Before the

Washington Utilities & Transportation Commission

Docket No. UE-921262

PUGET SOUND POWER & LIGHT COMPANY

Testimony and Exhibit of

THOMAS J. KNOBLOCH

On behalf of

**The Department of the Navy
and all other Federal Executive Agencies**

February 1993

1   **PUGET SOUND POWER & LIGHT COMPANY**

2   **before the**

3   **Washington Utilities & Transportation Commission**

4   **Docket No. UE-921262**

5   <u>**Direct Testimony of Thomas J. Knobloch**</u>

6   Q   PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

7   A   Thomas J. Knobloch, 12312 Olive Boulevard, St. Louis, Missouri.

8   Q   WHAT IS YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE?

9   A   I am a consultant in the field of public utility regulation and am a

10   principal in the firm of Drazen-Brubaker & Associates, Inc., regulatory

11   and economic consultants. My professional experience and background are

12   set forth in Appendix A to this testimony.

13   Q   ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

14   A   Drazen-Brubaker & Associates, Inc. is under contract with the United

15   States Department of the Navy to analyze cost of service, revenue allo-

16   cation and rate design proposals presented by Puget Sound Power & Light

17   (PSP&L) and prepare alternative recommendations, if appropriate. The

18   Navy represents the Department of Defense and all other Federal Execu-

19   tive Agencies (FEA) in certain assigned geographical areas. The FEA

1   takes service from PSP&L on residential, general service and high volt-

2   age service tariffs.

3 Q **WHAT ISSUES DO YOU ADDRESS IN THIS TESTIMONY?**

4 A My testimony addresses cost of service, revenue allocation and rate

5   design issues.

6 Q **PLEASE SUMMARIZE YOUR FINDINGS ON THESE ISSUES?**

7 A My findings can be summarized as follows:

8   1)   The Company's use of the "peak credit" method for allocat-
9   ing resource costs is inappropriate. It is not a cost-
10   based method, it is mechanically flawed, it is not in con-
11   formance with the Commission's cost of service guidelines,
12   and is not well recognized throughout the utility industry.

13   2)   This Commission should initiate an investigation into the
14   most appropriate method for allocating resource costs for
15   PSP&L in its class cost of service study.

16   3)   The Company's proposed interclass revenue allocation should
17   be rejected. First, it is based upon a faulty class cost
18   of service study. Second, even using the cost study the
19   Company has sponsored in this case, the proposed revenue
20   allocation does not result in moving customer classes one-
21   third of the way to cost of service. In fact, for the
22   Residential Class, the Company proposed revenue allocation
23   moves revenue responsibilities farther from cost of ser-
24   vice.

25   4)   Absent a reasonable cost of service study, revenues should
26   be allocated to each customer class on a uniform percent
27   increase basis. However, if the Commission determines to
28   allow the Company's cost of service study method for the
29   purpose of proceeding with this case, revenues should be
30   allocated to each customer class according to the alloca-
31   tion shown on Exhibit TJK-1 (   ), Schedule 3. This reve-
32   nue allocation truly moves rates one-third closer to cost
33   in accordance with the Company's expressed intentions.

34   5)   For rate design in the classes with demand and energy
35   charges, rates should be changed so that the same percent-
36   age of revenue is collected through the demand and energy

1 charges as current rates collect. Until a proper class
2 cost of service study can be used to allocate revenues and
3 design rates, current rate relationships should not be
4 altered.

5 6) FEA opposes the use of the Company's proposed elasticity
6 adjustment for designing rates.

7 7) FEA supports the concept of rate moderation. Should the
8 Commission allow an increase, it would be much more appro-
9 priate to phase this increase in smaller steps.

