

EXHIBIT NO. ____ (RG-9HC)
DOCKET NO. UE-07 ____
2007 PSE PCORC
WITNESS: ROGER GARRATT

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY, INC.,

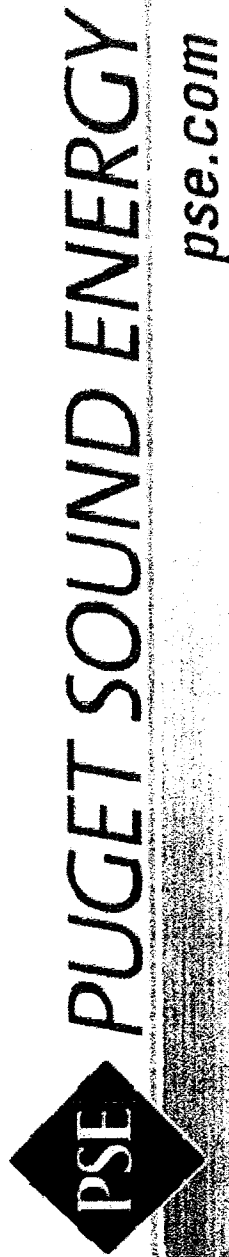
Respondent.

Docket No. UE-07 ____

**EIGHTH EXHIBIT (HIGHLY CONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF
ROGER GARRATT
ON BEHALF OF PUGET SOUND ENERGY, INC.**

**REDACTED
VERSION**

MARCH 20, 2007



Resource Acquisition Update All-Source RFP Short List Selections

Meeting with WUTC Staff//September 11, 2006

Agenda

- Review Phase I Results
- Phase II Analysis
- Phase II Results
- Commercial Negotiations Update

Phase I Results



Phase I Candidate Short List – 13 projects / 3 PPAs

Fuel	Project	Owner /Developer	MW	Status	Offer	COB/Term
Geothermal	Redacted					
Hydro						
Wind						
Wind						
Wind						
Wind						
Natural Gas						
Natural Gas	Goldendale	Calpine	277	Operating	ownership	2007
Natural Gas	Redacted					
Natural Gas						
Natural Gas						
Natural Gas						
Coal						
Coal						
PPA						
PPA						
PPA						

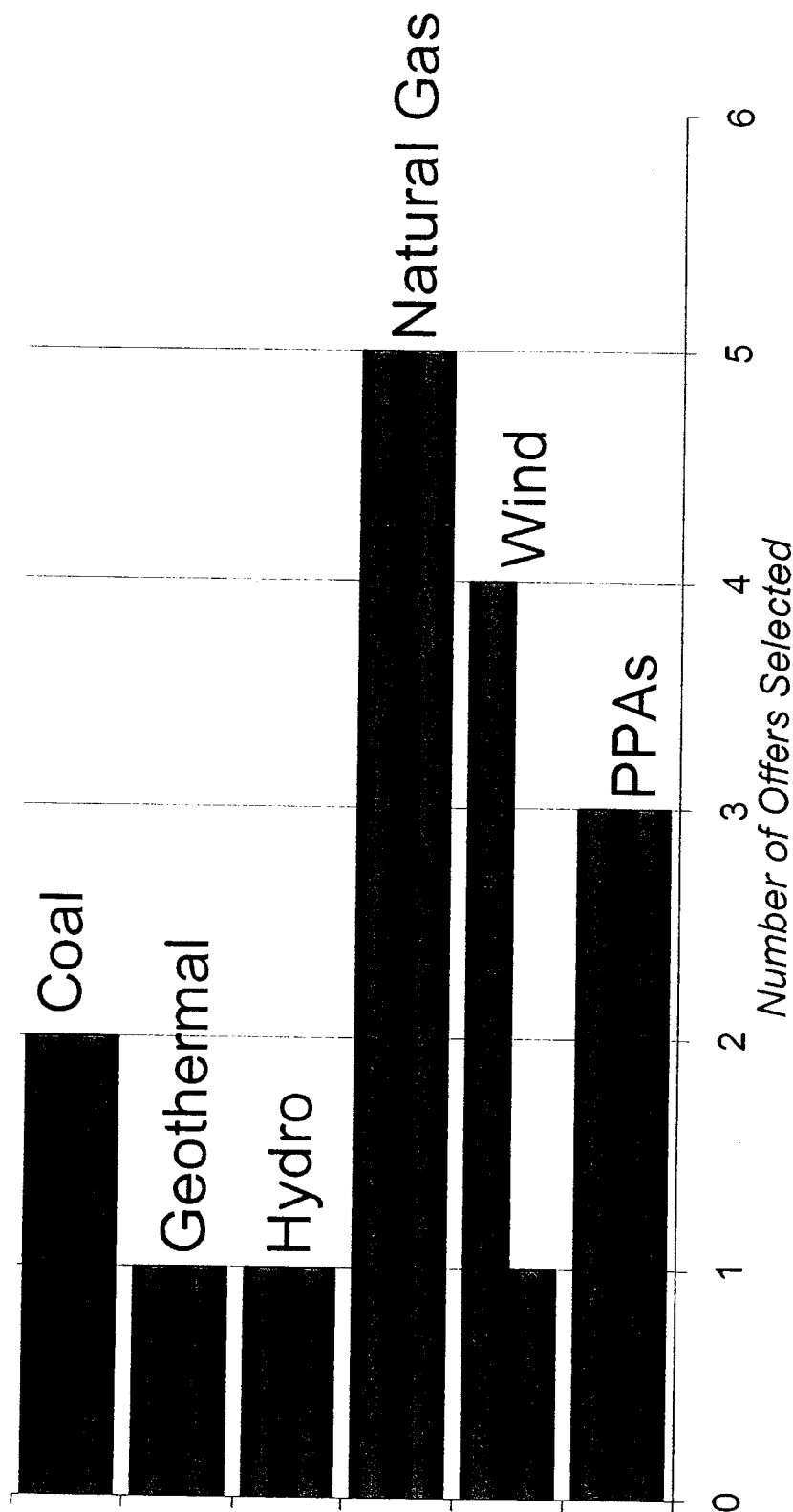
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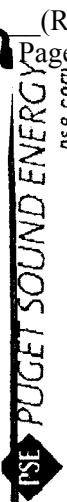
Candidate short list revised - 10 projects and 3 PPAs



Revised Candidate Short List – 10 projects/3 PPAs

Fuel	Project	Owner /Developer	MW	Status	Offer	COB/Term
Geothermal	Redacted					
Hydro						
Wind						
Wind						
Wind						
Natural Gas						
Natural Gas	Goldendale	Calpine	277	Operating	ownership	2007
Natural Gas	Redacted					
Natural Gas						
Natural Gas						
Natural Gas						
Coal						
Coal						
PPA						
PPA						
PPA						

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Phase II Analysis



Phase II Process

- Information requests and more in-depth analysis was performed on The Candidate Short List of projects.
- Projects were run in four different PSM scenarios.
- 7 Portfolios of Projects were run in PSM to analyze their potential effect on each other.
- Monte Carlo analysis is used to evaluate risk by adjusting variables within PSM, including hydro and wind conditions.
- ♦ Risk was evaluated as an average of the 10 worst trials from the 100 trials run.



