BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Evaluating the Commission's 2010 Water Action Plan Objective of Achieving Consistency between Class A Water Utilities' Low-Income Rate Assistance Programs, Providing Rate Assistance to All Low – Income Customers of Investor- Owned Water Utilities, and Affordability.	Rulemaking 17-06-024 Filed: June 29, 2017

COMMENTS ON SCOPING MEMO AND PHASE I ISSUES BY COMMUNITY WATER CENTER, PACIFIC INSTITUTE AND LEADERSHIP COUNSEL FOR JUSTICE AND ACCOUNTABILITY

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I. INTRODUCTION

"Access to an adequate supply of healthful water is a basic necessity of human life, and shall be made available to all residents of California at an affordable cost." (Public Utilities Code § 739.8(a); *see also* Water Code § 106.3.) We are encouraged that the CPUC is considering tangible steps to ensure that access to affordable drinking water is available to all.

Community Water Center (CWC), Pacific Institute, and Leadership Counsel for Justice and Accountability (Leadership Counsel) submit these joint comments on the Scoping Memo and the identified Phase I issues.

CWC works to ensure everyone has access to safe and affordable drinking water. We work primarily within the southern San Joaquin Valley, but much of our work, including working with the State Water Board in the AB 401 process, has statewide impacts. Many of the community members we represent are customers of CPUC-regulated water companies.

Pacific Institute envisions a world in which society, the economy, and the environment have the water they need to thrive now and in the future. In pursuit of this vision, the Institute creates and advances solutions to the world's most pressing water challenges, such as unsustainable water management and use; climate change; environmental degradation; food, fiber, and energy production; and basic lack of access to fresh water and sanitation.

Leadership Counsel works alongside and supports the most impacted communities to advocate for sound policy and eradicate injustice to secure equal access to opportunity regardless of wealth, race, income and place. We work with community leaders throughout the San Joaquin Valley and Eastern Coachella Valley to ensure meaningful investment in the communities most in need. Many of the residents we work with and represent are served by CPUC-regulated water companies.

II. SUMMARY

The comments submitted by CWC, Pacific Institute, and Leadership Counsel are influenced by and directly connected to our work on water affordability, including participation in the State Water Resources Control Board's AB 401 process. Our organizations have been working closely with SWRCB staff to try to develop creative solutions which will maximize benefit to residents who are struggling with unaffordable water rates. Our goal in this proceeding is the same — to improve Low-Income Rate Assistance (LIRA) programs both in terms of enrollment of eligible ratepayers, and the efficacy of assistance provided to those who are enrolled in ensuring real affordability to all LIRA enrollees. We are also encouraged that the Scoping Memo highlights complementary means of improving system-level affordability, including consolidations and operations and maintenance support.

By way of brief legal background, in 2012 California was the first state to recognize water as a Human Right with the passage of AB 685. The Human Right to Water states that "every human being has the right to safe, clean, affordable, and accessible water." While the passage of AB 685 was a significant step forward in acknowledging that water is a right not a privilege, without specific and targeted actions, it is only an aspirational goal. While it is important that California continues to allocate more funding to help with capital infrastructure projects for water systems, this is only one piece of the puzzle.

Affordability of water rates impacts families far beyond just the stress of an unaffordable bill. As the CPUC states in its 2010 Water Plan: "[w]ater is the only utility that is ingested by consumers. Therefore, water quality is vital to the health of consumers." It is impossible to overstate the importance of water is to everyday life. We need water to drink, to wash food, to cook, to clean, to flush toilets, and so much more. Many families are terrified that if their water is shut off, their families will be broken up. Considering how essential water is, many low-income households are

thus faced with the devastating choice over what other important needs must be traded or sacrificed in order to keep their water running. Families will forego medical care, nutritious food, and other necessities in order to continue paying their water bills. This is not a healthy way to live. Thus, it is clear how essential affordability is to achieving the human right to water.

Turning to our recommendations for the scope of this proceeding, we believe that there is room for improved coordination between LIRA programs offered by CPUC-regulated water utilities. While we believe that a statewide affordability program, developed through the AB 401 process or otherwise, offers many advantages, there is no assurance that the Legislature will enact an affordability program in the foreseeable future. At this time the final report pursuant to AB 401, intended to provide a proposal for a statewide affordability program, has been postponed and follow-up action on the proposal is not assured. Though we continue to recommend coordination with the SWRCB to the extent possible, given the delays in the AB 401 study, we suggest that the best path forward with regards to the potential statewide program is for the CPUC to continue to move forward with its own efforts, with an eye to how these can become part of or function alongside a statewide program, if one is enacted, or serve as a standalone program if the SWRCB and the legislature do not move forward.

Along the same lines, it is also important to recognize that the affordability programs offered by the CPUC-regulated utilities, both for energy and water, are being used as a model for best practices for the proposed statewide program. In addition, the SWRCB proposal has taken a narrow approach to addressing affordability, focused on the prospect of a bill discount. As the Scoping Memo appears to recognize, there is a need to address larger contextual issues around affordability, including the effects of conservation and efficiency on affordability, the potential of consolidation and technical support to address system-level affordability, and the need to address the many factors that lead to increasing price pressure on low-income customers. Because of its effective efforts thus far and more comprehensive framing of the issue, we see the CPUC as a leader on water affordability programs for the foreseeable future.

While two fundamental issues have been left for later phases, we again voice our support for the CPUC exercising jurisdiction over water bottle companies, as well as Class C and D water utilities. Water bottlers are potentially an important part of funding the solution to water unaffordability. However, should the CPUC exercise jurisdiction over water bottlers, any action must carefully

consider that unfortunately there are hundreds of Californians, particularly in the San Joaquin Valley, who depend upon bottled water. Many residents that CWC and LCJA works with or represents rely on bottled water as the only source of safe drinking water — either because of water quality problems or because of failed drinking water wells. Thus, a broad brushstroke for taxing bottled water could harm these communities, whereas a more focused approach can both benefit residents struggling with water rate affordability and eliminate or minimize harm to those reliant upon bottled water. Moreover, if a bottled water fee is used efficiently to provide access to safe and affordable drinking water for communities that presently rely on unsustainable and costly bottled water, these concerns can be minimized. With respect to residents served by Class C and D water utilities, we note that many residents of mobile home parks lack access to affordable drinking water, are not served by public water districts, and presently do not have access to a LIRA program. These issues must be meaningfully addressed in this proceeding, and we will offer specific suggestions at the appropriate time.

