APPENDIX A
NORTHERN TULARE COUNTY PILOT PROJECT

Disadvantaged Community Pilot Project
Northern Tulare County Sub-Region

Economy of Scale Evaluation

FINAL

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Kings Basin IRWM Authority

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ABBREVIATIONS

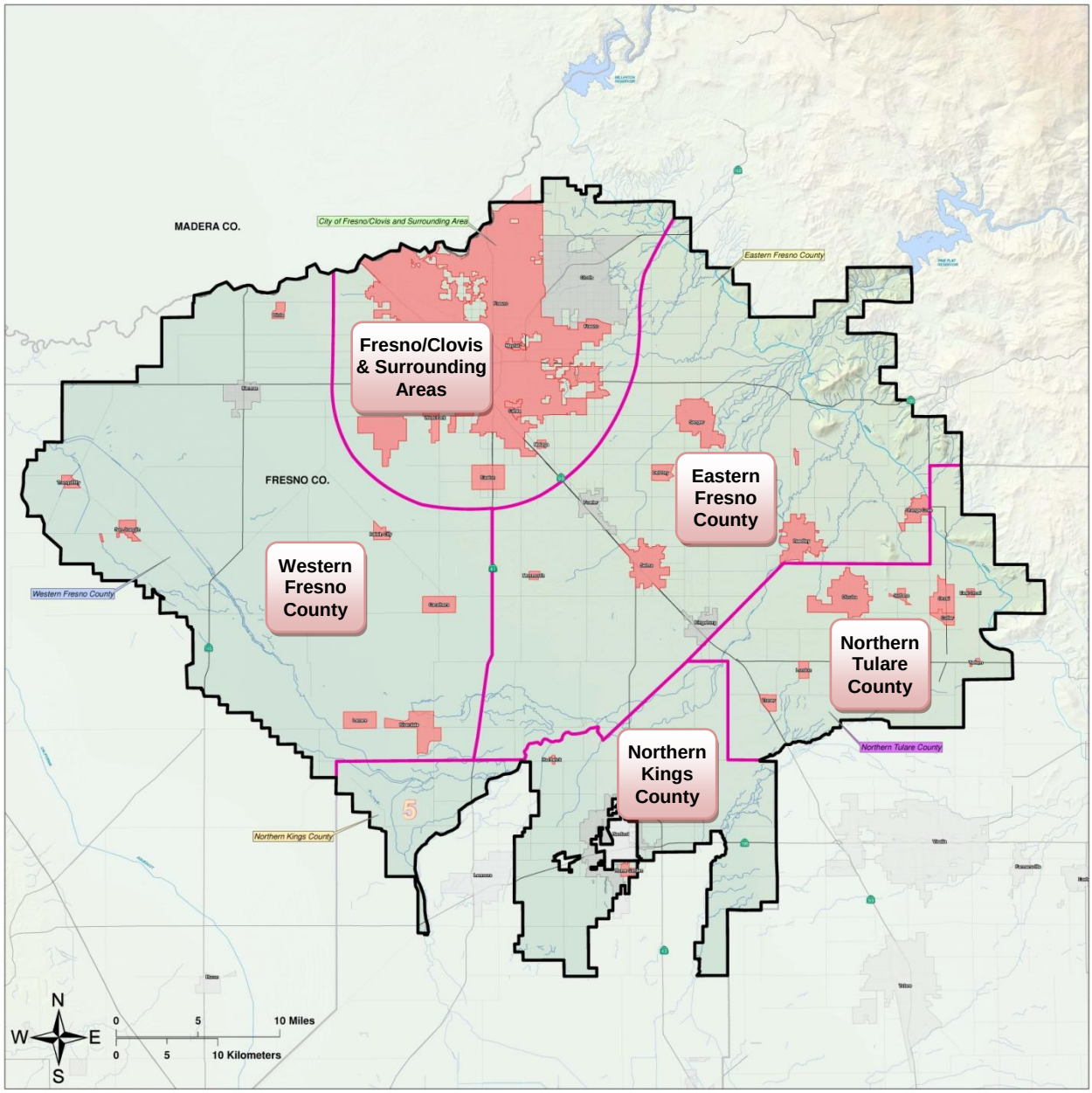
AWWA.....American Waterworks Association
CDPH..... California Department of Public Health
CSD..... Community Service District
DAC..... Disadvantaged Community
IRWM .....Integrated Regional Water Management
Authority..... Kings Basin Integrated Regional Management Authority
MHI.....Median Household Income
MSR ..... Municipal Service Review
PUD.....Public Utility District
TMF.....Technical, Managerial and Financial

1 INTRODUCTION

The Kings Basin Integrated Regional Water Management (IRWM) Authority (Authority) received a grant from the State of California, Department of Water Resources, to develop a pilot project or series of projects within the IRWM boundary focusing on water, wastewater or storm water problems and issues faced by Disadvantaged Communities (DACs).

