EXHIBIT NO. ___(RG-28C)
DOCKET NO. UE-07___/UG-07___
2007 PSE GENERAL RATE CASE
WITNESS: ROGER GARRATT

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**Docket No. UE-07____** **Docket No. UG-07____**

TWENTY-SEVENTH EXHIBIT (CONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF ROGER GARRATT ON BEHALF OF PUGET SOUND ENERGY, INC.

REDACTED VERSION

DECEMBER 3, 2007

DRAFT

WHITEHORN 2&3 LEASE RENEWAL ANALYSIS

Redacted

SUMMARY OF ANALYSIS

WHITEHORN 2&3 LEASE RENEWAL

BACKGROUND OVERVIEW

Phase II of the Whitehorn Generating Station ("Whitehorn") expansion took place in 1980 with the delivery and installation of two General Electric Frame 7E heavy-duty combustion turbines. These turbines were designed to collectively produce approximately 150 MW of electrical capacity (179 MW peak cold weather capacity). The expansion ("Facility") included all buildings, structures, foundations, oil storage tanks, water treatment facilities, pipelines, improvements and facilities located at the site; and the turbine-generators, ancillary machinery, equipment and other property, parts, appliances, appurtenances, accessories, and miscellaneous equipment necessary for continuous and reliable operation.

In 1980, Puget Sound Energy ("PSE"), then Puget Sound Power & Light, entered into an agreement with the Bank of California to sell the Whitehorn Phase II facilities and to lease the facilities back under a net lease having a fixed term of at least 23 years. For purposes of the Sales Agreement, the definition of Facility specifically excludes any transformers, transmission lines, or other transmission facilities located on the Whitehorn site.

LEASE SUMMARY

In accordance with the terms set forth in the Sales Agreement, PSE entered into a Lease Agreement with the Bank of California and other participants in May 1981. Major terms of the Lease Agreement are given below:

- The original lease term was set for 22-½ years, running through July 2004.
- The lease provides for calculation of semi-annual rent payments payable on February 2nd and August 2nd of each year. The payment is based on a percentage of the Lessor's cost and adjusted over the lease term by several factors, including changes in applicable interest rates. In the final years of the lease, the semi-annual rent payment is [redacted] annually.
- The lease provides for continuing support obligations by PSE until July 2011 to:

    1) Maintain an electrical interconnection and transmission service for the term of the lease and to provide that interconnection and service to the Lessor in the event of expiration or termination of the lease

    2) Maintain an interconnection with offsite infrastructure to provide for the delivery of natural gas fuel, public water for process use and fire protection, and access to wastewater disposal.

    3) To provide for Lessor operation of the Facility through the term of the support agreements.

CONFIDENTIAL
Per WAC 480-07-160

Text in box is Confidential

- The lease provides for Rights of 1st Refusal in the event that the Facility is re-leased to a third party at the anticipated expiration of its term.

- The lease agreement also provides for the following lease renewal options and timelines:

1) Fixed Renewal Rental

- This option specifies that the Basic Rent shall be calculated by multiplying the weighted average of the previous 45 rent installments by 50%. Under this option, the fixed semi-annual rent would be $802,527 or $1,605,054 annually.

- The fixed rental term shall be in multiples of 6 months

- PSE and the Lessor must agree on the useful remaining life of the Facility. To accomplish this, the lease agreement contemplates that a mutually agreeable party will perform a life assessment study on the Facility.

- The support agreements must be extended through the new remaining life of the Facility

- PSE must decide by February 2, 2003 to take this option or not.

2) Fair Market Renewal Rental

- This option specifies that the Basic Rent shall be determined by the results of a Fair Market Appraisal of the Facility. To accomplish this, the lease agreement contemplates that a mutually agreeable party will perform an appraisal of the Facility. A Useful Life assessment is also required.

- PSE must decide by February 2, 2003 to take this option or not.

3) Lessor Proposals

- PSEG Resources, the current Lessor, offered a hybrid approach to the renewal outside of the renewal options contemplated in the original lease agreement. An offer was made for both the lease renewal and for a direct purchase of the facility.

- The Fixed Renewal Proposal offered the same weighted average Basic Rent as contemplated by the Fixed Renewal Rental, but it stipulated the Useful Life through 2016, thus, no Remaining Life assessment was required. In addition, the proposal anticipated a 4-½ year lease term extension and required extension of the offsite infrastructure support agreements through 2016.

- The Direct Purchase Proposal offered a buyout price of [redacted] the Facility, provided that the remaining lease payments of approximately

Text in box is Confidential

[redacted] were also paid. The Direct Purchase Proposal anticipated payment of the purchase price and remaining lease payments by January 31, 2003. The value of this option was equivalent to [redacted]

PEAKING CAPACITY NEEDS

Based on modeling performed during development of the PSE's Least Cost Plan, PSE's peak resource needs are as shown in the following table. This table assumes that that Whitehorn 2&3 remain in service through the 2011 lease renewal term.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Max. Monthly Energy Deficit (aMW)	456	586	440	473	646	668	740	768	933	1358	1563
Normal Peak Deficit	692	745	841	910	1271	1323	1408	1481	1794	2237	2465
Residual Normal Peak Deficit	236	159	401	437	625	655	668	713	861	879	902
Extreme Peak Deficit	1244	1301	1404	1479	1848	1906	2001	2081	2401	2850	3089
Residual Extreme Peak Deficit	788	715	964	1006	1202	1238	1261	1313	1468	1492	1526
Normal Peak Load	4625	4656	4708	4766	4827	4879	4962	5015	5079	5130	5226
Extreme Peak Load	5177	5212	5271	5335	5404	5462	5555	5615	5686	5743	5850
Extreme vs. Normal Peak Load	552	556	563	569	577	583	593	600	607	613	624

As can be seen in the table, even after meeting winter energy deficits both PSE's residual normal peak deficit and the residual extreme peak deficit are forecast to be increasing. Loss of the Whitehorn 2&3 capacity in 2004 would increase the normal peak deficit by over 90% and the extreme peak deficit by over 20%. Whitehorn 2&3 is a substantial part of PSE's peaking portfolio.

