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## IN THE MATTER OF PUBLIC UTILITY COMMISSION OF OREGON STAFF'S INVESTIGATION RELATING TO ELECTRIC UTILITY PURCHASES FROM QUALIFYING FACILITIES

CASE NO. UM 1129

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6	REBUTTAL TESTIMONY
7	PHASE 1
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9	Dr. Don Reading
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11	on behalf of
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13	Sherman County Court and
14	the J.R. Simplot Company
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16	
17	January 20, 2005

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## Q, Please state your name and occupation.

A. My name is Don Reading and I am employed by Sherman County as a consultant on
community renewable energy. A copy of my qualifications were previously filed with my direct
testimony.

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## Q. What is the purpose of your rebuttal testimony?

A. I will focus on the 'big picture' issues dealing with terms and conditions for QFs in
Oregon as well as specific items found in the testimony of Staff witnesses Chriss and Galbraith.
Specifically I address issues related to natural gas price forecasts and the appropriate avoided
cost rates.

#### 12 Q. What do you mean by 'big picture' issues?

13 A. In Order No. 05-584 in this Docket the Commission stated:

14 This Commission's goal has been to encourage the economically efficient

- 15 development of these qualifying facilities (QFs), while protecting ratepayers by
- 16 ensuring that utilities pay rates equal to that which they would have incurred in

17 lieu of purchasing QF power. [UM-1129, Order No. 05-584, p. 1]

18 This case is now two years old and Oregon has yet to sign up new QFs. Despite that fact, the

19 utilities continue to acquire new resources. So far it does not appear that the Commission's goal

20 has been accomplished.

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1 Q. Is there a relationship between this Commission's actions and the ability of the QF 2 industry to develop? 3 A. Yes. 4 Q. Please explain. 5 A. In my direct testimony, I outlined four periods dealing with QF activity in Idaho and 6 demonstrated that the amount of QF activity is a direct result of the terms and conditions offered 7 to QFs. Favorable terms and conditions must be mandated by this Commission or else the QF 8 industry will simply not develop. 9 **Q**. Has the Oregon Commission been successful in implementing PURPA so far? 10 A. No. The Oregon Commission has made important steps toward achieving its goal of 11 encouraging economically efficient QF development in the earlier phase of this docket. 12 However, unless the Commission completes the process, all of our efforts to date will have been 13 for naught. The Commission is at an important crossroads given the current phase of this 14 Docket. 15 Is the Commission correct to be concerned that the ratepayers might be 0. 16 disadvantaged if a utility pays a rate higher than its true avoided cost? 17 A. Yes. However setting avoided cost rates is a two edged sword for ratepayers. By setting 18 rates lower than a utility's avoided cost, the Commission will thwart QF development; which is 19 contrary to this Commission's laudable goals. In addition, with QF development thwarted, the 20 utilities must rely on their own resources for which there is no guarantee that they are least cost.

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# Q. Why do you say that there is no guarantee that utility-owned resources are least cost?

A. The Commission approves (or disapproves) inclusion of a new utility-owned resources
based on information available to it at the time the utility files for approval. Decisions are based
on available knowledge at the time the utility files for rate treatment. In hindsight, such
decisions may or may not prove to be good for the ratepayers.

## 7 Q. Is that, in fact, how this Commission approaches ratebase decisions?

A. Yes. For example, recently the Oregon Industrial Customers of Idaho Power urged this
Commission to not allow Idaho Power to recover its investment in a very expensive gas fired
plant. The Commission rejected the OICIP's argument although the plant was very expensive
for the ratepayers. The Commission declared:

As noted by the parties, we must review the company's decision to build Danskin for whether it was prudent or reasonable based on information that was available at the time the decision was made. Idaho Power's decision to build Danskin, made during a time of volatile electricity prices in 2001, was a prudent decision for the company to insulate itself from variable hydro supply and extreme market electricity prices. [UE-167, Order No. 05-871, p. 15] The Commission is faced with similar ratemaking decisions in this docket as it determines the

19 proper avoided cost rates for QFs. By setting QF rates based on the best current information, it 20 will run the risk that the rates may be too low or too high at some point in the future. This is no

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different than when the Commission makes a decision to approve a utility-owned resource for
 ratemaking treatment.

Q. You were at the Idaho Commission when PURPA rates, terms, and conditions were
set. Given your experience in this arena what comments do you have for the Oregon
Commission?

6 A. In making a change in any policy direction it is likely some mistakes will be made. The 7 impact on ratepayers can be just as great for setting QF rates too high as they are for setting QF 8 rates too low. In order for the Commission to meet its stated goals it needs to use current 9 information and use its judgment based on this information. Future conditions will change 10 making past decisions look good or bad. The Commission can always come back and make 11 adjustments once it sees that its goals are being met. This is the conclusion I reached in my 12 direct testimony when I said, 13 There is a correlation between price, contract term and contract conditions and the 14 development of the QF industry. This Commission has the power to ramp the 15 industry up, or slow it down, by simply making the price and contract terms more 16 or less favorable. (Reading, Direct Testimony, UM1129, p. 8.) 17 The bottom line is that the Commission must use the best current information available to 18 it in order to set rates going forward. 19 0. What is your understanding of Staff witness Chriss' gas price testimony? 20 A. Mr. Chriss undertakes a technical analysis that compares, in real terms, natural gas prices

21 in between April 2001 and March 2005 with the utilities' forecasts. He found the average real

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1	price	in the forecast period to be 11.1% <u>lower</u> ( $$4.32$ v $$3.84$ ) than the base period for PGE. In		
2	the case of PacifiCorp, the forecast real natural gas prices were found to be 17.8% higher (\$3.93			
3	v \$4.6	53) in the future than for the base period. He concludes that PacifiCorp's forecast is		
4	reason	hable while PGE's is not.		
5	Q.	Do you agree with his analysis and do you believe it is valid for use in establishing		
6	QF ra	ates?		
7	А.	No, I do not agree with his analysis and I believe it is inappropriate for use in setting		
8	avoid	ed cost rates.		
9	Q.	Why do you disagree with Mr. Chriss' analysis?		
10	A.	First, the base period is too short to support his conclusions. Even Mr. Chriss		
11	acknowledges this fact. Sufficient data is simply unavailable to in order to have confidence in			
12	his co	nclusions.		
13	Q.	You noted that the lack of data is the first problem you have with Mr. Chriss'		
14	analy	sis. Are there othe problems?		
15	A.	Yes. The second area of concern is even more critical than the lack of sufficient data.		
16	The type of comparative analysis used by Mr. Chriss is only valid when market parameters are			
17	comparable between the base period and the forecast period. Implicit in the analysis is that the			
18	natura	al gas and energy situation for April 2001 through March 2005 (the base period) is		
19	essent	tially the same as the forecast periods which are 2010-2028 for PacifiCorp, and 2009-2020		
20	for PC	GE		

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#### Q. Are the base period and the forecast period comparable?

A. No, they are not. Recent price instability makes comparisons to the future questionable.
In addition, other witness in this case attest to recent significant changes in the market structure
for energy and natural gas. These changes in the nature of natural gas markets invalidate
meaningful comparisons of simple real average price differences between the two periods used
by Mr. Chriss.