With these principles in mind, we turn to the Phase I issues raised in the Scoping Memo.

III. DISCUSSION

1. Consolidation Of At Risk Water Systems By Regulated Water Utilities

a. How could the Commission work with the SWRCB and Class A and B water utilities to identify opportunities for consolidating small non-regulated systems within or adjacent to their service territories that are not able to provide safe, reliable and affordable drinking water?

While in general we support collaboration between the SWRCB and the Commission on consolidations, we first want to caution against privatization of public utilities. Where there is a public solution supported by community residents that can be implemented at comparable or lower rates, this should be the first option. Privatization of a system, especially a small community system, can result in disenfranchisement of the community served by the privatized system. It may also result in the elimination of a district that is providing other services, e.g., parks and recreation, lighting, etc. Further, privatization may in some cases result in higher water rates, leaving the community worse off.

That is not to say that CPUC-regulated water utilities should not be an integral part of the solution. Rather, the Commission must ensure that consolidations that involve a private company subsuming a public water district meaningfully involve community residents at every stage of the process. This means, at a minimum, outreach to the impacted community in the language(s) spoken by residents with translated materials, community meetings and workshops as necessary, exploration of feasible alternatives, presentation of effects on rates and administrative sustainability to the community, and finally a voice in determining the solution. Furthermore, the Class A or B system that will be subsuming the smaller system should be required to provide the Commission and SWRCB with a plan for how it will continue to engage community throughout the consolidation process in addition to how it will continue to respond to community once consolidation is complete.

The CPUC and regulated water utilities should explore solutions to two major barriers to consolidations. The first is that local jurisdictions and water districts are often hesitant to agree to consolidate with a smaller system. In our experience, there are many reasons for that hesitance, ranging from historic distrust between communities, to worries about future system capacity, and to concerns about the requirement to annex a disadvantaged community in the future. While we believe that these concerns are often unjustified and grounded in prejudice or misunderstanding, the SWRCB is often hesitant or unable to exercise its authority to order consolidation pursuant to SB 88. In situations where political concerns prevent consolidation, consolidation between regulated water utilities and the public system struggling with affordability may offer a more feasible solution.

A second barrier is lack of sufficient funding for consolidations. These are extremely time and resource-intensive projects. Assistance from the Commission may also facilitate the process of identifying and funding consolidation opportunities.

The Commission and the SWRCB should work together to create guidelines on best practices for consolidations. Beyond considerations about the physical infrastructure necessary to connect the two systems, the CPUC must consider the rights and inclusion of the community served by the subsumed system. Without adequate guidance and oversight a consolidation can quickly go from a benefit to a community suffering from unsafe and/or unaffordable water to one that harms the community. If a consolidating system does not adequately incorporate the needs of the subsumed

community there can be significant power imbalances and disenfranchisement of the community previously served by the subsumed system. These issues can eventually result in inefficiencies and higher costs and thus even higher and more unaffordable rates for the community.

The SWRCB, through its relatively new powers granted through SB 88, has begun to develop expertise in working with systems to facilitate, and at times mandate, consolidation. While we believe there is room for improvement in the SWRCB's process, most notably in acting more urgently to mandate consolidations, this expertise has value. Additionally, the Office of Sustainable Water Solutions routinely works with small water systems and DACs with technical assistance, access to funding sources, and help with identifying consolidation opportunities. Thus it would be in everyone's best interest for the Commission and the State Board to jointly develop comprehensive consolidation best management practices that can be provided to Class A and B water utilities which are interested in pursuing a consolidation project with a nearby struggling system. These guidelines must touch upon issues not only relating to actual physical connections, but also address outreach and engagement requirements throughout the planning and implementation processes as well as after the two systems are consolidated. Without clear guidance it is far too easy for a small community and its interests to be ignored, a fear that results in some communities unwillingness to consolidate with a larger system even if the consolidation promises other benefits.

Further, CPUC guidelines should delineate circumstances under which the Commission may mandate that a regulated water utility consolidate with a water district that is struggling with water affordability or contamination. Any such guidelines should require the informed consent of the subsumed community prior to mandated consolidation or extension of service, given that it entails privatizing a public utility.

Extension of Service

As a related but separate issue, the CPUC and regulated water utilities should also explore opportunities for extension of service to residents currently served by domestic wells. As we saw during the recent drought, domestic wells are susceptible to failure during extended dry periods and as a result of overdraft. Similarly, domestic wells are typically shallower than drinking water wells serving public and private water systems, and thus more prone to contamination by nitrate and other contaminants. There is also presently no comprehensive program for domestic well

testing, meaning that water quality issues are often, if not typically, undetected. CPUC regulated water utilities are often the nearest system that could extend water service, and all opportunities to provide affordable, clean and reliable water service to residents should be explored and incentivized. An potential example is the community of Greenfield near Bakersfield, which is partially served by California Water Service, and partially served by domestic wells.

Rate Consolidations

Where feasible, rate consolidations need to be considered. A necessary investment in capital infrastructure or operation and maintenance may cause water rates for a small community to skyrocket due to the lack of economies of scale. However, when such an investment can be spread out to thousands (or more) rather than a few hundred people, the costs can be bearable and the small community is able to afford necessary investments in their water system.

Available Resources and Data Gaps

Several resources are available to identify consolidation opportunities, but there is room for development of complementary resources specific to affordability. First, we recommend close communication and coordination with community groups, non-governmental organizations with ground presence, and relevant agencies, all of which have information regarding available opportunities and potential barriers and solutions. Communities struggling with affordability and water quality issues that may benefit from consolidation or extension of service are disproportionately rural and communities of color. We also note that some neighborhoods dependent on domestic wells that struggle with dry wells or contamination issues are not easily identifiable, given that residents are often reluctant to seek public or private resources for fear of retaliation, code enforcement, or other similar concerns. It is imperative that existing networks and resources be used in order to overcome these barriers.

Second, with respect to system-level affordability related to contamination, the State Water Board has developed a Human Right to Water Portal, which is a valuable resource for identifying systems that are out of compliance of water quality standards. This Portal is useful in identifying communities that may currently or soon face affordability problems due to treatment costs. It is less useful at determining systems where returning to compliance has resulted in significant costs to the community.