10 **COST OF SERVICE STUDY**

11 Q **HAVE YOU REVIEWED THE COMPANY'S CLASS COST OF SERVICE STUDY?**

12 A Yes. The Company has submitted a class cost of service study which

13 allocates resource costs on a method that it calls the "peak credit"

14 method. Under the Company's calculation of this method, the 30-year

15 levelized costs of a base load combined cycle combustion turbine unit

16 at an 80% capacity factor is compared to the 30-year levelized cost of

17 a peaking combustion turbine operated for 200 hours per year (2% capac-

18 ity factor). For the calculation of the 30-year levelized cost of a

19 peaker, the Company only includes 50% of the fixed capital and fixed O&M

20 costs. This calculation results in a levelized cost for peaking capac-

21 ity of $57.07 per kW per year and a levelized cost for the combined

22 cycle base capacity of $351.11 per kW per year. Because $57.07 is 16%

23 of $351.11, the Company concludes that 16% of all resource costs should

24 be allocated on demand and 84% of all resource costs should be allocated

25 on energy.

1 Q   **DO YOU AGREE THAT THIS IS AN APPROPRIATE METHOD FOR ALLOCATING RESOURCE**

2   **COSTS ON PSP&L'S SYSTEM?**

3 A   No. The method is arbitrary, it does not reflect cost-causation, it

4   does not satisfy the Commission's cost of service requirements, and is

5   not generally recognized in the utility industry.

6 Q   **IN WHAT WAY IS THE METHOD ARBITRARY?**

7 A   The method is arbitrary because in the determination of the levelized

8   cost for a peaking combustion turbine, the Company arbitrarily includes

9   only one-half of the capital and fixed O&M costs. The Company's reason

10   for doing this (according to its testimony) is that the CT provides more

11   "value" than simply the ability to meet peak loads for 200 hours in a

12   year. While that may be the case, the Company has provided no study to

13   support its contention that the capital and fixed O&M costs should be

14   discounted by <u>50%</u> to arrive at a levelized fixed cost. The method is

15   arbitrary. If the combustion turbine capital costs were not discounted

16   by 50%, the "peak credit" method would result in 25% of the resource

17   costs being allocated on demand and 75% being allocated on energy.

18 Q   **WHY IS THIS METHOD NOT COST-BASED?**

19 A   The method is not cost-based because it doesn't reflect how costs are

20   incurred on a utility's system. In theory, all other factors equal, a

21   utility with a low load factor should have a different resource mix than

22   a utility with a high load factor. The low load factor utility should

23   have less base load capacity and more peak load capacity than a utility

24   with a high load factor. And since the theory behind the "peak credit"

1   method is that base load capacity is energy-related and peak load capac-

2   ity is peak demand-related, then the utility with a low load factor

3   should have less capacity allocated on an energy basis than a utility

4   with a high load factor. Under the Company's "peak credit" method,

5   however, the amount of resource costs allocated on an energy versus a

6   demand basis is not sensitive to a utility's load factor or resource

7   mix. Therefore, this method is not cost-based.

8   Second, if the intent of the "peak credit" method is to allocate

9   base resource costs on an energy basis and peak resource costs on peak

10   demand, a "peak credit" method double counts the amount of capacity

11   allocated on an energy basis. In other words, if the "peak credit"

12   method were to truly reflect the concept that combustion turbines are

13   used to serve peaking capacity above that served by the base load

14   energy-related capacity, then the portion of resource costs allocated

15   on a demand basis should be allocated on the basis of the peak demands

16   above the average demand, which is also called the "excess" demand.

17   This concept is well recognized in the utility industry in the uniformly

18   accepted "average and excess" demand allocation method. In that method,

19   capacity is not allocated on peak demand, but rather the peak demands

20   above the average demand (the "excess" demands). If the Company were

21   to correctly allocate the demand-related resource costs to reflect the

22   fact that the CTs are serving that peak demands above what the base load

23   plants are serving (in the average demand), then the demands during the

24   top 200 hours for each class should be reduced by the average demands.