## 7 Q. Are there other problems with Mr. Chriss' analysis?

8 A. Yes. He also did not undertake an analysis of the sufficiency period for either PGE or
9 PacifiCorp.

#### 10 Q. What is the significance of the failure to analyze the sufficiency period?

A. As shown in my direct testimony, as well as in the testimony of others, future market prices for natural gas are significantly higher than those in the base period. Since there is an obvious relationship between electric and natural gas prices, and because Mid-C prices are used for the sufficiency period QF rate setting, I can only conclude that rates for <u>both natural gas and</u> <u>electricity</u> will be higher than those filed by the utilities over the next 5 years. Which, of course, is the time period in which PGE and PacifiCorp claim to be resource sufficient.

17 Q. Didn't Mr. Chriss acknowledge the dynamic nature of future natural gas markets?

18 A. Yes. He stated:

19 The forecast provides a conservative long term appraisal of where natural gas prices may 20 or may not be headed. When comparing a price current as of the time of filing to a future 21 price, the forecast seems fairly realistic. Events in late 2005, such as Hurricanes Katrina

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1		and Rita, showed that the United States' natural gas market is susceptible to large shocks.		
2	However, we do not yet know if these shocks will result in a large sustained price			
3		increase over time. [Chriss Testimony, UM1129, p. 21.]		
4	As poi	inted out in my direct testimony, the best measure of near-term prices for natural gas is the		
5	NYM	EX futures market. Exhibit Reading-REB-1 shows the movement of future natural gas		
6	prices	on the NYMEX since I filed my direct testimony in December.		
7	Q.	What does Ex. Reading-REB-1 show?		
8	It indi	cates a lowering of near term prices and an increase for the period 2009 through 2011.		
9	This f	atting of the futures curve indicates the market is coming to terms with the impact of the		
10	hurric	anes as well as the current supply and demand situation. It also shows prices over the next		
11	five ye	ears do not drop below \$7.56/MMBtu.		
12	Q.	Is it important to use the most accurate estimate of natural gas prices available?		
13	А.	Yes. Staff acknowledges this fact. Mr. Chriss states:		
14		Utility customers would benefit under a particularly low forecast, but it is important to		
15		remember that low or high, avoided cost rates need to be calculated correctly and		
16		accurately represent the cost being avoided. [Chriss Testimony, UM1129, p. 15.]		
17	If one	believes in the goals of both this Commission and PURPA, that is that QF development is		
18	benefi	cial and should be encouraged, then Mr. Chriss is simply wrong. Artificially low avoided		
19	cost ra	tes do not benefit ratepayers.		
20	Q.	Please explain.		

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1 A. If the gas forecast is so low that avoided cost rates are uneconomic, then no QF projects 2 will come on line. It should be remembered when a QF signs a contract the avoided cost rates in 3 that contract are typically locked in (or between the bands if that is the option selected) over the 4 life of the contract. Utilities, on the other hand, are free to seek rate increases when their 5 variable (gas) costs are higher than projected. In other words, the utility has the option of 6 coming before the Commission for rate changes based on its costs of production. 7 What is the significance of this "locked-in" feature in avoided cost contracts? **O**. 8 A. In an era of increasing energy prices, fixed QF contract rates would be a significant 9 advantage for ratepayers relative to utility-owned resources that are impacted by rising costs that 10 are passed on to the consumers as higher rates. 11 **O**. Do you have any observations relative to Mr. Galbriath's testimony? 12 A. Yes. He recommends a defective methodology for defining the sufficiency period for 13 PGE and PacifiCorp. 14 0. What does Mr. Galbriath recommend? 15 A. He testifies that the sufficiency period ends when a utility is projected to experience 16 significant deficits in both capacity and energy on an annual basis. According to Mr. Galbriath: 17 Pursuant to the methodology adopted by the Commission in Order 05-584, PacifiCorp and PGE are to use a natural gas-fired CCCT as a proxy for the avoided resource in the 18 19 period of resource deficiency. See Order No. 05-584 at 27. Since a natural gas-fired 20 CCCT is considered to be a base load resource, it is appropriate to determine the resource 21 sufficiency period on both an annual energy and capacity basis. In other words, a utility is 9 Reading, Reb

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1		unlikely to acquire a base load resource unless it forecasts a significant annual energy and
2		capacity deficit. In other words, a utility is unlikely to acquire a base load resource
3		unless it forecasts a significant annual energy and capacity deficit.[Galbriath at p. 4]
4	He us	ses the significant deficit in both energy and capacity for determining the first deficit year
5	based	on the fact that the Commission selected a base load unit for the proxy during periods of
6	defici	ency.
7	Q.	Do you agree?
8	А.	No. I read the Commission's order differently. The Commission's decision is based on
9	the de	eferral or avoidance of a planned resource. Specifically the Commission ruled:
10		The calculation of avoided costs when a utility is in a resource deficient position should
11		reflect longer term resource decisions that are subject to deferral or avoidance due to QF
12		power purchases. Although a utility may acquire market resources as demand gradually
13		builds, at some point the increase in demand warrants the utility making plans to build or
14		acquire long-term generation resources. At that point, calculation of avoided costs should
15		reflect the potential deferral or avoidance of such generation resources. [Order 05-584,
16		UM1129, p. 27.]
17	It is c	lear that the Commission is focusing on when a utility makes "plans to build or acquire"
18	long-	term resources, rather than on the type of resource being acquired. When a utility's planned
19	resou	rce can be avoided or deferred is when the resource deficiency period should begin. As I
20	testifi	ed to in my direct testimony, both PGE and PacifiCorp are currently acquiring resources.

Reading, Reb 10 UM 1129 Sherman County Court Mr. Galbriath's approach misses the mark by looking at the utilities' estimates of significant
 shortfall of both capacity and energy and not at the fact that the utilities are currently acquiring
 resources that can be deferred.

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## **Q.** What approach should the commission use in defining a sufficiency period?

5 A. In my direct testimony I offered evidence demonstrating that a sufficiency period should 6 not be used in calculating avoided cost rates. However, if a sufficiency period is used, I would 7 agree with ICNU's witness Falkenberg. He argues the sufficiency methodology needs to be 8 simpler. As I noted in my direct testimony, the Idaho Commission struggled with this issue and 9 finally decided to eliminate it for use in calculating avoided cost rates. If this Commission still 10 wants to use a sufficiency period it should end the moment a utility begins the process of actively 11 acquiring a new resource – which for PGE and PacifiCorp is now. As an alternative I would 12 accept the methodology used by Mr. Falkenberg.

13 Q. Based on updated natural gas futures prices at the NYMEX what are the accurate

14 avoided cost rates as of today?

A. QF rates based on NYMEX gas futures prices for January 18, 2006 are shown in my
Exhibit Reading-REB-2.

Q. How did you determine the accurate avoided cost rates in your Exhibit ReadingREB-2?

A. I used the same methodology described in my direct testimony only I substituted the
current NYMEX prices. The one difference is that I reduced the Henry Hub prices specifically
for the natural gas hunbs of Sumas, Opal, and AECO. The amount of adjustments are those

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recommended by ODOE witness Carver of \$0.69 for Sumas, \$0.94 for Opal, and \$0.78 for
 AECO.

3 Q. Do you have any observations as to these new rates?

4 A. Yes. The current futures prices reflect the lower near term prices and higher long term
5 prices (post 2009).

6 Q. In your opinion, what explains the lower near term prices and higher long term
7 prices?

8 A. These pricing trends are a result of the flattening of the future natural gas prices over the 9 past six weeks. While the near term prices are lower, they are still significantly higher than the 10 unrealistic prices filed by the utilities based on their outdated natural gas price projections.

