



# Protecting the Mokelumne River

A District Response to the Proposed Divestiture  
of PG&E's Mokelumne River Project

EAST BAY MUNICIPAL UTILITY DISTRICT

---

*This paper explores the policy issues arising from PG&E's proposed hydropower divestiture on the Mokelumne River. It also provides background information regarding electric industry deregulation. It recommends alternative courses of action that will reduce or eliminate the potential water quality and environmental health risks associated with PG&E's divestiture.*

# TABLE OF CONTENTS

TABLE OF CONTENTS	ii
EXECUTIVE SUMMARY	1
Historical Operations	1
Impacts of A New Hydropower Market	2
Proposed Actions	3
INTRODUCTION	4
Mokelumne River System Schematic Profile	5
ELECTRIC INDUSTRY DEREGULATION BACKGROUND	7
New Economies in California Hydropower	8
Natural Resource Impacts of Maximizing Hydropower Profits	10
STRATEGIC ACTIONS	13
Engaging in the Regulatory Process	13
State Legislative Activity in 2000	14
Continuing Work with Upcountry Interests	14
Project Acquisition and Management	15
Hydropower Divestiture Task Force	17
CONCLUSIONS AND NEXT STEPS	18
FACILITIES SUMMARY	19
GLOSSARY	22

# EXECUTIVE SUMMARY

The Mokelumne River Project, a series of dams, hydroplants, and other facilities owned by PG&E, lies directly upstream of Pardee Reservoir, the East Bay Municipal Utility District's primary source of drinking water supply (see schematic map on page 5). PG&E is proposing to divest itself of its hydropower facilities by auction to the highest bidder. This means a new owner -- one likely to have a high profit motive -- would run the Upper Mokelumne River Project.

The operation and maintenance of this project directly affects the District's ability to meet drinking water supply requirements and to protect the Mokelumne watershed's natural resources. For this reason, EBMUD is actively seeking protections for the river -- including possibly acquiring the project -- as the California Public Utilities Commission (CPUC) proceeds with divestiture.

## Historical Operations

---

E B M U D

I N T E R E S T S

---

- Water quality
  - Watershed health
- 

Historically, PG&E's Mokelumne River Project has been operated under a set of adjudicated constraints called the Lodi Decrees. The Decrees' requirements and years of active cooperation between EBMUD and PG&E have significantly influenced the operation of the system.

This approach has supported EBMUD efforts to meet increasingly stringent water quality standards, to provide adequate water supplies to customers, and to protect the environment. This historical approach has been an important consideration in forging new agreements to protect natural resources and provide high-quality water.

EBMUD has pursued an extensive mine remediation project to keep toxic materials out of the Mokelumne River, and successfully challenged timber harvest proposals that threatened water quality. The District spends over \$6 million a year to preserve and protect the river watershed and natural resources.

Continued operation of PG&E's Mokelumne River Project dams and hydroplants in a way that supports these efforts is critical.

# Impacts of A New Hydropower Market

---

## C O N C E R N S

---

- Nutrient loading
  - Oxygen levels
  - Water temperature
  - Toxic compounds
- 

The restructuring and deregulation of the electrical industry, mandated by the State Legislature in 1996 (AB 1890), has led to widely differing hourly prices for power. A price premium is placed on power that can be supplied quickly (in intervals as small as 10 minutes). Because hydropower can be rapidly turned on and off, it is well suited to meet this need and garner the resultant high profits.

The Lodi Decrees specify *average* daily and monthly water flows. Because they only specify averages they do not preclude drastic daily or even hourly changes in flows to provide short spurts of power.

A "price only" auction will sell the Mokelumne project to the highest bidder who, in turn, is likely to want the highest profit. Operating PG&E dams with drastic fluctuations could be very profitable. It could also have potentially devastating effects on water quality and the downstream environment including:

- Scouring of the river, streams and canals in the Mokelumne basin would add sediments and nutrients to the water in Pardee Reservoir that would degrade water quality
- Rapidly changing water levels could increase water temperatures to levels that could adversely impact fish, compromising District-designed programs to avoid such problems

An over emphasis on the money-saving aspects of project operations and maintenance, and exposure to frequent ownership changes (an emerging trend in the wholesale energy industry), could cause other problems:

- Maintenance of watershed areas around dams could become a low priority. Poor timberland management and maintenance practices could send sediments and nutrients to the lower river, harming water quality and fish.
- An owner considering only the bottom line might opt to remove sediments behind PG&E dams with an inexpensive "flushing" technique. This could lower Pardee Dam's storage space by filling it with sediments.
- Flushing could also bring toxic compounds (e.g., copper) into our main drinking water storage reservoir.

## Proposed Actions

The CPUC is presently considering PG&E's application to conduct a "price-only" auction of hydropower assets. The District's obligations and investments in the Mokelumne River demand that we take an active role in this divestiture process.

