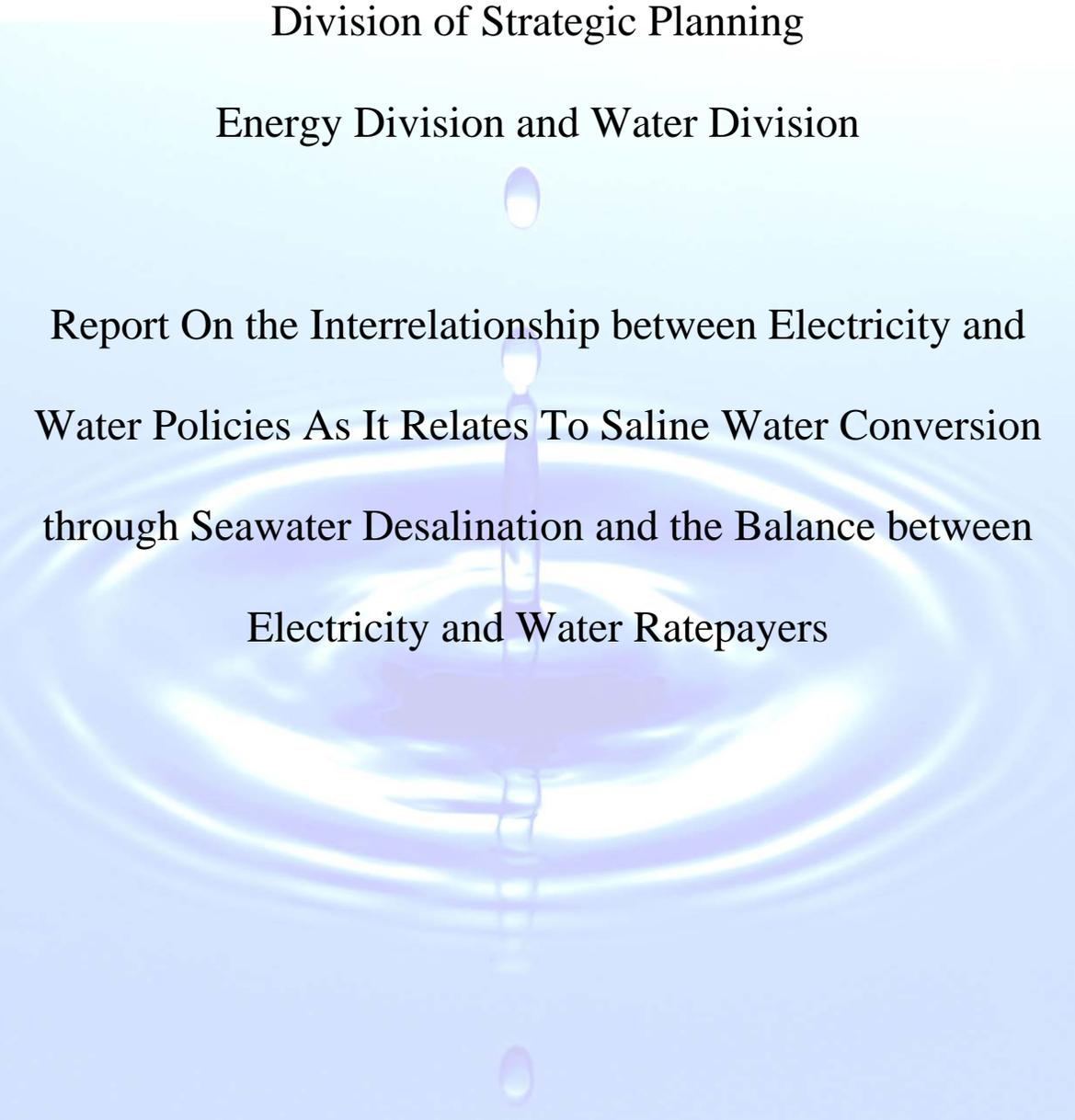


CALIFORNIA PUBLIC UTILITIES COMMISSION

Division of Strategic Planning

Energy Division and Water Division



Report On the Interrelationship between Electricity and
Water Policies As It Relates To Saline Water Conversion
through Seawater Desalination and the Balance between
Electricity and Water Ratepayers

San Francisco, California

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EXECUTIVE SUMMARY

Assembly Bill 2918 (Laird, 2004) directed the California Public Utilities Commission (CPUC or Commission) to evaluate the interrelationship between electricity and water policies as it relates to saline water conversion through seawater desalination and the balance between the interests of electricity and water ratepayers. This report responds to Assembly Bill 2918's mandate. This report outlines the possible electric tariffs and existing policies that are applicable to customers of investor owned electric utilities. The comments from other state agencies about their concerns regarding desalination projects are included in this report (See Appendix).

The CPUC promotes energy efficiency, conservation, cost-based and equitable rates through the use of public hearings, public meetings, settlement conferences and publicly circulated proposed decisions. Parties are afforded an opportunity to submit written comments on proposed decisions. Summaries of these comments are included in the final document for consideration by the Commission. Commission-established rates must be just and reasonable.¹ Customers who can manage their industrial operations in response to the level of overall electric demand more efficiently may save on electricity costs by availing themselves of various demand response and peak pricing tariffs designed by the CPUC.

