

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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RE: THE TARIFF SHEETS FILED BY)
PUBLIC SERVICE COMPANY OF)
COLORADO WITH ADVICE LETTER)
NO. 1495 – ELECTRIC)

DOCKET NO. 07S-521E

Answer Testimony of

Kathryn Iverson

On behalf of

Colorado Energy Consumers

Project 8964
March 24, 2008



BRUBAKER & ASSOCIATES, INC.
ST. LOUIS, MO 63141-2000

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OF THE STATE OF COLORADO**

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RE: THE TARIFF SHEETS FILED BY)
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Answer Testimony of Kathryn Iverson

1 Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

2 A My name is Kathryn E. Iverson; 17244 W. Cordova Court; Surprise, Arizona 85387.

3 Q WHAT IS YOUR OCCUPATION AND BY WHOM ARE YOU EMPLOYED?

4 A I am a consultant in the field of public utility regulation and employed by the firm of
5 Brubaker & Associates, Inc. (BAI), regulatory and economic consultants with
6 corporate headquarters in St. Louis, Missouri.

7 Q WOULD YOU PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND
8 EXPERIENCE?

9 A I have a Bachelor of Science Degree in Agricultural Sciences and a Master of
10 Science Degree in Economics from Colorado State University. I have been a
11 consultant in this field since 1984, with experience in utility resource matters, cost
12 allocation and rate design. More details are provided in Appendix A to this testimony.

1 **INTRODUCTION AND SUMMARY**

2 **Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

3 A I am testifying on behalf of the Colorado Energy Consumers (“CEC”). The
4 participating CEC members for this proceeding are industrial customers, namely Air
5 Liquide, Western Metal and Metals Management. These customers purchase
6 electricity from Public Service Company of Colorado (“PSCo” or “Company”) and
7 have elected to participate in PSCo’s interruptible program.

8 **Q WHAT IS THE SUBJECT OF YOUR TESTIMONY?**

9 A My testimony addresses several of PSCo’s refinements to the Interruptible Service
10 Option Credit (“ISOC”) tariff and operation of the program, including the use of the
11 interruptible hours over the year, the proposed financial incentive payout to PSCo, the
12 benefits to native customers and the Credit Adjustment Factor, as well as other
13 operational aspects of the ISOC rider.

14 **Q WOULD YOU PLEASE SUMMARIZE YOUR FINDINGS AND CONCLUSIONS?**

15 A The main points of my testimony can be summarized as follows:

16 **ISOC Program Methodology:**

- 17 • The fundamental method for determining the interruptible credits is reasonable
18 and results in cost-justified credits. The program offers participating customers
19 choices as to their level of hours and how much advanced notice they need
20 before interruption, as well as the whether interruptions will be unconstrained or
21 not during any 24 hour period.

22 **Credit Adjustment Factor and Incentives to PSCo:**

- 23 • The Commission should not accept the Company’s one-sided request for a
24 financial incentive payout of 10% of the ISOC program credits. If the Commission
25 should decide, however, that an incentive is warranted for exceptional
26 administration, then benchmarks and goals should be established in order for
27 PSCo to qualify for the incentive. In no case, however, should the incentive be
28 made simply for continuing with the administration of this already-established
29 program.

- 1 • The other nonparticipating firm customers already benefit from the ISOC program,
2 and there is no reason to reduce credit payments to participants to ensure this
3 continued benefit. The ISOC program provided net benefits of over \$500,000 in
4 2005, and over \$3.6 million in 2006. We would expect that native customers
5 would continue to experience savings in both avoided generation capacity costs
6 and reduced energy costs during the high cost or stressed hours for the system
7 under the ISOC program.
- 8 • PSCo's proposed "Credit Adjustment Factor" should be rejected. Credits paid to
9 the participants in the ISOC program should continue to be set at 100% of the
10 determined avoided cost.