Text in box is Confidential

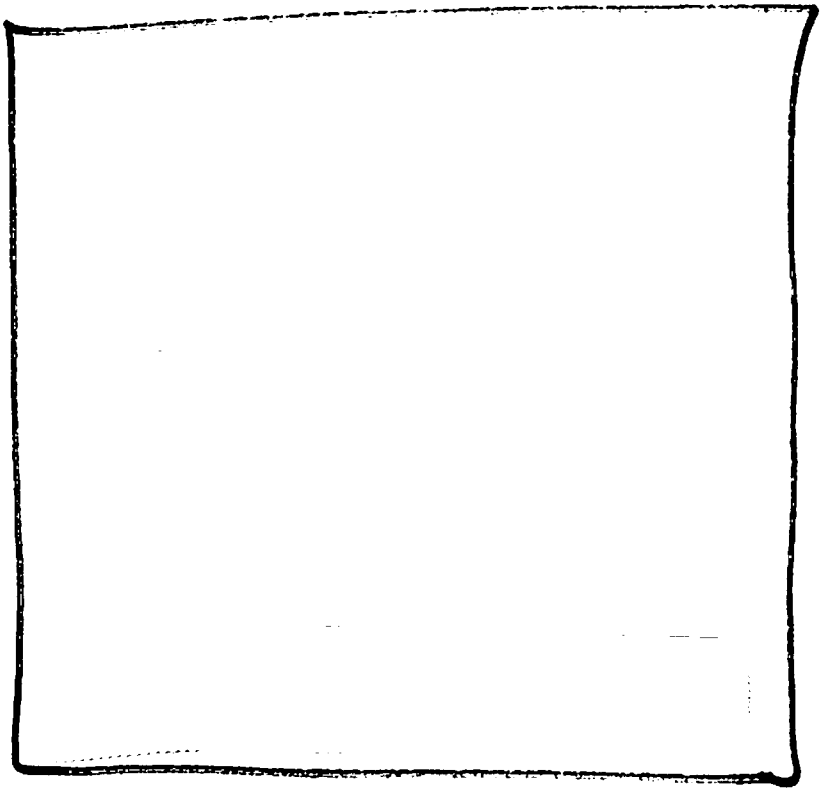
VALUATION ANALYSIS

To assess the value of Whitehorn capacity in PSE's portfolio, three different approaches were used. The use of multiple approaches was seen as the best way to bracket the value of this facility and build a reasonable and credible valuation upon which to base the lease renewal decision.

The calculational approaches are as follows:

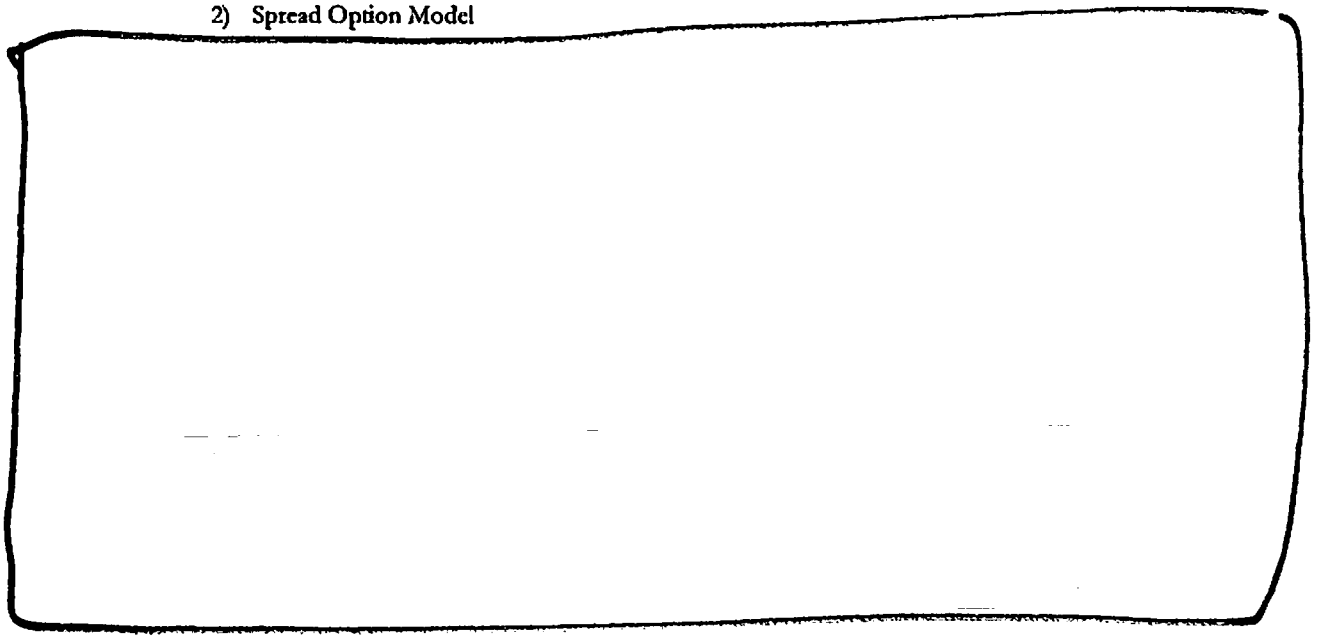
1) Aurora Model

The Aurora valuation assumes no change in market power price, with or without the resource. This is equivalent to removing the resource from the portfolio, but leaving it in the region. Removing the resource from both the portfolio and the region will impact prices slightly; however, that small delta in price would be leveraged over a lot of market purchases, generating a different value.