11 Q. Can you summarize your rebuttal testimony?

A. Yes. The Commission should eliminate, or at a minimum simplify, the definition of
sufficiency period. The utilities should be required to resubmit their compliance filings with
updated gas prices based on current gas prices using the forward gas market prices. Failing to do
these things will frustrate the Commission's goal of encouraging the development of QFs in
Oregon while at the same time ensuring that the ratepayers, the utilities and QFs receive
equitable treatment.

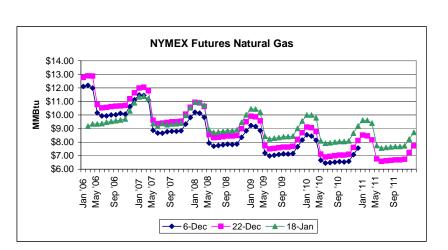
18 Q. Does this conclude your testimony?

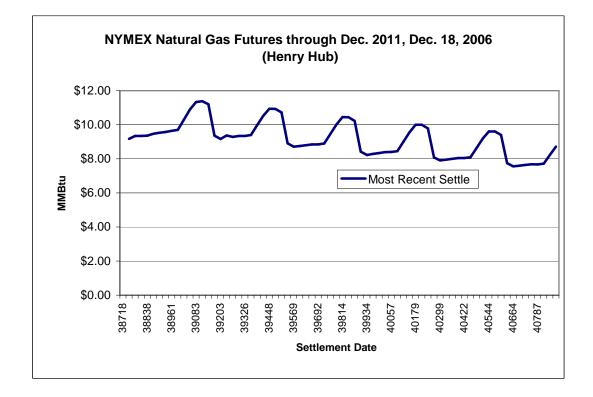
19 A. Yes, it does.

