(Decision No. C90-1641)

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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GENERIC INQUIRY CONCERNING DEMAND SIDE MANAGEMENT ISSUES	)))	DOCKET NO. 90I-227EG **POLICY STATEMENT**

December 5, 1990

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1. OVERVIEW

The Colorado Public Utilities Commission (Commission) is dedicated to achieving a regulatory environment that provides safe and reliable utility services to all on just and reasonable terms. We are interested in the long-term welfare of Colorado utility consumers and the viability of the utilities that serve those consumers. Over the past two years, the Commission has conducted a wide-ranging inquiry concerning utility participation in energy efficiency, renewable energy, and environmental quality. The inquiry has involved many utilities, state agencies, industrial, commercial, and residential customers, and other interested individuals. As a result of this activity, the Commission has prepared this policy document for public review and comment. The policy statements contained in this document are the result of the beginning stages of what we hope will be a dynamic process of mutual education, communication, and change.

2. ACKNOWLEDGEMENTS

The Commission greatly appreciates the hard work and substantial resources that all parties have invested in this inquiry. The open, non-adversarial exchange of information has contributed to an increased understanding of these important utility issues. This understanding has permitted us to move forward toward resolving the specific issues discussed in this policy statement. The Commission wants to extend special thanks to the Colorado Office of Energy Conservation (OEC) for its participation. We look forward to continued OEC participation in Commission proceedings. The participation of the Colorado Rural Electric Association, and the offer of voluntary participation of Colorado-Ute Electric Association, Tri-State Generation and Transmission Association, Inc., and Mountain View Electric Association in subsequent working groups are noteworthy, and indicate a recognition of our common interest and inter-dependence.

3. PROCEDURAL HISTORY OF THE INQUIRY

In the course of the past two years, the Commission has received a wealth of information concerning demand side management (DSM) (definition provided in Appendix 11-C), energy efficiency, renewable energy, environmental quality, integrated resource planning, and incentives. Much of our information has come from the review of a growing amount of literature on these topics. Our information has also come from interaction with utility representatives, experts from other state agencies, and commissioners and staff from other states.

Throughout our examination, the Commission has involved Public Service Company of Colorado (PSCo), the OEC, the Colorado Office of Consumer Counsel (OCC), the Staff of the Colorado Public Utilities Commission (Staff), and many other organizations and individuals to ensure that their expertise was brought to bear. As part of this process, an economists' panel composed of representatives from PSCo, Staff, and the

OCC, attended special open meetings and reported back to the Commission on their findings.

The Commission has sponsored a variety of special open meetings covering the following issues: utility experience with DSM and renewable energy sources, energy efficiency and large loads, photovoltaics, solar thermal electric power systems, internalizing environmental externalities, energy efficiency and low-income households, energy service companies, incentives, acid rain, global warming, clean coal technology, and a report by the economists' panel. These meetings were widely noticed and well attended. In addition, a special respository docket (Commission Docket No. 89I-084EG) was established, which is available for public information, to store a wide array of data.

It is significant that during this process, the Commission received a message on February 9, 1989 delivered by James Ranniger, Vice President of Rates and Regulations of PSCo, as authored by Del D. Hock, Chairman, and Chief Executive Officer of PSCo:

> While I am unable to attend this important meeting regarding a subject of vital interest to Public Service Company, the Public Utilities Commission, our customers and our shareholders, I do want to state that I am fully supportive of this joint effort to find reasonable and practical solutions to the better utilization of our energy resources. I want to assure the Commission of my personal support for this project and as I believe our presentation will demonstrate, we are fully committed as a company to the task of finding answers and opportunities through innovative applications of energy conservation and efficiency.

After holding these meetings, the Commission formalized the inquiry by establishing this docket (Commission Docket No. 90I-227EG). Commissioner Gary L. Nakarado served as Hearing Commissioner for the inquiry. Staff prepared documents detailing issues to be examined, and many parties and individuals intervened and participated. The Commission made special efforts to obtain the input of a wide variety of people who attended a series of five informal roundtable meetings in September 1990. In addition, public witness hearings and formal evidentiary hearings were held on October 4, 5, and 9, 1990.

The Commission discussed the results of these meetings and hearings in an open meeting on October 24, 1990. A week later, an initial draft of this policy statement was made available to the public. A working special open meeting was held on October 31, 1990, at which time members of the public and parties had an opportunity to comment on the draft. The Commission had further public discussion on the draft at that meeting. This policy statement is a direct result of the open meetings, evidentiary hearings, public witness hearings, roundtable meetings, and the two open meetings held on October 24 and 31, 1990. A complete record of this inquiry is available in the Commission's office.

4. PUBLIC COMMENT ON THIS DRAFT DOCUMENT

We are issuing this policy statement for public comment in anticipation of receiving responses that will assist us in improving the document. We are sending this policy statement to a long list of parties and individuals who we know have an interest in energy and public policy. Responses are due on January 7, 1991, addressed to the attention of James P. Spiers, Executive Secretary, Colorado Public Utilities Commission, 1580 Logan Street, Denver, Colorado 80203. The responses will be reviewed by the Commission, and a new document will be issued that reflects information and viewpoints that advance public utility policy development in Colorado.

