TO: BOARD OF DIRECTORS

FROM: BRUCE BUEL BBB

DATE: FEBRUARY 5, 2008

AGENDA ITEM
E-4
FEB. 13, 2008

ADOPT REVISED WATER CONSERVATION PROGRAM

ITEM

Adopt the revised Water Conservation Program [RECOMMEND ADOPTION].

BACKGROUND

In October 2007 a Draft Water Conservation Program was presented to the Board. The Board of Directors directed revision of the program, which has been accomplished (see attached draft).

The revisions are as follow:

- Staff recommendation is now for a multi-tiered, conservation-based rate structure for both single-family residences and multi-family residences, with the specifics of the rate structure to be decided by the Board.
- Emphasis has been placed on public outreach and education measures.
- Recommendation is now made for the initiation of a pilot turf-replacement program.
- The budget has been revised.

Adoption of the Water Conservation Program may accomplish several goals:

►**Improve the likelihood of qualifying for State grants, funding and low-cost loans**. The California State Department of Water Resources on January 25, 2008 announced $38.3 million for available grants for water-efficiency programs. Review of the documentation indicates that District projects which may be eligible include grant funding of the high-efficiency clothes-washing rebate program, the turf-replacement pilot program, public outreach efforts, and the District landscape rehabilitation into a water-efficient demonstration landscape. There are several other sources of State and Federal funding available, as well.

The DWR has made it quite clear that it requires demonstration of good stewardship of current resources before the State will grant more resources in the form of funding. Adoption of the proposed Water Conservation Program would demonstrate wise stewardship of the Nipomo Mesa's only water resource: the groundwater basin underlying the Nipomo Mesa.

The District is facing the possibility of expensive projects in the future. Every dollar of grant funding we obtain will be one dollar less the District's customers will have to pay. Allowing the District to qualify for grants will lessen the financial burden on the District's customers.

►**Regulatory and environmental groups will regard the District as responsible stewards of its water resources.** The desalination project, for example, will require approval by several regulatory bodies, which may be more inclined to expediently approve a project for a water purveyor which has demonstrated wise stewardship of its resources. In addition, support by environmental groups may be beneficial in the approval process.

►**Save money and resources over time.** It is projected that over 20 years, if 15% water conservation was obtained for seasonal water use (used for landscape, during the warmer months of the year) would save $8,388,000 in water costs alone.

►**Buy time until the Santa Maria Tie-In Project can produce water for the District.** It is estimated that it will be three years before water can be delivered from Santa Maria. The status of the amount of groundwater stored is still being assessed, but it appears that the amount of groundwater available above sea level is decreasing more rapidly than it has in the past. Water conservation can be one of the tools the District can use to bridge the time until supplemental water arrives in the District.

►**Demonstrate to the Community that we are serving the community's best interests by protecting our water resource by ensuring efficient use.** An important part of the future of Nipomo is the availability of water. By approving the Water Conservation Program, the District will show its commitment to safeguarding the viability of the groundwater basin from which it draws its customers' water.

►**Avoid or delay expensive capital investment.** Slowing down the rate of water consumption by our customers will extend the period of time until expansion or upgrading of facilities is required.

RECOMMENDATION

Staff recommends that your Honorable Board adopt the Water Conservation Program and direct staff to implement.

ATTACHMENT

* Draft Water Conservation Program

T:\BOARD MATTERS\BOARD MEETINGS\BOARD LETTER\BOARD LETTER 2008\ADOPT WATER CONSERVATION PLAN.DOC

Nipomo Community Services District

Water Conservation Program

Saving water now for Nipomo's future...

Nipomo Community Services District

President	Michael Winn
Vice President	Jim Harrison
Director	Ed Eby
Director	Cliff Trotter
Director	Larry Vierheilig
General Manager	Bruce Buel
Conservation and Public Public Outreach Specialist	Celeste Whitlow

February 2008

I. Table of Contents

II. Table of Charts, Graphs, Tables

III. Executive Summary

(The Executive Summary is a very brief overview of the proposed water conservation program. For the specifics and details of the program, please refer to the complete report.)

INTRODUCTION: The District faces several challenges in meeting the water demands of its customers, including having only groundwater as a source of water for the District, consumption of groundwater exceeding the rate of natural recharge, and years of delay before supplemental water will be delivered to the District. Reducing customers' water demands is the only way to meet the immediate short-term need to save water, and the cheapest way to moderate long-term water needs.

The water conservation program goal is to achieve an overall 15% reduction in water use by the District. Other benefits to be achieved from this conservation include the maintenance of the District's primary water source, the Nipomo Mesa Management Area groundwater; fiscal savings from decreased need to buy/produce water and decreased operating and maintenance expenses; fiscal savings from decrease, delay or deferment of water and wastewater facility upgrades, repairs and expansions; decrease in environmental damage by decreasing byproducts from energy used to obtain and deliver water; and decrease in stormwater systems pollution due to decreased fertilizer- and pesticide-laden runoff from overwatering landscapes.

WATER CONSERVATION PROGRAM: The proposed water conservation program has been designed to achieve the most savings with the least funding. The criteria for including a measure in the program were: amount of potential water savings; cost to the District (savings:cost ratio); years to pay off the initial investment in equipment or rebate; and ease of designing, promoting and administering the program or measure. Once the measures were analyzed, they were given ranking scores.

The program is divided into two basic parts: the "core measures" and the "non-core measures." The core measures are an integrated set of water conservation measures that are designed to support each other and, as a unit, support the non-core measures. The core measures include public outreach and education, advertising, workshops, technical assistance (leak detection and water audits), and a conservation-based multi-tiered water rate structure. Due to the way that the core measures amplify the impact of each other, they are an example of the whole being greater than the sum of the individual parts. The core measures are designed to be used intact; splitting them apart and only using some of them would greatly decrease the overall efficiency and savings of the program.

The non-core program contains measures that are not all essential to the success of the program. Indeed, it is not anticipated or desired for the Board to accept all of the non-core measures. For some measures (those which would be expensive and difficult to implement) it is recommended that a small pilot program be performed first. Non-core measures included rebates for plumbing retrofitting, high-efficiency clothes-washer rebates, a cash-for-turf replacement program, and rebate/provision of "smart" evapotranspiration-based irrigation system controllers. It is recommended that the latter two measures first undergo small pilot programs before launching larger programs.

RECOMMENDATIONS: The water conservation program measures recommended are as follow:

Core Program Measures: It is recommended that all of the core measures be adopted. These include:

- A multi-tiered, inclining block, conservation-based rate structure
- Public education and outreach/ advertising measures
- Technical assistance measures.

Non-Core Measures Program: It is recommended that the following four non-core measures be adopted:

- High-efficiency clothes washer rebates
- Indoor plumbing (non-toilet) retrofit and leak detection aids
- Pilot turf-replacement program
- Irrigation efficiency equipment.

SUMMARY: The NCSD and its customers are facing water challenges that can only be met with proper planning and customer support. Water conservation plays a vital role in meeting these challenges. Fortunately, there is a wealth of information and statistics compiled by those who have been down this road before us, and we are now on notice regarding the anticipated impending "permanent drought" that may affect us as early as 2050, the anticipated multi-year drought in the nearer future, and the insecurity of the provision of State water. Throughout the State of California, politicians and managers of water suppliers are taking the lead in initiating plans now for the events predicted to occur in the future.

People in the future will look back on those making water policy decisions at this crucial point. By moving forward now in a decisive manner, we can help secure the District's customer's rural way of life in a sustainable manner.

IV. Introduction

"Nothing so needs reforming as other people's habits."
--Mark Twain

The Nipomo Community Services District faces both immediate and long-term challenges to providing water to its customers. The 13% decrease in above-sea-level groundwater stored in the Nipomo Mesa aquifer from April 2006 to April 2007 dictates immediate concern for protecting the long-term viability of the aquifer. According to an article published 8/10/2007 in the journal *Science*, starting in 2009 at least five out of ten of the following years are expected to be hotter than 1998, the warmest year recorded.[1]

Water suppliers throughout California are aggressively asking for increased water conservation from their customers[2,3,4,5,6] and some are instituting new ordinances relating to amount and type of irrigation for new construction, "smart" irrigation controllers, and golf course turf and irrigation.[7] For at least one California county, a state of water emergency has been declared,[8] and another county has asked for federal disaster aid with an emergency declaration possible in the very near future.[9]

In addition, reliance on State Water may not be a prudent decision as the reliability of the source may be in question. Because of the environmental litigation regarding the Delta smelt, a 30%-to-50% reduction in water transfers going south of the Delta may be ordered by the court.[10] The condition of California's levee system makes it vulnerable to failure from flooding or earthquake, contaminating the Delta system (from which much of the State water going south is derived) with saltwater from San Francisco Bay.[11] FEMA is now questioning whether some of the Delta levees can withstand the next flood.[12]

The combination of the Delta ruling and an anticipated multi-year drought has driven California politicians and water suppliers to initiate planning to meet their responsibility to providing water to constituents and customers.

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[1] Kerr, Richard A. *Humans and Nature Duel Over the Next Decade's Climate*. Science 10, August 2007, 317:746-747.
[2] Rockenstein, Denise. *Citizens asked to reduce water use as Lower Lake faces shortage.* Lake County Record Bee, 08/28/2007
[3] *Metropolitan Launches Serious Water-Saving Message in Most Extensive Outreach, Education Effort in District. History.* Businesswire.com, 08/06/2007
[4] Halter, Reese. *California Focus: State Likely Faces a Drier Future.*
[5] Simmons, Ann. *Palmdale Water Board Orders Conservation Measures.* Los Angeles Times, 08/30/2007.
[6] Duarte, Jesse *Water shortage hurts Upvalley vineyards; St. Helena's lower reservoir at less than half its capacity.* Napa Valley Register, 08/31/2007.
[7] Atagi, Colin. *New Plans to Curb Water Usage.* Desert Sun, 08/31/2007.
[8] Abrams, Jonathan. *Water Emergency is Declared in Riverside County.* Los Angeles Times, 07/20/2007.
[9] Hearden, Tim. *Supervisors Ask for Drought Aid.* Redding Record Searchlight 08/29/2007.
[10] Dobuzinskis, Alex. *Court Could Devastate Water Supply: Half of Southland's Imported Resources from North at Risk.* Los Angeles Daily News, 08/30/2007.
[11] *If the Levees Fail in California.* Business Week (www.businessweek.com), 08/20/2007.
[12] Miller, Inga. *Will Levees Hold? FEMA Unsure.* The Modesto Bee, 08/31/2007.

According to California Governor Arnold Schwarzenegger, *"Due to climate change, we can expect a decrease in our snow pack by as much as 40 percent by the year 2050, which means more flooding in the winter and less drinking water in the summer. We can't afford to wait any longer. We need a water management strategy that tackles all our long-term water needs. That means increasing water storage, developing new conveyance systems, fixing the Delta, restoring key water resources and aggressively moving forward with conservation efforts… I want California to remain at the forefront of water conservation and be the model for the next generation of smart water users. That's why in my water infrastructure plan I've proposed California's largest investment in water conservation ever."*[13]

The recent court ruling regarding a probable significant decrease for six months of the year (June to December) of Delta water being pumped out to its water agency clients, combined with last winter's weak rainfall numbers and predictions for a multi-year drought, is causing many water agencies to put their customers on notice now: if significant voluntary conservation is not soon demonstrated, they can anticipate mandatory rationing in the future. Water managers throughout the state are leading the way in ensuring that they meet their responsibilities to their customers. Much of the San Francisco Bay area is introducing the specter of rationing, including Alameda County Water District (which gets 40% of its water from the Delta) and the Santa Clara Valley Water District (which gets 50% of its water from the Delta system).[14] Silicon Valley is also looking toward the possibility of mandatory water rationing, its first in 16 years.[15]

Despite the recent rains, water suppliers throughout California are advising their customers that there is still a water shortage, and are raising rates and imposing surcharges to cover the increased costs of water. Accourding to Bill Patzert, a climatologist with the Jet Propulsion Laboratory in La Canada-Flintridge, the recent rains are "…a drop in the bucket, We crept into this drought and we will crawl out even more slowly." [16]

At least one city is investigating the feasibility of requiring recycled water use for selected residential, commercial and industrial developments, said Santa Rosa Water Resources Planner Jennifer Burke. "Wastewater," Burke said, "is drought-proof and sustainable."[17]

The Metropolitan Water District is looking towards the possibility of rationing,[18] and that means that the water agencies supplied by MWD will have to pass that on to their customers. The general manager of Western Municipal Water District (which supplies the western half of Riverside County), John Rossi, said that some kind of mandatory conservation would be addressed. According to Tim Quinn, president of the Association of California Water Agencies, "The crisis is indefinite, and will last beyond the one-year court order."

