

**Integrated Resource Planning Advisory Committee**  
**RECOMMENDATIONS REPORT**  
*Phase II: Resources and Facilities*

**November 2014**



## TABLE OF CONTENTS

I. Executive Summary .....	3
II. Advisory Committee .....	5
III. Discussion Topics .....	6
IV. Recommendations .....	7
Appendix A – Membership .....	11
Appendix B – Meeting Synopsis .....	12
Appendix C – Lake Mead Elevation Modeling Scenarios .....	14
Appendix D – Low-Elevation Pumping Station Conceptual Design Diagram .....	15
Appendix E – Funding Model Scenario .....	16
Appendix F – 62-City Rate Comparison Chart .....	17
Appendix G – Attributes for Evaluating Resource Alternatives .....	18

# EXECUTIVE SUMMARY

The Southern Nevada Water Authority (SNWA) has consistently relied upon input from citizen committees since its inception in 1991. Panels convened by the SNWA Board of Directors have explored and deliberated over issues ranging from water quality and environmental initiatives to the development of water resources for Southern Nevada's future. In the mid-1990s, the first iteration of the Integrated Resource Planning Advisory Committee (IRPAC) evaluated a range of water resource options based upon prevailing hydrologic conditions at the time.

During the ensuing two decades, conditions on the Colorado River—which represents 90 percent of the community's water supply—changed dramatically, compelling the SNWA to take a number of measures to securitize Southern Nevada's access to a reliable water supply. Even as the SNWA was initiating mitigation measures to address the drought, the global economy entered a prolonged recession. Nowhere in the United States was the recession felt more profoundly than in Southern Nevada, which virtually overnight was transformed from one of the nation's most robust economies to the epicenter for home foreclosures and unemployment. The financial impact on the SNWA was profound; connection charges, which per previous IRPAC recommendations represented nearly 60 percent of the funds used to pay for the community's water system, decreased from a high of \$188 million in 2005 to only \$3 million in 2008.

To address the challenges associated with economic conditions in a comprehensive way, the SNWA Board again initiated an integrated resource planning process in 2012; Phase I of this process had a relatively narrow focus, identifying the optimal fiscal formula to pay for approved and largely constructed water infrastructure projected to result in an increase in annual debt service spike of \$80 million by 2016. Between June 2012 and September 2013, the IRPAC met more than a dozen times to analyze a myriad of funding formulas and evaluate them against a number of criteria related to stability, affordability and equity. The panel ultimately identified and recommended a funding plan that balanced the stability of a fixed monthly rate with the conservation incentives of a variable usage-based rate. Further, IRPAC recommended that the increases be phased in over a three-year period to provide municipal water customers sufficient time to adjust to the additional monthly costs.

In February 2014, the committee reconvened to develop recommendations related to a number of infrastructure- and resource-related issues, including conservation goals, Colorado River system conservation projects, the development of in-state water resources, and the construction of a low-elevation water pumping facility to provide access to Lake Mead should the reservoir's elevation drop below 1,000 feet, at which point neither of the SNWA's existing pumping stations will remain operational.

This report summarizes the activities and results of the IRPAC Phase II process as it relates to the aforementioned issues. Section I is an overview of the committee process. Section II

reviews committee discussion topics. Section III provides the committee's eight recommendations.

### Committee Finding

The members of the Integrated Resource Planning Advisory Committee assert that the risk of Lake Mead's elevation falling below 1,000 feet is not acceptable to our community due to the potential impacts on water delivery and resource availability.

### Recommendations Summary

Below is a summary of the Committee's recommendations:

1. Evaluate an increased water conservation target upon achieving the currently established goal of reducing gross water usage to 199 Gallons Per Capita Per Day (GPCD) by 2035.
2. Present water usage information to the Board of Directors and the community in both "gross" and "net" terms for the purposes of 1) more accurately communicating the water resource implications associated with various conservation measures, and 2) improving comparability of our community's water consumption with that of others.
3. Continue to partner with other Colorado River Basin States to undertake system conservation projects designed to protect critical elevations in Lake Powell and Lake Mead, conditional upon the identification of mutually agreeable projects and shared funding responsibilities.
4. Classify expenditures associated with Colorado River system conservation projects as one-time capital expenditures, thereby making funds available for these costs from Connection Charge revenues as identified in Recommendation Nos. 7 and 8 from the September 2013 Integrated Resource Planning Advisory Committee Recommendations Report.
5. Begin design and construction of a new low lake level water pumping station within the swiftest feasible timeframe.
6. Generate needed revenue for the construction of a new low lake level water pumping station exclusively through fixed charges based upon meter size.
7. Phase in the increase to fixed monthly charges over a three-year period.
8. Continue to include the Groundwater Development Project within the SNWA's Water Resource Portfolio with future resource options.