A third resource is under development by the SWRCB. Specifically, it is currently working on creating a resource which will summarize water systems located within a one-mile radius of water systems which have a Human Right to Water violation. This resource will provide additional aid in identifying potential opportunities for consolidations. The Commission can work with the SWRCB to include regulated water utilities into this list as well, expanding the opportunities for consolidation to help further the Human Right to Water.

Fourth, pursuant to SB 244, cities, counties and local agency formation commissions must periodically conduct an analysis identifying disadvantaged communities within their jurisdiction and/or sphere of influence. The analysis is required to include an evaluation of the needs and deficiencies related to water and wastewater services in the community. These analysis can be an invaluable resource in identifying small rural communities that are struggling with failing water and wastewater services, and which may benefit from consolidation or extension of either service.

Notably, however, these resources do not directly address water affordability. The report resulting from AB 401 may provide more information on communities struggling with high water costs as a percentage of MHI, but that report has not yet been released. We thus see a need for a more focused resource identifying communities that suffer from unaffordable water, and analyzing solutions to that problem including consolidation.

In order to address this data gap, the CPUC should adopt a requirement that all regulated water utilities identify communities near their service areas that struggle with water or wastewater deficiencies or unaffordability, identify feasible alternatives for solutions, and provide a publically accessible report of those findings to the Commission. The report should also include public information on the utilities' shutoff and water affordability rates. This resource can aid the Commission, the SWRCB and the public in identifying opportunities for consolidation and/or other solutions to water quality problems and unaffordability. More needs to be done to identify systems that are unable to provide water service to communities at affordable rates.

Should the CPUC address consolidation outside GRC?

While we are cognizant that consolidations may (but will not necessarily) impact ratepayers, the Commission and regulated water utilities must be able to react quickly and nimbly where necessary to solve water quality and affordability issues. Given that general rate cases are only required every three years, the Commission must be able to address potential consolidations outside of the

GRCs. A water system struggling to provide reliable safe and affordable water to their customers should not have to wait for the nearby Class A or B system to begin their upcoming GRC before the systems may consolidate. If a consolidation is proposed shortly before a GRC, it could potentially be rolled into that proceeding, however if a consolidation need arises shortly after a GRC, the Commission needs to be able to react and address the need outside of a GRC. We also note that consolidations and extensions of service often take time to study and complete, and may not fit well within the structure of a general rate case.

b. *In what ways can the Commission assist Class A and B utilities that provide unregulated affiliate and franchise services to serve as administrators for small water systems that need operations & maintenance support as proscribed by Senate Bill (SB) 552 (2016)?*

Unfortunately for many small water systems and the people reliant on them, operators are often overworked and under-trained, attempting to operate multiple water systems with little support. In regions where contamination and supply issues are common, serious issues can fall through the cracks, resulting in a ratebase that suffers the consequences. Larger, better financed and technically savvy water systems can provide essential assistance to smaller water systems struggling to keep up with ever more frequent quality and quantity issues. The Commission can assist Class A and B utilities through connecting these systems to struggling small water systems and with the SWRCB in the effective implementation of SB 552.

One community example where a contract administrator would have helped the community is Ducor. In 2005, the water coming from the taps in Ducor was brown and that it had a terrible smell and taste. The community was impacted with manganese and other secondary contamination problems. The solution was to flush the system and begin chlorination. However, the system's management continually failed to do so and instead served the community for months water that was not palatable. Finally, pressure from the state was able to force the system to implement these solutions and the community once again was served clean water.

Appointment of an administrator can be a solution where a water system has failed or is in danger of failing due to lack of managerial or technical capacity. However, the assistance described in SB 552 must be time limited to prevent the administrator from effectively permanently running the system, removing control of the system from the community's hands. SB 552 states: "The state

board shall work with the administrator of a designated public water system and the communities served by that designated public water system to develop, within the shortest feasible timeframe, adequate technical, managerial, and financial capacity to deliver safe drinking water so that the services of the administrator are no longer necessary." A clear timeframe for when the system returns to the community's control is essential. The contract administrator position is very similar to the receivership model for failing systems. Without a clear plan for when the receivership shall end, it can continue on indefinitely leaving communities without clear representation within their own water district.

Further, should the Commission facilitate the creation of a fund to assist with water rate affordability (as part of a CPUC LIRA program and/or through funds collected from water bottlers), these funds could be used to help cover or partially offset the costs associated with Class A and B utilities providing the support proscribed by SB 552.

Additionally, there are instances where a physical consolidation may not be technically or economically feasible either the near or long-term. For a very small number of small water systems there are no neighboring water systems within several miles (within the Central Valley, we are only aware of six such system serving disadvantaged communities with no neighboring water systems within 10 miles and only 24 where the nearest system is over 3 miles away) and, for those small number of systems, service connections and physical consolidations may be infeasible. Additionally, service connections and physical consolidations can take years to fully implement, leaving communities struggling with unsafe water and spending large portions of their income on water for domestic uses, while the project is completed. In these instances temporary appointment of an administrator and/or non-physical consolidation may offer the best solution.

Additionally, CPUC and regulated water utilities can play an important role in providing administrator assistance as described in SB 552 (more on this below) or other more informal technical assistance, such as providing trainings or educational materials.

2. <u>Forecasting Water Sales</u>

a. How should the Commission address forecasts of sales in a manner that avoids regressive rates that adversely impact particularly low-income or moderate income customers?

b. *In Decision (D.)16-12-026, adopted in Rulemaking 11-11-008, the Commission addressed the importance of forecasting sales and therefore revenues. The Commission, in D.16-12-026, directed Class A and B water utilities to propose improved forecast methodologies in their GRC application. However, given the significant length of time between Class A water utility GRC filings, and the potential for different forecasting methodologies proposals in individual GRCs, the Commission will examine how to improve water sales forecasting as part of this phase of the proceeding. What guidelines or mechanisms can the Commission put in place to improve or standardize water sales forecasting for Class A water utilities?*

Overestimating future water demand leads to unnecessary and costly investments in infrastructure, such as expanding water treatment plants and investments in new supplies. This in turn leads to utilities shouldering more debt, which raises rates overall, and specifically drives up fixed costs, which are disproportionately recovered in regressive fixed charges. There are a number of gaps and common failures in demand forecasting that undermine their accuracy. Pacific Institute's recent work on the issue has focused on recommendations to improve the accuracy of long-term forecasts, but these recommendations are also relevant to improving medium-term sales forecasts. Our key recommendation to improve forecasts, which in turn drive up fixed costs and therefore are used as a basis for raising rates overall and particularly the fixed charges.