Phase II evaluation tested variety of portfolios under 4 different scenarios

Candidate Short List Identified

Candidate Short List

- Projects
- Contracts
- Emergent Opportunities

Portfolios, Existing Plant plus

- All Generic
- Individual resource
- Combination of candidates

Portfolios Tested Against Different Risk Scenarios

PSE Current Trends Scenario

- Expected resource additions to WECC over next 20 year horizon

PSE Green World Scenario

- Expected resource additions over next 20 year horizon if all policy directives continue to favor renewables and penalize coal

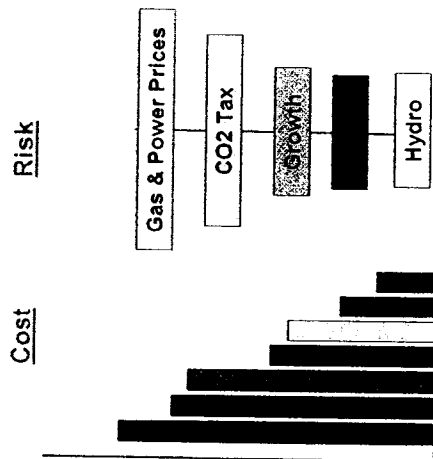
PSE Low Gas Price Scenario

- Expected resource additions over next 20 year horizon if low gas prices emerge

PSE Reserve Price Scenario

- Expected resource additions are 10% greater than Current Trends in 2025.

Monte Carlo Simulation Evaluates Cost and Risk of Each Candidate and Several Combinations



Short-Listed Respondents Will Be Thoroughly Evaluated

Candidates by Scenario

- Portfolio Benefit
- Benefit Ratio
- Levelized Cost

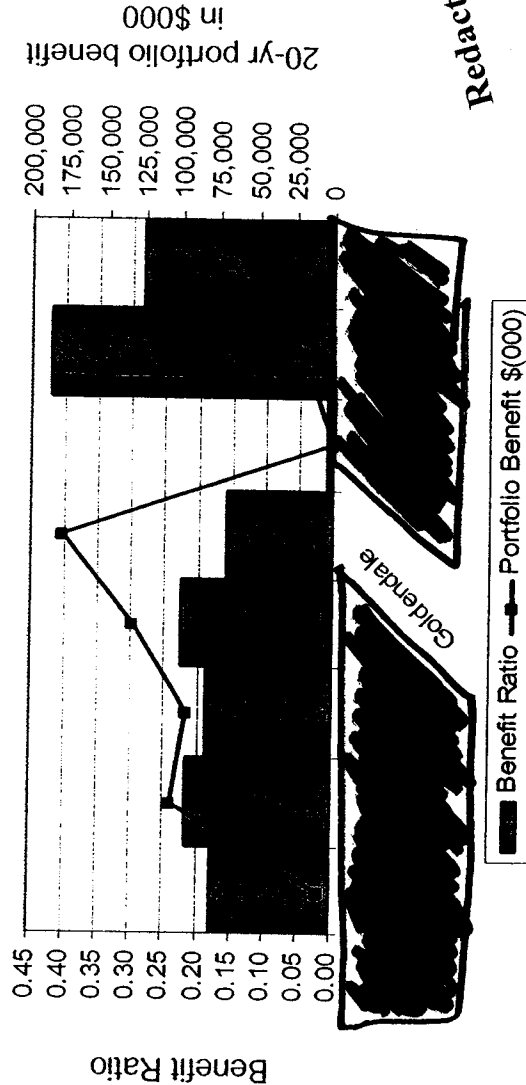
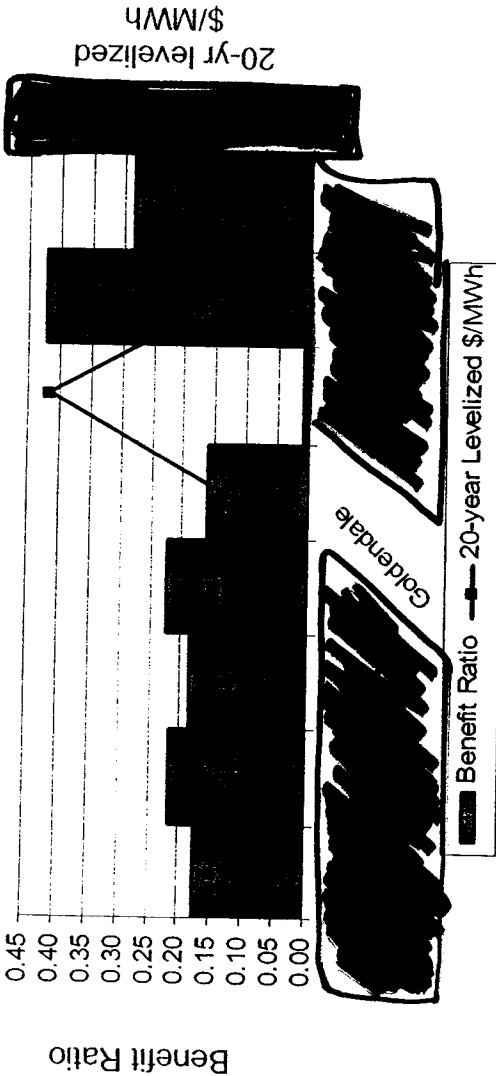
Detailed Qualitative Review

Table of Contents

- Phase II Quantitative Analysis Process
 - Data Flows
 - Four Scenarios and Price Assumptions
 - 16 Resource Alternatives Evaluated
 - 7 Portfolios
- Phase II Results Static (by price scenario)
- Phase II Results Dynamic (Monte Carlo)



Portfolio benefit ratio is balanced with levelized cost and portfolio benefit



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Levelized cost is the average annual cost per MWh produced during a 20-year period for each project.

Portfolio benefit is the 20-year present value of all portfolio benefits derived from each project in comparison to the 2005 LCP generic portfolio.

Portfolio benefit ratio is the present value of portfolio benefits divided by the present value of the project revenue requirements

Four Scenarios

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Scenario	Reference Current Trends	Reserve/Overbuild	High Price/Green World	Low Gas Price	Notes
WECC Demand (AURORA)	Reference (from EPIS) WECC Average Growth Rate 1.8%	Reference (from EPIS) WECC Average Growth Rate 1.8%	Low WECC Average Growth Rate 1.1%	Reference WECC Average Growth Rate 1.8%	Low Growth Rate is 60% of Reference Growth Rate for each area
Gas Price (Nominal \$ Levelized for 2007-2026)	Global Insights Reference; Levelized, plus Kiodex forwards 2007 - 2010 [REDACTED] MMBTU	Global Insights Reference; Levelized, plus Kiodex forwards 2007 - 2010 [REDACTED] MMBTU	Global Insights High Price; Levelized, plus Kiodex forwards 2007 - 2010 [REDACTED] MMBTU	Global Insights Low Economic Growth; Levelized; Kiodex forwards 2007 - 2008 [REDACTED] MMBTU	Global Insights (12/05) and Kiodex forwards (2007-2010) as of 12/19/2005
PSE Demand (PSM)	Reference	Reference	Low	Reference	Most recent PSE load forecast.
Carbon Costs (AURORA)	NCEP Nominal \$/ton by year: 2010: \$5.00 2015: \$6.38 2020: \$8.14	NCEP Nominal \$/ton by year: 2010: \$5.00 2015: \$6.38 2020: \$8.14	Clean Power (Jeffords) Nominal \$/ton by year: 2010: \$21.00 2015: \$31.17 2020: \$45.35	NCEP Nominal \$/ton by year: 2010: \$5.00 2015: \$6.38 2020: \$8.14	NCEP increases 2.5% real per year. Clean Power increases about 4% per year real over 20 years
Overbuild	No	Net Additions are approx. 30% greater in 2015 and 10% greater in 2025	No	No	