# ADVISORY COMMITTEE

## Membership

The SNWA Board appointed twenty-one (21) individuals, representing diverse stakeholder groups with an interest in the SNWA's long-term planning efforts. With the exception of four new members, all members of the IRPAC Phase II process participated in Phase I either on IRPAC or its subcommittees during 2012-13.

A list of IRPAC Phase II members is provided in Appendix A.

## Process

To coordinate and manage committee meetings, the SNWA utilized an independent, neutral facilitator from outside Southern Nevada (David Ebersold, CDM Smith, Los Angeles), who served in the same capacity for Phase I of the IRPAC process. Mr. Ebersold was responsible for soliciting dialogue and interaction among committee members, ensuring all perspectives had an opportunity to be heard and considered, and suggesting appropriate process tools to assist the committee members in problem-solving and other aspects of their deliberations.

Consensus served as the basis for formulation of the IRPAC's recommendations. Members worked together to identify positions that were generally acceptable to the committee as a whole. Mr. Ebersold was diligent about soliciting feedback and ensuring that all IRPAC members had an opportunity to voice their opinions.

To encourage public involvement, IRPAC meetings were publicly posted in accordance with Nevada's Open Meeting Law. Presentations and audio recordings of each meeting are posted on SNWA.com, and written meeting summaries are available to the public within the posting period for the following meeting. In addition, the SNWA Board received updates about IRPAC activities at the regularly-scheduled public Board meetings.

## DISCUSSION TOPICS

Having become well-versed in issues related to Southern Nevada's water demands, key infrastructure components, resource management, water rate structures and other related elements during Phase I of the process, IRPAC focused extensively upon the Colorado River drought, exacerbating factors such as climate change, and the implications of declining reservoir levels on the reliability of Southern Nevada's municipal water system. A summary of meeting topics is included in Appendix B. More detailed meeting summaries are available at [SNWA.com](http://SNWA.com).

Critical topics addressed by the committee included:

- Historical and projected hydrology on the Colorado River
- Climate change's influence on inflows and water uses within the Colorado River Basin
- The acceptable level of risk to the community of losing access to Lake Mead
- Costs and benefits associated with various water conservation target levels
- Alternative matrices for evaluating community water use and their implications for comparisons among metropolitan areas
- The attributes for evaluating potential infrastructure and supply alternatives
- The appropriate mix of fixed and variable fees within water bills and their relationship to infrastructure projects
- Benefits and drawbacks associated with phased increases to water charges

## COMMITTEE FINDING

The members of the Integrated Resource Planning Advisory Committee assert that the risk of Lake Mead’s elevation falling below 1,000 feet is not acceptable to our community due to the potential impacts on water delivery and resource availability.

## RECOMMENDATIONS

- 1. Evaluate an increased water conservation target upon achieving the currently established goal of reducing gross water usage to 199 Gallons Per Capita Per Day (GPCD) by 2035.**

The committee deliberated over the benefits and costs associated with adopting a more aggressive water efficiency target in the near term. Among the issues discussed were the additional investments and policy changes that would likely be necessary to alter the current trajectory of water use, as well as the necessity of those measures in the near term to meet resource demands. Based upon those discussions, the group reached consensus that the existing goal should be maintained until it is achieved; at that point, IRPAC recommends that a more aggressive goal be evaluated.

