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Ratepayer-Funded Energy-Efficiency Programs in a Restructured Electricity Industry: Issues and Options for Regulators and Legislators

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Environmental Energy Technologies Division

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Joseph Eto and Charles Goldman

Environmental Energy Technologies Division
Ernest Orlando Lawrence Berkeley National Laboratory
University of California
Berkeley, California 94720

Steven Nadel

American Council for an Energy-Efficient Economy
Washington, D.C. 20036

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Acronyms and Abbreviations

ACEEE	American Council for an Energy-Efficient Economy
CPUC	California Public Utilities Commission
DISCO	Distribution company
DOE	U.S. Department of Energy
DSM	Demand-side management
EIA	Energy Information Administration
ESCO	Energy service company
IOU	Investor-owned utility
NYSERDA	New York State Energy Research and Development Agency
NEEA	Northwest Energy Efficiency Alliance
NWPPC	Northwest Power Planning Council
PUC	Public Utility Commission
RESCO	Retail energy service company
T&D	Transmission & distribution

Abstract

Electric industry restructuring requires state regulators and legislators to re-examine the purposes served by and the continuing need for ratepayer-funded energy-efficiency programs, as well as the mechanisms to collect funds for these programs and the institutions appropriate to administer them. This paper offers background to these issues and a series of recommendations based on analysis of recent state experiences. Our recommendations are summarized in Table A-1.

Table A-1. Summary of Ratepayer-Funded Energy-Efficiency Program Recommendations

Question for Program Design	Recommendations
Rationale for Ratepayer Funding	Capture cost-effective energy-efficiency opportunities that will be missed by the competitive market Facilitate transition to more competitive markets Ensure benefits of restructuring are shared broadly among all customers
Creation of a Public-Benefit Charge	Ensure competitively neutral mechanism for collecting funds
• Funding level	Establish funding based on bottom-up analysis of cost-effective energy-efficiency opportunities remaining after restructuring and an assessment of likely private-sector activities in the absence of ratepayer funding; at a minimum, continue funding at historic levels.
• Duration	Decouple sunset date from recovery of competition transition charges; establish a five-year review period over which to assess accomplishments and determine continuing need for programs.
• Rate design	Collect funds through a nonbypassable, volumetric charge .
Objectives of Energy-Efficiency Policy	Ensure that benefits to society exceed cost Target activities to areas not adequately addressed by private sector Design programs to effect lasting beneficial changes in the market
Administration and Governance of Programs	Systematically assess desirability of utilities, state agencies, and independent institutions to manage public-benefits funds based on: (1) institutions' past performance, current ability, and level of interest; (2) geographic scope needed to implement policies; (3) duration of funding; (4) utility conflicts of interest and ability to manage these conflicts; (5) flexibility of state procurement and hiring procedures; and (6) degree of political support for creation of new, nonutility institutions.

1 Introduction

Electric industry restructuring requires state regulators and legislators to re-examine the purposes served by and the continuing need for ratepayer-funded energy-efficiency programs, as well as the mechanisms to collect funds and institutions appropriate to administer them. This paper provides background for a discussion of these issues and offers a series of recommendations based on analysis of recent state experiences.

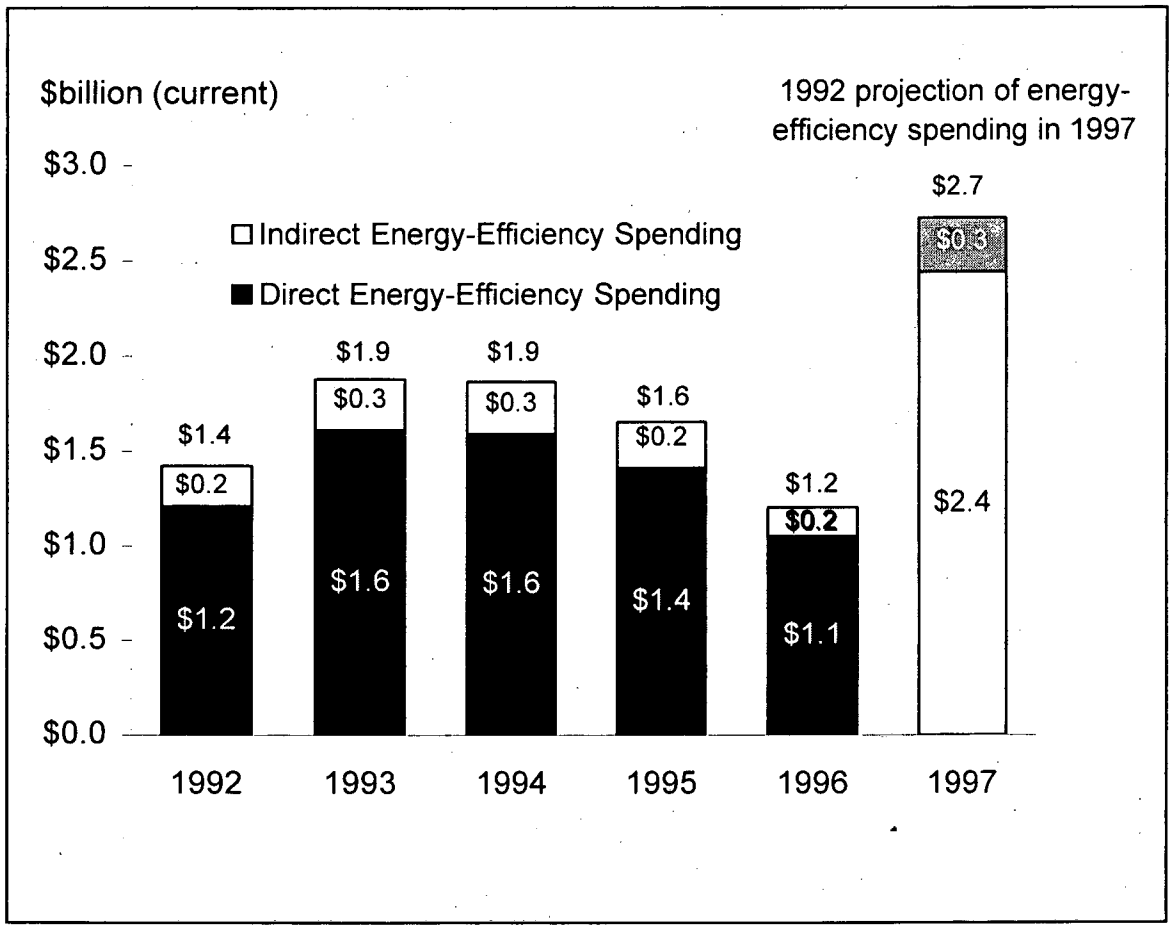
State regulation of investor-owned utilities has always had to strike a balance between the profit motives and public obligations of the regulated firms. In return for their monopoly franchise, utilities have been obligated to provide service at least cost and in a nondiscriminatory fashion. For regulated electric and gas utilities, programs to advance social and public interests have been important elements of utilities' public obligations. These "public-purpose" programs have included low-income assistance, demand-side management (DSM) energy-efficiency, renewable energy development, and research and development. The underlying legislative and regulatory policies that support public-purpose programs reflect both a recognition that these programs provide important benefits to society and that it is government's responsibility to ensure these benefits. Reliance on utilities as instruments of these policies reflects a perception that the programs' benefits would not result from the "natural" operation of the market. Not surprisingly, the degree and form of utility ratepayer support for public-purpose programs vary by state, reflecting the different ways in which states have struck the balance between utility profit-making opportunities and public obligations.

Electric and gas industry restructuring threatens this balance, replacing the long-standing relationship between a single monopoly provider and a protected franchise of customers with a new (and untested) set of relationships among retail electricity suppliers and customers who are now free to choose suppliers. If descendants of the former utility monopoly are the only firms required to continue offering public-purpose programs, these firms will be at a competitive disadvantage compared to new suppliers that are not obligated to offer these programs. Continued provision of public-purpose programs by current providers might also confer competitive advantages if these incumbent providers use the programs to exercise excessive market power. Thus, an examination of the traditional ways of providing public-purpose programs is appropriate in the context of industry restructuring. Recent, dramatic declines in utility spending on public-purpose programs as part of overall cost-cutting efforts attest to the reality that utilities have already taken aggressive steps in preparation for competition.

Declines in utility spending on energy-efficiency programs are especially notable. In 1992, before restructuring, utilities spent about $1.4 billion on energy-efficiency programs and projected that energy-efficiency spending would more than double to $2.7 billion by 1997

(EIA 1994).[1] In 1996, with only a handful of states having passed restructuring legislation, actual utility spending had declined to about $1.2 billion (see Figure 1). The latest projections show continued declines for the remainder of the decade.

Figure 1. Utility Spending on DSM Energy-Efficiency Programs by Year (1992 to 1997)



Note: Indirect spending refers to administrative costs, such as measurement and evaluation.
Sources: EIA 1994, 1995a, 1995b, 1997a, 1997b.

Although these spending declines have not been central to the public debate over restructuring—which has tended to focus on issues such as stranded asset recovery that involve substantially greater sums of money—they have not gone unnoticed. The Clinton administration's Comprehensive Electricity Competition Plan calls for the creation of a Public Benefits Fund of up to $3 billion to provide matching funds to states for public-purpose programs formerly funded by electricity customers as part of utility rates (DOE 1998). Energy-efficiency programs are one of the four public-purpose programs that would

[1] Utilities spent about $2.2 billion on all types of DSM programs in 1992. At that time, they predicted spending a total of $3.8 billion on all DSM by 1997.

be eligible for matching funds. (See box for descriptions of the other three eligible public-purpose programs.) The goal of the administration's plan is to "encourage and support states to ensure that the current level of funding for these programs, estimated at $6 billion in 1996, is preserved." This stance is in keeping with the federal government's long history of enacting laws that support utility ratepayer-funded public-purpose programs, starting with the National Energy Act of 1978, and reaffirmed in subsequent acts, most recently the Energy Policy Act of 1992.

Public-Purpose Programs in Addition to Energy Efficiency

In addition to energy-efficiency programs, public-purpose programs traditionally supported by utility ratepayers include: providing services for low-income households, promoting use of renewable energy resources, and supporting research to improve environmental quality and develop clean and efficient technologies.

Low-Income Assistance: Electric and gas utilities have traditionally provided a range of programs and services for low-income households, including weatherization programs, bill payment assistance, rate or bill discounts, special payment arrangements, consumer education and budget counseling, universal service, moratoria on service disconnections during the heating season, and arrearage forgiveness. In 1995, electric utilities spent more than $335 million for these services (Baxter 1997). As of February 1998, nearly all states that had enacted restructuring legislation or regulations had included specific provisions to continue funding for low-income services either through a public-benefits charge or through charges incorporated in existing rates of the distribution utility.

Renewable Energy: Electric utilities have historically supported demonstration and commercialization of clean, efficient, and flexible technologies, with renewables as a central element. Activities have included funding accelerated commercialization of renewable technologies; encouraging customers to purchase on-site, small-scale renewable energy systems through support of net metering; and entering into long-term power purchase contracts with renewable energy generators. States such as Arizona, Maine, Massachusetts, Nevada, and Vermont have included minimum purchase requirements for various renewable resources (e.g., renewable portfolio standards) in their restructuring legislation and regulatory decisions. California, Montana, and Vermont have allocated funds from their public-benefits charges to various renewable energy programs (Scheer, Brinch, and Eto 1998).

Public-Interest Energy R&D: R&D spending by investor-owned utilities declined by 33% from 1993 to 1996: from $708 million to $476 million. This trend reflects utility cutbacks in preparation for competition and increased emphasis on less risky and shorter-term projects; further spending reductions are likely in the future (GAO 1996). Electric utility R&D has traditionally encompassed a wide range of activities: demonstrations of new high-efficiency equipment, support of emerging renewable energy technologies, efforts to improve the efficiency of conventional power plants, research on health effects of transmission lines, and improvements in the reliability of the transmission and distribution system. Public-interest R&D can be defined as the subset of historic utility R&D whose benefits are widely distributed and difficult to capture in the near term by individual private or regulated companies. These benefits address health, safety, environment, and energy-efficiency issues as well as "precommercial" technical information (Blumstein and Wiel 1997). A number of states, including California, New York, Massachusetts, and Rhode Island have made specific provisions (by law or commission ruling) for funding public-interest R&D after restructuring (Scheer, Brinch, and Eto 1998).

This paper provides information to state regulators and legislators who are considering options for future ratepayer-funded energy-efficiency programs. Many of the issues we review have relevance for other public-purpose programs in both the electricity and gas industries, such as low-income assistance, renewable energy development, and research and development. However, we focus primarily on energy-efficiency public-purpose programs and the special issues that they face as a result of electric industry restructuring.

Foremost among the issues unique to energy-efficiency programs is the question of whether, in the context of restructuring, there remains a continuing need for ratepayers to fund these programs. Some would argue that, given the dramatic economic efficiencies promised by the creation of competitive markets for electricity and natural gas and given the past success of these programs in capturing the "low-hanging" fruit, there is no longer a justification for continued ratepayer funding for energy-efficiency programs. In Chapter 2, we argue that a compelling rationale for ratepayer funding for energy-efficiency programs emerges from a review of: (1) the strategic role that energy-efficiency programs can play in facilitating a transition to a more competitive industry, and (2) the continuing relevance of many, but not all, of the traditional rationales for these programs.

Where there has been agreement that energy-efficiency programs should continue after restructuring, a public-benefit or "wires" charge has emerged as an important option for state legislators and regulators who want to maintain ratepayer funding for these and other public-purpose programs. In Chapter 3, we explore the reasons why this approach is a fair way to collect funds for public-purpose programs in a restructured industry. We then discuss some of the design issues associated with public-benefit charges, including: the scope of the charges, the levels and duration of funding, and the design of rates. (Many of these considerations also apply to all public-purpose programs, not just those targeting energy efficiency). We also discuss approaches to ensure that policies adopted for the elements of the electric industry that remain regulated do not work at cross-purposes with ratepayer-funded energy-efficiency programs.

Although we believe there remain compelling reasons to continue ratepayer funding for energy-efficiency programs, we do not advocate continuation of DSM programs and approaches of the past. Utility DSM program portfolios have always reflected a balance between different energy-efficiency policy objectives, such as cost effectiveness and equity. Restructuring requires that this balance be re-examined to ensure that it is consistent with and, indeed, is supportive of the emergence of retail competition in the electric and gas industry. Chapter 4 reviews energy-efficiency policy objectives, paying special attention to recent interest in transforming markets as a new objective for ratepayer-funded energy-efficiency programs. These programs hold the promise of making lasting, beneficial changes in markets.

One of the most complicated issues associated with continuing ratepayer funding for energy-efficiency programs in a restructured electricity industry is evaluating the pros and cons of

various administrative and governance options. During the past decade, many state PUCs developed policies that gave utilities a central role in pursuing energy-efficiency objectives through DSM programs. Utilities were given responsibility for a variety of activities, including general administration, program design, implementation, program evaluation, and cost recovery. In a restructured industry, the past performance of these former program administrators and the changing incentives that they now face require regulators and legislators to carefully consider options for administration and governance in the future. Two major alternatives to utility administration have been proposed: vesting authority to administer programs in existing or newly created governmental agencies, or creating nonprofit corporations or authorities with boards of directors. Clearly, there is no one right answer for all situations. Chapter 5 reviews emerging state approaches, summarizes the three main options, and offers a structured decision tree for evaluating the issues and circumstances that must be considered.

Finally, in Chapter 6, we review our findings and summarize our recommendations.

2 The Rationale for Ratepayer-Funded Energy-Efficiency Programs in a Restructured Electricity Industry

In this chapter, we review the rationales for ratepayer funding for energy-efficiency programs in a restructured electricity industry, focusing on: (1) the strategic role energy-efficiency programs can play in facilitating the transition to a more competitive industry, and (2) the continuing relevance of the traditional arguments for ratepayer-funded energy-efficiency programs.

