 1,000 feet, the operational limit of SNWA's current and planned intake facilities.

A staged response, as detailed below, will occur based on Lake Mead water levels:

- 1,075 to 1,025 feet
- 1,025 to 1,000 feet
- Below 1,000 feet

Lake Mead Elevation 1,075 to 1,025 feet

Facility Construction. To preserve the lead time required to construct the Clark, Lincoln and White Pine Counties Groundwater Development Project, the SNWA will take the steps necessary to begin project construction when Lake Mead reaches a surface elevation of 1,075 feet; these resources are currently planned for use in 2020 under normal, non-shortage conditions.

Demand Management Assessment. The SNWA will also examine additional demand-management needs over and above existing water conservation goals and annual targets, as discussed in Chapter 2.

It is important to note that arbitrarily reducing water demands beyond those levels currently defined will not have a measurable benefit to Lake Mead water levels – Nevada's Colorado River allocation represents approximately two percent of the recorded total average system flow. As an example, 100,000 acre-feet in Lake Mead is equivalent to about 1 foot of elevation. Evaporation on Lake Mead alone exceeds this amount by two to four times, depending on surface elevation. However, additional conservation will help extend the use of Nevada's existing supplies if severe shortages occur.

Lake Mead Elevation 1,025 to 1,000 feet

Reconsultation. In accordance with the Secretary of the Interior's 2007 Record of Decision, the Colorado River Basin states will re-consult on Colorado River management strategies when Lake Mead reaches a surface elevation of 1,025 feet and shortage volumes have the potential to exceed 500,000 AFY. Parties will work together to determine what measures can be employed to protect a Lake Mead surface elevation above 1,000 feet.

Demand Management. The SNWA will implement additional mandatory demand management tools defined by earlier assessment. These additional water saving measures will help to maximize the availability of existing supplies and new in-state supplies, when available.

Contingency Assessment. The SNWA will assess options for continued access to Colorado River resources in the event that Lake Mead intakes become inoperable. This includes examining the potential for temporary infrastructure to extend the operational capabilities of SNWA's intakes in Lake Mead to pump water below 1,000 feet into existing water intakes.

Lake Mead Elevation Below 1,000 feet

In the unlikely event that Lake Mead water levels reach a depth below 1,000 feet, the SNWA will have a significantly limited ability to withdraw its Colorado River apportionment, as well as other water supplies accessed through Lake Mead, including return-flow credits, ICS resources (Muddy/Virgin rivers and Coyote Spring), and banked resources such as the Arizona and California water banks.

Restrict Non-Essential Water Use. The SNWA will maximize in-state and locally banked resources when Lake Mead reaches 1,000 feet by restricting non-essential water uses. Doing so will ensure that critical supplies are preserved for health and safety uses.

Figure 34 provides a summary of these actions, as well as triggers associated with Lake Mead water levels.

Figure 34 – Severe Shortage Plan

Lake Mead Elevation	Goal	Action
1,075 to 1,025 ft.	Preserve lead time for new facility development.	Construct Clark, Lincoln and White Pine Counties Groundwater Development Project. Examine demand-management needs over and above existing conservation goals/annual targets.
1,025 to 1,000 ft.	Preserve Lake Mead elevation of 1,000 ft.	Reconsult with the Secretary of the Interior and Basin States on additional Colorado River shortage management strategies. Implement additional demand-management measures through mandatory policies to offset further Colorado River Basin supply shortages. Examine potential for temporary infrastructure to extend the operational capabilities of SNWA's intakes in Lake Mead.
Below 1,000 ft.	Preserve water supply for health and safety uses.	Maximize use of available groundwater supplies (Southern Nevada Groundwater Bank and in-state resources). Significantly limit non-essential uses.

CONCLUSION

Water managers throughout the West recognize that even if Colorado River system inflows consistently return to pre-drought levels, it will take several years of above-average runoff for system reservoirs to fully recover. Likewise, if drought conditions continue to persist, further declines to storage will occur, possibly resulting in shortages due to reduced water storage. Given the current elevation of Lake Mead, one exceptionally dry year – such as that experienced in 2002 (25 percent of average inflow) – could have a significant effect on area reservoirs.

To this end, the greatest protection the community has against further Lake Mead water level decline is development of in-state groundwater resources. Additional water conservation will also play a critical role by helping to reduce demands, but conservation alone will not provide sufficient protection to completely replace those supplies lost if access to Lake Mead is interrupted or otherwise significantly reduced.

To mitigate any possible supply reductions, the SNWA will utilize banked water resources to meet near-term community water demands during times of declared shortage or severe shortage. The SNWA must complete necessary permitting activities and construct in-state water facilities, as dictated by Colorado River hydrology, implement appropriate water demand management tools to extend available supplies during times of severe shortages and investigate alternatives for Colorado River access.

The SNWA will closely monitor drought conditions throughout the Colorado River Basin and enact the appropriate response necessary to help protect the community from possible supply reductions. While the SNWA Water Resource Plan is reviewed annually, a detailed assessment of Colorado River conditions will occur regularly to inform community response.

In the event Lake Mead water levels decline rapidly, the SNWA will take appropriate and measurable actions to ensure that sufficient resources are available to preserve essential municipal water supplies.

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