Exhibit No. VN-3
Dockets UE-090704 and UG-090705
Witness: Vanda Novak

**BEFORE THE WASHINGTON STATE
UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**DOCKET UE-090704** **DOCKET UG-090705**

EXHIBIT TO TESTIMONY OF

VANDA NOVAK

**STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION**

Company Response to Staff Data Request No. 187

November 17, 2009

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Docket Nos. UE-090704 and UG-090705
Puget Sound Energy, Inc.'s
2009 General Rate Case

WUTC STAFF DATA REQUEST NO. 187

WUTC STAFF DATA REQUEST NO. 187:

Re: Weather Normalization

On page 12, lines 8-11 of Ms. Molander's direct testimony, Exhibit (LIM-1T), she states that dummy variables used in the 2006 weather normalization model were changed to gas load curtailment values, which "improve[ed] the specification of the remaining weather-specific portion of load for days on which gas was curtailed." Please provide the analysis supporting that conclusion and a written narrative describing the analysis.

Response:

Attached as Attachment A to Puget Sound Energy, Inc.'s ("PSE") Response to WUTC Staff Data Request No. 187, please find an MS Excel file that contains regression results and statistics supporting the modification of the curtailment dummy variable in the transportation and interruptible gas system model equations. Both regressions were run using the updated loads and temperatures for this proceeding, but the curtailment variables are specified differently to examine the difference in effects to the model.

In the weather normalization methodology approved in PSE's 2006 general rate case ("GRC"), WUTC Docket Nos. UE-060266 and UG-060267, dummy variables were used to remove the impact of curtailment from the gas interruptible and transportation weather adjustment models.

For this proceeding, the dummy variables were replaced by the actual gas load curtailment value, allowing for the model to account for the portion of load affected by curtailment and improving the weather-specific portion of load for days on which gas was curtailed. By using the actual curtailment value, the model is more informed about what the loads would have been if they had not been curtailed and the relationship to temperature on curtailment days, which typically take place during extreme weather. PSE believes this minor enhancement slightly improves the coefficients on weather but does not change the overall theory and methodology of the system model that was approved in the 2006 GRC.

By using the curtailed load as a variable, the remaining load on curtailed days contributes to building the model coefficients and allows the model to account for curtailment impact on every day for which there was a curtailment. Support for the use of the curtailment value variable versus curtailment day dummy variables rests on the following set of statistical assumptions: 1) the coefficient on curtailment is statistically significant, and 2) overall, the coefficients on weather become better specified.

In Attachment A to PSE's Response to WUTC Staff Data Request No. 187, the tab "Gas Int UPC Equations" is a comparison of the revised methodology to the methodology used in the 2006 GRC for the interruptible model. For the revised methodology model, the coefficients on the curtailment value variable are significant at the 5% level. In addition, the majority of the coefficients on the weather variables (i.e. the model HDD variables) are greater in the revised methodology reflecting a stronger estimated relationship between load and weather.

The "Std. Error" column reports the estimated standard errors of the coefficient estimates. The standard errors measure the statistical reliability of the coefficient estimates—the larger the standard errors, the more statistical noise in the estimates. Adding the standard errors of the revised methodology weather variables (i.e. HDD variables) gives a summed standard error of 10.786. For the 2006 GRC methodology, the summed standard error of the weather variables is 10.873, implying that the revised methodology has improved the specification of the weather coefficients.

Similar results can be found in the gas transportation adjustment models on the "Gas Trans UPC Equations" tab of Attachment A to PSE's Response to WUTC Staff Data Request No. 187. Additionally, adjusted R-Squared, a commonly referenced statistic used to measure how well the regression model has done at predicting values of the dependent variables with the provided exogenous variables, is higher in the revised methodology versus the 2006 model, for both the interruptible and transportation equations.