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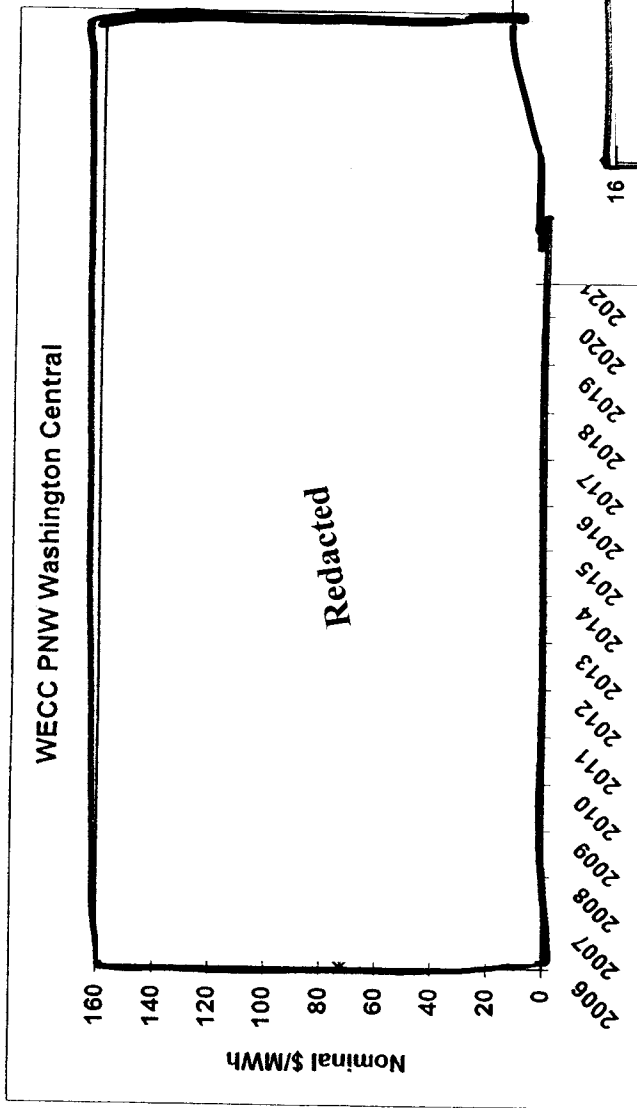
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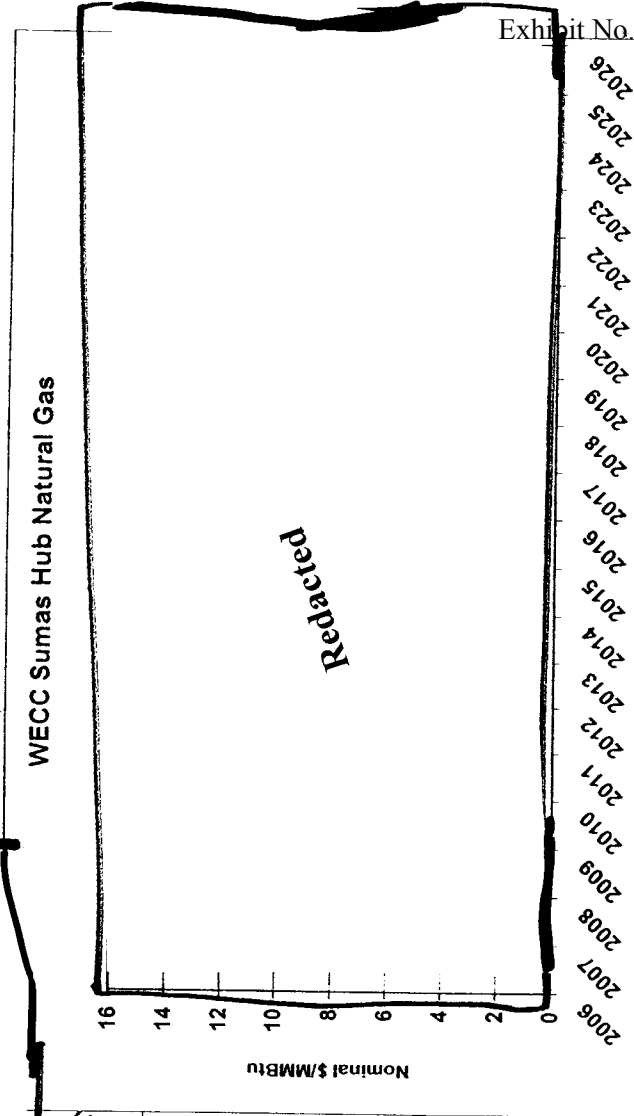
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Scenario Power and Gas Prices



AURORA model power prices forecasts

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Global Insights Gas (12/05):
Reference, High and Low for
2011 - 2026

Kiodex forwards 2007 – 2010,
except through 2008 for Low
Gas

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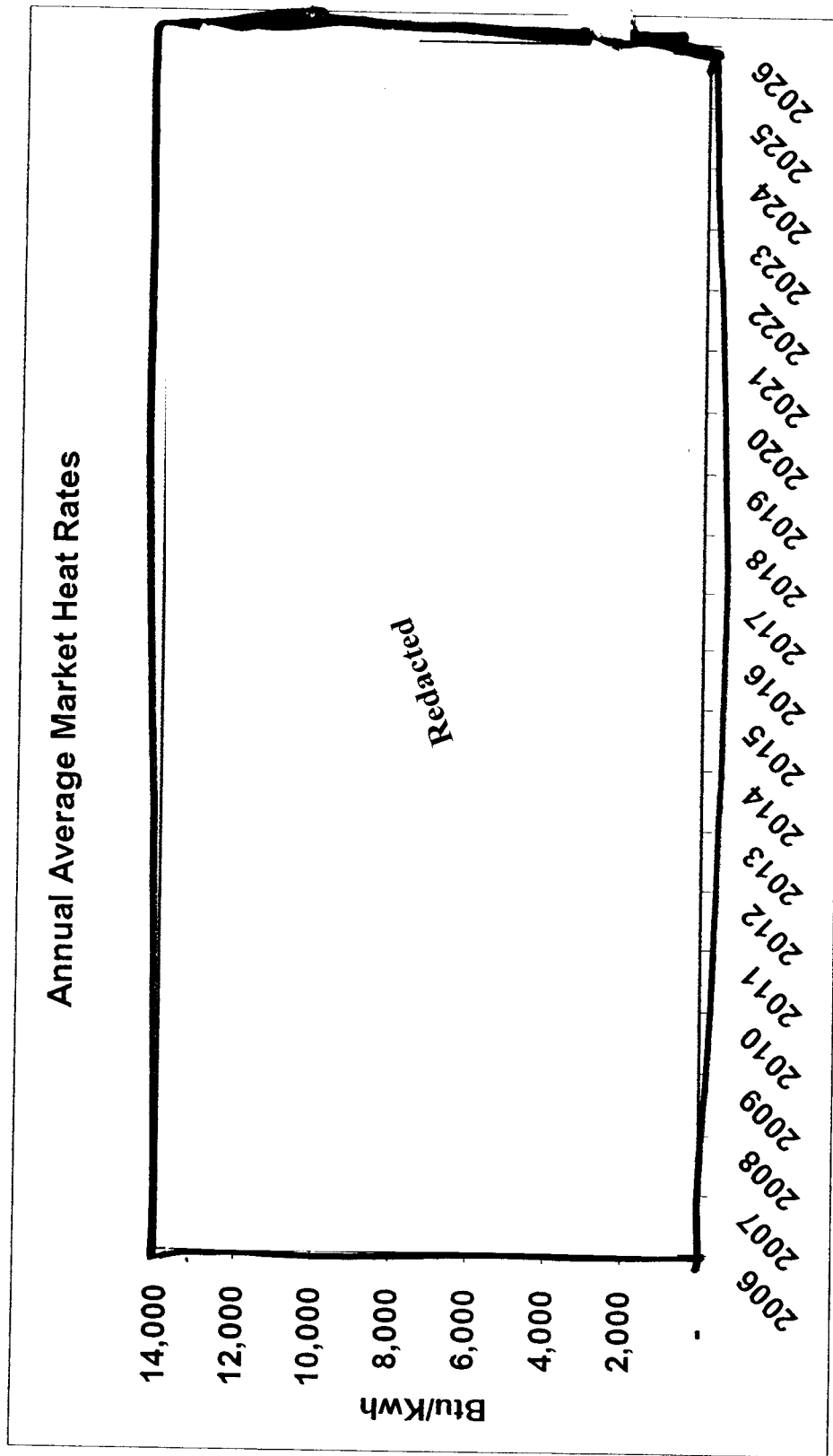
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Scenario Heat Rates



