

What Electricity Restructuring Means for Rural California Counties



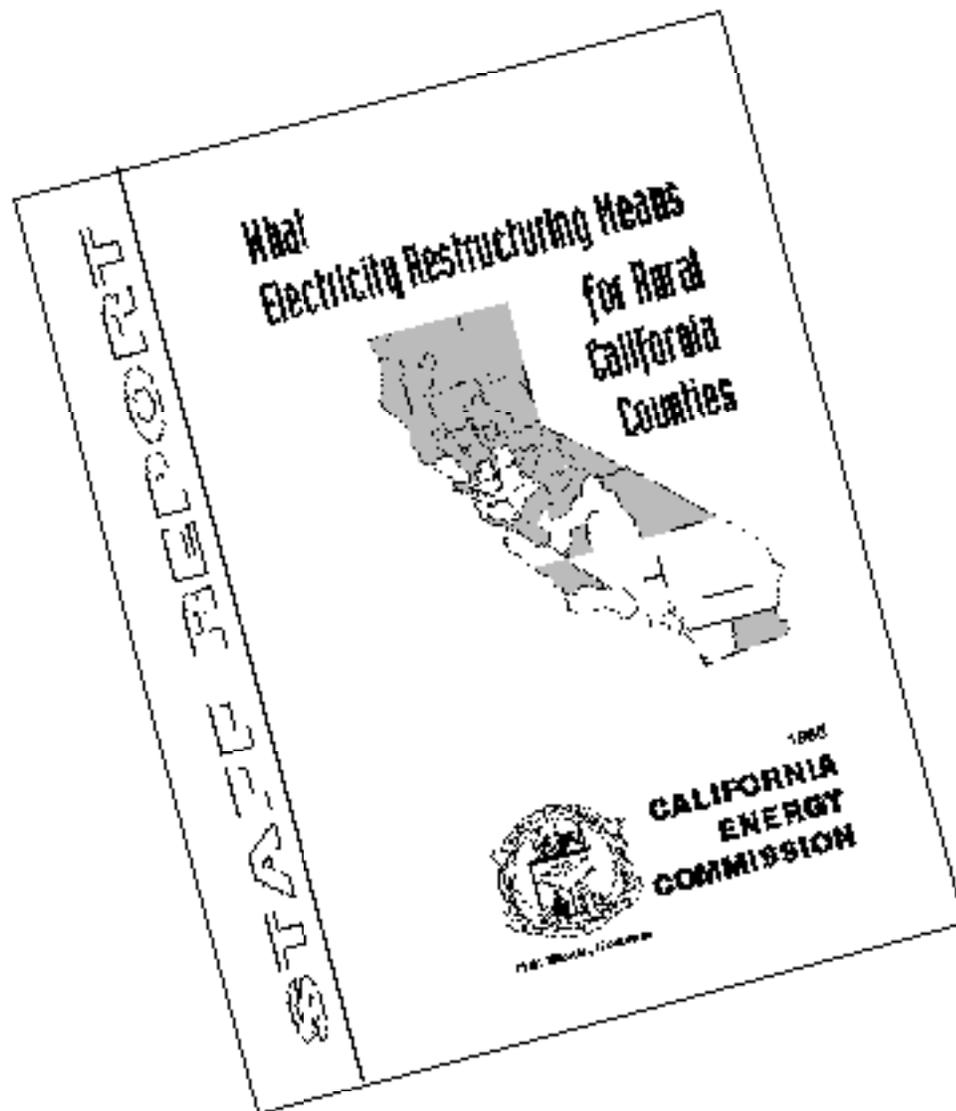
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Executive Summary

What Electricity Restructuring Means for Rural California Counties summarizes changes in the California electricity industry, the impact of those changes on rural counties, and options and opportunities for those rural counties.

This report has been prepared in accordance with Senate Bill 252 (Kelley, Chaptered September 25, 1997). Senate Bill 252 directed the California Energy Commission to evaluate the various aggregation options to acquire lower cost generation services that are available to small rural counties, their governments and residents. Aggregation is a commonly used term to describe combining the buying power of consumers that typically use small quantities of electricity to obtain better prices, terms and conditions than would be available to individual accounts. In addition, the Commission was directed to examine the feasibility and net benefits of these aggregation options.

Much of the information contained in this report was derived from the Energy Commission's energy consumption database as well as information provided to the Commission by county governments, the California Public Utilities Commission, and electricity service providers. The study's key findings follow.

Electricity Industry Restructuring

- Restructuring of California's \$22 billion electric utility industry by Assembly Bill 1890 (Brulte, Chaptered 854, Statutes of 1996) has transformed Pacific Gas and Electric, Southern California Edison, San Diego Gas and Electric, Sierra Pacific Power, PacifiCorp¹, Bear Valley Electric, and Mountain Utilities², the investor-owned utilities (IOU) in the state. For them, restructuring has divided the process of providing electricity service—generation, transmission, distribution, metering, billing, and other services—among many, and some new, market participants. For municipal and other publicly owned utilities, no comparable changes have yet been required.
- Within the service territory of the six IOUs, the local electric utility is responsible for the **distribution** of electricity to consumers' homes and businesses. The distribution utilities are now called utility distribution companies (UDCs) and are regulated by the California Public Utilities Commission (CPUC).

¹ PacifiCorp has recently announced that it is considering selling its California service area, which consists of small rural counties in the far northern portion of the state.

² Mountain Utilities is exempt from offering its customers with direct access to competitive electricity services. Mountain Utilities was formerly Kirkwood Gas and Electric.

- **Transmission** of electricity and assuring reliability of the transmission grid are now the responsibility of a new market entity, the Independent System Operator (ISO), instead of the IOUs.
- **Generation** is no longer regulated. Generation is now generally provided through competitive markets. These markets are open to new participants and are no longer restricted to just electric utilities. The price of electricity is now determined by market supply and demand conditions, similar to other competitive commodity markets. California's competitive electricity market is a \$4 billion annual revenue industry.
- In addition to separating the components of electricity service, restructuring has also "unbundled" customer's bills. Before restructuring, a customer paid one bill to the local utility that covered generation, transmission, distribution, and other services. Bills are now unbundled, meaning that they itemize charges into the separate components of electricity service. Customers will now know how much they are paying for generation, transmission, distribution, and for other services as separate items on their bill.
- During the transition period, January 1, 1998 to March 31, 2002, California's restructuring legislation required a 10 percent reduction in electricity bills for residential and "small commercial" consumers (those with less than 20kW load). (Large commercial and industrial consumers did not receive the 10 percent reduction.) Before restructuring, the average residential consumer paid about \$720 a year. As a result of the 10 percent reduction, residential consumers on average are saving about \$72 per year. The average small commercial consumer uses about twice as much electricity as a residential consumer, so their savings are greater. Average small commercial consumers paid about \$1,600 a year for electricity in 1997. The 10 percent reduction is saving them around \$160 per year. A typical rural county's small commercial accounts are one-fourth of its total electricity expenses, so the 10 percent reduction for them realizes an annual saving of slightly more than \$13,000.

Consumer Choices

- A consequence of restructuring legislation is that consumers who previously received service from one of the six IOUs, may now choose from whom they buy electricity. Consumers can continue to buy electricity from the UDC (the default option, if a consumer takes no action) or they can buy electricity from a new market entity, an Electricity Service Provider (ESP).
- ESPs that want to sell electricity to residential and small commercial customers are required to register with the CPUC and meet certain requirements, including providing potential customers with a description of prices, terms, and conditions at the time of

the offer. There are currently 28 ESPs registered with the CPUC that meet the requirements and can offer service to small consumers.

- There are two separate consumer markets that appear to be evolving to provide consumer choice. Small consumers, with small loads and small bills, are being offered standardized services—these small consumers individually do not have enough market power to negotiate for non-standard offers. Larger consumers, with larger loads and bills, are negotiating specialized deals with ESPs.
- Most CPUC-registered ESPs are trying to attract residential customers by offering electricity that has been produced by renewable energy-based (biomass, geothermal, solar, wind, and small hydroelectric) resources. While the renewable electricity products offered by ESPs may have beneficial environmental benefits, they typically cost more—with additional costs averaging from \$48 to \$200 annually for residential customers depending on the offered price.
- Consumers should remember, when evaluating offers, that if it looks too good to be true it probably is. Savings of about 2 to 4 percent off the total bill appear to be realistically achievable.