2.1 Facilitating the Transition to More Competitive Markets

A fundamental reason for restructuring the utility industry is that markets, not government regulators and utility monopolies, should be responsible for making future energy production and consumption decisions. Empowering the market participants (i.e., customers and other market actors) with the greatest interest in the outcomes to make these decisions is intended to effectively and equitably align the costs and benefits associated with energy-related transactions.

After nearly a century of regulated franchises and prices, it is unlikely that restructuring will lead to greater economic efficiencies and increased social welfare unless a transition strategy is carefully designed. For example, it is not a given that restructuring will automatically prevent abuses of market power or adequately protect consumer's rights and interests. Ratepayer-funding for energy-efficiency programs can play a critical role in a coordinated transition strategy to a competitive, restructured utility industry. As we will describe in detail later in this chapter, important market barriers to energy efficiency, which currently hinder markets for energy-efficient products and services from functioning efficiently, create strategic opportunities for using ratepayer funding to enhance the competitiveness of energy markets. It is naive to believe that these long-standing barriers will disappear overnight simply by the fact of the arrival of restructuring or that ratepayer funding cannot be used cost effectively to accelerate the transition to a more competitive market.[2]

Energy-efficiency programs can help ensure that all customers have the opportunity to share in the benefits promised by restructuring. The expected benefits of restructuring—prices that are closer to competitive costs—will not flow automatically or rapidly to all customers, despite well-funded and well-intentioned consumer education efforts. Larger customers are likely to have more opportunities than smaller customers. Savvy marketers will try to profit from consumer confusion and lack of information. Ratepayer-funded energy-efficiency

[2] In Chapter 4, we discuss transforming markets toward this end as a promising new policy objective for energy-efficiency programs.

programs can provide immediate bill reductions for smaller commercial and residential customers, who are unlikely to be the immediate recipients of the benefits of restructuring.

Emerging Evidence that Energy-Efficiency Programs May Offer Important New Benefits in Restructured Markets

Lower Power Pool Prices for All Customers. In a restructured electricity industry, energy-efficiency programs can lower power pool prices to all customers. In the future, generators will be dispatched in order of increasing bids. The pool price paid to all generators will be set by the bid of the last, most expensive generator dispatched. When energy-efficiency programs lower the load to be served, they may displace the need for generation from this last bidder. Thus, prices will be set by the next highest bidder so the price paid to all generators will be lowered. This phenomenon has been documented in several simulation-based studies of a restructured electricity industry (Centollela and Parmelee 1997; Marnay et al. 1998). The value of reduced prices to customers has not been studied conclusively but could be many times larger than the cost of the energy-efficiency programs.

Reduce Supplier Market Power. Energy-efficiency programs also offer the potential to reduce supplier market power. A recent study of the determinants of market power in a restructured electricity industry finds that market power can be reduced by either increasing the number of suppliers (emphasized by traditional approaches to mitigating market power) or by increasing the elasticity of demand, particularly during periods of peak demand (Borenstein and Bushnell 1997). Both energy-efficiency and load management programs can increase the elasticity of demand during periods of peak demand. Theoretical work is still in progress regarding the relative importance of short- versus long-term efforts to increase the elasticity of demand. Energy-efficiency programs can increase both elasticities.

2.2 The Remaining Potential for Cost-Effective Energy-Efficiency Investments Is Large

Recent dramatic declines in utility spending on energy-efficiency programs are well documented (see Figure 1 in Chapter 1). The trade press unambiguously associates these declines with utility efforts to cut costs in preparation for a more competitive industry. However, an alternative explanation is simply that the programs have been tremendously successful in the past, so the opportunities for further cost-effective investments are few because all the "easy" energy-efficiency improvements have been achieved. Analysts also point to recent declines in avoided costs, which mean that less energy efficiency is cost-effective than in the past. In both cases, the basic issue is an empirical one: are there still significant opportunities for cost-effective investments in energy-efficiency products and services?

In 1997, five of the U.S. Department of Energy (DOE) national laboratories collaborated on a comprehensive assessment of options for reducing carbon emissions by 2010 (IWGELT 1997). The findings from this study show that recent reductions in utility spending on

energy-efficiency programs do not reflect an absence of cost-effective energy-efficiency investment opportunities but instead reflect changing interest on the part of utilities in anticipation of restructuring.

Table 1. Cost-Effective Energy Savings Potentials for Selected End Uses in the Residential and Commercial Buildings Sector[3]

End Use	Energy Savings Potential
Residential	
Fuel Switching (Clothes Drying)	59%
Lighting	53%
Miscellaneous Electric End Uses	33%
Fuel Switching (Cooking)	33%
Refrigeration	33%
Fuel Switching (Water Heating)	29%
Electric Water Heating	28%
Freezers	28%
Electric Space Heating	25%
Gas and Oil Water Heating	23%
Electric Space Cooling	16%
Gas and Oil Cooking	15%
Gas Space Heating	11%
Miscellaneous Gas and Oil Uses	10%
Commercial	
Space Heating (Electric, Gas and Oil)	48%
Space Cooling (Electric and Gas)	48%
Ventilation	48%
Miscellaneous Electric End Uses	33%
Refrigeration	31%
Lighting	25%
Electric Water Heating	20%
Gas and Oil Water Heating	10%
Miscellaneous Gas and Oil End Uses	10%

Source: IWGELT (1997).

A central element of the analysis was an updated, comprehensive assessment of the potential for additional cost-effective energy-efficiency opportunities throughout the economy. Table 1 reproduces the study's findings for the residential and commercial building sectors. The table reports the amount of energy that could be saved cost effectively (i.e., at a price lower

[3] Energy-savings potentials are calculated as the percent difference in energy intensity of maximum cost-effective technology and new 1997 technology.

than the current cost of energy) for 23 residential and commercial building end uses by using the most energy-efficient technologies currently available rather than new equipment of average efficiency. The estimates in the table suggest that from 10 to well over 50 percent of energy consumed by new equipment being installed today could be saved cost-effectively by stimulating the purchase of more energy-efficient equipment. The study also found a large potential for cost-effective savings in the industrial sector (not shown in this table due to differences in the methods used to estimate savings, see IWGELT 1997).

The study uses this information to develop scenarios of future energy use based on capturing some portion of this energy-efficiency potential. The baseline or business-as-usual case for the scenarios is the official government forecast of U.S. energy use: the Energy Information Administration (EIA) *Annual Energy Outlook*, which accounts for natural turnover of equipment, normal diffusion of improved technologies, demographic shifts, etc. In the high-efficiency/low-carbon scenario, which is developed by assuming that only two-thirds of the cost-effective technical potential for energy-efficiency is captured, electricity use is lowered by 16 percent compared to the baseline case; net cost savings to the nation total $20 billion per year (without accounting for the value of any environmental benefits, such as those associated with reducing carbon emissions by more than ten percent).

In other words, the study finds that the U.S. economy would be $20 to $30 billion richer annually if we invested in energy-efficiency measures that more than pay for themselves at current and projected future energy prices. Moreover, these investments would offset substantial atmospheric carbon emissions, reducing our contribution to global warming.

2.3 Energy-Efficiency Programs to Capture Energy-Efficiency Opportunities Have Been Cost-Effective

Proponents of the need for public policies to promote energy efficiency point to a variety of market barriers that keep private investments from producing socially desirable levels of investment in energy efficiency (Blumstein et al. 1980; Carlsmith et al. 1990; Levine et al. 1994). See following box. As a result of these barriers, a large, untapped potential for cost-effective energy-efficiency investments exists. Supporters of public policies argue that energy-efficiency programs are an appropriate government strategy to capture economic efficiencies that the market cannot secure unassisted.

Market Barriers to Energy Efficiency

Market barriers to energy efficiency are characteristics of the market for an energy-related product, service, or practice that help to explain the gap between the actual level of investment in or practice of energy efficiency and an increased level that would appear to be cost beneficial to the consumer or firm.

High Information or search costs. The costs of identifying energy-efficient products or services or of learning about energy-efficient practices. These can include the value of time spent finding out about or locating an energy-efficient product or service or hiring someone else to do it on the consumer's behalf.

Performance uncertainties. The difficulties consumers face in evaluating claims about future benefits, which are made for many energy-efficiency investments and activities. Upstream market participants also face these costs in forecasting the market response to decisions they make to manufacturer, promote, stock, or offer energy-efficient products.

Hassle or transaction costs. The indirect costs of acquiring energy efficiency including the time, materials, and labor involved in obtaining or contracting for an energy-efficient product or service.

Access to financing. The difficulties associated with the lending industry's historic inability to account for the unique features of loans for energy savings projects (i.e., that future reductions in utility bills increase the borrower's ability repay a loan) as distinct from the other factors affecting the evaluation of a borrower's credit-worthiness.

Bounded rationality, organizational practices, or custom. Rules of thumb that serve to limit the focus or scope of considerations for a given decision. It can also include organizational behavior or systems of practice that discourage or inhibit cost-effective energy-efficiency decisions

Misplaced or split incentives. Institutional relationships which mean that the incentives of an agent charged with purchasing energy efficiency are not aligned with those of the persons who would benefit from the purchase. The classic example arises in rental property where the landlord has no incentive to install energy saving retrofits in buildings where she does not pay the utility bills. In this case, the tenant, having no financial interest in the building structure or fixtures, is not in a position to authorize retrofits that would benefit her directly in the form of reduced utility bills. Also arises in new construction.

Product or service unavailability. Unavailability and high prices may be the result of collusive or anticompetitive practices to hold some products (or producers) off the market in favor of others that offer higher profit or other advantages (e.g. market share). Distributors may face high search and acquisition costs in order to accurately anticipate demand or they may react in a boundedly rational way to expectations for future demand caused, for example, by the newness of a product. As a result, they may limit shelf space for or not stock energy-efficient products.

Externalities. Costs that are associated with transactions, but which are not reflected in the price paid in the transaction. For example, environmental costs associated with electricity generation by fossil fuel are not incorporated into prices for electricity or fossil fuel use.

Regulatory mispricing. This barrier arises when regulated utility commodity prices are set using ratemaking practices based on average (rather than marginal) costs.

Opponents of the need for public policies to promote energy efficiency offer several arguments in response. First, they assert that markets by definition reveal the socially desirable level of investment in energy efficiency, so intervention will only make things worse (Taylor 1993). Opposition to energy-efficiency policies is also based on an assessment that these social nonmarket approaches have inherent and unavoidable inefficiencies and inequities. Other opponents of energy-efficiency policies maintain that there are preferable methods, such as tax policy or building standards and codes, for addressing the underlying "problems" that energy-efficiency programs are intended to solve.

All the arguments against energy efficiency except the first one cited above agree that market barriers exist and lead to under-investment in energy efficiency. Opposition opinions differ only regarding what (if anything) can or should be done about these barriers. Public policies to promote energy efficiency must respond continuously to the following challenge: these policies only remain justified to the extent that they can demonstrate net improvements compared both to the status quo and to alternative approaches.

Careful analysis of the total cost and measured performance of utility DSM programs to promote energy efficiency has shown that these programs have successfully met this challenge. A recent, comprehensive study of the 40 largest, commercial-sector DSM programs in the country found that the programs had saved energy at an average cost of $0.032/kWh, with some of the largest programs saving energy at a cost of less than $0.020/kWh (Eto et al. 1995). The programs accounted for nearly two-thirds of total industry spending on DSM energy-efficiency programs in 1992. The study addressed all costs, including the additional out-of-pocket costs borne by program participants, and utility overhead costs, such as those for measurement and verification. All energy savings were based on post-program evaluations rather than preprogram estimates.

2.4 Restructuring, Alone, Is Unlikely to Significantly Reduce Market Barriers to Energy Efficiency

A fundamental argument for restructuring is that decisions made by private-market participants should lead to societal outcomes superior to those achieved by the former system of monopoly providers and regulators. The case for a legitimate government role to ensure social benefits depends on concluding that restructured markets, through their natural operation, are unlikely to lead to these benefits. To address this issue, we use both a theoretical approach (in this section) that emphasizes the economic rationale for energy-efficiency policies and a practical approach (in the next section) that focuses on the vibrancy of the private sector for supplying energy efficiency in the absence of these policies.

How will the market barriers leading to underinvestment in energy efficiency be affected by U.S. electric industry restructuring? Restructuring offers the promise of increased customer choice, and with this choice, market-based prices for electricity. According to economists,

market-based pricing, if not unduly influenced by abuses of market power, should lead to prices closer to the marginal cost of production. Thus, market-based pricing could begin to address an early reason for utility DSM programs, called regulatory mispricing, which was that regulated prices did not accurately reflect the true marginal cost of production, leading to inefficient production and consumption decisions (Eto, Goldman, and Kito 1996).

However, the reality of restructuring is not likely to follow economists' predictions. It will be some time (if ever) before all customers receive hourly meters and can respond to real-time prices. Instead, aggregators may bundle real-time prices (possibly including other nonenergy services) to the point where the price "signal" may be very difficult for a customer to discern. In short, while larger customers are likely to be in a position to receive and respond to market-based prices in a restructured industry, it is likely that smaller customers will continue to see a bundled and possibly even less identifiable price signal for the energy they use (Centollela 1998).

Finally, it seems unlikely that electricity industry restructuring will, by itself, address the many other important market barriers to energy efficiency that plague energy services markets. For example, it is highly doubtful that, in the short-run, market-based pricing will capture the full environmental cost of electricity generation. Moreover, it is highly doubtful that market-based pricing, by itself, will overcome decades of manufacturing, distribution, and consumer purchasing practices that have given rise to the many market barriers identified earlier.

In summary, although electricity industry restructuring promises improved economic efficiency, that promise is by no means a guarantee, particularly in the short run. Significant market barriers to energy efficiency are likely to remain unaddressed for many customer groups. The persistence of these barriers is compelling justification for continued government involvement to ensure consistency between private market decisions and social objectives, provided this intervention improves social welfare.

2.5 Private-Sector Energy-Efficiency Activities Are Growing, But Remain Underdeveloped

A review of actual developments in the markets for energy-efficiency products and services provides another important perspective on the rationale for continuing publicly funded energy-efficiency programs. If the market is working well, government involvement to stimulate the purchase and deployment of energy-efficiency products and services is less important than if the market is functioning inefficiently.

In speaking about "the market" for energy-efficient products and services we must first acknowledge that it is not a single market but a series of overlapping markets involving hundreds of end uses, thousands of intermediaries, and millions of consumers (Golove and

Eto 1996). Product manufacturers, vendors, local contractors, and retailers promote high-efficiency products and services as part of their core businesses, which include equipment manufacturing, installation, and sales. Vendors generally sell products that represent a range of efficiency levels. Some vendors promote energy efficiency as an advantage, targeting market segments thought to be receptive to this message. Architects, engineers, and contractors provide energy-efficiency services on a fee-for-service basis (e.g., energy audits, design services, installation, project management). With the limited, highly qualified exception of energy service companies (ESCOs, to be discussed next), it is evident that this market is not working particularly well, given the substantial untapped, cost-effective, energy-efficiency opportunities that remain in the economy.

The breadth and depth of the market for energy-efficient products and services is often overlooked because discussions of the private-sector energy-efficiency industry often focus narrowly on the growing significance of the ESCO industry. ESCOs offer a comprehensive set of energy-efficiency services using a performance contracting approach (Goldman and Kito 1994).

In fact, ESCOs represent only a tiny portion of the energy-services market. The last published estimate of their annual revenues totals approximately $450 million (Cudahy and Dreessen 1996), which is less than one-fifth of total utility spending on energy-efficiency during that same year. Moreover, we estimate that about least one-third of this revenue is accounted for by ESCO participation in utility DSM programs, such as DSM bidding and standard offer programs. Ratepayer-funded energy-efficiency programs have played a major role in the 15-year old ESCO industry's growth. In addition to providing funding, utility programs have promoted standardized measurement and verification protocols and business practices.

ESCOs have experienced limited success in certain niche markets, including the institutional sector (i.e., schools, universities, and local and state governments) which accounts for about 60 percent of ESCO activity. There has been comparatively little ESCO activity in the industrial sector (less than 10% of all projects). A few ESCOs are active in the residential market (e.g., EUA Citizens, SESCO, UCONS, Energy Services Group) but we are unable to find any energy service companies serving the single-family market without significant financial subsidies from utility-sponsored DSM programs.

