Exhibit No. ___(GND-4)
Docket No. UE-03_____
2003 PP&L Rate Case
Witness: Gregory N. Duvall

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, vs. PACIFICORP dba Pacific Power & Light Company, Respondent.	Docket No. UE-03_____

PACIFICORP

EXHIBIT OF GREGORY N. DUVALL

Risk Analyses

December 2003

Multi-State Process Risk Analyses

MSP Meeting

July 15 - 17, 2003

PACIFICORP

Risk Analyses - Overview

- Objective - To determine how Dynamic and Hybrid differ in determining State revenue requirements and retail prices under changes in loads, resources and market price.

- The specific scenarios may give rise to customer risk or shareholder risk, or both.

Risk Analyses - Study List

- **Load Risk Analyses**
  - West Load Loss (1 year)
  - East Load Loss (1 year)
- **Resource Risk Analyses**
  - West Resource Balance (15 years)
  - Poor Hydro / High Market (1 year)
  - High Hydro / Low Market (1 year)
  - East Generation Loss / High Market (1 year)
- **Market Price Risk Analyses**
  - High Market (10 years)
  - Low Market (10 years)
  - West Prices Greater than East (1 year)
  - East Prices Greater than West (1 year)

Risk Analyses - Study Assumptions and Results

- **West Load Loss**
  - 250 MW loss in Oregon
  - System balancing sales increased
  - Generation reduced (more reduction in West than East)
  - Dynamic and Hybrid allocated reduced costs similarly across States
- **East Load Loss**
  - 150 MW loss in Idaho, 100 MW loss in Wyoming
  - System Balancing sales increased
  - Generation reduced (more reduction in East than West)
  - Dynamic and Hybrid allocated reduced costs similarly across States

Risk Analyses - Study Assumptions and Results

- **West Resource Balance (Revised)**
  - Base case uses 2003 load forecast and IRP PF-1 resources
  - Removed 500 MW off-peak contract 2004-2006 in West
  - Removed 200 MW flat contract 2011-2018 in West
  - Assumed Mid-C / West Main transmission rights continue
  - Revenue requirements reduced 2004-2006 and 2011-2018
  - NPV of revenue requirement decreases by $259 million
    - West decreased by $94 million under Rolled-in and $189 million under Hybrid
    - East decreased by $165 million under Rolled-in and $70 million under Hybrid

Risk Analyses - Study Assumptions and Results

- **Poor Hydro / High Market**
  - East and West Hydro and Mid-C generation reduced by 20%
  - Wholesale power prices increase due to low regional hydro
  - Thermal generation increased (West more than East)
  - West increased fuel and purchase costs and lost sales revenues
  - East increased fuel and purchase costs
  - Overall revenue requirement increased by $46 million
    - The West increased by $17 million under Rolled-in and $37 million under Hybrid
    - The East increased by $29 million under Rolled in and $9 million under Hybrid.

Risk Analyses - Study Assumptions and Results

- **High Hydro / Low Market**
  - East and West Hydro and Mid-C generation increased by 20%
  - Wholesale power prices decrease due to low regional hydro
  - Thermal generation decreased (West more than East)
  - West decreased fuel and purchase costs and increased sales revenues
  - East decreased fuel costs and decreased sales revenues
  - Overall revenue requirement decreased by $26 million
    - The West decreased by $9 million under Rolled-in and $26 million under Hybrid
    - The East decreased by $17 million under Rolled in and was unchanged under Hybrid.

Risk Analyses - Study Assumptions and Results

- **East Generation Loss / High Markets**
  - Assumed the loss of a 400 MW East side thermal unit for 1 year
  - Market prices (power and gas) based on Bullish Gas (BG)
  - Thermal generation increased (more East than West)
  - The West increased sales revenues, offset by a small fuel cost increase
  - The East increased fuel and purchase costs
  - Overall revenue requirement increased by $59 million
    - The West increased by $21 million under Rolled-in and decreased $40 million under Hybrid
    - The East increased by $38 million under Rolled-in and by $99 million under Hybrid

Risk Analyses - Study Assumptions and Results

- **High Market**
  - Used the Bullish Gas (BG) forecast for 10 years (2004-2013)
  - West's change in revenue requirement ranges from $-24 million to $17 million annually when comparing Rolled-in to Hybrid
  - East's change in revenue requirement ranges from $24 million to $-17 million annually when comparing Rolled-in to Hybrid
  - The NPV of the revenue requirement increases $109 million
    - The West increases by $40 million under Rolled-in and decreases by $3 million under Hybrid.
    - The East increases by $69 million under Rolled-in and $112 million under Hybrid