- 2. Present water usage information to the Board of Directors and the community in both “gross” and “net” terms for the purposes of 1) more accurately communicating the water resource implications associated with various conservation measures, and 2) improving comparability of our community’s water consumption with that of others.**

The SNWA historically has utilized “gross” Gallons Per Capita Per Day (GPCD) as a metric for evaluating the community’s water efficiency. This serves as the framework upon which the current goal of 199 GPCD by 2035 is constructed. Gross GPCD is effective for this purpose because the SNWA is able to hold all variables constant, comparing present and past water efficiency with remarkable accuracy and consistency. However, media and other stakeholders regularly attempt to compare Southern Nevada’s water efficiency to other cities’ using the gross GPCD metric, which is scientifically inappropriate due to a variety of factors, including weather, development type and Las Vegas’ large tourism base. Additionally, gross GPCD fails to reflect Southern Nevada’s exceptional achievements in the area of water reuse; through the return flow credit mechanism, nearly all water used indoors is captured and recovered. SNWA technical staff has developed a “net GPCD” metric that accurately captures the community’s “net water footprint” and emphasizes the importance of conservation with relation to consumptive uses.

- 3. Continue to partner with other Colorado River Basin States to undertake system conservation projects designed to protect critical elevations in Lake Powell and Lake Mead, conditional upon the identification of mutually agreeable projects and shared funding responsibilities.**

SNWA staff provided an overview of existing and potential Colorado River system conservation projects and requested of the committee recommendations related to these

investments. The primary benefit of such projects would be to forestall or reduce the rate of decline in Lake Mead and Lake Powell, the Colorado River's two primary reservoirs. Examples of projects include agricultural irrigation upgrades, brackish desalination, weather modification and land fallowing. Water gleaned from these investments would not be allocated to the funding entities, but rather would remain in the Colorado River to contribute to the system's hydrologic stability. For Southern Nevada, the benefits of participating in such endeavors are, 1) to help maintain the elevation of Lake Mead, and 2) to further fortify positive relationships with partnering entities on the Colorado River. After discussion of funding sources and project scale, IRPAC recommended pursuing such agreements as opportunities arise provided that other parties to these types of project agreements fulfill their commitments.

**4. Classify expenditures associated with Colorado River system conservation projects as one-time capital expenditures, thereby making funds available for these costs from Connection Charge revenues as identified in Recommendation Nos. 7 and 8 from the September 2013 Integrated Resource Planning Advisory Committee Recommendations Report.**

Because the timing and scale of potential Colorado River system conservation projects is unpredictable, the committee evaluated various options for developing a funding pool. After discussing the creation of a separate account specifically for this purpose, IRPAC determined that the SNWA's existing capital expense account could be used for this purpose, consistent with Recommendations 7 and 8 from the committee's Phase I process.

**5. Begin design and construction of new low lake level water pumping station within the swiftest feasible timeframe.**

Having reached a finding that the risk associated with Lake Mead declining below 1,000 feet elevation—at which Southern Nevada would no longer be able to draw water from the reservoir using existing infrastructure—the committee received a presentation related to an infrastructure solution that would preserve the community's access to Lake Mead, even if conditions deteriorate to a point where downstream users in California, Arizona and Mexico could no longer access the Colorado River. However, because pumping technologies at extremely low lake elevations were not fully demonstrated at the time construction began on the new intake, and economic conditions at the time remained deteriorated, the SNWA Board of Directors deferred construction of new water pumping facilities. The committee unanimously recommended that the SNWA proceed with construction of a new low-elevation water pumping station.

**6. Generate needed revenue for the construction of a new low lake level water pumping station exclusively through fixed charges based upon meter size.**

The committee received an extensive presentation related to the SNWA's current financial condition, the ranking of local water rates compared with more than 60 cities throughout the West, key factors and assumptions related to rate structures, and four potential funding models to address the projected \$650 million cost of the recommended low-elevation pumping station. The rate impact for the vast majority of single-family customers ranged

from \$3.67 to \$4.81 per month. There was considerable discussion of whether fixed or variable usage-based charges were more appropriate to fund infrastructure needed to guarantee continued access to Lake Mead. Another point of emphasis among IRPAC members was ensuring that the funds generated through the increase were sufficiently reliable to pay the bonds, and that no additional charges would be required for this purpose. The committee ultimately reached consensus that fixed charges were more appropriate than usage-based increases for this purpose, because the value of the low-elevation pumping facilities is equal for both low-usage and high-consumption customers. IRPAC also recommended that the fixed charge should be based upon each customer's meter size.