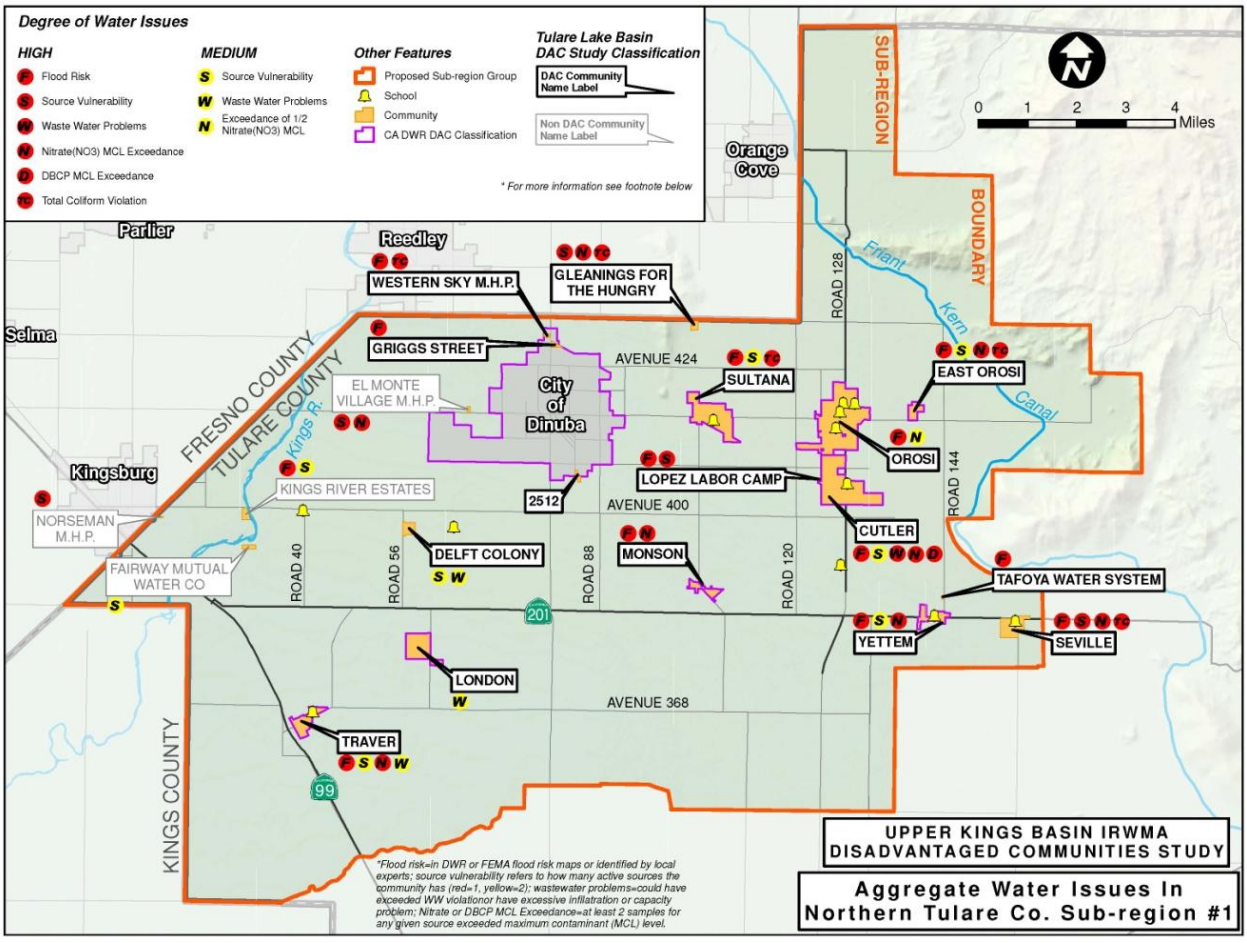
The Kings IRWM boundary extends over the majority of Fresno County plus portions of northern Tulare and Kings Counties and contains nearly 100 DACs. In an effort to develop pilot projects that would address common problems and benefit multiple DACs, the IRWM region was divided into five sub-regions: Northern Tulare County, Fresno/Clovis and Surrounding Areas, Western Fresno County, Eastern Fresno County and Northern Kings County (See **Figure 1-1**).

Figure 1-1: Kings Basin IRWM Sub-Region Map



The Northern Tulare County Sub-Region has numerous DACs (See **Figure 1-2**). Extensive outreach was performed to all agencies and water systems within the Sub-Region in an effort to educate them about Integrated Regional Management Planning and to seek their participation to help identify pilot projects for the Sub-Region. Several water systems actively participated in the pilot project process: Orosi Public Utilities District (PUD), Cutler PUD, Sultana Community Services District (CSD), East Orosi CSD, Monson, the Cutler Orosi School District and the unincorporated communities of Yettem and Seville.

Figure 1-2: Northern Tulare County Sub-Region Map



1.1 Development of the Project Scope

Stakeholders such as community residents, board members, consultants (representing water systems), and school personnel from the seven communities came together through several sub-region meetings to discuss their regional concerns and problems with a goal of developing a pilot project to address their common issues and concerns regarding operations of their water, wastewater or storm drainage systems.

Through consensus, the participating representatives determined the highest-priority issues for their communities are the lack of reliable and safe drinking water and the inefficiencies inherent in operating individual water systems for their small communities. Focusing on these issues, the group selected a pilot project to evaluate the possibility of sharing services such as legal, engineering, accounting, and/or operators. By pooling cost and funding for these services, the pilot project would attempt to identify efficiencies and possibly opportunities for reduced costs. After collecting water system specific information such as budgets, expenditures, and staffing characteristics, it was difficult to accurately extract water system data that would allow a commensurate (apples to apples) evaluation.