Restructuring and increased competition are causing profound changes in the ESCO and retail energy services industry. Many utilities and electric and gas marketers have acquired small- and medium-sized ESCOs and few small "independent" ESCOs remain (Goldman and Dayton 1996). Some utilities and marketers are building their own retail energy services companies (RESCOs) to market both energy commodities and energy-related services, often through strategic alliances or acquisitions of engineering consulting firms and providers of metering and billing services. However, a significant number of new major players target large commercial, industrial and institutional customers. Some new entrants (e.g., Entergy

Systems and Services) have tried to target smaller commercial customers although Entergy recently announced that this effort was being dramatically scaled back (Entergy 1997). Similarly, a few ESCOs (e.g., EUA Citizens) have successfully targeted public housing authorities and multifamily buildings) although these companies typically rely on financial incentives from utility DSM bidding programs and/or payments from the U.S. Department of Housing and Urban Development to help support their efforts.

This brief overview suggests that the private-sector energy-efficiency industry is not yet in a position to fill the void left by utility DSM programs. To the extent that ESCOs successfully address market barriers to energy efficiency, they are only successful in the limited niches of the market in which they operate. Experience to date suggests that in a restructured industry, ESCOs (and RESCOs) most likely will continue to target large institutional, commercial and industrial customers. After retail energy services markets are well established, the government may not need to promote energy efficiency to large commercial, institutional, and industrial customers, although activities targeted upstream of these customers may still be warranted. For residential and smaller commercial customers, however, there is a much stronger case to be made for continuing public funding of energy-efficiency programs, at least until it is clear that a vibrant, self-sustaining market of service providers is well established and that customers are readily able to acquire all cost-effective energy-efficient products and services. In the meantime, ratepayer-funded energy-efficiency programs have already shown that they can be successful.

2.6 Ratepayer Funding for Energy-Efficiency Programs Remains Appropriate

Agreeing that public policies are needed to promote energy efficiency in a restructured electricity industry is separate from agreeing that ratepayer funds should support these policies. Although general tax revenues are a traditional source of funding for public-purpose activities, we maintain that restructuring does not change two of the most important historic rationales for ratepayer funding of energy-efficiency policies targeted at the electricity sector:

It's fair. The environmental consequences of electricity generation are significant, and electricity consumers have a unique responsibility for the uninternalized consequences of their purchase decisions. Ratepayer funding of energy-efficiency programs, which can mitigate these environmental problems, is consistent with this responsibility. Whether such programs or ratepayer funding of them are the most appropriate ways to fulfill this responsibility is separate from accepting the basic principle that the polluter should pay.

It's practical. Although the existence of environmental externalities is for the most part accepted, there is substantial debate about the extent to which policies that specifically target the utility sector are appropriate. It has been argued, for example, that a tax levied uniformly on all forms of greenhouse gas emissions according to their relative contributions to global

warming offers a more efficient approach than general ratepayer charges to address this significant environmental consequence of electricity production (Joskow 1992). However, such a tax or even agreement that this type of approach is appropriate is impractical in the short term. Therefore, ratepayer funding should not be ignored even though it may be a "second best" solution in comparison to green taxes.

2.7 Other Industrialized Countries that Have Restructured Their Electricity Industries Have Found it Necessary to Promote Energy Efficiency

The U.S. is not the only country introducing competitive forces into the organization and operation of the electricity industry. Many countries are increasing private-sector energy-efficiency activities and have found it necessary to create energy-efficiency policies. So, although some players in the U.S. utility industry believe these policies are unnecessary, experience in other countries suggests that these policies are needed. In this section, we briefly review the background and emerging energy-efficiency policy responses of five major developed countries that have recently undergone restructuring: the United Kingdom, Norway, Australia, New Zealand, and Sweden.[4]

In the United Kingdom, the regulatory body for electric utilities initially believed that market forces would create demand for energy-efficiency services, so no special provisions for energy efficiency were established at first. By 1992, three years after restructuring in the U.K. began, it was apparent that the marketplace was not yielding either demand for or investments in energy efficiency. The U.K. government then established the Energy Savings Trust, a private limited company, to propose, develop, and manage programs to promote energy efficiency, primarily to meet the U.K.'s obligations under the Framework Convention on Global Climate Change. The Trust designed and will evaluate programs offered by regional electric companies. The programs are targeted at small customers (< 100 kW demand) and are funded by a small charge on distribution services.

In Norway, following restructuring in 1991, utility energy-efficiency programs withered. In order to compensate for reduced energy-efficiency activity, the government initiated two related programs: (1) a small transmission tax earmarked for energy conservation information; and (2) the creation and partial funding of independent regional energy conservation centers to provide energy-efficiency services.

In Australia, restructuring is now proceeding in the two most populous states—New South Wales (which includes Sydney) and Victoria (which includes Melbourne). In New South Wales, a Sustainable Development Authority was set up as a part of restructuring to administer a Sustainable Energy Fund that promotes energy efficiency and renewable energy.

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[4] Information for this section comes from Nadel, Elliot, and Pye (1997).

The state government has allocated $39 million (Australian) to the fund for 1996-98. In addition, restructuring legislation directed local electricity distributors to develop strategies to reduce greenhouse gas emissions associated with the electricity they supply, to develop demand management plans, and to investigate energy conservation and other alternatives before expanding the distribution network. In Victoria, the government believes in a "let the market rule" approach to restructuring, so some existing energy-efficiency programs have been dismantled. It is too early to say what impact this policy will have on energy-efficiency investments in Victoria.

In New Zealand, an Energy Saver Fund was established as part of restructuring to support residential sector energy-efficiency programs. Local utilities, government agencies, and others compete for the funds in a series of bid cycles. The program is funded by an $18 million (New Zealand) appropriation from the federal government for an initial three-year period. The restructuring plan also initially provided for an energy-efficiency revolving loan fund for larger commercial and industrial facilities, but this fund was never created.

Only in Sweden is there some evidence that a private-sector energy-efficiency industry is emerging following restructuring, which began on January 1, 1996. Some Swedish utilities and power marketers are offering a variety of services, including energy efficiency, as part of a package to get customers to sign power supply contracts or to create additional profits. The larger utilities generally offer a range of energy-efficiency services and packaged products; experts in energy efficiency are on staff. In an interview, one utility representative estimated that about half of the utility's customers were interested in "additional" services, but the interviewee noted that interest was highest in administrative services, such as electronic or simplified billing, not in energy efficiency. Nearly all efforts to market energy services in Sweden so far have targeted relatively large customers; utility representatives note that energy consumption per account among small customers is too small to support the cost of energy-efficiency efforts.

In summary, experience in other countries where utility industry restructuring has already taken place indicates that, without government intervention, the private market for energy efficiency has become very limited. Several governments have taken explicit steps to implement specific policies and programs to address underinvestment in energy efficiency.

3. Creation of a Public-Benefits Charge

As the debate on restructuring has unfolded, a public-benefits or "wires" charge has emerged as an important means to generate funding for public-purpose programs. In this chapter, we explore the reasons why this approach is a fair way for collecting funds to support public-purpose programs in a restructured industry. We then discuss design issues associated with creating a public-benefits charge, including the scope of the charge, level of funding, duration of funding, and design of rates. Finally, we also identify additional considerations to ensure that policies adopted for the elements of the electricity industry that continue to be regulated do not work at cross-purposes with ratepayer-funded energy-efficiency programs.

3.1 The Rationale for a Nonbypassable Public-Benefits Charge

State regulators and legislators have two basic options for providing ratepayer funds for energy efficiency in a restructured electricity industry: (1) continue to include these costs in the base rates of distribution utility customers, or (2) establish a surcharge that is collected from all customers.

Historically, state PUCs have authorized utility expenditures for energy-efficiency programs as part of general rate cases, integrated resource planning processes, or demand-side management plans. Typically, utility expenditures that were either pre-approved or found to be reasonable were collected in base rates. Several state PUCs (e.g., Maine, Pennsylvania) have decided to continue funding for energy-efficiency programs as part of the base rates for distribution utility customers during restructuring. This approach is often viewed as a transitional strategy, which is linked to the phasing in of retail competition, and adopted because of timing considerations from previous PUC decisions (e.g., to cover the period addressed by current rate cases or rate freezes) or negotiated with utilities as part of a broad political settlement that is acceptable because rate impacts are negligible.

However, utilities in a number of states have raised concerns that continuing to include the costs of energy-efficiency programs in rates would put utilities at a competitive disadvantage compared to other suppliers that are not required to include these costs. To address these concerns, most state PUCs or legislatures that have continued support for energy-efficiency and other public-purpose programs have opted to establish a public-benefits charge that is levied on all electricity users.

The major arguments to support adoption of a broad-based, nonbypassable public-benefits charge are summarized by the California PUC's Energy Efficiency Working Group (EEWG 1996):

- An explicit charge preserves the opportunity to promote investments in energy-efficiency services and products;

- An explicit charge, if properly structured, helps ensure that all energy consumers, regardless of where they obtain their power, pay for the energy-efficiency programs that benefit them;

- An explicit charge separates out energy-efficiency program costs, which are currently lumped into general rates, thus providing customers with valuable information on the actual costs of these programs;

- An explicit charge for electricity and natural gas users removes an incentive for customers to try to avoid paying this cost by switching fuels or suppliers and thus receiving the benefits from energy-efficiency without paying for them.

A public-benefits charge ensures that funding for energy-efficiency programs is consistent with the new institutional relationships that are being created: (1) all ratepayers contribute equitably to programs that are in the public interest because the surcharge is nonbypassable, and (2) utilities, the traditional collection agents for these funds, are not competitively disadvantaged compared to new market entrants, who might otherwise have no obligation to provide or charge for energy-efficiency programs.

3.2 Linking the Scope of a Public-Benefits Charge to its Function in a Restructured Industry

One of the first issues that must be resolved by policymakers in establishing a public-benefits charge is which customers should pay the charge. Public utility commissions only have authority to set rates for the electric and gas utilities that they regulate. As a result, PUCs have generally deferred to state legislatures for statutory authority to establish a public-benefits charge.

State legislatures can define the scope of public-benefits charges to include the customers of PUC-regulated utilities (electric, gas, or both), non-PUC regulated utilities (e.g., publicly owned utilities, rural electric cooperatives), self-generators, and consumers of unregulated fuels. These decisions will be affected by whether or not energy-efficiency programs have historically been funded by these customers, what levels of funding have been maintained, and what overall policy objectives have been established.

At bottom, the issue of who should pay requires legislators and regulators to decide on their objective in creating a public-benefits charge. If the intent is only to preserve (or prevent reductions in) funding for existing energy-efficiency activities, then the charge should affect only those customers currently funding these activities through rates. If the objective is to create a more "level playing field" so that all customers pay a uniform charge for programs

with broader societal benefits, then including customers who have not traditionally funded these activities should be considered.[5]

3.3 Establishing Funding Levels

Experiences in a number of states suggest that determining the amount and duration of funding is among the most politically contentious decisions regarding a public-benefits charge for energy efficiency. In our opinion, the level of expenditures required to support energy-efficiency programs should be linked to the overall policy goals and objectives. Some of the factors to consider include: how well functioning is the private market for energy-efficient products and services, what are the current trends in energy prices, what potential exists for public benefits beyond what the private market is likely to do, and what program designs have been proposed.[6] Given these factors, the amount of funding required might be expected to change over time. However, the political realities of restructuring have typically required policymakers to establish prespecified floor or ceiling funding levels for established time periods.

To establish initial funding levels, many states have used past authorized or actual spending levels of utilities as a benchmark (see Table 2). Yet, choosing only the most recent year (e.g., 1996 or 1997) or relying on actual as opposed to authorized spending levels may be problematic because utility budgets for energy-efficiency programs have fallen significantly since 1993-94. Moreover, in recent years, many utilities have also consciously spent less than their authorized levels for DSM in an attempt to cut costs (and rates) in response to concerns about imminent restructuring (see Figure 1). Table 3 illustrates trends in spending among the 15 of the largest utility energy-efficiency programs from 1993 to 1996. Utility spending on energy efficiency decreased overall by 45 percent among these utilities; spending reductions are particularly pronounced in states where retail access was actively under consideration. Thus, if state PUCs want to rely on past spending as the starting point in establishing funding levels for utilities that were actively involved in administering energy efficiency, we would recommend considering an average of spending levels during at least the past four years.

Another reason to be cautious about basing future funding of energy-efficiency programs on past funding is that funding levels in some states or time periods have been low because of utility opposition to energy-efficiency programs. These past levels of funding understate the amount that is likely to best serve the public interest now that it has been separated from utility interests.

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5 Creating a level playing field also joins the issue of who should pay with that of collecting funds through a uniform charge (to be discussed later in this chapter).

6 These issues are examined more thoroughly in the next chapter.

Table 2. Funding Levels for Electricity Energy Efficiency in States Where Restructuring Legislation Has Been Enacted

State	Historic Funding* ($ million)	Annual Funding ($million)	Surcharge Level & Collection Period (mills/kWh & years)	Percent of Electric Revenues
California	$263	~ $218	1.32 floor (1998-2001)	1.40%
Connecticut	$49	$85	3.0 (no sunset)	2.60%
Illinois	$12	$3	0.04 (no sunset)	0.05%
Massachusetts	$130	~ $160	3.3 in 1998 ramping down to 2.5 in 2002	3.00%
Montana**	$10	~ $15	1.0 (1998-2003)	2.40%
New Hampshire***	$4	none	-	-
New York****	$149	~ $56	1.0 cap [0.7 current] (over 3 years)	0.50%
Pennsylvania	$33	~ $10	tbd	0.10%
Rhode Island*****	$13	~ $15	2.3 floor [2.7 current] (1997-2001)	2.10%

Notes:

* 1994 represents a mid-point year for energy-efficiency expenditure and is representative of average historic funding levels.

** At least 17% of this amount must be spent on low-income programs. The utilities may choose to allocate the rest among energy efficiency, renewables, or additional low-income programs.

*** Though New Hampshire's restructuring legislation (HB 1392) does not call for funding to support energy efficiency, the governor has proposed a $2.3 mills/kWh surcharge to fund both energy efficiency and r enewable energy. The PSC has opened a docket to consider energy efficiency and renewable energy funding.

**** PSC Decision. Legislation Pending.

***** Both energy-efficiency and renewables are included under this floor; energy-efficiency expected to receive the majority of funding.

Comprehensive reviews of historic funding reveal wide variation in utility program performance. Some utility programs have been highly cost effective while others have not. To better address these issues, we recommend a "bottom-up" reassessment of funding priorities based on a careful review of a state's historical record, estimates of the achievable potential for cost-effective efficiency investments, and evaluation of the funding needed to achieve current policy objectives.[7] This reassessment could result in an increase or decrease in funding compared to past levels.

Table 3. Trends in Spending on Electricity Energy Efficiency[8]

Utility	Electricity Energy-Efficiency Expenditures			Percent Change
	1993 (in $million)	*1996 (in $million) [rank in top 15 programs]*		
1. Pacific Gas & Electric	$105.9	$77.5	[1]	-27%
2. Consolidated Edison	$100.2	$38.2	[7]	-62%
3. Southern California Edison	$100.1	$59.5	[3]	-41%
4. Puget Sound Power & Light	$57.2	$4.6	[-]	-92%
5. Potomac Electric Power	$52.7	$45.3	[5]	-14%
6. Florida Power & Light	$49.5	$75.8	[2]	53%
7. Consumers Energy	$47.0	$5.0	[-]	-89%
8. Boston Edison	$44.1	$13.8	[-]	-69%
9. New York State Electric & Gas	$43.7	$4.6	[-]	-89%
10. PacifiCorp	$41.0	$14.8	[-]	-64%
11. Massachusetts Electric	$38.5	$43.0	[6]	12%
12. Georgia Power	$38.0	$0.0	[-]	-100%
13. Connecticut Light & Power	$37.5	$27.0	[11]	-28%
14. Wisconsin Electric Power	$34.0	$11.2	[-]	-67%
15. Baltimore Gas & Electric	$28.3	$28.8	[10]	2%
TOTALS	$817.7	$449.1		-45%

Source: EIA 1995b, EIA 1997b

7 ACEEE conducted such an assessment in its Mid-Atlantic state study (Nadel, Laitner et al. 1997). The study recommended specific funding levels for each state based on opportunities for cost-effective investments and an assumption that public-benefits funds would cover, on average, one-third of investment costs.

