Witness OCS 4S

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of	**)**	**Docket No. 09-035-23**
Rocky Mountain Power for Authority to	**)**	
Increase Its Retail Electric Service Rate in	**)**	**Surrebuttal Testimony of**
Utah and for Approval of Its Proposed	**)**	**Randall J. Falkenberg**
Electric Service Schedules and Electric	**)**	**On Behalf of the**
Service Regulations	**)**	**Utah Office of**
	)	**Consumer Services**

November 30, 2009

Redacted

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Randall J. Falkenberg, PMB 362, 8351 Roswell Road, Atlanta, Georgia 30350. I am the same witness who filed direct and rebuttal testimony previously in this case.

Q. WHAT IS THE PURPOSE OF THIS SURREBUTTAL TESTIMONY?

A. I reply to the Rebuttal Testimony of Rocky Mountain Power witness, Mr. Gregory N. Duvall. I will present my revised NPC results incorporating corrections and other adjustments I have accepted. I discuss the areas where Mr. Duvall and I are in agreement. I next comment on Mr. Duvall's proposal to update test year NPC. The remainder of my testimony explains why I continue to disagree with the Company regarding other OCS NPC adjustments.

Q. PLEASE SUMMARIZE YOUR SURREBUTAL TESTIMONY.

A. Table 1-Revised shows my final NPC recommendations. I also testify that:

1. Based on the Company's rebuttal, five of the original OCS adjustments are no longer contested issues. These are highlighted in green on Table 1 Revised. OCS also withdraws one additional adjustment, related to Bear River reserve capacity, and modifies the wind integration adjustment to remove the impact of the BPA rate reduction.

2. I oppose the Company's proposal to update test year NPC. I identify various practical problems posed by updates and have found several other power cost reductions ignored by the Company in its update. I demonstrate the Company's update is not complete or symmetrical.

3. I demonstrate using new analyses and other evidence that the Company's opposition to the remaining contested adjustments is incorrect, poorly reasoned, or unsupported.

4. I recommend overall final test year NPC of $965 million[1/], resulting in a reduction to Utah revenue requirements of $14.1 million. This is a decrease of approximately $1 million from my original NPC adjustments.

[1/] Because the SMUD imputed revenue has been removed by OCS witness Ramas, effectively, my final NPC result is approximately $970 million.

Table 1 Revised November 30, 2009
Summary of Recommended Adjustments - $

	Total Company		Est. Utah Jurisdiction
		SE	41.00%
		SG	41.13%
I. GRID (Net Variable Power Cost Issues)			
PacifiCorp Request NPC	999,143,849		409,681,359
A. GRID Market Caps			
1 GRID Market Caps	(10,983,676)		(4,510,509)
B. GRID Start Up Logic and Costs			
2 Correct Company Screens	(1,849,146)		(759,362)
3 Start Up Fuel Energy Value	(3,746,777)		(1,538,635)
C. Long Term Contracts			
4 SMUD Shaping	(526,689)		(216,288)
5 Biomass	(772,616)		(317,279)
D. Hydro Logic and Inputs			
6 Motoring and Efficiency Loss Modeling	(278,515)		(114,374)
~~7 Bear River Reserve Capability~~	~~(1,356,553)~~		~~(557,076)~~
E. Power Cost Modeling Issues			
8 Chehalis Start Costs	(647,453)		(265,880)
9 STF Transmission Test Year Synchronization	(4,132,606)		(1,697,078)
10 Transmission Imbalance	(714,685)		(293,489)
11 Cholla Capacity Upgrade	(311,838)		(128,058)
12 Wind Integration Error Correction	(1,202,561)		(493,838)
13 Wholesale Wind Integration Charges and Costs	(3,278,326)		(1,346,263)
F. Planned and Forced Outage Modeling Issues			
14 Planned Outage Schedule	(663,654)		(272,533)
15 Bridger Ramping	(279,185)		(114,649)
16 Minimum Loading Deration + Heat Rate Adj.	(2,752,818)		(1,130,460)
17 Currant Creek and Lake Side EFOR	(1,032,956)		(424,189)
18 Gadsby EFORd	(67,715)		(27,808)
19 DPU Wyodak Heat Rate Adjustment	(1,006,149)		(413,181)
Subtotal NPC Baseline Adjustments -	(34,247,364)		(14,063,874)
Allowed - Final GRID Result*	964,896,485		395,617,485

Uncontested Issue	Revised Adjustment	Adjustment Withdrawn

<u>Uncontested Issues</u>

Q. PLEASE IDENTIFY THE ISSUES NO LONGER IN DISPUTE.

A. Mr. Duvall testifies that the Company now agrees with OCS adjustments D.6 (Lewis River Motoring), E.12 (Wind Integration Split), and F. 18 (Gadsby $EFOR_d$). I accept Mr. Duvall's minor change to F.17 (Combined Cycle plant EFOR). I also withdraw

Adjustment D-7 (Bear River reserve capacity) for now, because Mr. Duvall testifies the data provided earlier by the Company was incorrect.

Q. DO YOU SPONSOR AN ADJUSTMENT RELATED TO THE SMUD CONTRACT DUE TO THE DOCKET NO. 09-035-T08 STIPULATION?

A. No. OCS witness Ms. Donna Ramas has already reflected this SMUD adjustment in her test year revenue requirement.

<u>Proposed NPC Update</u>

Q. PLEASE DISCUSS MR. DUVALL'S PROPOSAL TO UPDATE NPC TO REFLECT INFORMATION AVAILABLE AFTER THE FILING DATE.

A. The Company proposes to update NPC only for information available prior to the time that other parties filed their direct testimony, claiming that his update is complete and symmetrical, and consistent with the Commission's Docket 07-035-93 Report and Order rejecting a similar update:

> We find the Company's proposed change to its forward price curve is untimely and not well supported. Changes by the Company to its own uncontested forecasts fairly late in the process are subject to a high standard of review. The regulatory "known and measurable" standard of review can not be readily applied to projections and forecasts. All projections must be evaluated for general reasonableness and also to ensure consistency with other inputs and assumptions and the appropriate matching of costs and revenues throughout the test period. We do not see such support in this record. In this case we do not even have a definition of what is meant by the "forward price curve." Nowhere is there a discussion of whether this includes natural gas and wholesale power prices or only wholesale power prices. Nor are the initial or proposed values provided in the record for any cursory reasonableness check. Further, the record indicates the Company is nearly 100 percent hedged with respect to natural gas prices and well hedged with respect to wholesale power prices but the connection between these hedges and the impact on net power costs from the Company's proposed change in its forward price curve remains unclear. For the foregoing reasons, we decline to accept this adjustment. (Order Docket 07-035-93, page 51).

In fact, the Company once again failed to provide an update that is consistent with the Commission's prior holding. Because the Company's updates are not complete, nor symmetrical, they should not be allowed at all.[2/] In addition, it is far too late in this proceeding for the Company to propose, in effect, a rulemaking to establish standards for updating general rate case data.

Q. WHAT IS THE COMPANY'S PROPOSAL REGARDING UPDATES IN THIS DOCKET?

A. Mr. Duvall recommends the Commission specify allowable practices concerning updates to be applied to this general rate case and presumably, future cases. The updates proposed by the Company in this case cannot result in "fair, just and reasonable" rates because of the controversy and complexity endemic to the Company's timing in this case, and the process it proposes. Mr. Duvall's proposal is too far reaching to be decided "on the fly" in this case. The Commission should re-affirm the precedent it established in Docket No. 07-035-93, denying the post filing updates. This ruling should apply to all parties.

Q. CAN YOU DEMONSTRATE WHY MR. DUVALL'S UPDATE IS NOT COMPLETE OR SYMMETRCIAL?

A. Certainly. Mr. Duvall proposes to limit updates to information known as of the filing date for intervenor testimony.[3/] However, the Company's proposed update, doesn't comply with Mr. Duvall's proposal and it appears rather incomplete. First, the Company used a June 30, 2009 forward price curve in its proposed update. However, the Company updates its forward price curves daily, and develops new "Official Forward Price Curves" quarterly. As a result, the forward price curve Mr. Duvall used in his update was available more than three months before the intervenor testimony was due. Further, Mr.

[2/] Mr. Duvall suggests this standard at Page 5, line 87.
[3/] Duvall rebuttal, page 5.

Duvall also excluded substantial new information that would have been available as of the time of the intervenor testimony due on October 8, 2009.