Recommendation of improving demand forecasts: Water utilities should avoid constructing unnecessary and costly infrastructure and supplies by accurately accounting for declines in per-capita water demand. Water use tends to decline due to passive turnover to more efficient devices, and active conservation and efficiency programs led by the water utility. Improving the accuracy of forecasts over all time scales will prevents utilities from making unnecessary investments, in turn curbing long-term rises in costs. Managing costs prevents unnecessary rate increases to the benefit of all customers, especially low income residents.

Below we give the technical details on how to accomplish this goal through a more refined understanding of turnover of devices and model uncertainty.[1]

[1] *See* Donnelly, Kristina, and Heather Cooley. 2015. "Water Use Trends in the United States." Pacific Institute. http://pacinst.org/publication/water-use-trends-in-the-united-states/. Heberger, Matthew, Kristina

Accurate *long-term* water demand forecasts are essential planning tools and can help avoid costly investments in unnecessary water infrastructure.

Water agencies develop water demand forecasts for several time periods, depending on the application of the forecast. Short-term forecasts, ranging from hours to weeks, serve to optimize day-to-day operations. Medium-term forecast, ranging from one to several years, are used for setting water rates. Long-term forecasts, which focus on time periods decades or more, are used for planning and developing additional water supplies (Billings and Jones 2008). While sales forecasting often occurs as part of a medium-term forecast, long-term forecasting can have a significant impact on water rates and affordability over time. *Therefore, long-term water demand forecasting should be included as an integral part of forecasting to avoid additional rate increases.*

Water agencies and planners have a critical need to develop reliable long-term water demand forecasts. These forecasts focus on providing adequate water supply for the upcoming decades; inadequate water supply can result in high, short-term costs for some customers and the imposition of emergency cutbacks. For this reason, water utilities tend to focus on reducing the risk of water supply shortfalls, and therefore often err on side of overpredicting demand.

Overpredicting future demand can lead to unnecessary and costly investments in unneeded infrastructure, including new sources of supply with potentially high marginal costs. Indeed, data from throughout the country demonstrate that water utilities consistently overestimate demand (Figure 1) leading to a greater support for costly infrastructure and supply investments for a demand that may never materialize (Heberger, Donnelly, and Cooley 2016). These ultimately unnecessary investments necessitate increased water rates to cover the additional investment costs, and therefore can have a dramatic impact on water affordability. This in turn drives up fixed costs - usually in the form of debt repayment - that contributes to rising fixed charges, which

Donnelly, and Heather Cooley. 2016. "A Community Guide for Evaluating Future Urban Water Demand." Oakland, California: Pacific Institute. http://pacinst.org/app/uploads/2016/08/A-Community-Guide-for-Evaluating-Future-Urban-Water-Demand-1.pdf. Diringer, Sarah, Heather Cooley, Matthew Heberger, Rapichan Phurisamban, Kristina Donnelly, Andrea Turner, John McKibbin, and Mary Ann Dickinson. In Press. "Integrating Water Efficiency Standards and Codes into Long-Term Demand Forecasting." Funded by: Water Research Foundation. Contributing Organizations: Pacific Institute (Oakland, CA), Institute for Sustainable Futures (Sydney, Australia), and Alliance for Water Efficiency (Chicago, IL).

disproportionately burden low-volume residential customers, discussed in more detail in our response to Question 3, below.

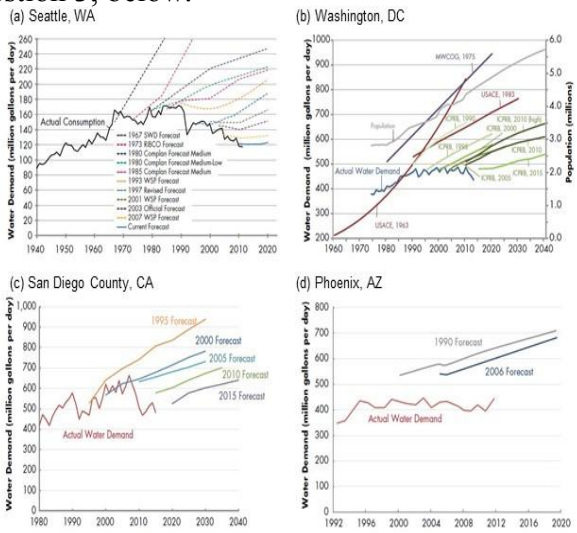

Figure 1 Comparison Of Water Demand Forecasts And Actual Demand

Per-capita Water Demand is Declining Due to Active and Passive Savings

Per capita water use is declining, largely driven by improving efficiency of water-using devices. This trend should be incorporated into long-term demand forecasts to more accurately predict future demand and to avoid investment in new and potentially unnecessary supplies (Diringer et al., in press).

Municipal water demand varies over time in response to a variety of factors, including population, economic activity, demographics, and the implementation of conservation and efficiency measures. Water demand can change dramatically during drought and water restriction, as many utilities experienced during California's most recent drought and restrictions in 2014. However, in addition to these relatively short-term impacts to water demand, per capita water demand is declining throughout the United States, and this underlying trend must also be considered for long-term planning (Donnelly and Cooley 2015). In some areas, reductions in per capita demand are substantial enough that total water use has remained steady or even declined over the last several decades despite continued population and economic growth.

Several studies have demonstrated that a key driver in reducing per capita demand has been the greater uptake of water efficient appliances and fixtures. There are a variety of tools to encourage the uptake of water-efficient devices, including direct financial incentives, such as rebates and vouchers; conservation-oriented pricing policies, such as tiered water rates; regulations, such as

codes, standards, and ordinances; and education and outreach programs. Water savings associated with these programs and policies are sometimes divided into two categories: active savings and passive savings. Active savings are those savings that result from programs funded and implemented by a water utility (e.g., local rebate and incentive programs). Passive savings, by contrast, are those savings that result from programs and policies outside of a water utility's direct controls. For example, standards and codes ensure that as new developments are constructed and old devices wear out, efficient devices become more common, driving down per capita usage.