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Phase II - 16 Resource Evaluations

0	000 Generic Portfolio of wind, PPA, Gas and Coal
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	552 Goldendale (Own) – 277 MW CCCT
16	

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Reconcile # Projects Analyzed

16 13 projects plus 3 PPAs

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+1
+1
+1
-1
-1
-1

+ 16

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Portfolio Design Criteria

Portfolios will be designed to:

- Add resources to meet, or come close to meeting, B2 Standard for energy need. Because PSE will have another RFP at the end of 2007, filling need for future years not as critical.
- Meet Renewable Portfolio Standard as proposed by WA (Initiative 937). 9% 2016 15% 2020
- Test portfolio cost and risk of owning new gas plant(s) versus contracting via PPAs
- Test incremental benefit of short listed resources by adding and subtracting from portfolios.
- Test portfolio cost and risk of short list projects that most closely approximate the 10% wind plus approximately equal mix of coal and gas from the 2005 LCP.
- Test portfolio cost and risk of choosing long lead projects with bridge PPA.

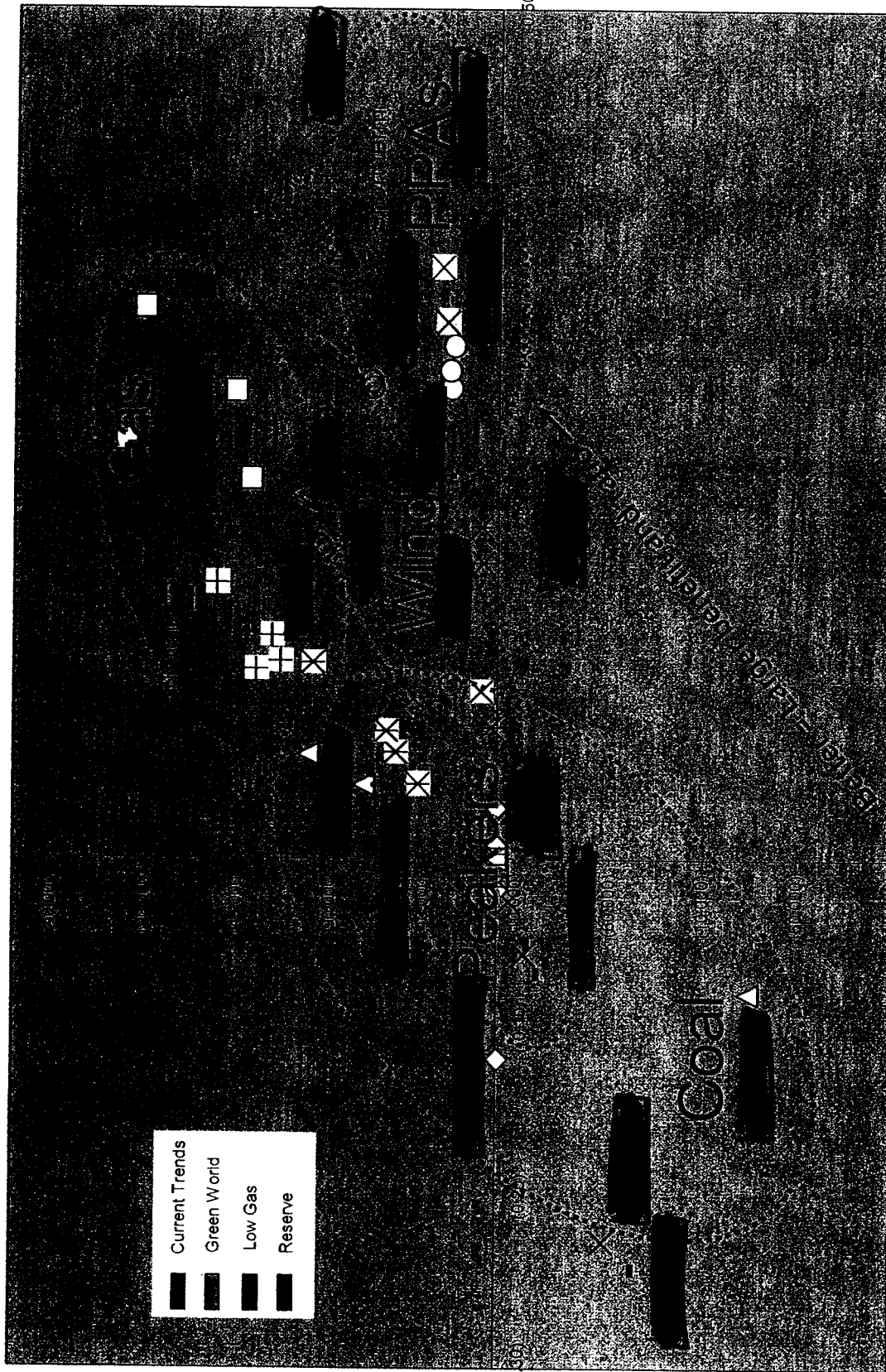
Phase II - 7 Portfolios Evaluated in addition to the All Generic Portfolio

Port 1	[REDACTED] (PPA), [REDACTED] (PPA), [REDACTED] (PPA) and Goldendale (OWN)
Port 2	Like Portfolio 1, with substitute of [REDACTED] for Goldendale, i.e., all PPA
Port 3	Like Portfolio 1, but without [REDACTED]
Port 4	Like Portfolio 1 with substitute of [REDACTED] for Goldendale
Port 5	Like Portfolio 1 with substitute of [REDACTED]
Port 6	Long Lead Hydro and Coal with bridge PPA. [REDACTED]
Port 7	Similar to LCP strategy of 10% wind, 45% coal, 45% gas. [REDACTED]

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Phase II – Individual Resources



Portfolio Benefit (\$000s)