Q. CAN YOU DEMONSTRATE THE LIKELY IMPACT OF THIS NEW INFORMATION IGNORED BY THE COMPANY?

A. Yes. Exhibit OCS 4.1S is a copy of a document filed by the Company on November 9, 2009 in OPUC Docket No. UE 207, showing a series of updates the Company now proposes to make in Oregon.

First, it is important to note that in that case the update of short-term firm contracts and the forward price curves produced a reduction to NPC of $3.5 million on a Total Company basis.

It is also noteworthy that some of the contract updates proposed by the Company in Oregon (the Southern Cal Edison, San Diego Gas and Electric, and Pacific Gas and Electric) were not included in Mr. Duvall's November 12, 2009 filing. I believe that all three contracts were known to the Company well prior to the intervenor testimony due date as two of the contract documents date to May, 2009 while another dates to September 15, 2009. These contracts provide an NPC reduction of approximately $2 million for power sales, and an unspecified amount of revenue for renewable energy credit sales.

Q. ARE THERE OTHER EXAMPLES OF NEW INFORMATION MR. DUVALL DID NOT USE?

A. Yes. The Company includes $13.2 million total Company cost for Cal ISO service and wheeling fees in the test year, based on data for the 12 months ended December, 2008. However, for the 12 months ended June 30, 2009, actual Cal ISO service and wheeling fees dropped to $7.0 million, and for the 12 months ended September 30, 2009 the

Company estimates actual costs drop to $5.0 million. Consequently, an update of Cal ISO fees would require further adjustments reducing NPC by $6-8 million.

Q. EVEN ASSUMING A JUNE 30, 2009 FORWARD PRICE CURVE SHOULD HAVE BEEN USED, DID THE COMPANY FULLY UPDATE THE TEST YEAR?

A. No. The wind integration charges the Company included in the test year are a function of the forward price curve. If the forward price curve drops, then the cost of providing reserves for wind projects decreases as well. While the Company made two other adjustments to the wind integration charges, it failed to reflect the new forward price curves in its wind integration charges. I estimate that this would have resulted in a further reduction to the test year NPC of around $5 million, Total Company.

Q. WHAT IS YOUR RECOMMENDATION?

A. I recommend the Commission deny all updates based on events that occurred after the Company's filing date as the Company's update is not balanced and symmetrical. To the extent this requires other NPC adjustments proposed by the OCS or other parties be denied, that would be appropriate. I believe the only OCS adjustment where this standard might apply concerns Mr. Hayet's proposal to reflect the BPA Wind Integration final rate change. Although Mr. Hayet indicates that by the time of the Company filing, this rate change should have been expected, to minimize controversy, OCS withdraws the adjustment.

<u>Reasonableness of NVPC Recommendations</u>

Q. ON PAGE 2, MR. DUVALL TESTIFIES THAT THE COMPANY'S TEST YEAR NPC OF $1.018 BILLION IS "REASONABLE" AS COMPARED TO RECENT ACTUAL COSTS AND OTHER NPC PROJECTIONS. PLEASE COMMENT.

A. Mr. Duvall cites the 12 months ended August 2009 actual NVPC result of $981 million and projected figures for the calendar years 2010 and 2011. As there are always substantial differences between normalized and actual NPC, I believe the comparison to recent actual results is not compelling. Further, recent trends show a rapid reduction in actual power costs, as the full impacts of the fall 2008 Financial Crisis and ensuing recession become apparent. As for the projected 2010 and 2011 results, there is little reason to believe they are not subject to the same infirmities as the Company's current test year. It is likely that parties would also propose various adjustments to those studies were they to be carefully examined. Further, the OCS and DPU power costs studies differ by less than 1%. In contrast, the 2010 and 2011 results quoted by Mr. Duvall are 8%, and 29.5% higher respectively than the Company's June filing. This suggests that the 2010 and 2011 projections are of no value to this proceeding. Consequently, I recommend the Commission examine each issue on its own merits and disregard Mr. Duvall's post test year projections and comparisons to actual costs.

Q. DO YOU HAVE ANY OTHER GENERAL COMMENTS REGARDING MR. DUVALL'S TESTIMONY?

A. Yes. Mr. Duvall suggests the Commission apply a rather laissez-faire standard that requires parties to show the Company's position is "unreasonable" before the Commission would adopt an alternative adjustment.[4/] Under such a standard, a forecast of natural gas prices of $10/MMBTU for 2010 is possible, and not necessarily "unreasonable", though it now appears unlikely. A more likely forecast might be $5. Under Mr. Duvall's proposal, the Commission would accept the $10 figure merely because the Company proposed it and it is not, on its face, unreasonable. I disagree. The Commission should adopt the "most reasonable" modeling methods rather than simply adopting any Company position that is "not unreasonable."

4/ See page 27, lines 577-580 and page 28, lines 595-597.

Further, Mr. Duvall frequently makes operational or technical arguments in opposition to various adjustments. However, he has not quantified the impact of such criticisms. Were he to actually quantify these arguments to demonstrate their impact, his testimony would be far more useful in resolving disputes. In the many examples I address, I have demonstrated that Mr. Duvall's arguments are of little practical importance. Consequently, I suggest the Commission give less weight to Mr. Duvall's non-quantified arguments.

Adjustment 1 - Market Caps

Q. WHY DOES MR. DUVALL DISAGREE WITH THIS ADJUSTMENT?

A. Mr. Duvall makes three arguments: 1) Utah precedent supports inclusion of market caps; 2) Without market caps, coal generation will be overstated in GRID and; 3) Market caps are needed to account for market illiquidity.

To some extent, these arguments amount to a matter of deciding whether a four year rolling average or recent single year (2008) of coal generation is the proper metric for evaluating the issue. Because the Company computes its market caps based on a single year of data (again, 2008), the use of a four year rolling average is a-priori, nearly irrelevant.

Q. MR. DUVALL STATES THAT THE COMMISSION RULED IN FAVOR OF MARKET CAPS IN DOCKET 03-035-14. PLEASE COMMENT.

A. That was an avoided cost case rather than a general rate case.[5/] Mr. Duvall doesn't explain why he changed from use of a four year average, as used in that docket, to a

[5/] Mr. Duvall's current testimony appears inconsistent with his recent Oregon testimony, where he stated "*I followed the reasoning of the 2004 ruling approving the Company's market caps by the Wyoming Public Service Commission, the only commission to explicitly rule on the Company's market caps, to structure my analysis*." Oregon Public Utility Commission Docket No. UE 207, Sur-Surrebuttal Testimony of Gregory N. Duvall, PPL/111, page 10, September 4, 2010. As Mr. Duvall was also a witness in the 2003 avoided cost case, it is unclear why he didn't previously consider it to be pertinent.

single year (2008) in computing the market caps.[6/] It is also interesting that Mr. Duvall still opposes the modeling of non-firm transmission which was also supported by that order.

In any case, the decision in the avoided cost case was predicated on *specific evidence* (or the lack thereof) not a policy decision:

> *We are persuaded by the evidence* that coal resources are backed down in some hours and use of a production cost model, including market caps, is necessary to accurately identify the production costs avoided by a QF and thereby maintain ratepayer neutrality. (Order, Docket No. 03-035-14, page 13, emphasis added)
>
> Upon cross examination, however, UAE and US Mag were unable to produce evidence to support the assertions that coal output could or should be higher than shown in GRID. *Further, neither UAE nor US Mag witnesses offered testimony or evidence* to demonstrate consistently liquid markets in low load hour or non-firm markets to allow Company resources to make sales in all hours. The avoided costs in low load hours account for the bulk of the difference in results in the two methods. (Id)

Q. ARE THERE REASONS WHY A DECISION IN AN AVOIDED COST CASE MAY NOT BE APPLICABLE TO A GENERAL RATE CASE?

A. Yes. A major difference is that an avoided cost case involves projections over a very long time horizon, not simply a single test year. Issues that aren't important in a single test year may be significant some years into the future. In a single test year, one has much more detailed forecasts of wholesale transactions, and all of the inputs are much "closer in time" to the period being forecast. Avoided costs concern planning assumptions, while rate cases concern normalization assumptions. In any case, I'm suggesting the Commission decide this issue on the basis of *evidence*, not *policy*. If the

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[6/] The Order in Docket 03-025-14, page 14 assumed use of a four year average for computing market caps, and required modeling of non-firm transmission, which the Company still opposes. Mr. Duvall's testimony in that case represented that the Company computed market caps using a four year average. Rebuttal Testimony of Gregory N. Duvall, Docket No. 03-035-14, page 8. Line 168.

evidence in an avoided cost case is different, the Commission should then reach a different decision.