5. PURPOSE OF THE INQUIRY

The broad intent of this inquiry is to make the regulatory objectives of the Commission explicit in the areas of DSM, renewable energy resources, and environmental quality. While these overarching objectives will not have the legal force of rules, the following benefits of our explicit statements are sought:

A. To provide guidance and notice of our present objectives, policies, and priorities to all affected parties and others .
B. To reflect and to encourage public debate and re-direction.
C. To allow other political representatives, such as the legislature, departments of the executive branch, and others, to join the discussion, and to provide support and guidance where necessary.
D. To encourage all parties who are interested to have early and clear notice of where we see the consensus of public opinion moving on the issues discussed. The parties can then play their proper role of innovation and implementation, check and counter-balance, and consideration of equities and efficiencies.

6. JURISDICTION

The Public Utilities Commission's jurisdiction and responsibilities flow from Article XXV of the Colorado Constitution, which provides that:

> . . . all power to regulate the facilities, service, and rates and charges therefore, including facilities and service and rates and charges . . . of every corporation, individual, or association of individuals, wheresoever situated or operating within the State of Colorado . . . as a public utility [with the exception of municipally-owned utilities] . . . is . . . vested in . . . the Public Utilities Commission . . . as the General Assembly . . . by law designate[s]. (Brackets supplied.)

and our specific statutes, which provide, in part:

a. Section 40-3-101, C.R.S., REASONABLE CHARGES - ADEQUATE SERVICE, provides, in part:

> (1) All charges made . . . by any public utility . . . shall be just and reasonable . . .
>
> (2) Every public utility shall furnish, provide, and maintain such service, instrumentalities, equipment, and facilities as shall promote the safety, health, comfort, and convenience of its patrons, employees, and the public, and as shall in all respects be adequate, efficient, just, and reasonable. (Emphasis supplied.)

b. Section 40-3-111, C.R.S., RATES DETERMINED AFTER HEARING, provides, in part:

> . . . In making such determination [of just and reasonable rates], the commission may consider . . . any other factors which may affect the sufficiency or insufficiency of such rates, . . . and may consider any factors which influence an adequate supply of energy and any factors which encourage energy conservation. (Emphasis and brackets supplied.)

and finally,

c. Section 40-3-102, C.R.S., REGULATION OF RATES AND CHARGES, provides, in part, that it is this Commission's

> . . . duty . . . to generally supervise and regulate every public utility in this state; and to do all things, . . . which are necessary or convenient in the exercise of such power, . . . (Emphasis supplied.)

6.1 ELABORATION

The meaning and the practical application of our Constitutional and statutory charge continue to evolve, as circumstances and the depth of our understanding increase. In the past, when humanity's impact on the environment was at a much less profound scale; and when energy consumption, technology, and fuel costs changed at a far more predictable pace, public utility regulatory objectives tended toward a short-term focus on low rates. Today, the circumstances are different: people are changing the physical environment, and the very basis of much of our

modern society--inexpensive and transportable energy--is now known to have significant external costs and to be of finite quantities.

Further, our understanding of our circumstances has grown. We know that there is a relationship (1) between tons of coal burned to generate electricity and our air quality, (2) between air quality and the health and quality of life of our people, (3) between the health and quality of life of our people and the strength of our economy, (4) between the strength of our economy and the demand for electricity, and (5) between the demand for electricity and tons of coal burned. But such relationships are complex and frequently are not well understood. For example, there is also a relationship between the price of electricity and the strength of our economy.

The inter-dependence of these issues is complex, but must be addressed by this Commission to fulfill its responsibilities. We choose to begin to incorporate these difficult and complex issues into our regulatory objectives.

We will hereafter consider at least the following influences and considerations in setting and implementing our regulatory objectives:

a. An inter-dependent, but competitive global economy with increasing income disparities within and among nations;

b. A physical environment at risk;

c. An opportunity for society to reduce present and future risk and discontinuities by pursuing diversity of energy supply sources, developing renewable energy resources, and investing in efficiency; and

d. A regulatory process among the Commission, Colorado utilities, the legislature, and Colorado consumers, which integrates the strengths of democracy, free markets, and technology towards a sustainable society.

6.2 REGULATORY OBJECTIVES

The mission of the Commission is to achieve a regulatory environment which provides safe and reliable utility service to all consumers in the State of Colorado at a just and reasonable cost. We believe it is in the best interest of the utilities and consumers of this State to provide these services at the least cost, as described below. We define costs very broadly, and over the long run. We believe it is our obligation to use all available regulatory tools to bring about such a result. We view it as our responsibility to develop and maintain a process which encourages participation by all interested parties. We then set public utility goals, providing incentives to utilities and price signals to customers to meet such goals.

Ultimately, we believe one of the overarching purposes of government regulation of the utilities is to ensure that a zero or low discount rate analysis is developed and compared to standard discounted cash flow analyses, because standard market analyses tend to undervalue a long run perspective. While the market is without peer as a mechanism for short term allocation of resources, government, as an expression of community, must insist on analysis directed toward long term sustainability.