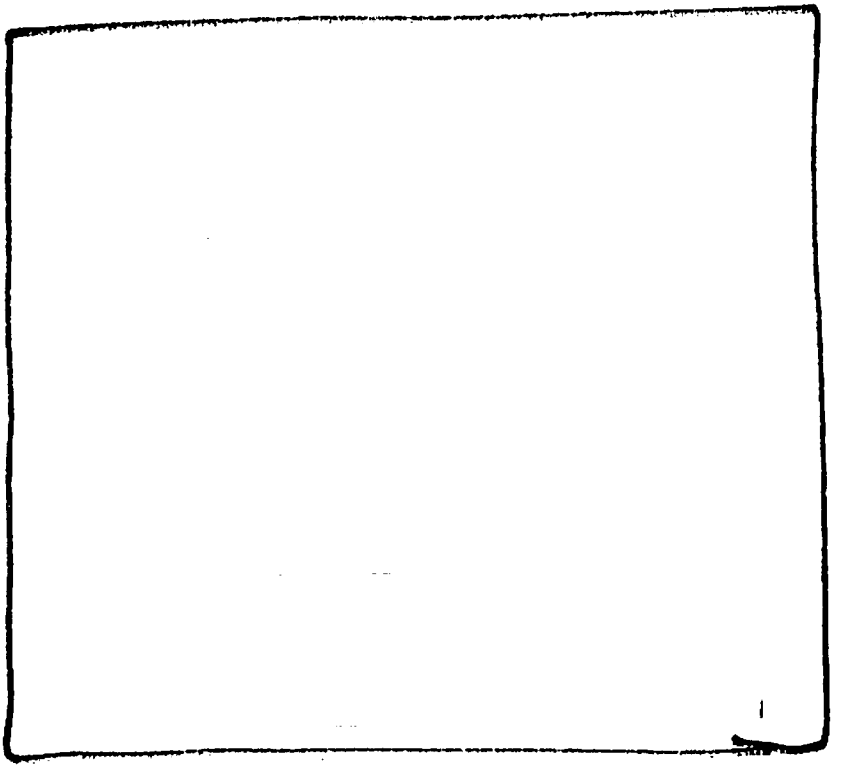


CONFIDENTIAL
Per WAC 480-07-160

2) Spread Option Model



3) Navigant Screening Model



Redacted

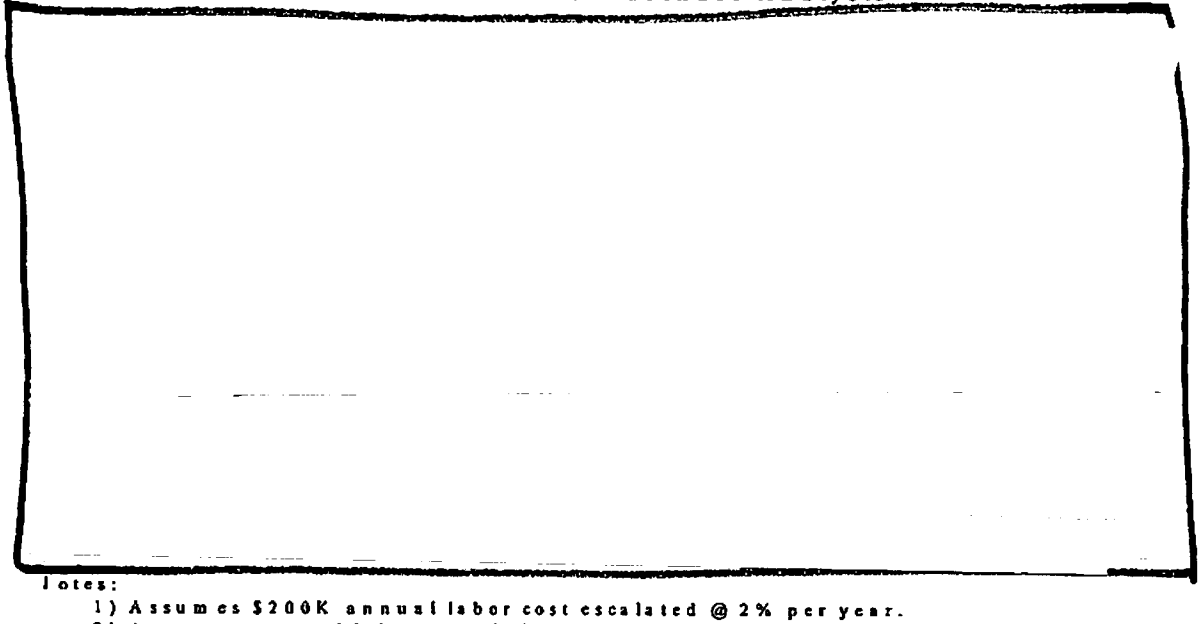
WHITEHORN LEASE VS. PURCHASE ANALYSIS

Once the portfolio value of Whitehorn 2&3 had been forecast using the three approaches referenced above, it became clear that the Navigant Screening model and the Aurora model tended to show very high valuations in the later years, as opposed to the Spread Option model which showed very consistent future valuations. Review of the base data indicated that both the Aurora and Navigant models were predicting extremely high "needle" peaks during the summer months and those extraordinary peaks were unreasonably inflating the portfolio value of Whitehorn 2&3.

PSE did not believe that the predicted peaks realistically represent the future value of Whitehorn and chose, instead, to take a more conservative view by using the long-term Spread Option valuation for the lease vs. purchase analysis. In addition, the Aurora and Navigant models capture only intrinsic value (the absolute value of in-the-money dispatch that would be realized if all in-the-money opportunities were exercised). Neither captures extrinsic value (the value realized when buyers are willing to pay for an option in anticipation that price volatility will cause the option to increase in value). The Spread Option model better represents both the short- and long-term valuation of Whitehorn 2&3 and was used for all subsequent lease analysis.

The following chart compares the forecast valuations returned by the Aurora, Spread Option, and Navigant Screening models to the calculated "break-even" lease cost and purchase price for various periods up to the year 2022. The break-even amounts were calculated based on the Spread Option valuation and represent the highest lease payment or purchase price that could be supported. The lease payment calculation assumes a $200,000 annual operating labor cost escalated at 2% per year. The purchase price assumes the same labor cost and a current $27,000,000 equipment salvage value (based on discussions with used equipment brokers) deflated at 3% per year.

Whitehorn Lease vs. Purchase Analysis



Notes:
1) Assumes $200K annual labor cost escalated @ 2% per year.
2) Assumes annual labor cost & $27M salvage value deflated @ 3% per year.

