2/26/10

Water Advisory Committee:

I have spent a few hours on the Internet researching information for your consideration before making any decision concerning setting rates.

Blue Paper

Date: March 15, 2010 for the March 18, 2010 Water Advisory Committee Meeting
To: Linda Hanson (Calistoga City Water User)
From: Paul Knoblich
Re: Personal Response to Your Letter of February 26

Your four-page letter is so appreciated. Thank you for taking the time to write such a thoughtful letter to our committee. It certainly deserves a response, and I've taken it upon myself to do this as just one member of the committee. In this 'Blue Paper', I'm not speaking for the committee nor for the City.

Unfortunately you were unable to attend the March 1 meeting. The meeting began with each of the seven members stating his or her thinking as to which direction the committee should take with regard to recommending to the City Council a water rate structure. I spoke last and was very surprised that at least four of my colleagues advocated some form of a uniform rate structure. My comments in bold italics below reflect the statements I made when I spoke and specifically address many of the fine points you have raised.

Research shows that flat rate billing appears to be a thing of the past in water stressed California. ***There is, indeed, a serious and silent water crisis brewing in California. Yes, flat rate billing has gone by the wayside and rightly so. Flat rate billing means that residential customers pay a single flat fee each month ($50 per month, for example) for water regardless of whether they use 1,000 gallons or 10,000 gallons. Often, there's not even a separate meter. That billing structure clearly promotes waste.***

Forgive me for having used the term 'flat rate' in the meeting of February 23. I should have used the term 'uniform rate' which, by definition, means that all residential users pay the same dollar amount per hundred cubic feet (hcf = 748 gallons) of usage each billing period. For example, after paying the basic monthly service charge, a home that uses five hundred cubic feet of water (5 hcf) would pay about $25 whereas a home that used 10 hcf would pay about $50.

Conservation tier billing now appears to be the norm for water providers. (Most water providers in California have replaced their simple flat rate billing systems with tiered systems that progressively penalize customers that use more water. (*Bill Moseley Director of Operations for California Utility Billing Services, a utility billing company that focuses on utility cost recovery in Southern California.*) ***True, and I disagree that this is a wise course for the future even though it's served its purpose in the past. There is a better way now.***

Additionally, efforts to provide "conservations incentives" within a flat rate billing rate system appears to require additional, and more sophisticated, analysis of water use by the City and/or developing, funding, and putting incentive programs in place. ***I have discerned no interest on the part of the committee to base water rates upon the number of people living within each home or any other tedious way to compile sophisticated information on which to base a rate structure.*** It would be difficult to establish a flat rate billing system that also includes appropriate conservation incentives as part of the package within the next few weeks and it is unlikely that the incentives could be established in the long term without additional time, expense, and analysis. ***I disagree. Committee members discussed on March 1, 2010 a few different conservation incentives other than giving a discounted rate to Tier 1 and Tier 2 low-water users that I think would be very easy to implement. For example, distributing low-flow shower heads and offsetting the cost of dual-flush toilets is an easy and most effective method of conserving water. This incentive can be funded by a uniform rate structure whereby all users, except those who are truly financially***

challenged, pay the true cost of water they use, which has been $4.61 per hcf since January 1, 2006. However, for the past 4+ years, all 1,241 Single Family Residential Users (SFRs) have paid 25% less ($3.46 per hcf) each billing period for usage through Tier 1 and have received a 10% discount ($4.15 per hcf) for usage through Tier 2. Another example to financially incentivize conservation would be to give users a discount if they lowered their usage 10% below the prior year. While this is not my preferred approach, it still is better than giving all users discounts through the first two tiers that result in payments below the actual cost of water!

I recognize you have much to read and consider, so these first 2 pages will present a summary of what I found and Attachment A will provide additional information and links to the research that I've summarized below. I hope you give this information your attention and find it helpful. ***Again, you have done a beautiful job presenting all of the information, and I have seriously considered everything you have written. In addition, I have explored each of the web sites you listed in your Attachment A.*** Please carefully consider before sending a message that the City of Calistoga is not interested in conserving water. ***This is certainly not the message I want to send, nor do I believe any member of the Committee wants to send that message. Bear with me for a minute here, please, and let me share with you what I shared at the meeting last week about me.***

When I submitted my application on August 7, 2009 to be on the Water and Wastewater Revenue Program Advisory Committee, I had to respond to the following statement: "State specifically why you wish to serve, why you believe you are qualified for the position, and what you might contribute to the group." I wrote: "I have had a lifetime interest in 'water' (competitive swimmer, white water rafting, supporter of 'Restore Hetch Hetchy' [Valley] in Yosemite National Park). Our home remodeling plans include 3 grey-water discharge areas. Contribution? A fresh perspective, a knack for numbers, and the ability to simplify complex concepts/facts."