The District is objecting to a "price-only" auction that does not consider water quality, water rights and environmental issues. We are actively participating in the proceedings to obtain reasonable operational constraints responsive to the interests we are bound to protect. We are taking advantage of every opportunity to assure the Mokelumne River Project is operated by a responsible owner.

Acquisition of the Mokelumne River Project by EBMUD in a public partnership may also be a viable alternative to ownership by a profit-motivated company and should be further evaluated. Years of operation of two hydropower generation facilities on the river demonstrate EBMUD's expertise in this field. The District is also an active wholesaler through the Automated Power Exchange.

The District should actively participate in the various forums related to the divestiture including the CPUC divestiture proceedings, the upcoming legislative session, the Project No. 137 FERC relicensing process, and the proposed hydropower asset auction.

# INTRODUCTION

Background on the proposed auction and PG&E's Mokelumne project

Pacific Gas and Electric (PG&E), a regulated utility, has applied to the California Public Utilities Commission (CPUC) to auction its hydropower generation assets. This auction would fulfill one of PG&E's principal obligations under the 1996 electric industry restructuring law (AB 1890), which encourages vertically integrated electric utilities to divest of certain facilities. The Mokelumne River hydropower facilities owned by PG&E and known as FERC Project No. 137, constitute one of 26 Federal Energy Regulatory Commission (FERC) licensed projects in California PG&E proposes to auction.

The PG&E facilities are located directly upstream and adjacent to EBMUD's Pardee Reservoir.<sup>1</sup> PG&E operates its Mokelumne River facilities under the terms of the Lodi Decrees and applicable California Department of Fish and Game (DF&G) agreements. These legal agreements specify the *average* daily and monthly outflow requirements, maximum water storage levels and minimum stream flows that PG&E must meet. For decades, PG&E and EBMUD have mutually cooperated to manage the system. PG&E has met the storage and release requirements and worked effectively with EBMUD. PG&E's commitment has been vital to the Mokelumne's downstream water quality and supply reliability. Through long-established agreements and informal operating relationships, environmental values have generally been maintained on the Mokelumne.

EBMUD is a water industry leader in its commitment to resource protection

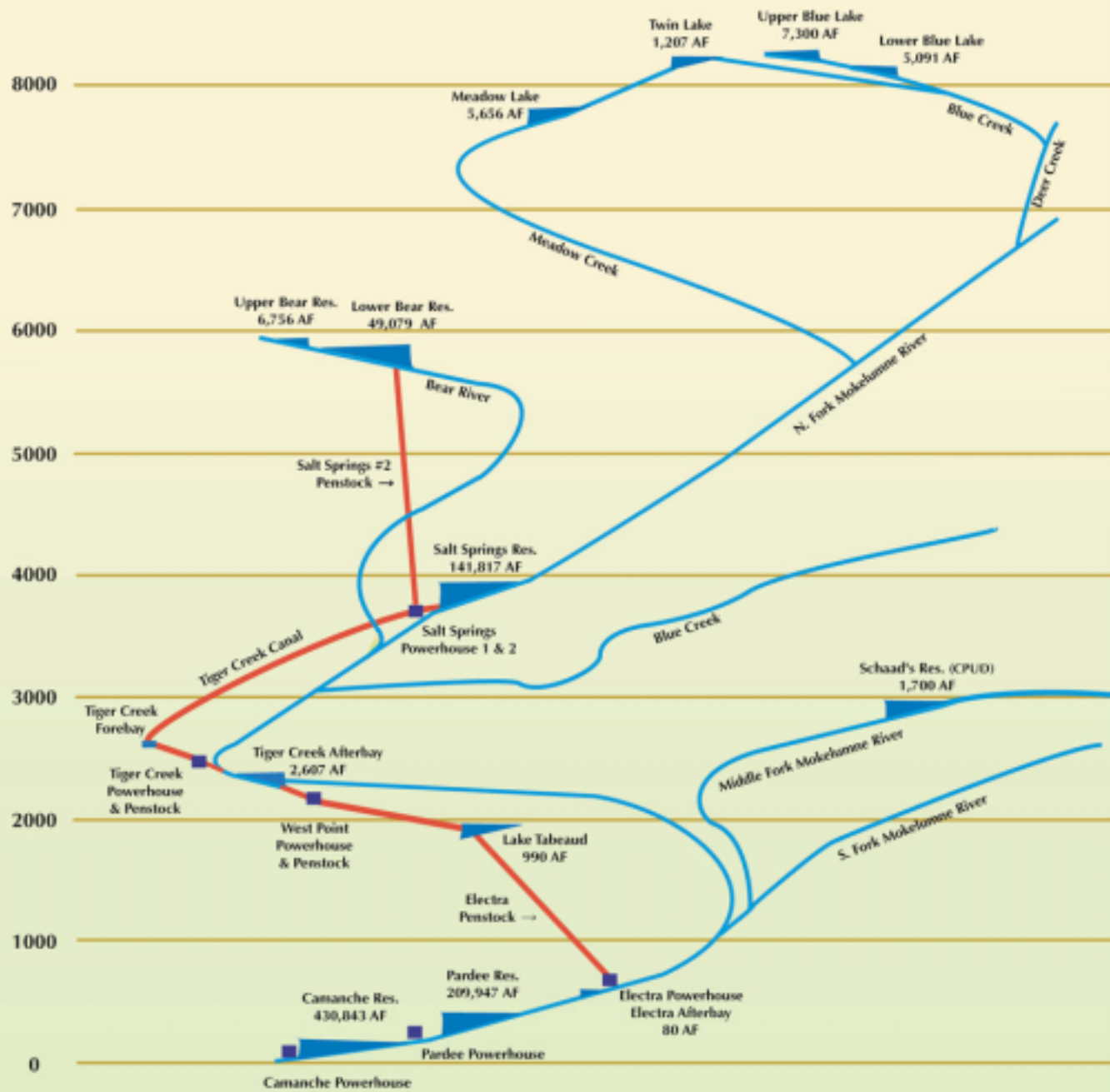
EBMUD's commitment to stewardship of the resources has grown over the last 70 years. EBMUD is now a leader within the water industry in responsible natural resource management, protection, and enhancement. EBMUD is one of the only water agencies in the country to explicitly identify natural resource protection as part of the organization's core mission.