Desalination requires a great deal of electricity and as a consequence electricity is a significant cost of operating a desalination project. Water utilities, including desalination facilities, do use electric industrial tariffs. These facilities do not receive preferential treatment in electric rates or policy by the CPUC. When the CPUC designs electric rates it tries to equitably reflect a customer's fair share of the costs of providing energy. Lowering electricity rates for one customer class leads to cost shifting (assuming the utility is not willing to accept a lower overall revenue requirement), in which other customer classes bear the responsibility for the balance of the unrecovered costs.

¹ Public Utilities Code § 451

The CPUC promotes policies that ensure safe and reliable water supplies, encourage water conservation and balance ratepayers' and utilities' interests. Due to their heavy electricity requirements, it is uncertain if the benefits of seawater desalination plants are such that they properly satisfy any deviation from these policies. In addition, any proposal involving cost shifting among ratepayer categories will need to pass rigorous scrutiny. Given the countervailing policy considerations involved, the CPUC may find it difficult to find a justification for establishing an electric rate that affords a subsidy to desalination plants.

Chapter 1: Desalination

California Public Utilities Commission's Role in Setting Rates

The CPUC regulates 140 investor owned water utilities, which annually collect about \$970 million in revenue and provide about 20% of California's drinking water.

Municipalities, water districts and mutual water companies provide the remaining 80% of California's drinking water and do not fall under the jurisdiction of the CPUC. The CPUC aggressively promotes policies that ensure safe and reliable drinking water supplies, encourage water conservation, and balance ratepayers' and utilities' interests.

The CPUC has jurisdiction over setting the water rates (tariffs) of investor owned water utilities and comparable authority over the electric rates of investor owned electric utilities. As a general policy, any proposal involving cost shifting among ratepayers will need to pass rigorous scrutiny. This report will describe the electric rate components to show that they are unbundled. In addition, this report will show that there is a menu of many different electric services that would be available to desalination projects which are also available to other similarly situated large electric energy customers.

As to targeted subsidies, other than subsidies aimed at low-income customers, the CPUC has deferred to the legislature to determine whether and how much a subsidy should be given. For instance, Public Utilities Code § 740.11 states "... the Legislature strongly urges the Commission to consider providing the option to all agricultural commodity processing customers to be included in the definition of customers eligible to be served under agricultural tariffs, consistent with its other constitutional and statutory objectives,

and to the extent it does not result in cost shifting to other customer classes.” In this instance, the Legislature’s intent is to prevent cost shifting to other customer classes. Another example of a targeted subsidy is Public Utilities Code § 744.5 that “...every electrical corporation which furnishes electricity to an agricultural producer to provide, in accordance with the requirements of subdivision (c), citrus and avocado producers with an electrical energy payment deferral program related to the production of citrus and avocado crops.”

Seawater Desalination

Currently, sixteen seawater desalination facilities operate in California. Annual production among these plants is about 4,600 acre-feet per year. The facilities are predominantly designated for emergency backup, industrial usage and drought-relief. The scope of proposed desalination facilities is growing rapidly; the largest facility in the U.S currently under consideration is a 50 million gallons per day (56,000 acre-feet per year) drinking water reverse osmosis desalination plant in Carlsbad (near San Diego). Existing plans project seawater desalination production in the state will be about 325,000 acre-feet per year in 2010. The potential electric demand for proposed seawater desalination plants in California is estimated to be 90 – 225 Megawatts. This potential electric demand is 0.17% - 0.42% of the current installed electric capacity of 54,000 Megawatts in California.²

Desalination processes are generally divided into two categories: thermal distillation and membrane filtration. Within these two categories, different sources of feed water may be used such as seawater, brackish water and recycled water. AB 2918 calls for the study of seawater desalination, which in California utilizes primarily seawater reverse osmosis membrane technology. The process involves forcing seawater through specialized membranes that filter out all but water molecules.

The seawater reverse osmosis process incurs a high energy cost because (1) there are more dissolved salts and other minerals in seawater than in brackish or recycled water and (2) it requires at least 900 pounds per square inch of pressure to squeeze seawater

² California Energy Commission, Seawater Desalination and Power, Commissioner James D. Boyd, June 2005.

through the highly specialized membranes. Despite the amount of electricity required for the process, the seawater reverse osmosis desalination process gained renewed interest in the 1980's as a result of continuous improvements in membrane materials and their performance in areas such as improved salt rejection capability, greater fouling resistance, and improved pretreatment alternatives. In addition, technological innovation in the reverse osmosis desalination process through incorporating energy recovery devices resulted in decreased electric needs. This more efficient reverse osmosis process results in lower desalination electricity cost estimates. On the average, an increase in electric energy cost of \$0.01 per kilowatt hour (kWh) would increase the total cost of desalination by \$53 per acre-foot (AF) of desalinated water.³ The total amortized production cost of reverse osmosis desalination would be \$860/AF to \$1,300/AF (assuming electricity costs of \$0.08/kWh) has been calculated by the California Department of Water Resources.⁴ These cost estimates fall in line with current industry perception. To put the cost of desalinated water in context with the cost of other sources of water, State Water Project water costs about \$560/AF and the cost of ground water pumped out of a well costs about \$80/AF.

