Decoupling Mechanisms: Energy Efficiency Policy Impacts and Regulatory Implementation

Tory Weber, Southern California Edison Company
Athena Besa, San Diego Gas and Electric Company and Southern California Gas Company[1]
Bill Miller, Pacific Gas and Electric Company

ABSTRACT

One of the key policy issues for the use of energy efficiency as a resource is the loss of sales that results from the reduction in customer energy usage and the implications for utility revenues. A principal response to this issue is the development and implementation of regulatory mechanisms which decouple the impacts of energy efficiency programs from the energy sales levels which are utilized to derive utility revenues. This work presents the experience in California of the use of decoupling mechanisms to address this issue. Background on the history of decoupling mechanisms in California and the progression of these mechanisms to those in place today is presented. A discussion is provided on the policy implications of the decoupling mechanisms utilized by each of the California Investor-Owned Utilities (IOUs) on historic and current energy efficiency programs. Details on the mechanics of each of the decoupling mechanisms utilized by the individual California IOUs are presented, including a description of the regulatory processes and the ratemaking implications. The use of decoupling mechanisms in California has contributed to the resurgence in the use of energy efficiency as a primary energy resource. Such mechanisms can be used as a resource for other states in their discussions and development of an appropriate means to also deal with the implications of energy usage reductions attributed to the use of energy efficiency programs as a resource.

Review of the Issue – Traditional Rate of Return Ratemaking and the Impact on Energy Efficiency

Many a paper and presentation has been offered on the issue of energy efficiency and the impact on utility revenues under a traditional rate-of-return ratemaking setting. Traditional rate-of-return ratemaking operates under a cycle of utilities filing periodic rate cases to set utility revenue requirements.[2] Once the revenue requirement is set and the rate impacts are divided among the customer classes, the prices of energy are set such that revenues from sales are expected to meet the associated variable costs projected during the period covered by the rate case, as well as fully recover the fixed costs of the utility. During the rate case period, utilities revenues are dependent on the sales of energy in the market, the degree of risk being associated with the amount of costs recovered in the variable rate. A fluctuation in sales volume, whether from energy efficiency, weather, or economic fluctuations, has the effect of creating revenue volatility and associated risks to both the utility and ratepayers. During periods of higher than average energy usage, whether attributed to weather extremes or economic boom, customers overpay fixed distribution costs, and utilities earn more than their projected return, essentially a

[1]Supported by David Barker of Southern California Gas Company and San Diego Gas and Electric Company.
[2]Under the Rate Case Plan, as modified by Commission Resolution ALJ-151 and D.89-01-040, California's energy utilities file General Rate Case (GRC) applications every three years.

windfall unrelated to utility management of its operations. Conversely, with increased energy efficiency, mild weather, or more difficult economic times, consumers reduce usage and their bill payments fall short of covering approved fixed costs. The utility suffers a loss, again not connected to the utility's controllable actions. As such, traditional rate-of-return ratemaking encourages short-term sales of energy, whether electricity or natural gas, covering the variable costs and increasing contribution to fixed costs.[3]

This encouragement towards increased sales discourages utilities from pursuing energy efficiency since the utilities lose revenue from sales not made because of the success of the energy efficiency programs. This disincentive of lost utility revenues is one of the primary short-term disincentives to the promotion of energy efficiency programs by utilities. A principal response to this issue is the development and implementation of regulatory mechanisms which decouple the impacts of energy efficiency programs from the energy sales levels which are utilized to derive utility revenues.

Potential Solutions to Traditional Rate of Return Ratemaking and the Impact on Energy Efficiency

Under a traditional rate-of-return ratemaking setting, the revenue requirement developed through the rate case process and utilized to set rates will always differ from the actual revenue collected through energy sales due to the difference in sales volume between that projected during the rate case process and the actual sales required to serve the market during the rate case period. This difference between the adopted revenue requirement and the actual revenue collection which is created due to sales variations and any other causes can be mitigated through the use of regulatory adjustment mechanisms which ensure that an established revenue requirement is achieved, regardless of the actual energy sales during the time period. Such adjustment mechanisms are designed to "decouple" utility revenues from energy sales. Decoupling is a means of eliminating the revenues lost due to the promotion of successful energy efficiency programs. Breaking the coupling between the utility's energy sales and its revenues removes both the incentive to increase energy sales and the disincentive to run effective energy efficiency programs.