**7. Phase in the increase to fixed monthly charges over a three-year period.**

Several committee members emphasized the importance of phasing the increase into water bills over a three-year period rather than implementing them in full all at once. They stressed that providing customers sufficient time to adjust to the new charge would be critical to public acceptance of the increase, and noted that the increase in the ultimate "peak" charge is nominal compared to the phased approach.

**8. Continue to include the Clark, Lincoln and White Pine Counties Groundwater Development Project within the SNWA's Water Resource Portfolio with future resource options.**

Recognizing that the SNWA's Groundwater Development Project is not needed immediately and projects of such magnitude require significant lead time, the committee opted to affirm the project's place within the SNWA's Water Resource Plan. The committee agreed that it would be prudent to continue legal and permitting activities for the project.

# APPENDICES



## APPENDIX A

---

### IRPAC Membership

<b>Member</b>	<b>Stakeholder Category</b>
Chris Armstrong	Golf Courses
Tom Burns	General Business
Yvanna Cancela	Labor
Thalia Dondero	Southern Nevada Residents
Bob Ferraro	Senior Citizens
John Guedry	Henderson Chamber
Joyce Haldeman	Education
Warren Hardy	General Contractors
Katherine Jacobi	Restaurants
Carol Jefferies	Southern Nevada Residents
Jennifer Lewis	Development
April Mastroluca	Environmental
Otto Merida	Latin Chamber of Commerce
Bobbi Miracle	Real Estate
Paul Moradkhan	Las Vegas Chamber
Terry Murphy	Ratepayers/Small Business
Phil Ralston	Industrial/Commercial Business
John Restrepo	General Business
David Scherer	Small Industrial/Commercial Bus.
Danny Thompson	Building Trades
Virginia Valentine	Hospitality/Gaming

## APPENDIX B

---

### IRPAC Phase II Meeting Synopses

The following provides a brief synopsis of discussion topics during the second phase of the IRPAC process. A detailed summary with an audio recording was developed for each meeting and is available on SNWA.com or by contacting the SNWA.

**Meeting 1 – Feb. 26, 2014:** Introduction of new IRPAC members, review of IRPAC Phase I process and previous committee processes, overview of Phase II topics, discussion of attribute development, review and update of drought conditions affecting Southern Nevada.

**Meeting 2 – March 26, 2014:** Discussion of agreements governing the Colorado River, review of activities undertaken by Basin States in response to drought, update on Colorado River drought conditions.

**Meeting 3 – April 23, 2014:** Climate change presentation by Director of the Getches-Wilkinson Center at the University of Colorado, Boulder, presentation on the Colorado River Basin Study by Bureau of Reclamation technical staff.

**Tour – May 23, 2014:** Tour of Alfred Merritt Smith Water Treatment Facility and Lake Mead, discussion of existing infrastructure, associated limitations and implications of continued decline in reservoir elevation.

**Meeting 4 – July 23, 2014:** Update on Colorado River drought conditions, discussion and development of attributes to be used for evaluating alternatives, overview of opportunities for cooperation among Colorado River Basin States, presentation on potential low-elevation pumping station in Lake Mead.

**Meeting 5 – Sept. 10, 2014:** Update on Colorado River drought conditions, discussion of topics suggested by the SNWA Board of Directors for consideration by IRPAC, finalization of attributes, presentation on water conservation initiatives and goals, update related to low-elevation pumping station conceptual design.