Randy Van Gelder, general manager of San Bernardino Valley Municipal Water District, which imports Delta water for several cites, believes that the court decision will have a lasting impact, unlike the effect of a natural drought. Long before the court ruling, the Inland Empire was suffering from the effects of an eight-year drought impacting the Colorado River, with Sierra Nevada snow pack at its lowest levels since 1990, and 30% of normal snowfall in local mountains (water from which recharges the aquifers). If the worsening water situation persists, a number of Southern California areas may be adopting a rate structure that penalizes those who use over a certain level

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[13] *California Governor Schwarzenegger Pushes Compehensive Water Plan."* www.allamericanpatriots.com. 05/10/2007.

[14] Curiel, Jonathan. *Forced Water Conservation May Follow Dry Winter*. San Francisco Chronicle, 09/05/2007.

[15] Rogers, Paul. *Water Rationing Could Be on the Horizon.* San Jose Mercury News, 09/05/2007.

[16] *Water Supplies Low Despite Recent Rain*. San Gabriel Valley Tribune, 01/10/2008.

[17] McCoy, Mike. Santa Rosa May Force Use of Wastewater. Santa Rosa Press Democrat, 09/10/2007

[18] Dobuzinskis, Alex. *Court Could Devastate Water Supply: Half of Southland's Imported Resources from North at Risk*. Los Angeles Daily News, 08/30/2007.

of water.[19] Mr. Van Gelder also indicated that, unless there is significant and substantial rainfall this winter, authorities may turn to water rationing. Mr. Van Gelder said the anticipated decrease in rainfall and State Water deliveries might translate into less water to keep lawns green, and in a few years may produce restrictions on the amount of residential lawn allowed.[20]

The Los Angeles Department of Water and Power, faced with uncertainty about the reliability of State Water deliveries in the future, is focused on safeguarding their water supplies, and is preparing water rationing contingency plans. If rationing occurs in L.A. it will be a first for the city. David Nahai, president of Department of Water and Power commissioners, said "If that is what will be needed in order to safeguard our water supplies, well, so be it. But we'll have to see just what this plan is that Metropolitan Water District will be putting forward."[21]

The impact on agriculture of the uncertainty of water deliveries is predicted to be significant. Many farmers are concerned that the amount of reduction of State water delivered may make growing crops unprofitable, leading to a reduction in work force. According to Greg Zlotnick, special counsel for the Santa Clara Valley Water District, which provides Delta water to 1.7 million people in Silicon Valley, "It's our quality of life that is at stake and the regional economy as well."[22]

Another scenario worrying economists is the impact on local economies should farmers, faced with the questionable reliability of State water deliveries, decide to sell their water allotment to water-strapped cities. It is predicted that these cities will make big-money offers for the water. Fallow fields, especially in San Joaquin Valley which is already economically depressed, would decimate local economies.[23]

California is looking to its politicians to solve California's water crisis. A Chico Enterprise Record editorial claims that the water shortage has a silver lining: forcing politicians to do what it takes to definitively solve this long-standing problem: "Let's see. Perhaps the court's forced cutbacks will force the politicians' hand. Maybe they'll finally have to quit ignoring the warning signs and face up to the problem. Maybe they'll spend money on delta restoration. Maybe they'll force cities and farmers to do more in the way of recycling water and conserving water...."[24]

At least one water supplier, San Lorenzo Valley, has already implemented mandatory restrictions. After requests for voluntary conservation of 20% were not successful, San Lorenzo imposed mandatory restrictions, including banning irrigation during the daytime. The next step, said Jim Mueller, the agency's director, would be water rationing and fines.[25]

Locally, the Nipomo Mesa has been the perennial recipient of a large part of new residential development in the San Luis Obispo County. Despite the County's certification of a Level of Severity III (use exceeds resource) for water resources in the Nipomo Mesa Management Area, construction of new developments continues. Under consideration now by the County is the State affordable-housing mandate, and the County is considering targeting the Nipomo Mesa with 80% of the new multi-family, high-density affordable-housing.

Many of the District's customers, aware of the limited water availability, look at the possible large increase in new housing in the Nipomo Mesa and the requests to voluntarily conserve water, and

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[19] Bowles, Jennifer. *Ruling spurs 'great deal of uncertainty' over water supply.* Riverside Press Enterprise, 09/05/2007.

[20] Edwards, Andrew. Time to Conserve Water is Now, Officials Say. Inland Valley Daily Bulletin. 09/09/2007

[21] Contingency Plans Drawn Up for Possible SoCal Water Rationing. Associated Press. 09/06/2007.

[22] Weiser, Matt. *Less Delta Water Means Dry Times.* Sacramento Bee. 09/06/2007.

[23] *Politicians Frozen Amid Water Crisis.* Chico Enterprise Record. 09/07/2007.

[24] *Ibid.*

[25] Associated Press. *Water Restrictions: Mandatory Water Restrictions for San Lorenzo Valley Residents.* 09/06/2007.

believe their sacrifices in conserving water will be used to provide water for new development. It is recommended that Board address this issue if full public support of a water conservation program is desired.

District customers would be more enthusiastic about conserving water if they knew that their sacrifices would not simply be used to provide water for new housing.

The target water conservation goal is an overall 15% for the District's customers, using 2006's consumption figures as the starting point (.65 AF/Y per account). The year 2006 was chosen because it is the last year for which complete water consumption statistics are available. The average per-account usage in 2006 is also very close to the average per-account usage for the years 2001-2006 (.68 AF/account), and so is viewed as representative of a longer-term pattern for the District's customers.

It is believed that a goal of 15% water conservation is a reasonable goal that can be achieved with the District's support and a reasonable amount of customer effort.

In addition, 15% is:

- The stated goal in the District's *2005 Urban Water Management Plan.*
- A median average goal from the Kennedy/Jenkins report.
- Recommendation from the Resource Management Study for San Luis Obispo County, prepared by John Hand (to be achieved by 2010).

Much of what humans do on a daily basis, including how they use water, is done by habit. For the NCSD to meet the challenges we face, we must convince our customers to use less water, which will require a multi-faceted approach by the District to help them change their water-use habits.

While the District's customers use only a portion of the Nipomo Mesa's groundwater, the District, by taking the leadership role in responsible stewardship of this limited resource, stands a better chance for setting a responsible course for the future of the Nipomo Mesa aquifer.

Water saved by conservation practices can be a dependable, cost-effective source of supplemental water.[26,27] It saves considerably for utilities in capital and operating costs, and for customers in the amount they pay for water.[28]

By implementing a goal-oriented, cost-effective Water Conservation Program, which is practical in design, the District can not only best serve its customers, but place itself at the forefront of resource stewardship by protecting Nipomo's water resource—and, therefore, Nipomo's economic viability—for future generations.[29]

BASICS OF THE PROGRAM:

All statistics and analyses of District water production and consumption are based on the annual California Department of Water Resources Public Water System Statistics which the District must file with the State each year.

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[26] G. Henderson. *City of San Luis Obispo 2006 Water Resources Status Report.* 2006
[27] Vickers, Amy. *Handbook of Water Use and Conservation.* Amherst, MA: Water Plow Press. 2001.
[28] Ibid.
[29] Troxel, Wyatt. *Saving Water Now a Critical Issue.* www.dailybulletin.com. 08/26/2007.

The excerpts of referenced sources at the end of this document are provided as examples of information given in the sources, and not meant to provide detailed information of all referenced sources in this document.

Projections of costs and benefits over years reflect an annual 3% increase. Projections of number of meters and estimated population are based on the average percent-change (increase) from 2003 to 2006, a 3.22% average annual increase.

Estimates on amount of savings to anticipate from a measure are based on existing studies, adjusting for Nipomo's climate when necessary (i.e., when using the estimates from a landscape study based in southern Nevada, proportional analysis was used to arrive at figures that would reflect Nipomo's much lower evapotranspiration rate). In all cases, the estimates based on other studies were actually lower than could have been justified, with the desire to be more conservative in estimations of savings.

The FY2008 budget for the water conservation program is based on previous budgets for water conservation and current estimates of amount of resources needed to provide the support the District's water customers need in meeting the program's conservation goals. For all measures presented, costs for the initial year of the program are much greater than the costs of subsequent years. For some measures (toilet and other hardware installations), the costs are required only at the initiation of the program, when the actual costs for promoting the measure to customers, and purchase/rebates, are provided to the customers. After the initial installation of the hardware, subsequent years until the end of the expected life of the hardware (up to 20 years) are profit.

There are two basic categories of water-conservation measures recommended:

1. **Core program measures.** A grouping of measures which are the bedrock support upon which rests the success of the other program measures. The non-core water conservation measures are designed based on the core program measures remaining intact. The core program measures are meant to be implemented together and intact. The core program measures depend upon each other, and the other program measures depend on the Core program measures. Public education, advertising, conservation-based rate pricing and technical assistance to customers are all part of the Core program measures.
2. **Non-core-program measures ("stand-alone" measures).** These are measures that are not dependent on each other, but are dependent upon the core program measures. It is not recommended, desired, or anticipated that all of the non-core measures will be implemented. This is a category where analysis and study will help the District select which measures will be implemented, and when they will be implemented.

The core elements support all other measures; therefore, costs for the core elements are apportioned to each of the non-core elements. The percentage of each non-core element's share-of-core-elements costs is based on an estimation of the amount of support services each non-core element will require. For some non-core elements (e.g., showerhead replacement), all costs are in the very beginning of that element's program, and follow-up over the years of the program is not required. For other non-core elements (i.e., those that involve changing of habits or behaviors), yearly follow-up is required as reinforcement of the gains of the element.

A voluntary conservation goal of an average15% decrease of overall water consumption has been chosen by the District. This goal is reasonable, and it is believed that it can be obtained with reasonable effort by the District and its customers.

The non-core elements of the program have been selected based on the following criteria:

1. The amount of potential water savings.
2. Cost to district (savings:cost ratio).
3. Years to pay off initial investment in equipment or rebates.
4. Ease of designing, promoting and administering the program for the measure.

To attain this goal, non-core elements have been proposed and rated as to benefit to the District. The non-core elements were chosen for their ability to make it easier for the District's customers to conserve water. See *Comparison and Ranking of Measures*, page 89.

Rebates or outright purchase of equipment for customers reap many benefits.

- Rebates encourage customer participation in the program. Designing, launching and administering a water conservation program requires a great deal of staff time and effort, as well as funds for public-education and advertising support of the program. Programs without rebates, or has rebates but in amounts that aren't sufficient to generate enough customer interest to get ensure participation, end up spending staff time and effort, and supportive funding, with very little return.
- A well-designed and planned water conservation program produces water savings sufficient to warrant the water supplier's funding of customer rebates. The rate of return of a strong rebate program has inspired water suppliers all over the country to invest in these measures.
- Rebates communicate to all customers, even those not participating in the program, the value and efficacy of the recommended measure (i.e., the District would not be offering a rebate if the measure was not believed to be of value in saving water and funds).
- Rebates are a strong focal point of advertisements. Even a small pilot program, especially of a measure that has not previously been used in the region, can generate media interest and publicity. This, in turn, communicates to customers the value of the program.
- The amount of the rebate influences customers' willingness to participate in the rebate program. Since the majority of shared program costs (public education, advertisement, etc.) occur in the initial years of the measure, it is important for the amount of the rebate to be sufficient to encourage participation; otherwise, the shared program costs are not efficiently used, and the non-core program measure will not be optimally utilized.

A total of 13 core measures and 8 non-core measures are presented. It is not anticipated nor desired of the Board that they approve all of these measures. With adoption of the intact core program measures, it is anticipated that with only the high-efficiency clothes-washer rebate program, non-toilet hardware retrofit measures, small-item irrigation efficiency items, and turf-replacement program, the District will be able to come close to meeting the goal of 15% water conservation.

While the selection or omission of non-core elements can be flexible, core elements cannot be omitted without crippling the results of the non-core measures chosen and funded by the District. Without the core elements of the program, the District will have to spend more on its programs to get less.