Decoupling Mechanisms

Under a decoupling mechanism, utility revenues are set in accordance with expected costs and fixed for a specified term. Similarly, a utility's revenues per customer could be fixed for the specified term, providing an automatic adjustment to revenues to account for new or departing customers. Under either of these methodologies, if a utility can reduce costs during the term through energy efficiency it will be able to increase its profits even with reduced sales. As such, if a utility's sales are reduced for any reason, including energy efficiency, weather, or economic fluctuations, its revenues and profits would be unaffected. Such a "decoupling" of utility revenues from energy sales eliminates the incentive to increase sales.

[3]This issue applies not only to regulated investor-owned utilities, but also to public power providers. For example, revenues generated by public power agencies are necessary to contribute to the municipal revenue base. Such revenues are in most cases critical to the provision of other public services, whose certainty cannot be jeopardized.

Lost Revenue Adjustment Mechanisms

An alternate methodology, used to allow the utility to recoup costs associated with specific energy efficiency or other activities is a Lost Revenue Adjustment Mechanism (LRAM). LRAM mechanisms allow the utility to derive an amount of sales reduced by energy efficiency programs and multiply the estimate by a fixed portion of the utility's prices. The resulting amount is the estimate of lost revenues attributed to energy efficiency programs and is returned to the utility.

However, LRAM mechanisms have multiple issues that are detrimental to their use. Such mechanisms can be tied to detailed measurement and evaluation studies utilized to determine the energy efficiency program impacts, increasing the cost of utilizing such a mechanism. In lieu of such measurement and evaluation studies, LRAMs could result in utilities recovering more or less lost revenues than the energy efficiency program actually saved. It is also unclear as to whether LRAMs fully overcome the disincentive to energy efficiency, since utilities can still earn increased profits with increased energy sales. In addition, under an LRAM, strong support for energy efficiency beyond the utility programs, such as support for energy efficiency in building codes and appliance standards, conservation-focused rate design, and customer initiated conservation, would still threaten fixed cost recovery since they result in a reduction in throughput, but may not be compensated through the LRAM.

Fixed-Charge Ratemaking

Another alternative to decoupling or LRAM mechanism is a shift in ratemaking to that which is less volumetric and more based upon a fixed charge per customer or declining block rates. Large fixed charges or declining block rates will have smaller discrepancies between revenue collected and the revenue requirement with sales variations as the recovery of fixed costs is not as dependent on marginal sales, the sales saved by energy efficiency programs. Such a methodology would remove any disincentive in the short run to energy efficiency programs. However, such a shift in ratemaking would reduce the volumetric price signal to customers, reducing the incentive for them to use energy wisely. Volumetric or inverted rates provide a very valuable price signal to customers to pursue energy efficiency to manage their energy costs.

History of Decoupling in California

Pre-Restructuring

In the late 1970s, California utilities were under traditional rate of return regulation when, due to the first energy crisis, the State made a concerted effort to reduce customer consumption. Besides a large increase in spending on energy efficiency programs, the California Public Utilities Commission (CPUC) instituted inverted rate structures where consumers pay low rates for consumption less than a baseline amount and high rates for usage above the baseline. The high tail block rates provided customers with a strong incentive to reduce consumption, but also magnified revenue variability due to weather and energy efficiency.

After implementing the new rate design, the CPUC opened an Investigation for gas utilities because weather impacts and fuel-switching were shown to cause extremely large revenue shortfalls or windfalls. Revenue decoupling was adopted in Decision 88835 as a solution for gas utilities in 1978. The CPUC adopted a decoupling mechanism entitled the Supply Adjustment Mechanism (SAM). SAM compensated California gas utilities for any change in revenues due to sales fluctuations. Consequently, the utility received revenues for lost sales that arose because of unexpected weather, customer conservation response to the new rate design, and energy efficiency programs. Any differences between a utility's CPUC-authorized revenues and its actual sales-based revenues were tracked in a balancing account. Under and over-collections of revenues in the SAM balancing account were recovered or refunded semi-annually through changes in rates. This new approach took sales fluctuations off the table, but still required utilities to effectively manage their operations, in order to keep costs under control to achieve their respective authorized rates of return.