The project scope needed to be adjusted to identify an evaluation tool that could provide a commensurate evaluation. The water systems recognize their small customer base limits their ability to effectively distribute costs. Any minor change in operational costs has a significant impact to the financial viability of the water system and their ability to provide water services according to California Department of Public Health (CDPH) standards. Therefore, metrics that are more common and accurately maintained were identified to help evaluate cost distribution for the water systems. The number of water connections and water rates were selected to be the basis for water system comparisons. Using these metrics along with two industry benchmarks, developed by the American Water Works Association (AWWA)[1] and CDPH[2], equitable metrics were identified allowing water system comparisons with a higher degree of correlation.

By comparing water systems using these common characteristics and industry standards, some general conclusions about the distribution of costs and/or the economies of scale were developed. Therefore, the goal of the project was revised to identify, if possible, a trend of improved cost distribution, and when or at what point could this trend transform into a noticeable economy of scale.

The purpose of this pilot project or economy of scale evaluation is to help provide data and information that can foster collaboration opportunities and demystify the advantages and disadvantages of consolidation. Also, this evaluation is to be used as a tool that can lead to water system specific consolidation efforts that would require a more accurate and detailed analysis such as a Technical, Managerial, and Financial (TMF) assessment.

[1] The average water rate charged for in Tulare County for water services according to the *2011 California-Nevada Water Rate Study*, AWWA California-Nevada Section

[2] CDPH considers the calculation of 1.5% of the Median Household Income as the affordability level for a water rate

2 ECONOMY OF SCALE ANALYSIS

Economies of scale are, by definition, the increased efficiencies inherent in providing services or delivering products by increasing the number of units over which the fixed costs are spread. Often operational efficiency is improved with increasing scale, leading to lower variable and overall costs.

An Economy of Scale Analysis identifies the point at which water systems can capitalize on economies of scale through collaboration. The end goal of the analysis is to provide the water systems with a 'range of initial efficiencies' so they can plan for potential collaborations; allowing the water systems the ability to continue or improve services with the most efficient approach.

Such an analysis provides many pieces of information and conclusions; however, it is a high-level trend evaluation and should not be substituted for other analyses or studies necessary for consolidation. The analysis provides the following items:

- Illustration of collaboration and consolidation benefits
- Potential point at which efficiencies and benefits of economies of scale will initially be realized
- Factual information to begin collaboration discussions between the participating water systems.
- Trends of the actual data received from the water systems and other public sources

The analysis should not be substituted for further analysis and deeper studies, noting these particular caveats:

- Exact numeric values associated with potential points of efficiencies are related only to the information presented here and should be used for reference only
- This analysis is not:
    - a Financial Analysis of the water systems or region
    - a Consolidation Study or Feasibility Study
    - a Rate Study or Analysis
    - an Evaluation of existing service levels

2.1 Baseline Development

The first task necessary to develop a baseline involved assembling of data for as many water systems as possible. Adequate information was available for 15 water systems within Tulare County. The objective of assembling a large number of water systems was to test the economy of scale evaluation on a macro scale. Included in the baseline development are the seven Participating Agencies, which have been highlighted with an asterisk "*" in Table 2-1. The Participating Agencies are those water systems that have been actively participating in the Kings Basin DAC Pilot Study and have requested this evaluation. The Monson DAC did participate in selecting the pilot but does not have a public water system and information was not available to be included in the evaluation. Section 2.2 presents the economies of scale evaluation for the Participating Agencies.

The economies of scale evaluation used several important data sets that are specific to the water systems. Using data from the Census, Municipal Service Reviews (MSR), and County of Tulare records, information including population, total connections, services provided, and water rates were obtained for all 15 baseline water systems. A summary of the data and industry benchmarks are detail in Table 2-1.

Table 2-1: Baseline Water Systems

System Name	Number of Connections	Monthly Water Rate	Median Household Income	1.5% of MHI (Affordability) Monthly	AWWA Tulare County Ave. Water Rate
Yettem*	69	$51	$37,311	$46.64	$29.39[3]
Seville*	89	$60	$45,536	$56.92	
East Orosi CSD*	102	$17	$26,163	$32.70	
Sultana CSD*	224	$23	$42,321	$52.90	
Woodville PUD	421	$27	$27,622	$34.53	
London CSD*	450	$18	$38,701	$48.38	
Poplar CSD	555	$25	$31,875	$39.84	
Tipton CSD	587	$24	$34,539	$43.17	
Richgrove CSD	600	$23	$27,386	$34.23	
Strathmore PUD	690	$43	$21,683	$27.10	
Pixley PUD	700	$20	$30,521	$38.15	
Ivanhoe PUD	1174	$19	$36,841	$46.05	
Cutler PUD*	1197	$28	$31,105	$38.88	
Earlimart PUD	1483	$8	$23,415	$29.27	
Orosi PUD*	1678	$19	$34,394	$42.99	
		Average	**$32,628**	**$40.78**	
* Participating Water Systems					

[3] The *2011 California-Nevada Water Rate Study* used water rates from the Cities of Porterville and Dinuba to calculate an average.