11 **Use of Contracted Interruptible Hours:**

- 12 • PSCo should use the contracted interruptible hours to the maximum extent, and
13 participants should expect that the Company will use those hours wisely for
14 capacity and/or contingency interruptions, or in the event of economic interruption.
15 The Company's proposal to call a disproportionate number of interruptions at the
16 end of the year simply to meet a quota should be rejected.
- 17 • The Company should consider exploring the idea that it could come back to those
18 ISOC participants willing to be available at additional credit for additional hours of
19 interruption after its contractual amount of interruptible hours has been used up in
20 order to provide added benefit to the system.

21 **Ten Minute Notice Customers:**

- 22 • The higher payments for "<10 Minutes" notice provision is based on the fact that
23 loads able to be curtailed within ten minutes can be treated as operating reserves.
- 24 • Customers taking service under the "<10 Minutes" notice provision should be
25 allowed to reduce their load *within* ten minutes, thus allowing them to reduce load
26 in a controlled manner.
- 27 • Relying upon e-mail or verbal notification for a "<10 Minutes" notice could result in
28 the customer failing to interrupt due to a breakdown in communication (e.g.,
29 network server down, lines busy, etc.) An ISOC participant should be allowed to
30 request an electronic signal notification tied into the customer's automated system
31 that would better facilitate timely notice to the appropriate equipment operators.

32 **False Alarm:**

- 33 • Shutting down equipment and foregoing production are direct costs to the
34 customer which do not disappear simply because the Company claims the
35 interruption was a false alarm. Consequently, these hours should count towards
36 the customer's contracted amount.

CURRENT ISOC PROGRAM

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Q HOW LONG HAS THE CURRENT INTERRUPTIBLE PROGRAM BEEN IN EFFECT?

A The current ISOC program has been in effect since mid-2005. Credits are paid to participating customers based on their interruptible load, the maximum number of hours each customers chooses to be interrupted, and notification requirements. The credits are currently based on the avoided costs of combustion turbines, with offsetting adjustments for interruption hours less than 200 hours per year. The Company currently pays participating customers 100% of the costs it has determined are avoided by their participation in the ISOC program.

Q DO YOU BELIEVE THE BASIC FRAMEWORK OF THE CURRENT ISOC PROGRAM IS SOUND?

A Yes. The current framework provides credits to interruptible customers based on the understanding that interruptible customers provide a very valuable service to the PSCo system. Given the extraordinary cost and environmental implications of constructing new peaking capacity, demand reduction programs can be a cost-effective and environmentally-friendly way to lower peak demand.

But it is important to remember that being an interruptible customer can have significant implications. For customers who normally operate around the clock, an interruption can mean less production and, therefore, fewer revenues. There are logistical and staffing challenges associated with managing interruptions that will last several hours. Additionally, bringing a plant up and down can cause expensive wear and tear on equipment. Therefore, if the Commission wants to maximize the demand savings achieved through an interruptible program it is important to provide as much incentive as possible to potential interruptible customers. As such, the current

1 mechanism which pays participating customers 100% of avoided costs is the right
2 approach.

3 **Q DO YOU BELIEVE PSCO'S METHODOLOGY FOR CALCULATING**
4 **INTERRUPTIBLE CREDITS IS REASONABLE?**

5 A Yes. The fundamental method for determining the interruptible credits is reasonable
6 and results in cost-justified credits. The program offers participating customers
7 choices as to their level of hours and how much advanced notice they need before
8 interruption.

9 **Q IS THE COMPANY PROPOSING TO CHANGE THE ISOC PROGRAM?**

10 A Yes. After roughly 2½ years, PSCo now wishes to make several refinements to the
11 ISOC program. Some of these changes are appropriate and beneficial and reflect
12 lessons PSCo has learned as the program has moved forward. However, some of
13 these proposals are counter-productive and could act to diminish rather than enhance
14 the level of participation in the interruptible program. I shall comment on several of
15 PSCo's proposed refinements, as well as provide additional refinements that CEC
16 believes are worth considering.