1 Q   **WHY IS THIS "PEAK CREDIT" METHOD NOT IN ACCORDANCE WITH COMMISSION PAST**

2   **ORDERS ON COST OF SERVICE?**

3 A   In the last Commission order in Docket Nos. U-89-2688-T and U-89-2955-T,

4   Third Supplemental Order, the Commission stated:

5   "The Commission noted later in its Second Supplemental
6   Order in Cause Nos. U-82-10/11 that embedded cost of ser-
7   vice studies should be forward looking by use of historical
8   cost for functionalizing to production and other catego-
9   ries, followed by a classification method which would rec-
10   ognize the current cost relationships between baseload and
11   peak facilities." (Page 70)

12   Under the company's method, it calculates a levelized fixed cost

13   of a peaker versus the levelized cost of the base load facility. Once

14   that classification is made, the "peak credit" method then allocates the

15   "base load" capacity portion on the basis of all 8,760 hours of demand

16   (energy usage) and the peak load capacity portion on the basis of the

17   200 highest peak demands. Cost allocation should be based upon cost-

18   causation. Allocation of base load capacity on energy usage implies

19   that the demands during all 8,760 hours of the year cause base load

20   plant to be built. Similarly, the allocation of peaking capacity on the

21   basis of the top 200 hours of peak demand implies that the top 200 hours

22   of peak demand cause peak capacity to be built. Nothing could be far-

23   ther from the truth.

24   First, what causes capacity to be built is the need to serve peak

25   demands. However, the decision to build base load or peak load capacity

26   depends upon how many hours that capacity is required--up to a point!

27   That point is called the "break-even" point. It is a fact that base

28   load capacity costs more to install than peak capacity but has lower

29   operating costs, and peaking capacity costs less to install than base

1 load capacity but has higher operating costs. The "break-even" point

2 is the point at which a base load plant becomes more economical than a

3 peaking plant, based upon the total capital and running costs. For

4 example, the cost of the two types of plants used by the Company in

5 determining the "peak credit" method are as follows:

6 **Plant Costs**

	Peaker (CT)	Base Load (CC)
7		
8 Capital Costs	$63.15/kW	$99.28/kW
9 Running Costs	$.1271/kWh	$.0359/Kwh

10 The break-even point is the number of running hours at which the lower

11 running cost of the base load plant exactly offsets its higher capital

12 cost. This can be calculated by taking the difference in capital costs

13 divided by the difference in running costs. Based on the Company's

14 costs, that point is:

15 **Break-Even Point: Base Load Vs. Peaker**

16
17 Δ Capital Costs = $99.28 - $63.15
18 Δ Running Costs $.1271 - $.0359
19
20   = $36.13
21   .0912

22   = 396 Hours

1   The calculation verifying that 396 hours is the break-even is shown

2   below:

3   **Verification of Break-Even Point**

	Peaker (CT)	Base Load (CC)
Capital Costs (1kW)	$ 63.15	$ 99.28
Running Costs		
396 x $.1271	$ 50.33	
396 x .0359		$ 14.22
	$ 113.48	$ 113.50

10   Thus, if a plant is required to run for 396 hours, the two will have the

11   same total costs. If it is required for more hours, the base load plant

12   will have a lower total cost, and therefore, a lower average per kilo-

13   watthour costs. What is more important, once this break-even point has

14   been reached, is that there is no further impact on capital costs. In

15   other words, the choice between a base plant and a peaking plant is made

16   at 396 hours. Obviously, that plant can operate for more than 396

17   hours. That does not mean that use in excess of 396 hours has any

18   further impact on the decision to build either base or peaking plant--as

19   an energy based allocation would imply.

20   In this example, what causes the decision to build base load or

21   peaking plant is the top 396 hours of peak demand. If one wishes to

22   properly reflect the Commission order to consider the cost differences

23   between base and peaking load plant, it would be more appropriate to

24   allocate both capacity costs and fuel cost for PSP&L on the basis of the

1   highest 400 hours of peak demand. It is not appropriate to allocate 84%

2   of resource costs on the basis of energy because it's not the demands

3   during 8,760 hours (energy) that determines whether base or peaking

4   capacity is built.