Federal Support for Desalination

The Federal government has taken a proactive position in developing desalination technologies. House Resolution (HR) 1071, introduced by James Davis (D-FL,) would direct the Secretary of Energy to make incentive payments to the owners or operators of qualified municipal desalination facilities to defray the cost of electricity. Payments of \$200 million have been appropriated for fiscal years 2006 through 2016, of which 60% is intended for seawater desalination and the remainder designated for facilities using brackish groundwater or surface water. H.R. 1071 also would authorize an appropriation of \$10 million over the ten-year period to support research and development of new desalination technologies. The subsidy amounts to approximately \$200 per acre-foot of water produced, targeting operational costs rather than capital costs.

³ California Department of Water Resources, "Californians Support Economically and Environmentally Feasible Desalination Projects", Dr. Fawzi Karajeh, December 2005.

⁴ Ibid

Developing Desalination in California

Proposition 50 (adopted by the voters in 2002) identifies desalination as a new water source and appropriates \$50 million for construction, pilot and demonstration, research, and feasibility studies of more efficient desalination methods. Desalination provides exceptionally pure drinking water, but at a high price due to electrical costs. Customers served by a new desalination plant may experience dramatic increases in their water rates—increases in excess of 100%.

The CPUC does not currently have interrelating energy and water policies that pertain to desalination. A customer operating a desalination facility is served by industrial electricity tariffs or the various alternative tariffs described in Chapter 2.

Co-location of desalination facilities with existing coastal power plants may help reduce the electricity costs of a desalination project, because co-location utilizes both the power plant's seawater cooling system and the direct power supplied at the plant. Special contracts called Self-Generation Deferral Agreements authorized by the Commission in which firms could receive reduced electricity rates to deter departure from the State and to avoid bypass to non-utility energy suppliers are no longer allowed.⁵ New Economic Development Rates probably cannot be applied to desalination customers due to the restrictive qualifying conditions for this tariff.⁶ The development of desalination in California is currently not contingent upon any special rate relief or subsidy by the CPUC.

Chapter 2: Energy Ratemaking and Policy

The following section provides an overview of the California Public Utilities Commission's electric rate design policies and practices and the interaction between electric and water rates as they relate to desalination plants.

The CPUC maintains a policy of cost-causation when determining fair and equitable rates. The Commission establishes electric rates to collect each investor owned electric

⁵ D.94-03-075

⁶ D.05-09-018

utility's forecasted annual revenue requirement. Furthermore, electric utility rates are designed to recover the costs that each class of customer imposes on the system or causes the investor owned electric utility to incur on its behalf. Any discount from these tariffed rates provided to a particular customer must be paid by remaining customers, through higher-than-otherwise-forecast rates for those other customers. The Commission tries to avoid creating rates that require one class of customer to subsidize the costs of another.

Water utilities typically have large water pumping loads. Water utilities do not receive preferential rate treatment for this load—they pay tariffed cost-of-service electric rates. The CPUC does not regulate municipal water utilities or districts, but it does regulate the rates for over 140 water companies in the state. CPUC regulated water systems do not receive preferential electric rates.

Water utilities pay the tariffed rates on whatever schedule that applies to the usage of the facility in question; most usage is billed according to the electric investor owned electric utilities' regular tariffs for industrial, large commercial and small commercial customers. For example, large pumps take service on Pacific Gas & Electric Company's Schedule E-19 (or possibly E-20), and smaller pumps take service on tariffs for smaller customers. The very largest loads could qualify for E-25, "Restricted Variable-Peak-Period Time-Of-Use Service to Water Agencies". San Diego Gas & Electric Company and Southern California Edison Company have comparable tariffs for industrial customers within their territories.

In Southern California Edison Company's territory, water utilities are eligible to take service on the company's agricultural pumping schedules if 70 percent or more of the customer's energy use is for general water pumping.

Electricity Tariffs

The following sections describe the standard industrial tariffs for investor-owned utilities as well as demand-response and critical peak pricing programs designed by the CPUC. Desalination projects will use industrial electric tariffs that are designed for customers with large electricity demands. For instance, medium industrial customers are defined as using more than 499 kW (E-19 tariff schedule) and large industrial customers are defined as using more than 1,000 kW (E-20 tariff schedule).

In addition to the standard industrial tariffs, the CPUC has also designed scheduled load reduction programs, critical peak pricing programs and interruptible programs, all of which support the Commission's policy goals of efficiency, conservation, cost-responsibility and equitable rates.

Scheduled Load Reduction Tariffs

As a result of the energy crisis, policies to reduce peak demand have become a priority. The CPUC has designed scheduled load reduction tariffs for investor owned electric utilities that enable customers to provide load reductions at pre-scheduled times. To qualify, participants must identify a specific four hour time period, up to three times per week, which is coincident with the California Independent System Operator's system peak conditions. During the summer season (June 1 through September 30), the customer commits to reduce its load, without shifting the load to another time. This Program may be closed without notice when the interruptible program limits set forth by the CPUC have been fully subscribed.