17 **REFINEMENTS TO THE CURRENT ISOC PROGRAM**

18 **Credit Adjustment Factor and Incentives to PSCo**

19 **Q HOW MUCH LOAD IS CURRENTLY ON THE ISOC PROGRAM?**

20 A The ISOC program currently has "only about 120 MW of load to date". Brockett
21 Direct, page 6. PSCo hopes to increase this load to 243 MW by 2020. Brockett
22 Direct, page 16. According to the Company's testimony, setting the interruptible

1 credits at 100 percent of determined avoided cost “might attract a lot of load.”
2 Brockett Direct, page 5. However, even though the credit has been set at 100%
3 since 2005, PSCo has only attracted less than 2 percent of the Company’s 2007
4 system peak load.

5 **Q DOES THE COMPANY PLAN TO CONTINUE OFFERING PARTICIPANTS 100%**
6 **OF THE AVOIDED COST?**

7 A No. PSCo proposes to set credits going forward at 80 percent of the avoided costs.
8 Consequently, even though the Company anticipates doubling interruptible load in 12
9 years, it is modifying the credit equation by withholding 20% of the credit paid to
10 participating customers it wishes to attract. In other words, at the same time the
11 Company wants to expand the program, it is establishing an 80% “Credit Adjustment
12 Factor” which will cause credits to be 20% lower than they would have been without
13 this new factor.

14 **Q IS IT POSSIBLE TO SAY WHETHER OR NOT THIS 80% “CREDIT ADJUSTMENT**
15 **FACTOR” WILL STIFLE ADDED PARTICIPATION IN THE ISOC PROGRAM?**

16 A That is impossible to say at this point. However, if the Commission is concerned
17 about ensuring this program continues to be as successful as it has in the past, then
18 any proposal to reduce the avoided cost credit payment should be critically reviewed.
19 In particular, customers on the margin who might become interruptible with the right
20 level of incentives may elect not to participate if the credits are kept low.

1 **Q WHAT IS THE COMPANY'S RATIONALE TO SET THE CREDIT AT LESS THAN**
2 **100% GOING FORWARD?**

3 A The Company claims that setting the credit below the full avoided cost provides
4 greater assurance that non-participating customers will benefit. Brockett Direct, page
5 12. More specifically, the 80% Credit Adjustment Factor is based on the expectation
6 that nonparticipants will benefit from the ISOC program in the face of these two
7 assumptions: (1) a complete absence of any energy savings of the ISOC program
8 and, (2) that the Company is guaranteed a financial incentive payout of 10% of the
9 avoided cost.

10 **Q ARE EITHER OF THESE TWIN ASSUMPTIONS VALID?**

11 A No.

12 **Q WHY NOT?**

13 A As stated earlier, the first assumption is that absolutely no energy savings
14 whatsoever stem from the ISOC program. As I understand the mechanics of the
15 ISOC program, customers are paid both for the capacity savings, as well as the
16 energy savings, through a \$ per kW-month credit. The monthly credit is based on a
17 capacity payment (on a \$ per kW-month basis) plus energy payment (on a \$ per kWh
18 basis times the number of hours to be interrupted) added together to come to a single
19 monthly credit, which is then seasonally differentiated. In order for the Company's
20 first assumption to be true, there would have to be absolutely zero energy savings,
21 that is, the Company would never call a single hour of interruption.

1 **Q DOES THAT SEEM REASONABLE?**

2 A No, it does not. The Company called more than 95% of total available hours in 2006.
3 PSCo Response to CPUC 2-2, CPUC 2-2.A2 Attachment. The Company has always
4 made use of its interruptible resources by calling interruptions and there is no reason
5 to believe it would suddenly cease calling interruptions completely.

