

**- BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH -**

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**In the Matter of the Application of PacifiCorp  
for Approval of its Proposed Electric Rate  
Schedules and Electric Service Regulations**

**Docket No. 01-035-01  
Utah Division of Public Utilities  
Exhibit No. DPU 12.0**

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**Prefiled Direct Testimony of**

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**For the Division of Public Utilities**

**Department of Commerce**

**State of Utah**

**June 15, 2001**

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. What is your name, and by whom are you employed?**

3 A. George R. Compton. I am a Technical Consultant for the Division of Public Utilities  
4 (UDPU, DPU, or Division) of the Utah Department of Commerce.

5 **Q. What is your education and work experience?**

6 A.. I hold a Bachelor's Degree from Brigham Young University, with majors in Mathematics  
7 and Psychology, and a minor in Philosophy. A portion of my undergraduate experience  
8 also took place at Stanford. Subsequent to earning a Master's Degree at BYU in Statistics,  
9 with minors in Psychology and Philosophy, I worked for McDonnell Douglas Astronautics  
10 in Southern California, principally as a probabilist.

11 Apart from some part-time teaching at BYU, my entire career since earning a  
12 Ph.D. in economics from UCLA in 1976 has been spent in utility regulation. For all but  
13 two of those years I have been employed by the Division, on whose behalf I have testified  
14 countless times before this Commission. In the two odd years, I was an independent  
15 consultant. My clients included UAMPS, UP&L, and U S WEST. The main area of my  
16 professional interest has been the application of economics principles to utility pricing and  
17 costing. In that capacity I was the principal proponent of the 8CP inter-jurisdictional  
18 allocation approach that was adopted by all the Utah Power jurisdictions back in the  
19 1980s. For a number of years I was also the Division's primary cost-of-capital witness.  
20 More recently I have explored issues surrounding mergers, acquisitions, the emergence of  
21 competition, and the introduction of alternative forms of regulation.

22 **Q. What is your assignment in this case?**

23 A. I have been asked to present rate design testimony regarding PacifiCorp's (or, the  
24 "Company's") Residential Rate Schedule 1. The general policy witness in the area of rate  
25 design is Rebecca Wilson. She will be presenting a summary of the Division's suggested  
26 rate designs for all the schedules, along with justifications for the various proposed rate  
27 design alterations for schedules other than Schedule 1.

**II. SOME PROPOSED PRICES**

**Q. Before proceeding, it would be useful to see the existing residential schedule 1 prices, what PacifiCorp is proposing, and what the Division is proposing – given its and the Company’s revenue requirement recommendations. Would you please furnish that to us now?**

A. Certainly.<sup>1</sup>

**RESIDENTIAL RATE SCHEDULE COMPARISONS**

	Current Rates	DPU Rates   DPU Rev’s	DPU Rates   PacCorp Rev’s	PacCorp Rates  PacCorp Rev’s
Customer Charge	\$0.98/mo.	\$0.98/mo.	\$0.98/mo.	\$0.98/mo.
Min. Bill - Single Phase	\$3.54/mo.	\$3.54/mo.	\$3.54/mo.	\$3.54/mo.
Min. Bill - Triple Phase	\$10.62/mo.	\$10.62/mo.	\$10.62/mo.	\$10.62/mo.
Summer - First 400 kWh’s	6.1307¢/kWh	6.1307¢/kWh	6.9916¢/kWh	6.8897¢/kWh
Summer - Other kWh’s	6.1307¢/kWh	6.4565¢/kWh	7.7753¢/kWh	7.6734¢/kWh
Non-summer - 1 <sup>st</sup> 400 kWh’s	6.1307¢/kWh	6.1307¢/kWh	6.9916¢/kWh	6.8897¢/kWh
Non-summer - Other kWh’s	6.1307¢/kWh	6.1307¢/kWh	6.9916¢/kWh	7.6734¢/kWh

**Q. How would you characterize those four rate designs (beyond recognizing the fact that they have identical customer charges and minimum bills)?**

A. Current Rates: A uniform, flat energy charge throughout the year.

DPU Rates | DPU Revenue Requirement and Spread: The entire rate increase would appear in the summer-season tail block. (All other rates would remain unchanged from the current tariff.) “Summer” is defined as the billings of June through September.

PacCorp Rates | PacCorp Rev’s: The Company has proposed an inverted block rate structure that would keep the same (inverted block) rates throughout the year.

DPU Rates | PacCorp Rev’s: The inverted block structure would only appear in the

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<sup>1</sup> Sources: Current Rates - Tariff 43; DPU Rates - DPU Exhibit 12.1; PacCorp Rates - UP&P Exhibit \_\_\_\_4 (WRG-4)

1 summer. The summer tail-block rate would exceed the initial block by the same amount  
2 as with the Company's inverted structure. The rate for the summer's initial block would  
3 be the same as the uniform, flat rate for the rest of the year.

