

**- 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  
& Electric Service Regulations**

**| Docket No. 06-035-21  
| Utah Division of Public Utilities  
| Exhibit No. DPU 1.0**

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**Prefiled Direct Testimony of**

**George R. Compton, Ph.D.**

**TEST PERIOD**

**For the Division of Public Utilities**

**Department of Commerce**

**State of Utah**

**June 9, 2006**

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3 **I. INTRODUCTION**

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

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

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

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

14 Apart from some part-time teaching at BYU, my entire career since earning a  
15 Ph.D. in economics from UCLA in 1976 has been spent in utility regulation. For all but  
16 two of those years I have been employed by the Division, on whose behalf I have testified  
17 countless times before this Commission in cases involving electric, gas, and telephone  
18 utilities. In the two odd years, I was an independent consultant. My clients included  
19 UAMPS, UP&L, and U S WEST. The main area of my professional interest has been the  
20 application of economics principles to utility pricing and costing. For a number of years I  
21 was also the Division's primary cost-of-capital witness. In recent years I have been the  
22 primary witness within the Energy Group in the areas of rate design and cost of service.

23 **Q. What is the purpose of this testimony that you are now filing?**

24 A. I will be presenting the Division's position as to what test period should form the basis of  
25 this case. I will also discuss some ideas about how concerns regarding future test period  
26 uncertainties in this case might be resolved.

27 **Q. Did you participate in the Test Period Task Force that was formed pursuant to a  
28 stipulation in the last PacifiCorp general rate case?**

29 A. I did.

30 **Q. Did that task force achieve some kind of consensus?**

A. There was agreement regarding what PacifiCorp (or the Company) would file specifically

31 in this case with regard to the test period issue. There was also tentative agreement that  
32 the test period upon which the final revenue requirement would be based should be  
33 established – via stipulation or Commission Order – within the first 65 days of the 240-  
34 day standard general rate case calendar.

35 **Q. What test-period revenue requirement “work-ups” did PacifiCorp file in this case in**  
36 **conformance with the task force agreement?**

37 A. The company filed revenue requirements based upon three separate test years –  
38 historic/baseline, mid-period, fully forecasted. Those test periods ended on September  
39 30th of, respectively, 2005, 2006, and 2007.

40 **Q. What is the Division’s test year recommendation in this case?**

41 A. We recommend the adoption of a test period ending September 30, 2007. We also  
42 recommend serious consideration to several ways for dealing with future uncertainties,  
43 the effect of which is to subtract somewhat from the level of futurity in that test period.

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## II. SOME FUNDAMENTAL REGULATORY PRINCIPLES AND THE RELEVANCE OF THE TEST PERIOD

**Q. By statute, the Division is charged in its advocacy with balancing the interests of the regulated utilities and their ratepayers. In its most primary sense, how would you characterize that objective?**

A. It is to seek utility rates and tariffs that are “just and reasonable.” I would interpret that to mean rates that cover costs that are legitimately incurred. “Legitimate” entails the objective of optimizing costs – i.e., to minimize them in the context of avoiding unacceptably high risks. Minimizing costs in that context is a major element in the utility’s side of the “regulatory compact.” Regulation’s side of that compact is to grant a monopoly utility the *opportunity* (i.e., not a guarantee) to have its revenues recover, or roughly equate to, its full costs, including capital costs.

**Q. What role does the test period play in utility ratemaking?**

A. The “test period” is the regulatory time frame in which the equality of revenues and costs is sought. It is meaningless by itself to say that a set of revenues should equate (even roughly) to costs without designating the time frame for which that would be true. Should

it be minute-by-minute or hour-by-hour?<sup>1</sup> Day-by-day? Monthly? Annually? Biennially? Over the entire lives of assets? Establishing test periods of twelve month durations has been the conventional norm. It takes into consideration 1) the long lives of most utility assets, 2) the potential for more or less sudden movements in costs and net revenues over time, and 3) the standard accounting mind-set of looking at fiscal matters on an annual, or yearly, basis.<sup>2</sup>

### III. HISTORICAL VERSUS FORECASTED TEST YEARS

**Q. In the past (albeit not in every case), this Commission has employed as the regulatory test year an historical year with no alterations, even for post-test-year “known and measurable” changes to specified cost components. What is the advantage of the straight historical test year approach?**

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<sup>1</sup> The technology of real-time metering now makes this in some sense possible -- most beneficially for accommodating prices that can be put into effect when marginal costs happen to be extraordinarily high.