If the core program is not accepted intact, then other non-core measures will need to be chosen to accomplish enough water conservation savings to justify the water conservation program. Some of these non-core measures will require a great deal of staff time to accomplish. Funding for extra staff has not been included in the projected costs, but can be provided at the Board's request.

If the Board decides to omit portions of the recommended program, the Board is respectfully requested to select other measures to provide the needed savings and serve the same role in the overall program as the omitted core measures.

V. PROGRAM GOALS

1. Maintain the long-term health of the District's primary water source, the Nipomo Mesa sub-area of the Santa Maria Groundwater Basin.
2. Staff-recommended water use reduction of 15% for the District.
3. Gain support of Nipomo residents for the water conservation program.
4. Share the burden and costs of water conservation equitably across all customer types.
5. Educate the community on Nipomo's unique water balance, the link between use and supply, and the consumers' responsibility for protecting groundwater quality.
6. Promote awareness regarding Nipomo's limited water sources, the dependence on the Nipomo Mesa aquifer for 100% of water delivered to customers, and the risk of contamination by seawater should saltwater intrusion occur.
7. Keep the community informed regarding the status of the multifactorial conditions that impact water supply in the Nipomo Mesa.
8. Provide education and support for the public in water-efficiency measures for indoor and outdoor water use.
9. Provide leadership by example by demonstrating practical and attractive water-efficient devices and landscapes on District property.
10. Avoid, defer or decrease of expansion and costs of water and wastewater facilities.
11. Reduce energy combustion byproducts that play a role in air pollution and climatary change.
12. Reduce costs and impact on the environment.
13. Enforce existing ordinances, and implement new ordinances as required.
14. Comply with all regulations and ordinances.
15. Accurately assess success of program by program monitoring, economic analysis, and revision, as necessary.
16. Increase the District's credibility as a resource steward.

VI. OVERVIEW OF BENEFITS FROM WATER USE EFFICIENCY

BENEFIT RECIPIENT	TYPE OF BENEFIT	DESCRIPTION OF BENEFIT
Water Utility	Supply System O&M	Short- and long-term O&M costs reduced secondary to lower energy expenses related to reduced pumping and use of chemicals in water treatment and disposal.*
Water Utility	Supply System Capital Invest.	Capital facilities can be deferred or downsized.
Water Utility	System Reliability	Less water purchased from other water purveyors/sources, and more reliability of supply yields, depending on available capacity.
Wastewater Utility	System O&M	Short- and long-term reductions in O&M costs resulting from lower energy expenses because of reduced loading on collection systems, pumping volume, aeration, and chemical use in wastewater treatment.
Wastewater Utility	Disposal System Capital Investment	Capital facilities for land disposal can be deferred or downsized. There are additional benefits when wastewater discharge restrictions are present.
Environment	Quality Enhancement	Decreased need for dams and reduced construction disturbance in natural waterways of third-party suppliers who provide supplemental water.
Environment	Quality Enhancement	Decreased in pollution entering stormwater systems secondary to decreased fertilizer- and pesticide-laden runoff from overwatering landscapes.
Environment	Quality Enhancement	Reduced green solid waste to landfill with reduction of overwatering and excessive growth of plants/turf; reduced pollution from trucking; reduced landfill space.
Environment	Quality Enhancement	Higher stream flows for fish and wildlife habitat of third-party suppliers who provide supplemental water.
Environment	Quality Enhancement	Reduced pollution, less addition to landfill due to deferred or downsized of construction of capital facilities.
Environment	Quality Enhancement	Deferment or downsizing of desalination plant, deferring or limiting impact on ocean wildlife and habitat.
Community	Aesthetic Quality	Diminished aesthetic effects on waterways from avoided or deferred capital projects.
Community	Environmental Justice	Fewer social equity issues with facility concerns.
Community	Public Health	Leakage reduction programs lower risk of contamination in the distribution system; water supply reliability supports health and hygiene.
Community	Economic	Increased economy on the same resource, creation of water conservation jobs, customer savings in utility bills.
Community	Economic/Political	Fiscal savings from avoided or delayed new capital expenditures or debt.

*The Electric Power Research Institute estimates that 4 to 5% of all electricity used in the U.S. is used for pumping water[30]

[30] *AWWA M50 Water Resources Planning Manual of Water Supply Practices.* American Water Works Association. June 2001.

VII. Water Use Characteristics

1. PRODUCTION:

1.1. Production, Non-Revenue Water, and "Unaccounted Losses."

For the years 2001-2006, the District produced a total of 16,197.78 acre-feet of water (average of 2699.63 acre-feet/year), delivered a total of 15,202.42 AF (average of 2533.74), and percentage of loss was a total of 995.36 AF (average of 165.89). The percent losses averaged 6.21% per year (Table 1).

Table 1: PRODUCTION and LOSSES 2001 - 2006

Year	Total Produced	Total Delivered	System Losses	Losses as %of Prod	% Change
Yr.2001	2395.02	2238.07	156.95	6.55%	
Yr.2002	2630.79	2340.53	290.26	11.03%	9.84%
Yr.2003	2743.33	2567.08	176.25	6.42%	4.28%
Yr.2004	2907.83	2810.24	97.59	3.36%	6.00%
Yr.2005	2794.04	2638.51	155.53	5.57%	-3.91%
Yr.2006	2726.77	2607.99	118.78	4.36%	-2.41%
TOTALS	**16,197.78**	**15,202.42**	**995.36**		**13.80%**
AVERAGE	**2699.63**	**2533.74**	**165.89**	**6.21%**	**2.76%**

For accurate financial planning, projections and estimations of cost are made by the marginal (next-increment) cost.[31,32] Using the $2000/AF estimated next-increment cost of water, the yearly average monetary loss from non-revenue water and "unaccounted-for losses" in the production-distribution system is $331,780.00.

The total percentage increase in production from 2001-2006 was 13.85%, and the average production increase each year was 2.31%.

1.2. Status and reliability of water source.

The District's sole source of water is groundwater from the Nipomo Mesa aquifer. The District currently uses eight active wells, one active well in Nipomo Valley, and one standby well. The cost for the District to pump and deliver groundwater to District customers is approximately $500/AF.

The aquifer under the Mesa has been in a steady pattern of consumption-greater-than-recharge for several years. Over the years the level of groundwater stored in the aquifer has dropped 58 feet. The District, along with approximately 800 other parties, has been involved since July 1997 in litigation over the Santa Maria Groundwater Basin pumping rights. A majority of parties, including the District, have entered into a Stipulated Agreement which, among other things, requires the District to import 2500 acre-feet/year of supplemental water toward mitigation of a long-term consumption-greater-than-discharge of the aquifer. The District's plans are actually for 3000 AF/Y of supplemental water, with the excess going to meet the demands of current customers.[33] Currently it is estimated that the time to deliver this supplemental water to the

[31] HDR Engineering, Inc. *"Utility Billing System Enhancements, City of San Luis Obispo, Volume 1 – Utility Rate Structure Evaluation."* March 2006

[32] Stavins, Robert. *As Reservoirs Fall, Prices Should Rise, an Economic Perspective.* Environmental Law Institute (The Environmental Forum, November/December 2006.

[33] *Nipomo Community Services District Draft Ordinance, Chapter 3.24, Emergency Water Shortage Regulations (Third Draft).* April 2007.

Nipomo Mesa is three-plus years for Santa Maria City water, and 10 years for construction of a desalination plant.

To meet the District's long-term needs, and to establish a long-term reliable source of potable water, the District is investigating the construction of a desalination plant. It is estimated to take 10 years for water from desalination to be available.[34]

Nipomo's summer temperatures average 75 degrees, and winter temperatures 38 degrees. The average rainfall for Nipomo is 16.82" per year. In the 2006-2007 rain season, Nipomo received only 6" of rain (35.6% of normal). California may be entering a multi-year drought. It is predicted that in the decade starting in 2009 that five of the following ten years will have temperatures higher than current record temperatures.[35] In addition, it is predicted that the American Southwest may enter a "permanent drought" as early as the year 2050[36]. In a Department of Water Resources hearing on 08/23/2007, experts testified that in Southern California last winter's rainfall was the lowest since rainfall records were started in 1877. Global climate change will have a dramatic impact on California's water resources, reduce the Sierra snowpack by at least 25% by 2050, decrease spring runoff into the Sacramento-San Joaquin Delta, and contribute to more severe droughts. The consensus of opinion of experts who testified 08/23/2007 at a hearing of the State Water Resources Control Board was that increased conservation and better use of local groundwater and reclaimed water were the best strategies to deal with these challenges.[37]

Table 2: CONSUMPTION CHANGE FROM 2002 TO 2007 (MEAN DIFFERENCE)

Categories	2002 AF/Y Consumption	2007 AF/Y Consumption	2002-2007 Difference	Mean Difference (AF)
SFR	1,839.45	2205.89	366.44	73.29
MFR	85.19	106.65	21.46	4.29
CI	85.70	101.64	15.94	3.19
Landsc	233.95	321.63	87.68	17.54
Other	79.09	97.78	18.69	3.74
AG	17.15	15.81	-1.34	-0.27
TOTALS:	**2,340.53**	**2849.40**	**508.87**	**101.77**

►There is a two-month delay in the bimonthly billing cycle. Example: Consumption billed in March is actually for January.
►Based on increased rate of consumption from January-April 2007.
SFR= Single-family residence
MFR=Multi-family Residence
CI=Commercial, Institutional (businesses, schools)
Landsc=Large landscape accounts
Other=NCSD facilities, construction hydrant-water use
AG=Agriculture

[34] *Evaluation of Supplemental Water Alternatives-Technical Memorandum No. 1, Constraints Analysis.* Boyle Engineering, June 2007.
[35] Kerr, Richard A. *Humans and Nature Duel Over the Next Decade's Climate.* Science 10, August 2007, 317:746-747.
[36] Alan Zeremba, B. Boxall. *Permanent Drought Predicted for the Southwest.* Los Angeles Times, 04/06/2007.
[37] Herdt, Timm. *Changes in climate tied to water supply.* Ventura County Star, 08/24/2007.

The District has contracted with Boyle Engineering to assess the supplemental water options available. At this time, the original eight supplemental-water options have been narrowed down to two: obtaining, through an agreement with the Santa Maria Intertie Project by which Santa Maria will sell 3000 AF to the District, (short-term solution), and building a desalination plant (long-term sustainable solution).

The estimated cost for desalination is $2000 to $4000 per AF, plus the cost of purchase or lease of the land for the desalination facility, and time to completion of the project is estimated at between 8 and 10 years. The estimated cost for the Santa Maria/State Water allocation option is approximately $2000/AF,[38] and time to completion of project is estimated as three-plus years.

The District has contracted with Science Applications International Association (SAIC) for geohydrological study of the Nipomo Mesa. As part of this study it was ascertained that, between April 2006 and April 2007, the Nipomo Mesa aquifer had a 13% decrease in above-sea-level groundwater storage. Some wells were found to be pumping below sea level.

This puts the Nipomo Mesa aquifer at risk for saltwater intrusion and collapse. As the rate of consumption-greater-than-recharge continues and increases, the risk to the aquifer also continues and increases.

If the aquifer beneath the Nipomo Mesa was to experience collapse or saltwater contamination, it would force the District to import all of the water necessary to satisfy the demand of District customers until a desalination plant, or other long-term source of water, was completed.

Depending on State Water for a water source is problematic. The amount of water delivered from the Colorado River has decreased 30% due to the decreased Sierra snow-pack last winter,[39] an average of 25% reduction in snow-pack is predicted by the year 2050,[40] and a major source of State Water, the Delta system, is at risk due to litigation over the Delta smelt (which may reduce by as much as 50% the amount of water sent south) and a degraded levee system which, if it fails, could result in saltwater contamination from saltwater intrusion from San Francisco Bay.[41]

1.3. Wastewater Recycling. Water recycling, also known as "water reclamation" or "water reuse," is the process of treating wastewater, and then storing, distributing, and using the recycled water. Recycled water, as a result of treatment of wastewater, is suitable for a controlled beneficial use that otherwise would not occur. Recycled non-potable water is recycled in semi-arid areas, such as California, where public policy emphasizes water recycling. Recycled non-potable water frees up large amounts of potable water previously used for activities such as landscape irrigation. In California, an average of 525,000 AF/Y of recycled water is used annually. In 2002, uses for recycled water included agriculture irrigation (46%), landscape irrigation and impoundment (21%), seawater barrier (5%), groundwater recharge (5%), and industrial use (5%). California State law encourages the development of water recycling projects to meet California's water needs (Water Reclamation Law, Water Code Sections 13500-13556).