While the inverted rate structure was also adopted for electric utilities in the 1970s, revenue decoupling was not extended to electric utilities until the early 1980s in their General Rate Cases. By 1982 the CPUC had adopted a decoupling mechanism, entitled the Electric Revenue Adjustment Mechanism (ERAM), for all California investor-owned electric utilities. With revenue decoupling, the differences in sales forecasts, which had become contentious, were rendered mute. As with SAM, ERAM compensated the California electric utilities for any change in revenues due to a change in sales. Consequently, the utility received revenues for lost sales that arose because of unexpected weather and economic patterns and energy efficiency programs. The purpose of ERAM was to ensure that each of the California electric utilities would be entitled to collect an amount of money which would enable them to recover their fixed costs, notwithstanding any effects of energy efficiency programs on sales and associated revenues. The CPUC-authorized revenues were adjusted annually to reflect any changes to the utility's capital expenditures, costs of capital and interest rates, and changes in operational costs. Any differences between a utility's CPUC-authorized revenues and its actual sales-based revenues were tracked in the ERAM balancing account. Under and over-collections of revenues were recovered or refunded through changes in rates the following year.

Both the SAM and ERAM enhance the desirability of energy efficiency programs to the California utilities and to the utilities' customers. Not being at risk for sales fluctuations, the utilities had no disincentive to pursue energy efficiency. Utility customers, faced with high marginal rates, had a strong incentive to purchase energy efficient equipment to reduce their energy bills. Aggressive energy efficiency programs in the early 1980s led to the development of leading edge, high-efficiency equipment and appliances. These new products then made it possible for California to adopt the most stringent building and appliance standards in the country.

While decoupling removed disincentives to the pursuit of energy efficiency, establishment of performance-based financial incentives in the early 1990's provided positive incentives for utilities to pursue energy efficiency. The energy savings resulting from energy efficiency programs offered in the pre-1998 era provided approximately $1.5 billion in net resource benefits to California customers (CA IOUs 2006).

Restructuring

Gas industry restructuring began in California in the mid 1980s. First, competition from alternate fuels led to abandonment of the inverted rate for large customers. Tail block rates that did not accurately reflect costs created an incentive for uneconomic fuel-switching and/or bypass and so were changed in 1983.[4] Then major restructuring decisions, 86-12-009 and 86-12-010, allowed large customers to buy their gas directly from producers or marketers and phased out revenue decoupling over a two year period for this large customer group. This rate structure was modified to a declining block rate structure for some large customer groups and fixed charges for other large customer groups, so that tail block rates tended to reflect variable costs. In the early 1990s, the rate structure moved to a straight volumetric rate for the large customer class and in 1994, as part of a Global Settlement, D.94-07-064 adopted a sales incentive mechanism for Southern California Gas Company (SoCalGas) that ran through 1999. Energy efficiency programs for these customers were eliminated, the thinking being that their bills were large, so that they had the incentive to invest in cost-effective energy efficiency without regulator intervention.

At the onset of restructuring in the electric industry in the late 1990's, California dropped its revenue decoupling policy for electric utilities and support for performance incentives for energy efficiency programs. In a 1996 Decision, the CPUC stated "Introduction of competition for generation will render ineffective the CPUC's past approach of supporting Demand Side Management by using ERAM to counter the utility's economic incentive to increase sales." (CPUC, 1996) In addition, ERAM conflicted with the proposed freeze on customer rates which was part of the restructuring legislation. The CPUC moved funding of energy efficiency to a Public Goods Charge paid for by all electric customers regardless of who was providing retail service. Energy efficiency program administration was proposed to move from the utilities to third parties.

Consistent with the move to reliance on competition in markets for energy, the CPUC shifted its focus on energy efficiency from maximizing resource benefits from the energy efficiency programs to reliance on the market to provide an optimal amount of energy efficiency services, with energy efficiency programs designed to reduce market barriers for energy efficiency products and services. Prior to restructuring, the resource acquisition focus of energy efficiency was considered an alternative to supply resources in an overall integrated resource planning process. With utilities no longer in the role of integrated resource planning, the role of public support for energy efficiency in California changed. In D.97-02-014, the CPUC indicated that "our focus for energy efficiency programs has changed from trying to influence utility decision makers, as monopoly providers of generation services, to trying to transform the market so that individual customers and suppliers in the future, competitive generation market will be making rational energy choices." This change of emphasis lasted until the California Energy Crisis and the inadequate amount of generation required an emergency focus on energy efficiency as an alternative to generation (which could not be built fast enough to bring supply and demand into balance).