Aggregation

- Instead of shopping for new electricity providers individually and only being presented with standardized offers, consumers also can join together and combine their loads. With larger combined (or aggregated) loads, consumers may be able to negotiate for better deals. Assembly Bill 1890 allows consumers of all classes to combine or aggregate their electrical loads on a voluntary basis.
- Combining many customers' loads into a buying pool provides the opportunity for a lower price of electricity. Aggregation can possibly achieve lower prices by using (1) market power and (2) diversity power. Market power is the power to negotiate for lower electricity prices by buying in bulk, comparable to buying in a club or discount membership store. Diversity power is the combining of customers with different electric use patterns into a more attractive pattern that does not change over the day. Relatively constant use over the day will be more attractive to an ESP than a pattern that has pronounced high use peaks and low use valleys because the ESP will be able to negotiate a better deal from generators.
- Loads can be aggregated in two ways. A single business that has control over many individual accounts can offer all of those loads to a seller. Examples of this “single-owner” method of aggregation are McDonald’s packaging all of its 800 restaurants into a single offer to ESPs and Safeway’s combining all of its stores in a package. In contrast, the “multi-owner” aggregation method combines the loads of separate

businesses. The California Electric Users Cooperative, which is combining the loads of individual agricultural cooperatives, is an example of multi-owner aggregation.

- The savings from aggregation need to be balanced against the costs of aggregation. One multi-owner aggregation group of almost 500 members expects gross annual savings of approximately \$720,000. The average use for each member is 640,000 kilowatt-hours (kWh) which is equivalent to 100 residential customers. These savings are offset by start-up costs of approximately \$150,000 (or about \$300 per participant) and on going costs that are projected to be approximately \$120,000 per year. Thus their net savings will be \$600,000 or about \$1,200 per participant per year.
- A county can choose to serve as a “multi-owner” aggregator in one of two ways. First, the county can broker electricity sales. Brokers act as agents, bringing together buyers and sellers. A broker does not take ownership of electricity and, consequently, is not paid by customers for electricity service. Customers pay the owner of the electricity. The second way for a county to become an aggregator is to become an ESP. An ESP does take ownership of electricity and is paid for that electricity by its customers. Because an ESP is in an on-going business relationship with its customers, it faces more responsibilities, costs, and liabilities than does a broker.
- County government can aggregate its own electrical loads as a “single-owner” aggregator. Operating as a single owner aggregator does not require the county to become a broker or an ESP. Sonoma County has aggregated its loads and expects savings of around \$95,000 per year.
- A single county can also join with other counties in a buying pool for county government electrical loads as a “multi-owner” aggregator. The combined group of counties would have to choose whether to be a broker and purchase from an ESP or to be an ESP.
- County government can also aggregate the loads of homes and businesses in the county, acting as either a broker or an ESP. If public agencies, such as cities, counties, or special districts seek to serve as “multi-owner” or community aggregators, they must offer the opportunity to all customers within their jurisdiction. Palm Springs Energy Services—a public/private alliance between the City of Palm Springs and Enron—is an ESP offering service to homes and businesses in the City of Palm Springs.
- County governments can use existing mechanisms—community energy authorities (CEAs), joint power agreements, or joint power agencies—to become a broker or to create an ESP to take advantage of aggregation buying power.

- Senate Bill 477 (Peace, Chapter 275, Statutes of 1997) exempts counties and other public agencies that serve customers within their jurisdiction from AB 1890's third-party verification and CPUC registration requirements. These exemptions reduce some of the costs of aggregation for a public agency that decides to pursue that option.

Recommendations for Rural Counties

- County governments, either acting alone or in combination, should seek competitive bids for the IOU-provided electricity used by county facilities. Bids for a one-year term should be solicited from ESPs and brokers, including but not limited to Association of Bay Area Governments (ABAG) Power and California Department of General Services (DGS) Energy Assessments, two government entities which aggregate loads for local governments and governmental agencies. The resulting offers should then be evaluated using existing competitive procurement practices.
- For a county government that has determined to aggregate loads of homes and businesses in the county, as either a broker or an ESP, consider introducing legislation to change the aggregation rules for a county from the “opt-in” requirement, where the local utility is the default provider, to an “opt-out” model, where the county is the default provider. An “opt-in” model is one in which each customer is automatically **excluded** from the pool unless they make a specific request to participate. An “opt-out” model is one in which each customer is automatically **included** in the aggregation pool unless the customer specifically takes steps to indicate that they choose not to participate. An “opt-out” model might be more attractive by decreasing recruitment costs and by increasing the aggregate loads under the negotiating power of the local government, allowing them to strike a better deal with suppliers.
- County government should monitor any changes in rate allocations or design that may be proposed after the transition period. Unbundling of electricity service into its component parts may be extended further to unbundling of electricity charge and to unbundling of costs determined by costs associated with groups of customers within a customer class. For example, distribution charges may be unbundled, with higher rates charged to customers that impose more costs on the system.
- Invest in energy efficiency programs to reduce county administration electricity costs further. Cost-effective efficiency methods can provide many times more than the 2-4 percent savings possible through aggregation.

Introduction

On September 23, 1996, Governor Pete Wilson signed legislation of historic significance. The new law (Assembly Bill 1890, Brulte, Chapter 854, Statutes of 1996) has dramatically changed California's electricity industry, opening it up to competition and increased customer choice. One of the choices customers have is to join with other consumers to increase their bargaining power in the competitive market. This is called aggregation.

Senate Bill 252 (Kelley, Chaptered September 25, 1997) required the Energy Commission to evaluate the net economic benefits that may be achieved by aggregating electricity loads in small rural counties containing 250,000 or fewer persons. The evaluation was to consider the feasibility and net benefits of different forms of aggregation. In addition, the Commission was required to assess the options related to aggregation of electricity purchases by small rural counties and make recommendations for legislation which may be necessary to achieve any identified potential net economic benefits attributable to load aggregation.

This report examines the benefits and costs of aggregation of electric loads by small rural counties. Rural officials are concerned that small counties do not have the resources or technical capabilities to ensure that they will be able to take advantage of aggregation opportunities available under Assembly Bill 1890 (AB 1890). This report considers the feasibility and benefits of different forms of aggregation, including aggregation of county government loads, aggregation of individual customer loads, and multi-county load aggregation.

Overview of the Report

This report first describes the electricity industry restructuring and its impact on rural counties. The report then addresses aggregation of electric loads and concludes with a discussion of options and opportunities for rural county governments in the new, restructured electricity industry.

The Appendix contains information about rural counties and their energy characteristics, including forecasts of county electricity use. In addition, several areas in which rural counties differ from urban counties are discussed.

Electricity Industry Restructuring

From Monopoly to Open Market

Roughly 70 percent of electricity service in California is provided by three large electric utilities owned by private investors and regulated by the California Public Utilities Commission (CPUC). In the old market structure, Pacific Gas and Electric, Southern California Edison, San Diego Gas and Electric—the three large investor-owned utilities (IOUs)—and four smaller (in terms of California presence) IOUs, PacifiCorp, Sierra Pacific Power, Bear Valley Electric Company, and Mountain Utilities (formerly Kirkwood Gas and Electric Company) were granted franchise areas in which they were given the exclusive right to provide electricity service. In exchange for this exclusive, or monopoly, right all aspects of their business were regulated. The CPUC set standards for electricity service; authorized utilities to invest in new facilities such as power plants, transmission lines or other equipment as necessary to meet the obligation to provide service to all customers; and set rates that different customers paid for electricity service. While the CPUC will continue to set service standards and to regulate certain aspects of the new electricity market, much of the traditional structure will change.

The new law essentially treats the major private utilities as if they had four distinct functions:

1. Generation of electricity
2. Transmission of electricity along high voltage transmission lines
3. Distribution of electricity to customers with other customer services
4. Metering and billing for electricity

In the past, a single utility company performed each of these functions, subject to CPUC oversight. These functions are now done partly by the regulated utility company, partly through competitive businesses—including unregulated utility affiliates—and partly by two new entities (the Independent System Operator and the Power Exchange) created by AB 1890.