Q. MR. DUVALL TESTIFIES ON PAGE 9 THAT OCS HAS NOT SHOWN THAT MARKET CAPS ARE NO LONGER NEEDED TO MAINTAIN RATEPAYER NEUTRALITY AS REQUIRED BY PURPA. PLEASE COMMENT.

A. If market caps are not needed or are unsupported by the evidence, then ratepayer neutrality is simply not an issue. It's true that avoided costs may be higher with the market caps removed or reduced. However, that is not, by itself, inequitable because it simply means that avoided costs are higher than previously assumed, not that ratepayers are subsidizing QFs. Further, any underlying suggestion that the Commission will have to substantially increase QF rates if it approves of Adjustment 1 is completely unwarranted. Based on my test year GRID analysis, the overall impact on avoided costs due to removal of market caps is less than 2%.

Q. DID THE 2003 AVOIDED COST CASE FORGE A DIRECT LINK BETWEEN THE LEVEL OF THE MARKET CAPS AND THE FOUR YEAR AVERAGE COAL GENERATION?

A. No. The actual coal generation during the four year period used in that case was already some 1.4 million *lower* than the GRID model predictions with market caps included.[7/] The Commission never suggested that market caps should be increased to reduce coal-fired generation. Rather, coal generation was already far too high in GRID, so that increasing it further by removing the market caps was unwarranted. In that case, it was apparent that the coal generation was simply "out of bounds" already – there was no need to further increase it. Circumstances are much different now.

[7/] Docket No. 03-035-14, UPL Exhibit 1-7, page 8. Note that the market caps used were based on four years of history.

As the market caps apply only in a subset of the low load hours ("LLH"), the so called "graveyard shift", the data that should be analyzed is the graveyard coal generation and sales. Oddly, Mr. Duvall argues that my analysis of graveyard coal generation is not appropriate (page 12) and he seems to completely ignore the issue of wholesale sales in the graveyard hours. It is this sales data which provides evidence concerning market liquidity. While Mr. Duvall asserts that market caps are still needed to account for market illiquidity, he simply provides no evidence regarding the matter.

Q. HAVE YOU ALREADY ADDRESSED THE ISSUE OF MARKET LIQUIDITY AND THE "BACK DOWN" OF COAL PLANTS IN OFF PEAK HOURS?

A. Yes. I have already shown in my direct testimony that even without the market caps, the GRID model vastly understates graveyard sales. I also showed that the actual graveyard coal generation in my modeling with the market caps removed is close to actual results, and that the back down of coal plants is far less prevalent than in the past. The actual graveyard sales and coal generation demonstrates that the Company's assumed market caps fail to realistically address the issue of market liquidity and are simply no longer needed.

Q. PLEASE ADDRESS MR. DUVALL'S CONTENTION ON PAGES 11-12 THAT THE OCS FINAL GRID STUDY CONTAINS EXCESSIVE COAL GENERATION.

A. Mr. Duvall presents inaccurate comparisons. He uses an incorrect comparison period that fails to account for system changes and load growth. He also overstates the amount of coal fired generation implied by the OCS (and Company) test years. Mr. Duvall also failed to point out that his own GRID studies (filed earlier this year in Docket 08-035-38) showed coal generation were quite close to my current results. As a result, his application of the four year average coal generation standard is inconsistent and irrelevant.

I will demonstrate that a four year rolling average is an unrealistic metric due to the many systematic changes that require the use of more recent data. I have already demonstrated that my projected coal fired generation is quite reasonable compared to actual results for 2008, the year used by the Company to compute the market caps.

Q. PLEASE EXPLAIN THE PROBLEMS WITH MR. DUVALL'S ANALYSIS.

A. It ignores the changes to the system that occurred during his assumed four year period (from 2005-2008) and the June 30, 2010 test year. While there are many changes to consider, some of the most obvious and significant changes are load growth and the introduction of the Currant Creek, Lake Side and Chehalis combined cycle plants on the system.

Load growth naturally increases coal generation. The new combined cycle plants also allow for increased coal fired generation because the new gas plants are now carrying reserves that were previously assigned to coal units.

Naturally, there are many other factors that would also impact coal fired generation – the decline in hydro, the increase in wind generation, fuel price changes, and other factors. Because there are so many factors that vary between the test year and the four year period, data more than two years out of date is of little value. As a result, it makes much more sense to rely on more recent data, as I did in my direct testimony.

Q. HOW MUCH COAL GENERATION DID MR. DUVALL INCLUDE IN HIS GRID STUDIES IN DOCKET 08-035-38?

A. In the 2008 GRC, Mr. Duvall's 2009 test year (both his December 2008 and March 2009 studies) showed 46.0 million MWh. Mr. Duvall's studies in that case differ from my recommended test year result (46.1 million MWh) by a trivial amount.

Q. ON PAGE 11, MR. DUVALL ALSO CITES A DECLINE IN COAL GENERATION IN 2009. DOES THAT INVALIDATE THE MARKET CAP ADJUSTMENT?

A. No. The GRID model uses a four year (2005-2008) average to compute planned and unplanned outage rates. Results outside of that four year period don't provide a good comparison, as substantial outages may have occurred in the past several months that were not reflect in GRID. Also, as noted above, the market caps are based on 2008, not 2009 (or 2005-2007) data. Results outside of 2008 therefore don't really matter.

Further**,** I suspect that the recent decline in coal generation can also be traced to the combined effects of the recession and a substantial increase of wind generation added to the system this year. As the Company has not relied on historical data into 2009 for its test year, the effects of the recession are not fully considered. Further, GRID doesn't directly account for all of the impacts of this new wind energy, particularly the impact of wind integration of test year coal generation. As modeled by the Company, wind integration amounts to merely a fixed cost adder to the test year. However, this cost adder represents the impact of using coal and gas generation to provide reserves to cover for the variability of wind energy.

Q. EXPLAIN HOW WIND INTEGRATION IMPACTS COAL GENERATION.

A. The Company includes a substantial adjustment computed outside of the model for wind integration expenses. This adjustment, amounting to approximately $20 million, represents the cost of holding reserves on coal and gas fired units to provide for wind integration services. While GRID doesn't explicitly model these reserves, the <u>costs</u>

included in the test year *do* account for them. As a result, it is not accurate to simply compare the GRID output reports to historical data. If the wind integration component of reserves is considered, the test year contains far less coal generation than shown on the GRID output reports.

Q. HAVE YOU QUANTIFIED THE EFFECT OF INCLUDING ADDITIONAL RESERVES REQUIRED FOR WIND INTEGRATION DIRECTLY IN GRID?

A. Yes. In developing its wind integration cost, the Company assumes there is a need for substantial additional reserves to meet the requirements for wind integration. I included these reserves directly in the GRID model at a level supported by the Company's wind integration workpapers and sufficient to replicate the intra-hour wind integration cost used by the Company. When included directly in the model, coal fired generation in the test year is reduced by more than 700,000 MWh (from 46.1 to 45.4 million MWh.) which differs little from the four year average (45.4 million) reported by Mr. Duvall. Consequently, the circumstances of the 2003 avoided cost case are completely absent – GRID is not already over-predicting coal generation by a substantial (1.4 million MWh) amount. Rather, even with market caps removed, the GRID results are in line with recent historical data, whether one considers 2008 by itself or the 2005-2008 four year period.

Q. PLEASE SUMMARIZE THESE POINTS.

A. Mr. Duvall's reliance on the decision in Docket 03-035-14 is misplaced. In that case, the Commission didn't believe there was sufficient evidence to support removal of the market caps and GRID already predicted far too much coal generation. However, the system has changed and grown. I've provided the missing evidence in this case to demonstrate that market caps are no longer needed to restrain coal generation and that the size of the market, as measured by the Company's actual sales is far greater than assumed in the GRID model. The Company itself relied on GRID studies showing coal generation quite close to my current results in the 2008 GRC. Further, when the reserves required for wind integration are included directly in the model, rather than indirectly through a cost adder, the amount of coal generation *is* consistent with historical levels even after the market cap adjustment is made. For all of these reasons, the Commission should adopt Adjustment 1, and eliminate the market caps from GRID.

<u>Adjustment 2 - Daily vs. Monthly Screens</u>

Q. WHY DOES THE COMPANY OPPOSE THE USE OF DAILY SCREENS?

A. Mr. Duvall makes several arguments. He incorrectly contends that the Order in Docket 07-035-93 approved monthly screens. While the order adopted a screening adjustment (predicated on daily screens) it certainly never approved of nor specified any particular methodology. I pointed out that he is simply wrong about this in my direct testimony. Mr. Duvall also states that GRID is not affected by daily variations in loads, market prices and resources. He also suggests the use of purely financial adjustments for duct firing screens is inappropriate. I will address each point.