1.5% MHI and the 2011 California-Nevada Water Rate Study by AWWA are the two industry benchmarks used to help provide comparative context and to locate the potential for economies of scale:

- 1.5% affordability level, which was determined by averaging Median Household Incomes (MHIs) for the study communities and multiplying by 1.5% (*$32,628 x 0.015=$489.41/12=$40.78 per month*)

- Tulare County Water Rate Average, as discussed in the 2011 California-Nevada Water Rate Study, conducted by AWWA, California-Nevada Section

The 1.5% MHI affordability level is tracked by the CDPH, which considers it to be the maximum level at which water bills are affordable (Pacific 2011). Additionally, several grant programs list 1.5% MHI as the minimum water rate that the system must be charging to be eligible for grant-only funding without a loan component.

The AWWA County Average Water Rate gives some indication of the level of funding required to provide basic water service in Tulare County. While we recognize every system has unique circumstances that drive rates higher or allow them to be lower, inter-agency rate comparisons are an important tool to help water systems and customers understand large variances from the norm and to judge the overall efficiency of a given system.

As previously discussed identifying commensurate metrics for the water systems was difficult and this benchmark should not be construed as an evaluation of service levels or financial integrity.

Figure 2-1 shows how the monthly water rates correlate with the total number of connections for the 15 baseline water systems. The graph shows monthly water rate (right y axis) and number of connections for each water system (left y axis), along with the 1.5% MHI (Affordability Level) and the AWWA Tulare County Water Rate Average for 2011. On the bottom of the graph (x axis) the water systems are organized in ascending order of number of connections.

Observations from the 15 Baseline Agencies:

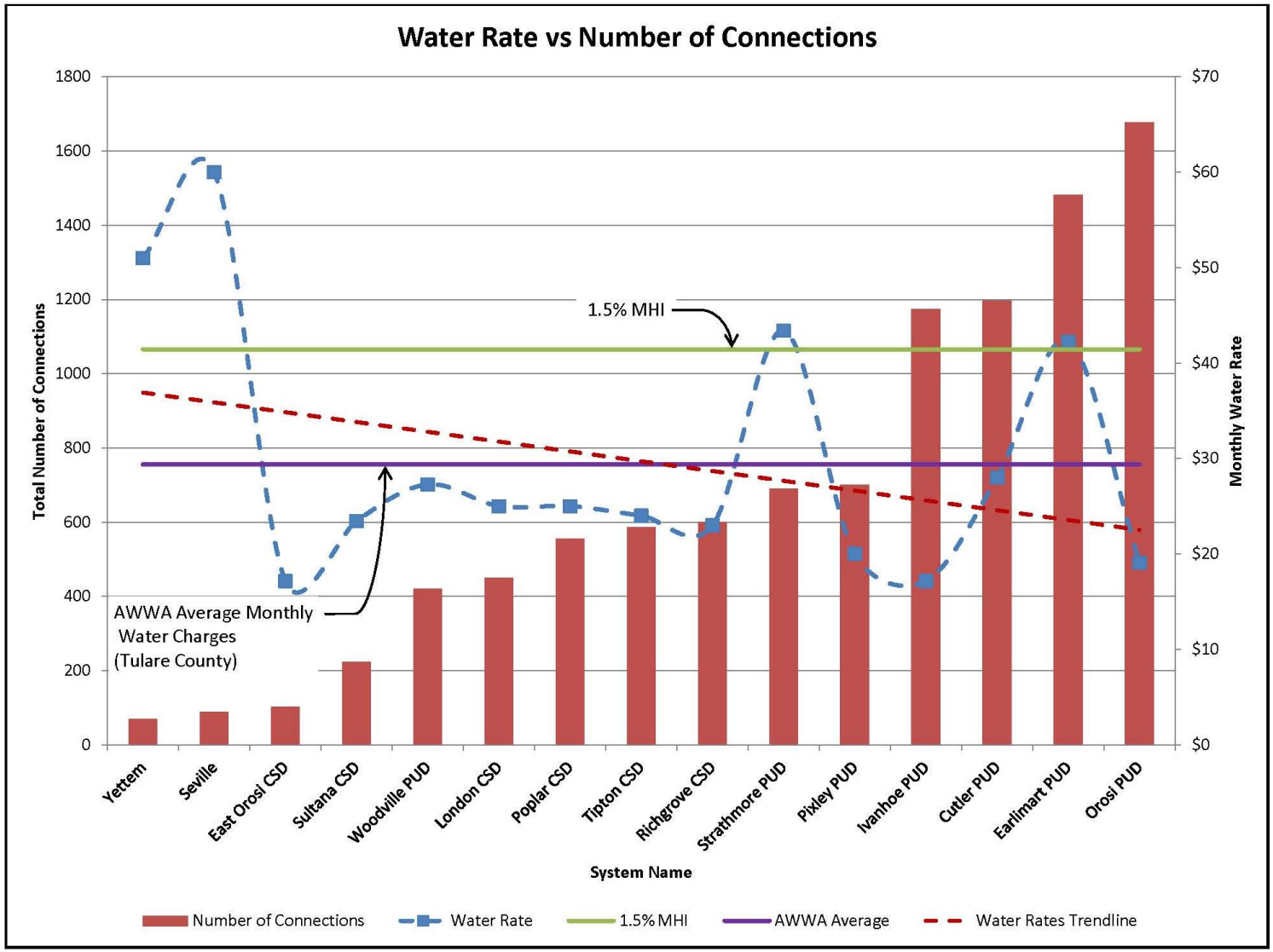
- 1.5% MHI (Affordability Level) – Rates for all but two water systems are significantly lower than the affordability benchmark.