ATTACHMENT A to PSE's Response to WUTC Staff Data Request No. 187

Gas Interruptible Load (Use-per-Customer) Equation

Revised Methodology (Using Curtailed Load)
Dependent Variable: Gas Interruptible Use-Per-Customer
Method: Least Squares
Date: 10/19/09 Time: 18:33
Sample: 1/01/2004 10/31/2008
Included observations: 1766
Convergence achieved after 84 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-49847.11	2752.529	-18.110	0.000
JAN	36.893	32.913	1.121	0.263
FEB	32.328	37.768	0.856	0.392
MAR	-51.343	33.333	-1.540	0.124
APR	-23.375	30.168	-0.775	0.439
MAY	-14.911	28.311	-0.527	0.599
JUN	-28.023	27.677	-1.012	0.311
JUL	-7.997	26.864	-0.298	0.766
AUG	-9.795	26.877	-0.364	0.716
SEP	-9.890	27.944	-0.354	0.723
OCT	-35.961	30.345	-1.185	0.236
NOV	-47.331	35.333	-1.340	0.181
JANHDD	11.439	0.844	13.545	0.000
FEBHDD	11.780	1.222	9.642	0.000
MARHDD	15.214	1.059	14.370	0.000
APRHDD	13.756	0.902	15.251	0.000
MAYHDD	11.502	0.993	11.588	0.000
JUNHDD	12.215	1.196	10.210	0.000
SEPHDD	10.206	1.317	7.752	0.000
OCTHDD	14.391	1.092	13.181	0.000
NOVHDD	15.143	1.100	13.772	0.000
DECHDD	13.252	1.063	12.472	0.000
WE	-76.537	3.023	-25.314	0.000
HOL	-66.549	7.668	-8.679	0.000
TRENDM	24.969	1.372	18.194	0.000
CURTAIL	-0.007	0.000	-18.767	0.000
AR(1)	0.423	0.027	15.623	0.000

R-squared	0.9096	Mean dependent v	379.3625
Adjusted R-squ	0.9082	S.D. dependent var	149.0955
S.E. of regressi	45.1717	Akaike info criterion	10.4740
Sum squared r	3548406	Schwarz criterion	10.5577
Log likelihood	-9221.534	Hannan-Quinn crite	10.5049
F-statistic	672.6640	Durbin-Watson stat	1.8299
Prob(F-statistic)	0.0000		
Inverted AR Ro	0.420		

2006 GRC Methodology
Dependent Variable: Gas Interruptible Use-Per-Customer
Method: Least Squares
Date: 10/19/09 Time: 18:33
Sample: 1/01/2004 10/31/2008
Included observations: 1766
Convergence achieved after 86 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-50070.340	2783.273	-17.990	0.000
JAN	47.040	33.295	1.413	0.158
FEB	47.758	38.051	1.255	0.210
MAR	-51.998	33.597	-1.548	0.122
APR	-24.447	30.415	-0.804	0.422
MAY	-16.126	28.548	-0.565	0.572
JUN	-29.238	27.910	-1.048	0.295
JUL	-9.250	27.093	-0.341	0.733
AUG	-11.015	27.105	-0.406	0.685
SEP	-11.141	28.180	-0.395	0.693
OCT	-37.077	30.591	-1.212	0.226
NOV	-10.734	35.580	-0.302	0.763
JANHDD	10.843	0.861	12.593	0.000
FEBHDD	10.932	1.228	8.904	0.000
MARHDD	15.182	1.067	14.232	0.000
APRHDD	13.747	0.909	15.129	0.000
MAYHDD	11.501	1.000	11.503	0.000
JUNHDD	12.216	1.206	10.130	0.000
SEPHDD	10.200	1.327	7.685	0.000
OCTHDD	14.383	1.100	13.079	0.000
NOVHDD	13.241	1.104	11.990	0.000
DECHDD	13.174	1.072	12.295	0.000
WE	-76.208	3.044	-25.037	0.000
HOL	-65.579	7.710	-8.506	0.000
TRENDM	25.081	1.388	18.074	0.000
D010404	-363.555	47.195	-7.703	0.000
D010504	-637.819	50.764	-12.564	0.000
D010604	-369.256	46.737	-7.901	0.000
D010405	-566.208	45.110	-12.552	0.000
D010505	-331.837	45.276	-7.329	0.000
AR(1)	0.425	0.027	15.590	0.000

R-squared	0.908625	Mean dependent v	379.3625
Adjusted	0.907045	S.D. dependent var	149.0955
S.E. of reg	45.45696	Akaike info criterion	10.48881
Sum squa	3585091	Schwarz criterion	10.58494
Log likelih	-9230.616	Hannan-Quinn crite	10.52433
F-statistic	575.0911	Durbin-Watson stat	1.823994
Prob(F-sta	0		
Inverted A	0.43		

Equation Variables Key
JAN, FEB, ... , NOV = Monthly Dummy Variables
JAN*HDD, FEB*HDD, ... , DEC*HDD = Monthly Heating degree Days with a 65 F cut point
WE = Weekend Dummy Variable
HOL = Holiday Dummy Variable
TRENDM = Linear Trend Variable
D(MM)(DD)(YY) = Daily Dummy Variable where (MM) is month, (DD) is day, and (YY) is year
Curtail = Curtailed Load