First, it is very significant that Mr. Duvall never disputes the fact that the daily screens do a far better job of eliminating the error induced costs than do monthly screens. Nor does he dispute the fact that it takes little or no extra work to implement daily screens. In the end, Mr. Duvall proposes that the Commission allow the Company to collect additional funds from customers simply because the GRID model contains a mathematical error. Commission acceptance of his position would diminish any incentive for the Company to ever correct the error. It is very important to remember that this GRID error (acknowledged by the Company) is a one way street: it can only increase power costs. The Company proposes to take short cuts that allow it to profit from its GRID error. I propose that they be required to do the best possible job of correcting it and that it be corrected as soon as possible.

Q. IS MR. DUVALL CORRECT THAT GRID IS NOT AFFECTED BY DAILY VARIATIONS IN LOADS, MARKET PRICES AND RESOURCES?

A. Mr. Duvall's meaning in this passage is unclear. On its face the statement is obviously wrong because GRID models resource availability changes from day to day due to planned outages, Short Term Firm and Long Term Firm transactions. Loads and hydro generation are also modeled with daily (and even hourly) variations within a month. Market prices vary by day of the week. Exhibit OCS 4.2 illustrates the daily variations within a month in the GRID model input loads and net STF transactions, and net balancing requirements. The data clearly shows substantial variations on a daily basis. These data make it clear that GRID does models daily variations in inputs that necessitate use of a daily screening method to derive the best results. The model, as designed, is already intended to optimize the system dispatch on a continuous basis.

Q. CAN YOU ILLUSTRATE WHY DAILY SCREENS ARE NECESSARY?

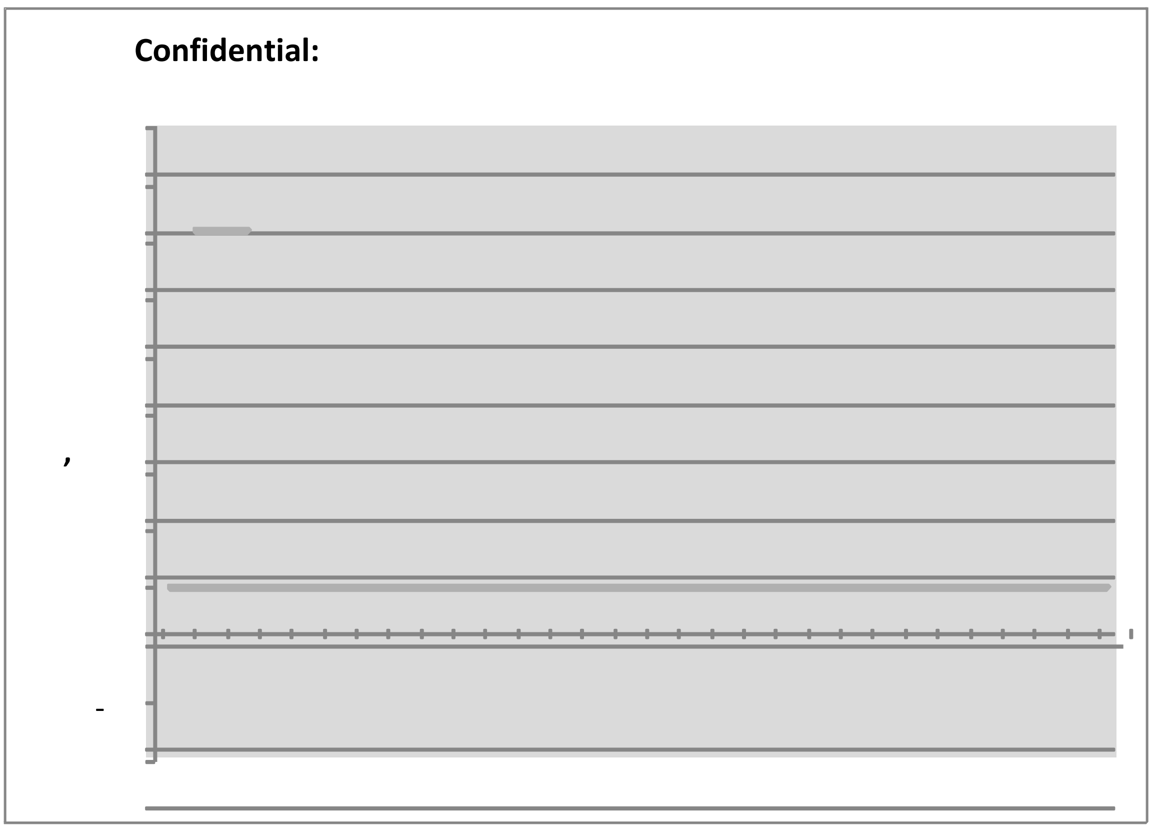
A. Yes. The confidential figure below illustrates why daily, rather than monthly screens are necessary. This figure shows the daily dispatch benefits[8/] for Currant Creek and the associated start-up costs for June, 2010.

When start-up costs exceed the daily dispatch benefits, it makes no sense to start up the resource.[9/] For example, there are nine days in June, 2010 when Currant Creek should not be running at all, including one day when a start up produces a loss of [redacted] thousand before start up costs and [redacted] thousand after counting start up costs. Using a monthly screen, the nine days when Currant Creek should not be running are permitted to

[8/] The difference between the value of the energy produced less the cost of fuel.

[9/] In this case, Currant Creek is shutting down and starting up every day, already.

occur because there are 21 days when dispatch benefits are quite substantial. A daily screen prevents Currant Creek from running nine days (mostly weekends) when the unit would otherwise produce negative dispatch benefits. The daily screening adjustment reduces the cost due to the GRID logic error by $364 thousand in June, 2010 and avoids substantial additional start-up O&M expenses. Further, it is important to realize that as market prices increase the problems related to logic error will increase. In prior cases, the overall impact of the screens used was as much as $25 million dollars, due to the much higher market prices prevailing at the time. If market prices increase again in the future, this will likely become a far more significant issue.



Q. DO YOU ALSO MAKE A SCREENING ADJUSTMENT FOR DUCT FIRING AS PART OF ADJUSTMENT 2?

A. Yes. I model the effect of the screening adjustment for these small resources as a purely financial adjustment. Mr. Duvall suggests that that it isn't appropriate to model the duct firing screening adjustment on this basis.

Q. PLEASE COMMENT ON MR. DUVALL'S CRITICISM REGARDING YOUR DUCT FIRING SCREENING ADJUSTMENT.

A. I am a bit surprised Mr. Duvall considers this a problem. The Company has made far more significant financial adjustments in this and prior cases related to modeling of wind integration, as I discussed above. Because the duct firing capacity is so small and highly flexible, there is little reason to believe it would have any meaningful effect on final NPC results to include it within the model. Indeed, a standard part of the screen verification procedure is to compare the final NPC results with those predicted outside of the model. The spreadsheets do an excellent job of predicting these impacts even when applied to larger units. This should pose no problem for duct firing. Because the screening is a sequential process, with one screen impacting the next, it is necessary to compute the screening adjustment for large units within the model. However, I model the duct firing as one of the very last adjustments, and there is no real impact on any subsequent adjustments.

Q. YOU PREVIOUSLY RECOMMENDED THE COMMISSION REQUIRE A MINOR GRID MODIFICATION TO EXPORT THE HOURLY SUM OF FUEL AND PURCHASE POWER COSTS LESS SALES REVENUE TO FACILITATE THE SCREEN DEVELOPMENT. WHAT IS THE COMPANY'S POSITION?

A. Mr. Duvall states the Company doesn't oppose this recommendation. To avoid any future confusion regarding this matter, I request the Commission order it be implemented prior to the next case.

<u>Adjustment 3 - Start Up Energy</u>

Q. PLEASE DISCUSS MR. DUVALL'S OPPOSITION TO MODELING THE START UP ENERGY OF COMBINED CYCLE PLANTS.

A. Mr. Duvall continues to recommend that the cost of start-up fuel be included in GRID, while ignoring the energy produced during the start sequence. He argues that: 1) Within an hour there is no market for the energy; 2) Hydro follows the ramp up of gas plants; 3) GRID does not reflect efficiency losses due to ramping down other resources as gas units are ramping up; and 4) That my modeling could result in shut downs shorter than the minimum down times of the combined cycle units. He points out that my results exceed the similar start up energy adjustment proposed by DPU witness Mr. George Evans. I have already addressed the later point in my November 12, 2009 rebuttal testimony.