Recycled water use has many benefits, including restoration of wetlands and marshes; defer or delay the impact of a drought by conserving potable water; improvement of soil by providing

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[38] *Evaluation of Supplemental Water Alternatives-Technical Memorandum No. 2.* Boyle Engineering, June 2007

[39] Dobuzinskis, Alex. *Court Could Devastate Water Supply: Half of Southland's Imported Resources from North at Risk.* Los Angeles Daily News, 08/30/2007.

[40] Herdt, Timm. *Changes in climate tied to water supply.* Ventura County Star, 08/24/2007.

[41] *If the Levees Fail in California.* Business Week (www.businessweek.com), 08/20/2007.

additional sources of water, nutrients and organic matter; provision of drought protection; and the social benefits of providing more jobs.[42]

Drawbacks of recycled water use include negative public perception, possibility of excessive salts applied to soil, and the unintended use of recycled water for potable-water purposes due to human error.

Recycling of water requires tertiary treatment of wastewater. The District's wastewater treatment facility currently treats to only a secondary treatment level. Therefore, an additional drawback for the District for recycling wastewater would be the costs of upgrading the facility to the tertiary level of treatment, and adding wastewater recycling functions to the facility.

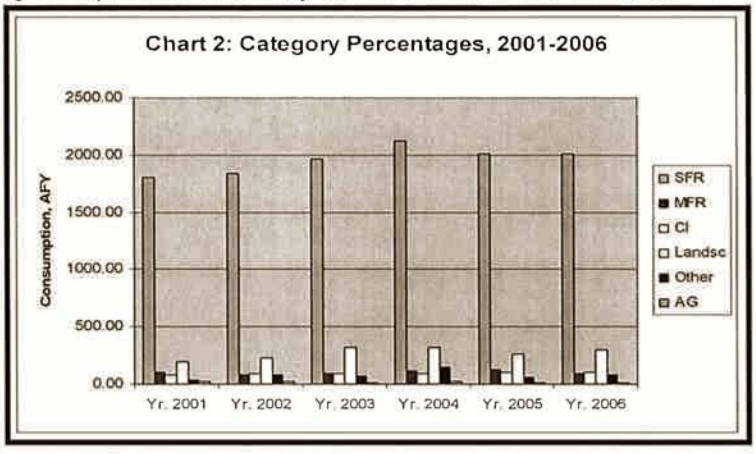
Currently, in California, approximately 5 million AF/Y is being collected for recycling, and out of this amount approximately 14% ends up as recycled water.[43]

Translating California's figures to District-relevant figures, projected for the years 2008-2027, over that period of time, if wastewater recycling were possible for the District, a total of 882.704 AF of the District's potable water would be saved (average 44.135 AF per year), saving approximately $2,518,629.54 in total (average $125,931.47 per year). The percentage of potable water freed up by the use of recycled water would be approximately 1.37%.

1.4. Summary: Comparing the amount of water produced to the amount of water delivered, over the last six years the District has had a yearly average of 6.21% in losses.

The District continues a long-term trend to draw more water from the aquifer than can be replenished by nature. In the last year, the amount of groundwater stored in the aquifer above sea-level has decreased by 13%. The District customers' water consumption increased between January-April 2006 and January-April 2007, and if the rate of increase persists throughout 2007, it is projected that the District's customers will use 3511.09 AF in 2007, an increase of 472.04 AF from that which would be expected based on the average increase per year from 2001 to 2006.

The District currently has one source of water, groundwater from the Nipomo Mesa aquifer. It will take at minimum three-plus years to get supplemental water to the District. Currently the plans for supplemental water are accessing Santa Maria City water (short-term) and construction of a desalination plant (long-term). The reliability of State water as a source of supplemental water is questionable due to a possible 30% to 50% reduction in delivery of contracted amounts secondary to the impact of a combination of climatary and legal problems. The District does not have the current capabilities to recycle wastewater into water suitable for non-potable uses.



The District's only current source of water, the Nipomo Mesa aquifer, because of consumption greater than

[42] *Water Facts (No. 23): Water Recycling.* California State Department of Water Resources. http://www.owue.water.ca.gov/recycle/docs/WaterFact23.pdf.
[43] Karajeh, Fawzi. State of California Department of Water Resources. Telephone call on 09/05/2007. (916) 651-9669.

discharge, is at risk of contamination and collapse.

At this time the only option available for achieving a decrease in consumption-greater-than-recharge of the aquifer is to decrease consumption. This can only be achieved by water conservation.

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2. CONSUMPTION:

2.1. Categories of Consumption.

The District's customers are split up into six categories:

Table 3: METERS AND USAGE BY CATEGORY (2006)

Category	# of Meters	AFY Usage	Avg. AFY/Meter
SFR	3423	2010.23	0.587
MFR	390	93.83	0.241
CI	96	104.19	1.085
Landsc	83	298.38	3.595
Other	varies	84.92	varies
AG	3	16.44	5.480
TOTALS	**3995**	**2607.99**	**.65**

Single-Family Residence (SFR): SFRs are residences that traditionally have one house per lot, and one meter per parcel, although this is changing with the addition of secondary units to some residences. The SFR category has the largest number of meters (85.7%) in the District. The average use per meter is 0.587 acre-feet/year (AFY). This category in 2006 used 77% of the total District metered water consumed, 2010.23 AF/Y.

Multiple-Family Residences (MFR): Residences that have more than one residential unit per parcel (apartments, duplexes, etc.). Usually there is one meter for the entire parcel; individual units are not billed by the District. MFR meters are 9.8% of total District Meters. MFR category in 2006 used 3.6% of all metered water consumed by the District, 93.83 AF/Y.

Commercial / Industrial (CI): There are only 96 CI meters (2.4% of all meters) in the District. There are no Industrial meters and relatively few Commercial businesses. CI category in 2006 consumed 104.19 AF (4%) of all District water used.

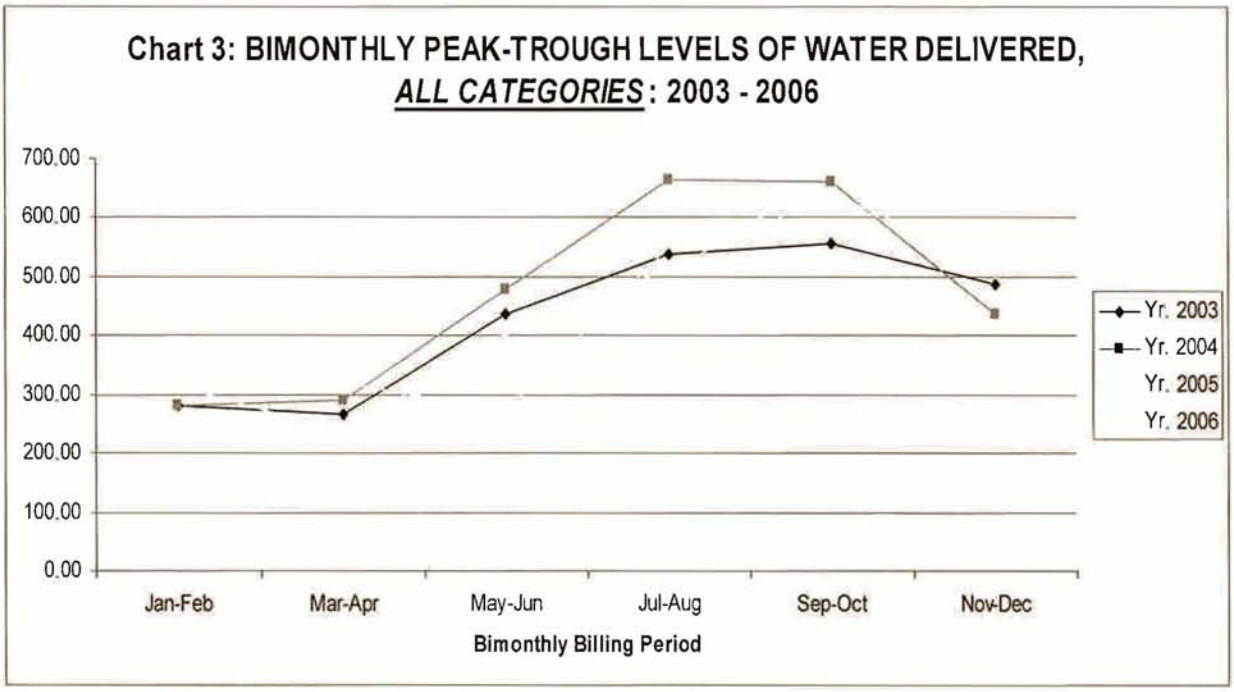
Landscape (LANDSC): Landscape meters are for large areas of landscape (parks and landscape/turf areas of homeowners associations). There are 83 landscape meters (2.1%) in the District. In 2006 this category consumed 298.38 AF (11.4%) of all metered water used in the District.

Other: The Other category includes the NCSD facilities and hydrant water used by construction projects, sprayed on bare soil during construction to decrease the amount of airborne dust. The number of Other meters constantly changes, due to the variability and temporary nature of the construction hydrant-water use. The hydrant water is metered and charged at a flat rate. This category used 84.92 AF in 2006 (3.3% of metered water used in the District).

Agriculture (AG): The District only has 3 AG accounts (0.008% of all District meters). This category used 16.44 AF in 2006, or 0.63% of all metered water consumed in the District.

For the years 2001-2006, by far, the "single-family residence" (SFR) customer category used the highest percentage of the total used by all categories (77.8%). The "landscape" category was the next-highest percentage of total use (11.45%). (Table 3, Chart 1)

The District's water delivery (consumption) from 2001 to 2006 showed little relative



change in the percentage-of-total figures for the customer categories. The largest increase over the six-year period was in the "Other" category (water for NCSD and Blacklake facilities, and hydrant water used for construction), which demonstrated a 136.28% increase over the six years (48.98 AF over six years, and a 22.71% average increase per year). The "agriculture" category showed a decrease of 12.79% from 2001 to 2006 (a decrease of 2.41 AF over six years, with an average decrease per year of 2.13%). The SFR category showed an 11.45% increase from 2001-2006 (206.59 AF over six years, and an average increase per year of 1.91%). (Table 3; Chart 1,2)

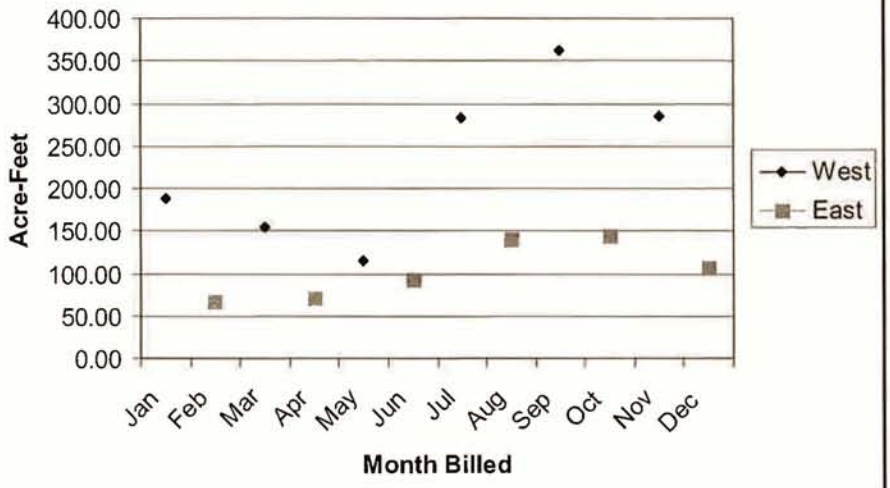
All categories, combined: For all categories, combined, the average per-meter usage was .684 AF/Y for the years 2001-2006.

2.2 Seasonal Patterns of Consumption.

Note: Because of the nature of the billing cycle, amounts billed in one billing cycle actually were for the previous two months. Example: A customer's bi-monthly bill sent in March is actually for water consumed in January and February.