8 The EIA data used for this table do not include energy-efficiency spending by BPA. BPA spending was $152 million in 1993 and $96 million in 1996 (Keating 1998).

3.4 Decoupling Sunset Provisions from Restructuring Transition Charges

The duration of public-benefit charges has been a particularly contentious issue in several states. Three major positions have been articulated:

- Energy-efficiency programs should be funded indefinitely;
- Energy-efficiency programs funded by public-benefit charges should expire at a prespecified date, typically the endpoint of the restructuring transition period (e.g., phase-in of retail competition for all customers); or
- Energy-efficiency programs should be funded for a defined time period, with provisions to consider in the future whether such programs are still needed.

Advocates of indefinite public-benefits charges argue that many of the market barriers that inhibit efficiency investments are pervasive problems that have plagued energy markets for decades and are unlikely to be ameliorated by restructuring. Supporters of indefinite funding believe that there is little evidence that vibrant private energy-services markets will develop for residential and low-income customers.

Proponents of definite expiration dates for energy-efficiency charges argue that private energy-service providers will adequately serve all sectors over the long term, so ratepayer funding is only needed to get the private energy-services market started. However, the funding period for ratepayer-funded energy efficiency is often tied explicitly to the transition period for restructuring, which is often the amount of time allowed to recover authorized stranded costs.

We do not believe that a sunset date for energy-efficiency funding should be established in advance; in particular, we do not recommend linking the expiration date for charges to the recovery period for stranded costs. Instead, we believe it is more appropriate to link continued ratepayer funding for energy-efficiency programs to achievement of program objectives. These objectives should be established when the programs begin and reviewed regularly as a condition of continued funding.

We recommend that ratepayer-funded energy-efficiency programs be comprehensively reviewed after a five-year period, which allows roughly a year for programs to start up and four years of full-scale operation. Evaluation of past and current efforts should take place throughout the period, leading up to a decision in the final year on whether to continue the programs. Our recommendation for a minimum time period assumes that transforming markets will receive greater emphasis as a policy objective for future programs (see Chapter 4). A market-transformationorientation will tend to require a strategic sequence of activities that may take several years to implement and evaluate. Thus, if time periods shorter than five years are adopted, it will be difficult to determine the success or failure of programs, and

funding decisions may then be made on the basis of inadequate information regarding program impacts and future potential.

To address legitimate concerns about open-ended funding, criteria should be established at the outset for future decisions regarding whether or not to continue ratepayer-funded energy-efficiency programs. Criteria that should be considered include the following:

- Have programs been effective in accomplishing their specified objectives?
- Are these objectives appropriate for the future or should they be modified? If so, how?
- Are the programs cost effective—i.e., are benefits greater than costs? Would continued operation of these programs result in increased public benefits?
- Has a vibrant private energy services market emerged that will provide adequate energy-efficiency services to all major customer groups, or are there still some sectors inadequately served by the private market?

3.5 The Design of a Public-Benefits Charge

The primary design questions for a public-benefits charge are: 1) whether the charge should be identified separately on customers' bills and 2) what method should be used to collect the charge from energy users. Because unbundling of services is a central feature of restructuring, these issues will typically be resolved in a broad regulatory setting focused on development of tariffs for separate services (e.g., distribution, transmission, commodity, etc.) and charges designed to recover transition costs. Proponents of public-benefits charges have generally favored explicit identification of such charges on customers' bills provided other transition charges (e.g., stranded cost recovery) are similarly identified. If other charges are not identified then it makes no sense to single-out public-benefits charges.

The method used to collect public-benefits charges has been controversial; two basic approaches have been proposed: (1) a volumetric charge based on energy use (e.g., mills per kWh or therm or a percentage amount of the customer's monthly bill) or, (2) a fixed charge per user.

Advocates of an energy-use-based or volumetric charge argue that this approach is consistent with efforts to internalize environmental and other unpriced externalities associated with energy use, which is a primary rationale for a public-benefits charge (see Chapter 2). Opinions differ regarding whether the charge should be collected on a per-kWh basis or as a percentage of the customer's energy bill.

Opponents of collecting charges on a uniform per-kWh basis stress that this approach may introduce inappropriate pricing distortions because it does not address the realities of current tariffs, which involve customer-class-specific or time-of-use energy and demand charges. Under the per-kWh approach, some kWh would increase disproportionately in price compared to others, and demand charges would be unaffected. This is a significant concern if this approach is used for recovery of stranded costs as well. This concern is typically addressed by using the charge per-kWh to establish an overall revenue requirement and then simply allocating this revenue requirement to individual tariffs and tariff elements in accordance with current ratemaking practices.

Proponents of collecting charges as a percentage of each customer's energy bill argue that this approach avoids the introduction of unequal distortions in bills as a function of the initial price levels for energy use. In addition, fees based on a percent of the entire bill would also mean that demand components would be reflected for certain customers. However, opponents of this approach point out that it could introduce disparities among energy users in different service territories. For example, customers of utilities whose electricity is expensive would pay more for public-purpose programs than customers whose electricity is less expensive. Thus the percentage approach may increase the rate disparities that restructuring is designed in part to reduce.

Finally, some have advocated collecting a fixed charge from all energy users. This proposal, even more clearly than the previous two, illustrates the equity concerns that often underlie discussions of alternative rate design methods. In this case, the issues include: is it fair for the smallest users to pay the same charge as the largest? If not, what should be the criteria for allocating charges among customer/rate classes? Opponents of fixed charges note that this approach reduces the marginal cost of energy to the customer, thus reducing customers' incentives to use energy efficiently.

We recommend use of a volumetric charge to support energy-efficiency programs. This charge should be identified in a fashion similar to charges for other unbundled elements of customers' bills (e.g., charges for recovery of stranded costs). Thus far, most states that have established public-benefits charges have opted for volumetric charges, typically expressed as a fixed amount per kWh.

3.6 Companion Regulatory Policies: Minimize DISCO Financial Disincentives to Pursue Energy Efficiency and Establish Market Rules that Enhance Prospects for Robust Energy-Efficiency Services Industry

It is important for regulators in a restructured electricity industry to ensure that ratemaking and other regulatory policies do not work at cross purposes to energy-efficiency policy objectives. Three areas that need special attention are: (1) ratemaking incentives for regulated firms (i.e., transmission and distribution utilities); (2) rules that establish criteria

for access to utility information on customer energy-use patterns and market potential for energy efficiency; and (3) rules that govern participation by utility affiliates in competitive delivery of unregulated energy-efficiency services.

Although regulated utilities that only have an obligation to connect customers to the grid will no longer have to plan for generation, regulatory policies will continue to influence utilities' decisions on expansion of local distribution systems. In particular, we expect to see increased reliance on performance-based ratemaking (PBR) approaches, which attempt to mimic the pricing and cost-minimizing discipline of unregulated markets, for business activities that remain regulated after restructuring. However, the predominant form of PBR, called price caps, provides strong incentives for regulated firms to increase sales, which is at odds with promoting energy efficiency. Revenue cap approaches to PBR eliminate the incentive to increase sales while retaining the important cost-minimizing incentives inherent in performance-based rates (Comnes et al. 1995).

Regulators will also need to consider guidelines that address access to customer information and ratepayer-funded market research that would be useful to nonutility providers in the energy services market. That is, the success of utilities in delivering energy efficiency highlights a number of their potential competitive advantages. Some of these advantages (such as access to customer billing system, access to customer billing records, which is useful for credit analysis, and the ability to recover project costs through charges on utility bill) result from the regulated monopoly status of the utility. Utilities also have obtained valuable information and experience through their administration and delivery of ratepayer-funded DSM programs (such as research on market segmentation, customer decision-making criteria, and customer groups receptive to energy efficiency; databases to track measures installed by customers participating in utility DSM programs; and trained DSM staff). Other utility advantages, which are less tangibly ratepayer assets, include: "brand-name" recognition, institutional stability, and (up to now) lack of direct financial interest in particular products or services. Some utility assets may help reduce marketing and transaction costs for potential new administrators of energy-efficiency programs (see Chapter 5) or private-sector energy-efficiency service providers (see Chapter 4).

Regulators should also consider specifying which program activities are still appropriate for regulated utilities and establishing ground rules under which unregulated affiliates of a local utility can compete in energy-efficiency services markets. As competition increases, a number of utilities have begun to package energy efficiency with other services, including tying these services to arrangements for long-term power purchase contracts (Newcomb 1994). Some utilities are trying this approach on the regulated side of their businesses; others are pursuing this strategy through their retail energy-service companies (RESCO). Customer and load retention are key motivations. Some market participants have raised concerns that utilities may attempt to use competitive advantages that derive from their previously regulated monopoly status to enhance their position on the unregulated side of their businesses.

4. Rethinking Energy-Efficiency Policy Objectives and Program Designs for a Restructured Electricity Industry

Although we believe there are compelling reasons to continue ratepayer funding for energy-efficiency programs, we do not advocate continuing past DSM policies and approaches. Restructuring requires that the balance among different energy-efficiency policy objectives, such as cost-effectiveness and equity, be re-examined and restruck in ways that are supportive of the emergence of retail competition in the electric and gas industry. This chapter reviews program design strategies in light of restructuring, paying special attention to recent interest in market transformation programs, both as a new policy objective and as a new program design strategy for future ratepayer-funded energy-efficiency programs.

4.1 Aligning Energy-Efficiency Policy Objectives to a Restructured Electricity Industry

Utility DSM program portfolios have always balanced more than one energy-efficiency policy objective (see box). Foremost among these objectives are: (1) maximizing environmental benefits, (2) maximizing cost-effectiveness, and (3) ensuring equity across customer classes. More recently, a fourth objective, transforming energy markets so that public funding is not needed to support energy efficiency, has been added to the list. How does restructuring change the relative importance of these objectives for the future?

From our perspective, a balance must still be found among objectives; we do not advocate focusing on only one objective. Although state regulators and legislators have always expressed preferences among the three objectives listed above, it is often practically impossible to pursue any one of them to the exclusion of the others. Preferences can only be expressed broadly by setting overall funding levels and in establishing allocations among program types or categories. Table 4 summarizes some of these preferences that have been established in the past.

Table 4. Principles Used to Balance Traditional Energy-Efficiency Policy Objectives

	Prior to Restructuring	During/After Restructuring
Maximize Environmental Benefits	Largely set by overall level of funding for energy-efficiency programs	No change
Maximize Cost-Effectiveness	Allocate funds to most cost-effective programs	No change
Equity Across Customer Classes	Ensure broad portfolio of program opportunities available to all customer classes	Target programs to classes not well served by the competitive market

Energy-Efficiency Policy Objectives for a Restructured Electricity Industry

Maximize Environmental Benefits. The environmental benefits of energy-efficiency programs result from electricity generation that is displaced by conserving energy. The size of the benefits is directly proportional to the amount of energy saved.

Maximize Cost Effectiveness. Studies of the technical potential for increased energy efficiency routinely show that the potential for saving energy cost effectively is large. Pursuing the cheapest efficiency opportunities first provides the greatest return to ratepayers and society.

Ensuring Equity Among Customer Classes. Although there is no shortage of cost-effective opportunities in any one customer class, the potential for savings is greater in some classes than in others. If programs are available to all customer classes, members of each class have the opportunity to reduce their energy bills.

Transform Markets to the Point Where Intervention Is No Longer Needed. Many energy-efficiency initiatives during the past 15 years have shown that some programs have caused lasting changes in the market (Nadel and Latham 1998). For example, recent declines in funding for some of these programs have not been accompanied by substantial backsliding to less efficient measures and practices; instead, there are now new, more efficient standard practices. These accomplishments suggest that there is a role for programs that are consciously designed to self-terminate once they have transformed the market to the point where private sector activities, alone, lead to adoption of cost-effective energy-efficiency products and services.

We believe that the objective of maximizing environmental benefits cost effectively through energy-efficiency programs is unaffected by restructuring. As discussed in Chapter 2, restructuring does not change many of the most important rationales for ratepayer funding for energy-efficiency programs. It is logical that many of the basic policy objectives for these programs should also remain unchanged. Because of the many market barriers to energy efficiency that are not affected by restructuring, we see no reason to believe that securing economic and environmental benefits cost effectively will be any less important in the future than it is today.

In our opinion, restructuring only significantly affects the energy-efficiency policy objectives of ensuring equity among customer classes and transforming markets. Both objectives are important; only the ways in which they are pursued may change as a result of restructuring.

We expect restructuring to ultimately lead to an increase in energy-efficiency activities offered by the private sector (see discussion in Chapter 2). Therefore, we expect priorities for publicly funded programs to shift toward emphasizing market segments that are unlikely to be the beneficiaries of these private-sector activities. An example of this type of thinking has occurred in Wisconsin; an important part of the restructuring discussions there has involved identifying residential and small commercial customers as the primary beneficiaries of future ratepayer-funded energy-efficiency programs while large commercial and industrial customers are to be excluded from participation. The rationale is that the market is already

working well for large commercial and industrial customers but not for smaller commercial and residential customers. It is difficult to draw absolute conclusions for entire classes of customers, but we agree with the principle that it is not appropriate to continue to provide ratepayer-funded programs to segments of the market that are already being well served by the private sector.

4.2 Establishing a Role for Transforming Markets as a New Energy-Efficiency Policy Objective

A number of states that have adopted public-benefits charges for energy efficiency have formally embraced the concept of transforming markets. The California Public Utilities Commission (CPUC) has articulated these new objectives for its ratepayer-funded energy-efficiency activities:

> 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.
>
> The mission of market transformation is to ultimately privatize the provision of cost-effective energy efficiency services so that customers seek and obtain these services in the private competitive market. (CPUC 1997a)

In Wisconsin, the Public Service Commission has noted similarly that "the primary goal of the Public Benefits effort in the area of energy efficiency is market transformation." These efforts include "facilitating the transformation of markets so that they effectively respond to customers' needs and public interests in increased energy efficiency" and "administering or otherwise insuring delivery of services where market failures and/or barriers continue to exist" (PSCW 1997).

The Massachusetts Department of Telecommunications and Energy has stated that: "Market transformation efforts are designed to create long-term changes that reap continuous energy-efficiency savings at low cost." Utility program plans should "include participation in market transformation efforts sponsored by private industry, regulatory agencies, or other entities that aim to develop new energy-efficiency technologies and upgrade building codes and standards" (MDPU 1996).

In the Pacific Northwest, the four regional governors appointed a Steering Committee to conduct a comprehensive review of the Northwest Energy System and make recommendations to the governors and state legislatures on restructuring issues. The Committee report "calls for the region's retail distribution utilities to mount a coordinated effort to transform markets for efficient technologies and practices." The Committee further

notes: "Because markets invariably cut across utility and jurisdictional boundaries, it makes sense to pursue these efforts regionally." (Steering Committee 1996).

The New York Public Service Commission, in saying how public benefit funds established as part of restructuring should be spent, included "programs that emphasize permanently transforming the market for energy-efficient products and services or reducing market barriers, rather than achieving immediate or customer-specific savings" among a short list of eligible programs and services (NYPSC 1998).

The most widely used definition for market transformation was developed by Eto, Prahl, and Schlegel (1996) as a standard for determining the continuing appropriateness of public funding for energy-efficiency programs (see box). A transformed market, according to that definition, means that the market barriers to the adoption of cost-effective energy-efficiency products and services have been reduced to the point where efficient goods and services are

What Is Market Transformation?