I have done some of my best creative, out-of-the-box thinking as a result of interacting with the other concerned volunteers on this committee and receiving extensive public input. I'm surprised by the ideas I have been able to conceptualize through this process. In terms of my qualifications, they are not your standard qualifications: I love Calistoga and want to see it retain its historic charm. I have not served in a water agency so I can bring a fresh perspective. As a certified financial planner, I can deal with detailed numbers and often come to a creative conclusion that makes good financial sense. Maybe most importantly, I try as much as possible to "walk the talk" when it comes to conserving water. For example, in our remodeled home, we have a low-flow showerhead, dual flush toilet, on-demand hot water system placed strategically near the master bath to avoid wasting water, a circulating pump to bring hot water to the kitchen and second bath, and an energy star rated, small dishwasher and washing machine. So having said that, here goes . . .

1. Clarification of what conservation pricing is intended to do.

"Conservation pricing is a system in which the price you pay for water depends on how much water you use. ***This is exactly how it should be; if you use 5 hcf, you pay roughly $25 in addition to the fixed service charge; if you use 10 hcf, you pay roughly $50 plus the same fixed service charge.*** The more water used, the higher the price. ***I assume you are saying that the price per 100 cubic feet is different for high water usage than low water usage. I can support this to a small degree but stand firm that all water users must pay at least the true cost of the water, except those who are truly financially challenged.*** The goal of conservation pricing is to *reduce excessive discretionary water use*, especially outdoor irrigation, by making water use increasingly more expensive. ***I strongly disagree with this. It implies that residents who take pride in maintaining an aesthetically pleasing front yard are being wasteful by using large amounts of water three seasons a year. This system may be fine in communities built in the desert on large lots but it is not at all acceptable for quaint historic Calistoga as a destination resort. Half of our city's budget comes from visitors through the Transient Occupancy Tax (TOT).*** Conservation pricing encourages smart water use and protects the region's water resources. ***Conservation pricing as it is currently done encourages people to neglect their front yards or even to put cement in place of their lawns. Conservation efforts are not effectively done***

through pricing alone such as giving a discount below the real cost for low usage for all users through their first two tiers and penalizing high water users for maintaining attractive yards. Conservation incentives like educating home owners and landlords on water efficient landscaping and perhaps providing subsidies to do so result in lower water usage, attractive yards, and, in the case of Calistoga, a residential environment attractive to tourists.

Let me prove to you why the traditional tier system does not work, or at least can't work effectively in the future. Ready? If traditional conservation tiers were indeed effective, almost everyone now would be in Tiers 1 and 2 only, but that's not the case, is it? Furthermore, as we all personally experienced a few short years ago when gasoline prices approached $5 a gallon, we, and the rest of the nation, drove fewer miles. Now that gasoline prices have dropped, we hardly think twice about driving. When the most precious resource of all, water, is priced so inexpensively, there is actually an incentive to use more, not less.

2. What is non-discretionary water and how does it apply to our current tiered system and potential changes under a flat rate program?

Non-discretionary water is the minimal amount of water considered necessary to meet needs for drinking, sanitation, bathing and cooking. This amount varies but the industry standard appears to be about 70 gallons per person per day. The minimum figure provided for "survival and health" in developing countries is lower, between 7 and 53 gallons per person per day. A 1998 AWWA (American Water Works Association) Study of residential use in 1300 homes in twelve US cities using data-loggers found that w*ithout conservation*, the household used on average 64.6 gallons per person per day. *With conservation,* this rate was reduced to 44.7 gallons per person per day. ***I agree that every one of us, including me, could do more to conserve water by installing the fixtures and appliances I mentioned earlier. That is true water conservation. Giving an artificially low price for the first two tiers of usage actually encourages water wastage, not water conservation. "If it only costs me an extra 20 cents to take a 15-minute shower instead of a 5-minute shower, why not?" By the way, for a family of two where each person showers each day, that's 40 cents a day for 30 days, or $12 a month, and few people are paying attention. For most Calistogans, if they simply installed a low-flush or dual flush toilet, a low-flow showerhead, and took short showers every time, they would more than offset any projected rate increase.***