Utilities are selling many of their power plants to existing or possibly new power generation firms and additional power plants will be constructed by power companies that are not utilities, all to compete for the business of the consumer. Power plant owners now sell electricity directly to customers with whom they have negotiated sales contracts; in an auction setting (the Power Exchange, described below) which large customers and distribution utilities access to meet their needs; or to "aggregators", firms that have signed contracts with many customers to provide their electricity. Competition among potential generators of electricity sets the price for the electricity generation component of a

customer's electricity bill. A major role of regulators is to make sure that competition is fair and that no firms can dominate the market and set competitive prices.

The distribution/customer service function, which encompasses moving electricity through a service area to customers, maintaining electricity lines, and providing metering and billing services, largely remains monopoly activities of the utility distribution companies (UDCs) at this time. The UDCs continue to be regulated by the CPUC. Some of the services, however, now performed by the distribution/customer service company, such as metering and billing, power conditioning or backup, may be provided by other private businesses.

Since March 31, 1998, customers located in the service territories of six of the seven investor-owned utilities (Mountain Utilities is exempted at this time) have been allowed to shop for power in an open market. These customers can choose to purchase electricity directly from a non-utility electricity service provider (ESP) or from their current electric utility. No longer restricted to buying power only from their local utility company, they can compare one deal to another and pick the one that meets their preferences³. It is possible that packages of power and other services will be offered in this manner, so that the customer can choose the best overall value that meets their needs. For example, some companies may not need high levels of reliability and may negotiate interruptible supply contracts at lower rates, while others may need continuous service. Other companies may be able to shift their loads to take advantage of lower prices at certain times. It is not possible at this time to predict the combination of services or prices that a competitive market will produce.

Independent System Operator

AB 1890 created a non-profit corporation, the Independent System Operator (ISO) which oversees the operation of most of the high voltage electricity transmission system in California. Western North America is interconnected with many high voltage electric lines. These high voltage lines allow electricity to be generated in one area and used in another within a geographic region that extends from Colorado to the Pacific, Canada to Northern Mexico. The major responsibility of the ISO is to ensure fair and impartial access to the transmission system in California for all generators, while maintaining reliable electricity system operation. Since the high voltage lines are the electrical "highways of commerce," the ISO will ensure that no particular buyer or seller of electricity can block access by another.

Power Exchange

The second major feature of the law is the creation of a second non-profit corporation that operates a power exchange. The California Power Exchange (PX), as it is called,

³ At the time this report was drafted, approximately 73,000 customers had elected to switch to an ESP. The total number of electricity accounts is 9.9 million.

accepts requests to buy or sell a quantity of electricity at a given price. The PX functions like an auction to match total demand for power with generation of power. The PX creates a "spot market" where price information is publicly available. The PX solicits bids from electricity generators and chooses the lowest bidders until the PX has enough supply to meet the requests to buy power. PX prices can change on an hourly basis. Many customers pay for electrical power based on this price, either directly through their distribution utility or through a private power supply contract with terms that are pegged to the PX price. Thus, consumers who choose to enter into private contracts for power, where the terms, conditions and price are not public knowledge, may use the public information from the PX to gauge the attractiveness of supply or service offers they receive.

Transition and Recovery of Uneconomic Investments

The bulk of the transition to a competitive market is expected to occur between now and early 2002. During this transition period, the investor-owned utilities will receive accelerated payments from utility customers for what are called "stranded costs" or "competitive transition costs (CTC)". These costs represent expenses the investor-owned utilities have incurred or investments they have already made, but which are not likely to be recovered in the competitive market. Examples include but are not limited to: (1) the portion of unrecovered power plant investment that is estimated to be more expensive than current or future electricity supplies such as power from California's large nuclear-fueled plants; (2) some contracts with non-utility generators that have terms which are non-competitive by today's standards; and (3) costs incurred as a direct consequence of the move to a competitive market such as consumer education, new computer systems for the ISO and PX, and employee retraining. The total amount of transition costs was initially estimated to be about \$28 billion but this amount has dropped somewhat as utilities have sold powerplants to new owners at prices greater than their book value. The CPUC is now proceeding to define what items will be considered transition costs and how much of the cost may be recovered by utilities.

During the transition period, electricity rates are frozen at June 1996 levels except for a 10 percent reduction for residential and small commercial customers. Freezing electricity rates created a mechanism and an opportunity for recovery of stranded costs. This will have the short-term effect of rates being 10 percent or so higher for some customers than they would be if traditional methods were used to set electricity rates during the transition period. The money collected as a result of the rate freeze (in excess of utility actual costs) will be used to pay the stranded costs. The net result of this funding mechanism is to forego a rate decrease now to greatly accelerate the time at which the competitive market can begin to function. Rather than a fifteen-year transition period, which would otherwise occur, California's electricity system will move to a competitive foundation in slightly over four years.

Customers who elect to purchase electricity from a new supplier during the transition period of January 1, 1998, through March 31, 2002, are obligated to pay a fair share of transition costs. There are costs that will extend a portion of the transition charges for several years after 2002. In general, consumers cannot avoid their share of the transition costs by changing from utility service to a new supplier. Similarly, if a municipal utility elects to allow direct transactions, it is authorized to recover transition costs applicable to their electricity system.

Impact of Restructuring on Small Rural Counties

Will Counties and County Residents Be Affected?

When and if you will be affected by electricity industry restructuring depends on what utility now provides you with electricity service and how much electricity you use. It is important to remember that the industry restructuring law applies primarily to the investor-owned utilities. Customers served by the following investor-owned utilities within California are eligible to select non-utility electricity service providers for some electricity services:

- Pacific Gas and Electric
- San Diego Gas and Electric
- Southern California Edison
- PacifiCorp
- Sierra Pacific Power
- Southern California Water Company's Bear Valley Electric

The governing bodies of publicly owned utilities such as the Imperial Irrigation District, Lassen Municipal Utility District, Trinity County Public Utilities District, and the city of Redding must decide if they will allow other electricity providers to do business in their service areas. Consequently, if you now receive service from a utility other than one of the investor-owned utilities required to allow direct access, you may not be directly affected by electricity industry restructuring at this time. You should contact your municipal utility to see if and when direct access will be made available.

Equally important to keep in mind is that every electricity customer of an investor-owned utility, from the largest industrial firm to the smallest residential customer, has the option to continue service with their current utility company. In fact, a customer's current utility company is the default provider: if customers take no action they will continue to receive

service from their current utility company. Customers make the decision whether to change electricity provider in response to offers they may receive or learn about.

If you are a customer of an investor-owned utility, whether you receive offers from competing electricity providers will likely depend on how much electricity you use, either at one location or at all locations under your control. Businesses with multiple locations, such as supermarkets and retail stores, may combine the electrical load at all locations and contract with one service provider. During the initial stage of the restructured market, new electricity providers will likely approach large electricity users first and smaller consumers later because of the relatively higher cost of signing up a large number of small consumers.

A city, county or special district can opt to function as an aggregator and negotiate for electricity on behalf of their residents, businesses, and farms—as well as their own government loads. Electricity users living inside the boundaries of the city, county, or special district have at least two options for purchasing electricity: from their existing utility or from their local government—if their local government chooses to be an aggregator for residential customers. However, the public agency must have the written consent of each individual consumer for whom they provide this service. In addition, if a public entity acts as a community aggregator for residential customers, it must offer the opportunity to purchase electricity to all residential customers within its jurisdiction.

Local Government Revenues

State, county, and city governments are beginning to recognize the potential fiscal implications of electricity industry restructuring on their tax receipts. The transition to a restructured market will impact local, county, and state government's sales taxes, franchise fees, property taxes, and income taxes.

Franchise Fees and Taxes Paid by Utilities

Utilities, like many businesses, pay taxes to local governments based on gross sales to electric consumers. These fees (called gross receipt taxes or franchise fees) may be affected if either kilowatt-hour sales are reduced as customers choose alternative electricity service providers or prices decline as a result of competition.