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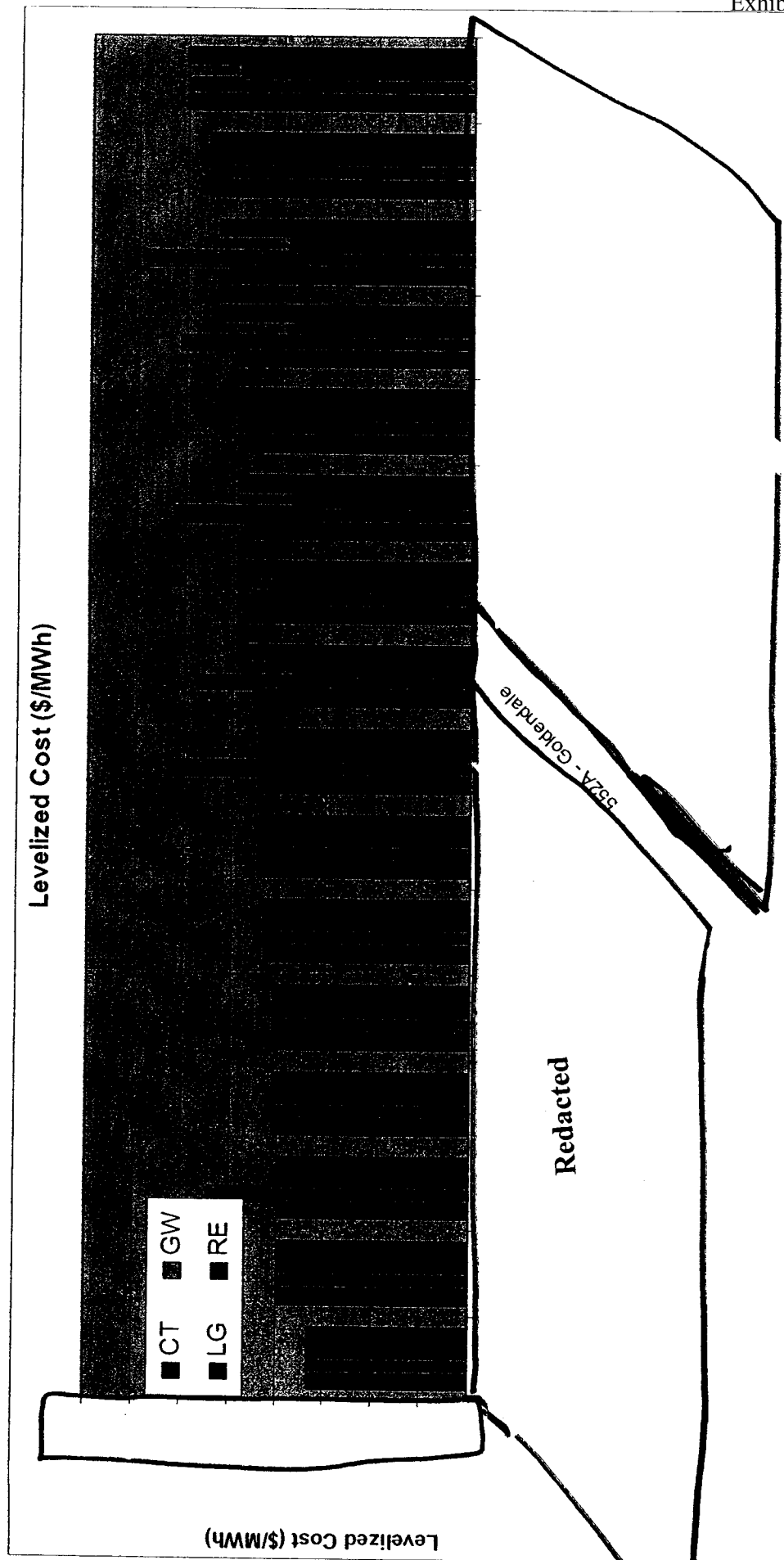
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Levelized Cost of Individual Resources