Critical Peak Pricing Tariffs

Critical peak pricing (CPP) programs are a voluntary alternative to traditional time-of-use rates. Such programs are available to customers with billed maximum demands of 200 kW or greater. The CPP program only operates during the summer months (May 1 through October 31). Customers on this tariff must agree to allow the California Energy Commission or its contracting agent to conduct a site visit for measurement and evaluation, and agree to complete any surveys needed to enhance the CPP program.

Interruptible Tariffs

Interruptible programs are intended to provide load reductions to systems on a same day basis when the California Independent System Operator issues a curtailment notice. Customers enrolled in the Program will be required to reduce their load down to their firm service level within thirty (30) minutes of their notice from their utility. This program may be closed without notice when the interruptible program reaches limits set forth in CPUC Decision 01-04-006. This tariff, however, may not be appropriate for

desalination plants, whose delicate equipment is prone to fouling and may not tolerate shut-offs.

Regulated Tariff Cost Components

The purpose of this discussion of rate components is to show that electric rates are unbundled. And if someone wants to propose a cost-shift for ‘policy’ reasons, then he or she is going to have to decrease the rate in one of these rate component “buckets”. In addition, a variety of different services are available to desalination facilities which are also available to other similarly situated large electric energy consumers.

A number of different cost components comprise each regulated electrical tariff, some of which are fixed and some of which vary according to amount and time of usage and other variable factors. The combination of customer, demand, and energy charges incurred depends on the voltage at which service is taken. All of the components reflect the California Public Utilities Commission policy of cost-responsibility and reasonable and equitable rate design. While the exact amount of each charge varies from one utility to another, the general amount of each charge is listed below. The cost components are:

- **Customer Charge:** A flat monthly fee that collects the fixed cost of providing service to a customer. The amount of this charge varies widely according to the customer class size.
- **Demand Charges:** Charges that cover the costs incurred by an investor owned utility to maintaining sufficient facilities at all times to meet each customer's highest demand for energy. The demand charge is expressed as a dollar per kilowatt (kW) rate and is applied to the customer's maximum kW demand, or the highest rate at which the customer required power during the month. For larger customers, separate demand charges may be charged for different periods during the day, such as a peak-period-demand charge, a part-peak-period demand charge and maximum-demand charge. These charges may also vary seasonally.
- **Transmission:** The Federal Energy Regulatory Commission (FERC)-jurisdictional rate that recovers the cost of owning and operating the investor owned

utility's transmission system incurred as a result of transmitting energy from generating sources to the investor owned utility's distribution system. This rate averages about one-half cent per kWh.

- **Distribution:** The CPUC-jurisdictional rate that recovers the cost of owning and operating the investor owned utility's electric distribution system. This rate averages about 3 cents per kWh.

- **Generation:** The CPUC-jurisdictional rate that recovers the costs of owning and operating investor owned utility power plants, fuel costs for investor owned utility power plants, the costs of investor owned utility power, and the costs of the California Department of Water Resources power purchases on behalf of investor owned utility customers. This rate will vary depending on the market price of electricity and natural gas. Currently, the system average cost of investor owned utility generation is about 8 cents per kWh.

- **Nuclear Decommissioning:** The CPUC-jurisdictional rate that recovers costs required for site restoration when investor owned utility nuclear power plants are removed from service. This rate averages about two-tenths of a cent per kWh.

- **Public Purpose Programs:** The CPUC-jurisdictional rate that recovers the cost of state mandated assistance programs for low-income customers, as well as energy-efficiency, renewable, and research and development and demonstration programs. The energy-efficiency, renewable, and Research Development & Deployment components will be in place through January 1, 2012 pursuant to Public Utilities Code Section 399.8. This rate averages about one-half cent per kWh.

- **Competition Transition Charges (CTC):** The CPUC-jurisdictional rate that recovers ongoing transition costs associated with power procurement and employee transition costs as defined in PU Code Section 367(a). The line item "Ongoing CTC" shown on an investor owned utility's bill shows charges billed for this rate. This rate averages about seven-tenths of a cent per kWh.

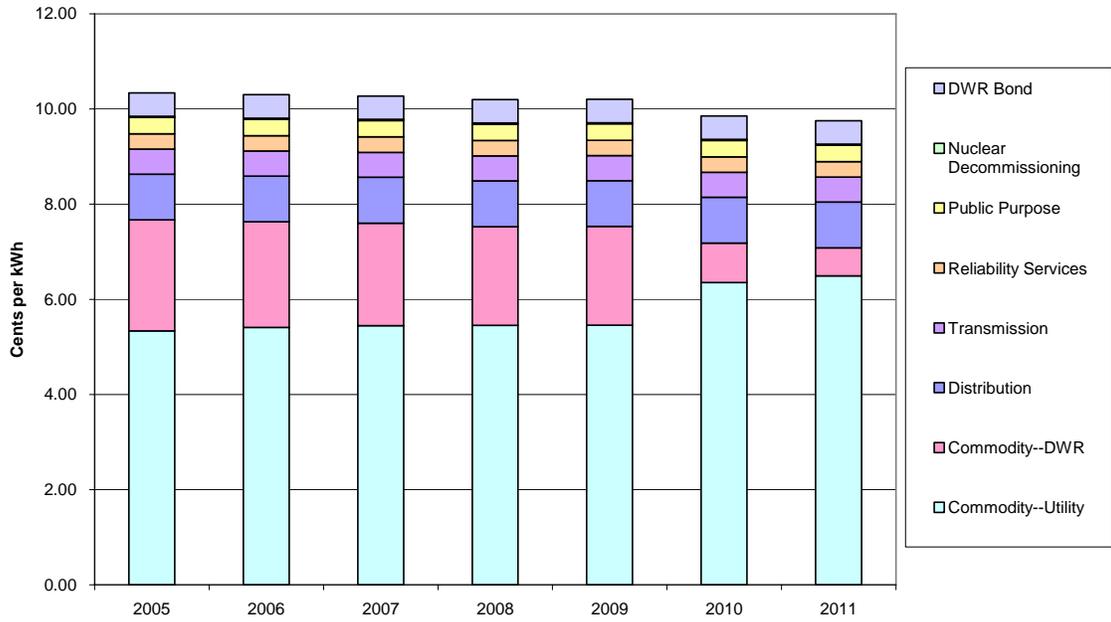
- **Department of Water Resources (DWR) Bond Charge:** The CPUC-jurisdictional rate to recover the costs of debt service for bonds issued to repay the State