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Natural G	Sas Comp.	NY	MEX
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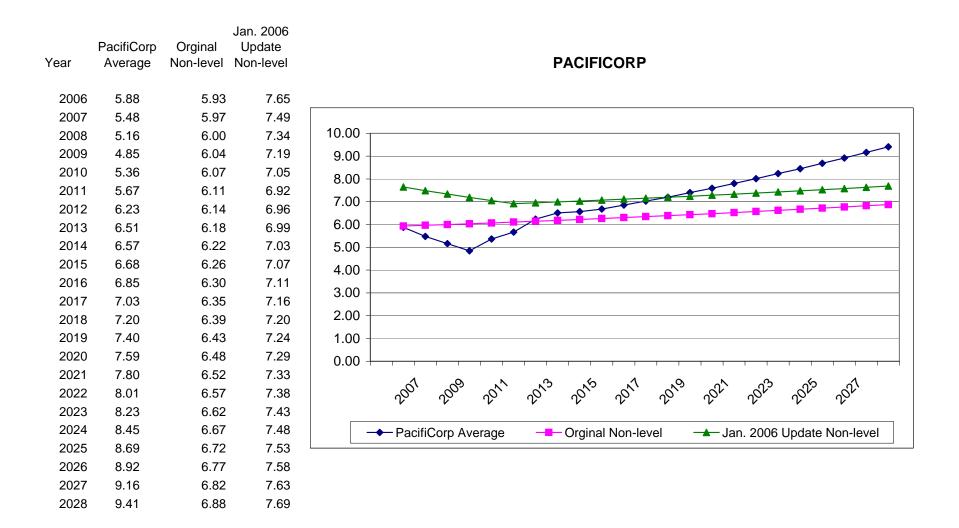
Date of Futures Prices           Month         18-Jan         22-Dec         6-Dec           Jan '06         9.170         12.874         12.100           Feb '06         9.340         10.77         10.150           May '06         9.340         10.523         9.930           Jun '06         9.470         10.555         9.930           Jun '06         9.580         10.657         10.119           Oct '06         9.700         10.693         10.064           Nov '06         10.300         11.188         10.620           Dec '06         10.900         11.634         11.117           Jan '07         11.380         12.041         11.437           Mar '07         9.362         9.606         8.872           May '07         9.362         9.401         8.650           Jul '07         9.382         9.441         8.757           Aug '07         9.342         9.491         8.797           Sep '07         9.347         9.494         8.827           Aug '07         9.800         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         <		Data a		-
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Oct '06         9.700         10.693         10.064           Nov '06         10.300         11.188         10.620           Dec '06         10.900         11.634         11.117           Jan '07         11.300         11.98         11.470           Feb '07         11.300         11.776         11.100           Apr '07         9.362         9.606         8.872           May '07         9.162         9.356         8.672           Jun '07         9.370         9.401         8.650           Jul '07         9.282         9.441         8.757           Aug '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.977           Aug '08         8.847         8.439         7.817				
Nov '06         10.300         11.188         10.620           Dec '06         10.900         11.634         11.117           Jan '07         11.330         11.98         11.470           Feb '07         11.300         11.776         11.100           Apr '07         9.362         9.606         8.872           May '07         9.162         9.356         8.672           Jun '07         9.370         9.401         8.650           Jul '07         9.282         9.441         8.757           Aug '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.977           Aug '08         8.712         8.319         7.857           Nov '08         9.452         8.984         8.340				
Dec '06         10.900         11.634         11.117           Jan '07         11.330         11.98         11.470           Feb '07         11.380         12.041         11.437           Mar '07         9.362         9.606         8.872           May '07         9.162         9.356         8.672           Jun '07         9.370         9.401         8.650           Jul '07         9.342         9.491         8.797           Sep '07         9.347         9.494         8.792           Oct '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.977           Aug '08         8.412         8.439         7.857           Nov '08         9.452         8.984         8.344     <				
Feb '0711.38012.04111.437Mar '0711.20011.77611.100Apr '079.3629.6068.872May '079.1629.3568.672Jun '079.2829.4418.757Aug '079.3429.4918.797Sep '079.3479.4948.792Oct '079.98010.0549.332Dec '0710.52710.5649.817Jan '0810.92710.88910.127Mar '0810.72010.6249.822Apr '088.9128.5547.922May '088.7128.3197.702Jun '088.8028.3997.797Aug '088.8428.4397.837Sep '088.8478.4397.817Oct '089.4528.9848.344Dec '0810.0079.4898.830Jan '0910.4379.8599.147Mar '0910.2279.5648.847Apr '098.4277.7347.197May '098.2877.5397.032Jun '098.3827.6297.132Sep '098.4027.6347.122Oct '098.4477.6847.158Aug '098.3927.6297.132Sep '098.4027.6347.122Oct '098.4477.6847.633Jan '109.9979.0598.448Mar '109.7878.7698.138Apr				11.117
Mar '07         11.200         11.776         11.100           Apr '07         9.362         9.606         8.872           May '07         9.162         9.356         8.672           Jun '07         9.370         9.401         8.650           Jul '07         9.282         9.441         8.757           Aug '07         9.342         9.491         8.792           Oct '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         10.927         10.624         9.822           Mar '08         10.720         10.624         9.822           May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.842         8.439         7.817           Aug '08         8.42         8.439         7.857           Nov '08         9.452         8.984         8.301           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147	Jan '07	11.330	11.98	11.470
Apr '079.3629.6068.872May '079.1629.3568.672Jun '079.3709.4018.650Jul '079.2829.4418.757Aug '079.3429.4918.797Sep '079.3479.4948.792Oct '079.4029.5448.837Nov '079.98010.0549.332Dec '0710.52710.5649.817Jan '0810.92710.88910.127Mar 0810.72010.6249.822Apr '088.9128.5547.922May '088.7528.357.752Jul '088.8028.3997.797Aug '088.8428.4397.817Oct '089.008.4797.857Nov '089.4528.9848.344Dec '0810.0079.4898.830Jan '0910.4479.9049.217Feb '0910.4379.8599.147Mar '098.2277.4996.982Jun '098.2277.4996.982Jun '098.3427.5847.082Aug '098.3927.6297.132Sep '098.4027.6347.122Oct '098.4477.6847.158Nov '099.0078.1897.653Jun '109.9979.0598.448Mar '109.9979.0598.448Mar '109.9979.0598.448Mar '10				
May '079.1629.3568.672Jun '079.3709.4018.650Jul '079.2829.4418.757Aug '079.3429.4918.797Oct '079.4029.5448.837Nov '079.98010.0549.332Dec '0710.52710.5649.817Jan '0810.92710.88910.127Mar '0810.72010.6249.822Apr '088.9128.5547.922May '088.7528.357.752Jul '088.8028.3997.797Aug '088.8428.4397.817Oct '089.0008.4797.857Nov '089.4528.9448.300Jan '0910.4479.9049.217Feb '0910.4379.8599.147Mar '0910.2279.5648.847Apr '098.2277.4996.982Jun '098.2877.5397.032Jul '098.3427.6847.132Sep '098.4477.6847.158Nov '099.0078.1897.653Jun '109.9979.0598.448Mar '109.9979.0598.448Mar '109.9979.0598.448Mar '109.9979.0598.448Mar '109.9979.0598.448Mar '109.9979.0598.448Mar '108.0926.6946.513Aug '10 <td></td> <td></td> <td></td> <td></td>				
Jun '079.3709.4018.650Jul '079.2829.4418.757Aug '079.3429.4918.797Sep '079.3479.4948.792Oct '079.4029.5448.837Nov '079.98010.0549.332Dec '0710.52710.5649.817Jan '0810.92710.88910.127Mar '0810.72010.6249.822Apr '088.9128.5547.922May '088.7128.3197.702Jun '088.7528.357.752Jul '088.8028.3997.977Aug '088.8428.4397.837Sep '088.8478.4397.817Oct '089.4528.9848.344Dec '0810.0079.4898.830Jan '0910.4479.9049.217Feb '0910.4379.8599.147Mar '0910.2279.5648.847Apr '098.2277.4996.982Jun '098.3227.6297.132Sep '098.4027.6347.122Oct '098.4477.6847.158Nov '099.0078.1897.653Dec '099.5578.6948.143Jan '109.9979.0598.448Mar '109.7878.7698.138Apr '108.0026.9446.518Aug '107.0976.8996.553Sep '10 </td <td></td> <td></td> <td></td> <td></td>				
Jul '07         9.282         9.441         8.757           Aug '07         9.342         9.491         8.797           Sep '07         9.347         9.494         8.792           Oct '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.664         9.817           Jan '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.877           Aug '08         8.422         8.439         7.837           Sep '08         8.847         8.439         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.303           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         8.227         7.499         6.982	-			
Aug '07         9.342         9.491         8.797           Sep '07         9.347         9.494         8.792           Oct '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         10.922         10.839         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.912         8.554         7.922           May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.877           Aug '08         8.842         8.439         7.837           Sep '08         8.847         8.439         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.810           Jan '09         10.427         9.644         8.749           Apr '09         8.227         7.734         7.197           May '09         8.227         7.639         7.032				
Sep '07         9.347         9.494         8.792           Oct '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         10.927         10.889         10.197           Feb '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.842         8.439         7.837           Sep '08         8.847         8.439         7.817           Oct '08         9.00         8.479         7.857           Nov '08         9.452         8.984         8.304           Dec '08         10.007         9.489         8.303           Jan '09         10.437         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.47           Apr '09         8.227         7.499         6.982 <td></td> <td></td> <td></td> <td></td>				
Oct '07         9.402         9.544         8.837           Nov '07         9.980         10.054         9.332           Dec '07         10.527         10.564         9.817           Jan '08         10.927         10.889         10.197           Feb '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.912         8.554         7.922           May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.977           Aug '08         8.842         8.439         7.817           Oct '08         8.900         8.479         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.227         7.734         7.197 </td <td></td> <td></td> <td></td> <td></td>				
Dec '07         10.527         10.564         9.817           Jan '08         10.942         10.934         10.197           Feb '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.912         8.554         7.922           May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.977           Aug '08         8.422         8.439         7.837           Sep '08         8.842         8.439         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.427         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.684         7.158           Nov '09         9.007         8.189         7.653 <td></td> <td>9.402</td> <td>9.544</td> <td>8.837</td>		9.402	9.544	8.837
Jan '08         10.942         10.934         10.197           Feb '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.912         8.554         7.922           May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.977           Aug '08         8.842         8.439         7.837           Sep '08         8.847         8.439         7.817           Oct '08         9.007         8.848         8.449           Dec '08         10.007         9.489         8.830           Jan '09         10.427         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653		9.980	10.054	9.332
Feb '08         10.927         10.889         10.127           Mar '08         10.720         10.624         9.822           Apr '08         8.912         8.554         7.922           May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.797           Aug '08         8.842         8.439         7.837           Sep '08         8.847         8.439         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.427         9.564         8.847           Apr '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.684         7.182           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653				
Mar '08         10.720         10.624         9.822           Apr '08         8.912         8.554         7.922           May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.837           Sep '08         8.847         8.439         7.837           Sep '08         8.847         8.439         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.342         7.634         7.122           Oct '09         8.447         7.684         7.153           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538      <				
Apr '088.9128.5547.922May '088.7128.3197.702Jun '088.7528.357.752Jul '088.8028.3997.797Aug '088.8428.4397.837Sep '088.8478.4397.817Oct '088.9008.4797.857Nov '089.4528.9848.304Dec '0810.0079.4898.830Jan '0910.4479.9049.217Feb '0910.4379.8599.147Mar '0910.2279.5648.847Apr '098.4277.7347.197May '098.2277.4996.982Jun '098.3427.5847.082Aug '098.3927.6297.132Sep '098.4027.6347.122Oct '099.4477.6847.653Dec '099.5578.6948.143Jan '109.9979.1098.538Feb '109.9979.0598.448Mar '109.7878.7698.138Apr '108.0877.1096.653May '107.9526.9446.453Jun '107.9526.9446.553Sep '108.0477.0446.553Sep '108.0477.0446.553Sep '108.0447.0396.533Oct '109.1898.1097.563Jan '119.6098.449Mar '119.3998				
May '08         8.712         8.319         7.702           Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.797           Aug '08         8.842         8.439         7.837           Sep '08         8.847         8.439         7.817           Oct '08         9.00         8.479         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.427         9.564         8.847           Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.342         7.584         7.082           Aug '09         8.322         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.653           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143				