Q. HAS MR. DUVALL PRESENTED ANY ANALYSIS SUPPORTING HIS VARIOUS ARGUMENTS?

A. No. Mr. Duvall provides no analysis or evidence supporting his assertions regarding reserve requirements or the lack of an intra-hour market. Further, his assertion that hydro provides the reserves for combined cycle start up energy contradicts his intra-hour market and "efficiency loss" arguments.

I would also note that were Mr. Duvall to apply the same arguments to wind energy, it would suggest that wind energy has zero value, or worse – that integration costs actually exceed the dispatch benefits of wind resources. Start up energy is certainly more predictable than wind energy on a day-ahead, hour ahead and intra-hour basis. Consequently for an equal amount of energy, the realized value of start-up energy should be much greater than for wind energy produced at the same time.

Q. PLEASE EXPLAIN WHY MR. DUVALL'S ARGUMENT ABOUT HYDRO PROVIDING RESERVES IS INCONSISTENT WITH HIS ARGUMENT ABOUT THE LACK OF AN INTRA-HOUR MARKET.

A. If hydro is "following" the ramp up of the gas plant, it is incorrect to assume the energy has no value. Indeed, as the combined cycle plant ramps up, hydro output would decline, saving the start up energy for subsequent use. In all likelihood, that energy will have a higher value when it is ultimately used than when it was actually produced.

Q. IS MR. DUVALL CORRECT IN HIS ARGUMENT THAT GRID DOESN'T REFLECT THE EFFICIENCY LOSSES OF OTHER THERMAL PLANTS AS THEY RAMP UP WHEN COMBINED CYCLE UNITS ARE STARTING?

A. No. This argument is also inconsistent with his assumption that hydro is following the ramp up of combined cycle units. In any case, Mr. Duvall is incorrect about this point. GRID models heat rate curves for all units, generally resulting in higher heat rates as output is reduced.

Q. DO YOU HAVE ANY COMMENTS CONCERNING MR. DUVALL'S CRITICISM THAT YOUR MODELING IS NOT CONSISTANT WITH THE ASSUMED MINIMUM DOWN TIMES?

A. Yes. Mr. Duvall argues that to the extent that I model start up energy in GRID, I should have also increased the minimum down times for the combined cycle units to account for the start-up period. While Mr. Duvall's criticism has some validity, the impact is again negligible, based on a detailed analysis I performed using GRID.

Q. WHAT DOES YOUR ANALYSIS SHOW?

A. In the great majority of cases the shut down periods already modeled in GRID exceed the minimum down times even after accounting for the inclusion of start-up energy. However, to provide a rigorous test, I increased the minimum downtimes in GRID and shifted the start-up energy to reflect the longer downtimes. This has the effect of reducing the amount of start-up energy by about 20% because the re-optimization logic within GRID reduces the number of starts (which also lowers cost.) However, delaying the daily starts of the combined cycle plants can also increase the $/MWh value of the adjustment because the energy is being used later in the day when its value is increased. When all of these effects are combined, the net impact is less than $40 thousand on a Utah basis.

Q. DID YOU ALSO ADDRESS MR. DUVALL'S CONCERNS REGARDING THE NEED TO INCREASE RESERVES TO COVER THE RAMP UP OF THE COMBINED CYCLE PLANTS IN YOUR ANALYSIS?

A. Yes. My analysis of actual data shows no meaningful increase in reserve requirements on days when combined cycle plants start up. Further, because the start ups occur in low demand hours when there are ample reserves, these "regulate down" costs are not high.

Nonetheless, I modeled an incremental requirement to cover the entire amount of start-up energy on an hourly basis, not just the usual 7% requirement associated with thermal units. For example, if a unit had a start up energy of 100 MW during the first hour of the start sequence, I modeled an additional 100 MW to reserve requirements during that hour.

Q. DO YOU RECOMMEND ANY CHANGE TO THE START UP ENERGY ADJUSTMENT BASED ON THE ANALYSIS YOU HAVE DISCUSSED ABOVE?

A. No, because the impacts are inconsequential and my estimates provide a highly generous estimate of the incremental reserve requirements. In performing this analysis I did not re-optimize the screens, and I believe the incremental reserve requirements I included are far higher than supported by actual data. Mr. Duvall's various criticisms could be addressed in a future case, but there is no reason to believe Adjustment 3 has been overstated in this proceeding

<u>Adjustment 4 – SMUD Contract Modeling</u>

Q. MR. DUVALL ALSO ARGUES THAT THE SMUD CONTRACT MODELING SHOULD REVERT TO THE METHOD REJECTED BY THE COMMISSION IN DOCKET 07-035-93. DO YOU AGREE?

A. No. Mr. Duvall contends that implementing the Docket 07-035-93 decision should go hand in hand with modeling the actual deliveries and receipts under the provisional clause of the SMUD contract.[10/] In his view, the ensuing results would justify the Company's original modeling. Mr. Duvall also argues that it is inconsistent to model one contract (SMUD) using actual data, while ignoring actual data for other contracts.[11/]

Q. PLEASE ADDRESS MR. DUVALL'S FIRST POINT CONCERING THE PROVISIONAL CONTRACT CLAUSE.

A. Under this clause, SMUD has the option to take an additional 219,000 MWh at a delivery rate not to exceed 100 MW per hour, at any time during any given year. SMUD then must return that power at any time in the following year. There are two problems with Mr. Duvall's argument. First, the Commission has never considered the provisional contract clause. This is an extremely unfavorable aspect of the SMUD contract, which heretofore, the Company has not modeled in its power costs studies in Utah, or to my knowledge in other states. The Company has never sought rate recognition, or a prudence determination of the provisional contract deliveries or receipts in Utah. Indeed, the Company has normally ignored the provisional clause for retail rate cases. For example, Exhibit OCS 4.3S, shows a copy of a data response from Wyoming Docket 20000-266-EP-07 (WIEC 1.6) which states that for ratemaking purposes the Company has always excluded the provisional energy. Exhibit OCS 4.3S also shows a copy of the GRID Long Term Contract Attributes from the 2007 case, which demonstrates that the SMUD provisional contract was excluded by the Company in its GRID study. This can be seen by noting the "Restricted" entry is equal to one at all times. This means the

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10/ See page 17, line 369.

11/ See page 18, line 387

SMUD provisional energy was prevented from being dispatched every single hour. To my knowledge, the same was true for every case for many years now.

To now address the provisional clause, it would be necessary to make a prudence determination concerning the possible high value deliveries to SMUD and the low value returns. The prudence of that aspect of the contract is highly questionable, and has never been justified by the Company nor considered by the Commission. I don't believe that the highly unfavorable aspects of the provisional clause should now be cited as a basis to overturn the Commission approved modeling of the SMUD contract.

Q. PLEASE ADDRESS MR. DUVALL'S ARGUMENT THAT IT IS UNFAIR TO RELY ON ACTUAL DATA FOR ONE CONTRACT, WHILE NOT DOING SO FOR OTHER CONTRACTS.

A. This argument stems from a false premise – that the Company doesn't already use actual data in modeling contracts. In fact, the Company models many contracts using actual data, including other contracts comparable to SMUD. For example, the Company models the delivery locations under the Black Hills contract (another call option sale) based on actual data. The Company also models the delivery pattern from the Gem State contract using average monthly deliveries for a four year period, the same as the Commission approved SMUD adjustment. While the Gem State contract specifies that deliveries are intended to occur in June, July and August, the Company models some May deliveries because that is what actually happened in the four year period. The Company also uses historical data to compute various inputs for the APS, GP Camas, Idaho Power, Biomass, most QFs and small purchase contracts, as well as reserve requirement inputs for non-owned generation located in its service area. Finally, there are other call option sales contracts (Black Hills Power,[12/] Public Service Colorado, and UMPA) whose actual delivery patterns are far less costly than assumed by the Company. If I were to apply actual data to these contracts, it would reduce, rather than increase NPC.

Adjustment 7 – Bear River Reserve Capacity

Q. WHY ARE YOU WITHDRAWING THIS ADJUSTMENT?

A. Mr. Duvall indicates that the hourly data the Company provided in response to discovery responses may have overstated the reserve capacity allocated to the Bear River resources.[13/] As this is a minor issue, and it is too late to conduct extensive new discovery to resolve the issue, I withdraw the adjustment from the current case. However, the OCS will monitor this issue in future cases and may propose an adjustment later.