general fund for DWR's power purchases made for the utilities during the energy crisis in 2001 and 2002. The rate was imposed by the CPUC in D.02-10-063, as modified by D.02-12-082 and is the property of DWR. This rate averages about one-half cent per kWh, and is expected to remain at or just below this amount until it expires in 2022.

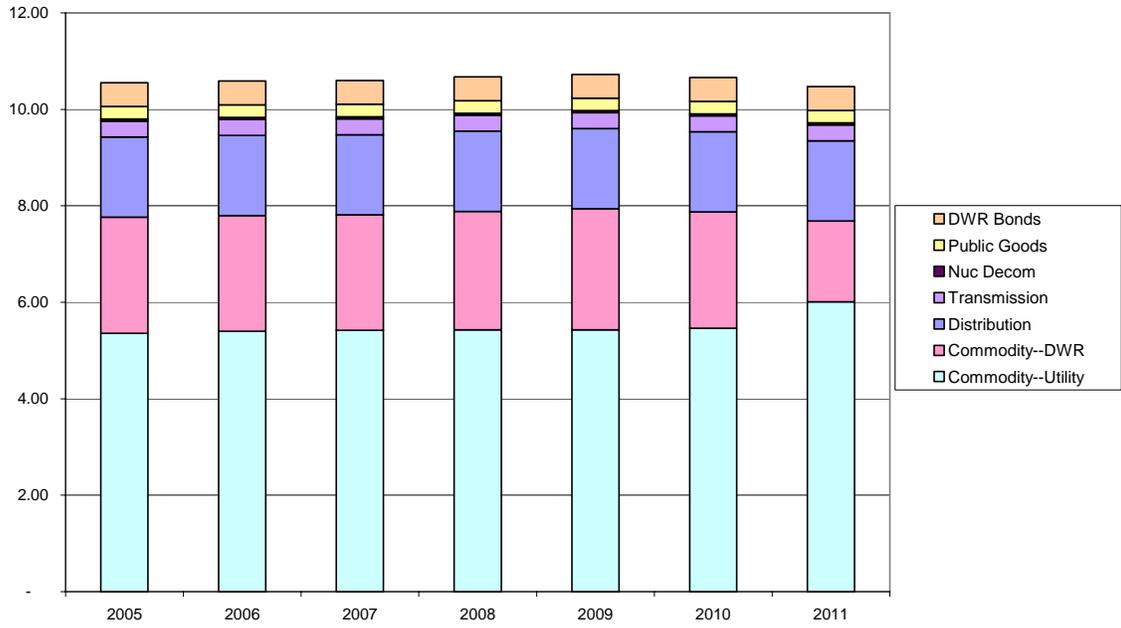
- **Cost Responsibility Surcharge (CRS):** recovers the cost obligation of applicable Direct Access (DA) or Departing Load (DL) customers, necessary in order to make the utilities' bundled customers financially indifferent to load migration from bundled to DA or DL that occurred after DWR long term contracts were signed. The surcharge will remain in place until each of its component charges expires. The surcharge includes certain tariff components already listed above (e.g., competition transition charge and DWR bond charge) as well as an additional component to collect DWR power costs. This DWR power component of the CRS depends on the market price of electricity, and generally ranges between 1 and 2 cents per kWh. In SCE's and PG&E's territories, the CRS also includes the Historical Procurement Charge (HPC) and the Energy Recovery Bond (ERB) charge, respectively, to recover costs incurred by the utilities to purchase power during the 2000-2001 energy crisis.

The charts below provide an approximation of the size of each rate component described above.