<sup>2</sup> Blessedly, Mid-America’s fiscal year, unlike Scottish Power’s, coincides with the calendar year.

- A. Forecasts, which generally rest on sound technical foundations, also entail professional judgement, guesswork, speculation, or whatever, with the inevitably accompanying argumentation and controversy. On the other hand, the past can be known with a high level of precision.<sup>3</sup> Insofar as conditions are sufficiently static that a case can credibly be made that, all things considered, prices established so as to equate historical revenues with historical costs will do a decent job of equating revenues and costs in the near future, then the use of an historical test year – even without adjustments for “known and measurable” changes – can be justifiable.
- Q. You just stated that under relatively static conditions, a historical test year can be justifiable. What about when costs are declining, as was the case for electricity and telephony during much of the 1990s?**
- A. Then, under the rare circumstance where there even was a general rate case, utilities seemed more than happy to “acquiesce” to a historical test year. Regulators were apparently agreeable to trading away lower rates for the sake of rate case internal precision.
- Q. The current Utah test year statute (Utah Code Ann. §54-4-4) prohibits the use of a historical test year absent such adjustments. On what basis could regulators ever refuse to adjust for “known and measurable” changes to specified cost components?**
- A. The problem has to do with the “matching principle.” The piecemeal out-of-period adjustments for certain items that pass the “known and measurable” threshold open up the process to leaving out (intentionally or inadvertently) offsetting items, which in turn may be reasonably estimated but are not directly measurable. For example, next year’s cost of new and fixed-price-contracted-for distribution plant might readily qualify as being known and measurable, but how many new customers will be served by the additional plant and how much offsetting revenue will they generate? An inability to incorporate into a test period the forecasted values for all the variables that are ancillary to or affected by the subset that is precisely “known and measurable” has often rendered unattractive the

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<sup>3</sup> Caveat: The common rate case function of normalizing costs and sales (to reflect “normal” weather and hydro-conditions, and to eliminate the effects of non-recurring events [e.g., a major power plant outage]) introduces judgements as to precisely how to “correct” for those inevitable “abnormalities.”

use of a historical test period that incorporated out-of-period adjustments that were restricted to what are “known and measurable.”

**Q. You have used the term, “historical test year.” How far back in time is that “history”?**

A. Due to the time it takes for the utility to gather and consolidate its records and then prepare its case, you’re looking at five months or more from the end of a historical test period to when the utility can file its general rate case. Given the standard 240-day rate case calendar, there will be thirteen or more months from when the test year ends and when rates based upon a historical test year would go into effect.

**Q. Obviously a lot can happen in thirteen months that would affect a utility’s costs, sales, and revenues. What measure – short of a fully forecasted test year – has Utah regulation taken in the past to accommodate recognized changes that occur after an historical test period while limiting both the controversy that surrounds forecasting and the unfavorable consequences of faulty forecasts?**

A. Utah has at times used a test year that was partly historical and partly forecasted. Under this approach the new rates would not go into effect until the end of the forecasted portion of the test period. With actual results of operations being produced during the pendency of the general rate case or soon thereafter, large departures from forecasts can be understood early enough in the process that rates can be adjusted via interim increases or decreases to reflect those departures before the disparity between revenues and costs becomes unacceptable.

**Q. Does the test period statute allow for such a blend of a historical period and a forecasted period in creating the twelve-month test period?**

A. Yes. The three explicitly recognized test periods are fully forecasted, fully historical with known and measurable adjustments, and a combination of a historical and forecasted test period. The third option constitutes that blend.

**Q. The combination of a historical and forecasted test period that you just described sounds highly reasonable. What is the argument against it?**

A. With a “mixed” test period and a 240-day calendar, rates go into effect at the end of the test period or later. That means that, by definition, when the new rates go into effect they

will have been designed to equate *past* costs and revenues, and not the costs and revenues that are becoming current. Such is okay as long as average costs are relatively stable.

With stability the case can be made that the loss of accuracy due to the mismatch between the test period and when rates are in effect may be less than the loss of accuracy owing to a utility's (short-term, at least) self-serving inclination in a forecasted test period context to over-estimate costs and under-estimate sales so as to maximize its rates.