CONFIDENTIAL
Per WAC 480-07-160

Text in box is Confidential

This chart clearly shows that purchasing the Whitehorn 2&3 facilities at the proposed price of [redacted] would not even break even until the year 2020, and if the final lease payments are added to the acquisition cost, purchase of the facilities does not break even at all. In addition, PSE believes that newer and more efficient power generating resources will be added to the region in the long-term, potentially devaluing an older resources. That longer-term valuation uncertainty and the eventuality of newer resources coming online made PSE reluctant to purchase the Whitehorn units, absent a substantial price reduction from the Lessor. Such discussions with the Lessor never moved past a preliminary stage once it became clear that there was little, if any, price flexibility.

In addition to the modeling calculations referenced above, the following capacity carrying costs were determined based on Navigant Screening model data and equipment cost estimates provided by Tenaska.

[redacted]

Again, the Whitehorn Fixed Renewal proposal represents a high-value part of PSE's peaking deficit solution.

With a direct purchase of the assets off the table due to the high asking price, evaluation of the Fixed Renewal proposal was greatly simplified. As stated previously, the Lessor offered to renew the Whitehorn facility lease for an annual payment amount of 50% X the Weighted Average of all prior lease payments, or [redacted] The proposed lease term extension was 4-½ years. Based on the Spread Option portfolio valuation given above, the Fixed Renewal proposal breaks even between 2005 and 2006. Based on Aurora valuations, the break-even point is between 2006 and 2007. With a proposed term running to July 2009, the Fixed Renewal proposal represented a good value to PSE's ratepayers and shareholders and was accepted.

CONFIDENTIAL
Per WAC 480-07-160

Text in box is Confidential

LEASE OF WHITEHOR[illegible]NITS 2 AND 3 COMBUSTION TURBINE GENERATING UNITS

CALCULATION OF RENT DURING A FIXED RENTAL RENEWAL

Whatcom Lease Issues & Analysis
PUGET SOUND ENERGY
PSE
1

Whitehorn Lease Issues & Analysis

- Equipment & Facility Description
- Lease Terms
- Resource Planning & Economics
- Valuation Analysis
- Alternative Approaches
- Regulatory Implications
- Appendix

PSE PUGET SOUND ENERGY

Redacted

CONFIDENTIAL
Per WAC 480-07-160

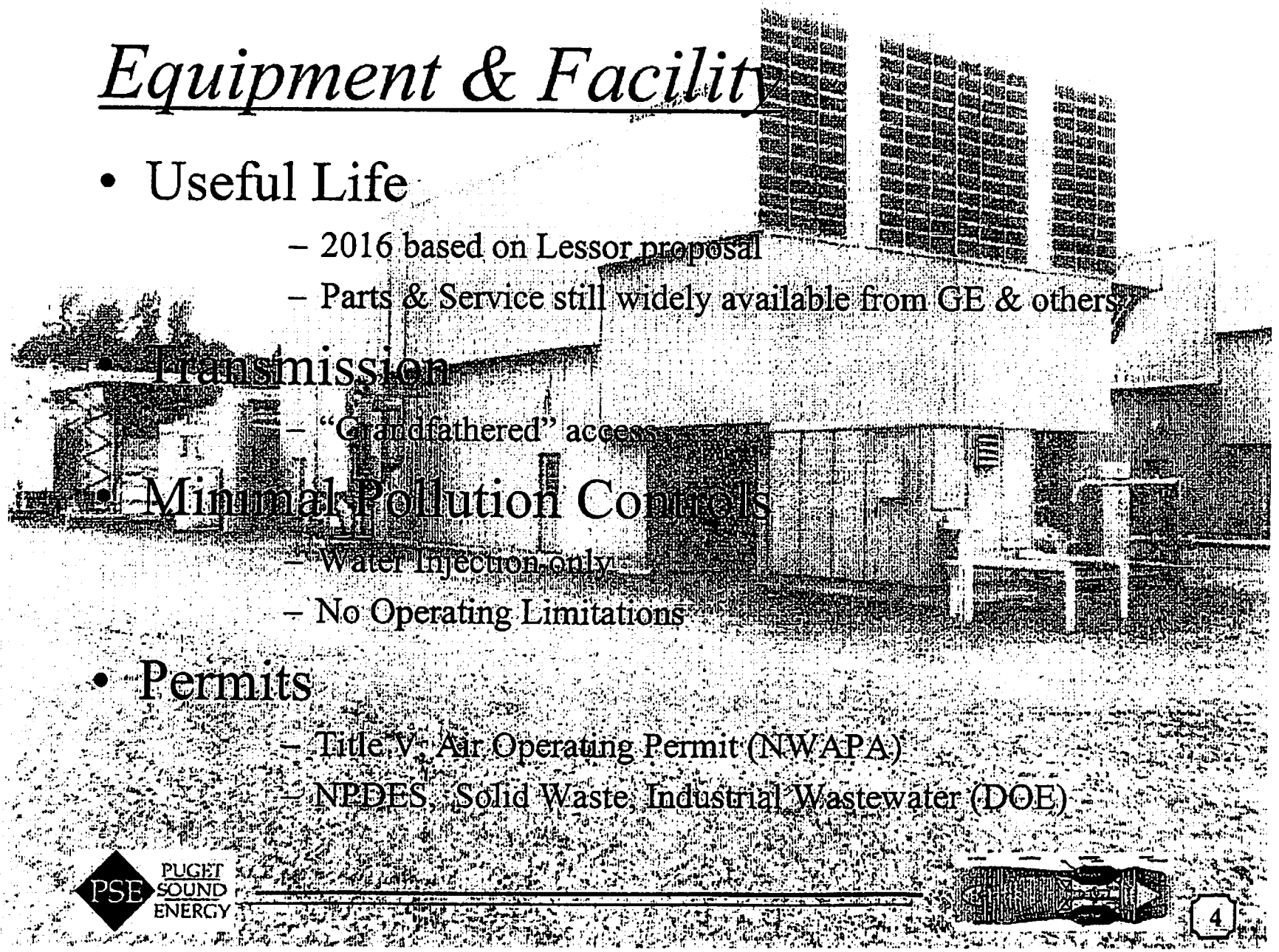
Text in box is Confidential

Equipment & Facilities

- Installation Date: 1981
- Two GE 7001E Turbine-Generators
- Capacity: ~148 MW (New & Clean)
- Heat Rate: [redacted] BTU/KWH (HHV)
- Balance of Plant Equipment (included in lease)
  - Offsite Water Supply Pipeline
  - Water Treatment Equipment & Building
  - Water Storage Tank & Handling Equipment
  - Fuel Storage Tank & Handling Equipment
- Real Property Owned by PSE