The water district has long been active in efforts to protect the Mokelumne River and its resources. These actions include partnerships with local interests on projects and services, and with state interests on fishery protection. The District has also been involved in litigation to improve timber harvest practices, and land acquisition to protect the water quality in the Mokelumne.

---

<sup>1</sup> The District's Pardee and Camanche dams, powerhouses and reservoirs are licensed as the Lower Mokelumne River Project, FERC No. 2916.

# MOKELUMNE RIVER SYSTEM SCHEMATIC PROFILE



**LEGEND**

- |                    |  |                    |  |
|--------------------|--|--------------------|--|
| Rivers             |  | Powerhouses        |  |
| Canals & Penstocks |  | Lakes & Reservoirs |  |
|                    |  | Elevations         |  |



EBMUD has worked with local interests to plan and implement recreation programs that benefit local communities. EBMUD also has worked closely with upcountry counties in recent years to ensure reasonable balances between recreation services and protection of water quality from contaminants such as MTBE.

- EBMUD has invested more than half a million dollars in litigation that successfully required both state and federal timber harvesting approvals to take a broader look at the downstream nutrient loading impact of proposed timber cuts.
- EBMUD also has acquired approximately 500 acres of Mokelumne watershed lands at a cost of nearly \$600,000 during the past ten years to protect water quality. The District has also led efforts to clean up Penn Mine, an abandoned copper mine, that was adversely affecting water quality and the fishery. Additionally, the District is implementing a comprehensive plan to ensure protection of the Lower Mokelumne River fishery.

Hydropower profits are higher when less attention is paid to the needs of the river

In the competitive electricity market, hydropower will have a premium value because of its location close to markets and operational aspects that make it cost-effective to serve variable demand. In today's market, California hydroelectric facilities are highly valued by the electric power industry for their ability to rapidly increase and decrease power generation. However, this ramping often results in highly erratic river flows which can adversely affect rivers and the natural resources and people who rely on them.

Choices by the CPUC also can contribute to the premium value of hydropower in the future. If PG&E is allowed to pursue its "price only" auction of hydro facilities, the new owner will, by definition, be the highest bidder. The buyer's likely desire to maximize return on investment could change the way the facilities are operated, with dramatic adverse impacts on the Mokelumne river flows and Mokelumne water quality, and irreparable harm to the resources that depend on the river.

This paper explains EBMUD's concerns about the proposed sale of PG&E's Upper Mokelumne River facilities. The next section provides background on California's electric industry deregulation and its consequence to hydropower. This is followed by a discussion of the "new economies" associated with hydropower generation in an unregulated, market-driven electric industry. Resulting changes to hydropower operations and the associated adverse impacts to water supply interests are then described. Strategic actions planned by EBMUD, including the possible acquisition of Mokelumne River facilities, are presented. The paper concludes with a comment on the potential threats to District interests and actions the District must take to respond.

# ELECTRIC INDUSTRY DEREGULATION BACKGROUND

In 1996, Assembly Bill 1890 restructured electric utility service in California, opening up key sectors of the electric industry, including generation, to competition. The objective of the change was to reduce regulation by the California Public Utilities Commission (CPUC) and decrease the costs to be paid by California electric consumers.