In 1997, in D.97-07-054, the CPUC adopted a revenue-per-customer indexing mechanism for SoCalGas, providing an automatic adjustment to revenues to account for new or departing customers in addition to adjustments for inflation and productivity. The CPUC maintained the existing revenue decoupling mechanism for the small customer group and kept in

[4]The first such rate was adopted for SoCalGas in D.83-02-081.

place the existing sales incentive mechanism for the large customer group. The revenue-per-customer indexing mechanism provided performance incentives for providing quality service to customers in a potential future environment with retail competition. Revenue decoupling removed incentives for increasing sales to the small customers and was supportive of energy efficiency spending. The SoCalGas revenue-per-customer mechanism ran from 1997 through 2003 and demonstrated that revenue decoupling is compatible with performance-based regulation. However, due to the California Energy Crisis, significant retail competition never materialized to test how well revenue decoupling would work in a competitive environment.

California Decoupling Mechanisms Today

In 2001, in the midst of the California Energy Crisis, California legislature enacted Assembly Bill 29x which required the CPUC to again remove the link between utility revenues and sales for electric IOUs. (CA PU Code) Specifically, the legislature stated that the CPUC should "ensure that errors in estimates of demand elasticity or sales do not result in material over or undercollections of the electrical corporations." (CA PU Code) The Commission adopted decoupling mechanisms for each California electric utility as part of the subsequent rate cases. The revenue balancing mechanisms adopted for the California utilities again apply between rate cases and remove the energy efficiency disincentive by allowing for rate adjustments based upon actual electricity sales, rather than test-year forecast sales. In concert with these new decoupling mechanisms and the enacting of the California Energy Action Plan which puts energy efficiency at the forefront of resource procurement, the California IOUs have returned to large-scale energy efficiency investments.

With the electric utilities returning to a central role in resource planning, energy efficiency has returned to its place as an alternative to supply-side resources. California IOUs consider energy efficiency investments before acquiring additional generation through long-term solicitations. The CPUC is also revisiting its policy for a shareholder performance incentive for energy efficiency.

Southern California Edison

In 2002 SCE proposed and the CPUC adopted a revenue indexing mechanism for Southern California Edison as part of the Decision on SCE's performance-based ratemaking mechanism. In this Decision, the amount of annual revenue that the utility may earn is established and periodically adjusted to reflect inflation, increases in productivity, and increases in the number of customers the utility serves. This mechanism is a distribution-only revenue decoupling mechanism, since beginning in 1998, the Federal Energy Regulatory Commission assumed jurisdiction over that portion of SCE's transmission system which became subject to the California Independent System Operator (ISO). The mechanism provided for an annual escalation of the revenue requirement by inflation minus a productivity offset (CPI-X), while adding a factor to account for customer growth. In addition, the mechanism includes a "Z-factor" intended to adjust revenue requirements to reflect events outside of SCE's control which would have a major impact on costs. Differences between the authorized annual revenue requirement and the recorded revenues are tracked in a revenue balancing account that assures recovery of SCE's authorized annual distribution revenue requirement until the 2003 general rate case became effective. The establishment of this ERAM-like revenue balancing account

complied with the Public Utilities Code 739.10, created by Assembly Bill 29x, ensuring that estimates of electricity sales did not result in any material over-or under-collections.

In SCE's 2003 general rate case, SCE returned to traditional cost-of-service ratemaking. In its 2003 rate case SCE proposed and the CPUC adopted an extension to its decoupling mechanism. The extension applied to generation, transmission, and distribution costs and continued to allow for annual adjustments to revenue requirements to ensure that the revenue requirements are met. Once again, SCE requested the continuation of a revenue balancing account which assured recovery of SCE's authorized annual revenue requirement, with a Post Test Year Ratemaking mechanism intended to provide additional revenues to cover costs of doing business in the interim years of 2004 and 2005, after the 2003 test year and prior to the 2006 General Rate Case (GRC). Again, under such a mechanism, rates would be designed to recover the authorized revenue requirement with any variation in recorded revenues (either higher or lower) tracked in a balancing account for subsequent recovery from, or refund to, customers. Under this approach, any additional revenues which result from customer growth or increased usage per customer are returned to customers as a rate decrease, rather than being available to offset SCE's cost increases. Consequently, it is necessary to provide for an increase in annual revenue requirement to recover cost increases caused by customer growth, the need to replace aging infrastructure facilities and the impact of price inflation on operating expenses. The 2003 GRC mechanism continued to include a "Z-factor" to adjust for major issues outside of SCE's control.