In 1996, the California DSM Measurement Advisory Committee commissioned a scoping study to examine the extent to which California DSM programs, which were designed to maximize net resource benefits, may also have contributed to market transformation. This study proposed a definition for market transformation that has since become a standard for the energy-efficiency community. The three key concepts in this definition are:

Market Transformation: a reduction in market barriers resulting from a market intervention, as evidenced by a set of market effects, that lasts after the intervention has been withdrawn, reduced, or changed.

Market Barrier: any characteristic of the market for an energy-related product, service, or practice that helps to explain the gap between the actual level of investment in or practice of energy efficiency and an increased level that would appear to be cost beneficial.

Market Intervention: a deliberate effort by government or utilities to reduce market barriers and thereby change the level of investment in (or practice of) energy efficiency.

Market Effect: a change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of energy-efficient products, services, or practices and is causally related to market intervention(s).

This definition provides a standard by which to judge market interventions in a regulatory environment. If an energy-efficiency program yields no lasting market effects, then the market has not been transformed because the reduction in market barriers has been only temporary. If a program yields lasting market effects but further intervention is still warranted, then the market has only been partially transformed. If there are lasting market effects and the most important and relevant market barriers have been reduced to the point where further intervention is no longer deemed appropriate, then the market has been completely transformed.

Source: Eto, J., R. Prahl, and J. Schlegel (1996).

normal practice in appropriate applications. If these changes are self-sustaining over time (i.e, without the need for continued intervention), then the market has been *fully* transformed. In many cases, continued intervention (possibly very different in scale and scope from the initial intervention) will be warranted; i.e., it will be more appropriate to talk of markets that have only been *partially* transformed. Market transformation is an objective that all energy-efficiency programs have at least a theoretical potential to achieve although some programs may do so more effectively than others.

We expect to see an increase in the prominence of transforming markets as a policy objective. Years of experience with energy-efficiency programs have demonstrated that, under the right combination of circumstances, programs can cause lasting beneficial changes in markets (see Table 5). In most cases, these changes were not envisioned when the programs were designed. However, future programs, which consciously target these changes will increase the likelihood that the programs can ultimately be terminated once they have succeeded in transforming the market. Incorporating this type of thinking into future program designs is obviously an important strategy for improving program cost effectiveness.

However, we believe it is critically important to distinguish between transforming markets as a policy objective (which is the subject of this section of this paper) and transforming markets as a program design strategy (which is the subject of the next section). Markets are complex and ever changing. In view of their long history, many of the most important market barriers to energy efficiency are likely to be resistant to change. Practically speaking, it will be difficult to wholly or even partially transform *all* markets through ratepayer-funded programs.

If a market cannot be fully transformed, does this mean that ratepayer-funding for a program is not warranted? We believe the answer is no; transforming markets is important but not the only policy objective appropriate for ratepayer-funded energy-efficiency programs. In the past, utility energy-efficiency programs have demonstrated that substantial economic and environmental benefits (i.e., large energy savings) can be obtained cost effectively without regard to whether or not the programs have transformed the market (though the absence of any change in the market is highly unlikely). We believe it is inappropriate to rule out entire classes of programs simply because they are unlikely to transform markets; other considerations, such as cost effectiveness should also be evaluated.

Table 5. Examples of Market Transformation Initiatives

Initiative	Initiative Components	Results
Condensing Furnaces in Wisconsin	Inclusion of condensing furnaces in low-income weatherization program; utility incentives	Market share now ~85%; prices have dropped and local contractors routinely recommend and install condensing furnaces
Residential Construction Practices in the Northwest	Development of voluntary Model Conservation Standards; demonstration projects; incentives for builders and local governments; development of new building codes	Model Conservation Standards now incorporated into building codes in Washington and Oregon, affecting ~85% of regional construction; entire effort cost regional utilities ~ 3 mils/kWh saved.
Electric Motors in British Columbia	Education of customers and dealers; customer and dealer incentives; promotion of provincial and national minimum efficiency standards.	As a result of first 3 components, by 1993 high-efficiency motors had a 70% market share; provincial minimum efficiency standards adopted in 1993 effective 1995.
Energy Star office equipment	Energy Star labeling program for office equipment with power management features; legislative requirement for office equipment information program; Executive Order requiring federal agencies to purchase Energy Star equipment.	Market share of Energy Star office equipment 70-97%, varying by type of equipment; efforts on-going to work with manufacturers and customers to encourage use of power management features.
Efficient Magnetic Ballasts	Utility incentives; state minimum efficiency standards.	Federal minimum efficiency standards took adopted effective 1990 which require performance levels achievable with only efficient magnetic or more efficient products.
High-Efficiency Refrigerators	Super Efficient Refrigerator Program (SERP); other utility rebates; bulk-purchase by housing authorities of high-efficiency apartment-size refrigerator; negotiations with manufacturers on new federal minimum efficiency standard.	New federal standard adopted, to take effect 2001, which will result in 30% energy savings for the most-commonly sold models, relative to the current federal standard.

Source: Nadel and Latham (1998).

The problem with making market transformation a disproportionately important policy objective can be seen in the contradictions that could result. Suppose one can only fund one of two programs (i.e., the programs cost the same amount and the total budget is too small to fund both). Assume that the first program will completely transform a small market with

a societal benefit-cost ratio of 1.05; that is, it is barely cost effective. Assume that the second program will not measurably transform its target market but will save lots of energy; it has a societal benefit-cost ratio of 5.0. The second program is clearly better for society than the first program. Yet, by choosing to fund the second program, a preference (which we believe is the correct one) is being expressed for increased societal benefits over market transformation. To further this example, under what conditions would it be appropriate to recommend funding for this first program if its societal benefit-cost ratio were less than one? Now, suppose that the benefits from the second program accrue primarily to large industrial customers and that the program displaces private-sector market participants also trying to target this market. Under these circumstances, which program should be funded? Finally, suppose that the benefits from the second program come overwhelmingly from labor cost savings as a result of process improvements and that total energy use is actually increased by this program. Now which program should be funded?

The point of this example is to emphasize the need for basing energy-efficiency program funding and funding allocations on multiple objectives: the future will only differ in the balance among these policy objectives.

In summary, we caution policymakers not to overemphasize transforming markets as the sole policy objective for ratepayer-funded energy-efficiency programs. Reliance on market transformation concepts clearly holds great promise for improving the cost-effectiveness of programs. Yet, experience with programs that have had substantial market transformation effects is limited. Furthermore, no one has claimed, on the basis of these programs, that further intervention in these markets is no longer warranted. Commonly, once one level of efficiency becomes common practice (e.g., efficient magnetic fluorescent ballasts), higher levels of efficiency (e.g., electronic fluorescent ballasts) are promoted. In other words, few if any markets can be shown to have been *fully* transformed. We believe it is especially dangerous to believe that markets are easy to transform and that ratepayer funding toward this end can therefore be terminated in just a few years (as discussed in Chapter 3).

4.3 Re-Designing Energy-Efficiency Programs to Transform Markets

Just as restructuring requires policy-makers to re-evaluate the balance among energy-efficiency policy objectives, we believe restructuring also requires program designers and evaluators—many of whom share close ties with policymakers—to reconsider the design of programs intended to pursue these objectives. We believe that incorporating a more explicit focus on transforming markets would lead to improved future ratepayer-funded energy-efficiency programs.

The primary difference between trying to transform markets and the resource-acquisition orientation of many utilities' past energy-efficiency programs is that the objective of market transformation is to cause lasting changes that lead to increased adoption of cost-effective

energy-efficient products and services. The goal of resource acquisition, particularly when performance incentives for utility shareholders were tied to measured savings (e.g., shared-savings mechanisms) was to save energy quickly, cost effectively, and in ways that could be easily verified. Attention to market barriers is important for designing effective marketing strategies for resource-acquisition programs; however, whether or not a resource-acquisition program causes lasting changes in markets is not central to its success. Saving energy is the key measure of success: in contrast, the success of market transformation programs is dependent on understanding the reasons why a program has (or has not) changed a market (e.g., the factors underlying changes in consumers' purchasing and usage decisions) and whether or not these changes can be expected to last. By directing attention to the factors underlying program performance, an emphasis on market transformation thinking provides a logical basis for mid-course corrections, and, ultimately, determining the appropriate time to terminate a program.

Emphasis on changing markets in order to improve energy efficiency naturally leads to program designs that focus more consciously on the market barriers that impede investments in energy-efficient products and services (see Chapter 2). Table 6 indicates the types of strategies for overcoming market barriers that have been *implicit* in various past energy-efficiency program designs. *This list of strategies and examples of programs is not exhaustive*, nor is it intended to suggest that all programs have consciously (or unconsciously) embraced them. Instead, the table is intended as an illustration of how a focus on transforming markets as a strategic framework for program design could lead to improvements over past program designs. Comments on each of the seven strategies listed in the table are provided below. We note that there are usually multiple program approaches available to implement the strategies. A focus on transforming markets would mean that program evaluation would include a focus on the success (and lastingness) of the program's approaches, in addition to how much energy the program has saved.

Endorse Products and Practices. Labeling programs such as Energy Star represent an important means to reduce customers' search costs, uncertainties regarding performance, and wariness regarding vendors' energy performance claims. Financial incentives, too, send a signal that the program sponsors (who traditionally have not had a financial interest in the products being promoted—e.g., they have not been equipment manufacturers or vendors) have endorsed the energy-savings potential of the product. (Of course, financial incentives also address customers' limited access to capital). The performance guarantees offered by ESCOs are yet another example of endorsement.

Provide Unbiased, Site-Specific Technical Information. Site-specific technical information addresses customers' and other market participants' (e.g., builders') lack of awareness of or poor understanding of how to implement energy-efficiency opportunities. It also reduces uncertainty regarding the savings potential for a particular site and thus the value of capturing these opportunities.

Table 6. Program Strategies for Addressing Market Barriers to Energy Efficiency

Strategies for Addressing Market Barriers	Energy-Efficiency Program Types				
	Customer Information Programs (e.g., audits, technical assistance)	Customer Incentive Programs (e.g., rebates, financing)	Builder Information and Incentive Programs (e.g., new construction)	Upstream Market-Pull Programs (e.g. SERP)	DSM Bidding/ Standard Offer Programs
Endorse Products and Practices	X	X	X		X
Provide Unbiased, Site-Specific Technical Information	X		X		X
Capture Time-Dependent Energy-Efficiency Opportunities		X	X		
Accelerate Market Entry of New Products				X	
Increase Availability/Quality of Energy-Efficient Products	X	X		X	X
Promote Practices/Technologies that Can Form the Basis for Upgrades to Efficiency Standards/Building Codes	X	X	X	X	X
Provide Start-up Funding for New Energy-Efficiency Providers	X[9]		X[10]		X

[9] Only if implementation strategy involves out-sourcing of services.

[10] For example, duct testing/sealing and building commissioning.

Capture Time-Dependent Energy-Efficiency Opportunities. New construction, building renovation, and equipment replacements (emergency and planned) all offer very narrow windows of opportunity for consideration of energy-efficiency in the decision-making process; once decisions have been made, costs to later retrofit are high. Targeting these lost opportunities may or may not overcome the underlying market barriers that create such narrow windows, but understanding these barriers is central to implementing programs that can capture lost opportunities cost effectively.

Accelerate Market Entry of New Products. Somewhere early in the continuum between the research and development phase and the mature market phase of a product lie a variety of organizational market barriers that hinder deployment of market-ready but not-yet-commercialized products. Among these barriers is manufacturer's and distributor's uncertainty regarding the ultimate market demand for a product. Programs that address these barriers to market entry (e.g., through the provision of financial incentives, public information and awareness campaigns, and training/education programs) will accelerate the introduction of new products. An example of such a program was the Super-Efficient Refrigerator Program or SERP (Feist et al. 1996).

Increase Availability/Quality of Energy-Efficient Products. Once products become commercially available, their diffusion is influenced by marketing practices (on the supply side) and individual or organizational purchasing processes (on the demand side). Financial incentives can increase the volume of product sales, lower prices as economies of scale are realized, and lead to or accelerate improvements in product quality. Increasing the availability of products involves making them easier for customers to locate and easier for marketers to promote.

Promote Practices/Technologies that Can Form the Basis for Upgrades to Efficiency Standards/Building Codes. The political acceptability of standards and codes is influenced, in part, by market participants' familiarity with newer energy-efficient products, services, and practices. Working actively to achieve a threshold level of adoption is often instrumental to building the consensus necessary to institute or change standards and codes.

Provide Start-up Funding/Support for New (and Existing) Energy-Efficiency Service Providers. Creating market opportunities for existing and new businesses whose financial livelihood is tied to their ability to overcome market barriers is an important element of focusing on transforming markets (see box). Creating institutional support (e.g., measurement and verification protocols, certification of qualified providers, etc.) or providing financial support may be instrumental to jump-starting these activities; once providers are established, they may no longer need this support.

Using the Market-Transformation Approach to Promote Development of ESCOs

The California PUC has made transforming markets an integral element of its strategy to create a fully competitive, efficient, and robust market for retail energy services based on customer choice. For customer choice to be meaningful, customers must have significant opportunities to compare and choose among retail energy suppliers that provide commodity-based electric services as well as providers that offer value-added services such as energy efficiency. Promoting the development of a vibrant, self-sustaining, private energy-efficiency services industry is an essential element of the CPUC's strategy. Programs targeting energy service companies, which represent an important, *but not the only*, segment of the private energy-efficiency services industry, are a useful example of the CPUC's approach.

Historically, the barriers facing ESCOs have included (Cudahy and Dreessen 1996):

- A limited number of capable firms, particularly firms with a good balance of business and engineering expertise;
- A shortage of working capital, and high risk premiums for much of the capital that is available;
- High transaction costs in developing complex, long-term projects.

Each barrier can be addressed by a combination of private actions and ratepayer-funded programs. To lower the cost of marketing energy-efficiency services to customers and thereby facilitating the market entry of ESCOs, New Jersey and California have developed "standard offer" contracts under which utility and/or public-benefits funds are used to subsidize energy service contracts (e.g., $0.02/kWh saved). See Goldman, Kito, and Moezzi (1995) and Goldman, et al. (1998). California intends to reduce these subsidies over time (e.g., $0.02/kWh in the first year, $0.015/kWh in the second year, etc.). Transaction costs are also being lowered through standardized contracts and energy savings verification procedures. These activities are proceeding as the ESCO industry develops a voluntary certification program and measurement and verification protocols, so prospective customers can be assured that a certified ESCO is likely to provide the savings it promises.

An important goal of the CPUC's efforts is to expand the number of market sectors for which private energy services are available and profitable without the support of ratepayer-funded programs. These efforts will also help to identify sectors where private energy services are not viable and develop new approaches for these sectors.

4.4 Theory Meets Practice: Balancing Energy-Efficiency Policy Objectives in Establishing Program Budgets

The recent experience of California utilities provides a tangible example of how changes in energy-efficiency policy objectives can affect energy-efficiency program budgets. As noted earlier in this chapter, California has adopted transforming markets as an important new policy objective for ratepayer-funded energy-efficiency programs starting in 1998. In the fall of 1997, California utilities entered into a joint-planning process with the PUC's California Board for Energy Efficiency (CBEE, to be discussed in the next chapter). Among

the objectives was the desire to begin redirecting ratepayer-funded energy-efficiency programs to promote market transformation in a restructured electricity industry.[11]

A comparison of aggregate, statewide utility budgets (electric and gas, combined) for 1997 versus 1998 illustrates the changes that were made (see Table 7). Total funding levels are not strictly comparable because funding for 1998 was approved for only the first nine months and thus represents only approximately 75 percent of what will be spent in 1998. However, reviewing expenditures by budget category reveals significant shifts in priorities between the two years.

Overall, funding for the residential sector in 1998 has increased as a proportion of the total budget compared to that for 1997. This trend is consistent with a recognition that the residential sector will not experience the energy-efficiency-related benefits of restructuring at the same rate or to the same degree as the nonresidential sector, so it should be the target of increased ratepayer-funded activities.