December 31, 2001 is the deadline for electric utilities to collect stranded costs

AB1890 requires investor-owned electric utilities, including PG&E, to determine the market value of their generation assets. This determination will allow the utilities to identify their stranded costs. Under the 1996 law, the electric utilities can recover stranded costs by levying a competition transition charge (CTC) on utility customers. The CTC charges can be collected until December 31, 2001.

California's investor-owned utilities have already sold significant portions of their generation assets (fossil fuel and geothermal). The two utilities with hydropower assets, PG&E and Southern California Edison, have not yet valued or sold any hydroelectric facilities. California's network of utility-owned hydropower generating facilities has a total capacity of nearly 5,000 megawatts (MW). Of this total, PG&E owns and controls 3,890 MW of hydro generation. PG&E's Mokelumne facilities provide 209 MW of hydro generation. (In comparison, EBMUD's two Mokelumne hydropower plants have a combined capacity of 40 MW). A summary of project facilities is provided in the attached Facilities Summary that illustrates the scope and dimension of the Upper Mokelumne River hydropower facilities.

Because hydropower generation can be started and stopped quickly and at relatively low cost, hydropower is capable of meeting peak demands cost-effectively. Peak demands are covered in the new electric market through purchase of what are known as ancillary services. Ancillary services are specialized capabilities that exactly match electric demands and supplies at given locations and times. They include generating capacity "reserves" that can provide energy on demand or on short notice. Additionally, ancillary services can respond to frequency variations and voltage reductions. Ancillary services are essential to providing reliable electricity to utility customers. Ancillary services are used by the Independent System Operator (ISO) to balance the supply and demand of electricity in California.

# New Economies in California

## Hydropower

The economies of hydropower in Northern California are changing. Before deregulation, the vertically integrated PG&E Company provided power generation, transmission and distribution services to customers throughout Northern California. Hydropower was one of several generation resources owned by PG&E, including fossil fuel, geothermal and nuclear. The costs, profits and service obligations of the monopoly utility company were regulated by the CPUC.

In today's emerging competitive environment, where market conditions regulate utility prices, generation, transmission and distribution services are being segregated. PG&E Company has elected to retain the distribution and retail services sector. Transmission services are now controlled by the California ISO.

PG&E has sold virtually all its generation assets except hydropower and nuclear. To divest itself of its remaining generation assets, PG&E has proposed to auction its hydropower facilities. In its September 1999 application to the CPUC, PG&E proposes a two-step auction process culminating in the sale of all hydropower assets to the highest qualified bidders. Two things make these facilities an extremely attractive investment target. First, many of the hydropower facilities are near urban and agricultural energy demand areas. Second, hydropower can be operated cost-effectively even during dramatic shifts in customer demand. Due to these factors, bid prices are generally expected to exceed book value, in some instances many times over.

The premium prices expected from PG&E's proposed auction are linked to hydropower's capabilities to meet certain electric utility service requirements. Generally, electric utility providers must supply electricity to customers upon demand, at specific locations, and with stable frequency and voltage. Unlike water utilities, which meet fluctuating demands by regulating water reservoir storage, electricity needs are met by minute-to-minute regulation of power generation. As demand for electricity increases, generation facilities are operated to increase output. As demand decreases, so too does generation. In the electric industry these fast changing demands for electricity are met by the ancillary services market.

In the newly competitive electric market, ancillary services have a higher value than in the previous regulated market system. In the past, ancillary services were "bundled" together with the other essential services provided by vertically integrated electric utilities. These ancillary services represented less than 5% of the total cost of energy to the customer. In the new competitive industry

structure in which service costs are unbundled, ancillary service costs are 8% to 10% of total costs to customers--or more.

Under AB 1890, the Independent System Operator is responsible for matching power demands throughout California with energy produced by California generators and imported from neighboring states. The ISO accomplishes this through its control of the state's network of transmission facilities. The ISO delivers energy purchased and sold (these transactions are based on energy demands estimated days, weeks and months prior to actual need) through the California Power Exchange (P/X), private exchanges such as the Automated Power Exchange (APX), or by bilateral contracts between large electric consumers and energy merchants. The ISO then meets actual real-time electricity demands through its acquisition of ancillary services. The costs for these services are market-based and are purchased in the day-ahead or hour-ahead auctions or in the "spot market", all of which are administered by the ISO.

Energy purchased and sold through the P/X typically ranges in price between \$10/MWh to \$50/MWh. Since its March 1998 beginning, the ancillary services market has been an economic roller coaster. By July the ISO was imposing \$500/MWh price caps. Market redesign measures were established and market conditions improved in October 1998 following FERC's approval of market-based rates for ancillary services (the previous cost-based rate structure had inhibited competition). In the summer of 1999 the ISO established an intermediate price cap of \$750/MWh which was raised to \$2,500/MWh in October.