**Q. Assume that the circumstance of rapidly changing costs justifies the use of a fully forecasted test period. What is to discourage the faulty kinds of forecasts that you just described?**

A. If a utility wants to minimize adverse adjustments to its future rate requests, and to maintain its credibility as a general matter, it will try to be as accurate as possible in its forecasts. Also, bear in mind that the Division and other parties have means available to them for making independent estimates, forecasts, and evaluations of the utility's material. Those form the bases for many of the various accounting adjustments that are sponsored.

#### **IV. THE FUTURE TEST PERIOD AS THE MOST DEFENSIBLE IN THE CURRENT INSTANCE**

**Q. You have criticized the use of a test year with known and measurable post-test-period adjustments on grounds that changes in offsetting factors that are not precisely "known and measurable" would not be taken into consideration, thereby creating a temporal mismatch among the various cost and revenue elements. And your criticism of both the historical test year and the mixed test period was that they may poorly reflect the conditions that exist when the new rates were put into effect. The statutory language of U.C.A. §54-4-4 (3) (a)<sup>4</sup> would appear to reinforce the**

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<sup>4</sup> It states the following:

**If in the commission's determination of just and reasonable rates the commission uses a test period, the commission shall select a test period that, on the basis of evidence, the commission finds best reflects the conditions that a public utility will encounter during the period when the rates determined by the commission will be in effect.**



**priority of having the test period coincide with the rate-effective period. Do you believe that a presumption has been created in favor of a fully forecasted test period?**

A. I do, *if* (note the emphasis) it can be shown that, in fact, conditions (i.e., utility investments, sales, etc.) are sufficiently different when contrasting the future and the present or recent past. Since the “rates determined by the commission” will not go into effect until the future, then – given a dynamic environment – a coinciding future test period should almost automatically better “reflect the conditions that a public utility will encounter during [that] period” than would a test period that ends before the self-same rate-effective period even begins.<sup>5</sup>

**Q. Recalling that the test period statute says that “the commission shall select a test period...on the basis of evidence,” do you have something more tangible – i.e., evidence incorporating real numbers?**

A. I do. First, the difference in the applicant’s stated revenue deficiency between what comes out of the fully forecasted test period versus the middle test period is about \$100 million, for a total request of \$197 rather than \$97 million middle period figure. Obviously a lot must potentially be changing between those two twelve month periods to account for such a large disparity. To generate one hundred million dollars requires more than slightly fudging costs up and sales down. The future (i.e., Oct. 2006 - Sept. 2007)

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<sup>5</sup> Another element which in my mind creates a presumption in favor of a future test year – in practice, if not by statute – is the fact that if conditions are truly stable over time, rates will normally already be in effect that recover the utility’s full costs. Under such circumstances the utility will have no need to file a general rate case. But given the opportunity to file on the basis of a future test period, it will be the *anticipation* of future losses (i.e., due to unstable conditions primarily in the form of a major increase in costs) that will strongly motivate a utility to apply for rate relief. In other words, given PacifiCorp’s ability to anticipate future cost increases owing to their most likely being caused by major plant additions, it is difficult to imagine that company ever *not* filing on the basis of a future test period.

By the same token, general rate decreases tend to occur when there is an established trend of declining fuel costs or greater utilization of a fixed inventory of plant and facilities. Under such circumstances, and assuming a credible case could be made for a continuation of such trends, it would also be advantageous for the DPU to utilize a future test period when it initiated a rates reduction proceeding.

must be very different from the present and recent past.

**Q. What accounts for such a major step-up in the revenue requirement?**

A. There are a host of factors, but it takes only three to account for over \$20 million. In my judgement, that by itself would be sufficient cause for going with the later test period.

**Q. What are those three key elements?**

A. They are the bringing on line of the Lakeside generation plant and the pollution scrubber at Huntington 2. Also, due to test-period averaging, not all of phase 2 of the Current Creek plant is included in the mid-period test year but is included in the fully forecasted test period.<sup>6</sup> My Exhibit DPU 1.1 shows rough estimates of the rate-base-related revenue requirement effects of those three items as additions to what would have been part of the mid period revenue requirement.