We believe it is the affirmative obligation of utilities to seek out and pursue cost-effective resources. The pursuit of our shared goals cannot depend entirely on regulatory action taken by the Commission. Our Staff is relatively small, and our limited resources have many competing demands. Innovative action in accordance with our shared goals must originate with Colorado utilities.

7. POLICY STATEMENT SUMMARY

7.1 **Minimization of Total Costs.** The Commission is dedicated to the goal of minimizing the total costs of energy services by improving long range planning and by identifying opportunities for additional savings. To reach this goal, the Commission will determine and compare avoided costs of various supply side resources, will determine appropriate discount rates, and will conduct load forecasts.

7.2 **Examination of Incentives and Rate Structures.** The Commission encourages utilities, Staff, and all interested parties to examine the existing incentives for utility profitability. We encourage interested parties to suggest incentives and rate structures that result in greater utility and customer participation in demand side (customer side) management activities and renewable energy development. We will also examine the relationship between utility profitability and sales and recommendations for decoupling this relationship.

7.3 **Environmental Concerns and the Societal Test.** The Commission recognizes that environmental quality must be considered when comparing both demand and supply side resources. As a consequence of this recognition, the Commission favors the societal test (see Appendix 11.C for definition) for cost effectiveness. At this juncture, the Commission does not intend to apply the societal test in a rigid manner. The societal test will serve, however, as a starting point in decision making until such time as externalities and an integrated resource planning regulatory framework can be implemented.

7.4 **DSM to be Pursued on an Equitable Basis.** The Commission is dedicated to the cost effective provision of reliable utility-supplied energy services. The Commission also favors equitable access to DSM programs. Accordingly, the Commission encourages a reasonable balance of customer class access to DSM programs to be contained in applications submitted by utilities for DSM pilot projects and programs.

7.5 **Attention to Renewable Energy.** The Commission endorses the integration of renewable energy resources into the utility supply mix in Colorado. The Commission favors an aggressive approach to utility research, development, demonstration, and commercialization of renewable energy resources. We will continue to advocate at the national, regional, and state level for increased attention to renewable energy resources.

7.6 **Development of an Integrated Resource Planning Framework.** The Commission's policy is to adopt an integrated resource planning regulatory framework. It is our intention to establish a rulemaking hearing to create this framework within three months following the completion of the next PSCo general rate case. The Commission may establish a rulemaking hearing earlier, if necessary or advisable, to meet the requirements of the Clean Air Act.

7.7 **Public Participation.** The Commission recognizes the need for strong technical capabilities, as well as meaningful public participation, when evaluating the cost and performance of DSM and renewable energy resources. We delegate to our Staff the responsibility to form and maintain a technical working group composed of jurisdictional utilities, Staff, the OEC, and the OCC, with additional participation by other qualified persons as deemed advisable by the Commission. The Commission is interested in exploring the opportunity for creating a new institutional arrangement that provides professionally managed collaboration aimed at analyzing and expanding the goals contained in this policy statement.

7.8 **Capturing Efficiencies in Construction.** The Commission favors policies to ensure that new investments in buildings and equipment incorporate appropriate energy efficiency characteristics. In addition, the Commission favors policies aimed at encouraging utility participation in the building retrofit market. We will convene a special open meeting to determine what approaches are best suited to meet the goal of increasing the energy efficiency of Colorado's existing residences and buildings.

7.9 **Energy Efficiency Response to Bypass.** The Commission encourages utilities, Staff, and other parties to examine the role of energy efficiency as a method the utility should employ to retain customers who are threatening to bypass the utility system by generating their own power. We will convene a special open meeting to hear proposals on how this might be implemented.

7.10 **Emphasis on Marginal Cost.** The Commission believes that consumer and investment decisions should be made based on marginal costs in the appropriate time frame. In other words, decisions having long-term consequences should be made based on long-run marginal costs, including externalities--whose costs are not zero.

8. BACKGROUND INFORMATION

8.1 THE POTENTIAL FOR END-USE EFFICIENCY

As a result of technologies and techniques developed in the last decade, efficiency has become a more economically viable undertaking. Additionally, a new spirit of cooperation has emerged among utilities, regulators, consumers, and environmentalists, all aimed at capturing this efficiency potential. One illustration of this cooperation is apparent in an article published in the September 1990 special issue of Scientific American. Two of the three authors of the article are Arnold Fickett and Clark Gellings of the Electric Power Research Institute (EPRI), a widely respected research arm of the nation's investor-owned electric utilities. Their co-author is Amory Lovins, one of the nation's foremost advocates of energy efficiency. That article states, in part:

> How much electricity could be saved if we did everything, did it right and fully applied the best technologies for efficiency? Agreement is growing that an astonishing amount of electricity--far more than the 5 to 15 percent cited a few years ago--could be saved in the U.S. According to a 1990 report by EPRI, it is technically feasible to save from 24 to 44 percent of U.S. electricity by 2000--some of it rather expensively--in addition to the 9 percent already included in utility forecasts. Thus, theoretically, aggressive efficiency efforts might capture as much as three to five times the savings that EPRI forecasts to happen spontaneously, about four to seven times as much as current utility programs plan to capture (80 billion watts before 2000). Rocky Mountain Institute estimates a long-term potential to save about 75 percent of electricity at an average cost of .6 cent per kilowatt-hour--several times lower than just the cost of fuel for a coal or nuclear plant. Even more could be saved at higher costs. The differences between these estimates are less important than their agreement that substantial amounts of electricity can be saved in a cost-effective manner. (Emphasis supplied.)