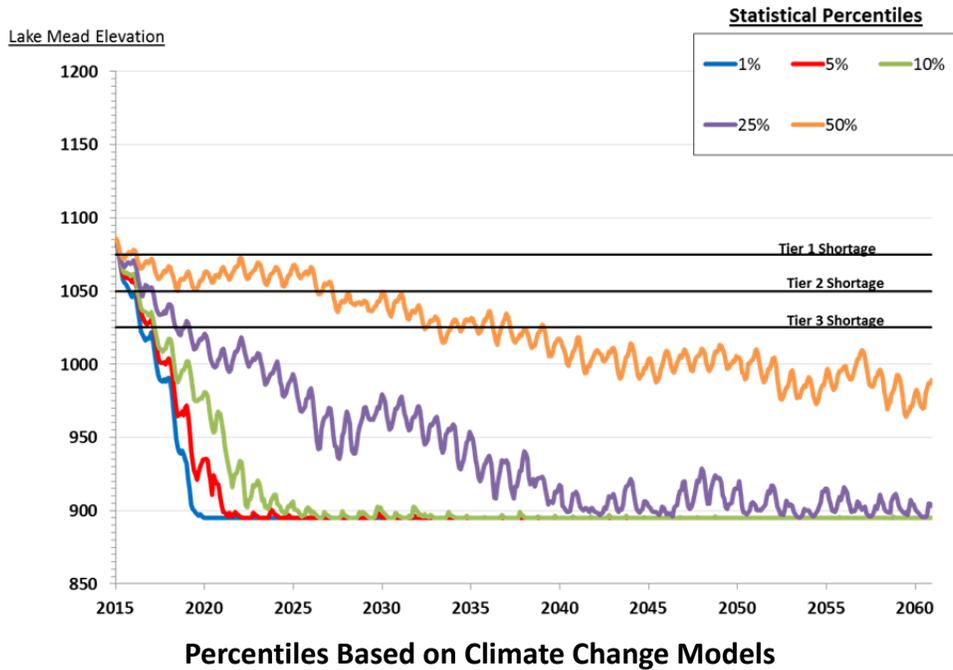
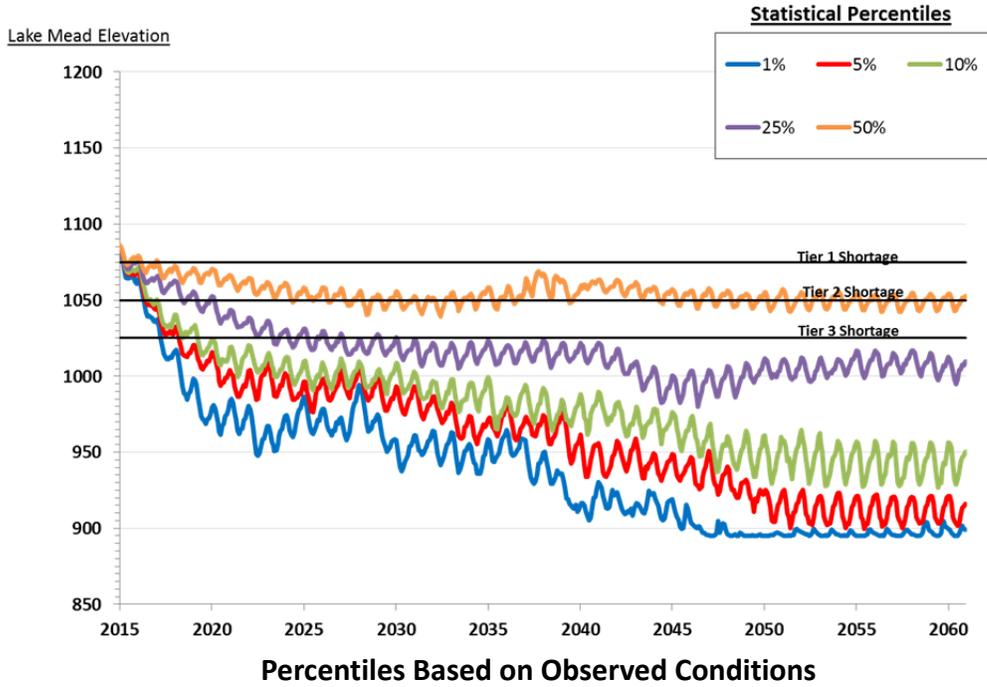
**Meeting 6 – Oct. 15, 2014:** Presentation on SNWA water resource planning approach, history, and assumptions; development of recommendations related to water conservation, presentation on Colorado River system conservation projects and development of recommendations, development of recommendations related to low-elevation pumping station.

**Meeting 7 – Nov. 5, 2014:** Discussion of underlying assumptions for Phase I funding recommendations, review of low-elevation pumping station, presentation on SNWA’s financial status and regional current rate comparison, presentation and discussion of potential rate models, development of recommendations related to increased charges and implementation timeframe.