Adjustment 8 – Chehalis Start Up Assumptions

Q. WHY DOES MR. DUVALL OPPOSE THIS ADJUSTMENT?

A. Mr. Duvall testifies the adjustment is unreasonable. He contends that the Company's revised input assumptions for Chehalis are intended to reflect additional wear-and-tear not considered in the IRP based assumptions the Company has used previously for Chehalis.

Q. PLEASE COMMENT.

A. Mr. Duvall failed to address my primary point - that the new inputs used by the Company are unsupported by any form of documentation, data or analysis. His assertion that the IRP based assumptions are "unreasonable" calls into question not only the IRP process, but also his reliance on these assumptions in prior rate cases, most significantly, the

[12/] In the case of Black Hills, the Company uses actual data to estimate delivery locations, thereby increasing NPC, but ignores the lower cost that would result from the use of the actual delivery profile.

[13/] Page 20, line 431.

Chehalis waiver proceeding (Docket No. 08-035-35). I don't believe use of undocumented assumptions can be considered reasonable. Nor is rejection of data used by the Company itself in prior proceedings, absent strong evidentiary support, reasonable either.

Mr. Duvall states Currant Creek values were used for Chehalis due to comparability of the two plants. However, the Chehalis start-up fuel energy exceeds the comparable Currant Creek inputs values by more than [redacted] As both units have comparable minimum loading levels, this substantial increase for Chehalis is not only unsupported, but also appears very questionable. Contrary to Mr. Duvall's testimony, this particular input *is* used in GRID to determine the optimal pattern of starts and stops, which are generally not modified by screening adjustments. As the Company should not be allowed to use undocumented assumptions in the place of already established data, I continue to recommend the Commission adopt this adjustment.

Q. HAVE YOU REQUESTED DOCUMENTATION FROM THE COMPANY REGARDING THESE INPUTS?

A. Yes. In the responses provided, the Company provided no actual documentation, but did provide a confidential attachment. That attachment was a spreadsheet containing nothing more than the value already assumed by the Company. As the document is confidential, I won't make it an exhibit, however, I did include it with my workpapers.

Q. DO YOU HAVE A CORRECTION TO YOUR INITIAL ADJUSTMENT?

A. Yes. I failed to correct for the impact of this adjustment in computing the "other start-up costs" already included in the GRID output report. I now have revised this adjustment in my final recommended NPC. The impact is $88 thousand on a Utah basis. This adjustment is now included on Table 1.

<u>Adjustment 9 - STF Transmission Test Year Synchronization</u>

Q. WHY DOES MR. DUVALL OPPOSE THIS ADJUSTMENT?

A. Mr. Duvall argues that the adjustment is unreasonable, removing all but $1.0 million of the $5.3 million in STF transmission expense from the test year. He also argues against assigning the cost of the STF transmission on a transfer volume basis, as I proposed.

Q. WHAT IS YOUR RESPONSE?

A. STF transmission costs and volumes have increased substantially over the past four years. Transfer volumes increased nearly seven fold from 2005 to 2008, while costs increased by 368%.[14/] Mr. Duvall proposes to model STF transmission costs on the relatively high 2008 levels, while limiting volumes far below 2008 levels by use of the four year average flows. His characterization of the amount of cost excluded from the test year is misleading because Mr. Duvall failed to mention that GRID test year STF transmission flows are only 16% of the actual volumes for 2008. It makes little sense to assume the Company would incur 100% of the 2008 STF transmission costs, were volumes only 16% of the actual levels. The adjustment does exactly what it should, synchronize expense and volume levels.

To further illustrate that the adjustment is reasonable, I prepared another analysis, which used 100% of the actual 2008 expense levels as suggested by Mr. Duvall ($5.3 million) coupled with 2008 transfer limits, based on actual 2008 flows. As I stated in my direct testimony, this is another way to synchronize STF transmission expenses and volumes. This approach would also eliminate Mr. Duvall's argument that charges are incurred on a take-or-pay rather than volume basis. Had I computed the adjustment using

[14/] See my direct testimony, Figure 2, page 33.

2008 transfer limits and full expense levels, the resulting adjustment would have been $3.9 million. This is almost identical to the $4.1 million adjustment I recommended in my direct testimony. I am indifferent as to which approach the Commission uses. In either case the expenses and transfer volumes for STF transmission are consistent, which is the entire purpose of this adjustment.

Q. IS THERE AN OBVIOUS FLAW IN THE COMPANY'S STF TRANSMISSION MODELING?

A. Yes. Under the Company GRID study, STF transmission is an uneconomic resource. The Company actually incurs $300 thousand more in costs than savings by use of STF transmission. As the entire purpose of STF transmission is to enable economic operation of the system, this result simply doesn't make sense.

Q. AT PAGE 24, LINES 513-516 MR. DUVALL STATES THAT YOU INCORRECTLY CHARACTERIZED HIS PRIOR TESTIMONY REGARDING THE MODELING OF STF AND NON-FIRM TRANSMISSION. IS HE CORRECT?

A. My direct testimony provided an actual quote from Mr. Duvall's testimony in Docket No. 08-035-38. His testimony speaks for itself.

<u>Adjustment 10 - Transmission Imbalance</u>

Q. MR. DUVALL CONTINUES TO OPPOSE THIS COMMISSION APPROVED ADJUSTMENT. HE CITES HIS PRIOR TESTIMONY IN DOCKET 08-035-38. PLEASE COMMENT.

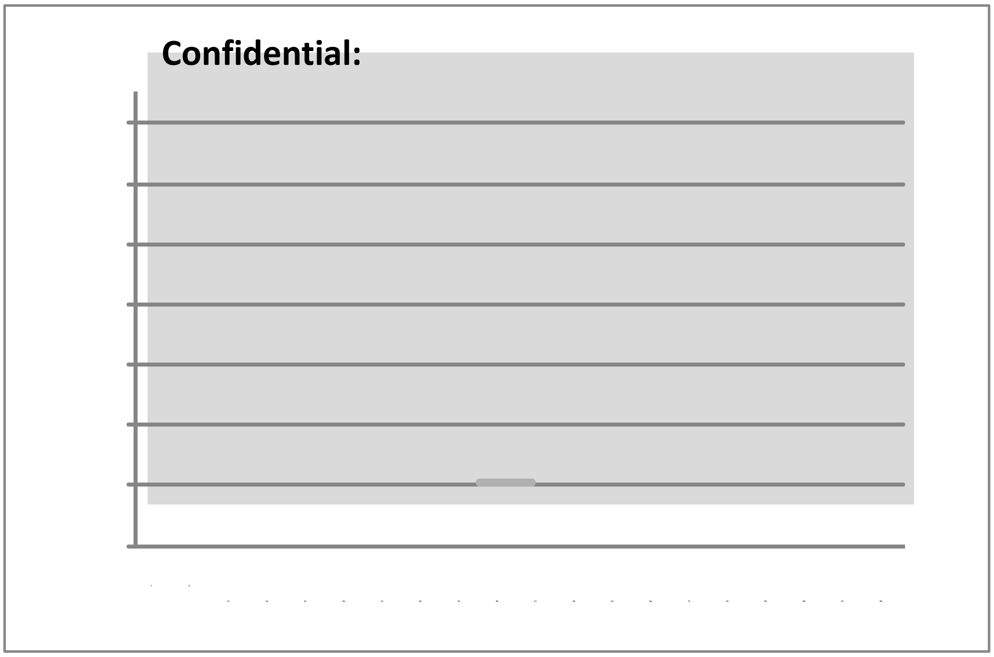
A. Mr. Duvall's reliance on his prior testimony ignores the fact that I addressed his previous concerns in the adjustment I propose in this case. For example, I no longer include any adjustment for OATT transmission customers, and instead apply the adjustment only to legacy contract customers. I also reduced the "premium/discount" factor from 10% to 5%. Finally, the adjustment is now purely financial, because the impact on the Company is purely financial. As I pointed out in my direct testimony, these modifications reduced this adjustment.

Finally**,** Mr. Duvall's arguments go to the level of the adjustment, not whether it should be applied. Lacking any actual analysis by the Company and given my modifications to it, I believe there is no basis for the Commission to reverse itself.