PSE PUGET SOUND ENERGY

Equipment & Facility



- Useful Life
  - 2016 based on Lessor proposal
  - Parts & Service still widely available from GE & others
- Transmission
  - "Grandfathered" access
- Minimal Pollution Controls
  - Water Injection only
  - No Operating Limitations
- Permits
  - Title V Air Operating Permit (NWAPA)
  - NPDES, Solid Waste, Industrial Wastewater (DOE)

PSE PUGET SOUND ENERGY

Redacted

CONFIDENTIAL
Per WAC 480-07-160

Lease Terms

- Original Term: 22 years (through July, 2004)
- Basic Rent: $ [redacted] annually
- Support Obligations (through July, 2011)
  - Power Interconnection Agreement
  - Facilities Agreement for offsite pipelines
  - PSEG Operation of Facility through term of Support Agreements
- Rights of 1st Refusal
  - Lease
  - Purchase

PSE PUGET SOUND ENERGY

Text in box is Confidential

Redacted

Text in box is Confidential

CONFIDENTIAL
Per WAC 480-07-160

Lease Terms - Renewal

- Renewal Options & Timelines
  - Fixed Rental Renewal
    - Term in multiples of 6 months
    - Basic Rent is [redacted] annually
    - Requires agreement on remaining Useful Life
    - Extend Support Agreements through new Useful Life
    - PSE decision required by February 2, 2003
  - Fair Market Value Rental Renewal
    - Term through July, 2011
    - Requires Market Value and Useful Life Appraisal
    - PSE decision required by February 2, 2003

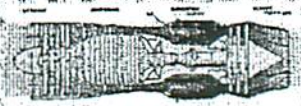
PSE PUGET SOUND ENERGY

Redacted

Other Renewal Options

- PSEG Renewal Offers
  - Fixed Rental Proposal
    - » [redacted] annually
    - » Stipulated Useful Life through 2016
    - » Additional Term of 4½ Years beyond July, 2004
    - » Extend Support Agreements through January, 2016
  - Purchase Offer
    - » [redacted]
    - » PLUS remaining Lease Payments of $8.1M
    - » Payable on January 31, 2003
    - » [redacted]

PSE PUGET SOUND ENERGY



Resource Planning & Economics

- PSE Peak Resource Needs from LCP

Residual Peak Needs After Meeting Winter Energy Deficits (MW)
(Assumes Whitehorn 2+3 Remain in Service through 2011)

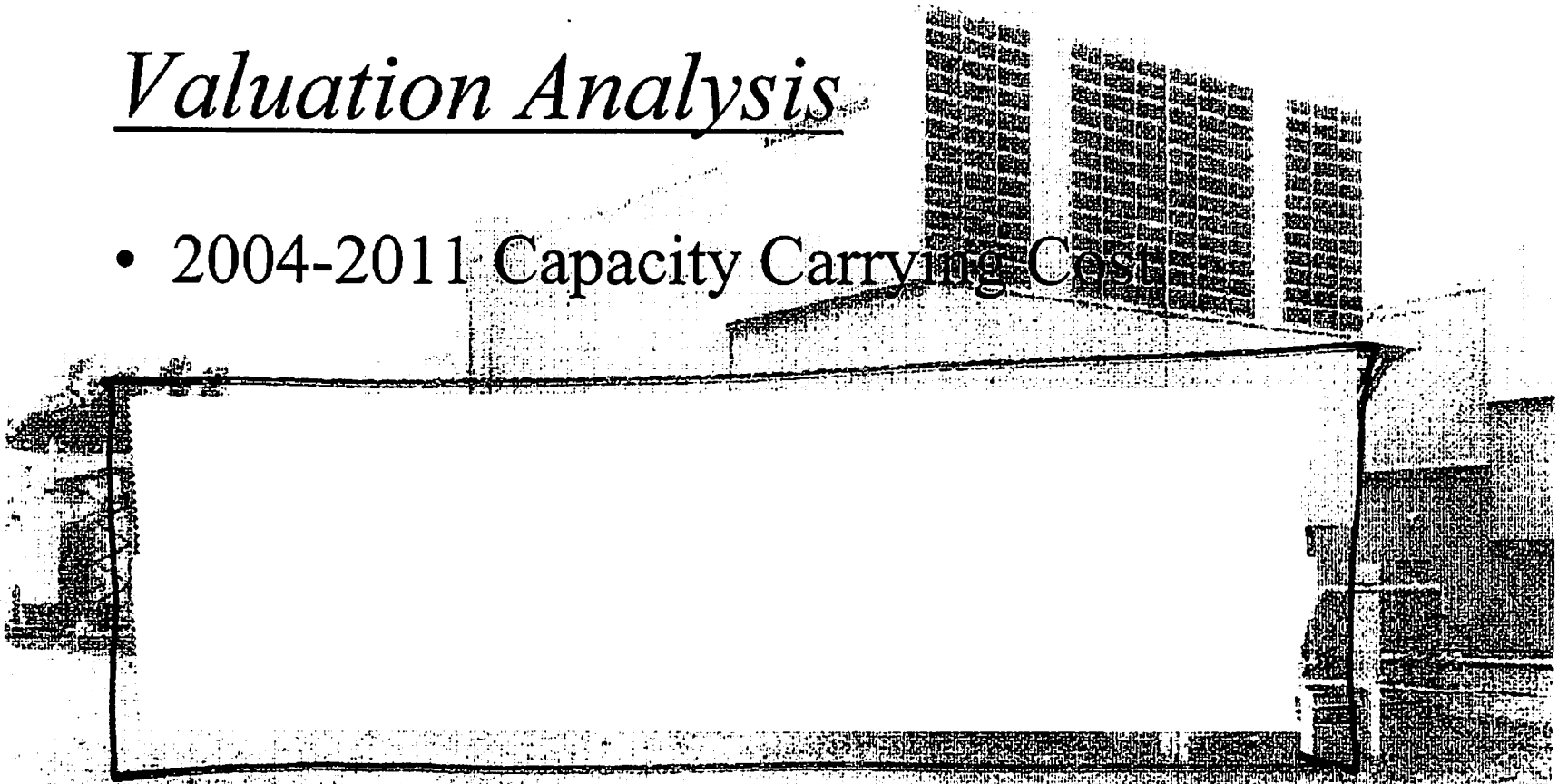
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Max. Monthly Energy Deficit (aMW)	456	586	440	473	646	668	740	768	933	1358	1563
Normal Peak Deficit	692	745	841	910	1271	1323	1408	1481	1794	2237	2465
Residual Normal Peak Deficit	236	159	401	437	625	655	668	713	861	879	902
Extreme Peak Deficit	1244	1301	1404	1479	1848	1906	2001	2081	2401	2850	3089
Residual Extreme Peak Deficit	788	715	964	1006	1202	1238	1261	1313	1468	1492	1526
Normal Peak Load	4625	4656	4708	4766	4827	4879	4962	5015	5079	5130	5226
Extreme Peak Load	5177	5212	5271	5335	5404	5462	5555	5615	5686	5743	5850
Extreme vs. Normal Peak Load	552	556	563	569	577	583	593	600	607	613	624