California state standards have become increasingly stringent over time. For example, as of 2014, California requires that all new toilets meet a minimum efficiency of 1.28 gallons per flush (gpf), compared to the 1.6 gpf toilets required federally and the 3.5 gpf toilets that were commonly installed prior to the 1990s. In addition, California has adopted an ordinance targeting outdoor landscape water use. In some areas, landscapes account for more than half of municipal water use. California's Model Water Efficient Landscape Ordinance (MWELO), first adopted in 1992 after a severe drought, establishes a landscape water budget for new developments based on local evapotranspiration and a plant coefficient, as well as performance standards and labeling requirements for landscape irrigation equipment (e.g., irrigation controllers, high-efficiency sprinklers, and pressure regulators) (California Department of Water Resources 2015). Given that California's standards affect both indoor and outdoor water-use, water efficiency standards are likely to have a significant impact on future water demand.

Improving long-term demand forecasting

To provide consistent and comprehensive long-range demand forecasts, we recommend that forecasts are conducted separately for single-family; multi-family; commercial, industrial, and institutional; and non-revenue water consumption. Forecasts should account for the impacts of:

1. conservation and efficiency standards and codes,
2. changing economic activity,
3. expected land use changes,
4. changing water price,
5. climate change and drought, and
6. uncertainty.

More information on each of these potential impacts can be found in Heberger, et al. (2015). Here, we focus on incorporating the impacts of efficiency standards and codes as well as uncertainty into long-term demand forecasts because (1) these are areas of expertise for the Pacific Institute, and (2) they are not often adequately incorporated into long-range demand forecasts.

Efficiency Standards and Codes

Regarding the long-term impacts of efficiency standards and codes, the forecast should include the effects of "passive conservation" caused by greater uptake of efficient appliances and fixtures that are mandated by standards and codes. In addition, the forecast should consider "active conservation" programs run by the utility, such as rebates for efficient appliances.

To account for passive and active savings, demand forecasts should include a series of stock models that examine the replacement of older, less efficient devices over time with newer, more efficient devices. From Diringer, et al. (In Press):

> "Stock models are a series of mathematical functions used to model the changing distribution of devices in a given service area over time. Most commonly, stock models are used to estimate the uptake of efficient devices (and decreasing number of inefficient devices) from one year to the next. Stock models allow forecasters to incorporate the impact of standards and codes as older, less efficient devices are replaced with new standard or better-than-standard devices. By incorporating stock models into demand forecasts, forecasters can estimate the impact of standards and codes on future water demand."

More information on the methods for incorporating stock models into demand forecasting can be found in Diringer, et al (In Press).

Incorporating Uncertainty into Long-Range Demand Forecasts

From Heberger, et al (2015):

"The further into the future we project, the more that random occurrences and unforeseen events make our predictions less accurate. As we have seen, when making long-range predictions, a forecaster has to make many assumptions about future changes to technology, laws, and the economy, which are notoriously difficult to predict. Forecasters should acknowledge the uncertainty in the data and methods they use, and reflect this in their forecast…"

All forecasts will contain some level of uncertainty, especially associated with the changing efficiency of devices and their uptake. High levels of uncertainty make it difficult for utilities to adequately plan for future water demand. Kiefer et al. (2016) provides a more in-depth review of addressing uncertainty in long-term water forecasts (Kiefer et al. 2016). Here, we provide two examples of uncertainty analyses that are especially relevant for integrating efficiency into demand forecasts.

Scenario Testing

From Diringer, et al. (In Press):

To determine a range of possible future water demands, some utilities will test a variety of scenarios and develop a deterministic forecast based on these scenarios. This approach can allow for the development of best- and worst-case scenarios when making supply and demand management decisions. In addition, simple scenarios offer one approach for incorporating new technologies into demand forecasts. In addition, forecasters can speculate on new standards and codes that are likely to occur. For example, a scenario that examines how a 1.28 gpf toilet standard affects demand would provide a more complete understanding of future water demand. Forecasters can also adjust the timing and rate of implementation of these standards and thus the balance between active and passive conservation. These scenarios can help to determine whether the development of new supply infrastructure can be delayed, downsized, or even eliminated.

Sensitivity Analysis and Monte Carlo Simulations

Sensitivity analysis examines how uncertainty associated with each model input affects the outcome of the overall model and allows for a probabilistic (rather than deterministic) model. During a sensitivity analysis, a specific input variable (such as device age) is varied by a given percent. The outcome identifies which variables have the largest impact on the model outcome (Billings and Jones 2008).

Monte Carlo simulations are a relatively complex sensitivity analysis that gives a probabilistic risk of specific model outcomes. The advantage of Monte Carlo simulations over scenarios alone is that it includes the probability around each variable outcome. Scenario testing, on the other hand, allows for modeler bias in which scenarios to choose and does not provide a probability that the scenarios may occur. It is highly unlikely that a combination of extreme outcomes would occur

simultaneously, and therefore a "high water use" or "low water use" scenario does not provide an adequate understanding of risk or uncertainty.

Often, forecasters do not have enough information to conduct a thorough sensitivity analysis or Monte Carlo simulation. In these cases, it is preferable to test a variety of scenarios to better understand the forecasts' uncertainty and the utilities' risk.

3. **What regulatory changes should the Commission consider to lower rates and improve access to safe quality drinking water for disadvantaged communities?**

Summary of recommendations on improving affordability of water for low-income households:

On revenue stability and non-regressive rate structures:

1. Use a system of consumption-based fixed rates to accurately divide the cost burden of investing in infrastructure upgrades across tiers of users. Past investment in infrastructure upgrades becomes part of a utilities' fixed costs. Low-volume residential users end up shouldering a greater share of these costs than they are responsible for. If consumption-based fixed rates are not possible, at least capping fixed charges at 30% of revenue is a less regressive rate structure than 40-50%.
2. Have drought surcharges for all pre-approved and ready to be enacted as soon as a drought begins, in order to keep revenue closely aligned with expenses during periods of greater conservation. Drought surcharges should increase volumetric rates, and for residences, be added to the second tier of use and above.