6 **Q WHY IS THE SECOND ASSUMPTION NOT VALID?**

7 A The second reason for reducing credit payments to ISOC participants is to guarantee
8 a financial incentive to PSCo of 10% of the avoided cost. To put this into perspective,
9 the credits paid in 2006 were \$8.7 million. These payments would go up roughly 27%
10 based on PSCo's updated costs and proposed adjustments¹ resulting in a financial
11 incentive payout to PSCo of over \$1.1 million.

12 It is the Company's obligation to provide reliable service to its Colorado
13 customers for least cost, and the inclusion of interruptible resources in the Company's
14 resource portfolio should not hinge on paying an incentive to do its job. Further, for
15 the interruptible customers I represent, the primary factor driving whether and the
16 extent to which they participate in this program are the credits they are paid. No
17 amount of marketing will help if the credits are insufficient to compensate customers
18 for the costs incurred by being interrupted.

19 Furthermore, the Company seeks to retain this financial payout as an
20 "incentive to market and administer the program effectively." Brockett Direct, page
21 18. However, the Company's filing provides no substantive description of how it
22 would monitor whether or not it was administering the program effectively. It appears
23 there is no basis to determine whether or not the Company would receive the

1 incentive; in other words, it would simply be a guaranteed payout based on the
2 credits paid to the ISOC program participants.

3 **Q WHAT IS YOUR RECOMMENDATION AS TO THE PROPOSED 10% INCENTIVE**
4 **TO PSCO?**

5 A The Commission should not accept the Company's one-sided request for a blanket
6 payment to continue with the ISOC program. If the Commission should decide,
7 however, that an incentive is warranted for exceptional administration, then
8 benchmarks and goals should be established in order for PSCo to qualify for the
9 incentive. In no case, however, should the incentive be made simply for continuing
10 with the administration of this already-established program.

11 **Q THE COMPANY CLAIMS THE 80% CREDIT ADJUSTMENT FACTOR ENSURES**
12 **THAT NONPARTICIPANT FIRM CUSTOMERS WILL BENEFIT FROM THE ISOC**
13 **PROGRAM. DO YOU AGREE?**

14 A The other nonparticipating firm customers already benefit from the ISOC program,
15 and there is no reason to reduce credit payments to participants to ensure this
16 continued benefit. For example, responses to Commission Staff discovery in this
17 case shows that the ISOC program provided net benefits of over \$500,000 in 2005,
18 and over \$3.6 million in 2006. CPUC 2-2.A1 Attachment and CPUC 2-2.A2
19 Attachment. We would expect that native customers would continue to experience
20 savings in both avoided generation capacity costs and reduced energy costs during
21 the high cost or stressed hours for the system.

¹ The current equation for the Monthly Credit Rate uses \$4.79 per kW-month as the starting point for determining the monthly credit. This starting point is proposed to go to \$6.10 per kW-month, or an increase of 27%.

1 Q ARE THERE OTHER WAYS THE NONPARTICIPANTS ALSO BENEFIT FROM
2 THE ISOC PROGRAM?

3 A Yes. As reported by PSCo in the 2006 review of this program, the ISOC program
4 provides PSCo with flexibility and options that a conventional combustion turbine
5 cannot provide.

6 Furthermore, nonparticipants should continue to benefit from the ISOC
7 program in another more subtle way. As PSCo witness Alan Taylor describes in his
8 testimony, the total investment cost of the combustion turbine must be multiplied by a
9 carrying charge to determine an annual cost on a \$ per kW-year figure. That is, Mr.
10 Taylor uses a nominally levelized carrying charge of 14.89% to establish a levelized
11 annual revenue- requirement. Mr. Taylor states that this value “approximates the
12 annual levelized cost to the utility’s customers if PSCO were to construct a Frame CT
13 and ratebase its investment.” Taylor Direct, page 5.