- Tulare County Water Rate Average (AWWA Average) – Rates for three water systems are at or above the Tulare County Water Rate Average for 2011.

- Water Rates – there is a large variance in rates for water systems with less than approximately 600 connections.

- Water Rate Trendline – The trendline is being used to show the general trend of water rates versus connections. The trendline shows as the number of connections increases water rates tend to decrease.

Figure 2-1: Monthly Water Rate vs. Number of Connection (Baseline)



2.2 Participating Water System Evaluation

2.2.1 Participating Water Systems

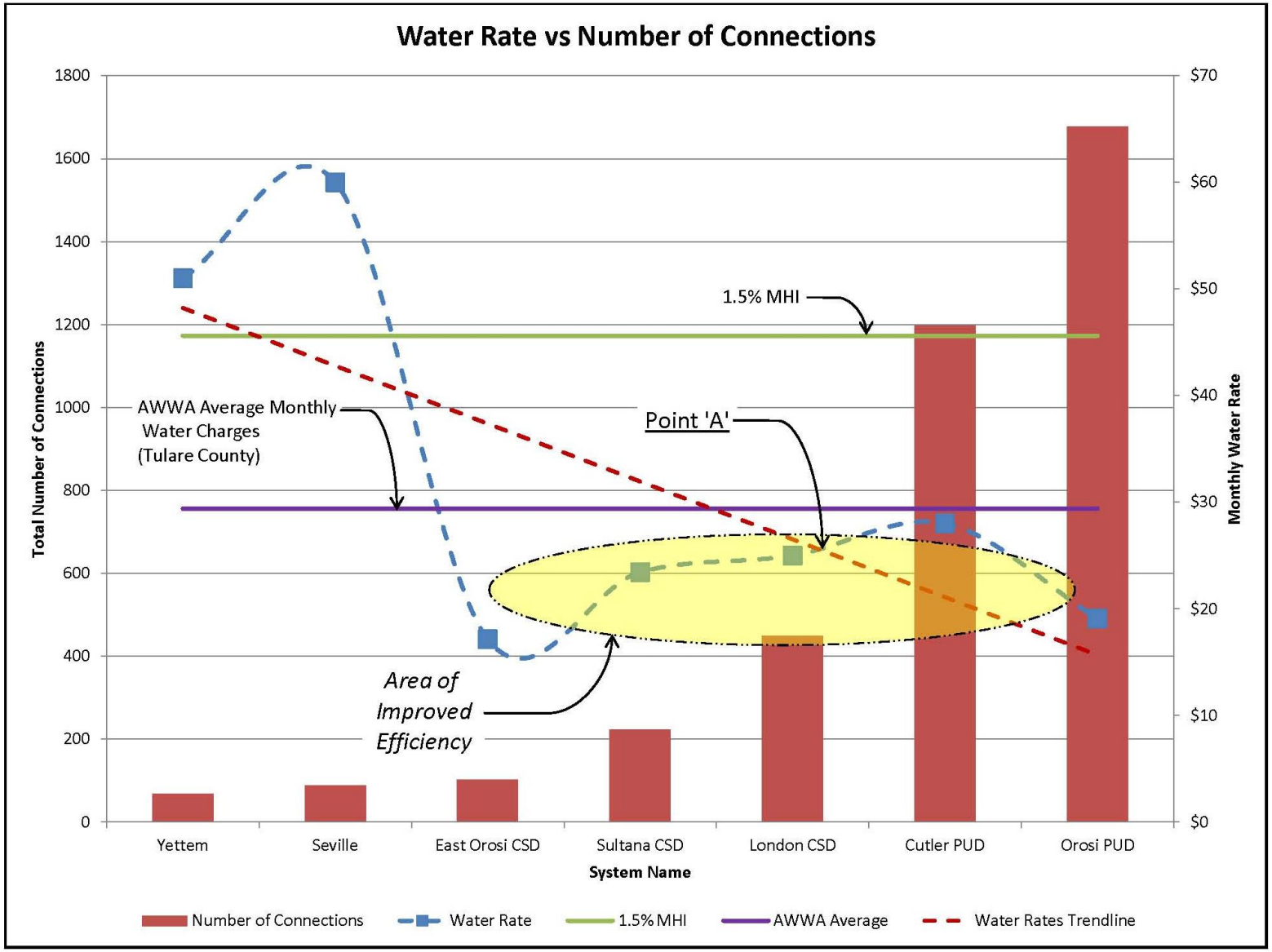
The same evaluation tools and metrics used for the Baseline Agencies as shown in Table 2-1 were used to evaluate the seven participating water systems, allowing specific observations applicable to these water systems. The DAC of Monson did participate in the pilot project selection process but did not have data available to be incorporated into the evaluation.

Table 2-2: Participating Water Systems

System Name	Number of Connections	Monthly Water Rate	Median Household Income	1.5% of MHI (Affordability) Monthly	AWWA Tulare County Ave. Water Rate
Yettem	69	$51	$37,311	$46.64	$29.39[4]
Seville	89	$60	$45,536	$56.92	
East Orosi CSD	102	$17	$26,163	$32.70	
Sultana CSD	224	$23	$42,321	$52.90	
London CSD	450	$18	$38,701	$48.38	
Cutler PUD	1197	$28	$31,105	$38.88	
Orosi PUD	1678	$19	$34,394	$42.99	
		Average	**$36,504**	**$45.63**	

[4] The *2011 California-Nevada Water Rate Study* used water rates from the Cities of Porterville and Dinuba to calculate an average.