On general system unaffordability (utilities where the cost of basic indoor water needs is burdensome for the majority of the population), address system-level costs and rate structures through:

1. Consolidation, regionalization, extension of service, and other strategies for pooling costs and spreading fixed costs across a larger rate base;
2. Better long-term demand forecasting to avoid investing in unnecessary infrastructure;
3. Incorporating climate change into planning;

4. Prioritizing lowest-cost sources of new supply first, and recognizing that demand management is the lowest-cost source of water;
5. Better short-term sales forecasting to bring authorized and collected rates into alignment, and to minimize surcharges applied after a drop in demand;
6. Invest consistently in infrastructure maintenance to avoid sudden rate hikes to compensate for underinvestment;
7. Use non-regressive rate structures that recover a higher proportion of revenue in volumetric charges.

On Customer Assistance Programs: (utilities where the cost of basic indoor water needs is burdensome for low-income households), develop a holistic approach to customer assistance programs by:

1. Providing a discount on basic indoor water needs that reaches low-income customers in all utility classes and has a high penetration rate;
2. Offer a conservation and efficiency program targeted at low-income and hard-to-reach customers (especially renters and residents of multifamily housing) to upgrade devices and repair leaks so they can meet their basic indoor needs with a modest amount of water;
3. Enact a policy that allows the most severely impoverished households to keep their water service as long as they meet scheduled payments;
4. Implement best practices on billing, fees and fines, and due process for shutoffs.

Affordability - Definitions and Indicators

Unaffordable water in California needs to be addressed as a problem that arises at two levels: the system level and the household level. Affordability is a problem that impacts any household that is paying a sufficiently large proportion of their income to force tradeoffs between water and other necessary expenses. Traditionally, water affordability has been measured as a percentage of median household income for the service area. This approach is somewhat useful for determining which utilities are unable to deliver water affordably to the majority of their customers. But it is a problematic metric for a number of reasons. First, water is valuable, and utilities need sufficient

funds to deliver safe, sufficient water to their customers. Customers with a large amount of disposable income arguably should be supporting their water utilities at a higher level if those costs are justified. Second, measuring water affordability as a percentage of median household income masks the burdens faced by low-income households in otherwise affluent areas, who pay large proportions of their income for water, often at the expense of food and medical care.

A number of publications have explored the shortcoming of traditional water affordability metrics, including Christian-Smith et al., 2013; NAPA, 2017; Teodoro, 2018. Laura Feinstein at the Pacific Institute is presently working on a publication that will propose more detailed affordability metrics in a report to be released in spring 2018, entitled "Measuring Progress Toward Universal Access to Water and Sanitation in California: Defining Indicators and Performance Measures" (Feinstein, in prep). We will plan to present a detailed set of quantitative performance indicators for affordability at Workshop 3.

In brief, we define affordability as a problem that operates at three levels, each of which requires its own indicator. *General system-level unaffordability* is when the bill for meeting Minimum Indoor Needs (MIN) is unduly burdensome for median-income households in the service area. *Low-Income System Unaffordability* is when the bill for meeting MIN is manageable for median-income households, but unduly burdensome for low-income households. *Household unaffordability* is when a household has difficulty paying their bill, regardless of whether it is affordable for others in their service area with higher incomes (e.g. severely impoverished households with incomes near 100% of the Federal Poverty Line typically do not make enough to pay for food, shelter, and energy). Each of these problems has a slightly different, non-exclusive set of solutions, which we describe below.

On a side note, we are not interpreting the CPUC's query about serving disadvantaged communities as relying on a definition of that term in statute. California statute has several different definitions of Disadvantaged Community, all of which are methods of determining whether a census tract or block is disadvantaged. We discuss strategies to assist households struggling to afford their water bills, regardless of the characteristics of the neighborhood where they live.

Strategies to Address System-Level Unaffordability

When the majority of households in a service area struggle to pay their water bill, the suite of solutions includes efforts to bring down the cost of MIN (approximately 40 gallons per person per day) through strategies such as managing system costs, growing the ratepayer base, or restructuring rates to recover a greater proportion of costs from high-volume residential, industrial, and commercial users. These systems may also require external financial support for operations and maintenance costs.

It might be tempting to think that a low-income rate assistance program is sufficient, on its own, to resolve the problem of system-level unaffordability. But there are three potential shortfalls with using LIRAs as the *only* solution to address affordability problems. LIRAs only address problems for households below a given threshold of earnings. Families with moderate incomes in areas with high water rates also struggle to pay their bill. Their burden is not addressed by LIRAs, and may only be aggravated if they are footing the bill for a subsidy. This is not a major burden if the number of households paying a surcharge is substantially larger than those receiving the subsidy, or there is a cutout to the subsidy for moderate income households. But there is a limit to the proportion of the population that can receive cost subsidies at the expense of slightly higher-earning households. The segment of the population that is burdened by the cost of water is likely to be a growing problem as the rate of water, along with the cost of other essentials such as housing, has been rising faster than low-and middle-class incomes.

The most sustainable, long-term solutions to addressing water affordability problems are approaches that help utilities manage costs long-term so that they can deliver water that is affordable for the vast majority of their customers without a discount. The top priority for addressing water affordability are system-level solutions aimed at keeping rates for MIN low, while balancing the needs for conservation and investment which are essential to long-term sustainability of the system. These strategies have been identified and discussed in CPUC's Water Action Plan and Decision 16-12-026, "Decision Providing Guidance on Water Rate Structure and Tiered Rates."

Utilities need to take a holistic approach to maintaining affordability on the part of low-income customers. The system-level approaches described here establish rates that are a reasonable balance of affordability and investment, and prioritize keeping costs low for the lowest-volume

residential users. This has two benefits: steeply inclined price tiers incentivize conservation, which keeps long-term costs low, and they set the stage to provide a conservation and efficiency program for low-income customers that enables them to meet their basic needs at an affordable price.

System-level strategies for maintaining affordable water include:

1. Consolidation, regionalization, extension of service, and other strategies for pooling costs and spreading fixed costs across a larger rate base;
2. Better long-term demand forecasting to avoid investing in unnecessary infrastructure;
3. Incorporating climate change into planning;
4. Prioritizing lowest-cost sources of new supply first, and recognizing that demand management is the lowest-cost source of water;
5. Better short-term sales forecasting to bring authorized and collected rates into alignment, and to minimize surcharges applied after a drop in demand;
6. Invest consistently in infrastructure maintenance to avoid sudden rate hikes to compensate for underinvestment;
7. Recover a higher proportion of fixed costs in the volumetric charge - at least 70 percent - and equitably distribute the costs of building and maintaining larger infrastructure and more expensive supplies to the higher-volume tiers by employing consumption-based fixed rates.