Under the adopted mechanism, the revenue balancing account compares the Authorized Base Revenue Requirement on a monthly basis to the applicable retail revenues from distribution and generation rates. The balancing account includes distribution and generation sub-accounts to track undercollections and overcollections by function. On an annual basis, the revenue balancing account balance is consolidated into rate levels. Distribution account over or undercollections are consolidated into distribution rate levels. Generation over or undercollections are consolidated into generation rate levels.

SCE has continued to promote such a mechanism in its 2006 GRC. In the Draft Decision on SCE's 2006 GRC the Commission adopted this expanded decoupling mechanism, and would continue to ensure that the utility is indifferent to the level of retail sales.

Southern California Gas

The revenue-per-customer indexing mechanism, adopted in 1997, maintained the revenue decoupling mechanism for small customers. By 2003, the revenue decoupling was extended to all customer classes. The mechanism compensated the company for the costs of serving more customers with a set margin per customer, regardless of change in the total amount of gas that the company sold. This mechanism provided incentives for the utility to increase the quality and efficiency of its service delivery to customers, and provides no disincentive for pursuing energy efficiency.

SoCalGas filed Application 02-12-027 in December 2002 to extend this mechanism for five years beginning in 2004. However, a settlement was reached and approved by the CPUC for a four-year mechanism based on adjusting the revenue requirement for the Consumer Price Index with specified minimum and maximum increases each year. The utility is at risk for managing its operations within the specified authorized revenue requirement. The settlement also retains

revenue decoupling.[5] SoCalGas still has the inverted rate structure and a minimal customer charge, so the same conditions that existed in the 1970s that prompted revenue decoupling are still present three decades later. In addition, today large customers no longer have the option of fuel switching to oil due to air quality constraints, so having adequate infrastructure is important. Revenue decoupling for large customers eliminates incentives to increase sales and instead supports the CPUC efforts to reduce gas use among electric generators through more efficient cogeneration, replacement of aging gas-fired generation facilities, and expansion of renewable generation. These efforts are designed to improve reliability and reduce environmental effects including greenhouse gas emissions, but will also reduce the stress on existing gas transmission infrastructure in extreme weather and hydro conditions.

Pacific Gas & Electric

In September 2003, PG&E reached a settlement agreement with parties in its general rate case, which included a new revenue decoupling mechanism to remove the disincentive to invest in energy efficiency (PG&E et al. 2003). The settlement agreement states that "the Distribution Revenue Adjustment Mechanism (DRAM) and Utility Generation Balancing Account (UGBA) balancing accounts will be implemented as revenue adjustment mechanisms effective January 1, 2004 to ensure that PG&E recovers its authorized electric distribution and electric generation revenue requirements regardless of the level of sales." (PG&E et al. 2003, Attachment A, 17) PG&E proposed that rates be trued-up annually through an Electric Annual True-up Proceeding.

In order to implement its bankruptcy settlement, PG&E filed an advice letter that includes the decoupling mechanisms agreed upon in the GRC (PG&E 2003). The Commission approved PG&E's decoupling mechanisms effective January 1, 2004, noting that "the revenue adjustment mechanisms comply with PU Code Section 739.10 by ensuring that errors in estimates of sales do not result in material over or undercollections." (CPUC 2004).

San Diego Gas & Electric

In December 2002, SDG&E filed Application 02-12-028 to implement a revenue-per-customer mechanism with revenue decoupling for natural gas and electric distribution, in order to provide "assurance that there is no disincentive for SDG&E to aggressively promote energy efficiency and environmental responsibility in the use of electricity and gas."(SDG&E 2002) The mechanism paralleled the SoCalGas mechanism in both term and general characteristics.

As with SoCalGas, a settlement was reached and approved by the CPUC for a four-year mechanism based on adjusting the revenue requirement for the Consumer Price Index with minimum and maximum increases each year, beginning in 2004. SDG&E established an Electric Distribution Fixed Cost Account, which operates as a balancing account to true-up the Company's authorized and actual revenues each year, identical to the ERAM, to comply with AB29x. On the gas side, core and noncore balancing accounts were established, similar to SAM.[6] Conditions today are similar to the early 1980s when the SAM and ERAM were first adopted for SDG&E. SDG&E has an inverted rate structure for residential customers on the gas

[5]The details of the core and noncore fixed cost accounts, the balancing accounts related to revenue decoupling, are available at www.socalgas.com.