The Nipomo Mesa is charac-terized by typical Mediter-ranean climate patterns, with the majority of the rainfall occurring in the cool winter months; summer months are generally warm and dry. The average annual precipitation is approximately 16.82" The warmest month of the year is September, and the coldest month of the year is December. (Table 4, Chart 3)

Chart 4: MONTHLY CONSUMPTION PATTERN OF USE THROUGHOUT THE YEAR
Single-Family Residence, 2006



The District's customers are billed for their water and sewer use on a bi-monthly billing cycle. One-half of the customers are billed each month: West side of town, except for Blacklake and Summit, on odd months; East side, Blacklake, Summit on even months.

Table 4: AVERAGE SEASONAL WATER USE, (% OF ANNUAL USE) 2003-2006 (AF)

Category	Avg.Lowest BiMonth	Avg.Highest BiMonth	Average, Total Use	Seasonal Use (%)
SFR	212.04	482.20	2045.88	62.18
MFR	15.21	20.79	105.6	86.42
CI	12.3	20.80	97.62	75.60
LANDSC	24.23	74.76	301.26	48.26
OTHER	12.74	22.72	89.47	85.44
AG	1.59	3.66	16.13	59.14
		TOTAL:	**2655.96**	**417.04**
		AVG.SEASONAL USE TOTAL:	**442.66**	**69.51**
Formula[44]: Average % Change =		100 x (lowest bimonthly period x 6). / annual use		

California water purveyors estimate the amount of a SFR's water consumption due to irrigation by assuming no irrigation is occurring during the lowest-use (trough, winter) months, when it tends to be cold and rainy. Therefore, the difference between the consumption in peak and trough months, or billing periods, is considered to be due to irrigation.

From 2003-2006, the average peak (high-use) bi-monthly billing period was September-October. The average trough (low-use) billing period was March-April. As would be expected, all categories showed an increase in use when comparing the winter bimonthly billings periods with the summer bi-monthly billing periods. For the years 2003-2006, for all categories combined, the average seasonal use (peak-season use as a percentage of total annual use)

[44] *Water Conservation Programs—A Planning Manual (M52).* American Water Works Association. 2006.

was 69.51%. Refer to Tables 5 and 7 for a breakdown of average seasonal water use by individual category. Refer to Table 5 for the formula used to determine seasonal use.

The average percent change—comparing peak (summer) use with trough (winter) use—for all categories combined, for the years 2003-2006, for all categories (both combined and individually) showed an increase (Table 6). The average %increase for all categories was 108.38%. The three highest-increase categories were landscape-irrigation (208.54% increase), agriculture (130.19% increase), and single-family residence (127.41% increase).

Table 5: AVERAGE % CHANGE IN SEASONAL USE, 2003-2006

Category	Avg.Lowest BiMonth	Avg.Highest BiMonth	Average, Total Use	%Change
SFR	212.04	482.20	2045.88	+127.41
MFR	15.21	20.79	105.6	+36.69
CI	12.3	20.80	97.62	+69.11
LANDSC	24.23	74.76	301.26	+208.54
OTHER	12.74	22.72	89.47	+78.34
AG	1.59	3.66	16.13	+130.19
			Total:	+650.27
			Average %Change:	+108.38

Formula:

$$\text{Average \% Change} = \frac{100 \times (\text{Highest} - \text{Lowest})}{\text{Lowest}}.$$

For SFR, MFR and Landscape categories, both the average seasonal water use and the %increase figures indicate that there are large potentials to save water used in the landscape. Because of the variables involved in customers in the other categories, further analysis would be necessary to discern where water savings could be made. However, there are sizeable seasonal percentages in all categories; therefore, it is estimated that the other categories could realize some savings due to seasonal use.

Table 6: SEASONAL WATER USE, PEAKS AND TROUGHS, 2003 - 2006														
Year	Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL (AFY)
2003	SFR	152.89	68.38	129.42	76.85	205.25	116.77	280.13	138.74	280.27	133.54	278.30	103.93	1,964.47
2004	SFR	143.34	74.71	144.07	83.08	215.89	130.03	332.61	157.36	335.38	156.86	270.62	75.92	2,119.87
2005	SFR	170.34	81.08	119.33	70.62	181.89	119.49	288.09	126.06	364.29	151.33	309.02	107.40	2,088.94
2006	SFR	188.84	68.16	153.99	70.79	114.46	92.55	282.78	139.92	361.93	145.19	284.22	107.40	2,010.23
2003-2006 Total		655.41	292.33	546.81	301.34	717.49	458.84	1,183.61	562.08	1,341.87	586.92	1,142.16	394.65	8,183.51
Bi-Month Subtotal		947.74		848.15		1,176.33		1,745.69		1,928.79		1,536.81		
Bi-Month Average		**236.94**		**212.04**		**294.08**		**436.42**		**482.20**		**384.20**		
Year	Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL (AFY)
2003	MFR	4.92	7.35	4.20	8.57	5.56	11.37	6.80	11.15	7.89	13.83	6.97	7.37	95.98
2004	MFR	4.99	9.49	5.33	9.10	7.48	12.27	9.17	12.53	8.51	12.07	11.80	8.01	110.75
2005	MFR	8.92	11.66	9.02	10.99	8.80	13.5	9.44	11.04	13.98	8.81	10.65	5.03	121.84
2006	MFR	9.38	4.11	9.54	4.91	9.51	4.86	10.98	5.82	11.91	6.17	11.79	4.85	93.83
2003-2006 Total		28.21	32.61	28.09	33.57	31.35	42.00	36.39	40.54	42.29	40.88	41.21	25.26	422.40
Bi-Month Subtotal		60.82		61.66		73.35		76.93		83.17		66.47		
Bi-Month Average		**15.21**		**15.42**		**18.34**		**19.23**		**20.79**		**16.62**		
Year	Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL (AFY)
2003	CI	7.24	4.14	5.15	4.38	12.63	7	11.71	6.14	10.66	7.27	10.02	6.16	92.50
2004	CI	7.14	4.67	7.24	6.03	9.18	7.15	11.21	8.34	10.68	8.47	9.06	5.11	94.28
2005	CI	6.98	4.39	6.01	5.90	6.90	7.74	7.26	8.21	14.18	12.42	13.44	6.08	99.51
2006	CI	7.71	6.94	8.79	6.74	7.80	7.1	12.88	8.75	11.41	8.10	10.84	7.13	104.19
2003-2006 Total		29.07	20.14	27.19	23.05	36.51	28.99	43.06	31.44	46.93	36.26	43.36	24.48	390.48
Bi-Month Subtotal		49.21		50.24		65.50		74.50		83.19		67.84		
Bi-Month Average		**12.30**		**12.56**		**16.38**		**18.63**		**20.80**		**16.96**		

Year	Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL (AFY)
2003	Landsc	15.86	15.92	16.28	14.48	34.03	35.06	35.03	31.80	36.17	36.20	32.41	21.47	324.71
2004	Landsc	14.85	7.92	12.78	11.12	27.70	41.88	42.92	37.08	43.23	42.11	27.28	12.34	321.21
2005	Landsc	19.52	7.78	7.67	5.25	37.07	19.39	26.32	18.32	32.84	26.14	36.70	23.73	260.73
2006	Landsc	18.41	9.54	19.08	10.25	6.43	23.98	39.33	28.30	49.33	31.83	38.59	23.31	298.38
2003-2006 Total		68.64	41.16	55.81	41.10	105.23	120.31	143.60	115.50	161.57	136.28	134.98	80.85	1,205.03
Bi-Month Subtotal		109.80		96.91		225.54		259.10		297.85		215.83		
Bi-Month Average		**27.45**		**24.23**		**56.39**		**64.78**		**74.46**		**53.96**		

Year	Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL (AFY)
2003	Other	1.02	2.53	5.03	0.79	3.53	2.19	7.20	7.02	9.12	17.36	10.30	6.62	72.71
2004	Other	9.52	1.87	5.63	3.21	3.89	21.03	18.68	29.04	25.23	15.26	8.12	4.81	146.29
2005	Other	2.05	0.83	0.44	0.38	2.70	2.8	2.24	14.66	7.09	5.94	11.46	3.37	53.96
2006	Other	9.83	0.96	3.18	32.31	0.81	1.89	13.75	4.33	5.56	5.30	5.03	1.97	84.92
2003-2006 Total		22.42	6.19	14.28	36.69	10.93	27.91	41.87	55.05	47.00	43.86	34.91	16.77	357.88
Bi-Month Subtotal		28.61		50.97		38.84		96.92		90.86		51.68		
Bi-Month Average		**7.15**		**12.74**		**9.71**		**24.23**		**22.72**		**12.92**		

Year	Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL (AFY)
2003	AG	2.08	0	1.69	0.00	2.92	0	2.93	0.00	3.61	0.00	3.48	0.00	16.71
2004	AG	2.11	0	1.52	0.00	3.15	0	4.33	0.08	3.20	0.23	3.17	0.05	17.84
2005	AG	1.70	0.05	1.50	0.00	2.32	0.12	2.86	0.13	3.77	0.42	0.53	0.13	13.53
2006	AG	3.42	0.02	1.60	0.03	1.60	0.04	3.14	0.16	2.83	0.58	2.76	0.26	16.44
2003-2006 Total		9.31	0.07	6.31	0.03	9.99	0.16	13.26	0.37	13.41	1.23	9.94	0.44	64.52
Bi-Month Subtotal		9.38		6.34		10.15		13.63		14.64		10.38		
Bi-Month Average		**2.35**		**1.59**		**2.54**		**3.41**		**3.66**		**2.60**		

Table 7: SEASONAL USE PER CATEGORY AND IMPACT OF 15% CONSERVATION FOR ONE YEAR (BASELINE YEAR 2006, SEASONAL USE PERCENT BASED ON 2003-2006 AVERAGES)											
Year	Type	TOTAL (AFY)	Meters	Avg. AFY/ Meter	Seasonal Use (%)	Seasonal Use (AF/Meter/Yr)	Seasonal Use (Gal/Meter/Day)	SeasonalUse (G/M/D) w/15%consrv	SeasonalUse Savings(G/M/D) w/15%consrv	Total Savings AF/Yr	$$Savings @$2000/AF
2006	SFR	2010	3423	0.587	62.18	0.365	326	277	49	187.508	$375,016.84
2006	MFR	94	390	0.241	86.42	0.208	186	158	28	12.163	$24,326.49
2006	CI	104	96	1.085	75.60	0.820	732	623	110	11.815	$23,630.06
2006	Landsc	298	83	3.595	48.26	1.735	1,549	1,316	232	21.599	$43,197.06
2006	Other*	85			85.44	0.000				10.883	$21,765.79
2006	AG	16.44	3	5.480	59.14	3.241	2,893	2,459	434	1.459	$2,917.00
TOTALS:		**2608**	**3995**	**10.988**		**6.370**	**5,686**	**4,833**	**853**	**245.427**	**$490,853.25**

Table 8 demonstrates the water and money savings the District would obtain by a 15% conservation for all categories, individually and combined. Water usage is based on the water usage in 2006, and the seasonal use % is based on the 2003-2006 averages.

If all District categories saved an average of 15% of seasonal water consumption, it would translate to a decrease of 245.427 AF/Y and a financial savings of $490,853.25.

If the SFR, MR and Landscape categories showed a15% average seasonal water conservation, it would mean a total savings of 221.270 AF/Y, or $442,540.39.