Each one of these strategies had been the subject of an entire body of research, which we will not explore in detail here. However, there is one determination in CPUC's D 16-12-026 that could present undue burdens on low-income customers: the decision to increase recovery of 40-50% of fixed costs on the fixed charge.

We appreciate the CPUC's argument that recovering a greater proportion of costs through fixed charges helps ensure rate stability over time. The CPUC, in item 13 of D16-12-026, directs Class A and B water utilities to consider recovering 40-50 percent of revenue from fixed charges, up from an earlier limit of 30 percent, while "consider(ing) the impact of shifting revenue recovery to fixed costs on low-income customers and propose appropriate adjustments to low-income

programs to maintain affordability and equity." Unfortunately, the tradeoff between increasing fixed charges and increasing the burden on low-income customers may be an inevitable one, and simply put, the best way to reduce burdens on low-income customers may be to accept the disadvantages of keeping fixed costs low, and seeking to stabilize rates through other mechanisms. It also is important to assess rates equitably; why should lower-volume users pay an equal share of the debt financing for infrastructure that would have been unnecessary if everyone used the same volume of water they use? Fixed charges are fixed now, but they often represent investments in larger treatment plants and new supplies that were driven by high-volume residential, commercial and industrial users: shouldn't they pay a great proportion of those costs? And last, recovering 30% of revenue from fixed charges was a Best Management Practice put forward by the Urban Water Conservation Council and is a key strategy in meeting future demand in the most cost-effective way.

Fortunately there are alternative strategies to stabilize rates besides increasing the fixed fee. Some alternatives to consider:

1. Have drought surcharges for all but the first tier of use pre-approved and ready to be enacted as soon as a drought begins.
2. Use consumption-based fixed rates that vary by customer depending on their previous year's usage (described in Spang et al., 2015). This strategy ensures the utility has a guaranteed revenue stream each year, but households pay a different share of the fixed costs. It provides revenue stability while keeping a conservation signal in place and more equitably assigning higher fixed costs to higher-volume users.

Strategies To Address Low-Income System And Household Unaffordability

For these utilities, the median-income households can afford their water bill, but low-income customers struggle and may be forced to cut back on food and health care to pay for basic water needs. The suite of solutions includes those for addressing general system affordability, if applicable, with the addition of customer assistance programs to provide low-income families with financial assistance to pay their bills, upgrade devices, and repair leaks. We describe a comprehensive approach to low-income Customer Assistance Programs that employs bill discounts (also known as LIRAs), low-income conservation and efficiency programs that provide

financial assistance for device upgrades and leak repair, and other best practices such as less burdensome billing practices and due process on shutoffs.

In conjunction with the strategies discussed above related to system-level unaffordability, there is room for significant improvement in existing LIRA programs offered by regulated water utilities, as well as expansion of those programs to include Class B, C and D water utilities that do not presently have a rate assistance program. As these comments are submitted prior to workshops on relevant issue, it is likely that our recommendations will evolve through this proceeding.

As an initial matter, it appears from the opening comments submitted by the water utilities that LIRA programs offered by regulated utilities have relatively high penetration rate, especially to the extent that the utilities automatically enroll those ratepayers enrolled in the CARE program.

On the other hand, the effectiveness of the LIRA programs at improving affordability appears to vary significantly, with some programs offering a very small discount to enrollees. For example, Great Oaks Water Company reports that it provides a 50% discount on metered rates, but does not offer a discount on the base rate. As a result, Great Oaks reports that the average single-family customer receives a discount of $4.81 off of a monthly bill of $47.89. (Great Oaks Opening Comments, p. 6.) As another example, San Gabriel Water Company reports that it provides enrollees a $9 a month discount. (San Gabriel Opening Comments, p. 3.)

While these discounts may offer some affordability relief to some households, there is no assurance that the result is affordable water to most or all enrollees. As a result, improvements must be made to the effectiveness of existing LIRA programs, potentially involving the creation of a single LIRA program for all CPUC-regulated water utilities, and/or consistent guidelines for the existing programs should be established. (*See* Public Utilities Code §739.8 ["Access to an adequate supply of healthful water is a basic necessity of human life, and shall be made available to all residents of California at an affordable cost."].) Strategies to improve and expand existing LIRA programs must be explored in this proceeding.

At this time, we note that a single coordinated program offers several benefits, including:

a. Widespread public recognition and familiarity with the system may yield higher enrollment rates.

b. Total administrative costs may be lower for a single unified program.

c. One well-funded program may be better equipped administratively than many small programs.

d. A unified program can access different, and potentially less restricted, revenue sources than separate local programs.

e. It may be possible to more equitably distribute costs of properly funding a unified LIRA program between low-income and higher income areas through a single unified program.

In terms of assuring that LIRA programs result in true household-level affordability, we recommend that the CPUC require that regulated water utilities offer a program to subsidize the cost of water over 1.5%[2] of the federal poverty line, with the goal of providing greater relief for low-income families paying a high proportion of their income for water. Flat rate discounts and percentage discounts, even if relatively high as a percentage, do not ensure affordability.

An important strategy for reducing costs for low-income households that can complement and expand the reach of a LIRA program is to develop conservation and efficiency programs that effectively reach low-income customers specifically, and hard-to-reach (H2R) customers more broadly. Such programs can be offered to a broader customer base than the LIRA itself, thereby helping more customers that are struggling financially to reduce their bill – both those that are enrolled in the LIRA but for whom the discount is insufficient, and those that earn slightly too much to qualify for a discount.

One of the greatest challenges in effectively serving low-income customers is that the households that are the most cost-sensitive have the greatest difficulty paying the up-front costs to repair leaks, upgrade devices, and replace landscaping. Traditional conservation and efficiency programs often rely on customers to pay up-front costs and receive rebates later, a strategy that does not meet the needs of customers with little capital on hand. Low-income households also often live in rental housing, where landlords have little incentive to invest in conservation and efficiency because they pass the cost of water on to their tenants. Low-income families often skip showering, washing dishes, and doing laundry in order to reduce their expenses (Feeding America, 2013). Enabling

[2] It is worth noting that the 1.5% standard is flawed, because households that spend nearly all their income on essentials can have difficulty even affording a small percentage such as 1.5% for water. To ensure that families do not lose access to water because they cannot afford even a relatively modest bill, we make recommendations on additional due process protections to prevent service disconnections for households that are paying what they can.

them to fulfill those needs with less water not only reduces their utility bills, it allows them to improve their health, hygiene, and quality of life.