Many cities charge franchise fees to utility distribution companies in exchange for the opportunity to do business within the city. For the time being, electricity distribution will remain a monopoly function with defined franchise areas. Units of government now empowered to charge franchise fees may continue to impose those fees on distribution utilities. Some cities also impose an electric utility tax on electricity consumers. They may continue to levy such taxes.

However, aggregators or electricity service providers are not regulated monopolies and have no defined franchise areas. A franchise fee is not applicable to these new types of market participants. Because these new players are business entities subject to licensing and registration, they may be taxed consistent with existing authority. For example, cities can use their existing tax authority to impose business taxes on electricity service providers operating within their jurisdiction.

Property Taxes Paid by Utilities

Restructuring may have an impact on the value of electric utility property and, consequently, on the amount of property taxes paid to counties and cities. The State Board of Equalization determines the value of electric utility property. These state-assessed properties, unlike those that are locally assessed, are not subject to the provision of Proposition 13 which limits the annual increases in assessed values of unsold property to 2 percent. As a result, electric utility properties, including generating plants, transmission lines, and transmission rights of way, are reappraised at their market value annually by the Board.

In June 1998, the Board of Equalization adopted \$31.75 billion as the value of the big three major investor-owned electric utilities in the state. This translates into approximately \$318 million in property tax revenues for local governments in the 1998-1999 fiscal year.

The electric utility property value is allocated to the counties according to where the utility properties are located. A one percent property tax rate is applied to the county's allocated unit value to arrive at the county's allocated property tax for said property.

California utilities are selling off many of their power generating plants. Recent announced sales have resulted in market prices for these plants that are higher than their allocated value, which could result in increased property tax revenues to county governments.

These power plant sales are not only establishing new values for these plants but are also transferring ownership of these plants to new non-traditional-utility owners. The State Board of Equalization is currently planning on treating these non-traditional-utility owned power plants the same as utility owned power plants: the non-traditional-utility owned plants will continue to be state-assessed and the values will be allocated to the counties still based on where these properties are located. So, restructuring may result in higher or lower property values as power plants are sold, but the power plant sales will not affect which plants are subject to statewide assessment.

Income Taxes Paid by Utilities

Income taxes are reduced when a utility's net income is reduced due to impacts on sales and expenses. A utility's net income may be reduced by a drop in sales, a reduced price

(resulting from competitive pressures) or an increase in expenses. All of these factors may contribute to lower income and, consequently, lower income tax payments to state and local governments.

Sales Taxes Paid by Consumers

As part of restructuring, all residential and small commercial customers of investor-owned utilities received a 10 percent rate reduction beginning January 1, 1998. This rate reduction translates into more disposable income for residential customers that may be spent on goods and services. This increased spending will increase the sales tax revenues of local county government to the extent that the additional income is spent on taxable goods within the county.

Residential consumers in rural counties spent over one billion dollars on electricity in 1996. With the rate reduction of 10 percent, those consumers will now have \$100,000,000 more income available to spend in 1998 on other goods and services. If all of that additional income were spent in the county on taxable goods, county governments would see an increase in sales tax revenues of \$7,000,000.

Small commercial customers also receive a 10 percent rate reduction. Since small commercial customers in rural counties spent about \$300,000,000 on electricity per year, a 10 percent rate reduction translates into a \$30,000,000 decrease in operating expenses for the businesses. To the extent that increased earnings translate into increased local economic activity by these small customers, tax receipts should increase.

Although the 10 percent rate reduction does not apply to larger commercial and industrial customers, some of these customers are being offered service packages that reduce their electricity prices compared to the pre-restructuring period. With lower electricity prices, these businesses may be less likely to move out of the state and county in search of lower energy prices elsewhere. Lower electricity prices will help improve California's competitive position and will aid in business retention and expansion, leading to increased government revenues through increased economic activity. In addition, as these businesses purchase electricity at lower prices, their expenses will decrease and their earnings will increase. Once again, these increased earnings could lead to increased activity and increased revenues to various units of government.

County Government Expenditures

County governments are end-use consumers of electricity. County governments use electricity for street lighting and traffic control; for lighting, heating and air conditioning in county buildings; for water and sewage pumping; and other activities.

Just as the population of small rural counties varies from 1,180 to 245,600 people, the electricity use of rural county governments covers a wide range, from less than one million

kilowatt-hours to greater than ten million kilowatt-hours⁴. Given this wide range, a typical county will be used to illustrate impacts that would be similar—just varying by magnitude—for each individual rural county. The rest of this section examines the electricity use of a typical California rural county.

**Local County Government Electricity Use
For a Typical Rural California County**

Type	Number of Accounts	Use (kWh)	Total Cost (\$)
Small “commercial”	50	1,000,000	134,000
Large “commercial”	7	4,025,000	390,425
Street Lighting	23	230,000	26,910
Total	80	5,255,000	551,335

As shown in the table above, the typical rural California county has a total of 80 electricity accounts. Of these, 50 are for small “commercial” accounts, 7 are large “commercial” accounts, and 23 are for street lighting and traffic control. Small “commercial” accounts apply to smaller administrative and miscellaneous buildings. Examples of large “commercial” accounts are the central administration building, the county jail, and the county courthouse.

Electricity use by the typical county government is around 5 million kWh per year. About 20 percent of that electricity is used by small accounts and 80 percent by large accounts. This electricity use costs the county \$550,000 per year, or less than one percent of the typical county’s budget.

With the 10 percent rate reduction effective January 1, 1998, the typical county started saving around \$13,000 on an annual basis. This represents 10 percent savings off the \$134,000 spent on small commercial accounts. Large commercial accounts and street lighting accounts do not receive the 10 percent reduction.

Energy Efficiency

One way county governments can reduce their expenditures on electricity is to reduce their consumption through energy efficiency programs. Energy efficiency programs are steps taken to increase the efficiency of energy use in facility operations, including installing new, more efficient equipment or modifying existing equipment and buildings.

⁴ A kilowatt-hour (kWh) is the most commonly used unit of measurement telling the amount of electricity consumed over time. It means one kilowatt of electricity supplied for one hour. A kilowatt-hour is equal to the energy used to light ten 100-watt light bulbs for one hour.

Local government energy efficiency programs could include: installing more efficient street lighting, upgrading to more efficient lighting in government buildings, and modifying heating and cooling systems in buildings for more efficient operations.

Energy efficiency programs may offer greater savings opportunities compared to shopping for cheaper electricity. Buying cheaper electricity only affects the generation portion of the bill (only 20 to 30 percent), but reducing electricity use through cost-effective efficiency programs can save many times this amount.

Impact on Rural County Residents and Businesses

All customers, small and large, served by investor-owned utilities can choose who provides their electricity. Customers with peak load greater than 20 kW also can have their generation service provider operate metering and billing services. County government loads that usually have a peak demand greater than 20 kW are the main administrative building, the courthouse, the county jail, and the main library. Beginning January 1, 1999, all direct access customers (customers who buy from an ESP directly rather than from their utility distribution company) will be able to have their ESP provide generation, metering, and billing services.

Residential and small commercial customers began receiving a 10 percent rate reduction on January 1, 1998. For counties in the PG&E area, these customers are defined as all residential customers, all commercial customers on rate schedules A-1 and A-6, and commercial customers on rate schedules A-10 and E-19 whose maximum demand was less than 20 kW. For counties in the Southern California Edison service area, these customers are defined as all residential customers and commercial (General Service) customers with demands of 20 kW or less served under schedules GS-1, TOU-GS-1, and TOU-EV-3.

There are many sources of information for customers who want to learn more about electricity industry restructuring. The California Public Utilities Commission has developed a comprehensive plan to inform consumers about restructuring. Part of the CPUC's plan is the \$89 million "Plug In, California" advertising campaign and the Electric Education Call Center. The Call Center can be reached at 1-800-253-0500 by phone or at www.knowledgeispower.org on the Internet. Additional consumer education information can be found at the CPUC's Internet site: www.cpuc.ca.gov and at the Energy Commission's web site: www.energy.ca.gov.

Recap of Restructuring and Rural County Impact

California's effort to restructure the state's electricity market has several goals:

- Transfer of Investment Risk - Those who bear the risk of the investment decision will make investments in new power plants. If a power plant turns out to be uneconomical, the plant investors will suffer the loss. Of course, as in all competitive markets, if the plant is profitable, the investors keep the profits.