5 Q   **PLEASE EXPLAIN THE BASIS FOR YOUR STATEMENT THAT PSP&L'S "PEAK CREDIT"**

6   **METHOD IS NOT RECOGNIZED IN THE UTILITY INDUSTRY.**

7 A   The touchstone for utility cost allocation is the National Association

8   of Regulatory Utility Commissioners (NARUC) cost allocation manual.

9   This cost allocation manual describes the various costing techniques

10   that are recognized in the utility industry and outlines the pros and

11   cons associated with using these techniques. There is no place in the

12   NARUC cost allocation manual that identifies and/or explains the "peak

13   credit" method. It is not a well recognized method in the utility

14   industry.

15 Q   **DO YOU HAVE A PREFERRED COST ALLOCATION METHOD TO RECOMMEND TO THIS**

16   **COMMISSION IN THIS CASE?**

17 A   No. Even though there are serious shortcomings to the method that the

18   Company is proposing, the final report for the Rate Design Collaborative

19   recommended that the "peak credit" method should be used for classifying

20   all resource costs. FEA felt that in this case it would not be produc-

21   tive to attempt to overturn the general concepts endorsed by the parties

22   in the collaborative group who have spent over a year in identifying a

23   consensus on certain issues. However, FEA does recommend that this

24   Commission initiate an investigation to determine the most appropriate

1   class cost of service method which should be used by PSP&L in classify-

2   ing and allocating resource costs.

3 **REVENUE ALLOCATION**

4 Q   HAVE YOU REVIEWED THE COMPANY'S PROPOSED REVENUE ALLOCATION?

5 A   Yes. The Company claims to have based its revenue allocation upon the

6   class cost of service study filed in this proceeding and moved all

7   customer classes one-third closer to cost of service.

8 Q   DO YOU AGREE IN PRINCIPLE WITH THE COMPANY'S PROPOSAL IN THIS CASE?

9 A   Yes. FEA agrees that interclass revenue allocation should be based upon

10   the results of a reasonable class cost of service study. FEA also

11   agrees that movement towards cost of service should consider customer

12   impact and, as such, a one-third movement towards cost of service would

13   be a step in the right direction.

14   However, as discussed previously, FEA does not agree that PSP&L

15   has filed a reasonable class cost of service study with which to allo-

16   cate revenue responsibilities. Furthermore, even based upon the Com-

17   pany's class cost of service study, the Company has not moved customer

18   class revenue responsibilities one-third of the distance towards cost

19   of service.

20 Q   WOULD YOU BE ABLE TO SUPPORT YOUR CONTENTION THAT THE COMPANY'S REVENUE

21   ALLOCATION DOES NOT MOVE ALL CUSTOMER CLASSES' REVENUE RESPONSIBILITY

22   ONE-THIRD OF THE DISTANCE TO COST OF SERVICE?

1 A   Yes. Exhibit TJK-1 (   ), Schedule 1 shows how the Company is propos-

2   ing to distribute the revenue increase to each customer class. **I should**

3   **note at the outset that the use of Company amounts in my exhibit does**

4   **not mean that the FEA accepts as correct the amounts/ratios of either**

5   **present or proposed rates.**

6   Exhibit TJK-1 (   ), Schedule 2 shows a comparison of the rates

7   of return, indexes of return and subsidies at present rates and the

8   Company's proposed rates by customer class. The rate of return for each

9   customer class at present rates is taken directly from the Company's

10   class cost of service study. The index of return for each class is a

11   ratio of the classes' rate of return to the total rate of return

12   expressed as a percentage. The subsidy is the dollar difference between

13   what each class would be paying at equal rates of return and what they

14   currently are paying at present or are proposed to be paying at proposed

15   rates. For instance, at present rates, the Residential Class is provid-

16   ing a rate of return of 5.76%. This rate of return is 90% of the system

17   average rate of return of 6.41%. The difference between what the class

18   is presently paying and what it should be paying in order to produce a

19   system-wide rate of return of 6.41% is $11,953,000. In other words, the

20   Residential Class is underpaying at present rates according to the class

21   cost of service study by $11,953,000.