We as a Commission cannot ignore such persuasive statements.

8.2 MARKET BARRIERS

The Commission recognizes that significant market barriers exist that inhibit investment in efficiency and renewable energy supply systems. The market barriers include, but are not limited to, customer reluctance to purchase DSM and renewable energy supply systems unless there is a very short pay-back period, insufficient supply and distribution channels, lack of readily accessible, credible consumer information, and a lack of capital for many customers.

8.3 TRANSITION OF THE ENERGY UTILITY BUSINESS

Substantial changes have occurred in the cost structure of electric utilities over the past 20 years. First, although utilities still retain monopoly dominance in certain markets, such as the residential market, utilities are facing increasing competitive pressures in other markets. Second, when the marginal cost of electricity was declining, it may have been in the consumers' and shareholders' interest for utilities to build more generating stations. However, we are now in a position where adding more generating stations causes price increases, since marginal costs generally exceed average costs. This fundamental change has resulted in a growing realization by utilities and regulators that a re-definition of the utilities' strategic objectives may benefit both consumers and shareholders.

Throughout the United States over the past decade, many energy utilities, with encouragement and incentives from their regulators, have embarked upon a transition from an enterprise dedicated primarily to the supply of commodities (i.e., kilowatt-hours of electricity and cubic feet of gas), towards an enterprise where the utility becomes a partner with the consumer in the management of the customer's electric and gas needs. The transition is characterized by utilities increasingly being engaged in DSM. We support that transition.

8.4 REGULATORY REFORM

The Commission recognizes that the form of regulation employed by public utilities commissions has a direct bearing on the degree to which the utilities progress through that transition. The Commission is dedicated to examining the present set of incentives and disincentives extended to utilities with respect to efficiency, renewable energy, and the internalization of environmental externalities. (We define the cost of environmental externalities as the cost of environmental damages caused by a project or activity for which compensation to affected parties does not occur, regardless of whether the costs are imposed within Colorado borders or elsewhere). If our present form of regulation does not meet our obligation to serve and protect the public, we are determined to make necessary changes. Accordingly, as suggested by PSCo and OEC, the Commission endorses and adopts the policies set forth by the National Association of Regulatory Utility Commissioners in its resolution on least cost planning adopted in July 1989, found in Appendix 11-A of this document. That resolution states that regulators should ensure that the successful implementation of a utility's least-cost plan is its most profitable course of action.

9. POLICY ISSUES

9.1 COST-EFFECTIVENESS TEST

A program is cost effective whenever the total cost of a resource--which includes a utility's program costs, all costs borne by

the program participants, and the proper accounting for externalities--is less than the utility's avoided cost. At the present time, we favor the societal test of cost-effectiveness. We recognize that full implementation may be delayed until additional information regarding environmental externalities makes such test practical. Definitions of the total resource cost test and the societal test are contained in Appendix 11-C.

We choose to examine the valuation of emissions from power plants and determine the potential environmental and economic damage caused by greenhouse gases and other emissions. We will not rigidly administer the societal test at this point in time; rather, the test will serve as a starting point for resource evaluation until a more in-depth analysis of cost-effectiveness can be conducted.

At this juncture, we do not intend to establish a policy to attach an externalities surcharge on existing utility-supplied energy services. We will further incorporate environmental externalities when comparing the economics of competing new resources, similar to our plans to provide an incentive for renewable energy qualifying facilities when the bidding program begins. In order to develop our understanding of environmental externalities and the societal test, the Commission will establish a separate docket to examine such issues.

We recognize the concern of several parties, including the Colorado Rural Electric Association and CF&I, who encouraged us to give consideration to economic impacts, such as dislocations that might result from a lower dependence on fossil fuels. We note that Colorado's present fuel mix for electric generation is dominated by coal, with a growing portion of gas, and virtually none for non-hydro renewables.

We believe a transition can be accomplished by having renewable energy serve a portion of the growth in energy demand in the near-term future. The Commission will also balance the societal test with the need for equitable access to DSM programs, as described later in this policy statement. We will re-examine our cost-effectiveness test if the effect of utility DSM programs results in a rate increase of 4 percent or more to any class of customers.

9.2 PUBLIC EDUCATION

The Commission has heard a considerable amount of testimony concerning the need for public education about energy efficiency, renewable energy resources, and environmental quality. All customers benefit from up-to-date, reliable, and easy-to-understand information that speaks directly to their particular needs. We believe that utilities are well-suited to perform this service to their customers. Present Commission policy provides utilities with the ability to perform these public education efforts with respect to safety and conservation as allowable utility ratemaking expenses. We encourage utilities to make these expenditures, to provide a much-needed service to their customers, with attendant economic and environmental benefits. In addition, the Commission will increase its participation in public educational activities.