[6]Details of the mechanical operation of the revenue decoupling balancing accounts (EDFCA, CFCA, and NFCA) are available at www.sdge.com in the tariff section.

side and an even more inverted rate design on the electric side. As a result of AB1X passed during the California Energy Crisis, residential rates for consumption less than 130 percent of baseline consumption are frozen. The residential rate structure has three added tiers above 130 percent of baseline with rates in these tiers progressively higher. While the inverted rate structure provides a strong conservation message to large residential users, it also creates substantial volatility in revenues that are smoothed out by revenue decoupling implemented through the balancing accounts. And as in the early 1980s, SDG&E is aggressively pursuing energy efficiency to meet CPUC goals. So while the regulatory structure is different than traditional rate-of-return ratemaking, revenue decoupling makes sense for similar reasons. And while SDG&E no longer faces the risks related to sales fluctuations, it still faces the substantial risk of managing its operations within the authorized revenue requirement given the potential for utility costs to rise at a rate different than the Consumer Price Index.

Conclusion

Revenue decoupling is an excellent mechanism for energy utilities where energy efficiency goals are driving down sales per customer through energy efficiency programs, building and appliance standards, and rates designed to encourage conservation and energy efficiency (i.e., where the marginal variable price far exceeds the marginal variable cost) and where utilities have a central role in long-term resource acquisition. It is simple to implement and avoids the difficulties in forecasting sales in other methods of accounting for energy efficiency impacts.

When compared to the other alternate approaches to breaking the link between utility revenues and the promotion of energy efficiency, decoupling tends to provide a more comprehensive approach to aligning the utility needs with the benefits derived from energy efficiency programs. It maintains the promotion of customer-driven conservation, not provided in a ratemaking scheme geared towards fixed-charges, continues to support the non-utility energy efficiency activities not provided through a LRAM mechanism, and allows the utilities to maintain a focus on energy efficiency programs which result in real reductions in energy savings.

The use of decoupling mechanisms in California has assisted the state in addressing the key policy issue of the loss of sales that results from the highly-successful energy efficiency programs in the state. The development and implementation of regulatory mechanisms for all of the IOUs in California has contributed to resurgence in the use of energy efficiency as a primary energy resource. Such mechanisms can be used as a resource for other states in their discussions and development of an appropriate means to also deal with the implications of energy usage reductions attributed to the use of energy efficiency programs as a resource.

References

California Investor-Owned Utilities (CA IOUs). 2006. *Joint Filing Of Pacific Gas & Electric Company, San Diego Gas & Electric Company, Southern California Edison Company, And Southern California Gas Company In Compliance With Decision 05-10-041*. Rulemaking 01-08-028, January 11, 2006.

California Public Utilities Code (CA PU Code). *SEC. 9. Section 739 (3) and SEC. 10. Section 739.10 as amended by Assembly Bill X1 29 (Kehoe)* [signed by Governor Davis on April 11, 2001].

California Public Utilities Commission (CPUC). 1996. *Decision No. 96-12-077*.

California Public Utilities Commission. 2006. *Opinion On Southern California Edison Company's Test Year 2006 General Rate Increase Request*.

Carter, Sheryl. 2001. "Breaking The Consumption Habit - Ratemaking for Efficient Resource Decisions." *The Electricity Journal*.

Carter, Sheryl and Bachrach, Devra. 2003. "Do Electric-Resource Portfolio Managers Have an Inherent Conflict-of-Interest with Energy Efficiency?" Natural Resources Defense Council.

McCarthy, Kevin E. 2005. "Decoupling Utility Sales And Earnings*", OLR Research Report*.

Moskovitz, David, Harrington, Cheryl, and Austin, Tom. 1992. *Decoupling vs. Lost Revenues Regulatory Considerations.* Regulatory Assistance Project.

Moskovitz, David, Harrington, Cheryl, Austin, Tom, Weinberg, Carl, and Holt, Edward. 1994. *Regulatory Reform: Removing The Disincentives.* Regulatory Assistance Project.

San Diego Gas and Electric (SDG&E). 2002. *Testimony of Debra Reed in A.02-12-028*

Southern California Edison. *2003 General Rate Case, SCE-10.*

U.S. Environmental Protection Agency. *EPA Clean Energy-Environment Guide to Action (Prepublication Version) - 6.2 Utility Incentives for Demand-Side Resources.*