Risk Analyses - Study Assumptions and Results

- **Low Market**
  - Used the Commodity Competition (CC) forecast for 10 years (2004-2013)
  - West's change in revenue requirement ranges from $25 million to -$-1 million annually when comparing Rolled-in to Hybrid
  - East's change in revenue requirement ranges from $-25 million to $1 million annually when comparing Rolled-in to Hybrid
  - The NPV of the revenue requirement decreases $51 million
    - The West decreases by $19 million under Rolled-in and increases by $40 million under Hybrid.
    - The East decreases by $32 million under Rolled-in and $91 million under Hybrid

Risk Analyses - Study Assumptions and Results

- **East Prices Greater than West**
  - Increased Prices in East by $10 / MWh
  - East generation increases, West generation decreases
  - Sales increase
  - Overall revenue requirement decreases by $24 million
    - West decreases by $9 million under Rolled-in and $7 million under Hybrid
    - East decreased by $15 million under Rolled-in and $17 million under Hybrid.

Risk Analyses - Study Assumptions and Results

- **West Prices Greater than East**
  - Increased Prices in West by $10 / MWh
  - West generation increases, East generation decreases
  - Sales increase
  - Overall revenue requirement decreases by $13 million
    - West decreases by $5 million under Rolled-in and $2 million under Hybrid
    - East decreased by $9 million under Rolled-in and $11 million under Hybrid.

Risk Analyses - Study Assumptions and Results

- **West Prices Greater than East**
  - Increased Prices in West by $10 / MWh
  - West generation increases, East generation decreases
  - Sales increase
  - Overall revenue requirement decreases by $13 million
    - West decreases by $5 million under Rolled-in and $2 million under Hybrid
    - East decreased by $9 million under Rolled-in and $11 million under Hybrid.

Percent change in 2009 Revenue Requirement due to difference in Allocation Methodology

Load Sensitivities

	West Load Loss	East Load Loss
California	-0.32%	0.55%
Oregon	-0.09%	0.77%
Washington	-0.40%	0.76%
Total West	**-0.17%**	**0.76%**
Utah	0.05%	-0.42%
Idaho	0.21%	-0.45%
Wyoming	0.27%	-0.61%
Total East	**0.10%**	**-0.46%**

Percent change in 2009 Revenue Requirement due to difference in Allocation Methodology

Generation Sensitivities

	Poor Hydro and High Mkt Prices	High Hydro and Low Mkt Prices	East Generation Loss and High Mkt Prices
California	1.03%	-0.83%	-3.14%
Oregon	1.43%	-1.14%	-4.33%
Washington	1.44%	-1.14%	-4.33%
Total West	**1.41%**	**-1.12%**	**-4.26%**
Utah	-0.84%	0.66%	2.50%
Idaho	-0.89%	0.72%	2.76%
Wyoming	-0.94%	0.75%	2.92%
Total East	**-0.86%**	**0.69%**	**2.60%**

Percent change in 2009 Revenue Requirement due to difference in Allocation Methodology

Market Price Sensitivities

	High Mkt Prices Systemwide	Low Mkt Prices Systemwide	West Prices Higher than East	East Prices Higher than West
California	-0.34%	0.74%	0.11%	0.06%
Oregon	-0.47%	1.02%	0.15%	0.09%
Washington	-0.47%	1.01%	0.16%	0.09%
Total West	**-0.46%**	**1.00%**	**0.15%**	**0.09%**
Utah	0.27%	-0.58%	-0.09%	-0.05%
Idaho	0.31%	-0.65%	-0.09%	-0.06%
Wyoming	0.33%	-0.69%	-0.09%	-0.08%
Total East	**0.28%**	**-0.61%**	**-0.09%**	**-0.05%**