- Consumer Choice - Consumers have access to many electricity suppliers. They are no longer restricted to just one supplier, on a "take it or leave it" basis. Prices are negotiable. This creates the opportunity for competition to lead to falling electricity prices for all consumers after the transition period.
- New Opportunities - The restructured market allows new business opportunities. New firms, selling new products and services, are appearing. Consumers have the option of buying their electricity services from these new providers, or they can elect to continue service very much as they have it today.

The electricity market is one of the last major monopolies to be opened to competition. While not every aspect of the electricity market will be competitive, there will be enough competition in key areas to assure that only the most efficient electricity providers continue to serve California's industry, agriculture, homes and businesses.

The net impact of electric industry restructuring, per se, on county government revenues is unclear. Whether a specific county's net tax revenue will increase or decrease is impossible to determine at this time because of the uncertainty that restructuring introduces in property, income, and sales tax collections and because many of the determinants of tax revenues are under the control of the counties and can be varied by them. It is also important that local governments review their existing authority on fees and taxes to ensure equitable treatment for old and new market participants in the revenue collection process. County revenues may increase as local residents spend their increased income from the 10 percent rate reduction on local taxable products.

County government uses electricity for various activities. The typical California small rural county uses about 5 million kWh per year to provide lighting, heating, and cooling for county buildings and for other purposes. This electricity use costs the county \$550,000 per year. With the 10 percent rate reduction applied to county government's small commercial accounts, the average county started saving \$13,000 per year on January 1, 1998.

What is Aggregation?

Aggregation is the combination of multiple end-use customer loads into a pool to facilitate the sale and purchase of electric energy, transmission, and other services on behalf of these customers. This chapter looks at the aggregation rules established by restructuring legislation and the costs and benefits of aggregation.

Rules for Aggregation

Assembly Bill 1890 defined the rules for aggregation in the restructured industry. Section 10 of that bill added Section 366 to the Public Utilities Code. Section 366 states:

- (a) The commission (CPUC) shall take actions as needed to facilitate direct transactions between electricity suppliers and end use customers. Customers shall be entitled to aggregate their electric loads on a voluntary basis, provided that each customer does so by a positive written declaration. If no positive declaration is made by a customer, that customer shall continue to be served by the existing electrical corporation or its successor in interest.
- (b) Aggregation of customer electrical load shall be authorized by the commission for all customer classes, including, but not limited to small commercial or residential customers. Aggregation may be accomplished by private market aggregators, cities, counties, special districts or on any other basis made available by market opportunities and agreeable by positive written declaration by individual customers.
- (c) If a public agency seeks to serve as a community aggregator on behalf of residential customers, it shall be obligated to offer the opportunity to purchase electricity to all residential customers within its jurisdiction

Section 366 has other provisions that require independent third-party telephone verification of a customer's request to change providers—to prevent “slamming” or involuntary provider changes such as have occurred in the telephone industry.

In August 1997, Senate Bill 477 revised the aggregation rules of AB 1890. In particular, SB 477 exempts public agencies from the possibly cumbersome requirements of (1) registering with the CPUC and (2) third-party independent verification, to the extent these agencies are serving residential and small commercial customers within their own political jurisdictions. The exemptions from CPUC registration and the third-party verification are the two areas in which local governments and public agencies differ from any other private aggregator.

The rules for local government and public agencies, as well as private sector providers, specify an “opt-in” model for aggregation. “Opt-in” means that local governments are required to aggregate customers individually with each customer electing to join a local

government aggregation to be signed up one-by-one. The utility distribution company is the “default” provider.

The other aggregation model is the “opt-out” model in which each customer of a local government that has decided to aggregate individual consumer loads is automatically included in that aggregation pool unless the customer specifically opts out. The “opt-out” model makes local government the default provider.

Costs and Benefits of Aggregation

The following section examines the various costs and benefits associated with aggregation. The new electricity market is in its infancy and is very complex. Counties vary greatly in terms of the financial and technical expertise necessary to master the complicated details associated with electricity purchasing. Consequently, it is not possible to assign hard and fast quantitative costs and benefits. Rather, this discussion will point out categories of costs and benefits that individual counties should assess when considering the aggregation option.

Costs of Aggregation

There are three types of costs associated with aggregation: start-up costs, customer switching costs, and on-going costs. Start-up costs are costs associated with establishing the aggregation pool. Customer switchover costs relate to switching a customer from a UDC to the aggregation pool. Maintenance of the aggregation pool requires on-going costs. Components of these three costs are listed below:

- 1) Startup Costs
 - a) Becoming informed about market opportunity and regulations
 - b) Doing legal research
 - c) Staffing, either internal staff or outside consultants
 - d) Selecting a scheduling coordinator
 - e) Choosing the energy source—selecting a power supplier, deciding to use a power exchange (PX), or a combination of both
 - f) Signing a service agreement with the utility distribution company
 - g) Developing or purchasing a metering and billing system
 - h) Developing a marketing plan for providing service to various customer types, for contacting customers, and for developing consumer education and marketing materials.

- 2) Customer Switchover Costs
 - a) Marketing to customers
 - b) Handling individual customer transactions
 - i) Collecting individual customer information—use and account numbers
 - ii) Processing direct access service requests (DASR)

- iii) Changing the customer's electric meter (if required)
 - iv) Entering data into customer information system (CIS)
 - c) Processing deposits
 - d) Performing credit checks
 - e) Processing customers who leave pool, including deposit returns
- 3) Ongoing Costs
 - a) Processing CIS data exchanges such as between the pool and the customer and between the pool and the electricity service provider
 - b) Billing customers
 - c) Acquiring power supply
 - d) Coordinating schedules of loads and resources
 - e) Processing non-payment of bills
 - f) Staffing call service system and handling customer bill complaints
 - g) Performing periodic audits
 - h) Resolving disputes with suppliers, power exchanges, Independent System Operator (ISO), etc.
 - i) Collecting and remitting taxes
 - j) Reporting to oversight body (e.g., Board of Supervisors)
 - k) Managing the pool
 - l) Maintaining sense of "pool membership"

The costs of aggregation may increase as the aggregation pool moves beyond single governmental jurisdictions or includes more heterogeneous members.

Benefits of Aggregation

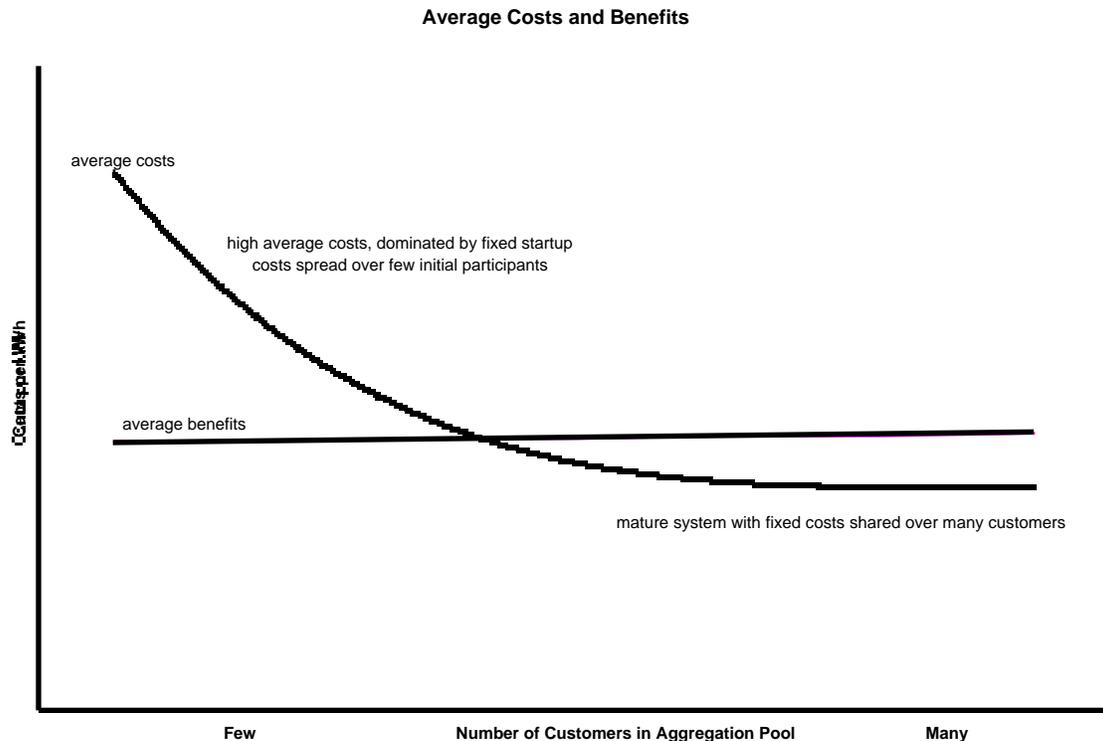
Aggregation presents an opportunity for a lower price of electricity. Aggregation efforts can achieve lower prices by applying (1) market power and (2) diversity power.