**Meeting 8 – Nov. 19, 2014:** Discussion of the SNWA’s Clark, Lincoln and White Pine Counties Groundwater Development Project, long-term water resources and finalization of the committee’s Recommendations Report.

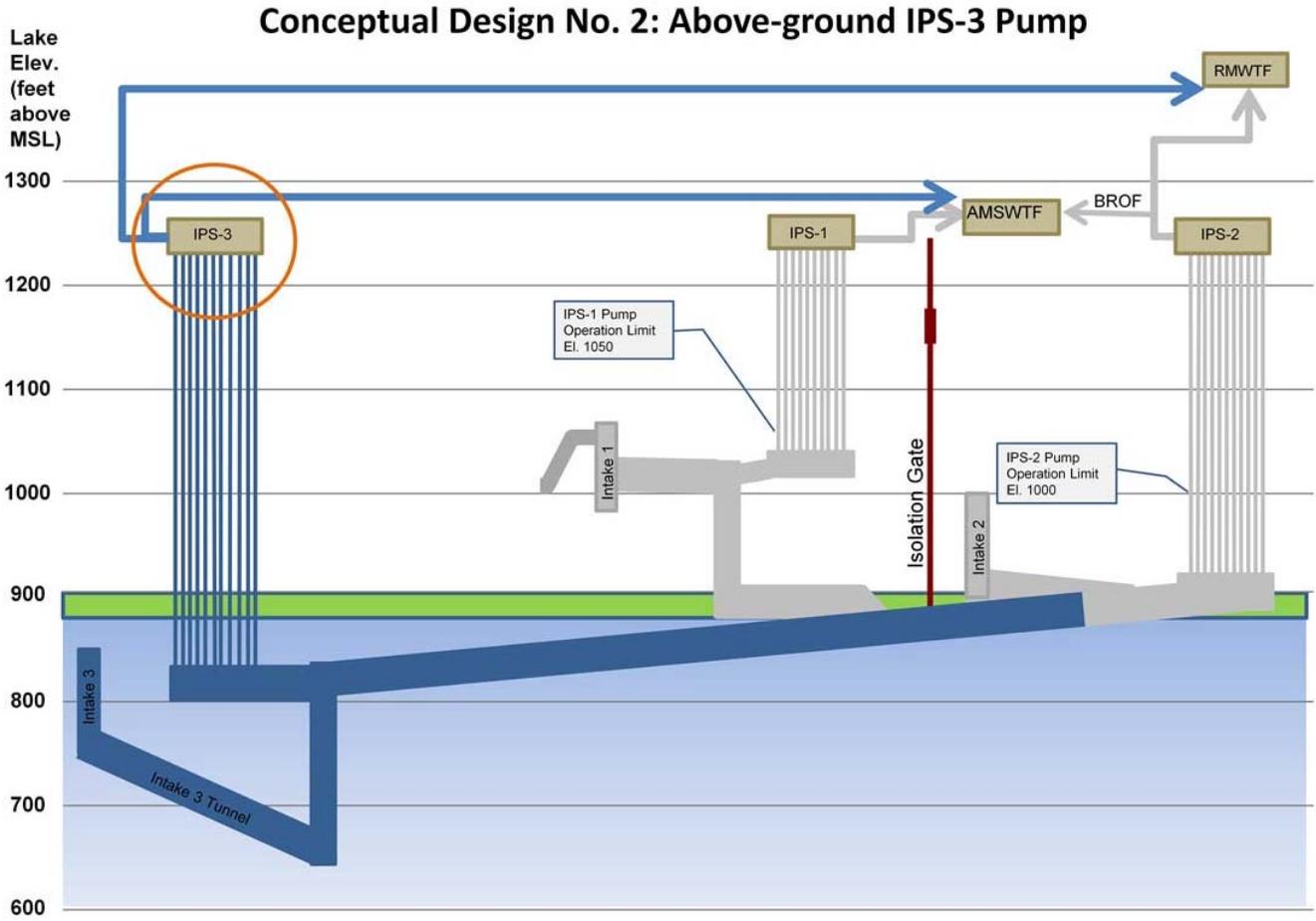
# Appendix C

## Lake Mead Elevation Modeling Scenarios



# Appendix D

## Low Lake Elevation Pumping Station Conceptual Design Diagram



# Appendix E

## Funding Modeling Scenario

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>Beginning Fund Balance</b>	\$339,492	\$356,108	\$350,445	\$326,912	\$322,771	\$316,736	\$303,708	\$294,814	\$287,287	\$282,415	\$280,265
<b>Total Expenses and Debt Service</b>	(\$199,895)	(\$250,923)	(\$273,560)	(\$273,662)	(\$275,060)	(\$276,525)	(\$275,881)	(\$278,187)	(\$279,404)	(\$280,657)	(\$281,948)
<b>Total Expected Revenues</b>	\$216,511	\$235,575	\$251,563	\$261,024	\$264,161	\$267,177	\$270,161	\$273,272	\$276,494	\$279,788	\$283,114
<b>Expected Net Revenues</b>	\$16,616	(\$15,348)	(\$21,997)	(\$12,638)	(\$10,899)	(\$9,348)	(\$5,720)	(\$4,915)	(\$2,910)	(\$869)	\$1,166
<b>Low Lake Level Pumping Station Debt Service*</b>			(\$25,944)	(\$25,944)	(\$34,829)	(\$43,784)	(\$43,784)	(\$43,785)	(\$43,787)	(\$43,787)	(\$43,784)
<b>Infrastructure Charge Revenue**</b>		\$9,685	\$24,408	\$34,441	\$39,693	\$40,103	\$40,610	\$41,173	\$41,825	\$42,505	\$43,138
<b>Total New Revenues</b>		\$9,685	\$24,408	\$34,441	\$39,693	\$40,103	\$40,610	\$41,173	\$41,825	\$42,505	\$43,138
<b>Ending Fund Balance</b>	\$356,108	\$350,445	\$326,912	\$322,771	\$316,736	\$303,708	\$294,814	\$287,287	\$282,415	\$280,265	\$280,785
<b>Increases to SNWA Infrastructure Charge per month per meter (No Changes to Fireline Meters)</b>											
<i>Residential - 5/8" &amp; 3/4" meter sizes</i>		\$2.41	\$3.61	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81