The 1998 budget shows a dramatic increase in funding for programs intended to stimulate private-sector energy-efficiency activities, and a corresponding decrease in funding for traditional utility financial incentive programs. The heir to the DSM bidding programs of 1997 is the standard performance contract program, in which the utility pays either customers or their agents (usually ESCOs) for verified savings on a $/kWh basis (Goldman, et al. 1998). Funding for DSM bidding was eight percent of total program funds in 1997; funding for the standard performance contract program is 27 percent of the total in 1998. In addition, a new program category, called third-party initiatives, was created to fund ideas for energy-efficiency market transformation programs proposed by market participants (rather than by utility staff). These activities account for five percent of the total funding available. In contrast, funding for financial incentives that are marketed by utility staff decreased from 42 percent of the budget in 1997 to 14 percent of the budget in 1998.

The 1998 budget also shows a large increase in funding for other market transformation programs. Although there is a recognition that all programs can transform markets, certain programs that do not emphasize payment of financial incentives to customers have been labeled "other market transformation." Funding for these programs has grown from two percent of the budget in 1997 to 16 percent of the budget in 1998 with corresponding decreases in funding for general information and customer-specific information programs.

Funding for several program areas, including measurement and evaluation, has remained roughly stable. Funding for new construction programs decreased slightly (partly in anticipation of California's new building standards).

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[11] Other objectives included changing DSM policies to be consistent with these new directions and changing the structure and reducing the level of financial incentives to utilities for operating successful programs.

Table 7. Comparison of California Ratepayer-Funded Energy-Efficiency Program Budgets in 1997 and 1998

	Program Year 1997 ($M)		Program Year 1998[12] ($M)	
General Information	26.1	12%	11.8	7%
Customer-Specific Information	38.2	18%	25.4	14%
Financial Incentives	89.5	42%	25.5	14%
DSM Bidding/Standard Performance Contract	17.0	8%	47.9	27%
New Construction	23.1	11%	15.1	9%
Other "Market Transformation"	5.2	2%	28.8	16%
Third-Party Initiatives			8.9	5%
Measurement & Evaluation	15.9	7%	13.5	8%
Total	214.9		177.0	
Residential		30%		35%
Nonresidential		70%		65%

Sources: CPUC 1997b; PG&E 1997; SCE 1997; SCG 1997; SDG&E 1997.

[12] The figures refer to funding that has been authorized for only the first nine months of 1998.

5. Assessing Options for Administration and Governance

One of the most complicated issues associated with continuing ratepayer funding for energy-efficiency programs in a restructured electricity industry is sorting out the pros and cons of various administrative and governance options. During the past decade, many state PUCs developed policies that gave utilities a central role in pursuing energy-efficiency objectives through DSM programs. Utilities were given responsibility for a variety of activities, including general administration, program design, implementation, program evaluation, and cost recovery. In a restructured industry, the past performance of and the changing incentives now faced by these former administrators requires regulators and legislators to carefully consider all options for administration and governance in the future. Two major alternatives to utility involvement have been proposed: vesting authority to administer programs in existing or newly created governmental agencies or creating nonprofit corporations or authorities with boards of directors. There is no one right answer for all situations. This chapter reviews emerging state approaches, summarizes the three primary options available (utility, state agency, nonprofit), and offers a structured decision tree for evaluating the issues and circumstances that must be considered.

5.1 Emerging State Approaches to Administration and Governance

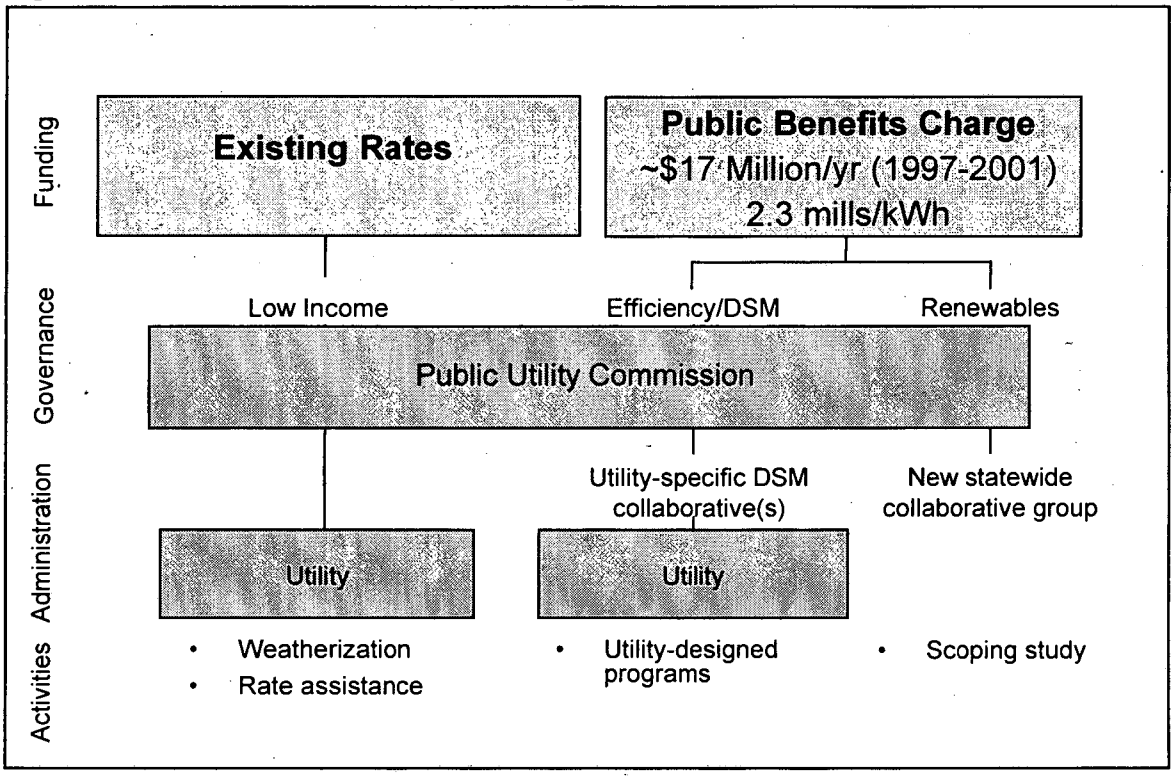
The approaches to program administration that are currently being pursued by four states and one region highlight different models for administration and governance of ratepayer-funded energy-efficiency programs.

- *Rhode Island.* In August 1996, the Rhode Island Public Utilities Commission (PUC) and legislature authorized electric distribution companies to levy a charge of at least 2.3 mills per kWh for energy efficiency and renewables (Rhode Island Legislature 1996). Approximately $17 million/year will be collected under this charge.[13] However, the PUC decided to maintain the status quo for administration and governance of energy-efficiency programs by utilities, subject to PUC oversight (see Figure 2). Utility implementation was supported by all parties because the utilities had a proven track record in successfully implementing programs and a history of working with nonutility service providers. The mix of programs and designs will be determined by DSM collaboratives that involve major stakeholders.[14] Regional coordination of energy-efficiency activities (e.g., participation in the Northeast Energy Efficiency Partnership, NEEP) is being accomplished by a regulatory mandate that utilities participate. Interested parties negotiate a consensus package

[13] As reported in Table 2, only $15 million of this funding is for energy-efficiency programs.

[14] A statewide collaborative group has been established to propose funding allocation and administration methods.

Figure 2. Rhode Island Public-Purpose Programs



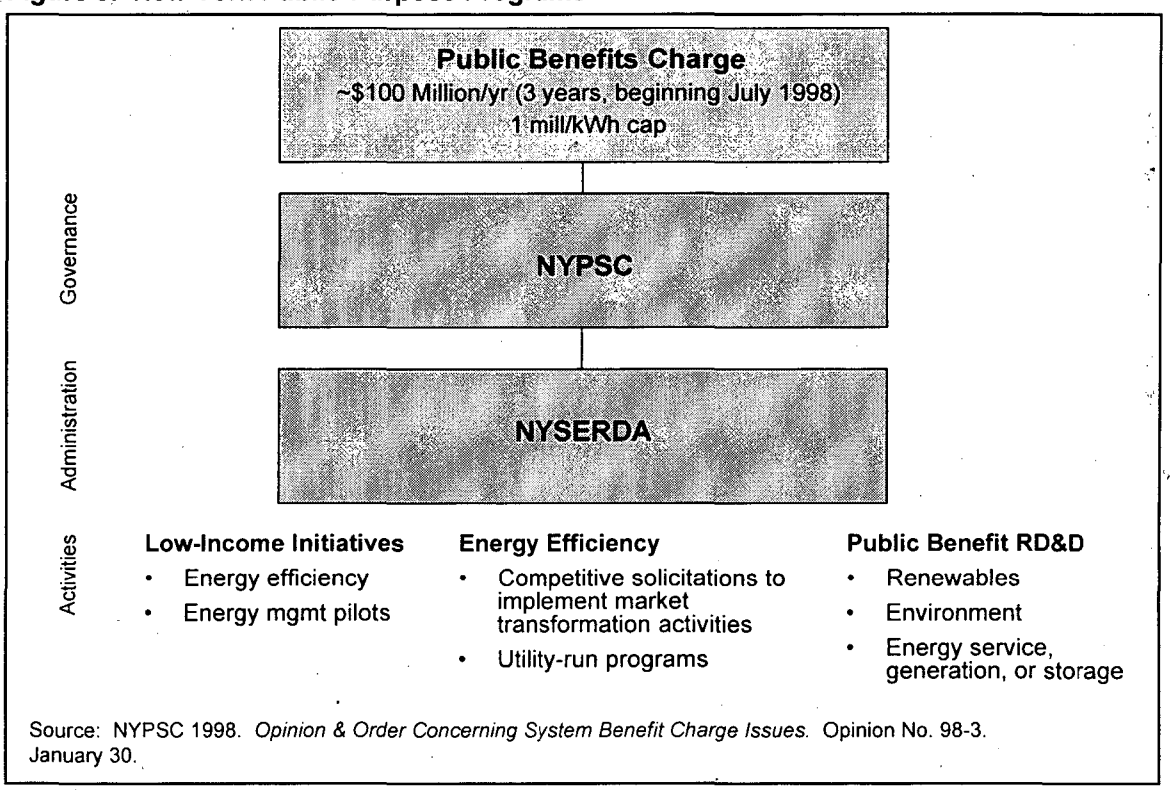
of activities that they jointly recommend to regulators. Such negotiated settlements can be time consuming but appear to work well when a state has multiple, knowledgeable interested parties. Negotiated settlements are generally only possible when all parties want to reach agreement and are willing to compromise.

New York. In a recent decision, the New York Public Service Commission (NYPSC 1998) established a system-benefits charge (SBC) and policies and administrative structures to continue public-purpose programs during the transition period while industry restructuring is taking place. The NYPSC established a three-year period for implementation of SBC-funded programs, beginning in July 1998. The New York Energy Research and Development Authority (NYSERDA), an existing, legislatively authorized, nonprofit entity, was designated statewide administrator for public-purpose funds (see Figure 3).[15] The NYPSC concluded that statewide, third-party administration would result in the most efficient and competitively neutral management of SBC funds. The NYPSC ordered utilities to enter into contracts with NYSERDA; the contracts provided that SBC monies collected by the utilities through rates would be transferred to NYSERDA for PSC-approved programs. In

15 Funding would be provided for PSC-approved programs in the areas of energy efficiency; public-interest RD&D demonstration projects related to energy storage, generation, the environment, and renewables; low-income energy-efficiency programs; and environmental protection programs.

developing a comprehensive program plan for NYPSC approval of SBC funds, NYSERDA was directed to solicit input from major stakeholders and to work closely with NYPSC staff. The NYPSC's expectation was that most SBC-funded programs would be implemented through competitive solicitations open to all qualified parties, including utilities and their affiliates. However, utilities may be allowed to continue administration of certain programs if NYPSC determines that utilities can most effectively implement them. Among the alternatives, statewide, third-party administration of SBC funds subject to NYPSC oversight was a straightforward choice because New York already had a well-established, legislatively-authorized organization that was experienced in delivering statewide, public-purpose programs for energy efficiency, the environment, and R&D.

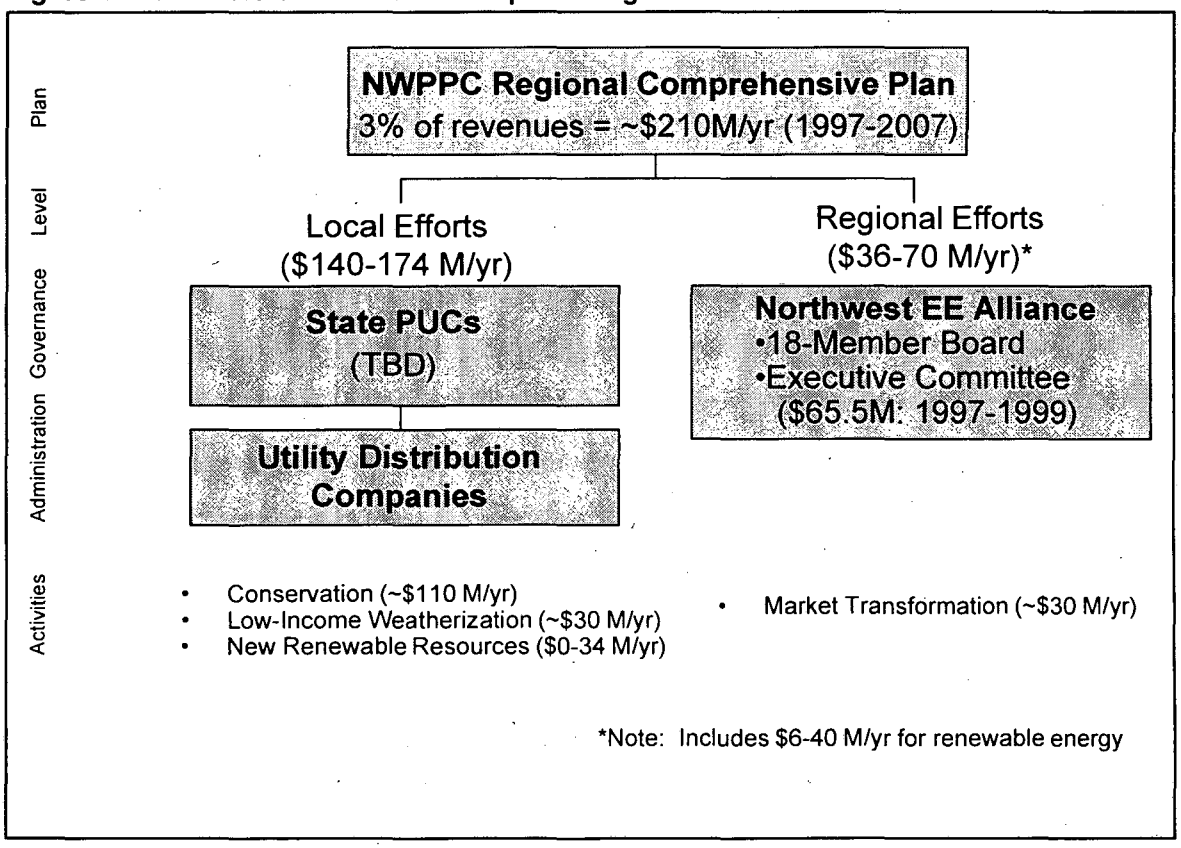
Figure 3. New York Public-Purpose Programs



Source: NYPSC 1998. *Opinion & Order Concerning System Benefit Charge Issues.* Opinion No. 98-3. January 30.