Projected out until year 2026, with 3.22% increase in meters and population each year, and 3% increase in cost of water per year (baseline marginal cost of water of $2000), by the year 2026 a total of 7,716.141 acre-feet of water (385.807 average per year) will have been saved, translating to a savings of $83,885,673.82 over the 20 years, and an average savings per year of $8,388,567.38.(Table 9)

(Tables 11, 12) With 15% conservation of seasonal water use, wastewater inflow would be reduced a total of 3858.071 AFY (1257.156 MGY) over 20 years, with an average of 192.904 MGY (million gallons per year). (Table 9)

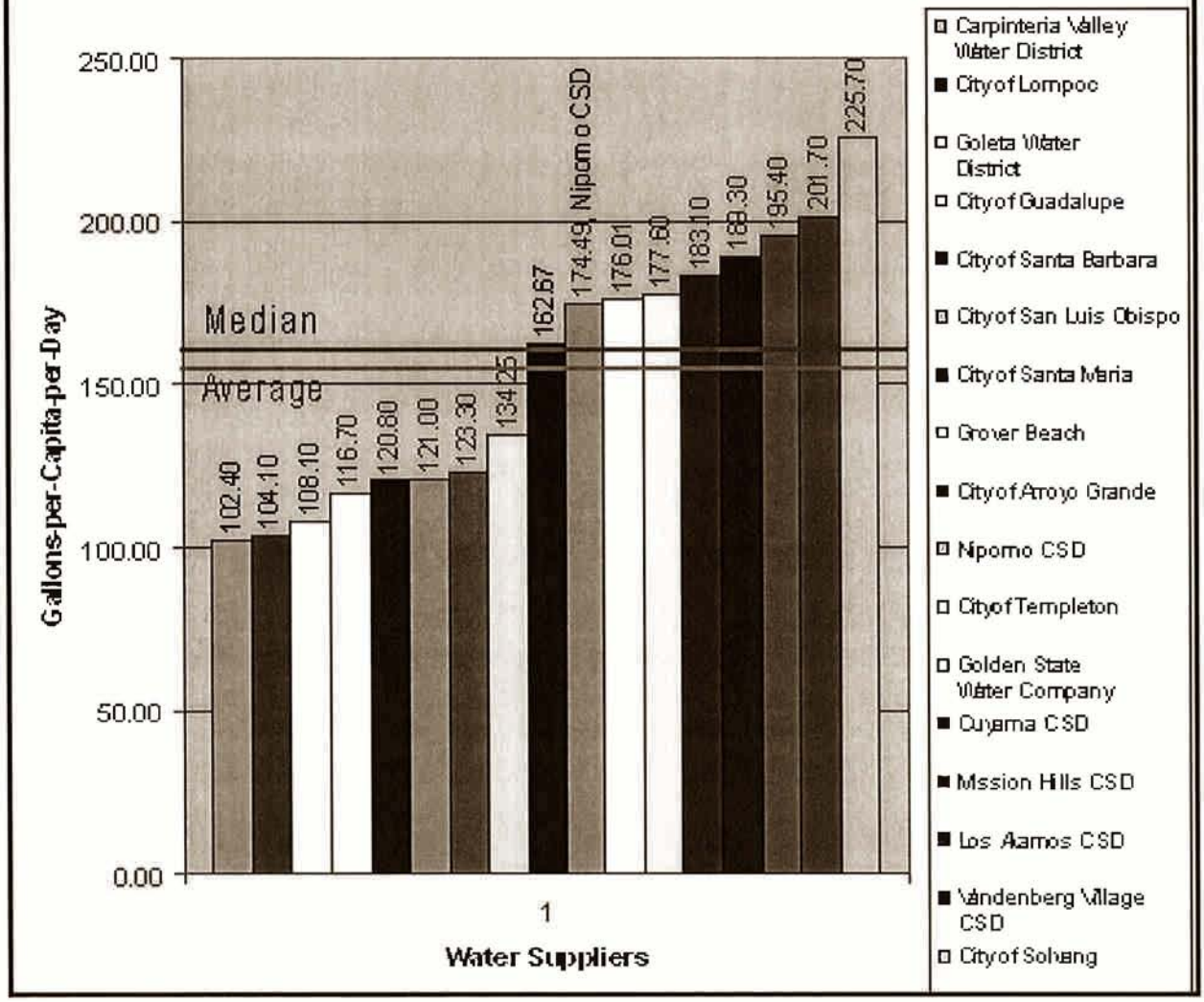
In summary, with a 15% decrease in water used during the seasonal, peak (summer), months, a total of close to $84million dollars in marginal cost of water can be saved over 20 years.

Table 8: PROJECTIONS OF SAVINGS FOR ALL CATEGORIES COMBINED WITH 15% CONSERVATION OF SEASONAL INCREASE, 2007 - 2026 (Base Year Water Use and Meters=2006; Avg.Seas %= Avg. 2003-2006)

Year	Pro-jected Popula-tion	Pro-jected # of Meters	Total Annual AFY Reqd	Avg. Sea. Use%, All Categ.	Avg.Seas Use AF/Y	Avg.Seas Use w/ 15%Cnsv	AFY Seas Use Saved w/15% Cnsv	Cost of H2O/AF w/3% inflat.	Cost of Seasonal Increase H2O Reqd/Yr	Cost of Seasonal Increase H2O Reqd/Yr 2/ 15% consv.	$$ Saved w/15% Seas.Conserv.	Sewage InFlow Saved (AFY) w/15% Seas. Consv.	Sewage InFlow Saved (MGY) w/15% Seas. Consv.
2007	13,773	4124	2,691.978	69.510	1,871.194	1590.515	280.679	$2,000.00	$5,383,955.35	$3,181,029.26	$2,202,926.09	140.340	45.730
2008	14,217	4257	2,778.766	69.510	1,931.520	1641.792	289.728	$2,060.00	$5,724,257.90	$3,382,091.92	$2,342,165.98	144.864	47.204
2009	14,675	4394	2,868.352	69.510	1,993.792	1694.723	299.069	$2,121.80	$6,086,069.87	$3,595,863.09	$2,490,206.78	149.534	48.726
2010	15,148	4535	2,960.827	69.510	2,058.071	1749.360	308.711	$2,185.45	$6,470,750.83	$3,823,146.06	$2,647,604.76	154.355	50.297
2011	15,637	4682	3,056.283	69.510	2,124.422	1805.759	318.663	$2,251.02	$6,879,746.22	$4,064,794.86	$2,814,951.36	159.332	51.918
2012	16,141	4833	3,154.816	69.510	2,192.913	1863.976	328.937	$2,318.55	$7,314,592.91	$4,321,717.50	$2,992,875.41	164.468	53.592
2013	16,661	4988	3,256.526	69.510	2,263.611	1924.070	339.542	$2,388.10	$7,776,924.86	$4,594,879.40	$3,182,045.46	169.771	55.320
2014	17,199	5149	3,361.515	69.510	2,336.589	1986.101	350.488	$2,459.75	$8,268,479.33	$4,885,306.99	$3,383,172.35	175.244	57.103
2015	17,753	5315	3,469.889	69.510	2,411.920	2050.132	361.788	$2,533.54	$8,791,103.38	$5,194,091.57	$3,597,011.82	180.894	58.944
2016	18,325	5487	3,581.757	69.510	2,489.679	2116.227	373.452	$2,609.55	$9,346,760.82	$5,522,393.43	$3,824,367.39	186.726	60.845
2017	18,916	5664	3,697.231	69.510	2,569.946	2184.454	385.492	$2,687.83	$9,937,539.59	$5,871,446.20	$4,066,093.38	192.746	62.806
2018	19,526	5846	3,816.429	69.510	2,652.800	2254.880	397.920	$2,768.47	$10,565,659.58	$6,242,561.48	$4,323,098.10	198.960	64.831
2019	20,155	6035	3,939.469	69.510	2,738.325	2327.576	410.749	$2,851.52	$11,233,481.02	$6,637,133.76	$4,596,347.26	205.374	66.921
2020	20,805	6229	4,066.476	69.510	2,826.607	2402.616	423.991	$2,937.07	$11,943,513.32	$7,056,645.69	$4,886,867.63	211.996	69.079
2021	21,476	6430	4,197.577	69.510	2,917.736	2480.076	437.660	$3,025.18	$12,698,424.48	$7,502,673.63	$5,195,750.85	218.830	71.306
2022	22,168	6637	4,332.905	69.510	3,011.803	2560.032	451.770	$3,115.93	$13,501,051.15	$7,976,893.56	$5,524,157.59	225.885	73.605
2023	22,883	6851	4,472.597	69.510	3,108.902	2642.567	466.335	$3,209.41	$14,354,409.28	$8,481,087.40	$5,873,321.87	233.168	75.978
2024	23,621	7072	4,616.791	69.510	3,209.132	2727.762	481.370	$3,305.70	$15,261,705.43	$9,017,149.73	$6,244,555.70	240.685	78.427
2025	24,382	7300	4,765.635	69.510	3,312.593	2815.704	496.889	$3,404.87	$16,226,348.87	$9,587,094.83	$6,639,254.03	248.444	80.956
2026	25,168	7535	4,919.277	69.510	3,419.390	2906.481	512.908	$3,507.01	$17,251,964.32	$10,193,064.34	$7,058,899.98	256.454	83.566
	TOTALS:		**74,005.096**	xxxxx	**51,440.942**	**43,724.801**	**7,716.141**	**n/a**	**$205,016,738.52**	**$121,131,064.70**	**$83,885,673.82**	**3858.071**	**1257.156**
	AVERAGE YEARLY SAVINGS:		**3,700.255**		**2,572.047**	**2186.240**	**385.807**		**$10,250,836.93**	**$6,056,553.24**	**$8,388,567.38**	**192.904**	**62.858**

Table 9: TOTAL WATER DELIVERED, NCSD, PER CAPITA: 2001-2006						
Year	Total Meters	Pop. Est.	Total AFY	AFY Capita	Gallons/ Yr/Capita	Gallons/ Cap/Day
2001	3412	11,396	2,238.07	0.20	63,993.70	175.33
2002	3472	11,596	2,340.53	0.20	65,766.86	180.18
2003	3709	12,388	2,567.08	0.21	67,523.53	185.00
2004	3751	12,528	2,810.24	0.22	73,091.85	200.25
2005	3879	12,956	2,638.51	0.20	66,360.79	181.81
2006	3995	13,343	2,607.99	0.20	63,688.60	174.49

Chart 5: COMPARISON OF CONSUMPTION, SANTA BARBARA AND SAN LUIS OBISPO COUNTIES, 2006

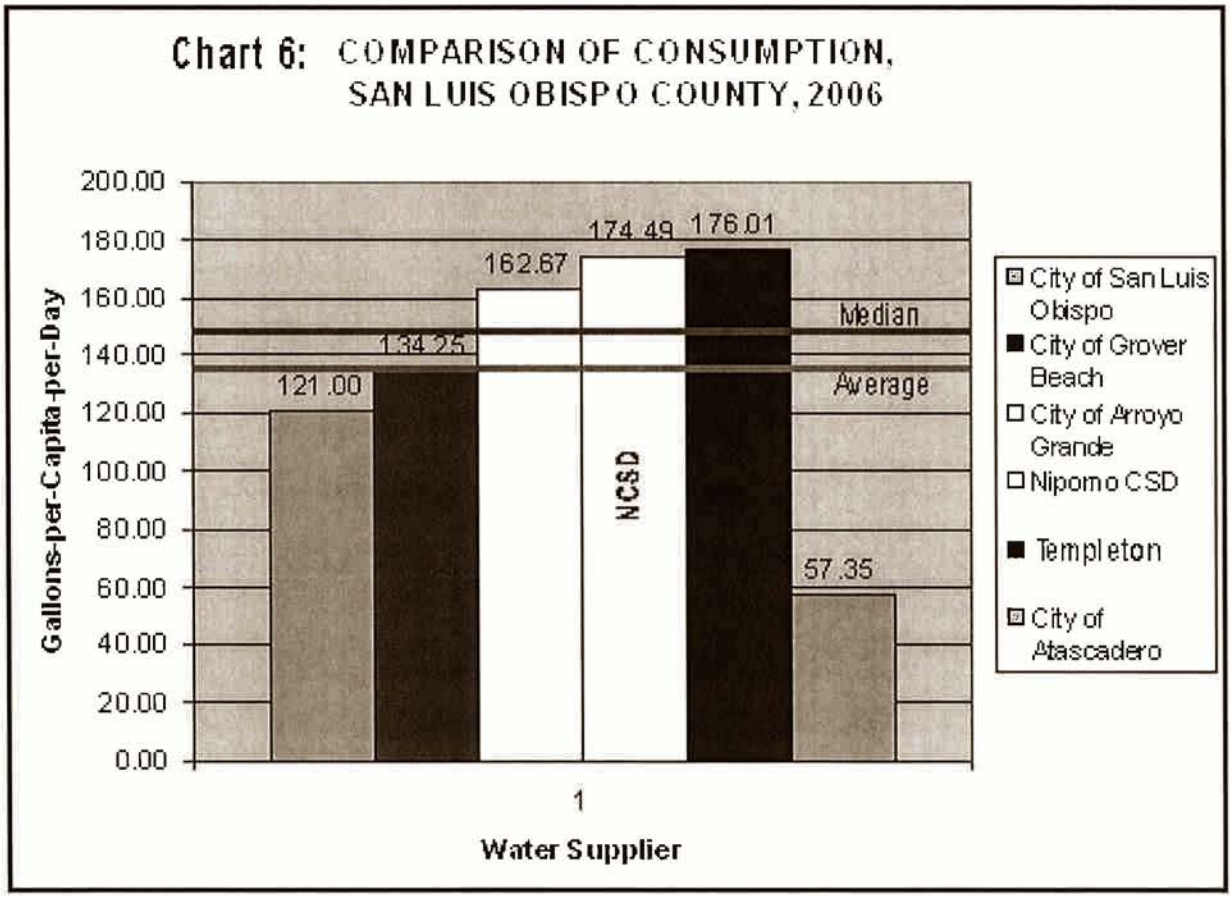


2.3. Per-Capita Consumption.

The District's gallons-per-capita-per-day (G/C/D) consumption from 2001 – 2006 began in 2001 at 175.33, and ended in 2006 at 174.49, demonstrating a less-than 1-G/C/D difference. The highest yearly G/C/D was in 2004 (200.25). The average G/C/D over six years was 184.85. (Table 10)

Comparing available per-capita consumption rates for customers of Santa Barbara and San Luis Obispo Counties, the District's use is above the average (153.92 G/C/D) and the median (162.67). (Chart 5). The lowest use was in the Carpinteria Valley Water District (102.4), 70% less than the District's G/C/D; the highest use was in the City of Solvang (225.7, 29% more than the District. Note that six water suppliers' figures were considered outliers and were not included.