Figure 2-2: Monthly Water Rate vs. Number of Connections (Participating Water Systems)



In Figure 2-2 the water rates for the smaller water systems (Yettem and Seville) are noticeably higher than those of the larger water systems, in both cases higher than the 1.5% MHI affordability level and the Tulare County Average Water Rate. The Water Rate Trend Line on the graph has a significant slope reflecting a strong correlation that as the number of connections increase, water rates decrease. Turning our attention to the Water Rate line, it starts high due to the rates of Yettem and Seville, and significantly drops as the Water Rate line transitions to water systems with larger connections. However, the once beyond Yettem and Seville, the Water Rate line tends to normalize (reduce in amplitude) for water systems with connections between 400 and 750. Potential observations identifying the realization of emerging efficiencies could be:

- In Figure 2-2 the Water Rate Trend Line for the seven Participating Agencies reflects the trend that as the number of connections increase water rates decrease.

- In Figure 2-2 the Water Rate Line begins to normalize (reduction in amplitude) between 400 and 750 connections (Area of Improved Efficiency).

- Once beyond Yettem and Seville, The Water Rate Trend Line intersects the Water Rate Line at approximately 600 connections (Point A in Figure 2-2).

Based on the observations described above, as a water system approaches or if a potential consolidation approached 600 connections, system efficiencies could begin to emerge and could continue to increase with the number of connections as a result of capitalizing on economies of scale. Water systems with more than this number of connections could already have some level of efficiency established within their systems, but they can still see increased efficiency as a result of collaboration.

2.3 Evaluation of Engineering and Legal Expenses

Typically, DACs do not maintain engineering or legal personnel on their staff, choosing instead to contract with consultants for such work. The costs associated with these consultants vary greatly from year to year depending on the circumstances faced by the system that year.

The Participating Agencies asked to evaluate the benefits of sharing or consolidating engineering and legal services. Information was not available from all of the communities or from all of the Participating Agencies; therefore the evaluation of these types of benefits was completed for the communities that provided the necessary information. Figure 2-3 and Figure 2-4 show how the cost of consultants per connection correlates with the total number of connections. The graph shows several pieces of information, consultant cost per connection with a regression line and number of connections. The water systems are organized in ascending order based on the number of connections.

The observations of engineering and legal costs when compared to the number of connections are:

- The Cost Per Connection varies greatly by water system. There are unique system specific issues that drive the costs of engineering and legal services.
- In general, the cost per connection for engineering and legal services trend downward as the number of connections increase.
- Systems with larger economies of scale have greater financial capacity to acquire professional services such as legal and engineering. In certain cases the use of professional services can improve the service levels for a water system.