<i>Residential - 1" meter size</i>		\$4.56	\$6.84	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11
<i>Residential - 1.5" meter size</i>		\$9.13	\$13.67	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22
<i>Residential - 2" meter size</i>		\$14.61	\$21.88	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15
<i>Residential - 3" meter size</i>		\$29.21	\$43.76	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30
<i>Residential - 4" meter size</i>		\$45.64	\$68.37	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10
<i>Residential - 6" meter size</i>		\$91.29	\$136.74	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20
<i>Residential - 8" meter size and larger</i>		\$146.06	\$218.79	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52
<i>Non-Residential - 5/8" &amp; 3/4" meter sizes</i>		\$2.41	\$3.61	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81	\$4.81
<i>Non-Residential - 1" meter size</i>		\$4.56	\$6.84	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11	\$9.11
<i>Non-Residential - 1.5" meter size</i>		\$9.13	\$13.67	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22	\$18.22
<i>Non-Residential - 2" meter size</i>		\$14.61	\$21.88	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15	\$29.15
<i>Non-Residential - 3" meter size</i>		\$29.21	\$43.76	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30	\$58.30
<i>Non-Residential - 4" meter size</i>		\$45.64	\$68.37	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10	\$91.10
<i>Non-Residential - 6" meter size</i>		\$91.29	\$136.74	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20	\$182.20
<i>Non-Residential - 8" meter size</i>		\$146.06	\$218.79	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52	\$291.52
<i>Non-Residential - 10" and larger meter sizes</i>		\$209.96	\$314.51	\$419.05	\$419.05	\$419.05	\$419.05	\$419.05	\$419.05	\$419.05	\$419.05