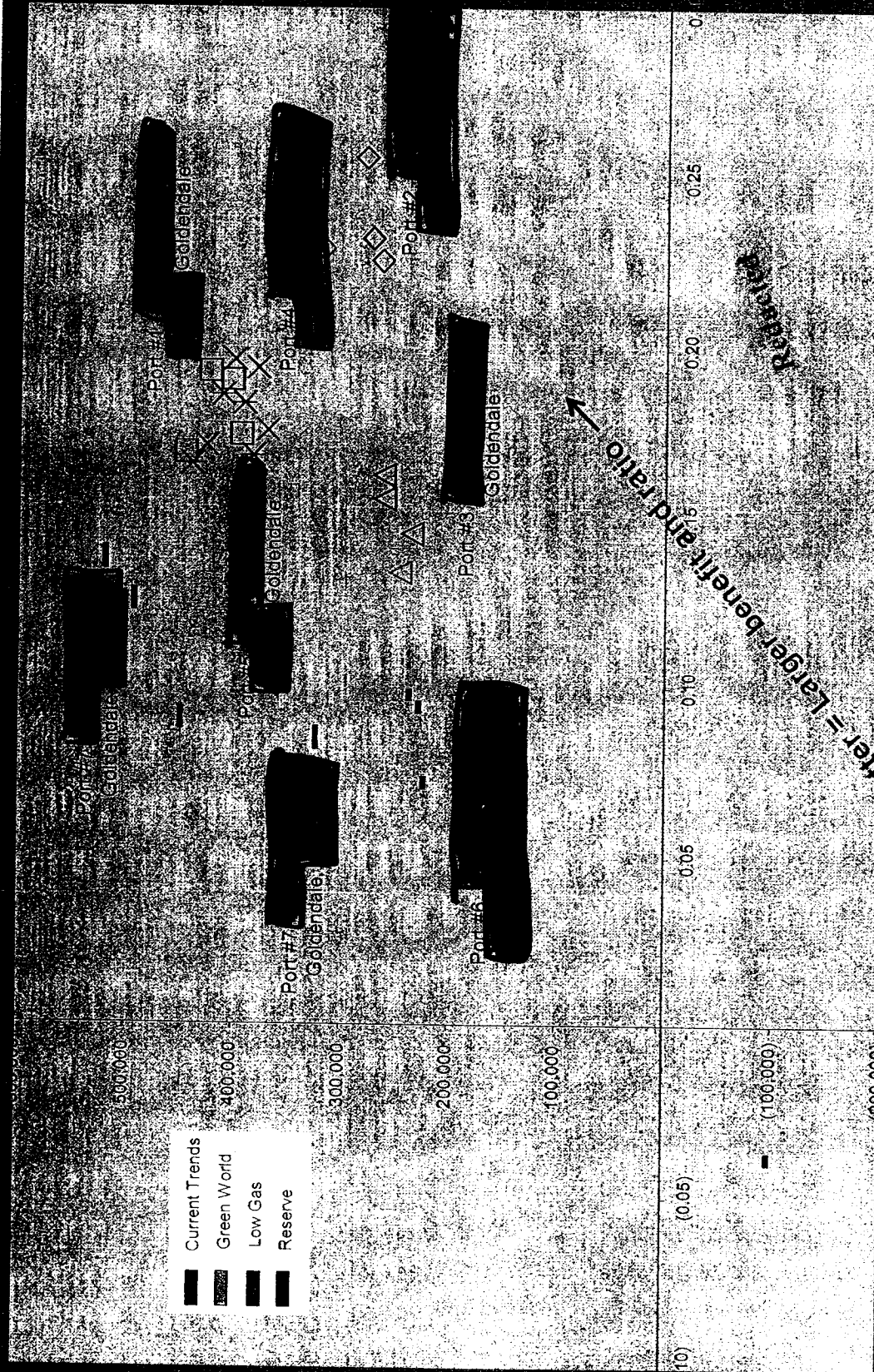


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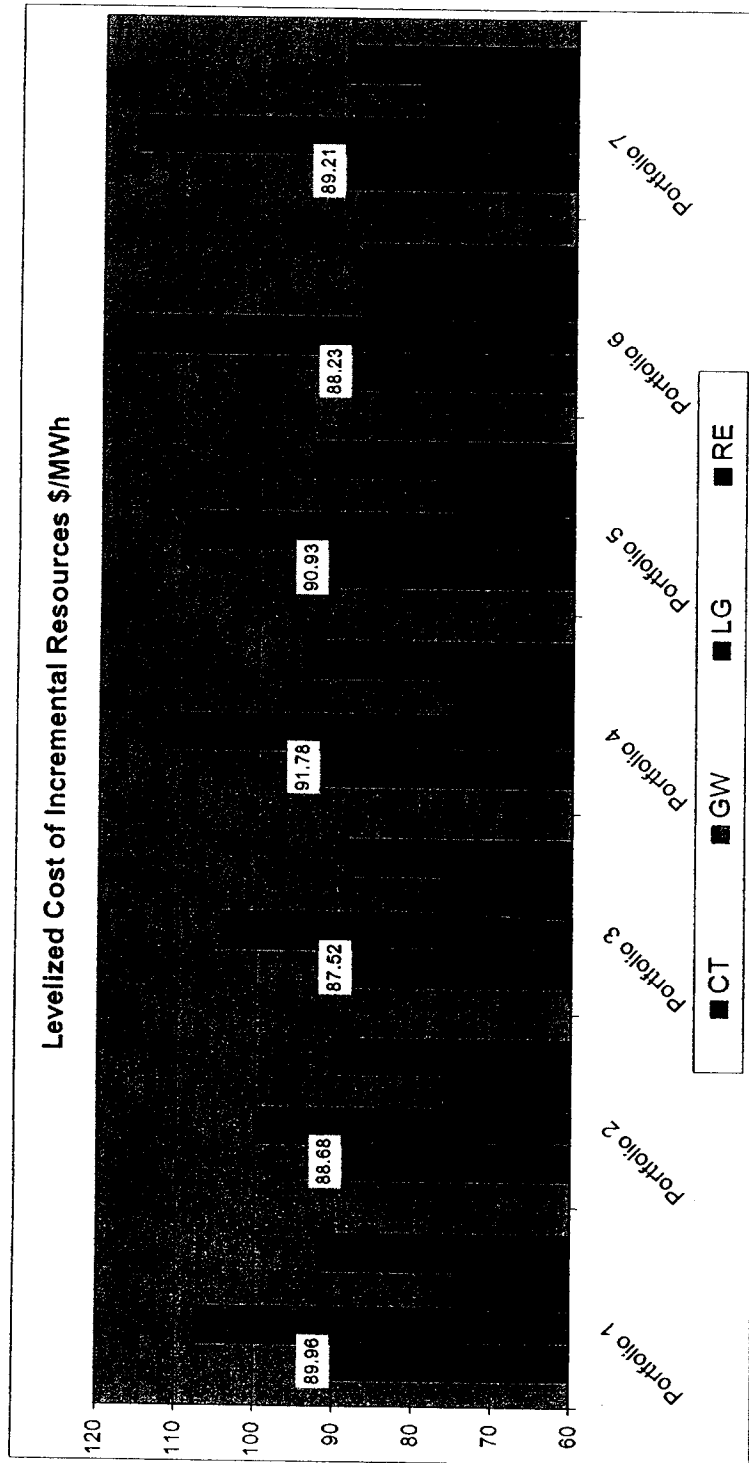
Phase II – Portfolios

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Levelized Cost of Portfolio Additions



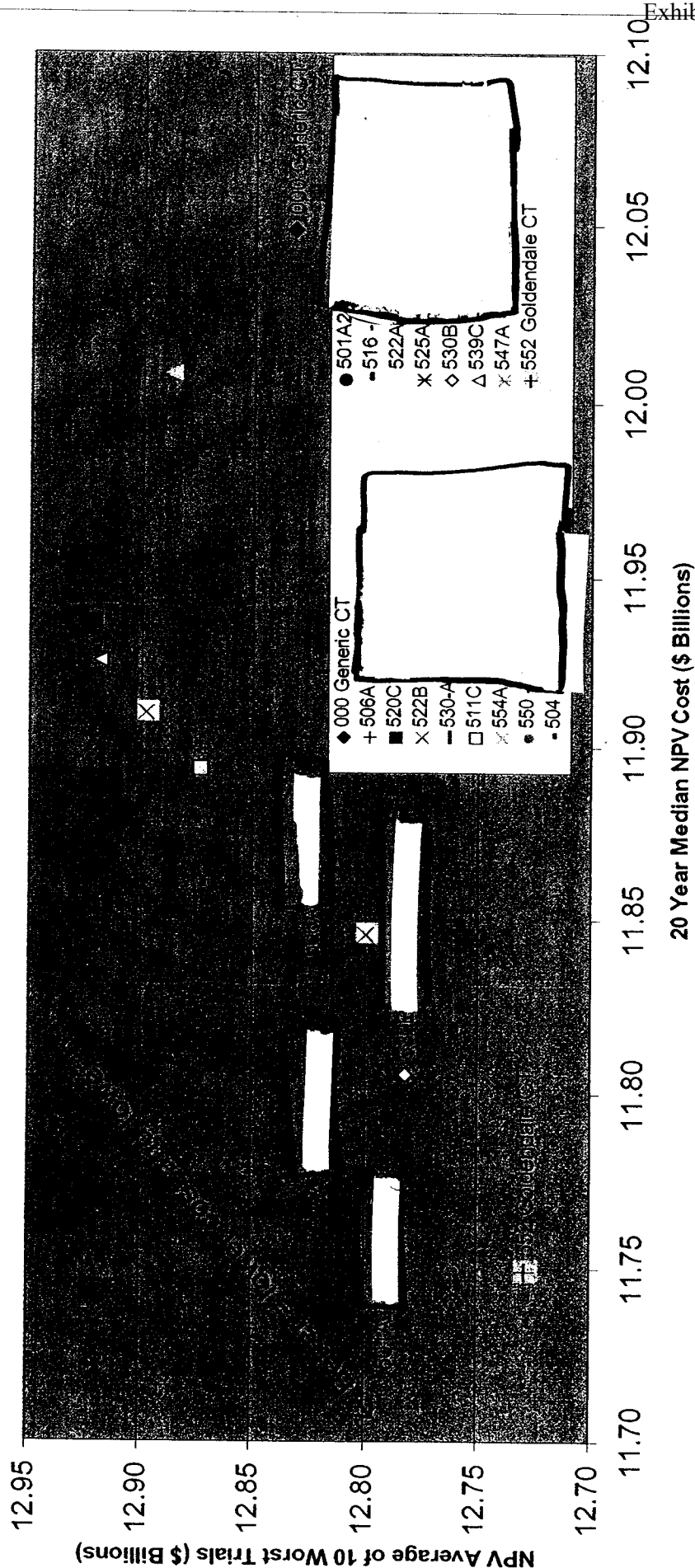
	CT	GW	LG	RE
Portfolio 1	89.96	107.45	74.76	91.96
Portfolio 2	88.68	100.08	75.76	90.44
Portfolio 3	87.52	104.33	76.07	88.77
Portfolio 4	91.78	111.86	75.08	94.27
Portfolio 5	90.93	108.34	75.42	93.22
Portfolio 6	88.23	116.30	86.99	87.11
Portfolio 7	89.21	115.97	79.40	89.28