### 4 III. JUSTIFYING INVERTED-BLOCK RATE DESIGNS

5 **Q. I observe that both the DPU and the Company are proposing a substitution of an**  
6 **inverted-block rate design for the flat rates currently in effect. Why?**

7 A. The economic ideal is to have prices approximate marginal costs. An inverted-block rate  
8 structure is appropriate when the tail block can approximate relevant marginal costs, and  
9 marginal costs exceed average costs.

10 **Q. What do you mean by "relevant marginal costs"?**

11 A. It depends on the supply-versus-demand situation of the utility, as well as in the market in  
12 which that utility participates. If a utility's own or contracted capacity is less than demand,  
13 as has been the case with PacifiCorp, then the relevant marginal cost is the price of the  
14 short-term (including spot-market) or the long-term power acquired to meet the shortage.  
15 If the utility has sufficient capacity to meet its loads, the relevant marginal cost is the cost  
16 of the capacity and energy required to have met the incremental loads.

17 **Q. Do the relevant marginal costs currently exceed average costs?**

18 A. They do. Back in December, average spot peaking prices were in excess of ten cents per  
19 kilowatt-hour. Given greater Western loads in the summer than in the winter, there has  
20 been a general expectation of even higher prices as the year proceeds. That expectation is  
21 reflected in PacifiCorp's power cost model. By contrast, the average cost to serve  
22 residential customers is in the neighborhood of seven cents per kWh.

23 **Q. What marginal cost is implied in PacifiCorp's "20-20" program for residential**  
24 **customers?**

25 A. It is upwards of 12 cents per kWh.<sup>2</sup>

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<sup>2</sup> The current bill for 600 kWh's, for example, is \$41.32. If consumption is reduced by 20%, to 480 kWh's, the bill – without the 20-20 discount – would be \$33.28. Discounting that bill by

1 **Q. With marginal costs that high, why is the Division not advocating a larger**  
2 **differential between the tail-block rate and the initial-block rate?**

3 A. We have four reasons.

4 1. Much consumption that is charged the tail-block rate does not represent consumption at  
5 the margin of the Company's capacity. Consider that the tail-block rate starts at 400  
6 kWh's in a billing period (for reasons described later). But average residential  
7 consumption exceeds 600 kWh's per month. Accordingly, much consumption in excess of  
8 the 400 kWh level takes place at times when the Company has adequate capacity and its  
9 marginal cost of service is less than six or seven cents.

10 2. While spot and peaking market costs are very high now, there is a hope and expectation  
11 that they will be substantially lower during the rates-effective period (i.e., after this  
12 summer season has ended). If marginal costs were generally below marginal prices, the  
13 Company would be exposed to unacceptably large net revenue *instability* in the event of  
14 extreme weather patterns. (Extra sales would generate surplus profits since the prices-  
15 revenues would exceed the cost of providing the extra power. Sales below expectations  
16 would lead to insufficient profits inasmuch as marginal-price-based revenues would drop  
17 faster than costs.)

18 3. Standard inverted block rates raise equity questions, and the greater the disparity  
19 between the initial- and tail-block prices, the greater the equity concerns. Recall that costs  
20 are allocated to each customer class so that the class as a whole covers its average,  
21 embedded costs. A standard equity principle is that revenues received from each customer  
22 will cover the share of the embedded costs associated with his usage characteristics. But  
23 with inverted-block rates, the very large customer (who pays the higher, tail-block rate for  
24 a disproportionate share of his consumption) will pay something in excess of his average-  
25 cost allotment, while the very small customer will pay something less than his average-  
26 cost-based share.

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20% yields \$26.62 – for a savings of \$14.70 compared to the bill for 600 kWh's. Dividing  
\$14.70 by 120 kWh's (the amount of reduced consumption) yields 12.2¢/kWh.

1 4. In the case of the Division's rate structure, to have had a larger tail block would have  
2 meant lowering the winter kWh charge to a level below the current tariff (exclusive of the  
3 interim rate increase surcharge). The Division thought it inappropriate to send a message  
4 to consumers that the cost of electricity had gone down in the winter or any other season of  
5 the year.<sup>3</sup>

6 **IV. THE PRIMARY DISTINGUISHING QUALITY OF**  
7 **THE DIVISION'S PROPOSAL VERSUS PACIFICORP'S**

8 **Q. The Company has proposed its inverted-block structure to apply throughout the**  
9 **year; the Division would only have that structure apply for the months of June**  
10 **through September. Why have you chosen the more limited application?**

11 A. The Division had two principal motivations:

12 1. It is in the summer season that PacifiCorp has been experiencing its greatest difficulty  
13 in meeting demand. Given the more rapid growth – within PacifiCorp and for the West as  
14 a whole – in areas where air-conditioning is the biggest demand driver, future capacity  
15 expansion will be largely driven by the need to meet summer-season demand. And given  
16 the limited revenue-requirement increase being proposed by the Division, we thought it  
17 appropriate to focus that increase entirely where a price signal would have the greatest  
18 import – on the summer season tail-block.<sup>4</sup> Accordingly, the initial-block energy charge  
19 for the summer, and the energy charge for the rest of the year for all levels of consumption,  
20 would remain at its current-tariff level.