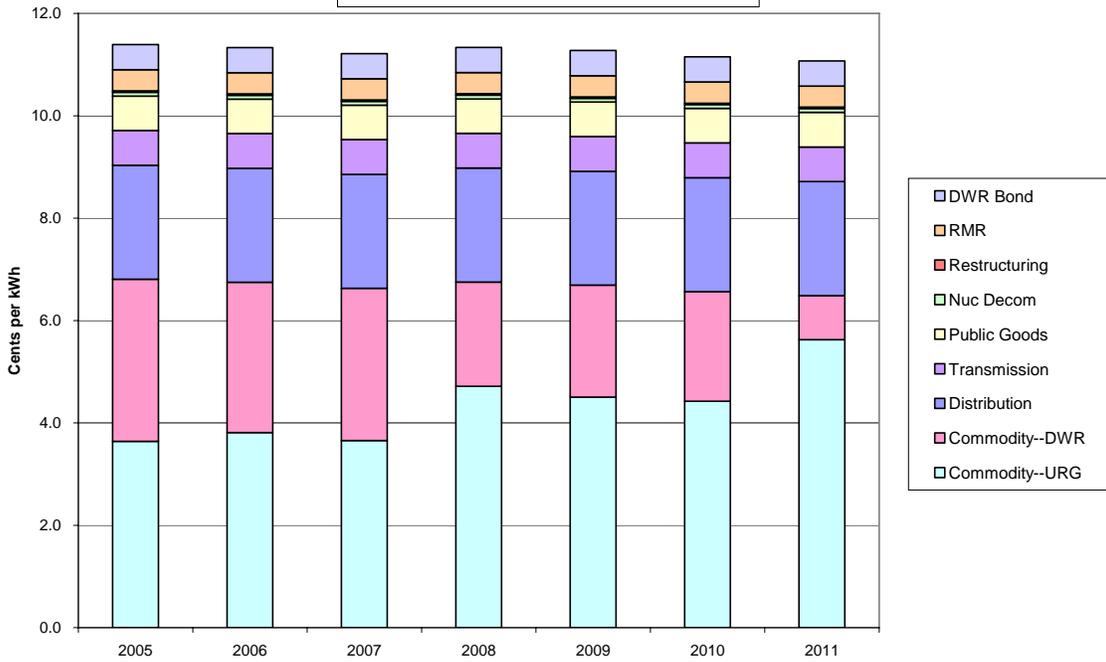
**PG&E Rate Components
E-20 Class
2005-2011**



**Southern California Edison
Average Rate for Large Power Customers
2005-2011**



**SDG&E Rate Components
Medium and Large Commercial & Industrial
2005-2011**



Direct Access

When California restructured its electricity market in 1997, customers were given the choice to either subscribe to “bundled service” from the utility distribution company or “direct access” service from an electric service provider. Customers who purchased bundled service from the utility paid an energy charge to cover the utility’s power supply costs. Thus, for these bundled service customers, the customer’s total bundled bill included charges for all utility services, including distribution and transmission as well as energy. On the other hand, a direct access customer received distribution and transmission service from the utility, but purchased its electric energy from its electric service provider.

However, the right to enter into new direct access arrangements is currently suspended. On February 1, 2001, Assembly Bill No. 1 from the First Extraordinary Session (AB 1X) was signed into law. Among other things, the bill required that the Department of Water Resources procure electricity on behalf of the customers of the California utilities. With regard to direct access, AB 1X added Section 80110 to the Water Code:

“After the passage of such period of time after the effective date of this section as shall be determined by the commission, the right of retail end use customers pursuant to Article 6 (commencing with Section 360) of Chapter 2.3 of Part 1 of Division 1 of the Public Utilities Code to acquire service from other providers shall be suspended until the department [the Department of Water Resources] no longer supplies power hereunder.”

Section 80110 was effective as of February 1, 2001. In September 2001, in response to the language quoted above, the Commission issued D.01-09-060, an interim order, effective as of September 20, 2001, which suspended the right to enter into new contracts or agreements for direct access after that date, and reserved numerous additional implementation matters for subsequent consideration and decision. These matters were placed into a separate rulemaking proceeding, R.02-01-011, in January 2002.

Direct access is not an option for new desalination projects because the right of retail end use customers to acquire service from other providers is suspended until the Department of Water Resources no longer supplies power. Some of DWR’s contracts will not expire until 2013, so—unless the existing law is changed—direct access will remain unavailable

to new customers until that date. At the same time, customers who switched to direct access in 2001 between February 1st and the Commission's September 20, 2001 suspension order were allowed to continue on direct access service provided that they pay a "cost responsibility surcharge" that covers costs incurred on their behalf by the investor-owned utilities and DWR during the electricity crisis. This means that a direct access customer's bill consists of (1) payment to its energy supplier for energy, (2) payment to its investor owned electric utility for non-energy tariffed charges, and (3) payment of the CRS charges, to both its investor owned electric utility and DWR. Continuous direct access customers, that is, those that switched to direct access service before February 1, 2001 before DWR began its power purchases, are exempt from the DWR bond and power charge components of the CRS.

Cost Responsibility Surcharge

The Cost Responsibility Surcharge (CRS) is currently capped by the CPUC at 2.7 cents per kWh and consists of the following components:

1. DWR bond charge: applicable to all Direct Access customers except for those that has been continuously subscribed to Direct Access both before and since DWR began its power purchase program.
2. Recovery of investor owned electric utility generation-related costs for the period prior to DWR purchases: Direct Access customers in the Southern California Edison Company service territory pay a "Historic Procurement Charge" (HPC) to the company pursuant to D.02-07-032. The HPC is expected to end sometime in 2006. In PG&E territory, Direct Access customers pay the Energy Recovery Bond Charges, and also paid its predecessor, the Regulatory Asset Charge.
3. Ongoing Competition Transition Charge (CTC): collects the ongoing above-market portion of utility-related generation costs.
4. DWR power costs: applicable to all incremental Direct Access load that took bundled service on or after February 1, 2001, this component of the

CRS collects Direct Access customers' share of the uneconomic portion of DWR's contract costs.