9.3 ENHANCING LONG-RUN EFFICIENCY OF INVESTMENTS IN BUILDINGS

The Commission favors policies to ensure that new investments in buildings and equipment incorporate appropriate energy efficiency characteristics. In addition, the Commission favors policies aimed at encouraging utility participation in the retrofit market.

The incorporation of energy efficiency in new construction is important, due to the lost opportunity if it is not done. The Commission will examine actions within our jurisdiction, such as hook-up fees, as a means of communicating the cost to utilities and all ratepayers of serving new loads. The Commission also will examine the role that rates and hook-up fees play in the financial decision-making by developers of new buildings and homes. Rates need to reflect cost or type of service, which could distinguish efficient builders from inefficient builders. Successful implementation of changes in rates and hook-up fees will require the cooperation of many parties. The Commission also wishes to consider encouragement of utility programs such as design assistance. Alternatively, utilities could be provided with incentives to verify that new construction meets code requirements.

Given the importance of this activity, the Commission will determine cost-based rates with attention to efficiency issues in all rate cases. In addition, we will establish a docket to investigate the use of hook-up fees to encourage energy efficient new construction, the proper use of utility rebates and design assistance, the role of utilities in the retrofit market, and the Commission's informal role, if any, with regard to energy codes.

9.4 INCENTIVES

The Commission recognizes that regulated utility companies will pursue business opportunities that are profitable. The Commission intends to establish a regulatory environment that will encourage genuine utility interest and participation in DSM and renewable energy resource development, rather than establishing only limited incentives in DSM and renewable energy resource development, that effect a relatively small portion of traditional utility operations.

9.4.1 DECOUPLING PROFITS FROM SALES

The Commission believes utilities should have incentives for DSM to be profitable. PSCo has said that its demand side incentives should be greater than the incentives it has in place to sell more power, which could create a pattern of competing incentives within the utility. This clash of incentives might be a way to encourage energy efficiency and DSM, without moving very far from the current incentives to sell more power. We believe that the clash of incentives proposed by PSCo may be inherently counterproductive.

Utilities' earnings may need to be decoupled from sales. At present, the utilities' revenue stream increases during extremely cold or hot weather, as a result of increased sales. We intend to investigate the development of a mechanism to decouple a utility's profitability from

its sales. The incentives for efficiency should be clear and unambiguous. We, therefore, encourage PSCo, Staff, and all parties in the next PSCo rate case to develop proposals for decoupling profits from sales. We also ask parties to present proposals on the Electric Revenue Adjustment Mechanism (ERAM) per customer proposal that is in the record of this case. We intend to examine proposals that decouple profits from sales in the next PSCo general rate case.

We agree with this statement from PSCo:

> In order to avoid the disincentive associated with reduced sales, Public Service submits that the best incentives available to make DSM more profitable need to be in place so that a utility is strongly encouraged to solicit and implement DSM measures which enable the utility to continue to earn reasonable profits while its actual sales decline as a result of DSM.

9.4.2 INCENTIVES TO BE DETERMINED IN GENERAL RATE CASES

A general rate case is a primary context in which incentive issues are determined. In addition to whatever specific proceedings may occur, in each future general rate case we will encourage utilities, Staff, and other interested parties to illustrate what incentives for utility profitability exist, using test year data. In each future general rate case, we will encourage or require the parties to compare existing incentives to the DSM profitability incentive goals contained in this policy statement.

It is essential to examine the relationship between energy efficiency and rate structure. Rate level and structure, including time-of-day, demand rates, hook-up fees, extension policies, and energy cost adjustments, have the potential for encouraging customers to engage in DSM activities.

We believe consumer and investment decisions should be made based on marginal costs in the appropriate time frame. In other words, decisions having long-term consequences should be made based on long-run marginal costs, including external costs, which are not zero.

Future rate cases will identify financial barriers to the pursuit of DSM and regulatory reforms that achieve the reconciliation of the utilities' financial interest with the goals set forth in this policy statement. The Commission will address the rate structure and DSM relationship in all future energy utility rate case filings. We are also interested in examining the incentives created by the Electric Cost Adjustment (ECA) and purchased power, especially regarding how the incentives contained in the ECA and purchased power effect the attractiveness of DSM resources.

We encourage Staff and other parties to develop an analysis of the practicality of an inverted block rate design. We also encourage parties to develop an analysis that would further flatten the present

two-part rate structure, which results in a declining unit price for increased usage. Parties also are encouraged to develop an analysis of the efficiency outcome that may result from continued or expanded use of demand and energy rates. The Commission welcomes the development of analyses of the efficiency outcome that may result from utilization of more sophisticated metering. In addition, we recognize that the utility is its own largest customer; therefore, we encourage parties to develop an analysis of the efficiency outcome that may result if utilities' operational practices were changed. Examples of possible changes include such issues as heat rates, availability factors for generation, new technology for transformers, voltage regulation, and new regional planning, coordination, and pooled operations.