Non-discretionary water is "basic needs" water. You cannot expect conservation within the first tier of users under our current pricing structure where about 100 gallons per day is delivered per household. It just isn't possible. ***This statement just isn't true. Everyone can be using less water. Everyone can be conserving more water if they become more conscious.*** The newly proposed tier one (option 1 and 2 from Feb 23) would allow 112 gallons per household per day which approaches a minimum non-discretionary use of water for a two person household.

It is just as unreasonable to expect some households to reduce their non-discretionary use under the flat rate billing of options 3 or 4 (presented 2/23/2010) just because their rates would nearly double. ***There is a misunderstanding here: water bills are not doubling. The only reason the impact on Tiers 1 and 2 appears significant is because the 25% and 10% discounts should not be continued any more, for a variety of reasons.*** People can not stop using this basic needs water simply because it gets more expensive under a new pricing structure without jeopardizing their and the communities health. ***I just simply disagree. With increased education and awareness, much can be accomplished in this area.***

3. Why not flat rate billing? It seems fair (but isn't when the current billing structure is considered as a comparison.)

Based on a comparison with our current system reverting to a flat rate billing structure provides no incentive to cut the use of discretionary water. ***There already is a built-in incentive to use less discretionary water: the more water you use, the bigger your bill is. Furthermore, high-end users should not be sorely punished for maintaining an attractive town. Why should the tourists come here if our neighborhoods start looking like cemented parking lots or have weeds instead of front lawns?*** In fact, based on both scenario 3 and 4 from the Feb 23 meeting, flat rate billing serves to reward high water users by decreasing the rates that they had been paying *for discretionary water* under the current structure by between 9.5 and 17.5%. A savings for using more discretionary water! At the same time flat rate billing penalizing those who will, or have been, conserving, by increasing their *non-discretionary* use of water by 22% to a staggering 46%. There is no fairness here, nor does it provide an incentive to conserve. ***Again, there is a major misunderstanding here: the percentages are nowhere near this big when the fixed monthly service charge is factored in. Furthermore, a large percentage increase does not translate to a large dollar increase. Figures will be presented at the March 18 meeting that show the actual dollar impact on a worst-case basis to the top user in each tier and a medium (average) user within each tier. The newspapers reported some of these figures in the last three weeks.***

I could find no benefits in moving to a flat rate billing system ***(uniform rate?)***; in fact most cities either are using the conservation tier billing system or are initiating one. ***If so, they are misinformed and ill-advised.*** A few larger communities are still using flat rate but apparently without charging for service (meter charge) and with incentive programs in place. These are few and far between but there is one local utility using it. (See City of Napa for their use of a flat rate without meter fee and their active conservation incentive program).

4. While promoting conservations and the use of a tiered billing system may appear to reduce the City's certainty with regard to cost recovery, it is the industry norm. ***Cost recovery issues aside, it is my conviction that it is not financially prudent to undercharge all 1,241 SFRs by 25% and 10% especially since having a low price per unit actually encourages people to use more water rather than less. The traditional tiered system ignores the recent knowledge gained due to the gasoline price crisis and obviously has not been particularly effective in promoting water conservation by the public. If it were effective, we wouldn't be having this discussion; it would be a "no-brainer" to keep traditional tiers. To the City Council's credit nearly five years ago, it strived to be compassionate by charging low users 25% and 10% less than the true cost, the assumption apparently being that "low-user" equals "low-income". Though admirable in intent, this assumption has now been seriously questioned. First, this economy has affected almost everyone from all walks of life, regardless of their water usage. Second, a very large family who may not even have a yard can be, by sheer necessity, a high water user but, at the same time, financially challenged. Third, a well-to-do, out-of-town second home owner who spends one weekend a month in Calistoga and uses his or her water without regard to conservation, is still a low-water user and gets significant discounts.***

I ask again: "Why would we, in the future, continue to give all 1,241 water users a significant discount below the true cost on their first two tiers of usage? Isn't the only way to be fair and equitable—which the law requires—to charge everyone equally for a unit of consumption regardless of tiers, and the only way to be compassionate to give financially challenged users a 20% discount on most of their water bill?"