Market power is the power to negotiate for lower electricity prices by buying in bulk, comparable to buying in a club or a bulk discount membership store. Individual members combine their purchasing power to get lower prices.

Diversity power is the combining of customers with different electric use patterns into a more attractive pattern. Different customers have different usage patterns. In the summer, residential customers tend to use more electricity during the late afternoon and early evening as they turn on their air conditioners, prepare for dinner, watch TV, and begin to turn on lights. In contrast, office buildings are beginning to decrease their use during the same period. These office buildings tend to use electricity relatively constantly during the 9-5 period, providing lighting, cooling and electricity for office equipment, but have low use during nighttime hours. So, combining residential and commercial loads would result in a more constant load pattern over the day, which would be more attractive to a supplier than a pattern that varies up and down.

Net Benefits of Aggregation

Although no precise quantitative data exist, preliminary information and evidence support the following conclusions: (1) the benefits of aggregation do not seem to vary based on the size of the aggregation pool. As the number of participants in a pool increase, the reduction in electricity costs—the average benefit for each pool member—stays relatively constant. As discussed in the next chapter, the maximum saving for aggregation pools of non-industrial customers is currently about 4 percent off the total rate.



On the other hand, the average costs of aggregation tend to be very high when there are few members of the pool and then decrease as the size of the pool increases. The high initial average costs are the result of the fixed costs of pool startup expenses being spread over relatively few pool participants. Average costs initially are expected to decline as pool membership grows but probably still exceed average benefits over a range because the growing pool leads to increased mass mailing and customer information system costs still spread over relatively few participants.

Eventually, as the size of the pool increases and fixed costs are spread over more and more participants, the average costs drop below the average benefits and net benefits will be realized. This breakeven point will vary for every aggregation pool. Beyond the breakeven point, the pool will experience net benefits as the average total benefits begin to exceed the average total costs.

Aggregation Case Study

The California Electric Users Cooperative (CEUC) is a cooperative whose members are agricultural cooperatives. These cooperatives have agreed to purchase their electricity through the CEUC. Individual farmers, growers, and producers who are members of the CEUC-member cooperatives are also entitled to purchase electricity.

The CEUC was incorporated in November 1997 after a year of organizational efforts. Full operational status was achieved on March 13, 1998. The CEUC operates as a broker and currently has 454 members. Projected energy use by the members is around 290 GWh with a peak demand of 140 MW. Annual electricity expenses of the members are about \$24 million.

Start-up cost for the CEUC was about \$150 thousand in cash and other in-kind services provided by members and other interested parties. Out of the \$150 thousand in start-up cost about \$40 thousand was for member development and education. Other major expenses were the development of a business plan, legal and financial advice, and the preparation of a Request for Proposal (RFP) that was sent to 35 electricity service providers.

The CEUC currently has a power supply agreement with New West Energy (NWE). The members of the CEUC will pay NWE the amount they would have paid their former utility. The CEUC will receive a discount of 3 percent of that amount. This 3 percent saving is estimated to be about \$720 thousand annually. About \$600 thousand will be returned to CEUC members and \$120 thousand will be used for on-going CEUC expenses.

Aggregation Options

The next section examines many options for grouping customers together. The first two options involve setting up a municipal utility to purchase and deliver electricity. The remaining options involve aggregating customers to negotiate for a more favorable electricity commodity price.

Municipalization

Municipalization is the act of creating a municipal utility. The term “municipal utility” refers to a broad variety of entities that provide municipal services, such as electricity, on a non-profit basis in a defined geographic area. The decision to create a municipal utility is normally based on the desire for lower rates, better service, or local control.

There are many different ways under California statutes that municipal utilities with differing characteristics may be formed. A municipal utility may own and operate power

plants, transmission lines, and distribution facilities. The Los Angeles Department of Water and Power (LADWP) is an example of a municipal utility that is involved in all aspects of providing electricity service. A municipal utility may also own and operate distribution lines and facilities, including electricity service meters for each customer, but not power plants and transmission lines. Plumas-Sierra Rural Electric Cooperative is an example of such a distribution-only utility.

Forming a new municipal utility is almost always a painstaking, complicated, expensive and controversial task. It involves either the construction of duplicate transmission and distribution systems or, more likely, the takeover—through condemnation—of existing investor-owned utility facilities. Investor-owned utility distribution companies generally have opposed municipalization efforts in the past. Restructuring does not alter the economic incentives that encourage investor-owned utility distribution companies to retain their customer base.

Muni-lite

“Lite Municipalization” or so-called “muni-lite” refers to a local government claiming that it owns enough of the local electricity distribution system to be granted the right to act like a municipal utility without going through the protracted and costly legal and political process of full municipalization.

The City of Palm Springs began exploring this option in 1996. The city’s strategy was to install duplicate electric meters at customer sites in order to qualify as a quasi-utility. In August 1996, the Federal Energy Regulatory Commission (FERC) ruled that duplicate meters did not constitute an actual electric distribution system, effectively ending Palm Springs efforts to use the “muni-lite” concept to qualify as a distribution utility.

Aggregation of Government Loads in a Single County

This option refers to a single county government seeking an alternative electric provider for all of the county government’s loads. Combining the loads increases the bulk buying power of county government. In addition, combining office building loads with street lighting loads may lead to a more constant overall usage pattern over the day. Examples of California counties and cities engaged in this form of aggregation activity are Sonoma County and the City of San Jose.

Community Aggregation of all Customers

This option refers to a county government aggregating the loads of all consumers in the county. Counties can aggregate customers from all customer classes as a broker or as an ESP. The county can broker electricity sales. Brokers act as agents, bringing together buyers and sellers. A broker does not take ownership of electricity and, consequently, is not paid by customers for electricity service. Customers pay the owner of the electricity. The second way for a county to become an aggregator is to become an ESP. An ESP does

take ownership of electricity and is paid for that electricity by its customers. Because an ESP is in an on-going business relationship with its customers, it faces more responsibilities, costs, and liabilities than does a broker. The City of Palm Springs is now pursuing this aggregation option, acting as an ESP.

Multi-Agency/County Aggregation

Through new or existing multi-county agreements, county governments can combine their government loads to increase their bulk buying and diversity power. To establish these new agreements, county governments may be required to establish new joint powers agreements, joint powers agencies, or community energy authorities.

ABAG POWER is an example of a multi-county, multi-agency aggregation pool. Sixty-four local government entities are participating in the aggregation pool, representing over 7,000 electricity accounts. Savings are estimated to be 2 to 3 percent off the total bill.

Community Energy Authority

In 1984, AB 1659 was signed into law (California Government Code, Sections 52000-52012 and 52030-52033) authorizing local governments to create “Community Energy Authorities” (CEAs). CEAs were modeled after housing authorities, which some local governments have established to manage low-income and public housing programs. The law authorizes every city and county in California to establish CEAs. In addition it allows any combination of cities and counties to establish an “area energy authority”. Although never used before restructuring, CEAs can serve as a vehicle for counties to develop community energy programs. They can also be a vehicle through which counties aggregate their own—or their constituents’—electricity loads.

Aggregation Savings

At the beginning of the restructuring process, potential electricity savings in the range of 25 to 30 percent were sometimes speculated. However, actual savings seen to date are far less. Savings range from 2 percent for residential consumers to around 4 percent for commercial and government loads.