<u>Adjustment 11 – Cholla Capacity Upgrade</u>

Q. WHY DOES MR. DUVALL OPPOSE THIS ADJUSTMENT?

A. Mr. Duvall contends the Cholla transmission limits are less than the capacity of the resources. However, this is irrelevant, since the plant historically has a high outage rate and the capacity available will exceed the transmission capacity only 20% of the time (which I already reflected in my adjustments). Ultimately, Mr. Duvall simply doesn't recognize that a transmission limit has the same effect on the expected value of capacity for Cholla as would any other capacity deration. The figure below shows that the capacity of Cholla is only impacted by the transmission limit 20% of the time. Mr. Duvall prefers to assume that the transmission limit reduces available capacity even when Cholla has already been derated or is out of service for other reasons. In reality, the transmission limit has very little effect on the amount of generation that can be obtained from the plant. It should be treated just the same as any other capacity deration in GRID as I have done in computing this adjustment.



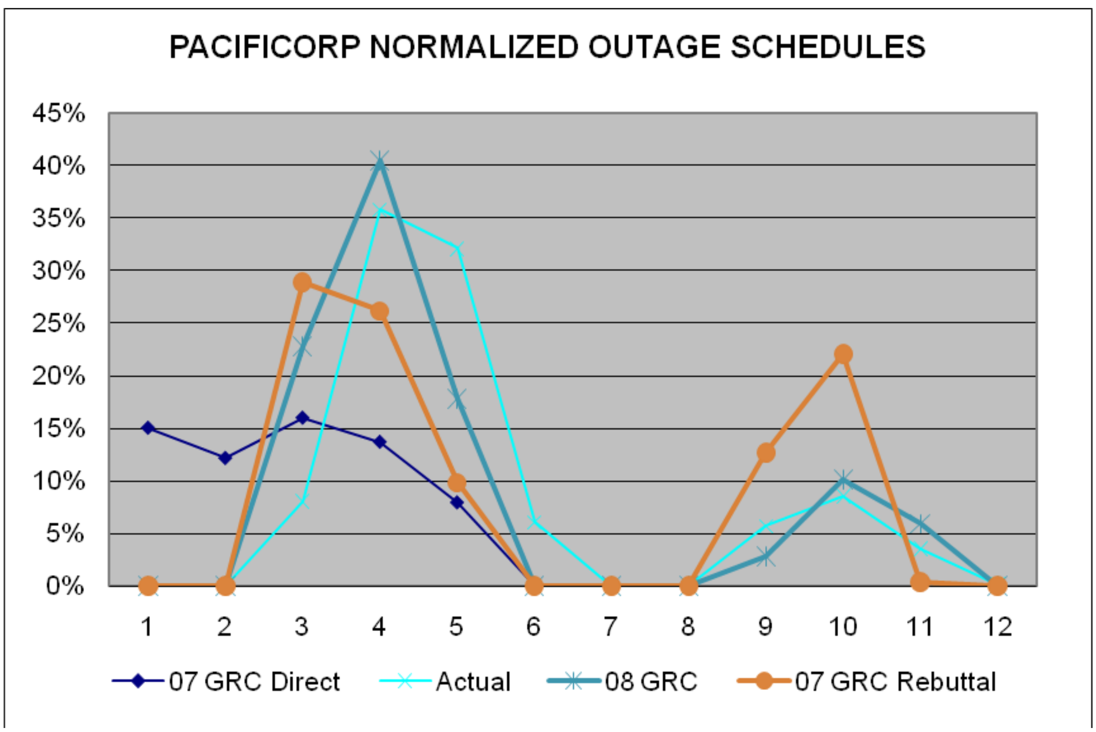
<u>Adjustment 14 – Planned Outage Schedule</u>

Q. IN YOUR NOVEMBER 12, 2009 TESTIMONY YOU ADOPTED THE DPU COAL PLANNED OUTAGE ADJUSTMENT. MR. DUVALL OPPOSES THAT ADJUSTMENT, AS WELL AS YOUR CURRANT CREEK PLANNED OUTAGE ADJUSTMENT. PLEASE REPLY TO HIS COMMENTS.

A. Mr. Duvall opposes both adjustments on similar grounds. He argues that the Company's schedule has not been shown to be unreasonable. This is not an appropriate standard, as I discussed earlier. Mr. Duvall also argues that the method used by Mr. Evans is arbitrary, while the Company's method is "transparent" and not subject to "gaming."

I disagree. Mr. Evan's attempted to faithfully replicate the actual distribution of outage energy throughout the test year, much as I did in Docket 07-035-93. The Commission adopted my planned outage schedule in that case. As Mr. Evans followed the historical pattern of outage energy, there is nothing arbitrary about his approach. It cannot be "gamed" because there is no way to change the actual historical outage pattern.

In contrast, the Company method is arbitrary, opaque and unfortunately, subject to "gaming" to apply Mr. Duvall's term. In Docket 07-035-93, the Company's method placed coal unit outage in winter months. The Company stated in subsequent discovery that these very scheduling assumptions were reasonable, despite the assumed winter outages and even sought reconsideration on the matter of the planned outage adjustment. Contrary to Mr. Duvall's testimony, the Company's method is arbitrary. It is driven by a limited number of unsupported inputs that can be used to produce nearly any outage schedule possible, irrespective of any consideration of economics, constraints, or actual practice. The figure below clearly illustrates the potential for "gaming" in the Company method.



Q. PLEASE EXPLAIN THE FIGURE.

A. It shows the distribution of coal plant outage energy used by the Company in recent cases. In the 2007 case, the Company originally proposed to use a schedule that placed coal plant outages in the winter. In its rebuttal in that case, the Company presented an alternative schedule, which moved the winter outages to the fall, another unrealistic assumption. In the 2008 case (and in the current case) the Company has moderated its assumptions, but not changed its method. As Mr. Evans and I have shown, the current schedule assumptions do not conform to actual practice. From the above chart, the arbitrariness of the Company's methodology (and prior practices) is clear.

Q. COMMENT ON MR. DUVALL'S OBSERVATION THAT THE 2009 OUTAGE FOR CURRANT CREEK OCCURS IN THE FALL.

A. The Company has never based the planned outage modeling on a single year's actual schedule, but rather has used a four year average. Over the past several years, and for the next several years, the Company plans both spring and fall outages for both Currant Creek and Lake Side. See Exhibit OCS 4.4S for supporting data. There is no basis to assume that, on a normalized basis, both Currant Creek and Lake Side will have annual outages every year in the fall.

Q. GIVEN THAT THESE ARE SMALL ADJUSTMENTS, IS THERE ANY REASON FOR THE COMMISSION NOT TO SIMPLY ADOPT THE COMPANY PROPOSAL?

A. Yes. While the impact is now small, the principle is important. If the Commission adopts the Company proposal, it could be viewed by the Company as precedential, if not an endorsement of its approach. This would simply perpetuate this argument. Assuming market prices increase in the future, this may become a much more important issue in the future.

<u>Adjustment 15 – Bridger Ramping</u>

Q. PLEASE COMMENT ON MR. DUVALL'S TESTIMONY ON PAGE 29.

A. Mr. Duvall testifies at lines 617-621 as follows:

"The Company has provided supporting data that the Company reasonably relied upon in calculating the Bridger ramping adjustment. Mr. Falkenberg selectively included one of the data responses that he has received, and ignored the others that further explained the data that the Company used in the calculation. Those data responses are provided as Exhibit RMP___(GND-3R)."

Mr. Duvall's testimony in this passage doesn't accurately reflect my exhibits. In GND-3R he included three discovery responses from the current Oregon case. In my exhibit OCS 4.4, I had already provided copies of several data responses including two of the three responses he provided in GND-3R. The one response I didn't include was an explanation by the Company that they believed they had fully responded to other discovery requests.

Q. WHAT ARE MR. DUVALL'S MORE SUBSTANTIVE ARGUMENTS AGAINST THE ELIMINATION OF THE BRIDGER RAMPING ADJUSTMENT.

A. Mr. Duvall disputes the exhibit I provided that showed when ramping losses were assigned to Bridger when the plant was being allocated reserves. He argues that other units at Bridger may have been carrying reserves during the time when one of the units was assumed to be incurring ramping losses. However, lack of Company – unit specific data makes it impossible to know for sure whether that's the case. I also demonstrated in my direct testimony that the Company's allocation of Bridger plant generation is not constant. This is a key assumption underlying its ramping calculation. Further, the amount of reserves allocated to the Bridger plant appears to substantially exceed the available capacity from the other Bridger units as was shown in Exhibit OCS 4.4. In the end, just as they admitted in March, 2009 (See OCS 4.4, page 1) the Company has no reliable way to determine Bridger unit generation on an hourly basis, a necessary ingredient for the ramping adjustment.

Q. MR. DUVALL SUGGESTS ON PAGE 28 THAT A RAMPING ADJUSTMENT IS USED FOR MOST OF THE COMPANY'S COAL PLANTS AND THEREFORE SHOULD BE USED WITH BRIDGER AS WELL. PLEASE COMMENT.