**Q. Couldn't the three large items you just listed merely be added, as relatively "known and measurable" adjustments, to the revenue requirement based upon a mid-period test year?**

A. They could.<sup>7</sup> But major capital additions of production plant don't happen in a vacuum. They are brought on due to growth in demand, which over time also leads to capital expansion in new or upgraded transmission, and in added distribution, mining, and general plant. Instead of assembling a small subset of the many growth-based additions that were literally "known and measurable" and adding them to a mid-period revenue requirement, it would seem to make more sense to start with the fully forecasted test period and pull out the dubious expense and rate base items. That way the process is less susceptible to experiencing the matching problem that was discussed earlier when a limited set of out-of-period adjustments are made to a given test period.<sup>8</sup>

**Q. Earlier in your testimony you mentioned offsetting factors that might alleviate the need for a general rate increase in the presence of a known cost increase. Have those**

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<sup>6</sup> Reminder: The "mid period" has been constructed as October 2005 through September of 2006.

<sup>7</sup> Some would argue that even if the future big-ticket items carried fixed-price contracts, the fact that they were not yet in service would make them not truly "known."

<sup>8</sup> The matching problem is most conspicuous where the rate base is adjusted for post-test-

**been taken into account in the present context?**

A. They have – although how accurately will be subject to the scrutiny of our and other parties' auditors.

**Q. How can the addition of new generation plants have such a large effect on the revenue requirement.**

A. There are two elements at work. The first is resource price inflation. For example, after twenty years of 4% inflation, a new plant will cost in nominal terms more than twice what an identical twenty-year-old plant cost when it was new. The second element is the fact that the rate of return cost component of a plant is calculated as a percentage<sup>9</sup> of its depreciated book value. Using standard straight-line depreciation, after twenty years a plant with a forty-year nominal life will have only half its original cost left in the rate base. Combining those two factors means that, for example, the annual rate of return on a new plant will be four times the annual rate of return on the same plant that is twenty years old and 50% depreciated.

**Q. Earlier in this testimony you said that a utility establishes credibility in a future test year environment by virtue of having made accurate forecasts in the past. We recently had such a test period. How well did they forecast it?**

A. It is still too early to tell with precision. That is because the results of the last half of that test year have not yet been compiled. PacifiCorp's test period witness, Jeffrey K. Larsen, indicated<sup>10</sup> an expectation that the rate case settlement will have under-estimated their OMAG<sup>11</sup> expenses by over \$25 million and their capital additions by over \$21 million. An investigation of the differential between the Company's rate case forecasts – not just the settlement figures (which may represent after-the-fact, black-box reconstructions) – and the actuals should prove instructive. That analysis should be supplemented by forecast modifications reflecting any re-budgeting that occurs subsequent to a rate case ruling that was substantially less than the Company's request.

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period capital additions but where offsetting revenues and operating cost savings are ignored.

<sup>9</sup> That percentage is around 12% as a pre-tax figure.

<sup>10</sup> On page 13 of his direct testimony.

<sup>11</sup> Operations, maintenance, administrative, and general.

**Q. I understand that Oregon has used future test years. How accurately have those been forecasted?**

A. In response to a data request, PacifiCorp supplied me with the results for FY02 and FY04. Results for the most recent case are not yet available and other years used historical test periods. The FY02 results are somewhat ambiguous because the forecast was based on a 2001 calendar year. In any event, the net revenues were over-estimated by about \$8 million for FY04 and under-estimated by about \$38 million for FY02. Accounting for the giant share of the FY02 discrepancy was a \$44 million increase in the difference between off-system power purchases and sales.

**Q. Forecasting inevitably contains an element of speculation. Hence the past reluctance to adopt a fully forecasted test period. Isn't the Division fearful that the \$100 million difference between the mid-period revenue deficiency and the fully forecasted test period's deficiency represents simply too much of a trust-the-company element?**

A. Let me answer that in three parts.

1. Virtually half of the increase between the mid period deficiency and the proposed test period deficiency involves the rate base return and depreciation expense.<sup>12</sup> Entailed here are, besides the aforementioned large generation plant items, literally hundreds of projects -- mostly involving transmission and distribution plant.<sup>13</sup> Given the nature of capital budgeting and construction contract management (with penalties for missed completion dates), it's difficult to imagine substantial, across-the-board delays. Unforeseen circumstances can prevent the timely completion of isolated projects, but one wouldn't expect substantial delays to be the rule. But even if *every* project was one or two months late entering the rate base, the revenue requirement impact would be just a fraction of the \$49 million revenue requirement increase projected for this cost category.