Figure 2-3: Cost per Connection (Engineering) vs. Number of Connection

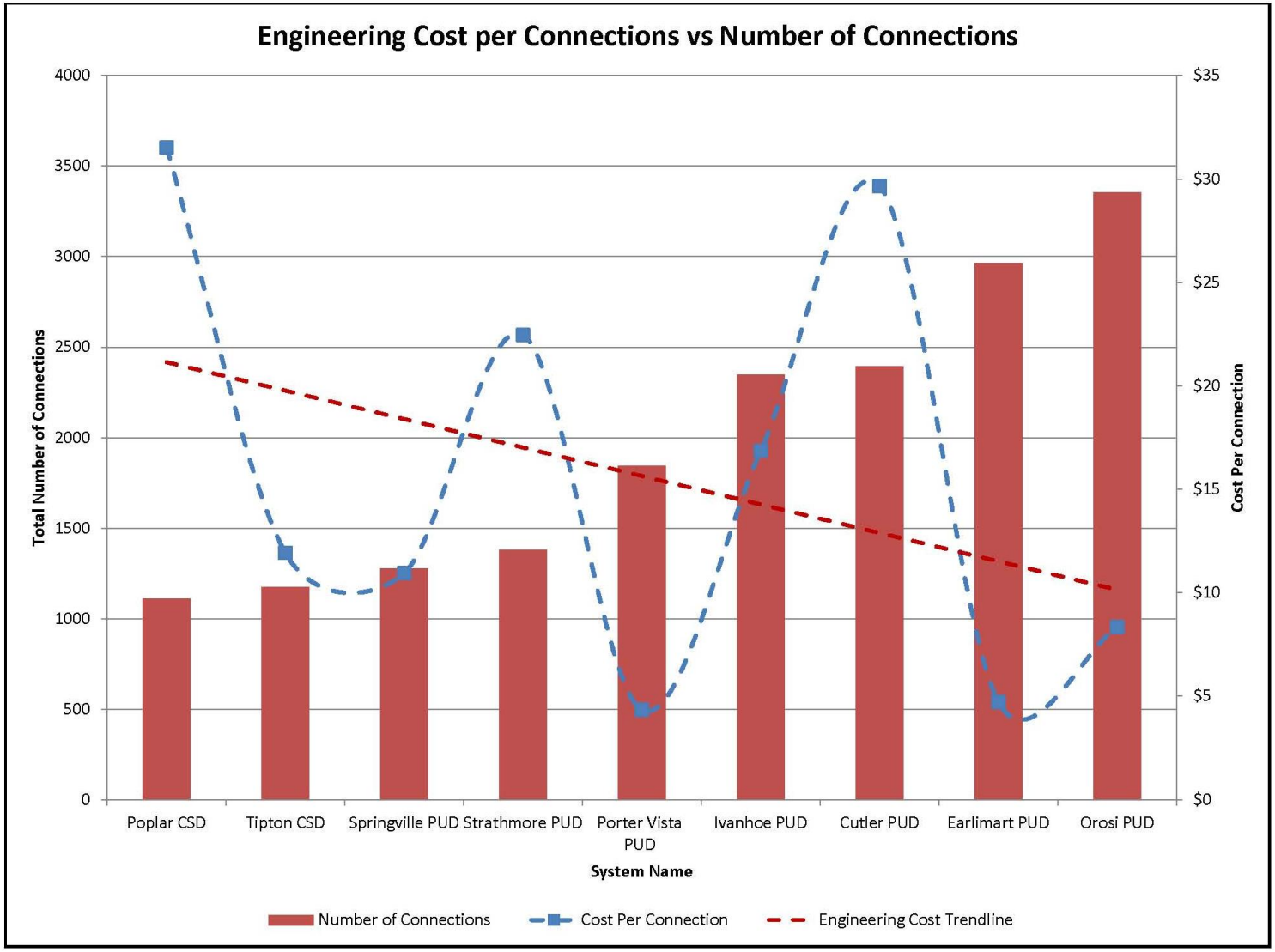
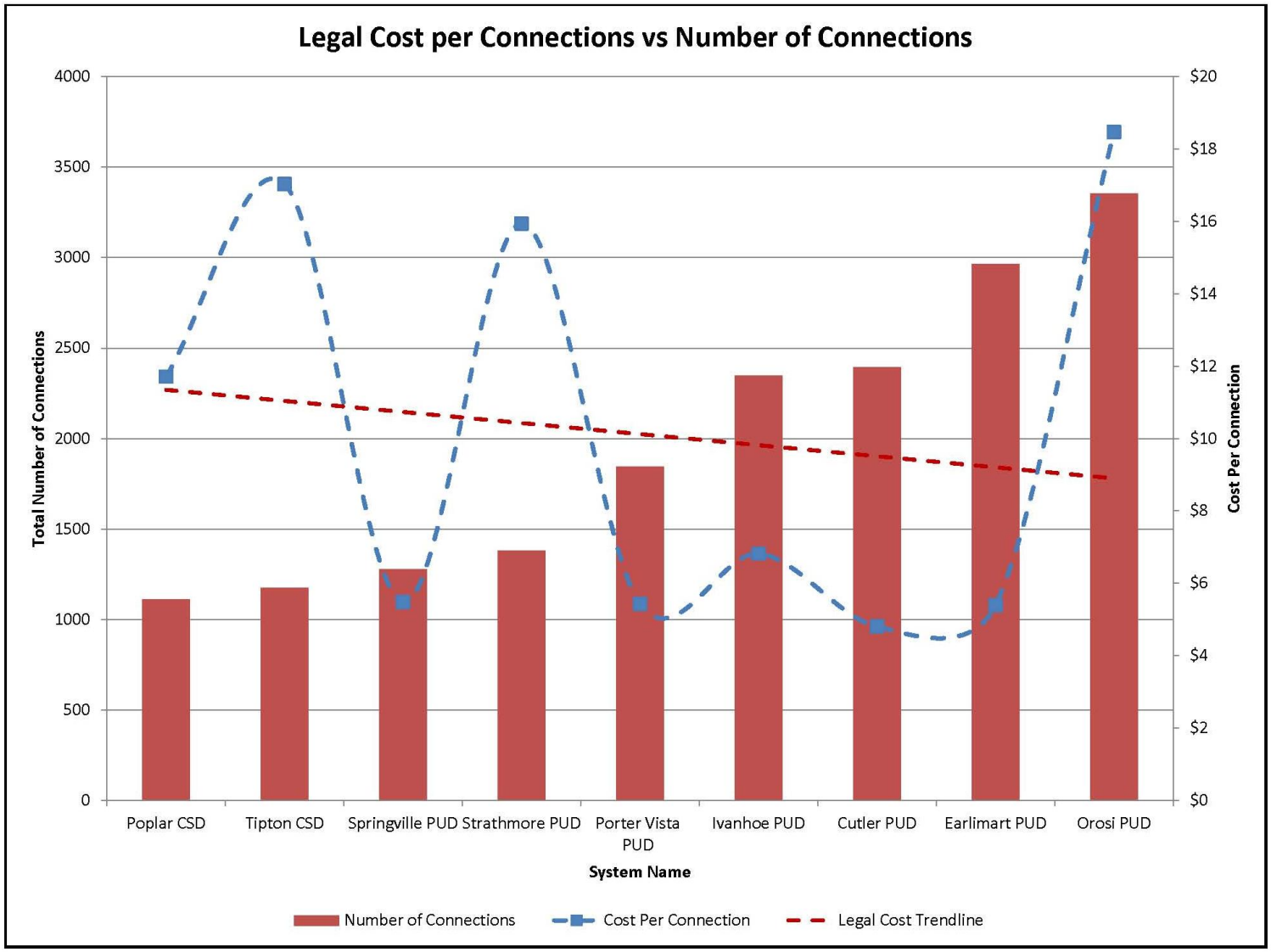


Figure 2-4: Cost per Connection (Legal) vs. Number of Connection



3 KEY OBSERVATIONS AND ACTION ITEMS

The seven Participating Water Systems recognize there is the potential for improved efficiencies through collaboration. However, the water systems did not have any supporting information that reflects improved efficiencies as a result of collaboration. The Economy of Scale Evaluation provides supporting information for the participating DACs to use as a starting tool for considering consolidation opportunities. The following key observations are listed in order to show how the evaluation was intended to provide a reasoning tool that simulates a building block effect or an increasing level of confidence with every step.