21 2. The Division was also unwilling to place an undo hardship on the “legacy” all-electric  
22 customers who rely on electricity for space heating. (They originally came onto the system  
23 under declining-block rates. The latter can be justified on the basis of the superior load-

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<sup>3</sup> The Division received strong encouragement from PacifiCorp -- specifically, William Griffith -- on this point.

<sup>4</sup> About 75% of the customers in August 2000 used more than 400 kWh's of electricity – placing their incremental consumption within the recommended tail-block. (Source: PacifiCorp's “Revised Response to SLCAP Data Request No. 6.”)

1 factors of the space heating customers.) Page 2 of DPU Exhibit No. 12.2 shows the  
2 reduced impact on large non-summer-season users of the Division proposal versus the  
3 Company's in the event of a revenue requirement as high as that sought by PacifiCorp.

4 **Q. One aspect of your rate design that is not distinguished from the Company's is using**  
5 **400 kWh's as the demarcation between the initial and the tail rate block. Why that**  
6 **choice?**

7 A. With conventional rate design there is an inevitable trade-off involved in the "demarcation  
8 point" selection. A higher demarcation point would allow for a higher tail-block rate  
9 (since it would apply to fewer kWh's). But then the price signal involved would apply to  
10 fewer customers, and the equity problem discussed earlier<sup>5</sup> would be exacerbated. In the  
11 Division's estimation, the 400 kWh demarcation point seems to strike a reasonable  
12 balance. It provides for the modest tail-block "step-up" that we desired, and in none of the  
13 summer-period months would the tail block apply to fewer than 73% of the residential  
14 customers.<sup>6</sup>

15 **V. MODIFYING THE DIVISION'S RATE DESIGN IN THE**  
16 **EVENT OF A LARGER REVENUE REQUIREMENT**

17 **Q. You just spoke of "a revenue requirement as high as what is sought by PacifiCorp."**  
18 **How do you propose to alter your Schedule 1 rates in the event that this Commission**  
19 **orders a revenue requirement that is larger than the one suggested by the Division?**

20 A. Initially, further increases should all be applied to the summer season tail-block. The tail  
21 block can absorb about \$14 million in revenue requirement increases without the  
22 differential between it and the initial block going above 0.7837 cents/kWh -- which is the  
23 differential proposed by PacifiCorp. If the revenue requirement increase assigned to  
24 Schedule 1 goes beyond that level, the Division recommends that it be spread uniformly

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<sup>5</sup> On page 4.

<sup>6</sup> Source: PacifiCorp's "Revised Response to SLCAP Data Request No. 6."



1 over both the Summer tail-block rate and the rate that would apply to all other usage (i.e.,  
2 the Summer initial-block and the all non-Summer kWh's). That preserves the 0.7837 cent  
3 differential.

4 **Q. What is so “sacred” about preserving the “Company-tail-block differential”?**

5 A. While perhaps arbitrary in its precise level, the Division believes the Company's suggested  
6 differential between the initial and tail blocks to be reasonable. (Refer back to discussion  
7 items 2 and 3 on page 4 for a rationale against “too great” of a difference between the tail  
8 block and the initial block.)

9 **VI. ANSWERING MISCELLANEOUS QUESTION**  
10 **REGARDING INVERTED-BLOCK RESIDENTIAL RATES**  
11

12 **A. Why Not Individually Customized Inverted-Block Rates?**

13 **Q. Earlier<sup>7</sup> you spoke of equity concerns regarding having too large of a differential**  
14 **between the tail-block and the initial-block rates. Wouldn't the problem of large**  
15 **users subsidizing small users be eliminated by having all users receive comparable**  
16 **proportions of cheap, initial-block rates and more expensive, tail-block rates? Such**  
17 **could be accomplished by individually “customizing” the step-up point between the**  
18 **initial block and the tail block – at, say, 90% of each customer's historic usage for a**  
19 **given month.**

20 A. You are absolutely correct regarding the merits of such an approach. But, unfortunately, it  
21 possesses its own set of problems. The Commission's priorities would determine whether  
22 those problems outweigh the benefits. In the Division's estimation they do.