PSE PUGET SOUND ENERGY

Redacted

Valuation Analysis

- 2004-2011 Capacity Carrying Cost



Calculations from the Portfolio Screening Model
Capacity and cost assumptions from Tenaska.

PSE PUGET SOUND ENERGY

Text in box is Confidential

CONFIDENTIAL
Per WAC 480-07-160

Redacted

[redacted]

1) Assumes $200K annual labor cost escalated @ 2% per year.
2) Assumes annual labor cost & $27M salvage value deflated @ 3% per year.

PSE PUGET SOUND ENERGY

10

Text in Box is Confidential

CONFIDENTIAL
Per WAC 480-07-160

Redacted

Resource Planning & Economics

- Broker Market Asking Prices

[redacted]

NOTES:

Asking prices are "As Is, Where Is" and do not include commissions, shipping, installation, permitting, or contemporary emission controls.

Used prices do not include disassembly or packaging, in addition to the above.

Actual sales price to be negotiated with the seller.

PSE PUGET SOUND ENERGY

Text in Box is Confidential

CONFIDENTIAL
Per WAC 480-07-160

Alternative Approaches

- Extend Lease
  - Contract Fixed Renewal
  - PSEG Fixed Renewal Offer
  - Contract Fair Market Renewal
  - Extend Support Obligations through 20??
- Purchase Assets
  - PSEG Offer
- Allow Lease to Expire
  - Support Obligations extend through July, 2011

PSE PUGET SOUND ENERGY

Regulatory Implications

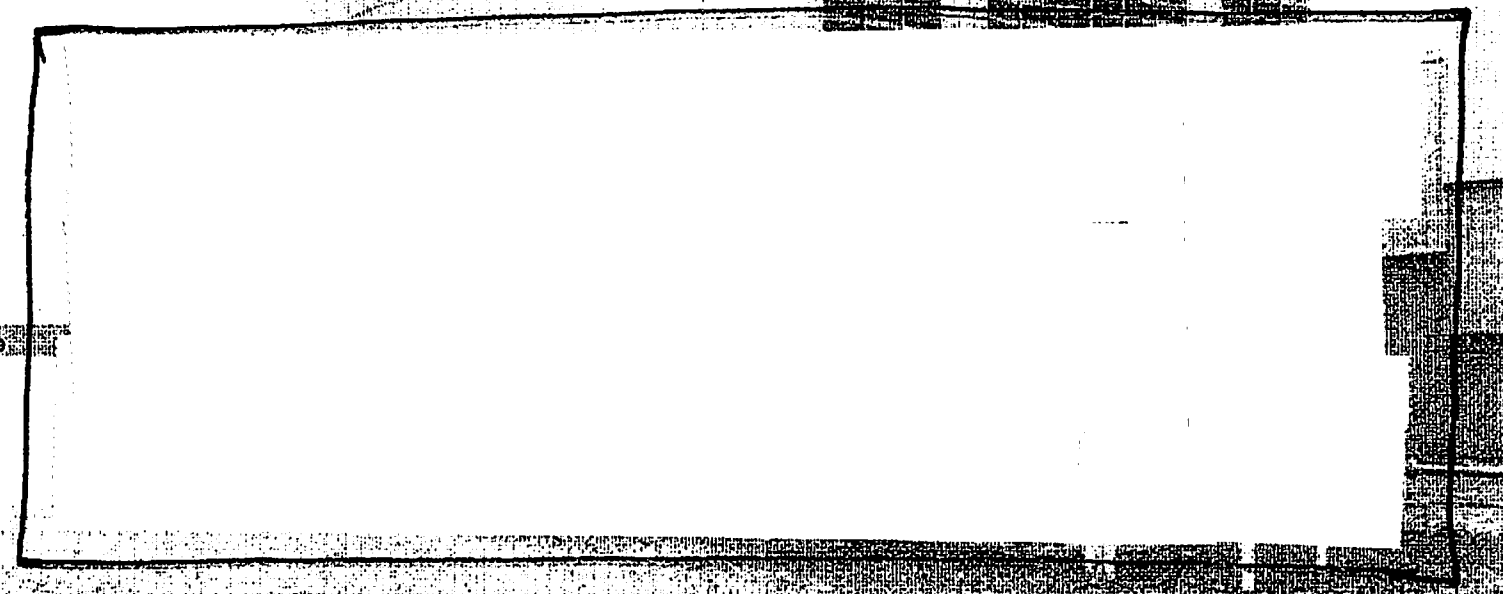
- Prudence Review
  - Decision is made against backdrop of LCP and Resource Acquisition processes
    - Consistent Analytical Approach
    - Evaluation of Alternative Capacity Resources
    - Complete Documentation Record
- Procedural Requirements
- Environmental Permit Issues