Pacific Northwest. The approach being taken in the Pacific Northwest (Idaho, Montana, Oregon, and Washington) is an interesting hybrid: a new institutional structure has been created for certain energy-efficiency activities that are thought to be most efficiently organized by markets (i.e., across state and utility boundaries) while utilities continue to administer activities that are thought to be most efficiently organized locally (e.g., low-income programs). Decisions regarding administration and implementation of energy efficiency supported by a public-benefits charge are based on the Comprehensive Review of Northwest Energy Systems, which made several recommendations (Steering Committee 1996). Specifically, the governors of the four states recommended that each state spend about three percent of revenues on public-purpose programs (i.e., energy efficiency, renewables, and renewables-oriented R&D) as well as low-income services. For energy efficiency, the Northwest Power Planning Council (NWPPC) suggested that 70 to 75 percent of the funds be targeted toward local efforts administered by local utilities and subject to regulatory oversight (for investor-owned utilities) or elected boards (for public utilities and cooperatives). NWPPC recommended that a nonprofit organization be created to focus on regional market transformation activities (see Figure 4). In 1996, the Northwest Energy Efficiency Alliance (known as "the Alliance") was created as a nonprofit corporation with an 18-member board of directors, composed of

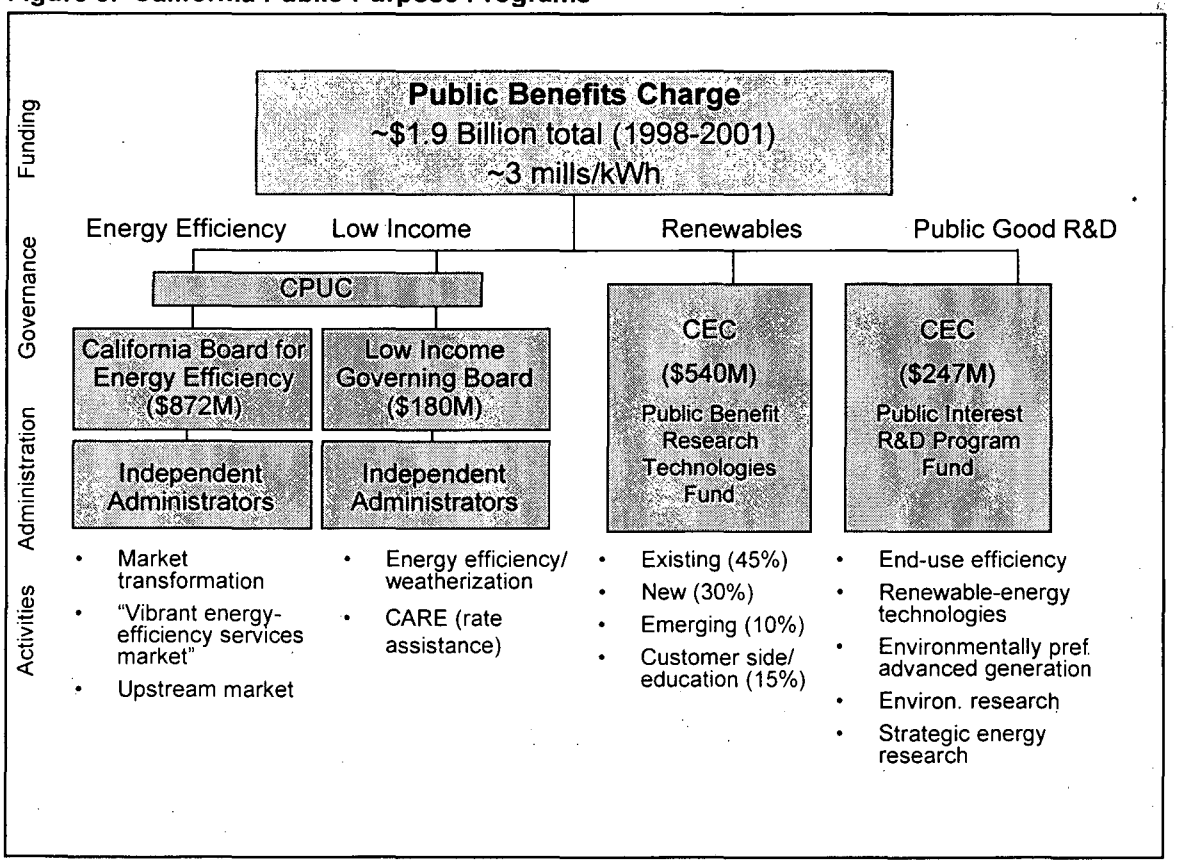
Figure 4. Pacific Northwest Public-Purpose Program Plan



representatives from investor-owned utilities, the Bonneville Power Administration (BPA), publicly owned utilities, NWPPC, and the public. The board of directors selects and approves funding for market transformation projects, reviews and evaluates results, and provides guidance to Alliance staff. With a budget of $65.5 million for 1997 to 1999, the Alliance has issued several broad-based solicitations for innovative market-transformation proposals. Of the four NWPPC states, thus far only Montana has enacted legislation creating a Universal System Benefits Charge. However, the BPA (on behalf of its public power customers) and six major investor-owned utilities (IOUs) in the region are contributing financially to the Alliance; funding from the IOUs is conditional on regulatory approval for recovery of costs through rates.

California. With the passage of electricity industry restructuring legislation (AB1890), the California legislature signaled that four public-purpose activities (energy efficiency, renewable energy, low income services, and public-interest R&D) would no longer necessarily be administered by investor-owned utilities. The California legislature authorized investor-owned utility distribution companies to collect about $1.8 billion in funding between 1998 and 2001 for energy efficiency, California-based renewable energy resources, public-interest RD&D (to advance science and technology not adequately supported by competitive and regulated

Figure 5. California Public-Purpose Programs



markets), and low-income services.[16] The California Energy Commission was given new authority to govern and administer funds for renewable energy development and public-interest R&D; the CPUC maintained authority to oversee energy-efficiency and low-income services (see Figure 5). In order to implement the legislature's goals for energy efficiency, the CPUC created a nine-member independent advisory board (the California Board for Energy Efficiency or CBEE), which was charged with developing and overseeing a competitive process for selecting program administrators to manage the delivery of energy-efficiency programs and services. The CBEE was also given the responsibility for recommending changes to existing policy guidelines and program rules in order to carry out the CPUC's objectives of transforming energy-efficiency services markets, in part by creating a vibrant private-sector energy-efficiency services industry. The CPUC's intent was to have an independent advisory board to oversee energy-efficiency activities and develop public input processes that would ultimately reduce the CPUC's regulatory burden.[17] The CPUC indicated in particular its desire to eliminate contentious and resource-intensive annual DSM earnings hearings and triennial program-approval proceedings. Because the issue of utility administration was so contentious, CPUC decided that program administrators would be selected competitively rather than continuing the utilities' *de facto* monopoly franchise over ratepayer-funded energy-efficiency programs (CPUC 1998).[18]

For completeness, Table 8 summarizes administrative and governance decisions in other states that are maintaining ratepayer funding for energy efficiency and other public-purpose programs as part of utility restructuring.

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16 Publicly owned utilities are also required to establish a nonbypassable public-benefits charge to fund some or all of these activities. An additional ~$500 million will be spent by these utilities during the four-year transition period; minimum funding levels are set relative to the lowest past expenditure level of the three large investor-owned utilities on a percentage-of-revenue basis.

17 However, as an advisory board, the CBEE can only make recommendations that must be approved by the CPUC.

18 The CBEE has recommended that up to three separate program administrators be selected through a competitive process to oversee nonresidential, residential, and new construction markets on a statewide basis.

Table 8. Summary of Public-Purpose Administration and Governance Decisions in Other States

		Decision	
State	**Action**	**Program Implementation**	**Funding Mechanism**
Arizona	ACC decision	Utilities	Public benefit charge
Connecticut	Legislation	Utilities	Public benefit charge
Illinois	Legislation	Utilities	Public benefit charge
Maine	Legislation	Utilities	Distribution company rates
Massachusetts	Legislation	Utilities	Public benefit charge
New Hampshire	Legislation	Utilities	Public benefit charge
Pennsylvania	Legislation	Utilities	Public benefit charge
Wisconsin	PSC recommendation to legislature	State agency	Public benefit charge

5.2 Alternative Administrative and Governance Structures: Key Issues and Tradeoffs

In this section, we discuss some of the major tradeoffs among alternative institutional and governance options for administration of publicly funded energy-efficiency programs. Based on state experiences to date, we organize our discussion around three generic options: (1) continued utility administration with regulatory oversight, (2) administration by an existing state agency, and (3) administration by an existing or new statewide or regional nonprofit institution with a board of directors. These options reflect the broad categories of approaches used so far although many variants and hybrids are possible. Criteria that may be useful for policymakers and regulators to consider include compatibility with broader public policy goals, accountability and oversight, administrative effectiveness, and feasibility and transition issues (see Table 9).

Table 9. Factors to Consider in Choosing Among Administration Options for Energy-Efficiency Programs

Criteria	Examples of Possible Objectives
Compatibility with Broader Public Policy Goals	• Supports market transformation goals • Fosters provision of energy-efficiency services by competitive market • Promotes minimization of all costs including administrative, regulatory, evaluation, marketing, and customer decision • Makes best use of existing energy-efficiency expertise and resources of utilities, energy-efficiency services providers, and governmental agencies
Accountability and Oversight	• Avoids conflicts of interest between those who allocate and those who receive public funds • Provides for public oversight necessary to assure accountability for responsible and effective expenditure of public funds • Minimizes regulatory or administrative procedures that might hamper relationship between service providers and customers • Aligns administrator's financial interests and incentives with desired public outcomes
Administrator Effectiveness	• Provides opportunities for input and feedback from stakeholders, market participants, experts, and customers • Does not impose significant avoidable or unnecessary transaction costs on service providers • Attracts highly qualified administrative and technical personnel
Transition Issues	• Avoids undue regulatory or political obstacles • Provides for smooth transition from current energy-efficiency delivery systems to new structure

Option #1: Utilities Continue to Administer Energy-Efficiency Programs

Description: In this option, the utility continues its central role in administering energy-efficiency activities, providing general administration, program design, oversight of implementation (significant elements of could be contracted out to private firms), evaluation, and cost recovery subject to regulatory oversight. The utility submits an overall plan with proposed program designs and budgets. Budgets and use of ratepayer funds are reviewed and approved by the PUC. Utility management designs individual programs and is responsible for overall program management and administration. Typically, utility plans reflect input from major stakeholders and possibly a consensus settlement (e.g., similar to the approach in Rhode Island).

Pros/Cons: Proponents of continued utility administration of energy-efficiency programs argue that the approach has been successful in some states and with certain utilities, particularly since the advent of DSM shareholder incentives. Many utilities have developed significant expertise in administering energy-efficiency programs, so new institutional arrangements do not make sense, particularly where state policymakers have determined that public-benefits funds are likely to be available only during a short transitional period. Some utilities have track records that show their strengths as program administrators even if the policy goals for energy efficiency have changed from resource acquisition to market transformation. These strengths include name recognition among customers, clout with manufacturers and trade allies, acknowledged technical expertise on energy use, lack of direct financial interest in promoting particular energy-efficiency products or services, access to detailed information on customer energy-use patterns, and a system for billing customers. One of the attractive features of continued reliance on utilities for these activities is that accountability and oversight mechanisms are well established. There are also well-developed mechanisms for input and feedback from key stakeholders through collaborative working or advisory groups. Finally, in part because of regulatory requirements, utilities have been compelled to document a standard of performance in their energy-efficiency programs that typically has not been required for comparable programs administered by governmental or nonprofit agencies.

However, opponents of continued utility administration argue that some utilities have done a poor job in the past, are no longer interested or well suited to administer energy-efficiency activities given new policy objectives, or have interests that are fundamentally incompatible with these objectives in a restructured industry. For example, if the energy-efficiency policy objectives move from resource acquisition toward creation of a vibrant, private-sector energy-efficiency services industry, market participants will have great difficulty perceiving that a regulated distribution utility can dispense funds in a competitively neutral manner if the utility has a retail energy service affiliate that operates in the local service territory. Policymakers may worry, as they did in California, that the distribution utility will have significant incentive to increase sales to facilitate recovery of potentially stranded costs; thus its financial or business interests may not be well aligned with the desired outcomes of ratepayer-funded energy-efficiency programs (CPUC 1997a). Opponents of utility administration also argue that utilities' historic administrative and organizational strengths in energy-efficiency program administration are not particularly relevant because energy-efficiency services markets are not defined by service territories; thus substantial coordination and administrative benefits could result from moving to statewide or regional administration of programs. Finally, opponents claim that, with the dramatic reductions in energy-efficiency spending in recent years, many utilities have lost much of their in-house expertise in this area.

Option #2: Existing State Agency Administers Energy-Efficiency Programs

Description: In this option, an existing state agency (e.g., state energy office, general services administration, economic development agency, or housing and social services agency) administers publicly funded energy-efficiency programs. The utility collects funds and transfers them to the state agency and, under certain conditions, may also implement programs.

Pros/Cons: Proponents of this approach argue that statewide administration would minimize costs, that a state agency will be less likely to be perceived by market participants as having conflicts of interest, that state agencies have significant experience and could dispense funds through competitive solicitations, and that, in theory, state agencies have well-developed processes to ensure input and accountability for use of public funds.

However, opponents caution that there are problems associated with utilizing an existing state agency to accomplish what is likely to be a significantly expanded mission. First, policymakers will need to assess the agency's ability to meet the public-policy goals for energy efficiency. During the past 20 years, various state agencies (e.g., state energy offices, housing departments) have been responsible for aspects of energy-efficiency program delivery, such as administration of federally funded programs (e.g., residential conservation services, low-income weatherization, the state energy conservation programs, and the Institutional Conservation Program). However, few, if any, state agencies have had experience administering the full scope of activities currently undertaken by today's utility energy-efficiency programs. Second, state agencies typically employ procurement guidelines that are often suboptimal when the desired products or services are difficult to define in advance. Potential drawbacks associated with state procurement processes will depend to some extent on the complexity of policy objectives for energy efficiency (e.g., acquisition of resource savings may be less problematic than transforming markets because resource savings are easier to measure). If transforming markets increases in importance, flexible procurement processes are likely to be particularly important (because our understanding of how to assess and evaluate proposals to transform markets is rapidly evolving). A third reason offered against state administration of energy-efficiency programs is that state budgeting and civil service requirements may make it difficult for state agencies to either staff quickly in response to an expanded mission or acquire necessary in-house technical expertise in a timely fashion. These constraints should be considered seriously, particularly if policymakers decide that publicly funded energy-efficiency activities will only be available for a relatively short (e.g., two- to three-year) transitional period.

Option #3: Rely on an Existing or Create a New Nonprofit Institution with Board of Directors

Description: In this generic option, state or regional policymakers would support an existing or create a new state or regional non-profit institution to carry out public-purpose goals for energy efficiency.

Pros/Cons: Proponents argue that this administrative approach has a proven track record. During the past 20 years, a number of nongovernmental institutions have gained experience administering large-scale energy-efficiency programs. For example, Rhode Islanders Save Energy, a nonprofit agency created by the state's utilities, successfully delivered energy audits to residential customers during the 1970s and 1980s and is presently administering several DSM programs under contracts with local utilities. The North Carolina Advanced Energy Corporation is a nonprofit organization that receives funding from the state's electric utilities (who also sit on its board of directors) to promote and demonstrate high-efficiency technologies and programs. There are also several examples of nonprofit or governmental agencies that are responsible for research, development, demonstration, and, in some states, limited implementation activities (e.g., New York State Energy Research and Development Authority, California Institute for Energy Efficiency, and Energy Center of Wisconsin). Other potential advantages of nonprofit administration of energy-efficiency programs include: (1) the organizational form, structure, and mission of nonprofits could be very compatible with public-policy goals for energy efficiency (e.g., market transformation), (2) market participants are unlikely to perceive conflicts of interest, (3) flexible planning and competitive procurement processes can be employed, and (4) the organization may be able to attract highly motivated, skilled technical and administrative staff relatively rapidly.

However, this option also has some significant potential drawbacks. First, the creation of a successful new institution hinges on a broadly shared consensus regarding mission, objectives, funding sources, and appropriate organizational form and governance. Significant political will, commitment, and vision are required from many parties in order to work out the many issues that arise in creating a new or significantly enlarging the scope and responsibilities of an existing institution. Success is certainly not guaranteed. Second, the issues associated with accountability and oversight of public funds and governance are particularly significant. Much depends on the enabling charter for the institution, including the role (if any) of the legislature in authorizing the creation of the institution. In the beginning, these issues may be time consuming to address. For example, even with knowledgeable staff on loan from the NWPPC, it took four to six months of discussions prior to and after the creation of the Northwest Energy Efficiency Alliance for the parties involved to reach consensus on administration and governance issues (Keating 1998). Given the high start-up costs of a new institution, this option is more attractive if policymakers in a state or region have indicated a relatively long-term commitment to energy efficiency (e.g., five years or more).