Jun '08         8.752         8.35         7.752           Jul '08         8.802         8.399         7.797           Aug '08         8.842         8.439         7.837           Sep '08         8.847         8.439         7.817           Oct '08         8.900         8.479         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.684         7.082           Aug '09         8.322         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.059         8.448	•			
Jul '08         8.802         8.399         7.797           Aug '08         8.842         8.439         7.837           Sep '08         8.847         8.439         7.817           Oct '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.300           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.634         7.122           Oct '09         8.402         7.634         7.122           Oct '09         9.557         8.694         8.143           Jan '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138 <t< td=""><td></td><td></td><td></td><td></td></t<>				
Sep '08         8.847         8.439         7.817           Oct '08         8.900         8.479         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.684         7.122           Oct '09         8.402         7.634         7.122           Oct '09         8.402         7.634         7.122           Oct '09         8.407         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.797         6.899         6.453 <t< td=""><td></td><td></td><td></td><td></td></t<>				
Oct '08         8.900         8.479         7.857           Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.634         7.122           Oct '09         8.447         7.684         7.153           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Jun '10         7.952         6.944         6.453           Jun '10         7.952         6.944         6.553 <t< td=""><td>Aug '08</td><td></td><td></td><td></td></t<>	Aug '08			
Nov '08         9.452         8.984         8.344           Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.342         7.539         7.032           Jul '09         8.342         7.634         7.122           Oct '09         8.447         7.684         7.153           Dec '09         9.007         8.189         7.653           Dec '09         9.057         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Jun '10         7.952         6.944         6.453           Jul '10         8.002         6.994         6.518           Aug '10         7.097         6.899         6.553 <t< td=""><td>Sep '08</td><td>8.847</td><td>8.439</td><td>7.817</td></t<>	Sep '08	8.847	8.439	7.817
Dec '08         10.007         9.489         8.830           Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.584         7.082           Aug '09         8.392         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           Jun '10         7.952         6.944         6.453           Jun '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553 <t< td=""><td></td><td></td><td></td><td></td></t<>				
Jan '09         10.447         9.904         9.217           Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.952         6.944         6.483           Jun '10         7.952         6.944         6.453           Jun '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553 <tr< td=""><td></td><td></td><td></td><td></td></tr<>				
Feb '09         10.437         9.859         9.147           Mar '09         10.227         9.564         8.847           Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.907         6.899         6.453           Jun '10         8.002         6.944         6.483           Jul '10         8.002         6.944         6.553           Sep '10         8.047         7.044         6.553				
Mar '09         10.227         9.564         8.847           Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.584         7.032           Jul '09         8.342         7.634         7.122           Oct '09         8.402         7.634         7.122           Oct '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.633           Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533				
Apr '09         8.427         7.734         7.197           May '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.584         7.082           Aug '09         8.392         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.987         8.069         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.633           Jun '10         7.952         6.944         6.453           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.649         7.604         7.73				
May '09         8.227         7.499         6.982           Jun '09         8.287         7.539         7.032           Jul '09         8.342         7.584         7.082           Aug '09         8.392         7.629         7.132           Sep '09         8.402         7.634         7.153           Oct '09         8.447         7.684         7.153           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.633           Jun '10         7.952         6.944         6.453           Jul '10         8.002         6.994         6.518           Aug '10         7.952         6.944         6.553           Sep '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.056         584           Nov '10         8.649         7.604         7.073				
Jul '09         8.342         7.584         7.082           Aug '09         8.392         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.907         6.899         6.453           Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449         Mar '11         9.399<				
Aug '09         8.392         7.629         7.132           Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.133           Apr '10         8.087         7.109         6.663           May '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449         Mar '11           Mar '11         9.399         8.159           Apr '11 <td></td> <td>8.287</td> <td>7.539</td> <td>7.032</td>		8.287	7.539	7.032
Sep '09         8.402         7.634         7.122           Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.907         6.899         6.453           Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.763           Jan '11         9.609         8.499         Mar '11         9.399           Jan '11         9.609         8.449         Mar '11         9.399         8.159           Apr '11         7.749         6.759         May '11         7.639         6.654				
Oct '09         8.447         7.684         7.158           Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.907         6.899         6.453           Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Jan '11         9.609         8.449           Mar '11         9.399         8.159           Apr '11         7.749         6.759           May '11         7.559         6.584           Jun '11         7.639         6.654	0			
Nov '09         9.007         8.189         7.653           Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.952         6.944         6.453           Jun '10         7.952         6.944         6.453           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449           Mar '11         9.399         8.159           Apr '11         7.749         6.759           May '11         7.559         6.584           Jun '11         7.639         6.654	•			
Dec '09         9.557         8.694         8.143           Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.907         6.899         6.453           Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449         Mar '11         9.399         8.159           Apr '11         7.749         6.759         May '11         7.559         6.584           Jun '11         7.639         6.654         Jun '11         7.639         6.654				
Jan '10         9.997         9.109         8.538           Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.952         6.944         6.453           Jun '10         7.952         6.944         6.453           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449         Mar '11           Mar '11         9.399         8.159         Apr '11         7.749         6.759           May '11         7.559         6.584         Jun '11         7.639         6.654           Jun '11         7.639         6.654         Aug '11         7.679         6.689				
Feb '10         9.997         9.059         8.448           Mar '10         9.787         8.769         8.138           Apr '10         8.087         7.109         6.663           May '10         7.952         6.944         6.453           Jun '10         7.952         6.944         6.453           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449            Mar '11         9.399         8.159            Apr '11         7.749         6.759            May '11         7.559         6.584            Jun '11         7.639         6.654            Aug '11         7.679         6.689				
Apr '10         8.087         7.109         6.663           May '10         7.907         6.899         6.453           Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.573           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449         Mar '11           Mar '11         9.399         8.159         Apr '11           Apr '11         7.559         6.584         Jun '11           Jun '11         7.639         6.654         Jun '11           Aug '11         7.639         6.654         Aug '11         7.679				
May '10         7.907         6.899         6.453           Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.509         7.664           Feb '11         9.609         8.449         Mar '11           Mar '11         9.399         8.159         Apr '11           Apr '11         7.559         6.584         Jun '11           Jun '11         7.639         6.654         Aug '11           Aug '11         7.679         6.689		9.787	8.769	8.138
Jun '10         7.952         6.944         6.483           Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.449           Mar '11         9.399         8.159           Apr '11         7.749         6.759           May '11         7.559         6.584           Jun '11         7.639         6.654           Aug '11         7.679         6.654		8.087	7.109	6.663
Jul '10         8.002         6.994         6.518           Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.509         8.159           Feb '11         9.399         8.159         4.449           Mar '11         9.399         8.159         4.49           Jun '11         7.559         6.584         1.11           Jun '11         7.639         6.619         1.11           Jul '11         7.639         6.654         4.49	-			
Aug '10         8.047         7.044         6.553           Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.509           Feb '11         9.609         8.449           Mar '11         9.399         8.159           Apr '11         7.749         6.759           May '11         7.559         6.584           Jun '11         7.639         6.654           Aug '11         7.679         6.689				
Sep '10         8.044         7.039         6.533           Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.509         7.604           Feb '11         9.609         8.449         8.159           Apr '11         7.749         6.759         6.84           Jun '11         7.559         6.684         Jun '11           Jul '11         7.639         6.654         4.19           Aug '11         7.679         6.689         5.584				
Oct '10         8.094         7.094         6.578           Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.509         8.109           Feb '11         9.609         8.449         8.159           Apr '11         7.749         6.759         6.759           May '11         7.559         6.584         Jun '11           Jul '11         7.639         6.654         4.19           Aug '11         7.679         6.689         1.11	-			
Nov '10         8.649         7.604         7.073           Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.509           Feb '11         9.609         8.449           Mar '11         9.399         8.159           Apr '11         7.749         6.759           May '11         7.559         6.584           Jun '11         7.639         6.619           Jul '11         7.639         6.654           Aug '11         7.679         6.689				
Dec '10         9.189         8.109         7.563           Jan '11         9.609         8.509         8.609           Feb '11         9.609         8.449         9.8159           Mar '11         9.399         8.159         9.6759           Apr '11         7.749         6.759         6.619           Jun '11         7.639         6.654         6.654           Aug '11         7.679         6.689         10.6689				
Feb '11         9.609         8.449           Mar '11         9.399         8.159           Apr '11         7.749         6.759           May '11         7.559         6.584           Jun '11         7.639         6.619           Jul '11         7.639         6.654           Aug '11         7.679         6.689	Dec '10		8.109	
Mar '119.3998.159Apr '117.7496.759May '117.5596.584Jun '117.5996.619Jul '117.6396.654Aug '117.6796.689	Jan '11	9.609	8.509	
Apr '117.7496.759May '117.5596.584Jun '117.5996.619Jul '117.6396.654Aug '117.6796.689				
May '117.5596.584Jun '117.5996.619Jul '117.6396.654Aug '117.6796.689				
Jun '117.5996.619Jul '117.6396.654Aug '117.6796.689	Apr 11			
Jul '11 7.639 6.654 Aug '11 7.679 6.689				
Aug '11 7.679 6.689				
Sep '11 7.676 6.684				
Oct '11 7.721 6.729				
Nov '11 8.221 7.229			7.229	
Dec '11 8.716 7.724	Dec '11	8.716	7.724	