14 However, that levelized amount actually understates the costs ratepayers
15 would be expected to pick up in the first several years if PSCo were to ratebase the
16 Frame CT. A traditional revenue requirement carrying charge would be high in the
17 initial years (because the investment is undepreciated) and would decline over time
18 as the investment depreciates. More specifically, if the utility were to ratebase
19 combustion turbines, the carrying charge in the first ten years would be higher than
20 the 14.89% nominally levelized carrying charge. Consequently, nonparticipating firm
21 customers would see higher costs in ratebasing an investment (at least in the first ten
22 years of the asset’s 30 year life) than under the method used here to determine
23 annual costs.

1 **Q ARE YOU TAKING ISSUE WITH MR. TAYLOR’S LEVELIZED FIXED CHARGE**
2 **RATE?**

3 A No, not at all. I agree with Mr. Taylor that using a nominally levelized carrying charge
4 makes the most sense in determining interruptible credits. I am simply pointing out
5 that had customers paid for the ratebasing of a combustion turbine, their costs in the
6 early years could be even higher initially than indicated by these proposed avoided
7 costs.

8 **Q WHAT IS YOUR RECOMMENDATION WITH RESPECT TO THE COMPANY’S**
9 **PROPOSED 80% CREDIT ADJUSTMENT FACTOR?**

10 A The Company’s reports have already demonstrated that native customers benefit
11 from the ISOC program, and we should expect benefits to continue in the future.
12 There is no need to further reduce the credit to provide any greater assurances that
13 nonparticipating customers will benefit from the ISOC program. Consequently, the
14 Company’s request for the Credit Adjustment Factor should be rejected by the
15 Commission. Credits paid to the participants in the ISOC program should continue to
16 be set at 100% of the determined avoided cost.

17 **Use of Contracted Interruptible Hours**

18 **Q IS IT IN THE BEST INTERESTS OF THE UTILITY AND ITS CUSTOMERS TO USE**
19 **THE INTERRUPTIBLE HOURS OFFERED BY ISOC PARTICIPANTS TO THE**
20 **MAXIMUM EXTENT?**

21 A Yes, it is. The current ISOC program offers customers the choice of 40, 80, 160 or
22 200 hours of interruption each year. By providing an array of choices for participants,
23 PSCo has made the ISOC program appealing to its potential pool of customers. In

1 that regard, PSCo should use those hours to the maximum extent, and participants
2 should expect that the Company will use those hours wisely.

3 **Q SHOULD THE COMPANY CALL A DISPROPORTIONATE NUMBER OF**
4 **INTERRUPTIONS AT THE END OF THE YEAR, SIMPLY TO HIT A TARGET?**

5 A No. The Company claims that it does not believe that exhausting all potential hours
6 every year is an appropriate standard. Brockett Direct, page 14. Mr. Brockett further
7 correctly observes that optimizing the use of economic interruptions is necessarily a
8 matter of judgment, and it is in the best interests of all parties to bank some hours as
9 an insurance policy against unforeseen reliability or economic issues.

10 However, the Company then switches gears and “proposes to, if necessary,
11 call a disproportionate number of interruptions at the end of the year to ensure that it
12 exhausts as many of the potential hours as possible.” Brockett Direct, page 15. While
13 I would agree that the Company should make greatest use of this interruptible
14 resource over the course of the year, I do not believe it is in the best interests of
15 either the utility, its firm customers or the participating ISOC customers to call hours
16 merely “to meet a quota”. This would be akin to firing up a combustion turbine in the
17 latter months of the year, simply for no other reason than it needed to operate “y”
18 hours each year.

19 The use of the interruptible hours should be triggered either by capacity and/or
20 contingency interruptions, or in the event of economic interruption. In fact, as Mr.
21 Brockett notes it would not make sense to call an economic interruption if the
22 incremental energy cost in the latter part of December does not exceed the Energy
23 Cost Adjustment that interruptible customers would pay anyway. Brockett Direct,
24 page 15. Consequently, the Company’s proposal to call these disproportionate
25 number of interruptions simply to meet a quota should be rejected.