As the energy and ancillary services markets evolve and the "new economies" of hydropower take shape, the divestiture of PG&E's hydropower system looms before us. As elements of the largest privately-owned hydro system in the United States, PG&E's hydro projects are potential acquisition targets of national and international investor-owned wholesale energy companies. Moreover, with CPUC and legislative interest in maximizing the market value of these projects, they may well be sold to the highest bidders. In a competitive, price-based bid process, potential investor-owned buyers will submit purchase prices based on anticipated earnings from energy and ancillary service sales in a deregulated market environment. These potential new "for-profit" owners, having paid premium prices to acquire PG&E's hydro generation assets, will be motivated to operate these projects in the most profitable manner possible under free market conditions. Thus, it is likely that many of PG&E's hydro projects, including the Mokelumne River Project, will be operated and maintained differently than they have in the past.

# Natural Resource Impacts of Maximizing Hydropower Profits

In the competitive wholesale electric energy industry the future owner of PG&E's Mokelumne River Project can maximize revenues and minimize costs to the extent allowed by applicable laws, decrees and regulations, and operator prudence. Sources of revenue from the facilities will include hydropower sales (energy and ancillary services) and site uses such as timber harvesting. The most significant facility costs will be debt service expenses to repay acquisition costs. Operating costs will include labor, engineering services, materials, supplies, electricity, rents, capital improvement costs and miscellaneous expenses.

Any owner/operator of the Mokelumne River Project hydropower facilities will have significant discretion with regard to project operations and maintenance decisions, and the management of lands and provision of recreation services. These impacts could be potentially significant and adverse. Following are descriptions of these actions and the potential impacts of greatest concern to the District.

Operational  
Actions and  
Impacts

PG&E operates its Mokelumne facilities in accordance with storage and outflow requirements specified in the Lodi Decrees and pursuant to terms in agreements with the California Department of Fish and Game. The Lodi Decrees are court actions that impose daily and monthly average flow requirements below Electra Powerhouse and maximum reservoir storage levels. These requirements acknowledge the priority of EBMUD's water rights. The DF&G agreements prescribe minimum pool levels at several project reservoirs and minimum flow standards for the 16 stream reaches affected by project operations. EBMUD and PG&E routinely review and, when necessary, make adjustments to operations based on conditions along the river.

Under the daily and monthly average flow requirements, a new project operator would have the discretion to maximize power revenues by generating power during peak price periods and participating in the lucrative ancillary services market. This operating scenario would be achieved by rapidly ramping up and down water releases in response to ISO electricity demands.

Under this scenario, the flows on the Mokelumne River reach below the Electra Powerhouse (the section that flows directly into EBMUD's Pardee Reservoir two miles downstream) could be as low as 10 cfs and as high as 1,135 cfs<sup>2</sup>. The

---

<sup>2</sup> 10 cfs is the CDF&G minimum fish flow; 1,135 is the Electra full load plus fish flows

restraints on operator discretion imposed by the Lodi Decrees are the *daily average* flow (either 300 or 200 cfs) and the *average monthly* flow (either 500 or 300 cfs). Because they use averages, the Lodi Decrees do not preclude drastic daily or even hourly flow changes that the operator could choose to release to provide peaking and ancillary services to the ISO. The impacts of high flow volumes include:

- River basin and shoreline scouring.
- Sediment transport to Pardee Reservoir, displacing water supply storage and adversely impacting water quality (turbidity, copper compounds).
- Increased plant by-product (nitrogen and phosphorous) volumes entering Pardee Reservoir, accelerating eutrophication.
- Higher water temperatures in flows to Pardee, compromising programs to enhance fish habitat conditions in Pardee, Camanche and the Lower Mokelumne River.

Maintenance  
Actions and  
Impacts

A new operator also would have discretion regarding the type and frequency of facility maintenance. To reduce annual costs, the owner/operator might choose to defer maintenance, or select capital improvement programs that minimize short-term costs. There are many old, unique, large and difficult-to-access facilities among the Mokelumne River hydropower facilities. Examples of maintenance actions needed and the potential adverse impacts that might arise from these maintenance actions are subsequently described.

- Sediments have deposited behind dams and similar structures in Project No. 137 over many years and will need to be removed. These could be removed by relatively expensive mechanical means that protect downstream resources. Alternatively, the owner could “flush” the sediments using high flows of water released specifically for that purpose. As noted earlier, sediment loading reduces space in Pardee Reservoir and contributes to eutrophication. Elevated turbidities from flushing events also can compromise drinking water supply if they exceed permitted levels<sup>3</sup>. Moreover, the existing sediments may contain copper compounds due to past maintenance practice of using  $\text{CuSO}_4$  to control algae.
- Tiger Creek canal requires regular and dedicated maintenance. Mechanical cleaning, tree trimming, algae control and routine joint repair are needed to avoid canal breach that can cause serious erosion. Two decades ago, a severe

---

<sup>3</sup> On August 6, 1997 a flushing event spiked turbidity from an ambient 4.7 ntu to 17.3 ntu.

storm caused a landslide. This type of failure creates significant downstream water quality problems that can affect Pardee and Camanche Reservoirs. Canal repair costs can be in the millions of dollars.