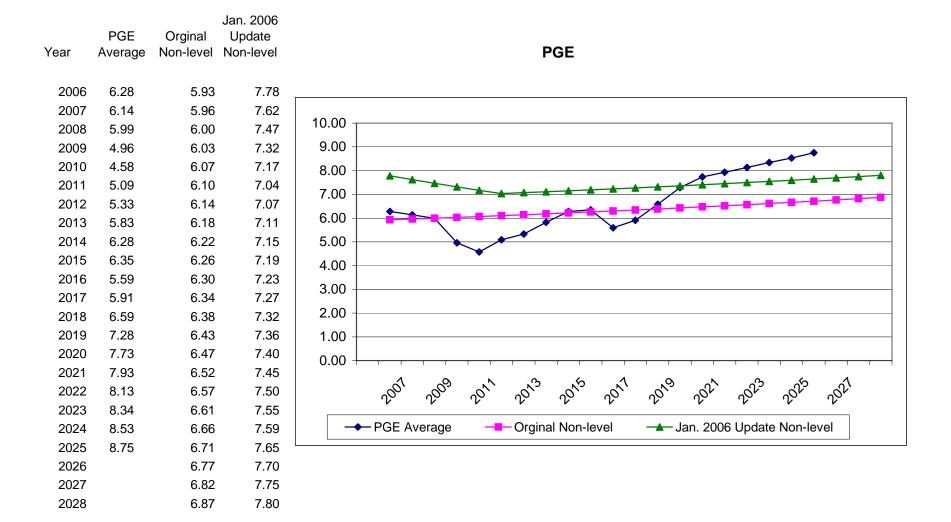




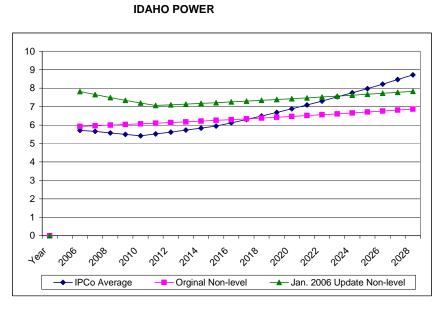
## NYMEX Natural Gas Futures through Dec. 2011, Dec. 18, 2006 (Henry Hub)

			0.69	0.94	0.78	
					Annual	Annual
			Annual	Annual	Average	Average
		Annual	Average	Average	AECO	AECO &
		Average	Sumas	Opal	Hub	Sumas
2	2006	9.67	8.98	8.73	8.89	8.93
2	2007	9.97	9.28	9.03	9.19	9.24
2	2008	9.48	8.79	8.54	8.70	8.75
2	2009	9.02	8.33	8.08	8.24	8.28
2	2010	8.65	7.96	7.71	7.87	7.91
2	2011	8.26	7.57	7.32	7.48	7.53





Year	IPCo Average	Orginal Non-level	Jan. 2006 Update Non-level
2006	5.71	5.93	7.82
2007	5.66	5.96	7.65
2008	5.57	5.99	7.50
2009	5.49	6.03	7.34
2010	5.41	6.06	7.20
2011	5.52	6.10	7.06
2012	5.62	6.14	7.10
2013	5.73	6.18	7.14
2014	5.83	6.22	7.18
2015	5.94	6.25	7.22
2016	6.12	6.30	7.26
2017	6.30	6.34	7.30
2018	6.50	6.38	7.34
2019	6.69	6.42	7.39
2020	6.89	6.47	7.43
2021	7.09	6.51	7.48
2022	7.30	6.56	7.52
2023	7.53	6.61	7.57
2024	7.76	6.66	7.62
2025	7.98	6.71	7.67
2026	8.22	6.76	7.72
2027	8.47	6.81	7.78
2028	8.72	6.87	7.83



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## IN THE MATTER OF PUBLIC UTILITY COMMISSION OF OREGON STAFF'S INVESTIGATION RELATING TO ELECTRIC UTILITY PURCHASES FROM QUALIFYING FACILITIES

CASE NO. UM 1129

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6	<b>REBUTTAL TESTIMONY</b>
7	PHASE 1
8	
9	Paul Woodin
10	
11	on behalf of
12	
13	Sherman County Court and
14	the J.R. Simplot Company
15	
16	
17	January 20, 2005
18	
19	

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1

2 3	Q,	Please state your name and occupation.	
4	A.	My name is Paul Woodin and I am employed by Sherman County as a consultant on	
5	comr	nunity renewable energy. A copy of my bio was previously filed with my direct testimony	
6	as Sl	herman/Simplot Exhibit No. 103.	
7	Q.	What is the purpose of your rebuttal testimony?	
8	A.	I will respond to the portions of the direct testimony of the other parties	
9	as the	ey relate to contract terms and conditions. Dr. Reading will address issues related to natural	
10	gas p	rice forecasts and the appropriate avoided cost rates.	
11	Q.	How is your testimony organized?	
12	А.	I will address issues as they appear in the testimony of the other parties.	
13	Q.	Do you have any overriding concerns you would like to bring to the attention of the	
14	Com	mission?	
15	А.	Yes.	
16	Q.	Please proceed.	
17	А.	Frankly, we want to underscore the fact that unless we have contract terms that a	
18	developer can, quite literally, 'take to the bank,' Oregon will not enjoy a robust QF industry. My		
19	rebut	tal testimony should be read in that light. We are not attempting to overreach, we are	
20	simp	ly attempting to help this Commission implement the Federal policy of encouraging the	
21	devel	lopment of a QF industry. This is not the time for timidity. For example,	

Woodin, Reb 2 UM 1129 Sherman County Despite recent near record rainfall in the Pacific Northwest, Mid-C prices have not moved down
 nearly as much as one would have expected. It is critical to the economic and environmental
 health of our region to develop our renewable and combined heat and power resource potential
 now, before it is too late.