# Appendix F

## 62-City Rate Comparison Chart

Utility	\$10 - \$20	\$20 - \$30	\$30 - \$40	\$40 - \$50	\$50 - \$60	\$60 - \$70	\$70 - \$80	\$80 - \$90	\$90 - \$100	Over \$100
Santa Barbara, CA (OC)										113.37
Santa Fe, NM										110.33
Colorado Springs, CO (OC)										109.22
Seattle, WA (OC)								96.33		
Santa Cruz, CA (OC)								94.23		
Reno, NV (Unmetered)								91.37		
San Francisco, CA								89.33		
Santa Barbara, CA								87.20		
Seattle, WA								84.46		
Portland, OR								83.08		
San Diego, CA						74.05				
Santa Cruz, CA						73.97				
Colorado Springs, CO						72.78				
Flagstaff, AZ (OC)						72.43				
Marin, CA (MMWD)					66.82					
Flagstaff, AZ					65.83					
Los Angeles, CA					63.40					
Santa Rosa, CA					60.52					
San Jose, CA (Company)				59.44						
Oakland, CA (EBMUD)				59.36						
San Jose, CA (City)				56.00						
Pasadena, CA (OC)				51.53						
<b>62 City Average</b>				<b>51.24</b>						
Houston, TX			48.94							
Tacoma, WA (OC)			48.59							
Phoenix, AZ (OC)			48.16							
Cheyenne, WY			45.92							
Tucson, AZ			45.17							
Reno, NV (Metered)			45.14							
<b>Las Vegas, NV (SNWA Phase II Full Rate)</b>			<b>44.07</b>							
Riverside, CA (OC)			43.73							
Kingman, AZ (OC)			42.74							
Pasadena, CA			42.14							
Victorville, CA			41.90							
San Antonio, TX (OC)			41.02							
Long Beach, CA			40.81							
Tacoma, WA			40.48							
<b>Las Vegas, NV (SNWA Phase I Full Rate)</b>			<b>39.26</b>							
Henderson, NV			38.60							
North Las Vegas, NV			38.37							
Boulder, CO (OC)			38.30							
Scottsdale, AZ			37.01							
Denver, CO (OC)			36.78							
Billings, MT (OC)			36.07							
Billings, MT			35.47							
San Antonio, TX			35.30							
Dallas, TX			34.47							
Boulder, CO			33.60							
Denver, CO			33.38							
Kingman, AZ			32.85							
Phoenix, AZ			32.35							
Anaheim, CA (OC)			32.12							
Salt Lake City, UT (OC)			31.51							
Boise, ID			31.43							
San Bernardino, CA			30.95							
Albuquerque, NM	29.93									
Anaheim, CA	29.20									
Riverside, CA	29.15									
St. George, UT	28.62									
Cedar City, UT	26.20									
El Paso, TX	26.18									
Redding, CA	25.91									
Salt Lake City, UT	25.13									
Boulder City, NV	22.53									

Based on LVVWD Average Monthly Single-Family Consumption of 10,000 gallons and a 5/8 or 3/4 Inch Service Charge for Comparison.

OC - Outside City  
 MMWD - Marin Municipal Water District  
 EBMUD - East Bay Municipal Utilities District

## Appendix G

### Attributes for Evaluating Resource Alternatives

Attribute	Measure
<b>Reliability</b>	Reduces vulnerability to hydrologic variability of Colorado River: Score 1 if reduces vulnerability to river hydrology, 5 if no change from current condition
	Resilience to climate change: Score 1 if no impact from climate change, 5 if high susceptibility to climate change
	Reduces probability of not meeting water demands
	Reduces amount of water demand shortfall
<b>Minimize Implementation Risk</b>	Score 1 if not complex regulatory/technical/public process, 5 if highly complex
	Score 1 if multi-state and/or federal cooperation not required, 5 if extensive multi-state and/or federal cooperation required
	Timeline required to implement
<b>Cost Effectiveness</b>	Initial Capital Cost (\$)
	NPV (Capital and O&M) (\$)
<b>Impact to Ratepayer</b>	Competitiveness of average SFR water rate with other cities: Score 1 if no change, 5 for maximum change from current position on 62-City Municipal Water Rates Survey
<b>Impacts to quality of life</b>	Score 1 allows water efficient consumptive water use, 5 restricts existing consumptive water use
<b>Water Use Efficiency</b>	Score 1 for most change, 5 if no change from existing condition
<b>Environmental Impact</b>	Relative environmental impact: Score 1 if low impact, 5 if high impact