9.5 EQUITY AND DISTRIBUTIONAL ISSUES

The Commission will require utilities to design DSM and other energy efficiency pilots and programs to be made available to all classes of customers on an equitable basis. No cost-effective measure should be discarded solely because of its differential effects on ratepayer classes. The Commission will strive to minimize any perceived inequities among classes of customers.

We essentially agree with the following language from the September 27, 1990 proposal "A Regulatory Response to Low-Income Energy Needs in Colorado," prepared by the National Consumer Law Center, Inc.

> When some households pay all or part of the costs of a DSM measure but, due to the nature of capturing and distributing the benefits, receive none of those benefits, a distributional problem arises.[1] This result has particular implications for low-income households. Assume for the moment that low-income households tend to be non-participants in utility-financed conservation programs. (That assumption will be provided with an empirical basis later.) If that is true, when a utility uses ratepayer money to finance DSM measures, there is a direct income transfer from low-income households to households with moderate and upper incomes. The income transfer from an equity viewpoint is clearly in the wrong direction.
>
> This is not to say that DSM programs are to be avoided if rates increase on a per unit basis as a result. Notwithstanding this result, all DSM programs which are cost-effective, as measured by a reduction in total revenue requirements, should be implemented. <u>The equity issues do not involve the question of whether a cost-effective program should be pursued. Rather, they involve how best to capture and distribute the costs and savings of such a program</u>.

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[1] While often confused with cost-effectiveness considerations, this problem is quite different from any measure of cost-effectiveness.

Nevertheless, the offer of cost-effective DSM programs raises new and unique issues regarding the recognition and distribution of costs and benefits of particular utility programs. Because of those new distributional issues, special efforts must be made to protect the poor. Without those special efforts to recognize and redress the distributional issues raised by DSM programs, those programs may have adverse (and unintended) consequences for low-income household, consequences that can be avoided. (Emphasis supplied.)

9.6 RENEWABLE ENERGY RESOURCES

A review of the literature on renewable energy resource economics, and the testimony of experts who have appeared before this Commission on repeated occasions, reveals that the cost of all direct solar conversion technologies (photovoltaics, solar thermal, wind) is declining. The cost of non-renewable resources, including fossil and nuclear technologies, is either stable or inclining. The operative public policy question is: what is the role of regulators to expedite what appears to be an imminent cross-over point between renewable and non-renewable resources? The Commission believes that sound public policy decision-making requires a special effort on the part of regulators to nurture the development of clean, abundant renewable energy resources, so that those resources can play an earlier and larger role than if left to market forces alone.

Colorado is blessed with a diversified portfolio of renewable energy resources, including wind, geothermal, solar, biomass, and hydro. Colorado also has relatively low humidity, which offers opportunities for inexpensive cooling strategies, such as evaporative cooling and natural ventilation. When comparing the amount of solar radiation falling on a residence to its heating requirement, most Colorado residences enjoy a ratio of 5 to 1. When comparing the amount of solar daylighting falling on a residence compared to its lighting requirement, most Colorado residences enjoy a ratio of 20 to 1.

The Commission recognizes the importance of acquiring a skill base among utility employees in renewable energy, and for that reason encourages early experimentation and implementation of renewable energy resources. In this regard, the Commission learned through one of its roundtable discussions that PSCo does not have conceptual problems with renewable energy resources becoming a larger part of its resource mix. Renewable energy resources ought to be attractive to utilities, as the initial capital-intensive nature of renewables would increase their rate base, upon which they could earn a return. In addition, we note that utilities should have a keen interest in renewable energy resources because renewables do not contain the inherent fuel supply uncertainties associated with non-renewable systems.

The Commission supports the development and deployment of renewable energy resources. We welcome, from utilities or other parties, suggestions on how to successfully integrate cost-effective (on a life-cycle basis) renewables into Colorado's electric supply mix. In addition,

the Commission will encourage a reasonable experimental, developmental, and demonstration deployment of renewable energy resources that are not currently cost effective, in anticipation of further cost changes that may make such resources cost effective.

Further, the Commission endorses the principles contained in a resolution of the National Association of Regulatory Utility Commissioners (NARUC) acknowledging the importance of renewable energy adopted by its Executive Committee on July 26, 1990 at the NARUC Summer Committee Meeting in Los Angeles, California, found in Appendix 11-B of this policy statement. The NARUC endorsement emphasizes the need to initiate work now to secure our long-term energy future.

9.7 INTEGRATED RESOURCE PLANNING

One of the goals of the Commission is the minimization of the present worth of revenue requirements of total utility system costs, consistent with other societal goals, such as environmental quality. In order to ensure that this goal is met, the Commission's objective is to adopt an integrated resource planning regulatory framework. Furthermore, it is our intention to establish a rulemaking hearing to create this framework within three months after the completion of the next PSCo general rate case. However, we recognize that the recent passage of the Clean Air Act may require the Commission to hasten this time frame in order to meet the opportunities and requirements of the Environmental Protection Agency regulations for implementation of the Act.