5 Q.

## **Do you have any response to Staff's testimony in this matter?**

A. Yes. I would like to first address Staff's comments on the creditworthiness issue. Staff
witness Schwartz takes a very broad reading of the Commission's order on creditworthiness. At
page 7, beginning on line 15, Ms. Schwartz states that, "the use of the term 'including' in the
quotation above allows the utilities to require additional documentation to establish that the QF
has good credit..." She is citing the Commission Order No. 05-584 in which the Commission
declared at page 45 that:

12QFs should be required to establish creditworthiness by making a set of13representations and warranties that the QF has good credit, including that14it is current on existing debt obligations and has not been a debtor in a15bankruptcy proceeding within the preceding two years.

According to Ms. Schwartz, the use of the word "including" gives the utilities carte blanche to demand any indicia of creditworthiness as long as that demand is "reasonable." Unfortunately "reasonable" is in the eye of the beholder. As noted by Idaho Power, and observed by Ms. Schwartz, most QF developers form new single purpose legal entities to facilitate project financing. It is not possible to require more from such an entity. But more to the point, allowing the utilities flexibility in devising their own creditworthy standards outside of the scope of this

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1 proceeding seems to defeat the very purpose of having this proceeding. QF developers need to 2 know, up front, what will be required of them and the utilities need guidance from the 3 Commission as to what they are allowed to require of QF developers. 4 I would like to point out that once a lender or investor has been satisfied as to the 5 creditworthiness of the developer the utility should also be satisfied. This is because the lender 6 and/or investor assumes almost all of the risk of a QF's default. This is especially true when the 7 utility claims to be in a surplus period. For the utility to place more stringent creditworthiness 8 criteria than the lender and or investor do is inappropriate. They don't carry the risk that the 9 lender or investor do. 10 Do you have any comments on Staff's acceptance of PGE's contract provision that **Q**. 11 requires default security in the event a QF is not current on its obligations to third parties? 12 A. Yes. Not being current on an obligation to a third party may or may not be an indication 13 of lack of creditworthiness. It may also be an indication of prudent business practices in the 14 event the obligation to the third party is under dispute. If it is an indication of credit problems, 15 then placing additional financial obligations on the QF does not seem like a rational response 16 since the primary source of income for most QF LLCs are sales of QF power to the utility. It is 17 not reasonable to allow the utilities to impose additional security requirements unless the QF is 18 not current on its obligations to the utility. 19 What is your response to Staff's acquiescence to PafifiCorp's creditworthiness 0.

20 requirements?

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1	A. I do not understand how Staff can accept, as reasonable, Pacif	iCorp's requirement that				
2	QFs larger than 3 MW must meet stricter creditworthiness requirements than the two					
3	representations required in Order No. 05-584. The Commission's ord	ler, on Page 45, clearly				
4	states that creditworthiness may be established by making the two rep	presentations that the QF is				
5	current on its financial obligations and has not recently been bankrup	t. But that is not my only				
6	concern.					
7	Q. What are your other concerns?					
8	A. Staff concludes its discussion of PacifiCorp's creditworthines	s requirements with the				
9	following statement:					
10	The utilities must be able to use other documer	ntation and methods to				
11	determine a QFs creditworthiness if they find the	hat the minimum warranties				
12	and representations are insufficient and if the Q	and representations are insufficient and if the QF does not have a long-				
13	term rating by a major credit rating agency.					
14	Staff/1 1000/10 (Schwartz) Emphasis provided.					
15	Staff seems content to let the utilities make creditworthiness determinations with virtually no					
16	sideboards and completely outside of the guidance provided by the Commission. For example,					
17	what standards will the utilities use to "find that the minimum warranties and representations are					
18	insufficient"? Remember we are not talking about an every day commercial transaction between					
19	a wholesale electric trader and the utility. QFs enjoy a special status conferred upon them by					
20	Federal law. QFs are not supposed to be treated like a typical counterparty in an everyday					
21	commercial transaction. Let us not lose focus of the fact that we are i	mplementing a Federal law				
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1	that mandates the State PUCs to implement PURPA such a way as to ENCOURAGE the	
2	devel	opment of QF projects.
3	Q.	What is your response to Staff's position on Issue No. 5 a.i. relative to Idaho Power's
4	secur	ity requirements?
5	А.	Idaho Power's contract uses the phrase "at a minimum" when referring to the type of
6	docur	nentation it will require from a potential QF to demonstrate creditworthiness. The language
7	in question is found at Section 4.1.6 of the Idaho Power contract:	
8		Provide Idaho Power with commercially reasonable representations and
9		warranties and other documentation to determine the Seller's creditworthiness.
10		Such documentation would include, at a minimum, that the Seller is current on
11		existing debt obligations and has not been a debtor in a bankruptcy preceding (sic)
12		within the preceding two years.
13		My reading of the Commission's order at page 45 is quite the opposite. The
14	repres	sentations are the maximum that a utility may demand of a potential QF. If the
15	Comr	nission felt that these representations were the minimal requirement they would have said
16	so.	
17	Q.	What is your response to Staff's position on default security?
18	A.	We were surprised that Staff acquiesced to the utilities once again. The Commission
19	Order addresses default security at page 45:	

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1 Although default security provided for in the form of a letter of credit or 2 escrow deposit provides immediate recovery of costs incurred due to a 3 QF's default, we are persuaded that terms providing for future recovery 4 over the course of a long term contract are reasonable. Consequently we 5 adopt Staff's recommendation that standard contracts include a clause 6 providing that, in the event that a QF defaults and the market prices to 7 replace the contracted for energy exceed the contract price, future 8 payments after the default period ends shall be commensurately reduced 9 over a reasonable period of time to recoup the costs incurred by the 10 utilities.

As I read the Commission's Order, default security is limited to recoupment of costs incurred by the utilities from future payments to the QF over a reasonable period of time. The Commission did not provide for the posting of a letter of credit or cash escrow by QFs that are creditworthy. In fact, it appears from the above passage that the Commission actively considered and rejected such devices which is evidenced by the first half of the first sentence in the above passage. We also believe such a requirement is unnecessary.

17

## Q. What security should a Creditworthy QF be required to provide?

A. As noted in my direct testimony, a creditworthy QF should only be required to provide the following security measures; (1) adequate insurance; (2) O & M certification by an engineer; (3) construction certification by an engineer; and (4) motive force secured for the life

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of the contract. If a creditworthy QF can provide these four security measures, it should not also
 be required to provide any financial security.

3

## What concerns do you have relative to Staff's position on default security?

A. We agree that a non-creditworthy QF should be subject to reasonable default security
provisions discussed in Staff's testimony. However, we are very concerned that it appears that
the Staff would leave the definition of the term "creditworthiness" to the utilities. This is
unacceptable because it is unknown what the utilities may or may not require.

8

## Q. Do you have any comments on Staff's position on minimum delivery

## 9 commitments?

Q.