Levelized cost (20 year)
of resource additions in
\$/MWh



Goldendale shows lowest cost and risk in the Current Trends price scenario

Resource Cost and Risk - Current Trends



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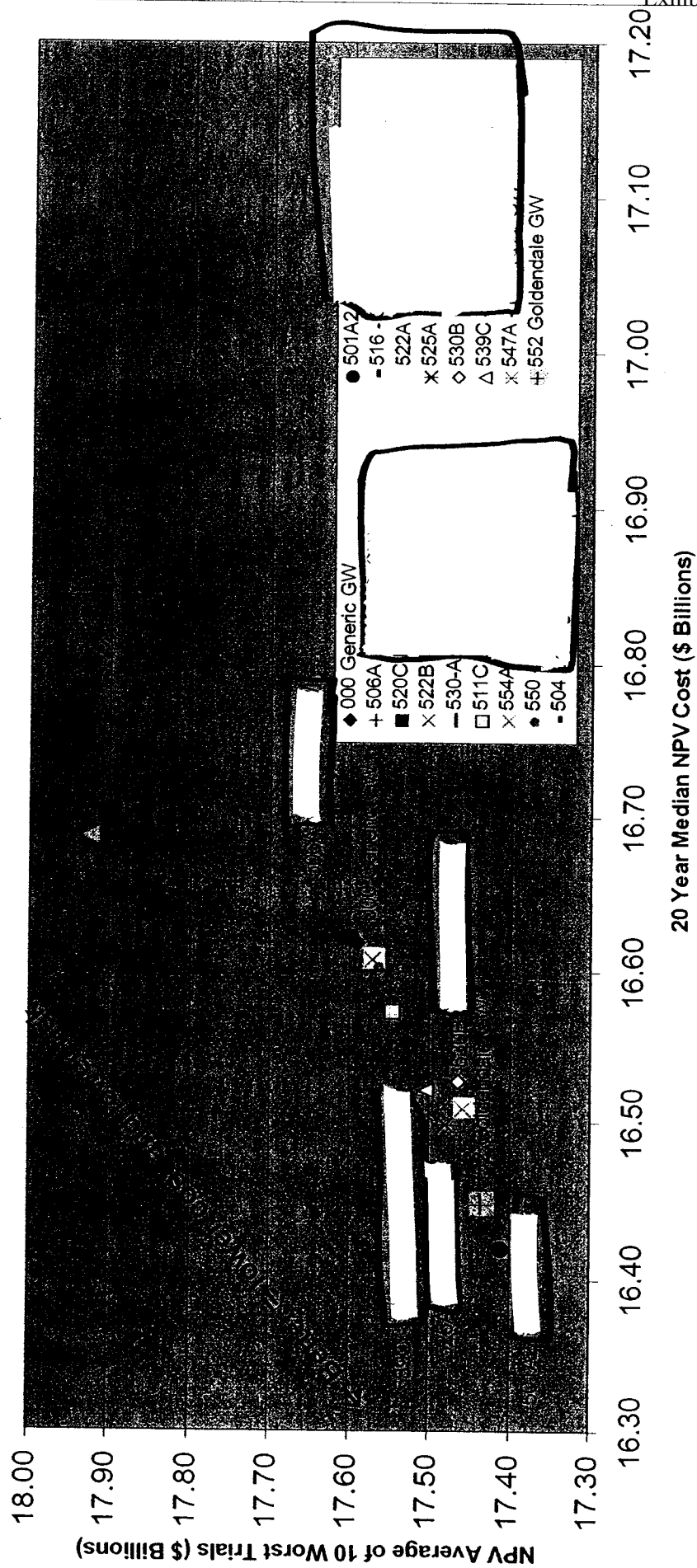
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[Redacted]

show lowest cost and risk in Green World Scenario

Resource Cost and Risk - Green World



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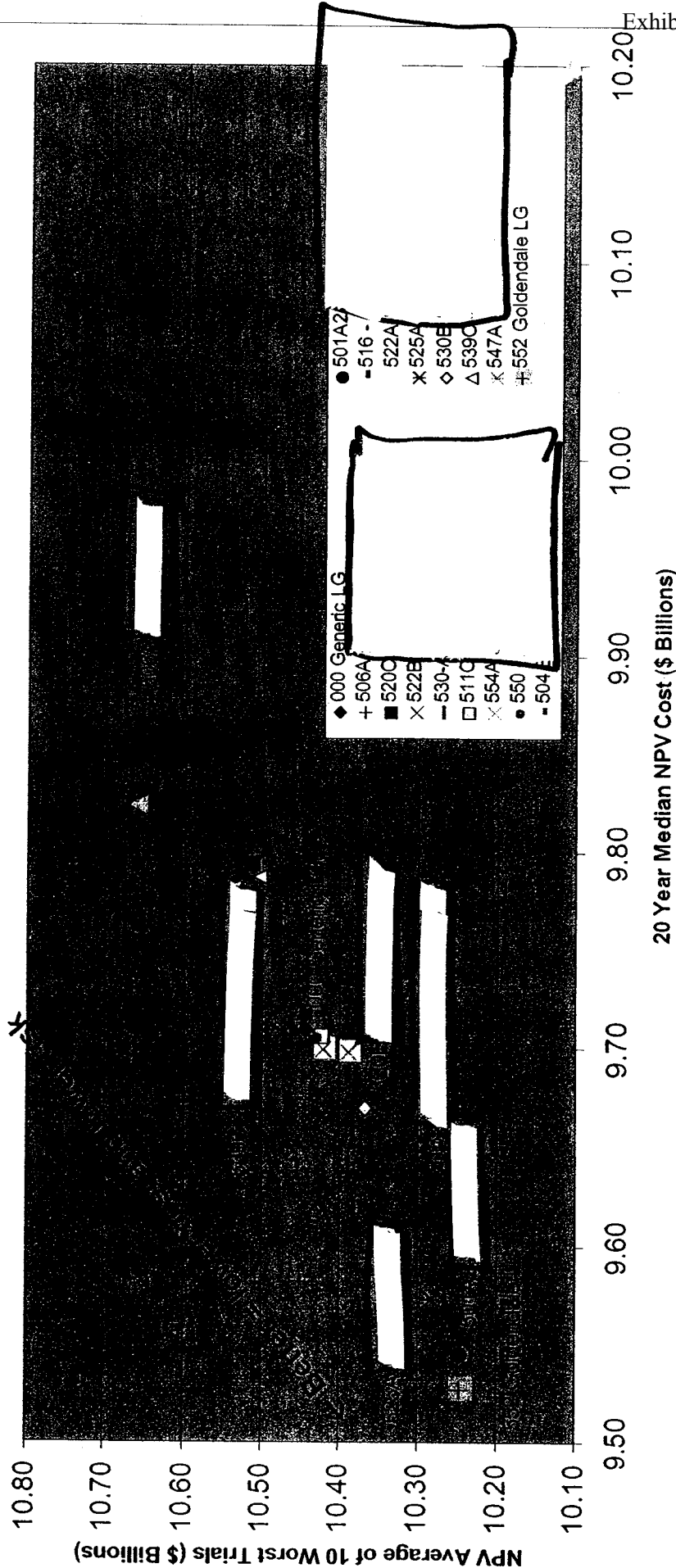
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Gas Plants show lowest cost and risk in Low Gas Price Scenario