Most Direct Access customers pay the full CRS. However, as discussed below, the CPUC has also established certain specific exceptions from some elements of the CRS, for customers that meet certain specific conditions. The following section provides a summary of the CRS adopted by the Commission.

Exceptions from the CRS for Departing Load

In addition to bundled service and direct access service, a third option exists for electricity service: load may depart utility service, in whole or in part, to self-generate. This category is called, simply enough, "departing load". The Commission cannot influence whether or not load departs from bundled service, but if that load was considered to have caused costs to have been incurred on its behalf during the electricity crisis, that load is also subject to the "cost responsibility surcharge". On the other hand, if that load can make a case that its departure was forecast before the crisis occurred, then logically no crisis-related costs were incurred on its behalf, and it is exempt or excepted from CRS charges.

Departing load falls into two categories: customer generation and municipal departing load. For example, when DWR entered into its long-term contracts in 2001, it forecast that a certain amount of customer "self-generation" would occur, so it did not purchase energy for this load, and this load is exempted from DWR energy charges. The Commission adopted a number of exceptions for customer generation departing load reflecting legislative objectives to promote investment and construction of renewable energy resources, diversify California's energy resource mix, stabilize California energy supply infrastructure and produce economic and environmental benefits. A second, more complicated example concerns load that departs IOU service to take service from one of California's municipal utilities or irrigation districts. It has been less clear whether DWR considered this sort of departure in the forecasts on which it based its purchases, and whether this load should be exempt from CRS charges. The Commission is in the final stages of issuing and implementing a number of decisions to resolve these questions.

Self-Generation

A desalination facility may be able to lower its electricity bill by building its own power generation, suitable for its size and needs (self-generation), or by purchasing electricity from a non-utility generator located at or adjacent to the facility site (known as an “over-the-fence” transaction). These arrangements are not considered direct access, because electricity is transported from producer to purchaser through power lines located on-site, and does not involve a utility’s transmission or distribution systems.

Under PU Code § 218 (a), a company that generates or distributes electricity through private property exclusively for itself or its tenants, and does not sell or deliver power to others, is not considered an “electrical corporation”. Historically, this arrangement describes a situation in which an industrial park or hospital generates its own power for its use and the use of its on-site tenants. This arrangement is not allowed if the energy producer’s primary purpose is the generation and sale of said energy.

If the facility remains connected to and purchases standby or supplemental power from the local utility when the facility’s load cannot be satisfied by the onsite generator, the customer would incur utility charges associated with providing these services.

Appendix

California Department of Water Resources

- Reference to Assembly Bill 314 (Kehoe, 2003 - Water Code section 12947), it was declared that it is the policy of the State that desalination projects developed by or for public water entities be given the same opportunities for state assistance and funding as other water supply and reliability projects.
- The California Water Desalination Task Force convened by DWR in 2003 pursuant to Assembly Bill 2717 (Chapter 957, Statutes of 2002) reported in its findings that because energy is a major cost component of desalination, economic viability of seawater desalination, in some areas, is dependent on the availability of low-cost power.
- The California Water Desalination Task Force in its report to the Legislature recommended the following:
 - Recognizing the importance of power costs to the costs of desalination; consider strategies that will allow project sponsors to access non-retail power rates.
 - Clarify the applicability of non-retail energy pricing for desalination facilities
- As recommended by the California Water Desalination Task Force, economically and environmentally appropriate desalination should be considered as an element of a balanced water supply portfolio, which also includes conservation and water recycling to the maximum extent practicable.
- Pursuing desalination as a part of a balanced water resources portfolio, gives the State the opportunities to recover polluted groundwater as well as provide water supply from desalinated brackish water and seawater to help meet existing and future water demands and environmental needs.
- Water desalination will help replace water lost from other sources (e.g., diminished California share of the Colorado River), enhance water supply reliability, and relieve drought conditions.
- Desalination can provide alternate water supplies alleviating groundwater overdraft and freeing up water that can be used for river and stream ecosystem restoration.
- Desalination will help many California communities reduce their dependence on imported water.
- Consistent with the objective of Assembly Bill 2918 aiming at making additional supplies of fresh water more affordable, the term “desalination plants” should be

elucidated and generalized to include any project that uses desalting technologies to provide reclaimed or potable water from a variety of sources to include, in addition to seawater and brackish water, domestic and industrial wastewater, agricultural drainage water, and other contaminated and impaired waters.

The State Water Resources Control Board

- Warns that water quality can be degraded through the use of desalination, just as it can be improved.
- Cited concerns over environmental impacts:
 - Damage to the aquatic environment through the intake of water for desalination
 - Reduction of the water supply needed to maintain the aquatic environment
 - Entrainment and impingement of aquatic species in intake pipes, filters and pumps
 - The discharge of concentrated brine from the desalination process
- Stated that although it was requested to participate, no specific questions were posed for the SWRCB to answer.