A. Yes, we agree with Staff that the annual minimum delivery commitments are a
reasonable approach to this issue.

12

## Q. What is your position on the delay default issue?

A. Staff's position on this issue is reasonable. That is, if the utility is resource surplus, then a QF's delay in coming on-line should not be an event of default and no penalties should be imposed. But this issue implicates another, more important question, and at the same time exposes a major inconsistency in the way rates are set.

17 **Q.** 

## Please explain.

18 **A.** PGE and PacifiCorp claim to be surplus for purposes of setting rates. If that is true,

19 then failure of a QF to come on line is, by definition, not an event of default, because the utility

20 doesn't need new sources of power during surplus periods. Yet the utilities are attempting to

Woodin, Reb 8 UM 1129 Sherman County impose penalties against QFs for a delay in meeting contracted for on-line dates during times of surplus. That is inconsistent. In my direct testimony I talked at length about the need to eliminate resource surplus calculations when setting rates. Here the utilities are playing a head-I-win and a tails-you-lose game. They claim to be resource sufficient when setting rates while at the same time claim to be harmed when a QF doesn't come on line during the surplus period. We would be willing to accept some delay penalties <u>if</u> the rates were set without a surplus period included in the rates.

8

**O**.

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#### Do you have any comments on Staff's opportunity to cure position?

9 A. Yes. Staff finds that PacifiCorp's and Idaho Power's opportunity to cure provisions 10 are both reasonable. Yet those two opportunity-to-cure provisions are completely inconsistent 11 with each other. It is difficult to believe that two such disparate approaches can both be 12 reasonable at the same time.

13

#### Please explain.

A. Idaho Power's approach allows the QF to cure over a commercially reasonable time. PacifiCorp gives the QF 120 days to cure - irrespective of whether 120 days is reasonable. If a defaulting QF needed 121 days to cure its default, it would be terminated according to PacifiCorp's contract. On the other hand if a QF only needed, say, 7 days to cure but was negligent and waited until day 100 to cure, under Idaho Power's contract that QF could be terminated. The Idaho Power approach simply makes sense, while PacifiCorp's hard and fast deadline has nothing whatsoever to do with what is actually happening on the ground. We urge

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the Commission to reject PacifiCorp's hard-wired deadline approach to cure and adopt Idaho
 Power's more thoughtful and reasoned approach for all three utilities.

3

0.

## Do you have any comments on Staff's position on default for under deliveries?

A. Yes, Staff believes that a QF that under-delivers during time of surplus should be penalized. Yet they do not believe that a QF's failure to meet its on-line date during a time of surplus is an event of default. This is inconsistent. If non-deliveries during surplus periods are not an event of default, then under-deliveries during times of surplus should likewise not be an event of default. We believe that under-deliveries during times of surplus do not harm the utility and hence QFs should not be penalized for such under-deliveries. This concept should also apply to the measurement of damages in the event of default.

# Q. Isn't it true that once a QF is on line that a utility may reasonably plan for that QF's output and hence it is damaged by under-deliveries?

A. That may or may not be true. However, this issue also highlights the inconsistency of setting avoided cost rates using a surplus period to discount those rates, because the utility ostensibly doesn't need power, while at the same time asserting the utility needs the QF's power and is damaged by the QF's under-delivery during time of surplus. I believe this issue should be analyized using the same logic I applied to the inconsistency of setting rates using a surplus period while at the same time asserting that the utility is damaged by a QF's missing its contracted for on-line date during times of surplus.

- 20
- Q. Is there a solution to this quandary?

Woodin, Reb 10 UM 1129 Sherman County 1 A. Yes. The Commission should not use surplus periods to reduce the published avoided 2 cost rates for any utility that is planning on acquisition of new resources. By that standard all the 3 surplus period should be removed from the avoided cost calculation for all three utilities.

4

## **R.** Do you have any comments on Staff's position on Force Majeure?

A. Yes, Staff's opposition to including lack of wind or water as events of force majeure simply puts form over substance. Staff's MAG discussion makes it clear that they do not believe that the lack of wind or water should be used to penalize the QF. Making the lack of wind or water an event of force majeure is a simple way of fixing the problem. We urge the Commission to so define force majeure so that all parties are clear on this point.

10 Staff accepts the utilities' assertion that "force majeure events are <u>limited to those that</u> 11 neither party could have anticipated." Staff/1 1000/55 – emphasis provided. However, that is 12 simply not true. For example, look at Idaho Power's force majeure clause:

13 "Force Majeure" or an "event of Force Majeure" means any cause beyond the 14 control of the Seller or of Idaho Power which, despite the exercise of due 15 diligence, such party is unable to prevent or overcome. Force Majeure includes, 16 but is not limited to, acts of God, fire, flood, storms, wars, hostilities, civil strife, 17 strikes and other labor disturbances, earthquakes, fires, lightning, epidemics, 18 sabotage, or changes in law or regulation occurring after the Operation Date, 19 which, by the exercise of reasonable foresight could not reasonably have been 20 expected to avoid and by the exercise of due diligence, is shall be unable to 21 overcome.

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1	If an event of force majeure were "limited" to events that "neither party could have anticipated"		
2	then none of the events listed above (flood, fire, storms, lightning, etc.) could be an event of		
3	force majeure. I think we can all agree such a result would be absurd. Also contrary to Staff's		
4	assertion, events such as floods, storms, and lightning can be modeled and are, in fact,		
5	anticipated. But because they are "beyond the control" of either party they constitute an event of		
6	force majeure. If a flood (too much water) constitutes an event of force majeur, then certainly a		
7	drought (too little water) also constitutes an event of force majeure. Both can be anticipated,		
8	both can be modeled, and both are beyond the control of the parties. Similarly, if a storm (too		
9	much wind) is an event of force majeure then a wind drought (too little wind) should also be an		
10	event of force majeure. Both can be anticipated, both can be modeled and, most importantly,		
11	both are beyond the control of either party.		
12	Q. Do you have any comments on Staff's position on third-party wheeling		
13	provisions?		
14	A. Yes. I believe the Staff understands the issue with QFs who wheel their power over		
15	third party systems. In Oregon, this situation will likely take place most often when a QF uses		
16	the Bonneville Power Administration's system to wheel to PacifiCorp or to PGE. Staff correctly		
17	notes that the wheeling utility only schedules in whole megawatt increments such that a 4.5 MW		
18	QF will schedule 5 MW for half the time and 4 MW for half the time and at the end of the day		
19	will have delivered 4.5 MW and no more. Staff described the 1/2 MW delivered over and above		

Woodin, Reb 12 UM 1129 Sherman County the 4.5 produced as "excess energy". Staff/1 1000/68. Staff recommended that the utilities"
 accept and pay full avoided cost rates for such excess energy.

3 While the "excess" power delivered is technically "excess," it is actually an ancillary 4 service the QF purchases from the wheeling utility. It, along with the under deliveries, are 5 purchased from the wheeling utility and then trued-up at the end of the month such that the QF 6 never carries a positive or negative balance with the wheeling utility for more than one month. 7 Our experience is that when BPA wheels for a QF it balances the deliveries on a monthly basis. 8 Also I should point out that all of interconnection issues between the QF and the wheeling utility 9 are controlled by the wheeling utility's open access transmission tariff. So none of the metering 10 and other interconnection issues being addressed in this docket would apply to a QF that wheels 11 on a third party's transmission system.

12 Q. Does this conclude your testimony?

13 **A.** Yes.

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