Comparing available per-capita consumption rates for customers of only San Luis Obispo County, the District's use is above both the average (137.63) and the median (148.46). The District's consumption (174.49) was only 1.5 GPCD below the top consumer, Templeton (176.01). When Atascadero's consumption figures are considered an outlier and not included, the average rises to 153.68 and the median rises to 162.67.(Chart 6)



A 2003 study of California water usage for typical single-family residences (SFR) assumed an average monthly water usage to be 1,500 cubic feet,[45] or 15 hcf[46]. For comparison, NCSD's 2003 monthly SFR use was 21.4 hcf, or 42.7% more than the average California residence.

[45] Black and Veatch. *California Water Charge Survey 2003.* Black and Veatch Management Consulting Division, Irvine, California.

SUMMARY: The District's costumers have steadily over the years used water at a rate greater than the rate nature can recharge the aquifer. Recently the rate of consumption has increased 41.45% for single-family residents and 31.3% for all customer categories combined. If this increased rate of consumption continues, in 2007 the District's customers will have consumed 472 AF than would have been expected based on the average yearly increase from 2001 to 2006 (11.45% for SFR, 16.53% for all customer categories combined).

As is expected, during the summer (peak) months the District's customers use more water than in the trough (winter) months. For the SFR category, 62.18% of the average account's annual use of water is due to landscape irrigation. For all categories combined, an average of 69.18% of an account's annual use of water is dedicated to landscape irrigation.

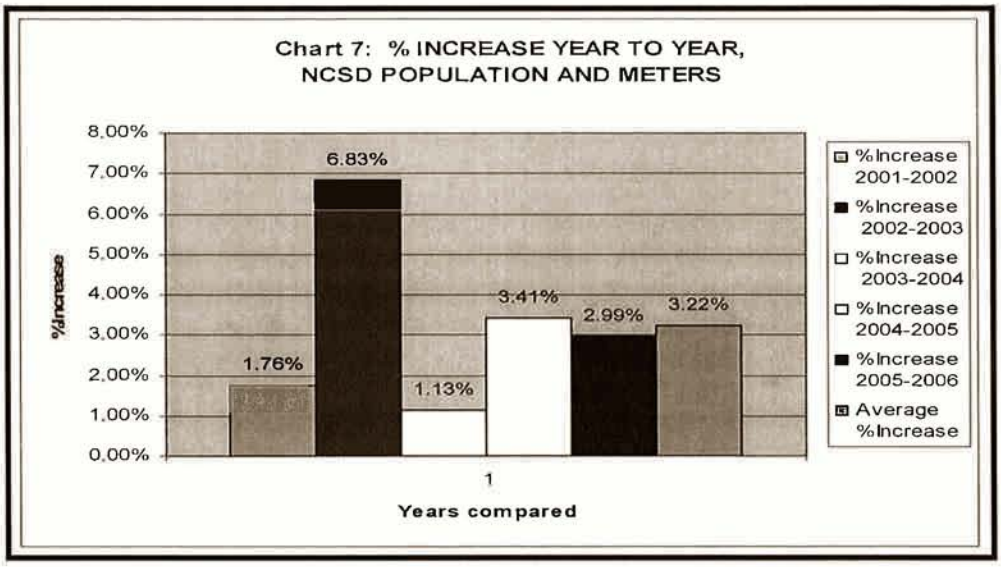
From 2001 to 2006, there was an overall decrease of less than 1 G/C/D (175.33 to 174.49), with an average for those years of 182.84 G/C/D. Comparing the District's G/C/D consumption in 2006 with available numbers from water purveyors in Santa Barbara and San Luis Obispo Counties showed the District to be above both the median and mean. When comparing the District's G/C/D consumption with that of San Luis Obispo County water suppliers alone, the District was again above the median and the mean, and also only 1.5 gallons less than the top supplier (Templeton). In general, an area's climate (and, where water charges are high, the wealth of the community) is considered to have the most impact on rate of water consumption. Templeton's average rainfall (15") is similar to the District's, but has average seasonal temperatures which are more extreme. Templeton's summer temperatures average 92 degrees (compared to Nipomo's 75 degrees), and winter temperatures average 31 degrees (Nipomo's is 38 degrees). In general, more extreme temperatures (both high and low) translate to higher water consumption, especially during the summer when a landscape's evapotranspiration rate rises to meet the heat challenge.

The District's customers use water at a higher rate than the majority of other local water suppliers' customers. In addition, a large part of the District's customer's water bills is due to landscape irrigation. Therefore, it appears that there is a good potential for water conservation, especially in the amount of water used for landscape irrigation.

[46] Black and Veatch. *California Water Charge Survey 2003.* Black and Veatch Management Consulting Division, Irvine, California

PROJECTIONS

(Refer to Chart 7, Table 11, 12)



AVERAGE %INCREASE IN POPULATION AND METERS, 2001 – 2006: 3.22%
PROJECTIONS BASED ON 3.22% AVERAGE INCREASE,

BASELINE YEAR 2006:

- Projected Population in Year 2026 (20 years): 25,169
- Projected Number of Meters in Year 2026 (20 years): 7,536
- Projected Water Needs in the Year 2026 if Consumption Rate Remains the Same: 4,919.47 AFY
- Projected Total Water Needed Over 20 Years: 74,007.94 AF
- Projected Total Water Needed Over 20 Years w/15% Conservation: 62,906.75 AF
- Projected Water Savings Over 20 Years w/15% Conservation: 11,101.19 AF
- Projected Cost of Water over 20 Years (with 3%/year inflation): $205,024,604.62
- Projected Cost of Water w/15% Conserv. Over 20 Years (with 3%/year inflation) $174,270,913.93
- Projected Savings in Cost of Water w/15% Conserv. Over 20 Years: $ 30,753,690.53

Looking to the future globally, "In 25 to 30 years, there could be 9 billion people on Earth—and one-third of them are projected to be 'suffering a severe water shortage.'"[47]

[47] Bistany, Andrea S. *Navigating the Rising Currents of U.S. Water Reuse*. Environment & Technology. 2006.

Table 10: ANNUAL WATER DEMAND PROJECTIONS, 2007 – 2026 (WITH AND WITHOUT CONSERVATION)									
Year	Projected Population	Projected # of Meters	AFY Reqd	AFY Reqd w/ 15% Cnsv.	AFY Saved	Cost of Water/AF w/3% inflat.	Cost of Water Reqd/Yr	Cost of Water Reqd/yr w/15% Conserv.	$ Saved w/15% Conserv.
2007	13,773	4124	2,692.081	2288.269	403.812	$2,000.00	$5,384,161.93	$4,576,537.64	$807,624.29
2008	14,218	4257	2,778.873	2362.042	416.831	$2,060.00	$5,724,477.53	$4,865,805.90	$858,671.63
2009	14,676	4394	2,868.462	2438.193	430.269	$2,121.80	$6,086,303.39	$5,173,357.88	$912,945.51
2010	15,149	4536	2,960.940	2516.799	444.141	$2,185.45	$6,470,999.10	$5,500,349.23	$970,649.86
2011	15,637	4682	3,056.400	2597.940	458.460	$2,251.02	$6,880,010.19	$5,848,008.66	$1,032,001.53
2012	16,142	4833	3,154.937	2681.697	473.241	$2,318.55	$7,314,873.56	$6,217,642.52	$1,097,231.03
2013	16,662	4989	3,256.651	2768.153	488.498	$2,388.10	$7,777,223.25	$6,610,639.76	$1,166,583.49
2014	17,199	5149	3,361.644	2857.398	504.247	$2,459.75	$8,268,796.58	$7,028,477.09	$1,240,319.49
2015	17,754	5315	3,470.022	2949.519	520.503	$2,533.54	$8,791,440.68	$7,472,724.58	$1,318,716.10
2016	18,326	5487	3,581.894	3044.610	537.284	$2,609.55	$9,347,119.44	$7,945,051.52	$1,402,067.92
2017	18,917	5664	3,697.373	3142.767	554.606	$2,687.83	$9,937,920.87	$8,447,232.74	$1,490,688.13
2018	19,527	5846	3,816.575	3244.089	572.486	$2,768.47	$10,566,064.96	$8,981,155.22	$1,584,909.74
2019	20,156	6035	3,939.620	3348.677	590.943	$2,851.52	$11,233,912.03	$9,548,825.23	$1,685,086.80
2020	20,806	6229	4,066.632	3456.637	609.995	$2,937.07	$11,943,971.57	$10,152,375.83	$1,791,595.74
2021	21,477	6430	4,197.738	3568.078	629.661	$3,025.18	$12,698,911.69	$10,794,074.94	$1,904,836.75
2022	22,169	6638	4,333.072	3683.111	649.961	$3,115.93	$13,501,569.16	$11,476,333.78	$2,025,235.37
2023	22,884	6851	4,472.768	3801.853	670.915	$3,209.41	$14,354,960.03	$12,201,716.02	$2,153,244.00
2024	23,622	7072	4,616.969	3924.423	692.545	$3,305.70	$15,262,291.00	$12,972,947.35	$2,289,343.65
2025	24,383	7300	4,765.818	4050.945	714.873	$3,404.87	$16,226,971.44	$13,792,925.73	$2,434,045.72
2026	25,169	7536	4,919.466	4181.546	737.920	$3,507.01	$17,252,626.25	$14,664,732.31	$2,587,893.94
		TOTALS:	**74,007.936**	**62,906.75**	**11,101.19**	n/a	**$205,024,604.62**	**$174,270,913.93**	**$30,753,690.69**
		AVERAGES:	**3,700.397**	**3,145.337**	**555.060**	n/a	**$10,251,230.23**	**$8,713,545.70**	**$1,537,684.53**

Wastewater Treatment Estimations:

Table 11: 2006: AMOUNT OF WATER DELIVERED THAT FLOWS INTO SEWER AND IMPACT OF 5% INDOOR WATER CONSERVATION ON SEWER INFLOW										
MG Water Dlvd. To Town	# of Town Meters	# of Sewer HookUps	% Meters w/Sewer HookUps	MG Dlvd to Meters w/ Sewer HUps	MG InFlow Sewer	%MG Dlvd to Meters that Inflows to Sewer	Sewer Inflow from 5% Indoor H2O Conserv.	Decrease in Sewer Inflow w/5% Indoor H_2O Consv.	%Sewer Inflow from 5% Indoor Conserv.H_2O	%Change in Sewer Inflow from 5% Indoor H_2O Consv.
631.825	3,352	2,281	68.05%	429.95	215.3500	**50.09%**	204.23	11.12	94.83%	-5.45%

Based on 2006 figures for the District, an estimated 50% of water delivered to residents with sewer hookups ends up in wastewater treatment at Southland Wastewater Treatment Facility. A water conservation of 5% of water used indoors would result in a 5.45% (11.12 MG/yr) decrease in the amount of inflow entering Southland.