We view our adoption of integrated resource planning as part of an overall Commission dedication to a risk management process. The Commission is accountable to the public to ensure that we minimize total utility system cost, within prudent reliability standards. We view an integrated resource planning regulatory framework as the most viable way to ensure that society's investment risk in utilities is properly managed.

9.7.1 PURCHASED POWER

The Commission identifies purchased power as a topic that requires greater scrutiny to ensure that utilities and customers benefit from decisions flowing from an integrated resource planning framework. Under such a framework, the Commission will review and approve purchased power contracts before they are executed or renewed. The Commission is aware of the sensitive nature of these contracts, and will work with the parties to adopt a procedural framework that respects the confidential and proprietary nature of this issue.

9.7.2 BYPASS

Large load customers who have the capability of self-generation pose a series of substantial concerns to both utilities and their other customers. An integrated resource planning framework will help the Commission better understand the bypass threat and the alternative means of managing these risks. The Commission encourages utilities, Staff, and other parties to examine the role of energy efficiency as a method to retain customers threatening to bypass the utility system. We will

discuss the bypass issue at an open meeting to determine what efficiency methods can be employed.

9.7.3 MEASUREMENT OF DSM AND RENEWABLE ENERGY PERFORMANCE

In order for DSM and renewable energy resources to take their proper place in a utility's resource portfolio, it is vital that the performance and reliability of these resources be assessed. All stakeholders who will be paying for the cost of these initiatives, or who have a stake in system reliability, have a right to a high degree of accountability. The Commission insists that utilities, Staff, and other interested parties dedicate a reasonable portion of total utility DSM and renewable energy resource program cost and time to performance monitoring and evaluation to determine the efficacy of these activities.

9.7.4 TECHNICAL WORKING GROUP

The Commission recognizes the need for strong technical capabilities, as well as meaningful public participation, when evaluating the cost and performance of DSM and renewable energy resources. We delegate Staff to form and maintain a technical working group composed of utilities, Staff, the OEC, and the OCC. The optimal time to undertake this effort is now, as we are not in a capacity shortage crisis, and, therefore, can be very deliberate. The group will meet regularly to review the performance of all DSM pilots and bidding programs, to report on results, and to recommend improvements in the process over time. In addition, the group should examine the transferability to Colorado of DSM and renewable energy resource program results from utilities in other states.

If other parties, such as non-jurisdictional utilities, representatives from federal laboratories, other state agencies, academia, and technically-qualified individuals, are interested in participating in the the group, they should communicate their interest, along with their qualifications, to the Commission, which will determine whether to expand the initial size of the group. The Commission may also create an advisory panel to review the group's results. The group should provide progress reports to the Commission and interested parties on a semiannual basis, or more often if deemed necessary.

9.7.5 NEW INSTITUTIONAL ARRANGEMENTS

Past Commission experience suggests that the traditional interaction between the utility, Staff, and OCC may be too narrow to obtain the full benefit of wider public and professional participation in addressing the goals contained in this policy statement. Public policy development is well-served by the participation of representatives from a variety of disciplines, such as architects, engineers, building managers, builders, and planners.

We are interested in learning more about institutional arrangements in other states, where universities, government laboratories, private not-for-profit institutes, manufacturers, energy consultants, state and local government, power administrations, and utilities have

been brought together in collaborative arrangements. Accordingly, we will convene a special open meeting to obtain more information and public comment on such alternatives.

10. ROLE OF THE UTILITY IN THE DSM MARKETPLACE

This policy statement encourages utility participation in a DSM marketplace that is now composed of many providers of energy services, who collectively are not able to overcome certain market barriers to wide public adoption of cost effective new technology. Despite their lack of scope and scale, these energy service providers are not presently facing competition from a utility, with its distinct advantage in marketing and financing. The Commission recognizes that many market issues will be raised as the utility increases its involvement in DSM. We intend to address these issues over time, once the opportunity for a broader examination exists.

The Commission adopts as policy the statements contained in this document, until such time as it may be amended as a result of comments received during the comment period.

(S E A L)

ATTEST: A TRUE COPY

James P. Spier
Executive Secretary

THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

Commissioners

COMMISSIONER RONALD L. LEHR ABSENT
BUT CONCURRING IN THE RESULT.

**NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
RESOLUTION IN SUPPORT OF INCENTIVES FOR
ELECTRIC UTILITY LEAST COST PLANNING**

WHEREAS, National and international economic and environmental conditions, long-term energy trends, regulatory policy, and technological innovations have intensified global interest in the environmentally benign sources and uses of energy; and

WHEREAS, The business strategy of many electric utilities has extended to advance efficiency of electricity end-use and to manage electric demand; and

WHEREAS, Long-range planning has demonstrated that utility acquisition of end-use efficiency, renewable resources, and cogeneration are often more responsible economically and environmentally than traditional generation expansion; and

WHEREAS, Improvements in end-use efficiency generally reduce incremental energy sales; and

WHEREAS, The ratemaking formulas used by most state commissions cause reductions in utility earnings and otherwise may discourage utilities from helping their customers to improve end-use efficiency; and