Land and  
Recreation  
Management  
Impacts

PG&E owns or controls more than 10,000 acres of land within the Mokelumne watershed. The buyer will be responsible for providing and maintaining recreation improvements on project lands (2,975 acres are federally owned). Recreation amenities include camping, hiking, fishing, boating and boat launching facilities, whitewater recreation, parking and sanitary support facilities. The management decisions that affect the privately owned lands and the project-related recreational amenities have significant cost and revenue implications for the project owners. A portion of recreation-related expenses are incurred from charges by concessionaires who service and administer project recreation facilities. Other major costs relate to road maintenance, construction and maintenance of restrooms, buildings, utilities and other structures. Project revenues are also developed through timber sales. Other revenues are potentially available by the sale of privately owned lands to timber companies or land developers. Poor land use management and recreation service management can have the following impacts:

- Improper maintenance of roads and public access facilities can result in washouts and increased erosion, adding to sediment loading in the lower basin.
- Insufficient regulation of boating activities can cause elevated levels of MTBE and other gasoline contaminants, thus contributing to downstream water quality problems.
- Timber land management and harvesting practices can contribute to erosion and nutrient loading, resulting in deteriorated water quality.

# STRATEGIC ACTIONS

Several concurrent actions must take place if EBMUD wants to ensure that PG&E's Mokelumne hydropower facilities are operated by a responsible owner under reasonable operating constraints. EBMUD must participate in the CPUC divestiture proceeding, the ongoing collaborative process related to FERC relicensing, monitor and address issues in the upcoming legislative session, and continue to work with upcountry interests. The District must also thoroughly evaluate the technical, financial, and legal issues associated with potential acquisition of PG&E's Mokelumne River Project.

## Engaging in the Regulatory Process

CPUC Process  
Schedule

Under state law the CPUC has jurisdiction in any effort by PG&E to divest itself of utility assets. With the December 2001 expiration of the CTC credit provision, there is some urgency for PG&E to initiate and complete the divestiture process. Hearings are scheduled by the CPUC to consider PG&E's proposed auction process and schedule. The suggested schedule anticipates the CPUC proceedings will conclude by April 2000. The auction process would begin in May, leading to bid awards to the highest qualified bidders by year's end. CPUC approvals of the proposed bid awards would be accomplished in March 2001, with all asset sales to be closed by June 2001.

With the broad public interest and involvement in the CPUC proceedings regarding asset valuation and auction procedures, it remains uncertain what will be finally approved by the CPUC. EBMUD is a party to the CPUC proceedings and has filed a protest to PG&E's proposed auction expressing its concerns and recommendations. The District's three stated concerns are that divestiture of PG&E's Mokelumne River Project should not adversely impact:

- Water quality
- The security of water rights under the Lodi Decrees
- The environment of the Mokelumne Watershed

The level of effort and representation needed to effectively continue in the CPUC process will be significant if we are to ensure the District's interests are protected. Technical and legal consultants will be required, as well as significant levels of in-house staff dedicated to understanding the issues and developing testimony.



PG&E's FERC license has been pending relicensing for 25 years. The FERC collaborative process currently underway to settle the outstanding issues surrounding the relicensing of Project No. 137 will not be complete until June 2000 or later. District staff participate in these ongoing proceedings to represent our interests in protecting water quality and the environment. FERC will conclude its relicensing process by including new terms and conditions required of the operator of Project No. 137. It is not known when the new license will be issued or what terms will be required by FERC.

## State Legislative Activity in 2000

The regulatory proceeding through the California Public Utilities Commission that has been initiated by PG&E's filing to auction its hydroelectric facilities will continue for some time. The State Legislature, which reconvenes on January 3, 2000, will be able to intervene in a variety of hydropower-related issues throughout its upcoming session.

There are several forums through which a legislative effort to comprehensively address hydroelectric facility operation/ownership, environmental protection/enhancement, and ratepayer protections may emerge. The conference committee formed by the Senate and Assembly during the latter part of the 1999 session continues to retain jurisdiction over SB 1133 (which is a vehicle for negotiating comprehensive hydropower-related issues). The Senate Energy, Utilities, and Communications Committee and the Assembly Utilities and Commerce Committee both retain jurisdiction over legislative issues relating to hydroelectric facilities. Those committees could individually or jointly convene informational hearings to evaluate prospective legislative remedies to the divestiture situation.