SUMMARY: Using the District's consumption figures for 2001-2006, the average per-year increase was 3.22%. Projected over 20 years, using a marginal price of water of $2000/AF, in the year 2026 the District's projected 25,169 customers, using 7,536 meters, will (without water conservation) consume 4,919.47 AF; with 15% water conservation, they will consume 4,181.57 AF, a savings of 737.92 AF.

During the 2007-to-2026 time period, without water conservation, they will have consumed 74,007.94 AF, and the District will have spent a total of $205,024,604.62 over the years (incorporating 3% annual inflation).

With 15% water conservation, during the same time period, they will have consumed only 62,906.75 AF (a savings of 11,101.19 AF) and the District will have only spent $174,270,913.93 (a savings of $30,753,690.69).

In addition, if a 5% water conservation can be achieved in the District's customers' homes, it will translate to 5.45% (11.12 MG/yr) decrease in sewer inflow.

With water conservation, there can be substantial savings in money spent on purchase/production of water, water and wastewater treatment facilities, and delivery infrastructure. In addition, expansions in both water and wastewater systems can be deferred or delayed.[48]

[48] Vickers, Amy. *Handbook of Water Use and Conservation.* Amherst, MA: WaterPlow Press. 2001

VIII. Water Conservation Program: Core Program Measures

Criteria for conservation measure's inclusion in the water conservation program:

- A benefit-cost ratio greater than 1.0.
- Reasonable cost.
- Reasonable water savings.
- Nonquantifiable but positive effects (community benefits).

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1. CORE (SHARED-COSTS) WATER CONSERVATION PROGRAM MEASURES

1.1. Conservation-based rate structure
1.2. Public outreach materials and efforts
  1.2.1. Printed materials, bill stuffers, direct mailings
  1.2.2. Communication through the media (advertisement, press releases)
  1.2.3. Customer promotional/giveaway items
1.3. Public outreach events
  1.3.1. Workshops
  1.3.2. School outreach program
  1.3.3. Community events
1.4. NCSD landscape/demonstration garden
1.5. Technical Assistance
  1.5.1. Water audits, assist in leak detection
  1.5.2. Provision of free, small-area landscape designs (i.e., design for an 8' shady border)
  1.5.3. Provision of a list of xeriscape-knowledgeable landscapers, landscape designers, and nurseries
  1.5.4. High-use letters offering assistance (water audit, information) and explaining rate schedule
  1.5.5. Low-use letters congratulating water efficiency

The core of the water conservation program is comprised of the interconnected, integrated measures which support the success of the other core measures and the success of the other non-core measures. The core measures are the bedrock upon which the other, non-core measures are built, and the glue which holds together the water conservation program.

The core measures are designed to work together, providing mutual support and support for the entire water conservation program. Removing any of the core measures will weaken the water conservation program and detract from the maximum benefits realized from the funds invested by the District in the water conservation program.

1.1. CONSERVATION-BASED WATER RATE STRUCTURE (BMP 4, 11)

> *"One of the most effective tools for water conservation is the rate structure. Rate structures and practices that promote the efficient use of water should be the goal to ensure sufficient resources to meet competing uses."*

-- *Water Conservation Measures.* Municipal Research and Services Center of Washington (http://www.mrsc.org/)

Refer to "Water Use Characteristics, Consumption," page 21, for details of the District's customers' consumption specifics and potential for savings.

Summary and comparison of usage. Analysis of DWR *Public Water System Statistics* reports from 2001 to 2006 indicates that the lion's share of NCSD's water use is consistently in the SFR category (77% in 2006), with the irrigation category being a far-distant runner-up (11% in 2006) (refer to Chart 1, 2 and Table 3, 4). In the SFR category, the element which has the most potential for conservation savings is the seasonal landscape-irrigation portion.[49] In the years 2003 to 2006, the average SFR highest bi-monthly billing period was September-October (482.20 AF), and the lowest was March-April (212.04 AF). The amount of the usage calculated to be due to SFR irrigation is the difference between the peak (summer) amount used and the trough (winter) amount used.

(Table 5). The average seasonal (peak summer) water use (percentage of annual use) for years 2003-2006, for all categories, is 69.15%, and for SFR category alone is 62.18%.

From 2001 through 2006, the SFR water usage increased each year until 2004, and then decreased in 2005 and 2006 (refer to Chart 2).

A 2003 study of California water usage for typical SFRs assumed an average monthly water usage to be 1,500 cubic feet, or 15 hcf.[50] For comparison, NCSD's 2003 monthly SFR use was 21.4, or 42% more than the average California residence.

When the District's per-capita water consumption is compared with other local water suppliers, the District is consistently above both the mean and median. When comparing the District with only San Luis Obispo County water suppliers, the District was a very close second (1.5 G/C/D less) to the #1 supplier (Templeton), with the highest per-capita consumption (Chart 5, 6).

The City of San Luis Obispo has a well-established water conservation program, and is a model of what can be achieved in water conservation, while maintaining the beauty of the residential landscapes. In 2005, the average daily per-capita use by NCSD's customers was 181.81 gallons, and 122 gallons by the City of San Luis Obispo's (SLO) customers. NCSD's daily per-capita water use was 49% more than SLO's use. As an example of how this translates into usage, for a SFR it would cost $144.30 to fill an average swimming pool in SLO, and only $65.98 for NCSD's (Town Division) SFR customers.

SLO City's program includes both conservation-based rate water and wastewater pricing and incentives in the forms of rebates, as well as public education and outreach. Over the years these measures have produced changes in customer choices and habits such that efficient use of the City's water resources is a way of life. The majority of landscaping in single-family residences in the City is certainly not barren or cactus-dominated.

At a time when the Nipomo Mesa is experiencing the immediate need for supplemental water, water conservation is the cheapest and most immediate source available. The minimum time until other supplemental water approaches would deliver wet water to our District is greater than

[49] A&N Technical Services, Inc. BMP Costs and Savings Study: A Guide to Data and Methods for Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices. March 2005. The California Urban Water Conservation Council.

[50] Black and Veatch. *California Water Charge Survey 2003.* Black and Veatch Management Consulting Division, Irvine, California

three years. Conserved water is available immediately, and without the cost of building a delivery system.

Water conservation pricing as an integral part of a water conservation program. Pricing of water can be a powerful incentive for conservation, can increase revenue, and can defer expansion of water and wastewater facilities.[51,52] More importantly, at a time when demand for water is rapidly increasing, and water supplies are remaining static or decreasing, conservation pricing of water, reflecting the complete costs involved in obtaining, treating and distributing it, can send a clear message to the consumers regarding the worth and availability of water.[53,54]

Conservation water pricing (inclining block rate structure) can stimulate customers to use less water and use it more wisely, and to fix leaks and address other water-wasting conditions. The water saved will translate into decreased wastewater sent for treatment, and a delay in the need to upgrade facilities and/or fund other improvements or expansions. To achieve the maximum water-conservation impact, conservation water pricing should be accompanied by a program of public education, water accounting and audits, plumbing retrofits, and other water conservation measures.[55,56,57]

In 2005 four Florida water management districts funded and published the largest study ever conducted regarding the impact water rates have on single-family residential water use. This study demonstrated that water use decreases with increases in water price. Changes triggered by increases in water price vary depending on property value and access to other sources of water. Water providers can decrease water use—without decreasing revenues—by using increasing block rates. Fixed charges do not encourage conservation. Water providers can stimulate water conservation by decreasing charges for fixed rates and increasing charges related to the amount of water used. To gain maximum impact from water-conservation pricing, customers need pricing and water use information included with the bill (i.e., how their use compares with the provider's average residential customer use).[58]

A study of water rate structures in New Mexico found that increasing block structures were most effective in encouraging efficient water use.[59]

The Irvine Ranch Water District was stated in one reference (published in 1997) to have saved 43% of landscape water use by implementing an increasing block rate structure, public education, and separate metering[60]. In another reference (published in 2001), they were said to have, by implementing a increasing block rate structure, been able to decrease outdoor irrigation by nearly 50%. IRWD determines the indoor use to be, on average, 80 G/C/D, and above that amount is considered to be outdoor irrigation.[61]

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[51] A&N Technical Services, Inc. *BMP Costs and Savings Study: A Guide to Data and Methods for Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices.* March 2005.
[52] Stallworth, Holly. *Conservation Pricing of Water and Wastewater.* April 2000. Environmental Protection Agency.
[53] Ibid.
[54] Whitcomb, John B. 2005. *Florida Water Rates Evaluation of Single-Family Homes.* July 2005.
[55] Stallworth, Holly. *Conservation Pricing of Water and Wastewater.*
[56] Hutchins-Cabibi, Taryn (Western Resource Advocates). *Better Water Rate Structures Can Encourage New Mexicans to Conserve.* February 2006
[57] Whitcomb, John B. 2005. *Florida Water Rates Evaluation of Single-Family Homes.* July 2005.
[58] Vickers, Amy. *Handbook of Water Use and Conservation.* Amherst, MA: WaterPlow Press. 2001.
[59] Hutchins-Cabibi, Taryn (Western Resource Advocates). *Better Water Rate Structures Can Encourage New Mexicans to Conserve.* February 2006
[60] Highlights of Irvine Ranch Water District's landscape conservation program. *Water Conservation News.* July 1997
[61] Vickers, Amy. *Handbook of Water Use and Conservation.*

The Utah State Water Plan, *Utah Water Resources: Planning for the Future*, published in 2001 by the State Department of Natural Resources, indicates that incentive pricing of water is crucial to conserving water. One city in Utah planned to implement an increasing block structure, and considered it a "key element in reaching its goal to reduce water demand 15 percent in five years."[62] To achieve results, implementation of incentive pricing must be done carefully. Identified elements of a successful program must include clearly identifying on customers' bills the fixed rates and the rated charges for water. The program should be implemented in such a manner that decrease in water usage does not cause a revenue shortfall. Efficient water use should be rewarded by low commodity rates, and excessive water should be discouraged by higher rates. Staff should be available to help customers with steps to conserve water.[63]

In 1995 Albuquerque, New Mexico, instituted an integrated water conservation program which included incentive rate structure, and by 2003 had reduced the per-capita use by 23%. [64]

Short-run elasticity estimates. Short-run estimates are used for estimates of customer water use response (short-term) to change in rates charged for water. Long-range estimates are made for long-range planning. Estimate of demand response to changes in the real price of water can be made by: (DeltaP x ETA_{price}=Decrease in use), where DeltaP is the change in price, x ETA_{price} is the price elasticity.[65]

Table 12: Short Run Elasticity Estimates for Conservation Rate Design	
Single Family Residential Customers	Range of Estimates
Winter Season	-.00 to -.10
Summer Season	-.10 to .20
Multiple Family Residential Customers	
Winter Season	-.00 to -.05
Summer Season	-.05 to -.10

Source: Designing, Evaluating, and Implementing Conservation Rate Structures. July 1997

For example, using the tabled figures, a 10% rate increase in the summer for SFR would be expected to produce a 1% decrease in water consumption.[66]

SUMMARY AND RECOMMENDATIONS: We are faced with both short- and long-term pressures to conserve water, and our per-capita usage has shown little end-result conservation since 2001. The current two-tier-rate billing categories appear to be too generous (the lower-tier range being too large), and have not produced conservation results. There is much evidence to indicate that incentive water pricing, if done with the right support measures, inspires consumers to use less water.

A strong, conservation-based rate structure is a cornerstone of a successful water conservation program. Like public outreach and education, it is the support structure by which all other measures can succeed or fail. The finest plumbing-retrofit program in the country will fail if customers don't know about it (public outreach) and if there is no real pocketbook incentive to

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[62] *Utah's Water Resources: Planning for the Future.* May 2001. State of Utah Division of Natural Resources

[63] *Utah's Water Resources: Planning for the Future.* May 2001. State of Utah Division of Natural Resources

[64] *Albuquerque, New Mexico: Long-range planning to address demand growth. Cases in water conservation: how efficiency programs help water utilities save water and avoid costs.* Environmental Protection Agency. July 2002. (http://www.epa.gov/owm/water-efficiency/utilityconservation.pdf)

[65] A&N Technical Services, Inc. *BMP Costs and Savings Study: A Guide to Data and Methods for Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices*

[66] Ibid.