Although in its infancy, the new electricity market has included some scam artists and false or misleading advertising. Some companies may provide misleading guarantees and vague terms. Other companies apparently are offering discounts or savings—in the range of 15 to 30 percent—that do not appear to be achievable unless the ESP is willing to lose large amounts of money, which is unlikely.

Offers generally take two forms: (1) savings off the total bill or (2) savings off the energy portion of the bill. Savings off the total bill, also referred to as “savings off the tariff” or “savings off the rate”, are expressed as a percent reduction in the total bill. For a county

government with a \$500,000 annual bill, a 5 percent savings off the total bill would be a savings of \$25,000 per year.

Savings off the energy portion of the bill are also referred to as savings off the PX price. The energy portion of the bill ranges from about 20 percent of the total bill for small customers to about 40 percent of the total bill for large customers. The annual savings resulting from a 5 percent reduction in the energy portion of the bill for the county government with a \$500,000 total bill would be approximately \$15,000 (assuming a 30 percent energy portion for a county's combined small and large accounts).

Aggregation Examples

- City of San Jose
 - 13 municipal sites will be served
 - 5 percent savings off the energy portion—or about 1.5 percent off the total bill
 - Supplied by New Energy Ventures

- California Manufacturers Association
 - An association of California manufacturing firms
 - 6 percent savings off the energy portion on a one-year contract—about 2.4 percent off the total bill
 - 8 percent savings off the energy portion on a two-year contract—about 3.2 percent off the total bill
 - Supplied by Montana Power

- San Diego Association of Governments (SANDAG)
 - An association of San Diego county government agencies
 - 1.5-3.5 percent savings off the total bill
 - 1 year term
 - Supplied by Commonwealth Energy

- Sonoma County
 - Government loads will be served
 - 3.5 percent off total bill for selected accounts
 - 3 year term
 - Supplied by Commonwealth Energy

- City of Concord
 - Government loads will be served
 - 2.75 percent off total bill
 - 3 year term, with opt out after year 2
 - Supplied by New West Energy

- City of Long Beach
 - Government loads will be served
 - 2.75 percent off total bill
 - 4 year term
 - Supplied by New West Energy

- California Electric Users Cooperative
 - Composed of 10 agricultural cooperatives
 - About 3 percent savings off the total bill
 - Supplied by New West Energy

At least two government entities are aggregating loads for electricity service to local governments and special districts:

- ABAG POWER
 - A joint powers agency serving public agencies in PG&E's service area
 - Operating as an ESP
 - About 2 to 3 percent savings off the total bill
 - www.abag.ca.gov/services/power/
 - (510) 464-7900
- California Department of General Services
 - Offers electricity supply services to state agencies, public sector higher education, cities, counties, and school districts
 - Operating as a broker
 - Savings ranging from 2.75 to 4.25 percent off the total bill
 - www.dgs.ca.gov/ea/
 - (916) 323-8777

What Should a Small Rural County Do?

This section presents recommendations for actions that small rural counties may wish to take as a result of electricity industry restructuring.

County governments, either acting alone or in combination, should seek competitive bids for the IOU-provided electricity used by county facilities. Bids for a one-year term should be solicited from ESPs and brokers, including but not limited to ABAG Power and DGS Energy Assessments. The resulting offers should then be evaluated using existing competitive procurement practices.

County governments should create a process and centralized location to collect, monitor, track, and analyze use and cost by all of a county government's electricity accounts. Improved knowledge of electricity use and its costs is essential to prudent action in the new market structure.

County government should also consider establishing community energy authorities (CEAs), joint power agreements, or joint power agencies as mechanisms to combine their government loads—and/or their constituents'—to take advantage of aggregation buying power.

For a county government that has decided to aggregate loads of homes and businesses in the county, as either a broker or an ESP, consider introducing legislation to change the aggregation rules for a county from the “opt-in” requirement, where the local utility is the default provider, to an “opt-out” model, where the county is the default provider. An “opt-out” model might be more attractive by decreasing recruitment costs and by increasing the aggregate loads under the negotiating power of the local government, allowing them to strike a better deal with suppliers.

County governments should invest in energy efficiency programs to reduce county administration electricity costs. While purchasing electricity from a new provider may result in savings of 2 to 4 percent off the total rate, cost-effective efficiency methods can provide many times this amount.

Additional Information

Additional information on electric industry restructuring and aggregation can be found at the following locations.

- General information on restructuring
 - CEC www.energy.ca.gov/restructurind/index.html
 - CPUC www.cpuc.ca.gov/electric_restructuring/er_home_page.htm
- Energy efficiency and renewables
 - CEC www.energy.ca.gov/renewables/index.html
www.energy.ca.gov/efficiency/index.html
 - (916) 654-4058 or toll free in California (800) 555-7794

Energy Efficiency Handbooks:

www.energy.ca.gov/reports/efficiency_handbooks/index.html

How to Finance Public Sector Energy Efficiency Projects

How to Hire an Energy Auditor

How to Hire an Energy Services Company

Energy Accounting: A Key Tool in Managing Energy Costs

- Consumer education
 - CEC www.energy.ca.gov/homeprofiler/index.html
 - CPUC www.cpuc.ca.gov/divisions/csd/electric/electric.htm
(800) 253-0500
 - Utility Consumer Action Network (UCAN) www.ucan.org
 - Toward Utility Rate Normalization (TURN) www.turn.org
- List of ESPs registered with the CPUC
www.cpuc.ca.gov/electric_restructuring/esp_registration/esp_mainpage.htm

Appendix

Appendix: Rural Counties and Their Energy Characteristics

This appendix contains information about rural counties and their energy characteristics, including forecasts of county electricity use. In addition, several areas in which rural counties differ from urban counties are discussed.

Defining “rural areas” is not simple. There are many definitions of “rural” in statute both at the Federal and State level. There is general agreement that the mountainous areas of Trinity and Alpine Counties are rural while San Francisco County is urban. However, defining the dividing line is difficult. The study area for this report is described below.

The Study Area

This report examines counties with populations of fewer than 250,000 people⁵, the population figure used in SB 252. Large counties with rural characteristics are not included. For example, San Bernardino County has a population of over 1.5 million but most of that population is concentrated in the western edge of the county leaving a large, relatively sparsely populated eastern portion. However, the study area includes a wide range of counties with many rural characteristics.

The following sections discuss some of the population and economic characteristics of the counties in the study area.

Population

The study area contains 37 counties. They range in size from Santa Cruz County with a population of approximately 250,000 to Alpine County, which has 1,200 residents. (See Table A-5 on page A9 for more details.) The average population of the study area counties is 89,230—compared to an average population of over 1.4 million for the 21 larger counties.

⁵ At the time SB 252 passed, Santa Cruz County had a population of less than 250,000. January 1, 1998 population data for Santa Cruz County is 250,200. Santa Cruz County has been included in this report.

Population Density

The small rural counties have an average population density of 40 persons per square mile, one tenth of the population density of 412 for the larger counties. Rural county population densities range from 2 persons per square mile in Alpine and Inyo counties to 561 persons per square mile in Santa Cruz County.

Population in Unincorporated Areas

Almost one-half of the residents of the 37 counties in the study area do not live in incorporated areas. In fact, three of the counties—Alpine, Trinity, and Mariposa—do not contain incorporated cities. By comparison, only 16 percent of larger county residents live in unincorporated areas.

Per Capita Personal Income

The counties in the study area include the county with the highest per capita income in the state (\$45,205 in Marin County) as well as the lowest (\$14,553 in Kings County). The average per capita income for the small counties is \$22,578—eleven percent lower than the statewide average of \$25,368 per person.

Role of County Governments

California has 7,000 local government agencies, including counties, cities, special districts, and school districts. The 58 California counties are responsible for providing three basic types of services to their residents:

- State and federal social service and health programs. These programs include cash aid to families with children, Food Stamps, and foster care.
- County services to all residents. These include operating trial courts, administering elections, apprehending, prosecuting and jailing criminals, and collecting property tax.
- Municipal services to people in unincorporated areas. These services include sheriff patrol, fire protection, water, garbage, sewer, and libraries.