At this point, it is unclear what may develop legislatively to address the hydropower issues in 2000. District staff have begun to revisit the debates and issues that were raised in 1999 in order to be prepared for any new legislation that emerges during 2000.

## Continuing Work with Upcountry Interests

The District is a member of the Mokelumne Watershed Partnership, which was established in September 1999 by a Memorandum of Understanding (MOU). The partnership is comprised of Alpine, Amador and Calaveras Counties, Calaveras County Water District, Calaveras Public Utility District, Jackson Valley Irrigation District and EBMUD. The MOU expresses the partners' shared interest in the

future ownership and management of the Mokelumne River Project. Five principles are articulated in the MOU which generally respond to the interests of the seven partners. These are:

1. Proper maintenance and safe operation of project facilities will be ensured.
2. Existing water supply rights and entitlements will be honored and not adversely affected.
3. Environmental resources and recreation benefits will be enhanced.
4. Additional consumptive water supply will be available upon acquisition of necessary entitlements.
5. Water quality for watershed and downstream users will be protected.

There have been discussions regarding the potential for elevating the partnership into a formal Joint Powers Authority. This would be necessary if joint ownership of Project 137 was desired. Short of actual joint ownership, the District could independently seek acquisition but work with the watershed partners to develop an advisory governance mechanism that ensures local interests are considered in project operational and management decisions.

## Project Acquisition and Management

### Benefits of Acquisition

Acquisition of the Mokelumne River Project by EBMUD (or by a Joint Powers Authority between EBMUD and other Mokelumne watershed interests) is an alternative to acquisition by a profit-motivated, investor-owned company. Management of the resources by individuals who have a vested interest and proven commitment to stewardship of the resources will avoid the problems noted in this paper. Additional benefits of District ownership are that acquisition:

- Eliminates risks associated with repeated changes in ownership that are becoming more frequent with investor owned electric utilities; it represents a long-term solution to uncertain and often-changing market conditions.
- Assures drinking water protection by California public agencies for California's citizens.

- Takes advantage of existing Mokelumne River and Mokelumne hydropower management expertise developed by EBMUD.
- Promotes collaboration among public agencies in the interest of affected individuals and communities.
- Gives EBMUD more flexibility that will allow better overall resource management while delivering a reliable water supply and operating a profitable hydropower operation.
- Over the long term, could have a net positive benefit for District ratepayers.

Alternative  
Methods of  
Acquisition

If acquisition is the chosen course of action, there are three alternatives: a negotiated purchase with PG&E, bidding in a CPUC process, and condemnation.

*Negotiated Sale* – As the owner, PG&E has the ability to negotiate a separate deal to sell these facilities, subject to CPUC approval. It is unclear whether PG&E would consider an offer outside the CPUC divestiture process. However, there are potential advantages (e.g., greater process control and certainty, and potentially lower costs) to this alternative approach which justify its consideration.

*Bidding in CPUC Process* – The PG&E auction proposal is a price-only auction very similar to two earlier thermal facilities auctions. The hydroelectric projects are proposed to be bid on in 25 bundles: five bundles grouped by PG&E's administrative units, and 20 separate and smaller project bundles.

PG&E's application calls for two stages, with the entire auction process taking 21 weeks. The first stage (six weeks) would consist of interested bidders signing confidentiality agreements to get access to the PG&E hydro data, and then filing a Statement of Qualifications. The Statement of Qualifications would describe the projects the bidder is interested in, the bidder's financial qualifications, operational expertise, current generating capacity, and qualifications as a FERC licensee. PG&E would identify qualified bidders for each project.

The bidders would have six weeks to submit contract markups to PG&E. Four weeks after the contract markups are due, PG&E will provide the bidders with the final contracts. Three weeks later, the bidders would submit their offers, and one week after bids are received, PG&E would announce the winners and sign the contracts. Within two days, the winning bidders would have to post a deposit with PG&E.

*Condemnation* – A third approach to public sector acquisition may be condemnation. Under the MUD Act, EBMUD has broad powers of eminent

domain and may condemn any property, within or outside its service area, necessary or convenient to its powers.

Costs of  
Acquisition

While EBMUD expects the revenues that can be generated from the facilities to exceed the debt service and annual operating costs of purchasing them, sufficient information is not currently available to estimate the costs of acquiring and managing the projects. It is known that the book value of the facilities is about \$60 million, and it is expected that an auction would result in bids at several times the book value. EBMUD can raise the necessary funds to purchase and manage the project through the sale of bonds.

## Hydropower Divestiture Task Force

Hydropower divestiture involves many legal, financial, operations, regulatory and institutional issues. To address these issues in a manner which effectively utilizes staff and financial resources, a Hydropower Divestiture Task Force is being established. The task force will be led by District staff and draw on both consultant expertise and the skills and knowledge of District staff members.