Here are some of the benefits (for the water user, the city, and the environment) as stated by other water providers with regard to saving water by the use of a tiered billing system

The water user:

- Allows users to pay lower prices for baseline non-discretionary water while making a personal choice in their usage of discretionary water. ***Please see the above paragraph.***

The City or utility:

- Complies most easily with California's BMPs (best management practices) for water without the need to develop and fund alternative conservation incentives. ***It is prudent to question the direction the herd has taken. Yes, "conservation" tiers are easy but not the most effective for conserving. I'd rather recommend to the City Council the more creative approach of developing and funding alternative conservation incentives that really do save water! Let's evoke the memory of our community's founder Sam Brannan who recognized a uniquely precious place and created something very special with Calistoga. We have the local talent to forge our own way, make the right choice for Calistoga, and demonstrate to the rest of California that conservation tiers "have gone about as fur as they c'n go, OK?" It's time for some new thinking and action to get us through what is undoubtedly brewing to be a very serious water crisis in our state.***
- Flattening the demand peak to reduce the need for water supply and treatment investment to meet an artificially high peak.
- Satisfying the demands of new growth without needing additional capital investment for supply and treatment.
- Reduces the need to acquire additional water, especially foreign water (Delta). This is particularly important as it relates to restrictions placed on Delta pumping and the resulting reduced availability. Supplemental water from the Delta is not going to get either more abundant or less expensive to acquire. Conserved water will ALWAYS be the cheapest new water you can buy if you consider the full acquisition costs.

The environment:

- Maintaining the habitat along rivers and streams and restoring fisheries with increased flows to comply with the requirements of state issued water rights permits.
- Reducing the volume of wastewater discharges to rivers and streams.
- Reducing excessive runoff of urban contaminants now being regulated under TMDLs (Total Maximum Daily Load).
- Restoring the natural values and functions of wetlands and estuaries impacted by excessive water supply withdrawals,

Again, we're all in favor of water conservation. I just don't believe that so-called conservation tiers really help. In fact, they make water so cheap at Tiers 1 and 2 that they serve to encourage waste. I want the proposed rate recommendation to the City Council to be fair, equitable, compassionate, and financially prudent. Charging the true cost will, in itself, not be enough to fully spur conservation. We need to embark on an enthusiastic education and water conservation campaign, including incentivizing users to install in-home conservation fixtures and appliances.

Linda Hanson (Calistoga City water user)

Attachment A

Helpful internet sites for more information:
California Water Crisis Website - www.calwatercrisis.org
Aquafornia – www.aquafornia.com

I found six of these seven websites to be excellent. There is much that can be applied to rural Calistoga. I'll bring selected reprints to the meeting. I particularly thought the following quote found in www.aquafornia.com by the Water Education Foundation alarming and hopeful at the same time:

"The Pacific Institute's Report, 'Waste Not, Want Not – The Potential for Urban Water Conservation in California' studied residential water use, and estimated that 12% of indoor water use in California can be attributed to leaks. Since toilets use the most water indoors, replacing inefficient older toilets with newer, high-efficiency models would result in significant water savings. The report concluded that indoor water use could be reduced by 40% if everyone would fix their leaks, replace showerheads and inefficient toilets, washing machines and dishwashers."

Metropolitan Water District – www.mwdh20.com
Be WaterWise – www.bewaterwise.com
Long Beach Water District – www.lbwater.org
Water Education Foundation – www.water-ed.org
H2ouse Water Saver Home – www.h2ouse.org

Rate Structure Alternatives for Conservation Pricing

Conservation Oriented Rate Structures from the Alliance for Water Efficiency (http://www.allianceforwaterefficiency.org/1Column.aspx?id=712)

The concept of conservation rate structures is to compel the water customer to implement cost effective water conservation measures and practices. The most important aspect of conservation rates is designing the rate structure so a large portion (two-thirds or more) of the charges are based on the quantity of water the customer consumes. This strategy must be balanced with the needs of a water purveyor recovering its fixed costs regardless of actual water usage. In general, an increasing block tier structure, where the cost per unit of water increases as the consumer uses more water, is considered the most effective conservation rate structure. Also, a few water purveyors have implemented water budgets with punitive tiers when budgets are exceeded; and have found this rate structure to be very effective in motivating customers to be water efficient. Often the revenue generated from punitive tiers is used to fund the conservation programs; this sets the tone for water wasters to help fund the efforts of customers participating in water utility conservation programs and measures. The financial justification for conservation rate structures is based on the premise that a large portion of the water purveyor's infrastructure and distribution costs are to meet daily and seasonal peak demands. Water efficiency reduces operating costs, and delays the need for system expansion and acquiring additional water supplies and storage capabilities.