5.3 A Structured Decision Tree for Evaluating the Options

In Table 10, we identify the most important issues facing the three generic administrative options described above, using the criteria identified earlier in Table 9. There is no one best solution; the relative strengths and weaknesses of each option require tradeoffs that can only be assessed by policymakers in each state. However, we have developed a decision tree that organizes the issues we believe states should consider sequentially in evaluating alternatives (see Figure 6).

We begin by assuming that a utility currently administers PUC-approved energy-efficiency programs. If a state concludes that the utility's past performance in energy-efficiency program administration and delivery has been poor and/or unacceptable, then there is little reason to believe that the utility's future performance will improve in a more competitive electricity industry. Likewise, if the utility's management clearly indicates that it has little interest in continuing to be responsible for ratepayer-funded energy-efficiency activities, then it is sensible to consider institutional alternatives. In both situations, the decision is relatively easy because the utility has effectively removed itself from consideration.

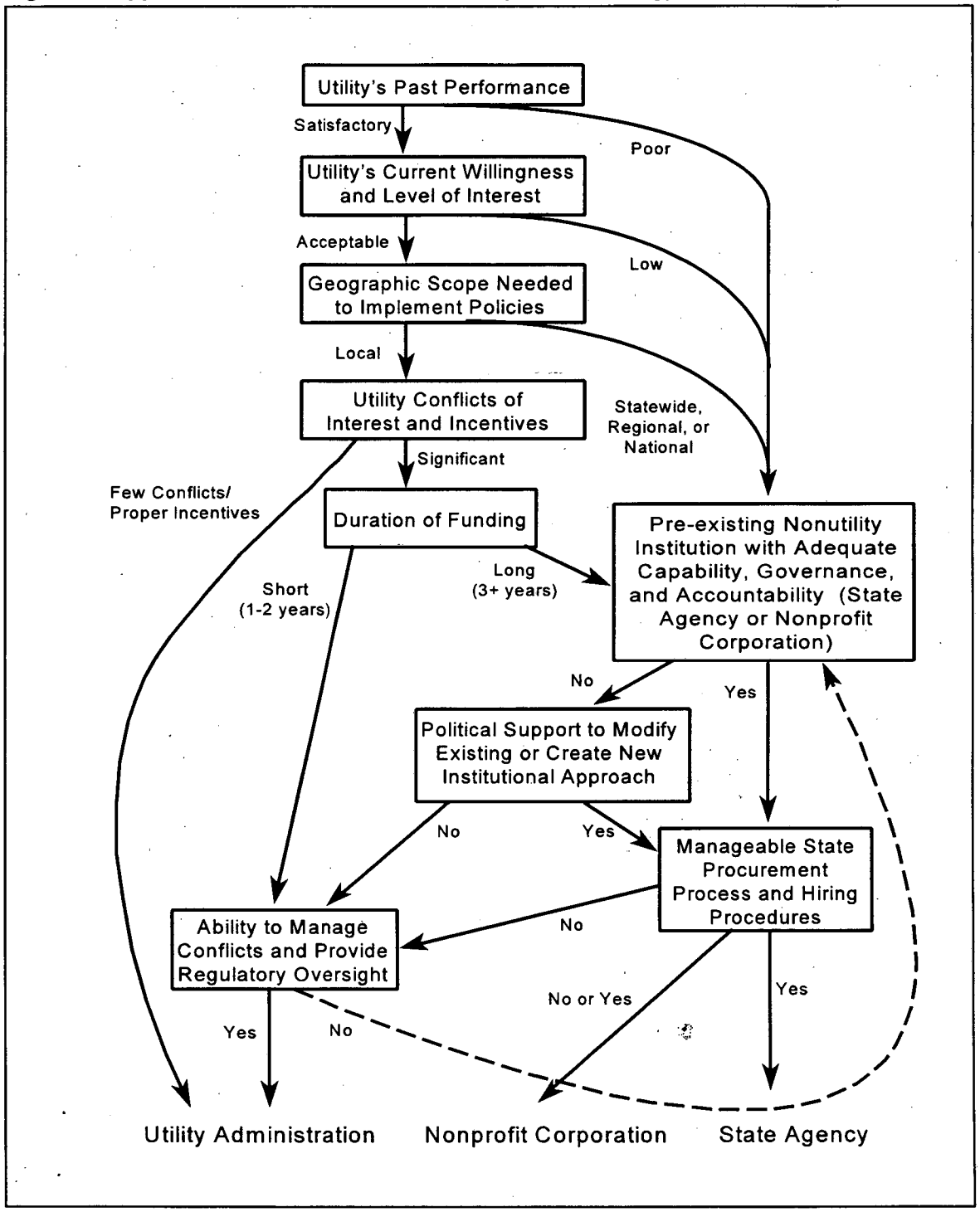
Next, we believe states should consider whether the specific policy objectives proposed for future ratepayer-funded energy-efficiency activities are best implemented locally or statewide. Local activities such as energy audits may be administered more effectively by transmission and distribution (T&D) utilities while statewide activities, such as participation in upstream market transformation activities, might be more effectively administered by a statewide organization. The Pacific Northwest provides a useful example of how such a hybrid strategy might be implemented. Other models certainly exist, such as Rhode Island's, in which utilities have been effectively directed to participate in statewide, regional, and national activities. However, we believe it is appropriate to consider options for nonutility administration before choosing utility administration as a default.

A critical issue raised by continued reliance on utilities for administration of ratepayer-funded energy-efficiency activities is perceived or real conflicts of interest. States will have to judge whether societal objectives for promoting energy efficiency are aligned with a utility's strategic incentives and whether utility administration poses significant threats to the development of a competitive and robust energy services industry. Subjective judgments on these matters are unavoidable, but certain conditions can be evaluated. For example, if a utility has divested its generation assets (i.e., it has become a pure DISCO), operates under a performance-based regulation scheme that decouples earnings from sales, and does not have an unregulated ESCO or RESCO affiliate operating in its service territory, the potential for conflicts of interest has been minimized.

Table 10. Pros and Cons of Alternative Administrative Options for Energy-Efficiency Programs

Criteria	Continued Utility Administration	Existing State Agency	New Nonprofit Institution
Compatibility with Broader Public-Policy Goals	• Utility expertise and infrastructure is an advantage • Utility clout with "upstream" entities is an advantage, but service territory limitations lead to market and administrative inefficiencies in certain programs	• Statewide scope may minimize administrative and transaction costs • Agency's ability to meet energy-efficiency policy goals must be assessed	• Organizational form, structure, & mission (e.g., statewide, regional) is strongly aligned with market transformation goals
Accountability and Oversight	• Significant potential exists for conflicts of interest or perceptions of conflict of interest with other market participants • Regulatory oversight mechanisms are well developed although process can be bureaucratic	• Low potential exists for conflicts of interest with private market participants • Public input process may be well developed but agency may have little experience with accountability & evaluation standards used for energy-efficiency programs	• Minimal conflicts of interest exist with market participants • Governance and accountability issues are significant
Administrator Effectiveness	• Existing, well-developed mechanisms for input and feedback from stakeholders • Some utilities have highly qualified, experienced staff • Desired public outcomes may not be compatible with utility financial interests	• Expanded mission for existing agency; assessment of historic track record • State procurement rules may make it more difficult to select "best value" programs & proposals • State agency may not have required technical expertise	• Most flexibility on competitive procurement but institution building takes time and resources • Can create efficient, lean organization quickly with clearly defined mission • High probability of attracting qualified administrative & technical staff
Transition Issues	Transition costs are lowest	• Transition issues may be significant	• Political will and support needed to create new institution

Figure 6. Approach to Select Administration Option for Energy-Efficiency Programs



If continued utility administration of energy-efficiency funds creates significant and unavoidable conflicts of interest in a restructured electricity industry, or if a utility's strategic

and financial interests fundamentally conflict with societal objectives for energy efficiency (as articulated by the state PUC or legislature), states will need to assess tradeoffs. Continued reliance on the utility will require management of conflicts of interest; reliance on nonutility administration raises issues regarding competence, governance, and accountability.

In evaluating options for managing conflicts of interest, there are several important considerations. First, if the DISCO is affiliated with an unregulated ESCO or RESCO operating in its service territory, a state could limit or constrain the activities of the ESCO or RESCO within the service territory (e.g., through market segmentation) or decide to monitor and enforce "arm's length" relationships. In this case, the state would have to evaluate the extent to which ongoing monitoring is compatible with future regulatory direction. Second, as discussed previously for Rhode Island, the existence of knowledgeable, well-funded (or reimbursed) interested parties can allow for negotiated settlements on funding allocations and program design, which may reduce the independent state monitoring required. Third, independent advisory boards (such as the California Board for Energy Efficiency, which is overseeing interim administration of programs by utilities in 1998) can be created to provide oversight separate from that provided by regulatory staff.

We recommend that the expected duration of continued ratepayer-funding enter into decisions to pursue utility versus nonutility administration. If the period of funding is expected to be short (one to two years), then we believe the transition and start-up costs associated with nonutility administration are likely to outweigh the expediency of continuing utility administration (despite the ongoing monitoring and regulatory oversight costs). If, however, the period of funding is expected to be long (three or more years), it is appropriate to explore nonutility administration.

Consideration of alternative administrators should begin with existing nonutility institutions. For a state agency or nonprofit corporation/governing board, the threshold questions are whether the institution has: (1) the capability to staff and manage ratepayer-funded programs, which may be significantly broader in scope than current activities; and (2) a system of governance and accountability that is acceptable to the public, the PUC, and the legislature. If these questions cannot be answered satisfactorily, the next question is whether political support exists to modify these institutions appropriately (or to create new ones). If not, states must revisit the options for continued utility administration.

If the capability, governance, and accountability requirements for nonutility administration can be met, then another issue arises if state agencies are given responsibility for program administration. State procurement and hiring policies can be quite rigid compared to those of utilities or nonprofit organizations.[19] If the rigidities in these procedures are deemed unmanageable given the need to implement energy-efficiency policies expeditiously, then

[19] These rigidities are based, in part, on a desire to procure contractors objectively and insulate state workers from political influences.

the arguments for state administration are less compelling.

Vermont and California are pursuing novel approaches for assessing institutional alternatives which will allow consideration of a fourth option: administration by a nonutility for-profit firm. Rather than make an upfront assessment of the tradeoffs and considerations identified in Figure 6, Vermont has proposed that the Public Service Board conduct a public solicitation through a formal proceeding in which the administrator could conceivably be a nonprofit organization, a private corporation, an ESCO, or a consortium of firms or organizations (VDPS 1997). Similarly, California is conducting an even broader solicitation, also subject to ultimate approval by the CPUC, that will allow state agencies, nonprofits, utilities, and nonutility for-profit firms to submit bids to administer energy-efficiency programs statewide (CPUC 1997a). In order to develop a Request for Proposals (RFP) to hire new administrators, the CBEE led an open process with significant opportunities for public comment. The RFP, which has now been largely adopted by the CPUC, identifies the number of administrators the CPUC will hire (three: residential, nonresidential, and new construction) and the scope of their responsibilities, including the separation between administrative and implementation responsibilities (Prahl and Schlegel 1998; Miller 1998). The openness of the process is central to the reasons why consideration of nonutility for-profit firms was even possible. However, developing and implementing the RFP process, which started in mid-1997 and will not be complete until the beginning of 1999 at the earliest, has been time-consuming. Other states are taking a wait and see attitude to the California process: only if it proves successful will other states consider it.

6. Conclusion

Ratepayer-funded energy-efficiency programs reflect societal preferences to secure important public benefits that markets cannot be expected to provide unassisted. Although restructuring holds great promise for improving the function of the energy market, we believe that restructuring alone is unlikely to supplant the need for ratepayer funding of energy-efficiency programs. These programs must be consciously redesigned, however, to ensure that they are consistent with the new institutional relationships and policy goals created through restructuring. Table 11 summarizes our recommendations.

Table 11. Summary of Recommendations

Question for Program Design	Recommendations
Rationale for Ratepayer Funding	Capture cost-effective energy-efficiency opportunities that will be missed by the competitive market
	Facilitate transition to more competitive markets
	Ensure benefits of restructuring are shared broadly among all customers
Creation of a Public-Benefit Charge	Ensure competitively neutral mechanism for collecting funds
• Funding level	Establish funding based on bottom-up analysis of cost-effective energy-efficiency opportunities remaining after restructuring and an assessment of likely private-sector activities in the absence of ratepayer funding; at a minimum, continue funding at historic levels.
• Duration	Decouple sunset date from recovery of competition transition charges; establish a five-year review period over which to assess accomplishments and determine continuing need for programs.
• Rate design	Collect funds through a nonbypassable, volumetric charge .
Energy-Efficiency Policy Objective	Ensure that benefits to society exceed cost
	Target activities to areas not adequately addressed by private sector
	Design programs to effect lasting beneficial changes in the market
Administration and Governance of Programs	Systematically assess desirability of utilities, state agencies, and independent institutions to manage public-benefits funds based on: (1) institutions' past performance, current ability, and level of interest; (2) geographic scope needed to implement policies; (3) duration of funding; (4) utility conflicts of interest and ability to manage these conflicts; (5) flexibility of state procurement and hiring procedures; and (6) degree of political support for creation of new, nonutility institutions.

Ratepayer-funded energy-efficiency programs should complement and enhance, not displace, emerging opportunities for the private sector to assist consumers in acquiring cost-effective, energy-efficient products and services. These programs should be designed to facilitate the transition to more competitive markets. They should also be targeted to those parts of the market that are not yet fully served by the private-sector energy-efficiency industry and thus, least likely to immediately reap the benefits of competition.

Support for energy-efficiency programs remains an important responsibility for all ratepayers; restructuring requires new mechanisms for funding programs. We believe that a nonbypassable public-benefits or wires charge paid by all electricity users represents the fairest approach. We recommend that states consider creating such a nonbypassable charge and ensure compatibility with current state policies toward energy efficiency in establishing funding levels and consistency with other restructuring policies in establishing collection mechanisms. We do not recommend linking program funding to the short transition periods being considered for other aspects of industry restructuring (e.g., recovery of stranded costs). Instead, we recommend authorizing funding for at least a five-year term coupled with ongoing evaluation and review to ensure that policy objectives are being met and that there is a continuing need for the programs.

Restructuring requires policymakers to re-examine the objectives for energy-efficiency programs (such as cost effectiveness and equity). Traditional principles of cost effectiveness—that the benefits of the programs should outweigh their costs—should be unaffected by restructuring. As noted above, however, ensuring broad equity among customer classes will require special attention to avoid duplicating or displacing the efforts of the private sector in areas that are already well served by the competitive market. Finally, we recommend that programs should be designed with the objective of permanently overcoming the many market barriers that currently impede the adoption of cost-effective energy-efficient opportunities. This approach is consistent with facilitating the transition to more competitive energy markets. However, we do not believe that success in overcoming market barriers can be guaranteed in advance (which is why we also do not recommend establishing a fixed sunset date for the programs). At the same time, we recommend a more explicit focus on reducing market barriers as a design principle in order to improve the prospects for lasting, beneficial changes in the structure and functioning of the energy market.

Finally, we recommend that states think carefully about the future role of utilities in administering ratepayer-funded energy-efficiency programs. In supporting these programs, we believe states will have to assess important tradeoffs between continued utility administration and options for nonutility administration. These tradeoffs cannot be made in the abstract but must be based on past accomplishments and future visions that are unique to each state. Hence, no single model will be appropriate for all states; important state-specific considerations, such as historic relationships among stakeholders, must be considered. We have attempted to lend some structure to these discussions by identifying the issues and circumstances that must be considered and some of the logical relationships that exist among them.

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Ernest Orlando Lawrence Berkeley National Laboratory
One Cyclotron Road | Berkeley, California 94720

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