PSE PUGET SOUND ENERGY

Appendix
14
PUGET SOUND ENERGY
PSE

Redacted

Sensitivity Analysis on Spread Option Results



Base Case

- Base Case Inputs: PIRA Gas Curves, Adjusted Aurora Flat Power Curves, "Extracted" daily volatility and correlation from KW3000s 100 scenarios
- Spread Option analysis does not take into account minimum run time, minimum down time, ramp up rate, ramp down rate, minimum output
- Different spread option valuation techniques will give different results when an option is deep out of the money

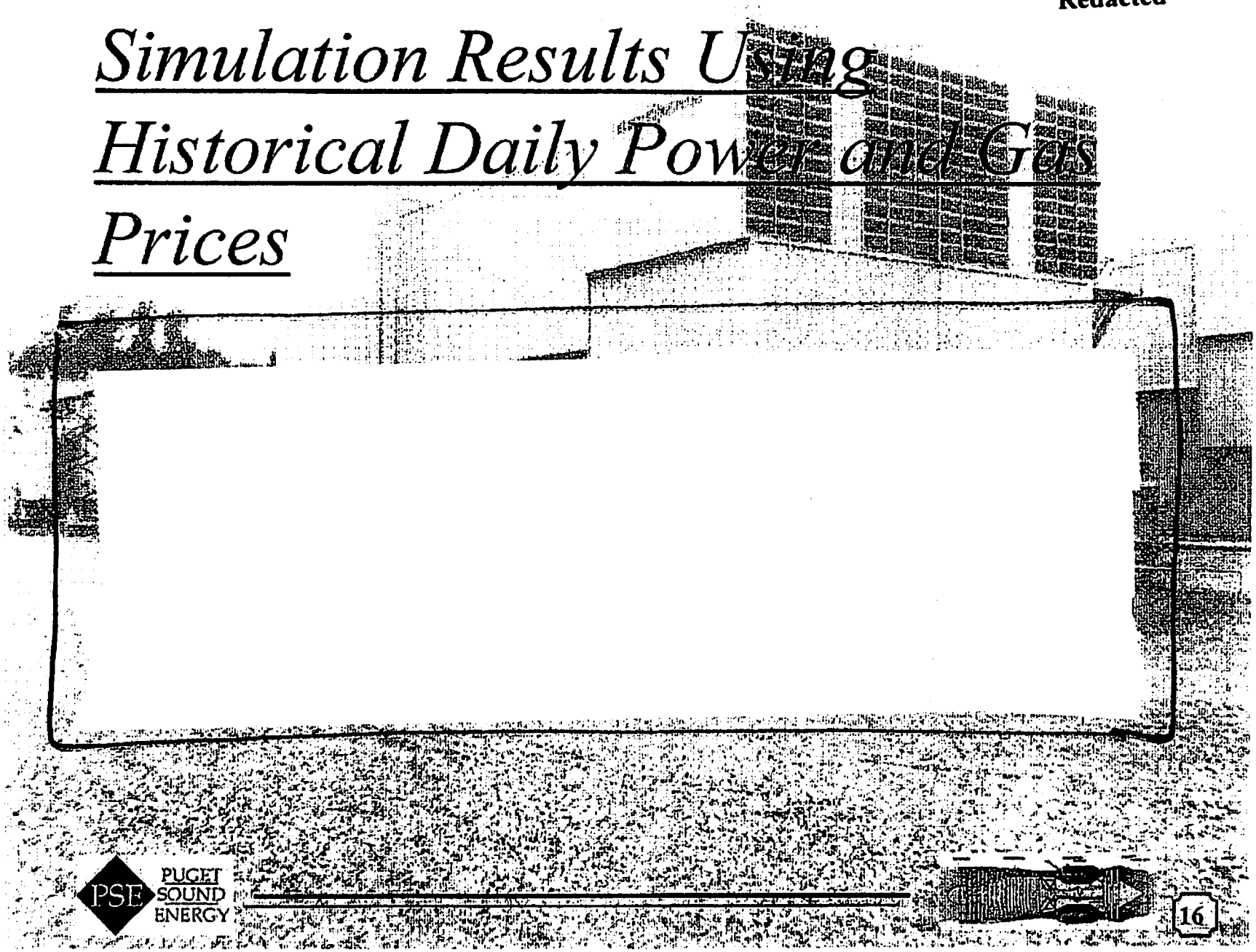
PSE PUGET SOUND ENERGY

Text in Box is Confidential

CONFIDENTIAL
Per WAC 480-07-160

Redacted

Simulation Results Using Historical Daily Power and Gas Prices



PUGET SOUND ENERGY

Text in Box is Confidential

CONFIDENTIAL
Per WAC 480-07-160

Whitehorn Combustion Turbine Generating Units Nos. 2 and 3

Preliminary Sales Proposal

Presented by: **PSEG Resources Inc.**
Newark, New Jersey

Presented to: **Puget Sound Power & Light Company**
Belleview, Washington

September, 2001

Whitehorn Combustion Turbine Generating Units Nos. 2 and 3

Preliminary Sales Proposal

Introduction

PSEG Resources Inc. is the beneficiary of an owner trust (the "Owner/Lessor") holding: a) title to Whitehorn Units Nos. 2 and 3; b) the lessor's interest in the Lease of Whitehorn Units Nos. 2 and 3 to Puget Sound Power & Light Company; and c) specified interests in certain Support Agreements entered into to support operations of Whitehorn Units Nos. 2 and 3.

This memorandum presents the preliminary proposal of PSEG Resources Inc. for the termination of the Lease of Whitehorn Units Nos. 2 and 3 and sale of Whitehorn Units Nos. 2 and 3 to Puget Sound Power & Light Company.