## CONCLUSIONS AND NEXT STEPS

The proposed “price-only” auction of PG&E’s Mokelumne River project represents a credible and significant threat to EBMUD and to others who value and rely on the Mokelumne River. A new owner, operating under the new economies of electric power, will have to change historical operating practices to be able to achieve premium power revenues. This would result in peaking the system of reservoirs and power plants on an hourly basis, with resulting adverse water quality impacts on Pardee Reservoir and other downstream resources.

EBMUD must fulfill its obligations and duties to provide high-quality drinking water and protect the natural resources of the Mokelumne River. This requires active engagement and participation in all aspects of the various proceedings now underway. It may require acquisition of the facilities by EBMUD.

# Facilities Summary

## Mokelumne River Project – FERC No. 137

### Reservoirs

Name (Year Built)	Function	Useable Capacity (AF)	Type
Upper Blue Lake (1881)	Storage	7,300	Earth Fill
Lower Blue Lake (1885)	Storage	5,091	Earth Fill
Twin Lake (1898)	Storage	1,207	Rock Fill
Meadow Lake (1903)	Storage	5,656	Rock Fill
Upper Bear Reservoir (1900)	Storage	6,756	Rock Fill
Lower Bear Reservoir (1952)	Storage	49,079	Rock Fill
Salt Springs Reservoir (1931)	Storage	141,817	Rock Fill
Tiger Creek Reg. (1931)	Regulator	234	Concrete Buttress
Tiger Creek A-Bay (1931)	Regulator	2,607	Concrete Arch
Electra A-Bay (1948)	Regulator	110*	Concrete Gravity
Tiger Creek F-Bay (1931)	Forebay	42	Earth Fill
Lake Tabeaud (1901)	Forebay	990	Earth Fill

\* Without flashboards

## Waterways

Name	Function	Length (Miles)	Capacity (cfs)	Type
Upper Tiger Creek	Conduit	17.8	550	Concrete Flume & Tunnel
Lower Tiger Creek	Conduit	2.5	625	Concrete Flume
Twin Lake	Feeder	0.1	5	Ditch
Cole Creek	Feeder	<0.1	200	Pipe/Concrete Flume
Bear River	Feeder	0.25	550	Concrete Flume
Beaver Creek	Feeder	0.1	10	Steel Pipe
East Panther Creek	Feeder	0.1	30	Wood/Steel Pipe
West Panther Creek	Feeder	0.7	30	Misc. Pipe

## Tunnels

Name	Length (miles)	Capacity (cfs)	Dimensions (Feet)	
			Width	Height
Bear River	2.51	225	8.6	11.0
Cole Creek	0.08 (vertical)	800	8.6	11.0
West Point	2.73	675	12.8	15.6
Electra	8.15	850	12.8	15.6
Tabaud	0.55	1,000	12.0	12.0

### Penstocks

Name	Slope Length (feet)	Size	Material
Salt Springs #1	514	120-90	Steel
Salt Springs #2	4,698	72-36	Steel
Tiger Creek	5,140	102-36	Steel
West Point	624	120-84	Steel
Electra	4,032	120-36	Steel

### Powerhouses

Name	Units	Estimated Dependable Capacity (MW)	Average Year Energy (MWh)
Salt Springs	2	31.3	175,600
Tiger Creek	2	58.0	353,200
West Point	1	13.0	87,600
Electra	3	92.0	347,200

### Land and Other Facilities

Project lands equal 2,271 acres (PG&E) and 2,975 acres (USA).
Easements/rights to private lands on 674 acres.
Transformers and switching gear at each powerhouse.
Assorted recreation, boating and camping facilities, including restrooms.
Access roads, parking areas, trails.
Administration buildings, maintenance facilities.



# Glossary

**Stranded costs**, also sometimes called uneconomic costs or transition costs, are costs not recoverable in a competitive generation market. They generally relate to generation assets whose net book value exceeds their market value.

**Ancillary services market** includes the following services:

- *Imbalance Energy*. Energy correction for any hourly mismatch between a transmission customer's energy supply and the demand served.
- *Regulation Reserve*. Capacity available within 30 minutes to respond to the ISO's automatic generation control (AGC) signal, and meet control performance criteria.
- *Spinning Reserve*. Capability available within 10 minutes from on-line generating capacity.
- *Non-Spinning Reserve*. Supplemental capability available within 10 minutes from:
  - Interruptible load
  - Interruptible exports
  - On-demand rights from other control areas (imports)
  - Excess spinning reserve
  - Off-line generation capacity
- *Replacement Reserve*. Capability available within 60 minutes from on-line or off-line generating capacity.