There are enormous opportunities for greater conservation and efficiency among H2R customers, as noted in the Water Research Foundation's recent report on *Customer Assistance Programs for Multifamily Residential and Other Hard-to-Reach Customers* (Water Research Foundation, 2017). In Chapter 9, WRF reviews the evidence that conservation and efficiency programs for H2R customers have yielded major savings. Among the literature they cite is a U.S. Government Accountability Office (GAO) report, which found that savings from water conservation and efficiency investments could reduce costs and pay for themselves in a short period of time (GAO, 2008). Another study found major opportunities to reduce water and wastewater bills through retrofits of multifamily housing. Shallow retrofits translated to reducing 57% of base use, while deep retrofits translated to reducing 66% of base use (Holt et al., 2015).

Finally, conservation and efficiency programs can be directed to multifamily housing, and therefore can provide assistance to customers who are ineligible for the LIRA because they do not have an account in their name. This can be particularly important for owners and residents of deed-restricted affordable housing. California Housing Partnership Corporation, an advocate for deed-restricted affordable housing and low-income renters, reports that many owners of affordable rental homes prefer assistance with conservation and efficiency upgrades to their properties as a means of controlling their water costs over bill discounts. This sector is important to serve because they offer affordable rental homes to low-income families, and they have strict regulations on rent and utilities that prevent properties from passing water costs to tenants. Rising water bills affect their ability to continue to deliver affordable and high-quality housing to families in need (Collin Tateishi, personal communication, 9/7/2017).

Additional recommendations for improvements to existing LIRA programs and related billing practices are suggested below. Many of these are derived from Cooley et al, 2016.

a. There should be a policy for "retroactive enrollment" in the LIRA, such that if a household that is not enrolled in the LIRA accumulates substantial debt on their water bill and can demonstrate that they are qualified for the LIRA, they should be able to retroactively receive the LIRA discount on their recent bills, up to the amount of their debt at the time of enrollment in the LIRA.

b. If a household can demonstrate either a short or long-term inability to pay their water bill, even with the LIRA discount, there should be standard policies for such households to be put on a payment plan that is affordable for their income level, and to ensure that they can maintain water service so long as they make on-time payments.

c. Ideally, households that are just above the threshold for eligibility in the LIRA (which we will refer to as moderate-income households) should not have to pay into the program, to reduce their cost burden.

d. The cost burden for moderate-income households can be mitigated by expanding the number and location of the ratepayers contributing to the support of the LIRA, either by developing a pooled LIRA fund for all regulated utilities or by merging with the statewide program in development at the Water Board. As noted in the letter from the San Gabriel Valley Water Company dated 8/21/2017, it is usually the utilities that serve the largest number of qualified households that also serve large numbers of households that are just above the eligibility threshold. There is less cost burden placed on these moderate-income households "if the costs of low income customer assistance programs (are) recovered from other available sources including a broader, more diverse population across the entire state."

e. Reduce Fees and Fines Where Appropriate: Retain those that are effective at preventing accumulation of debt and shutoffs, reduce or eliminate those that are not. Emulate the San Francisco Public Utility Commission's effort to assess the efficacy of and eliminate extraneous fees and fines.

f. Better Billing Practices: Provide flexible payment plans, such as allowing for levelized billing, changing bill timing to coincide with income, or providing due-date extensions.

g. Separate water, wastewater, and sewer bills to better communicate the cost of providing water service and to ensure that basic access to water is maintained even if the customer cannot afford bills for other services.

h. Provide full due-process protections before terminating water service—for example, requiring notice of a customer's opportunity to take advantage of a budget billing program or deferred payment arrangement.

We also recommend improvements in reporting requirements as a means of identifying areas for further improvement and/or regulatory change. Transparent information about water shut offs is necessary to more completely understand the frequency at which they occur and to see if there are clear patterns as to where they more frequently occur. Collecting data on water shut offs may expose water utilities who are less likely to work with low-income customers struggling to pay their rates, allowing the Commission to work with these utilities to improve practices, and it may also show regions where shut offs are more common, perhaps due to high water rates caused by contamination or supply issues. Regardless, data can be used to identify where money can be redirected to provide the greatest benefit. In order to begin collecting this data, the Commission must require regulated utilities report to the Commission the number of shut-offs they perform and link the shut offs to generalized geographic data (obviously we do not wish to potentially embarrass or shame individual households impacted by a shut-off by allowing their specific address to be made public). This data must then be uploaded to a publicly accessible database so the public can see this data to use to help advocate for targeted outreach and assistance. Currently there is a bill in the Legislature SB 998 (Dodd) that is aiming to, among greater protections against shutoffs, address the need for water shut off transparency. A limit of the Dodd bill right now, however, is that shutoffs will only be reported onto the individual water district's website, rather than shown at a broader geographic scale. The Commission should at a minimum require something akin to what is proposed in the Dodd bill, but ideally create a more statewide data collection resource that could perhaps be rolled into the implementation of AB 1755 (2016, Dodd) which is creating a transparent water database.

4. What if any regulatory changes should the Commission consider that would ensure and/or improve the health and safety of regulated water systems?

Maintaining infrastructure to last as long as possible is a constant worry for all water systems, and despite best efforts, extensive repairs or upgrades will eventually be necessary. While addressing these essential aspects of water system management applies to all systems, it is of even greater concern for small water systems. Small water systems, even if they do not provide water to disadvantaged communities, often lack the economies of scale necessary to address significant and expensive projects. For systems that service disadvantaged communities, routine operations and maintenance alone can be difficult, if not impossible, to sustain. In order to support the health and

safety of regulated water systems, an increased emphasis on providing assistance (financial, educational, technical, etc.) to all systems but with a focus on systems serving disadvantaged communities must be at the forefront. Many of the proposed changes we advocate for to ensure the health and safety of water systems are already included within the scope of this proceeding, including: consolidation (physical, managerial, and rate), developing a standardized LIRA program, water rate forecasting assistance, and finding a supplemental funding source to help smaller systems. Thus, we incorporate our above comments on these topics into this section as well.

IV. CONCLUSION

These organizations respectfully request that the Commission duly consider and incorporate these recommendations in this proceeding.

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Respectfully submitted,

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