Change in 2009 Dollar per MWh Load Sensitivities

	Allocation Method	West Load Loss	East Load Loss
Total Company	1.4 - Dynamic	1.21	1.23
	47.4 - Hybrid	1.21	1.23
California	1.4 - Dynamic	0.38	0.41
	47.4 - Hybrid	0.07	0.95
Oregon	1.4 - Dynamic	4.48	0.39
	47.4 - Hybrid	4.33	0.95
Washington	1.4 - Dynamic	0.38	0.40
	47.4 - Hybrid	0.09	0.95
Total West	1.4 - Dynamic	3.40	0.39
	47.4 - Hybrid	3.21	0.95
Utah	1.4 - Dynamic	0.37	0.38
	47.4 - Hybrid	0.41	0.09
Idaho	1.4 - Dynamic	0.24	10.65
	47.4 - Hybrid	0.37	10.35
Wyoming	1.4 - Dynamic	0.21	1.86
	47.4 - Hybrid	0.37	1.47
Total East	1.4 - Dynamic	0.33	1.60
	47.4 - Hybrid	0.40	1.28

Change in 2009 Dollar per MWh Generation Sensitivities

	Allocation Method	Poor Hydro and High Mkt Prices	High Hydro and Low Mkt Prices	East Generation Loss and High Mkt Prices	West Resource Sensitivity
Total Company	1.4 - Dynamic	0.83	(0.47)	1.08	(0.00)
	47.4 - Hybrid	0.83	(0.47)	1.08	(0.00)
California	1.4 - Dynamic	0.84	(0.47)	1.09	(0.00)
	47.4 - Hybrid	1.87	(1.29)	(2.02)	(0.00)
Oregon	1.4 - Dynamic	0.84	(0.47)	1.08	(0.00)
	47.4 - Hybrid	1.86	(1.29)	(2.02)	(0.00)
Washington	1.4 - Dynamic	0.84	(0.47)	1.09	(0.00)
	47.4 - Hybrid	1.87	(1.29)	(2.02)	(0.00)
Total West	1.4 - Dynamic	0.84	(0.47)	1.08	(0.00)
	47.4 - Hybrid	1.87	(1.29)	(2.02)	(0.00)
Utah	1.4 - Dynamic	0.84	(0.47)	1.08	(0.00)
	47.4 - Hybrid	0.26	(0.01)	2.82	(0.00)
Idaho	1.4 - Dynamic	0.82	(0.46)	1.06	(0.00)
	47.4 - Hybrid	0.25	(0.00)	2.81	(0.00)
Wyoming	1.4 - Dynamic	0.80	(0.45)	1.04	(0.00)
	47.4 - Hybrid	0.24	(0.00)	2.79	(0.00)
Total East	1.4 - Dynamic	0.83	(0.47)	1.07	(0.00)
	47.4 - Hybrid	0.26	(0.01)	2.81	(0.00)

Change in 2009 Dollar per MWh Market Price Sensitivities

	Allocation Method	High Mkt Prices Systemwide	Low Mkt Prices Systemwide	West Prices Higher than East	East Prices Higher than West
Total Company	1.4 - Dynamic	(0.05)	0.14	(0.24)	(0.44)
	47.4 - Hybrid	(0.05)	0.14	(0.24)	(0.44)
California	1.4 - Dynamic	(0.04)	0.13	(0.23)	(0.43)
	47.4 - Hybrid	(0.38)	0.86	(0.12)	(0.37)
Oregon	1.4 - Dynamic	(0.04)	0.14	(0.23)	(0.43)
	47.4 - Hybrid	(0.38)	0.87	(0.13)	(0.37)
Washington	1.4 - Dynamic	(0.04)	0.13	(0.23)	(0.43)
	47.4 - Hybrid	(0.38)	0.86	(0.12)	(0.37)
Total West	1.4 - Dynamic	(0.04)	0.14	(0.23)	(0.43)
	47.4 - Hybrid	(0.38)	0.86	(0.13)	(0.37)
Utah	1.4 - Dynamic	(0.04)	0.14	(0.23)	(0.43)
	47.4 - Hybrid	0.14	(0.27)	(0.30)	(0.46)
Idaho	1.4 - Dynamic	(0.07)	0.16	(0.25)	(0.44)
	47.4 - Hybrid	0.13	(0.25)	(0.30)	(0.48)
Wyoming	1.4 - Dynamic	(0.08)	0.17	(0.25)	(0.45)
	47.4 - Hybrid	0.12	(0.24)	(0.30)	(0.49)
Total East	1.4 - Dynamic	(0.05)	0.15	(0.24)	(0.44)
	47.4 - Hybrid	0.14	(0.26)	(0.30)	(0.47)