A. Although the Company uses ramping adjustments for some coal plants, Mr. Duvall acknowledges that for the six other jointly owned plants the Company does not make any ramping adjustment to outage rates. This is because the Company has difficulties in obtaining the necessary unit data for jointly owned plants. For example, the Company also lacks unit specific hourly logs for Colstrip and makes no Colstrip ramping adjustment. For the same reasons, the Bridger ramping adjustment should not be implemented, so that it is treated the same as all of the other jointly owned plants.

<u>Adjustment 16 – Minimum Loading and Deration</u>

Q. ON PAGE 31, MR. DUVALL DISPARAGES AN EXAMPLE PRESENTED IN YOUR DIRECT TESTIMONY AS MISLEADING AND HYPOTHETICAL. PLEASE COMMENT.

A. This example (shown on Exhibit OCS 4.5, page 16) concerned modeling of an actual outage at Currant Creek. The example showed how the Company's GRID modeling creates an obviously erroneous result and how the use of the minimum loading deration and heat rate curve adjustment would correct the problem.

The example showed that during a month where a high (50%) outage rate was modeled, GRID simulations showed Currant Creek with an average heat rate of 9,184 BTU/kWh, an unreasonably high result compared to normal operation.[15/] Comparison of the incorrect GRID result to the actual Currant Creek heat rate curve used in GND-4R[16/] demonstrates that there is no heat rate even close to 9,184 BTU/kWh over the entire

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15/ The plant typically has a heat rate around [redacted].

16/ Mr. Duvall's Exhibit doesn't show the actual scale for the Currant Creek heat rate curve, but the necessary data is provided in Confidential Exhibit OCS 4.5S.

normal operating range of the plant (from 250 to 450 MW.) The GRID model produced this heat rate because it assumed the unit would operate at 50%, or less, of full load for an entire month, a level of operation that is below the plant's minimum loading.

Q. WAS THE EXAMPLE PURELY HYPOTHETICAL?

A. There was nothing hypothetical about the example. The example came directly out of the test year GRID study the Company filed in Docket 08-035-93, in July 2008. The example showed that if the deration method was not applied, GRID heat rates can greatly exceed reasonable levels. Mr. Duvall suggests the example is unrealistic because the Company no longer uses the monthly outage rate modeling which resulted in the high outage rate underlying the example. He contends that currently none of the Company units have outage rates as high as in the example. However, eliminating monthly outage rates simply means the bias is no longer so obvious. Nothing in the change from monthly to annual outage rates ever addressed the problem illustrated in the example.

Mr. Duvall also contends that there is no unit on the system for which the derated maximum capacity will exceed the minimum capacity. This is simply another matter of happenstance, and there is nothing to suggest the problem couldn't occur again, whether by mistake or for valid reasons.[17/] There is no reason to assume that simply because the problem doesn't exist now, it can never happen again.

Q. ON PAGE 32 MR. DUVALL TESTIFIES THE HEAT RATE ADJUSTMENT MAY CAUSE ADVERSE UNINTENDED CONSEQUENCES. PLEASE COMMENT.

A. Mr. Duvall argues that when units are running below full load, the adjusted heat rate curve will be incorrect. However, my direct testimony (page 44) demonstrates that 74%

17/ Mr. Duvall is incorrect on this point as well. Lake Side duct firing is a unit whose derated maximum capacity is less than the assumed minimum. .

of all fuel costs in GRID are generated by units running at the maximum derated capacity.

I have already accounted for the problem of partial derations because heat rate degradation due to partial outages is properly reflected in the methodology, and to the same extent as under the Company's modeling. The heat rate curve adjustment only prevents misstatement of the heat rate due to modeling of full unplanned outages. This was shown in my direct testimony in Exhibit OCS 4.5 pages 1-3.

As for any concern of misstated heat rates at the minimum capacity, in Exhibit OCS 4.5 pages 4-6, I demonstrated that the actual heat rate at the actual minimum, maximum, and mid-point capacity for each PacifiCorp unit is exactly equal to the adjusted heat rate at the corresponding derated minimum, maximum, and mid-point capacities. This rebuts Mr. Duvall's criticism on page 32 that the heat rate curve adjustment understates heat rates. Further, Exhibit OCS 4.5, page 21 shows that my modeling method simulates actual heat rates more accurately than the Company's method, particularly for gas plants. This is important because gas plants operate below maximum loadings more frequently than coal plants, where Mr. Duvall suggests the method is most questionable.

This, as well as the information shown on Exhibit OCS 4.5, pages 4-6, clearly demonstrates that Mr. Duvall's contentions, based on his Exhibits GND4-R and GN5-R are simply mistaken. Mr. Duvall is ignoring the fact that the adjusted heat rate curve should apply to only the derated capacities, whether minimum, maximum, or in between.

When the adjusted curve is applied to the derated capacities, they provide the same heat rate as the actual heat rate curve applied to the unadjusted capacity.

Q. CAN YOU DEMONSTRATE MR. DUVALL'S MISTAKE BASED ON HIS GND-4R WORKPAPERS?

A. Yes. Exhibit OCS 4.5S, includes a copy of the pertinent section of Mr. Duvall's workpapers. This exhibit used the Currant Creek heat rate assuming a maximum capacity of [redacted] and a deration factor of [redacted] The full load heat rate is [redacted] After deration, the capacity is only [redacted] MW. If evaluated using the Company's unadjusted curve, it would result in a heat rate of [redacted] BTU/kWh. However, when the derated capacity is applied to the adjusted curve, the heat rate is [redacted] BTU/kWh, the same as at the maximum full load capacity. Conversely, the heat rate at minimum loading [redacted] is [redacted] If derated by the outage rate, the adjusted minimum capacity [redacted] heat rate is overstated by [redacted] using the Company curve. However, the adjusted curve produces exactly the same heat rate as the actual curve at minimum load. Mr. Duvall's Exhibits don't show the correct comparison, as he only presents the two curves without acknowledging that they *don't apply to the same scale.*

Q. DO YOU HAVE ANY COMMENTS CONCERNING EXHIBIT GND-5R?

A. Yes. In this exhibit, Mr. Duvall presents a similarly flawed comparison for a coal plant, Cholla 4. This chart is actually somewhat misleading because it shows the same heat rate at the derated capacity for both the adjusted and unadjusted heat rate curves. This is merely an unusual coincidence. It cannot be taken to imply that for coal units, the Company method will always produce the same heat rate as does the heat rate deration method, as the Company has sometimes claimed. In any case, this example does show that the heat rate adjustment is not "one sided" as Mr. Duvall contends. The heat rate curve adjustment in this case actually serves to *increase* the heat rate by a small amount. See again Exhibit OCS 4.5S, for a copy of a portion of Mr. Duvall's workpapers illustrating this point as well.

Q. MR. DUVALL CONTENDS THAT YOUR COMPARISON TO ACTUAL HEAT RATES SHOULD BE DISCOUNTED FOR GAS PLANTS THOUGH HE ACKNOWLEDGES THAT FOR COAL PLANTS IT IS "NOT UNREASONABLE." DO YOU AGREE?

A. No. This comparison is shown on Exhibit OCS 4.5, page 21. Both comparisons were done using the same type of analysis and data. It clearly shows that my proposed adjustment does a better job of simulating gas plant heat rates than the Company method. These are the units which cycle up and down and run more hours between minimum and maximum loading. They provide the best test of the methodology. The approach has a smaller impact on coal plants, and as shown above can even increase the predicted heat rates in some instances. In this situation, it appears Mr. Duvall simply doesn't like the results. Mr. Duvall offers no valid analysis of his own.

<u>Adjustment 17 – Combined Cycle EFOR</u>

Q. MR. DUVALL AGREES WITH ADJUSTMENT 17 RELATED TO COMBINED CYCLE PLANT UNPLANNED OUTAGE RATES, EXCEPT AS IT APPLIES TO CHEHALIS. DO YOU ACCEPT HIS MODIFICATION?

A. I have no objection to it for purposes of this case as it makes little difference (about $80 thousand.) I based my original adjustment on the Chehalis outage rate calculation the Company performed in Oregon Docket UE 207. In that case, the Company excluded all outages during the months they owned the plant. It appears from Mr. Duvall's testimony that the Company simply made a mistake in the Oregon case. In any case, the impact of this modification is essentially negligible. Should Chehalis outage rates appear excessive relative to the IRP assumptions in the future the OCS may revisit this issue. I have reflected this change in Table 1 Revised.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.