22   In order for each class to be moved one-third closer to cost of

23   service, subsidies would have to be reduced by 33-1/3% between present

24   and proposed rates. As can be seen from Schedule 2, subsidies are not

25   being reduced by 33-1/3%. Using the Residential Class, for example, its

26   subsidy is actually growing to almost $13 million. In other words, the

1   Company's revenue allocation proposal results in the Residential Class

2   moving farther from cost of service rather than closer to cost of ser-

3   vice.

4 Q **WHAT IS FEA'S RECOMMENDED REVENUE ALLOCATION IN THIS CASE?**

5 A FEA's primary recommended revenue allocation is that all customer

6   classes be increased by the same uniform percentage. FEA makes its

7   primary recommendation because it believes that the Company's class cost

8   of service study which is relied upon for revenue allocation is

9   seriously flawed and not appropriate to use as a guide in allocating

10   revenue responsibility.

11   However, if the Commission allows the use of the "peak credit"

12   method in this case, as set forth by PSP&L, FEA recommends the revenue

13   distribution shown on Exhibit TJK-1 (   ), Schedule 3. This revenue

14   allocation truly moves all customer classes one-third closer to cost.

15   Exhibit TJK-1 (   ), Schedule 4 shows rates of return, indices and

16   subsidies received or provided, at present and FEA recommended rates.

17   As can be seen from this schedule, all customer classes are one-third

18   closer to cost of service at our recommendation compared to the present

19   rates. In other words, for all customer classes, received or provided

20   subsidies have been reduced by one-third. However, the Commission may

21   elect to reduce the subsidies by one-fourth at this time.

1 **RATE DESIGN**

2 Q   DOES FEA HAVE ANY RECOMMENDATIONS REGARDING RATE DESIGN?

3 A   Yes. The Company has relied upon its class cost of service study to

4   alter the demand/energy split for classes that have separately stated

5   demand and energy charges. Because FEA believes that the Company's

6   class cost of service study is flawed, we recommend that there be no

7   change in cost recovery from demand and energy charges. Therefore, in

8   designing a demand/energy tariffs, the percentage of revenues collected

9   from the demand charges and the energy charges should remain the same.

10   Until a reasonable class cost of service study can be conducted, it is

11   inappropriate to realign intraclass revenue responsibilities between

12   demand and energy charges.

13   Also, FEA supports the Company's proposed change in KVAR billing

14   for general service customers who are demand metered on a per kW basis.

15   It is cost-based and should be approved.

16 **ELASTICITY ADJUSTMENTS**

17 Q   DOES FEA SUPPORT THE USE OF AN ELASTICITY ADJUSTMENT FOR RATE DESIGN?

18 A   No. Elasticity adjustments are subject to a great deal of criticism,

19   first because of their inaccuracy. Second, the use of an elasticity

20   adjustment increases the likelihood of overrecovering from ratepayers.

21   Without an elasticity adjustment, the utility will not overrecover if

22   customers do not adjust their usage. With an elasticity adjustment, the

23   utility will overrecover if customers do not adjust their usage with

24   higher rates (either in the short-term or in the long-term). When this

1   occurs, some of the risk is shifted from the utility to its ratepayers.

2   Most commissions throughout the United States have specifically rejected

3   the use of elasticity adjustments in rate-making for these reasons and

4   others. This Commission should do the same.