Water providers should look to achieve the following goals when they adopt a water conservation rate structures: reduce daily peak usage, reduce seasonal peak usage, and reducing total system demand. The many community benefits of implementing water conservation rates include: communicating general water conservation need, rewarding efficient users that contain water usage in the lower tiers, and penalizing non-efficient water use. The rate structure needs to be designed to balance conservation goals with price equity and the water purveyor's revenue stability.

Inclining tier block rate structure is the most common conservation rate structure used by water purveyors. The best examples of this residential rate design include the following features: the first tier provides minimal water usage for a typical household at the minimum reasonable price; the subsequent tiers are priced significantly higher (greater than 50%) than the prior tier. Usually 3 to 4 tiers are adequate for an effective residential rate design. An effective rate design will have more than half of residential customers exceeding the first tier when the new rate structure is first implemented, and at least 30% and 10% of customers using water in the 3rd or 4th tiers respectively (at least during seasonal peak demand).

Water budget based rate structures are also very effective in promoting conservation, though more difficult to implement. In this design, each residence has an inclining block rate structure designed according to its individual needs. The tiers are usually set based upon the quantity of occupants and the square footage of landscape; known to be the two most significant factors in residential water use. The prices of the tiers increase significantly (greater than 50%) after the base usage tier is established. This rate system requires a robust billing system to accommodate the quantity of individual rate structures (possibly equal to the quantity of customers); and the system requires a formal process to establish each homes base water usage, and respond to the many customers likely to appeal their base tier allotment. Water budget based rates are not only an effective water conservation strategy; the rate structure is the most equitable means to base rate on needs of each individual household. This rate structure can also be adapted for non-residential customers.

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What is Conservation Pricing?

Conservation pricing is a system in which the price you pay for water depends on how much water you use. The more water used, the higher the price. The goal of conservation pricing is to reduce excessive discretionary water use, especially outdoor irrigation, by making water use increasingly more expensive. Conservation pricing encourages smart water use and protects the region's water resources.

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How Water Is Used

A range of 20 to 40 liters of freshwater per person per day is generally considered to be a necessary minimum to meet needs for drinking and sanitation alone, according to Peter Gleick, president of the Pacific Institute for Studies in Development, Environment and Security. If water for bathing and cooking is included as well, this figure varies between 27 and 200 liters per capita per day (73).

Several different amounts have been proposed as minimum standards. Gleick proposes that international organizations and water providers adopt "an overall basic water requirement of 50 liters per person per day" as a minimum standard to meet four basic needs—for drinking, sanitation, bathing, and cooking. Falkenmark uses the figure of 100 liters of freshwater per capita per day for personal use as a rough estimate of the amount needed for a minimally acceptable standard of living in developing countries, not including uses for agriculture and industry (65, 69, 73) (1 gallon of water = 3.8 liters)

- *65. **FALKENMARK, M. and WIDSTRAND, C.** Population and water resources: A delicate balance. Population Bulletin 47(3): 1-36. Nov. 1992.
  *69. **GARDNER-OUTLAW, T. and ENGLEMAN, R.** Sustaining water, easing scarcity: A second update. Washington, D.C., Population Action International, 1997. p. 2-19.
  *73. **GLEICK, P.** Basic water requirements for human activities: Meeting basic needs. International Water 21(2): 83-92. 1996.

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Water Use Statistics

American Water Works Association. AWWA

Daily indoor per capita water use in the typical single family home is 69.3 gallons. By installing more efficient water fixtures and regularly checking for leaks, households can reduce daily per capita water use by about 35% to about 45.2 gallons per day Here's how it breaks down for households using conservation measures:

Thank you again, Linda, for your thoughtful contribution to our process. When the next water advisory committee is formed a few years from now, I hope you will join the pool of applicants.

Warm regards,

Paul Knoblich