The California Coastal Commission

- The Coastal Commission recognizes that seawater desalination will provide some part of California's future water supply, and it appears that some desalination proposals can be done in an environmentally-sensitive and economically-appropriate manner.
- Coastal Act policies do not suggest overall support of, or opposition to desalination. Each proposed facility has different design characteristics and each proposed location raises different issues, so Coastal Act review will evaluate proposals on a case-by-case basis. The most common issues of review will likely be:
 - A facility's effects on marine organisms if open-water intakes are used;
 - Feasible and less environmentally damaging alternatives to various components of proposed projects (which will include an assessment of the proposal's energy use);
 - Whether the proposal is public or private and whether private ownership would affect the state's ability to regulate the facility's effects on coastal resources (due to international trade provisions);
 - How the water supply fits into local or regional water quality portfolios and growth plans; and

- Whether the proposal will affect public access and use of the shoreline.
- For desalination facilities proposing to co-locate with coastal power plants, the Coastal Act review will evaluate what effects the proposed facility would have operating both with and without the power plant operating. This is based on the likelihood that the power plant's cooling system will not operate during the life of the proposed desalination facility for some period of time - due to maintenance requirements, changes to the cooling system, etc.
- While desalination has the potential to reduce an area's reliance on imported water, the state currently does not have the mechanisms to ensure this happens - that is, there is currently no assurance that a certain amount water will remain in its area of origin if a desalination facility produces an equivalent amount of water.

California Energy Commission

1) The notice asks what range of rates for desalination plants would make desalination water competitive with market-based water sources. In many areas, where other sources of water exist, they are not controlled by a private market. The question could be expanded to ask, what range of rates would make desalination cost competitive with other water sources, or options to reduce water use, that do not depend on a market. These would include reuse of wastewater and water conserving activities and equipment.

Seawater desalination is a very energy intensive method of improving water system reliability, or of accommodating growth in coastal areas. It may be possible to provide improved reliability or growth accommodation through other options, such as reusing wastewater and conservation. In determining the propriety of providing special rates to desalination facilities, it may be appropriate to determine whether other, more economical options for improving the water supply situation are available. Again, these may include water reuse and conservation. It would be unfortunate to provide incentives for an energy intensive option, if less expensive and energy intense options to meet community needs are readily available.

2) The notice has three questions related to involvement, communications and access by the public, and agencies involved in local, regional and statewide resource planning.

Our experience with the statewide desalination task force was that it provided a forum for discussion of issues among both state agencies and local jurisdictions. Holding meetings in both northern and southern California allowed local agencies and interested members of the public to attend, and comment on the record. One meeting was held in the Monterey Bay area. This allowed a number of participants to discuss the social and environmental issues facing that area. The discussion included issues surrounding

allocation of the high quality water from a desalination plant between the less prosperous agricultural areas of the county and the Monterey Peninsula.

Department of Fish and Game

- Department of Fish and Game (DFG) notes that brine wastes have the potential to affect marine and coastal biological resources. To adequately address the issue, DFG advocates a full discussion on avoiding and/or mitigating such impacts. In particular, the DFG recommends an analysis of worst case scenarios involving a desalination facility's co-usage of a coastal power plant's seawater intake system. If, in the long term, such an intake system is retired, the brine waste footprint would change significantly for the worse.
- Desalination plant designs must address impingement and entrainment concerns. Such concerns, in which marine life is either fatally drawn into the intake system or trapped against the intake pipe opening, will continue even if the power plant retires current intake technologies when converting to more advanced plant cooling methods.
- Detrimental biological impacts associated with dredging the intake systems will continue even after a power plant retires such systems, and will need to be addressed.
- Additional constituents that may be discharged other than brine wastes require discussion, pursuant to the Clean Water Act, the Ocean Plan, Bays and Estuaries Policy, etc.
- Desalination developments must address issues pertaining to the volume of water intake necessary for operations. Certain limits exist to maintain impingement and entrainment at acceptable levels.
- The DFG expresses concerns that distribution pipelines may traverse extensive habitats of very high and high value/preserve areas designated by the Final Multiple Habitat Conservation Program. Even underground placement of such pipelines may be insufficient to offset adverse effects to some sensitive habitats.
- Access Routes and staging areas must be accessed on a case-by-case basis.
- Each proposed desalination site must be accompanied by a complete inventory of flora and fauna within and next to the project area. This assessment should include, in particular, impacts on State and federally listed rare, threatened, endangered or proposed candidate species. Furthermore, a listing of biological resources associated with each habitat type should be included for the surrounding areas of each proposed site.

- Desalination site proposals should specify surrounding affected acreage and descriptions of wetlands, coastal sage scrub, riparian ecosystems, open space, wildlife corridors and other sensitive habitats. Maps and tables should be used to summarize such information.
- Desalination proposals should include discussions regarding potential adverse effects from lighting, noise, human activity, exotic species and drainage.
- Proposed desalination sites should discuss issues related to project-related growth inducement, including potential related increases in traffic along roads that bisect wildlife movement corridors.
- An analysis of cumulative effects, as described under CEQA Guidelines, Section 15130, should be conducted for each proposed desalination plant.
- Desalination proposals should address mitigation issues for adverse project-related impacts on sensitive plants, animals and habitats, including measures to fully avoid and otherwise protect rare natural communities from project-related impacts.