- The Water Rate Trend Line in Figure 2-2 reflects a characteristic that as the number of connections increase water rates decrease.

- The Water Rate Line in Figure 2-2 begins to normalize (reduction in amplitude), once beyond Yettem and Seville between 400 and 750 connections (Area of Improved Efficiency).

- The Water Rate Trend Line, once beyond Yettem and Seville, intersects the Water Rate Line at approximately 600 connections (Point A in Figure 2-2)

- Engineering and Legal costs per connection tend to decrease as the number of connections for a water system increase.

The Economy of Scale Evaluation is to be used as a discussion tool bringing agencies together to improve operations by collaboration or consolidation, and not to evaluate individual water systems readiness or resistance to consolidate. The primary observation realized from reviewing this evaluation is any of the seven Participating Water System can benefit from collaboration or consolidation.

There are a few issues of concern. Most importantly, the rates for four of the seven Participating agencies are significantly below both the 2011 AWWA Average Monthly Water Charges for Tulare County and the 1.5% MHI affordability test. This characteristic could indicate there are structural, financial and/or operational issues with most of the water systems, and that these water systems may not be providing levels of service typically expected of public water system. Although the industry benchmarks focus on water rates, there are several other ways to improve revenue:

- Increase the number of connections (customers) through growth or consolidation;

- Reduce accounts with delinquent payments using collections support and implementation of late or delinquent payment policies;

- Seek grant and low interest loan opportunities for capital improvements.

The key action item is to consider consolidation or collaboration amongst the seven Participating Water Systems. Opportunities for consolidation should be explored and, if supported, a more detailed evaluation such as a Technical, Managerial and Financial evaluation should be conducted.

3.1.1 Northern Tulare Sub-Region Next Steps

The region has a strong interest in finding ways to consolidate. Water systems that are considering some form of consolidation may need to seek funding to help conduct a feasibility study that can evaluate alternatives with accuracy and detail. A few items water systems may need to consider when preparing the scope or work for a feasibility involving consolidation are:

- The need to conduct a survey of the customers and elected officials to understand their interest and sentiments (Community Survey).
- The need to prepare a TMF Assessment.
- Retaining legal services that can evaluate the current legal forms of governance and how a new form of governance may change the responsibilities of an agency.
- Retaining accounting services that can evaluate the health and feasibility of consolidating finances, if applicable.
- Consider initiating consolidation by developing a shared services agreement for professional services (legal, engineering, accounting) to test the process and political will prior to seeking a consolidation feasibility study.
- Include funding and possibly consultant support to conduct public education and outreach.

The water and sewer agencies, community members, cities, counties, DACs, school districts, etc. need to continue their involvement with the Kings Basin Integrated Regional Water Management Authority by:

- Continuing to educate themselves and become more familiar with Integrated Regional Management Planning. Information is available at the following website http://www.krcd.org/water/ukbirwma/. Agencies such as the Community Water Center (559-733-0219) and/or Self Help Enterprises (559-651-1000) can help provide information about the Upper Kings IRWMA.

- Also, the State of California has a website that provides additional information http://www.water.ca.gov/irwm/grants/index.cfm.

- Attending the Upper Kings Board or Advisory Committee Meetings. The meetings are posted on the following website http://www.krcd.org/water/ukbirwma/agenda.html.

- Becoming an Interested Party or a Member could help provide access to funding. Call the Kings River Conservation District at (559) 237-5567 to obtain additional information about becoming a member or interested party.

3.1.2 Potential Funding Sources:

- Upper Kings IRWMA Proposition 84 and 1E funding
- The Small Water Systems Program Plan (SWSPP): In 2012, CDPH announced plans to concentrate funding and other resources on 177 specific small public water systems in need of meeting drinking water standards. Most of the water systems are in disadvantaged communities. This program outlines specific actions that CDPH intends to take that will incrementally reduce the number of small systems not meeting the State's water quality standards. CDPH staff have set a goal of bringing 63 of the 177 identified small systems into compliance by the end of 2014.
- The Safe Drinking Water State Revolving Fund (SDWSRF) provides funding to correct public water system deficiencies based upon a prioritized funding approach that addresses the systems' problems that pose public health risks, systems with needs for funding to comply with requirements of the Safe Drinking Water Act, and systems most in need on a per household affordability basis.
- Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Act of 2006 (Public Resources Code Section 75001, et seq.), was passed by California voters in the November 2006 general election. CDPH is responsible for portions of the Act that deal with safe drinking water supplies, including emergency and urgent funding, infrastructure improvements, and groundwater quality. Integrated Regional Water Management (IRWM) program from DWR has funding available under Proposition 84 for projects that address critical drinking water supply or water quality needs for Disadvantaged Communities.

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