One out of every two residents of rural counties—compared to one out of five on a statewide basis—live outside of cities and, consequently, depend more on county government for municipal services than residents of urban counties.

Energy Characteristics of Rural Counties

Electricity consumption in small rural counties is about 10 percent of the state total. As seen in Table A-1, rural county electricity use in 1996 ranged from 11 gigawatt-hours (GWh, one GWh is equal to one million kilowatt-hours) in Alpine County to over 2,200 GWh in Merced County.

Table A-1
Total Electricity Use for California Counties
Historic and Projected

Area	Use in GWh	
	1996	2002
California	234,013	258,188
Average	4,035	4,452
Large Counties	209,403	231,282
Average of Large Counties	9,972	11,013
Los Angeles County	64,401	71,860
Orange County	18,504	20,220
Rural Counties	24,610	26,906
Average	665	727
Alpine County	11	11
Sierra County	24	25
Placer County	1,983	2,139
Merced County	2,199	2,487

Source: Tables A-9 and A-17

Residents and businesses in small rural counties used over 24,000 GWh of electricity in 1996, averaging 665 GWh per county. This is in contrast to an average statewide use per county of over 4,400 GWh and an average use in large counties of almost 10,000 GWh per county.

Statewide electricity use is projected to increase from 234,013 GWh in 1996 to 258,188 GWh in 2002—growth of 1.75 percent per year. Rural county use of electricity is expected to grow at 1.50 percent per year, slightly slower than statewide growth.

The competitive portion of the electric market is the generation component. Table A-2 shows that California residents and businesses will pay more than \$5.3 billion for generation in 1998 (based on a generation charge of 2.4¢/kWh). Rural county consumers contribute almost \$600 million in revenues to the new competitive generation market, ranging from less than a million dollars in Alpine County to \$50 million in Merced County.

Table A-2
Competitive Electric Energy Market in California in 1996

Area	Millions of Dollars
California	5,311.4
Rural Counties	557.5
Average	15.1
Alpine County	0.2
Sierra County	0.6
Placer County	44.3
Merced County	50.3

Source: Table A-9 assuming 2.4¢/kWh

Rural counties use relatively more electricity for residential and agricultural uses and relatively less for commercial and industrial uses. As shown in Table A-3, residential customers in rural counties account for 40 percent of total use in those counties, while urban county residential customers' share is 32 percent. The commercial sector in rural counties has a 27 percent share of the total, while that sector accounts for 35 percent in urban counties.

Table A-3
Rural and Urban California Counties
Percent of Electricity Sales by Sector

Sector	Rural	Urban
Residential	40%	32%
Commercial	27%	35%
Industrial	15%	19%
Agricultural	9%	5%
Other	9%	9%

Climate, lack of natural gas, and the relatively smaller size of commercial and industrial activity in those counties lead to the difference in shares of electricity use by sector between rural and urban counties. More information on individual county use by sector can be found in Tables A-10 through A-12. These tables show residential, commercial, and industrial use within California counties, ranked by absolute size with the rural counties always in the bottom.

Although residential electricity use in rural counties is lower than total use in urban counties, Table A-4 shows that rural county use per residential customer is higher than

urban counties. Eight of the top ten counties in use per residential customers are rural counties.

Table A-4
Residential Electricity Use Per Customer for California Counties in 1996

Area	Average Use per Customer in kWh
California	6,484
Large Counties	6,336
San Francisco County	4,170
Alameda County	5,247
Sacramento County	8,815
Stanislaus County	9,255
Rural Counties	7,692
Siskiyou County	10,334
Placer County	10,222
San Luis Obispo County	5,898
Humboldt County	5,669

Source: Table A-13

Average use per rural county customer is around 7,700 kWh annually, 21 percent higher than an average of over 6,300 kWh per year in urban counties. Rural county use per customer ranges from over 10,000 kWh per year by residents of Siskiyou and Placer counties to slightly below 6,000 kWh per year in San Luis Obispo and Humboldt counties.

There are at least three reasons for the higher use per residential customer in rural counties. First, these counties experience more extreme climate conditions. The hot summers of the rural counties in the Central Valley and the cold winters and hot summers of the mountainous rural counties lead to higher use per customer than in coastal urban counties with more temperate climates.

Second, many residents of rural counties do not have natural gas service, leading to increased electricity use, as well as use of propane and wood, for space heating, water heating, and cooking. Out of the 37 rural counties, 12 do not have natural gas service. These 12 are Alpine, Sierra, Modoc, Inyo, Mariposa, Plumas, Del Norte, Mono, Lassen, Siskiyou, Tuolumne, and Lake Counties.

Third, rural residents pay for services in their electricity bill that urban consumers pay for in other bills. For example, many rural residents are not connected to piped water systems and rely on water wells and electric pumps to provide them with water, and rural residents must install more outside lighting, in the absence of streetlighting, for home

safety and security. Urban consumers, on the other hand, are provided water service and streetlighting by government and private entities and pay them directly for these services.

Municipal Utilities and Rural Counties

There are 47 electric utilities in California that sell electricity on a retail basis to end use consumers. Seven of these are for-profit, investor-owned utilities. The remaining are non-profit, publicly owned utilities referred to as “municipal utilities”. For many different reasons municipal utilities typically are able to provide electricity at lower costs compared to investor-owned utilities.

There are many different forms of municipal utilities in California. One way in which municipal utilities differ is the geographic scope of their service area. Twenty-three municipal utilities are departments of city government and provide service within the jurisdiction of their cities. These city-owned municipal utilities range in size from Los Angeles Department of Water and Power—which provides electricity to the City of Los Angeles and the Owens Valley in Inyo County—to the Biggs Electric Department, serving the City of Biggs.

Other municipal utilities’ service areas extend beyond city boundaries, encompassing portions of single counties or multiple counties, with the municipal utilities organized as irrigation districts, public or municipal utility districts, and rural electric cooperatives. Examples of this type of municipal utility are Sacramento Municipal Utility District, which serves most of Sacramento County and a small portion of Placer County and Modesto Irrigation District in Stanislaus County.

There are 12 publicly owned utilities in rural counties. Of these, five are city-owned:

- Biggs,
- Gridley,
- Redding,
- Shasta Lake, and
- Ukiah.

The remaining 7 utilities are shown below with the counties in which they provide service.

- Plumas-Sierra Rural Electric Cooperative - Lassen, Plumas, and Sierra counties
- Surprise Valley Electrification Corp. - Lassen and Modoc counties
- Valley Electric Association - Inyo and Mono counties
- Lassen Municipal Utility District - Lassen County
- Trinity County Public Utility District - Trinity County
- Truckee-Donner Public Utilities District - Nevada and Placer counties
- Tuolumne County Public Power Agency.

Although there are some municipal utilities that serve rural residents of rural counties, most of these publicly owned utilities are units of city government or are located in non-rural counties, leading to rural residents having less access to municipal utilities and less chance of benefiting from generally lower electricity costs.

Population Density and Utility Distribution Costs

As noted above, small rural counties have an average population density that is less than one-tenth the population density of larger counties. Lower population density means that there are fewer people, and hence fewer utility customers, per square mile. As a result, in order to provide service to rural customers, a utility must (1) install longer distribution wires and more power poles and transformers and (2) travel longer distances to read meters.

Currently, all consumers on the same utility rate schedule pay identical distribution charges. For example, a PG&E residential customer in San Francisco pays the same charge per kWh for meter reading as a residential customer in El Dorado County. But utility studies indicate that meter reading costs are at least twice as high in rural areas compared to urban areas. In effect, the urban resident, who is paying more than his proportion of meter reading costs, is subsidizing the rural resident, who is paying less than his proportion.

As the electricity industry becomes more competitive, these intra-class subsidies may disappear. Electricity rates are frozen during the transition period. However, after the transition period, the structure of rates may change and intra-class subsidies may diminish. This would result in higher per kilowatt-hour distribution costs for rural residents.

County government should monitor any changes in rate allocations or design that may be proposed after the transition period. Unbundling of electricity service into its component parts may be extended further to unbundling of electricity charge and to unbundling of costs determined by costs associated with groups of customers within a customer class. For example, distribution charges may be unbundled, with higher rates charged to customers that impose more costs on the system.