23 **Q. To what problems are you referring?**

24 A. There are both practical problems and equity problems. Because of the record-keeping  
25 involved, it would be administratively more cumbersome/expensive. There is also the  
26 matter of coming up with the “base consumption level” for brand-new customers. Also,  
27 there could be customer confusion problems derived from the fact that two customers

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<sup>7</sup> On page 4.

1 could have identical usage but pay different amounts.

2 The equity problem has to do with what makes up the historical level of  
3 consumption and what causes the bill-reducing “conservation.” A customer may have a  
4 very high base consumption level due entirely to profligacy. “Customization” would give  
5 him a windfall in the form of more kWh’s at the lower price than under the Division  
6 proposal. Another customer may have already done all that was “humanly” possible to get  
7 his consumption down to the sub-400 kWh level. He would not only see a rate increase  
8 (since his higher-rate tail-block would appear at 90% of his sub-400 kWh level of  
9 consumption), but he would be frustrated by the “impossibility” of conserving beyond  
10 what he had already accomplished.

11 **B. Why Not Inverted-Block Rates For Other Rate Schedules?**

12 **Q. You have justified inverted-block rates by virtue of the observation that marginal**  
13 **costs exceed average costs. Since that is true as a general proposition (i.e., not just**  
14 **for residential customers), why is the Division not recommending inverted-block**  
15 **rates for commercial and industrial customers as well as for residential customers?**

16 A. Before supplying a direct answer to your question, let’s place it in some form of context.  
17 In conventional competitive markets where marginal costs exceed average costs, prices for  
18 *all* units of the good or service are priced at the higher, marginal cost level. Firms whose  
19 average costs (including capital costs) are below the marginal cost level reap extraordinary  
20 profits. That is the way the market works. But with rate-of-return regulation (which sets  
21 pro-forma revenues to costs, thereby denying extraordinary profits), customers enjoy a  
22 right to what would have been the margin of revenues over costs. That margin appears, at  
23 least partially in this instance, in the form of prices that are below the marginal costs.<sup>8</sup>

24 Now to address your specific question. The different treatment of residential  
25 customers is a matter of social equity and scale. With residential customers one can

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<sup>8</sup> Another mechanism that has been proposed by economists for achieving the zero-extraordinary-profits objective while allowing all units of the service to be priced at the higher, marginal cost level, is to tax away all those profits. Such would allow other tax rates to be lower than they otherwise would be.

1 imagine some minimal level of electricity consumption to meet essential needs (e.g., for  
2 refrigerators, other basic appliances, and some lighting). For a greater, more “luxurious”  
3 standard, it is deemed socially acceptable to charge a higher price for electric service.<sup>9</sup> But  
4 how might some minimum level be established for a commercial or industrial enterprise?  
5 How would some baseline be established for a Geneva Steel vis a vis a Nucor Steel?  
6 Would a Dan’s Market “be on the same page” as a ZCMI mall? There may be an  
7 equitable way to establish inverted-block rates across customers with vastly different  
8 scales of operation, but the Division is unaware of such.

## 10 VII. RECOMMENDATION

11 **Q. Would you please summarize the Division’s recommended residential Schedule 1 rate**  
12 **structure?**

13 A. Along with PacifiCorp, the Division is recommending no changes in the customer charge  
14 or minimum bills at this time. Also along with the Company, the Division is  
15 recommending the creation of a higher-block rate, starting at 400 kWh’s per month.  
16 While PacifiCorp would place such an inverted-block structure in effect throughout the  
17 year, the Division would limit it to the four billing months of June through September.  
18 For Schedule 1 revenue requirement increases up to about \$14 million, the Division would  
19 keep the price for all consumption but the Summer-period tail-block amounts at the  
20 current level of 6.1307¢/kWh. Accordingly, the entire amount of the increase (up to the  
21 \$14 million level) would be placed on the Summer-period tail-block. At that point, the  
22 Summer-period tail-block rate would be 6.9144¢/kWh, or 0.7837¢/kWh above the all-  
23 other-consumption rate of 6.1307¢/kWh. It is the Division’s recommendation that  
24 additional Schedule 1 revenue requirement increases beyond the \$14 million level be  
25 spread uniformly on those two charges so as to preserve the 0.7837¢/kWh differential.

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<sup>9</sup> As an extreme example of this mentality, on May 15<sup>th</sup> the California PUC increased residential rates for PG&E by the following amounts: 0% for consumption below 130% of the “baseline,” 35% for consumption between 130% and 200% of baseline, 65% for consumption between 200% and 300% of baseline, and 80% for consumption over 300% of baseline.

1 **Q. Does this conclude your testimony?**

2 A. Yes.