5   **RATE MODERATION PROPOSAL**

6   Q   **DOES FEA HAVE A POSITION ON THE COMPANY'S PROPOSED RATE MODERATION**

7   **PROPOSAL?**

8   A   Yes, it does. FEA supports the concept of rate moderation. A one time

9   11.6% overall increase (with varying increases to customer classes) is

10   far too great given the current economic conditions. This Commission

11   should embrace an approach to phase-in this huge increase in order to

12   mitigate one-time harsh customer impacts.

13 **PERIODIC RATE ADJUSTMENT MECHANISM (PRAM)**

14 Q   **DO YOU HAVE ANY CONCERNS ABOUT THE PRAM MECHANISM IN THIS PROCEEDING?**

15 A   Yes. In Mr. Hoff's pre-filed direct testimony on Page 8, he states that

16   in PSP&L's PRAM filing in June 1993, it will ask that the demand portion

17   of the rate be eliminated and that the charges per kilowatthour be the

18   same for all blocks in each schedule. FEA is strenuously opposed to

19   this proposal. The current mechanism increases each block by an equal

20   percentage. This is the only mechanism which does not alter current

21   rate relationships. In order to alter a current rate relationship,

22   there should be cost-based evidence that supports changing current rate

23   relationships. In a PRAM proceeding, that cost-based evidence is not

1 present and as a result, current rate relationships should not be

2 altered. FEA supports the use of the existing procedure which increases

3 each rate block by an equal percentage, if the Commission determines

4 that a PRAM mechanism should be continued.

5 Q   DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

6 A   Yes, it does.

1 **Qualifications of Thomas J. Knobloch**

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

3 A   Thomas J. Knobloch, 12312 Olive Boulevard, St. Louis, Missouri.

4

5 Q   **WHAT IS YOUR OCCUPATION?**

6 A   I am a consultant in the field of public utility regulation and am a

7   principal in the firm of Drazen-Brubaker & Associates, Inc., regulatory

8   and economic consultants.

9

10 Q   **PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

11 A   I hold a Bachelor of Science Degree in Electrical Engineering from the

12   University of Missouri in Columbia, Missouri, and a Master of Business

13   Adminstration Degree with an emphasis in Finance from St. Louis Univer-

14   sity.

15   From June, 1971 through October, 1981, I was employed by Union

16   Electric Company in the Transmission and Distribution, Rates and Com-

17   puter Services functions. In the Transmission and Distribution func-

18   tion, I had various jobs, including the development of cable ampacity

19   computer programs, economic sizing of distribution facilities models,

20   and forecasting and budgeting the distribution circuit requirements in

21   various areas throughout the Union Electric Service area. In the Rate

22   function, I was primarily responsible for the Company's first load

23   research study and various assignments relating to the class cost-of-

24   service study which was completed with data from the load research

1   study.   I also worked on various other projects relating to cost of

2   service, rate design and tariff implementation for electric and steam

3   service provided by Union Electric.   In the Computer Services function,

4   I supervised an engineering computer service group whose primary respon-

5   sibility was to support all engineering computer applications on the

6   Company's corporate main frame computer.   This included the acquisition

7   of hardware and software products for engineering applications, in

8   addition to the in-house development and support of software computer

9   programs.

10   In November, 1981, I joined Drazen-Brubaker & Associates, Inc.

11   Since that time, I have participated in the analyses of over 50 utili-

12   ties for rate case and conservation-related matters.   I have analyzed

13   and provided testimony on revenue, cost of service and rate design

14   issues, in addition to participating in the negotiations of several

15   special contracts for large power users.   I have provided consulting

16   services to industrial customers, universities and utilities.

17

18 Q **HAVE YOU PREVIOUSLY TESTIFIED IN ANY RATE PROCEEDINGS?**

19 A I have testified before the regulatory commissions of California,

20   Florida, Indiana, Iowa, Kansas, Maine, Michigan, Missouri, New York,

21   Ohio and Wisconsin.   I have also testified in a court action before a

22   judge in Tacoma, Washington.