1 **Q BUT WHAT IF THE COMPANY EXHAUSTS ALL ITS INTERRUPTIBLE HOURS**
2 **BEFORE THE END OF THE YEAR, AND IT HAS A TRUE NEED FOR**
3 **ADDITIONAL INTERRUPTIBLE RESOURCES DUE TO UNFORESEEN**
4 **RELIABILITY OR ECONOMIC ISSUES?**

5 A In those circumstances, it would make better sense to explore the idea that the
6 Company could come back to those ISOC participants willing to be available for
7 additional hours interruption after its contractual amount has been used up. For
8 example, if a customer has signed up for 40 hours, and PSCo has used up those 40
9 hours before the end of the year, it could be beneficial to the ISOC participant to be
10 paid for additional hours of interruption. These additional hours could be used by the
11 Company in those instances of either capacity and/or contingency interruptions, or for
12 economic purposes. In any event, making additional use of an existing ISOC
13 resource to lower costs on the system by dampening demand makes more sense
14 than simply triggering interruptions solely to meet a quota and potentially diluting the
15 overall net benefits of the program.

16 **Ten-Minute Notice Customers**

17 **Q PLEASE EXPLAIN THE COMPANY'S RATIONALE FOR PROVIDING A HIGHER**
18 **CREDIT PAYMENT TO CUSTOMERS RECEIVING LESS THAN 10 MINUTES OF**
19 **NOTICE.**

20 A Loads that can be curtailed within ten minutes time can be treated as operating
21 reserves, that is, reserves the utility can call upon quickly in response to critical
22 immediate needs resulting from generation or transmission outages or other system
23 emergencies. Brockett Direct, page 5. Since the cost of quick-start combustion
24 turbines are higher, this translates into a higher credit.

1 **Q WHAT IS THE BASIS FOR THE TEN MINUTE NOTICE?**

2 A The Western Electricity Coordinating Council (“WECC”) guidelines provide for
3 interruptible load to be considered non-spinning reserve. According to Section 1) A.2
4 of the WECC Minimum Operating Reliability Criteria (page 3), non-spinning reserve
5 obligations can be met by “load which can be interrupted within 10 minutes of
6 notification”. Consequently, in the interpretation of the ISOC program tariff,
7 customers that select the Notice Factor of “< 10 minutes” should be allowed to reduce
8 their load within ten minutes, not just any requested time *less than* ten minutes.

9 **Q WHY IS IT IMPORTANT THAT CUSTOMERS BE ALLOWED TO REDUCE THEIR**
10 **LOAD “WITHIN” TEN MINUTES, NOT JUST A TIME THAT HAPPENS TO BE**
11 **“LESS THAN” TEN MINUTES”?**

12 A Interruptible customers may have large, high speed rotating equipment and it is
13 critical that this equipment be shut down in a controlled manner in order to minimize
14 risk and damage. Even though PSCo has the ability to disconnect a “<10 Minutes”
15 customer by tripping the breaker and taking the load down instantly, the customer
16 should be given adequate time to reduce its load in a controlled manner, as long as it
17 can get that reduction accomplished *within* the ten minute frame. If PSCo argues that
18 it can interpret the “<10 Minutes” as *anything* less than 10 minutes – for example, 30
19 seconds – then the interruptible customer will not have adequate time to properly shut
20 down its complex operations. Since the “<10 Minutes” higher credit is based on the
21 WECC non-spinning reserve guideline, interruptible customers should be held only to
22 the WECC standard -- that is, be able to reduce their loads within ten minutes.

1 **Q ARE THERE OTHER CONSIDERATIONS WITH RESPECT TO CUSTOMERS**
2 **SELECTING THE “<10 MINUTES” NOTICE?**

3 A Yes. Relying upon e-mail or verbal notification for a “<10 Minutes” notice could result
4 in the customer failing to interrupt due to a breakdown in communication (e.g., server
5 down, lines busy, etc.) An ISOC participant should be allowed to request an
6 electronic signal notification that would better facilitate timely notice to the appropriate
7 equipment operators. This signal could be tied into the customer’s automated system
8 to shut down equipment in a timely and controlled manner. The costs for this signal
9 would be paid for by the ISOC participant.