Gas Transportation Load (Use-per-Customer) Equation

Revised Methodology (Using Curtailed Load)
Dependent Variable: Gas Transportation Use-Per-Customer
Method: Least Squares
Date: 10/19/09 Time: 18:15
Sample: 1/01/2004 10/31/2008
Included observations: 1766
Convergence achieved after 9 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-166376.600	27784.690	-5.988	0.000
JAN	292.284	235.765	1.240	0.215
FEB	699.409	263.564	2.654	0.008
MAR	485.198	235.300	2.062	0.039
APR	357.712	216.491	1.652	0.099
MAY	302.641	204.169	1.482	0.138
JUN	497.378	195.993	2.538	0.011
JUL	276.541	195.866	1.412	0.158
AUG	337.254	195.881	1.722	0.085
SEP	298.364	203.528	1.466	0.143
OCT	308.481	217.317	1.419	0.156
NOV	210.604	255.255	0.825	0.409
JANHDD	54.474	6.084	8.954	0.000
FEBHDD	37.231	8.039	4.631	0.000
MARHDD	46.690	6.837	6.829	0.000
APRHDD	45.990	5.894	7.803	0.000
MAYHDD	34.747	6.472	5.369	0.000
SEPHDD	27.285	9.321	2.927	0.004
OCTHDD	40.622	7.089	5.730	0.000
NOVHDD	44.270	7.617	5.812	0.000
DECHDD	49.349	7.293	6.767	0.000
WE	-663.475	14.748	-44.989	0.000
HOL	-832.502	44.673	-18.635	0.000
TRENDM	84.772	13.851	6.120	0.000
CURTAIL	-0.043	0.002	-19.045	0.000
AR(1)	0.649	0.019	34.601	0.000

R-squared	0.852158	Mean dependent va	4383.153
Adjusted R-squa	0.850034	S.D. dependent var	722.6588
S.E. of regressio	279.8526	Akaike info criterion	14.12102
Sum squared re	1.36E+08	Schwarz criterion	14.20164
Log likelihood	-12442.86	Hannan-Quinn criter	14.15081
F-statistic	401.1743	Durbin-Watson stat	2.036899
Prob(F-statistic)	0		
Inverted AR Roo	0.65		

2006 GRC Methodology
Dependent Variable: Gas Transportation Use-Per-Customer
Method: Least Squares
Date: 10/19/09 Time: 18:14
Sample: 1/01/2004 10/31/2008
Included observations: 1766
Convergence achieved after 8 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-167474.800	28117.950	-5.956	0.000
JAN	331.620	238.660	1.390	0.165
FEB	769.782	265.680	2.897	0.004
MAR	481.381	237.264	2.029	0.043
APR	351.485	218.327	1.610	0.108
MAY	296.698	205.920	1.441	0.150
JUN	491.643	197.693	2.487	0.013
JUL	270.584	197.568	1.370	0.171
AUG	331.102	197.579	1.676	0.094
SEP	292.163	205.289	1.423	0.155
OCT	301.951	219.164	1.378	0.169
NOV	471.579	257.164	1.834	0.067
JANHDD	51.848	6.206	8.354	0.000
FEBHDD	33.184	8.097	4.099	0.000
MARHDD	46.496	6.888	6.750	0.000
APRHDD	45.959	5.939	7.739	0.000
MAYHDD	34.716	6.521	5.324	0.000
SEPHDD	27.244	9.397	2.899	0.004
OCTHDD	40.778	7.143	5.708	0.000
NOVHDD	31.135	7.645	4.073	0.000
DECHDD	48.604	7.350	6.613	0.000
WE	-662.251	14.857	-44.575	0.000
HOL	-829.832	44.972	-18.452	0.000
TRENDM	85.322	14.017	6.087	0.000
D010404	-2141.910	282.080	-7.593	0.000
D010504	-4009.082	317.363	-12.632	0.000
D010604	-2828.682	281.488	-10.049	0.000
D010405	-3302.221	266.289	-12.401	0.000
D010505	-2341.856	267.245	-8.763	0.000
AR(1)	0.651	0.019	34.669	0.000

R-squared	0.850272	Mean dependent va	4383.153
Adjusted R	0.847771	S.D. dependent var	722.6588
S.E. of reg	281.9564	Akaike info criterion	14.13822
Sum squar	1.38E+08	Schwarz criterion	14.23126
Log likelih	-12454.05	Hannan-Quinn criter	14.1726
F-statistic	339.9441	Durbin-Watson stat	2.041633
Prob(F-sta	0		
Inverted A	0.65		

Equation Variables Key
JAN, FEB, ... , NOV = Monthly Dummy Variables
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WE = Weekend Dummy Variable
HOL = Holiday Dummy Variable
TRENDM = Linear Trend Variable
D(MM)(DD)(YY) = Daily Dummy Variable where (MM) is month, (DD) is day, and (YY) is year
CURTAIL = Curtailed Load