2. Much of the difference between the mid-period and future test period revenue deficiency is a consequence of the fact that the revenue requirement impact of major plant additions that occur over the course of the mid-period would, due to prorating, be diluted in proportion to the number of months of the test period that transpired prior to their

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<sup>12</sup> Refer to Jeffery Larsen's Exhibit UP&L\_\_\_\_\_(JKL-2)

coming on line and entering the rate base. Consequently, there is a major increment to the revenue requirement in the test period following the mid-period owing merely to the fact that the costs of those mid-period additions would then reflect their being in the rate base throughout the entire year rather than in just a portion of the year.<sup>14</sup>

3. A number of mitigation measures are available by which greater confidence can be obtained that test period costs will not be exaggerated. To the contrary, the conservatism in future estimation by adopting them can be argued as being on the side of slightly under-estimating future costs.

## V. DEALING WITH UNCERTAINTIES AS REGARDS A FUTURE TEST PERIOD

**Q. It has been said that prophesying is a most perilous enterprise, particularly as regards the future. What steps might be taken in the context of a fully forecasted test period to limit the hazards of over-forecasting future costs?**

A. The steps that would be most suitable depend upon the underlying nature of the costs being estimated. The following consists of a list of the various kinds of costs and other elements with future test period implications and how their associated uncertainties might be dealt with.

1. Administrative and general expenses. The utility's rate case development practice here has been to escalate costs from their present levels by the use of national indices provided by Global Insight. One expedient for limiting the test period cost escalation would be to only take the escalators part way through the test period. This would move the cost estimate beyond the level associated with the intermediate test period (Oct. 2005 - Sep. 2006), but not all the way to the September 30, 2007 end of the forecasted test period.

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<sup>13</sup> Refer to Tab 8.10 of Ted Weston's Exhibit UP&L\_\_\_\_(JTW-1)

<sup>14</sup> Example: The scheduled in-service date for Phase 2 of Current Creek is March of 2006. The mid-period test period runs from the first of October 2005 through the end of September 2006. Accordingly, only 7/12 (corresponding to the months in the test period remaining after March) of the cost of that addition will be in the mid-period revenue requirement. To the contrary, its entire cost would be in the fully forecasted test period, which begins in October, 2006. Having that plant in rate base for an additional six or seven months adds \$6 million or so to the revenue requirement. (Refer to Exhibit DPU 1.1)

2. Labor expenses. The practice here has been to estimate the wage consequences of future labor union negotiations (which are also applied to salaried levels) and build those expectations into the test period forecast. Insofar as the outcome of more distant negotiations is more speculative than the more proximate negotiations, one expedient would be to simply disregard any changes that might occur after some designated cut-off date.

3. Operations and maintenance (O&M) expenses. O&M cost escalators reflect Company budgeting and input price inflation estimates. The mitigating process here is to directly contest the specific component escalators or to argue for an across-the-board reduction in the overall cost increase.

4. Electric plant in service. In a period of extensive facilities expansion, this cost category can be the subject of the most contention due to the amount of dollars at stake and the intrinsic uncertainties regarding construction completion and plant certification times. One expedient is to base rates on plant that is projected to be in service by some date shy of the end of the forecasted test period. That way there can be considerable confidence that all the plant used to develop the forecasted test period revenue requirement will indeed be in service prior to the end of the rate-effective/test period. A variation of this approach would be to estimate the amount of plant in service as of some intermediate date (i.e., well prior to the end of the test period) and then add back high profile plant additions according to the level of confidence that they will indeed be in service prior to the end of the test period. Another approach is particularly applicable when very expensive plant is projected to come into service part way through the test period. It is to exclude that plant entirely from the initially executed revenue requirement increase and only add it into rates when the plant actually comes on line and is certified. This approach has the benefit of not relying on the accuracy of construction completion estimates, and only requiring it to be paid for when it is physically “used and useful.”<sup>15</sup> Noting that plant is strategically introduced so as to reduce projected net power costs,

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<sup>15</sup> Under the Company’s application, if a plant is projected to enter service half way through the future test year, the rates are proposed to be established as if half the plant were in service for the entire test year.

when implementing this phasing approach care must be given to matching net power costs with the plants that are in service when the respective rates phases are in effect.

**Q. You have described some mechanisms by which uncertainties regarding a fully forecasted test period can be mitigated. That description was totally lacking in specifics. What is the Division's intention for the purpose of the test period portion of this case?**

A. Specific recommendations for accounting adjustments along the lines that I just described will appear in the revenue requirement segment of the rate case. It suffices now to re-affirm our support of the fully forecasted test period.

**Q. Does that conclude your prefiled direct testimony on the subject of the test period?**

A. Yes sir, it does.