10 **False Alarms**

11 **Q HAS THE COMPANY EVER GIVEN A FALSE ALARM NOTICE TO ITS ISOC**
12 **PARTICIPANTS?**

13 A Yes. It is my understanding that PSCo has given at least one of its ISOC participants
14 a false alarm more than once.

15 **Q SHOULD THESE FALSE ALARMS COUNT AS AN INTERRUPTION?**

16 A Yes, most certainly if the interruptible customer reduces its load in response to the
17 PSCo request. Shutting down equipment and foregoing production are direct costs to
18 the customer which do not disappear simply because the Company claims the
19 interruption was a false alarm. Consequently, these hours should count towards the
20 customer’s contracted amount.

21 **Q DOES THIS CONCLUDE YOUR ANSWER TESTIMONY?**

22 A Yes, it does.

Qualifications of Kathryn E. Iverson

1 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A Kathryn E. Iverson; 17244 W. Cordova Court, Surprise, Arizona 85387.

3 **Q PLEASE STATE YOUR OCCUPATION.**

4 A I am a consultant in the field of public utility regulation with Brubaker & Associates,
5 Inc., energy, economic and regulatory consultants.

6 **Q PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK
7 EXPERIENCE.**

8 A In 1980 I received a Bachelors of Science Degree in Agricultural Sciences from
9 Colorado State University, and in 1983, I received a Masters of Science Degree in
10 Economics from Colorado State University.

11 In March of 1984, I accepted a position as Rate Analyst with the consulting
12 firm Browne, Bortz and Coddington in Denver, Colorado. My duties included
13 evaluation of proposed utility projects, benefit-cost analysis of resource decisions,
14 cost of service studies and rate design, and analyses of transmission and substation
15 equipment purchases.

16 In February 1986, I accepted a position with Applied Economics Group, where
17 I was responsible for utility economic analysis including cogeneration projects,
18 computer modeling of power requirements for an industrial pumping facility, and
19 revenue impacts associated with various proposed utility tariffs. In January of 1989, I
20 was promoted to the position of Vice President. In this position, I assumed the
21 additional responsibilities of project leader on projects, including the analysis of
22 alternative cost recovery methods, pricing, rate design and DSM adjustment clauses,

1 and representation of a group of industrial customers on the Conservation and Least
2 Cost Planning Advisory Committee to Montana Power Company.

3 In March 1992, I accepted a position with ERG International Consultants, Inc.,
4 of Golden, Colorado as Senior Utility Economist. While at ERG, I was responsible for
5 the cost-effectiveness analysis of demand-side programs for Western Area Power
6 Administration customers. I also assisted in the development of a reference manual
7 on the process of Integrated Resource Planning including integration of supply and
8 demand resource, public participation, implementation of the resource plan and
9 elements of writing a plan. I lectured and provided instructional materials on the key
10 concept of life-cycle costing seminars held to provide resource planners and utility
11 decision-makers with a background and basic understanding of the fundamental
12 techniques of economic analysis. My work also included the evaluation of a marginal
13 cost of service study, assessment of avoided cost rates, and computer modeling
14 relating engineering simulation models to weather-normalized loads of schools in
15 California.

16 In November of 1994, I accepted a position with Drazen-Brubaker &
17 Associates, Inc. In April, 1995 the firm of Brubaker & Associates, Inc. was formed. It
18 includes most of the former DBA principals and Staff. Since joining this firm, I have
19 performed various analyses of integrated resource plans, examination of cost of
20 service studies and rate design, fuel cost recovery proceedings, as well as estimates
21 of transition costs and restructuring plans.

22 **Q HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?**

23 A Yes. I have testified before the regulatory commissions in Colorado, Georgia, Idaho,
24 Michigan, Montana, Oregon, Texas, Washington and Wyoming.