WHEREAS, Reduced earnings to utilities from relying more upon demand-side resources is a serious impediment to the implementation of least-cost planning and to the achievement of a more energy-efficient society; and

WHEREAS, Improvements in the energy efficiency of our society would result in lower utility bills, reduced carbon dioxide emissions, reduced acid rain, reduced oil imports leading to improved energy security and a lower trade deficit, and lower business costs leading to improved international competitiveness; and

WHEREAS, Impediments to least-cost strategies frustrate efforts to provide low-cost energy services for consumers and to protect the environment; and

WHEREAS, Ratemaking practices should align utilities pursuit of profits with least-cost planning; and

WHEREAS, Ratemaking practices exist which align utility practices with least-cost planning; now, therefore, be it

RESOLVED, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC) assembled in its 1989 Summer Committee Meeting in San Francisco, urges its member state commissions to:

1) consider the loss of earnings potential connected with the use of demand-side resources; and

2) adopt appropriate ratemaking mechanisms to encourage utilities to help their customers improve end-use efficiency cost-effectively; and

3) otherwise ensure that the successful implementation of a utility's least-cost plan is its most profitable course of action.

Sponsored by the Committee on Energy Conservation
Adopted July 27, 1989

NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS
RESOLUTION REGARDING RENEWABLE ENERGY

WHEREAS, Measured and prudent preparations for foreseeable risks are far more efficient and less disruptive than actions and reactions taken in response to crisis; and

WHEREAS, our economy's growing dependence on foreign nonrenewable energy sources places our nation's political and economic security at the risk of events and markets over which we have less and less control; and

WHEREAS, renewable energy technologies provide a secure buffer to our national economy and its constituent consumer groups because of renewables' inherent relative immunity to fuel cost increases or politically motivated embargoes; and

WHEREAS, the current reliance on many of our nonrenewable energy supplies is not sustainable even for the lives of our children; and

WHEREAS, many renewable energy technologies have the potential to be planned and implemented flexibly in incremental units to quickly match demand growth, and will add to our supply diversity; and

WHEREAS, as environmental concerns increasingly influence energy policy, renewable energy technologies can, and will increasingly supply a growing global demand for clean energy, which presents an opportunity for American industry to export technology and skills; and

WHEREAS, State Public Utility Commissions can utilize life-cycle costing methods in procurement decisions, can require utilities to compare the cost of central station nonrenewable sources and grid extension to central station, stand alone, and hybrid renewable energy technologies, can offer incentives for utility investment in renewable energy technologies, skills acquisition and delivery systems, and can take other actions to encourage or support greater use of renewable energy resources; now, therefore, be it

RESOLVED, That the Executive Committee of the National Association of Regulatory Utility Commissioners assembled at its Summer Meeting in Los Angeles, California, acknowledges that renewable energy technologies will contribute increasingly to the Nation's energy supply; and be it further

RESOLVED, That the NARUC urges the Department of Energy to: a) give properly increased recognition to the potential of renewables in the formulation of the National Energy Strategy; and b) increase its attention to the technical, institutional, and economic constraints which limit the contributions which renewable energy technologies can make to the Nation's energy requirements.

Sponsored by the Committee on Energy Conservation
July 25, 1990

DEFINITIONS

DEMAND SIDE MANAGEMENT is defined as programs and activities aimed at managing the energy demand of the end-use customer.

TOTAL RESOURCE COST TEST. The California Public Utilities Commission and the California Energy Commission defined the Total Resource Cost Test in a publication entitled "Standard Practice Manual: Economic Analysis of Demand-Side Management Programs," issued in December 1987, as follows:

> The Total Resource Cost Test (TRC) measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs. The test is applicable to conservation, load management, and fuel substitution programs. For fuel substitution programs, the test measures the net effect of the impacts from the fuel not chosen versus the impacts from the fuel that is chosen as a result of the program. TRC test results for fuel substitution programs should be viewed as a measure of the economic efficiency implications of the total energy supply system (gas and electric). A variant on the TRC test is the Societal Test. The Societal Test differs from the TRC test in that it includes the effects of externalities (e.g. environmental, national security), excludes tax credit benefits, and uses a different (societal) discount rate.

SOCIETAL TEST. The California publication cited above defines the Societal Test as follows:

> The Societal Test is structurally similar to the the Total Resource Cost Test. It goes beyond the TRC test in that it attempts to quantify the change in the total resource costs to society as a whole rather than to only the service territory (the utility and its ratepayers). In taking society's perspective, the Societal Test utilizes essentially the same input variables as the TRC Test in at least one of five ways. First, the Societal Test may use higher marginal costs than the TRC test if a utility faces marginal costs that are lower than other utilities in the state or than its out-of-state suppliers. Marginal costs used in the Societal Test would reflect the cost to <u>society</u> of the more expensive alternative resources. Second, these marginal costs might also contain externality costs of power generation not captured by the market system. Third, tax credits are treated as a transfer payment in the Societal Test, and thus are left out. Fourth, in the case of capital expenditures, interest payments are considered a transfer payment since society actually expends the resources in the first year. Therefore, capital costs enter the calculations in the year in which they occur. And finally, a societal discount rate should be used.