First, Whitehorn Units Nos. 2 and 3, the Lease and Support Agreements are summarily described.

Then, the essential terms of the preliminary sale proposal are outlined.

Representative photographs of Whitehorn Units 2 and 3 are provided as an appendix to this memorandum.

Description of Whitehorn Units Nos. 2 and 3

Whitehorn Units Nos. 2 and 3 together form a two unit simple cycle combustion turbine electric generating plant with a combined peak-cold-weather rated capacity of 179 MegaWatts, fully equipped for firing on natural gas and fuel oil, with water injection for reduction of NOx emissions.

Major Equipment Systems

Whitehorn Units Nos. 2 and 3 are comprised of the following major equipment systems:

- A gas turbine generating plant consisting of the following major components:
  - Two General Electric Company heavy duty combustion turbine generating units Model Series 7001E with Serial Number 248936 and Serial Number 248937 equipped for firing on natural gas and fuel oil with, in addition, all on-base equipment required for firing on residual oil. Each unit includes the following major pieces of equipment:
    - 1 simple cycle, single shaft combustion gas turbine and compartment
    - 1 inlet housing with filtration (22 feet in height)
    - 1 exhaust stack with 90 degree elbow (38 feet in height)
    - 1 open ventilated synchronous generator and compartment
    - local controls, including advanced instrumentation for interface with operator's computer monitoring system in 1 control compartment per unit
    - excitation equipment in 1 compartment per unit
    - switch gear in 1 compartment per unit
    - accessory gear including lubrication system, water cooling system and starting system in 1 compartment per unit
    - 1 fuel forwarding skid per unit
    - 1 water injection skid per unit
  - One remote supervisory control system to operate two units from a remote position (does not include communication channel)
  - One Carbon Dioxide fire suppression system
- A fuel oil system consisting of a 100,000 barrel welded steel storage tank (fixed roof) together with foundations, piping, meters, filters, valves necessary to complete the fuel oil system

- A natural gas system consisting of regulators and valving located on the gas turbines' side of the outlet flange, used to control flow of gas to the gas turbines
- A water treatment plant capable of producing 150 gallons per minute of demineralized water for water injection, consisting of three pressure filters, five demineralizer vessels, one acid storage tank, one caustic storage tank, one waste water tank, acid and caustic handling pumps, air compressors for service and instrument air, controls, instrumentation, piping, all enclosed in a special purpose structure
- A 500,000 gallon demineralized water tank
- Wastewater pumps (three) used for pumping waste water between sumps, tanks, ponds and discharge (not inspected)
- Water fire suppression system consisting of yard loop system with hydrants
- A microwave security system

Equipment Name Plate Information

Equipment identification plates located in the combustion turbine compartments of each unit provided the following information:

Number:	248936, 248937
Air In:	30 DEG F
ALT:	0 FT
Base:	Natural Gas: 82,450 KW, Distillate: 82,400 KW, Residual: 73,000 KW
Peak:	Natural Gas: 89,050 KW, Distillate: 88,950 KW, Residual: not noted
Fuel:	Natural Gas, Distillate, Residual
Turbine Exhaust Base:	Natural Gas: 965 DEG F, Distillate: 962 DEG F, Residual: 882 DEG F
Turbine Exhaust Peak:	Natural Gas: 1029 DEG F, Distillate: 1026 DEG F, Residual: not noted
Pressure:	14.17 PSIA
Compressor Stages:	17
Compressor RPM:	3600 RPM
Power Turbine Stages:	3
Power Turbine RPM:	3600 RPM

An equipment identification plate was located on the generator of Whitehorn Unit No. 2 which conveyed the following information:

General Electric Company
Air Cooled Generator No. 316X331
2 Pole, 3 Phase Wye Conn. 60 Hertz
Total Temperature at Rating Guaranteed not to Exceed: 130 C on Armature, 130 C on Field
Maximum Cold Air Temperature: 15 C

KVA:	Rating: 94000	Peak Capability: 98750
Armature Amps:	Rating: 3933	Peak Capability: 4131
Armature Volts:	Rating: 13800	Peak Capability: 13800
Field Amps:	Rating: 579	Peak Capability: 602
Exciter Volts:	Rating: 375	Peak Capability: 375
Power Factor:	Rating: .90	Peak Capability: .90
RPM:	Rating: 3,600	Peak Capability: 3,600:

Location and Site

The Whitehorn Generating Station is located approximately 110 miles north of Seattle Washington in Ferndale, Washington.

Land use in the vicinity of the Whitehorn Generating Station is largely agricultural. However, a large petrochemical facility is located immediately adjacent to the plant site.

The street address of the Whitehorn Generating Station is:

The Whitehorn Generating Station
4570 Brown Road
Ferndale, Washington 98248
Telephone: 360-371-2822

The improved area of the plant site is substantially oversized, with ample room for expansion.

Natural gas and fuel oil are transported to the plant site by pipeline.

Preliminary Sales Proposal

PSEG Resources Inc. wishes to discuss with Puget Sound Power & Light Company the feasibility and desirability of a business arrangement whereby, on or about December 31, 2001 (the "Closing Date):

- The Owner/Lessor would terminate the Lease of Whitehorn Units Nos. 2 and 3;
- The Owner/Lessor would prepay any remaining non-recourse lease debt;
- The Owner/Lessor would transfer to Puget Sound Power & Light Company all of the Owner/Lessor's right, title and interest in and to Whitehorn Units Nos. 2 and 3 and the Support Agreements;
- On the Closing Date, Puget Sound Power & Light Company would pay the Owner/Lessor a cash purchase price, net of all sales, use or transfer taxes, equal to the sum of: a) the remaining six installments of rent scheduled to be paid during the current term of the Lease; and b) $27,676,055.

This preliminary sales proposal is presented for discussion purposes only and is not binding on PSEG Resources Inc. or any other party. Consummation of the contemplated transaction would be contingent upon, among other things, consent of required officers, committees or boards of PSEG Resources Inc., satisfactory negotiation of terms of prepayment with holders of non-recourse lease debt, and satisfactory documentation.