Resource Cost and Risk - Low Gas



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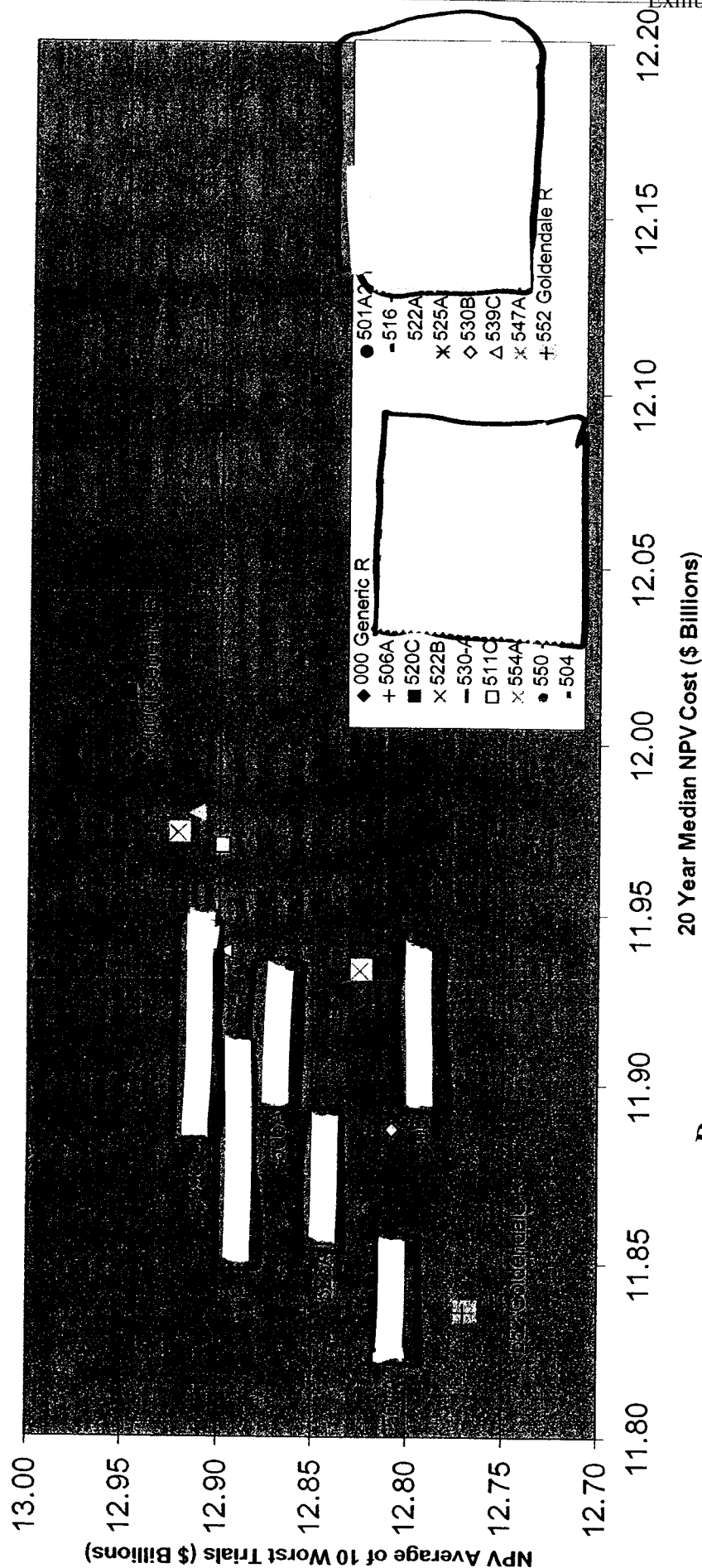
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Cost and Risk in Reserve Price Scenario Similar to Current Trends Price Scenario

Resource Cost and Risk - Reserve



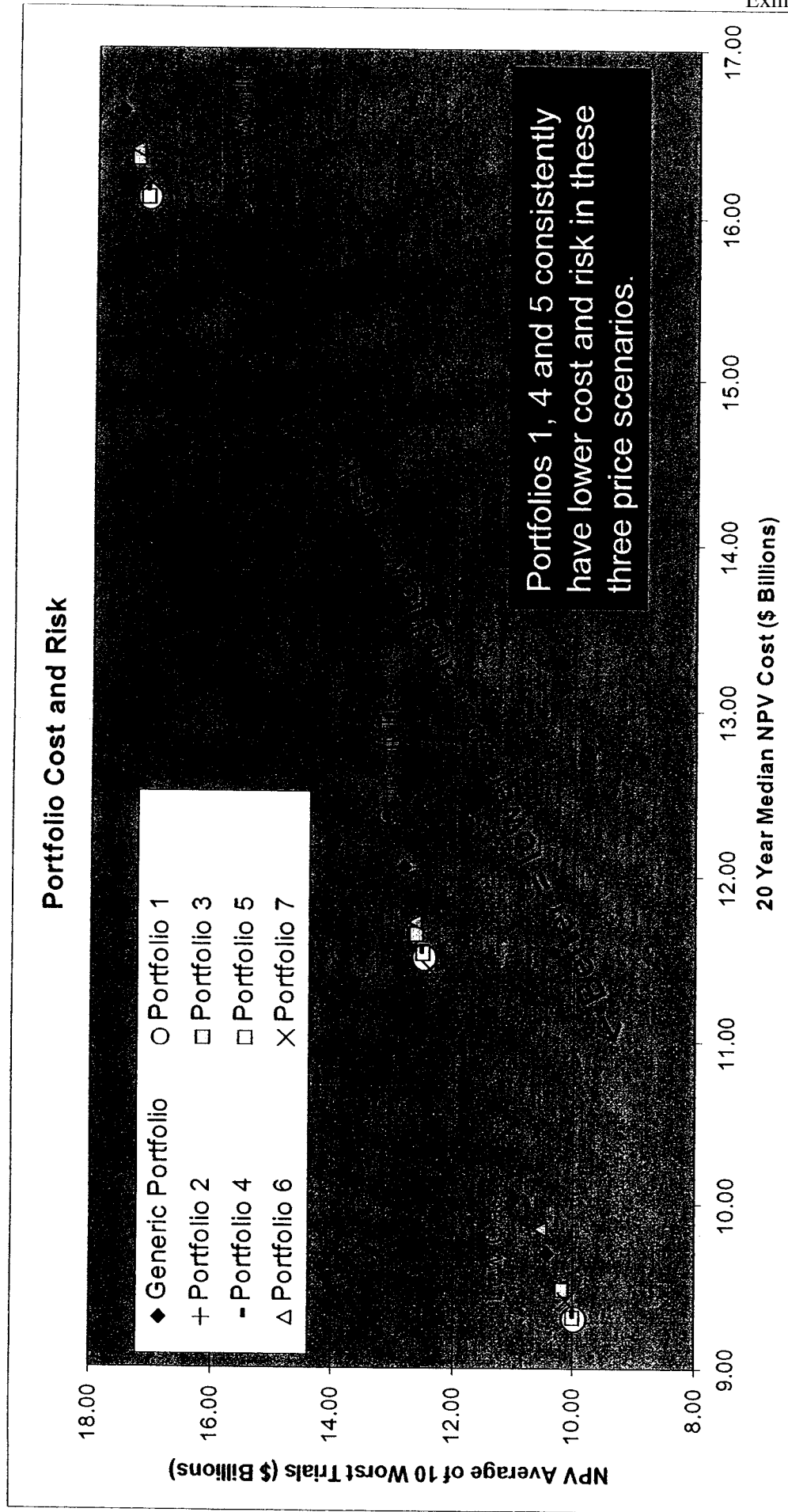
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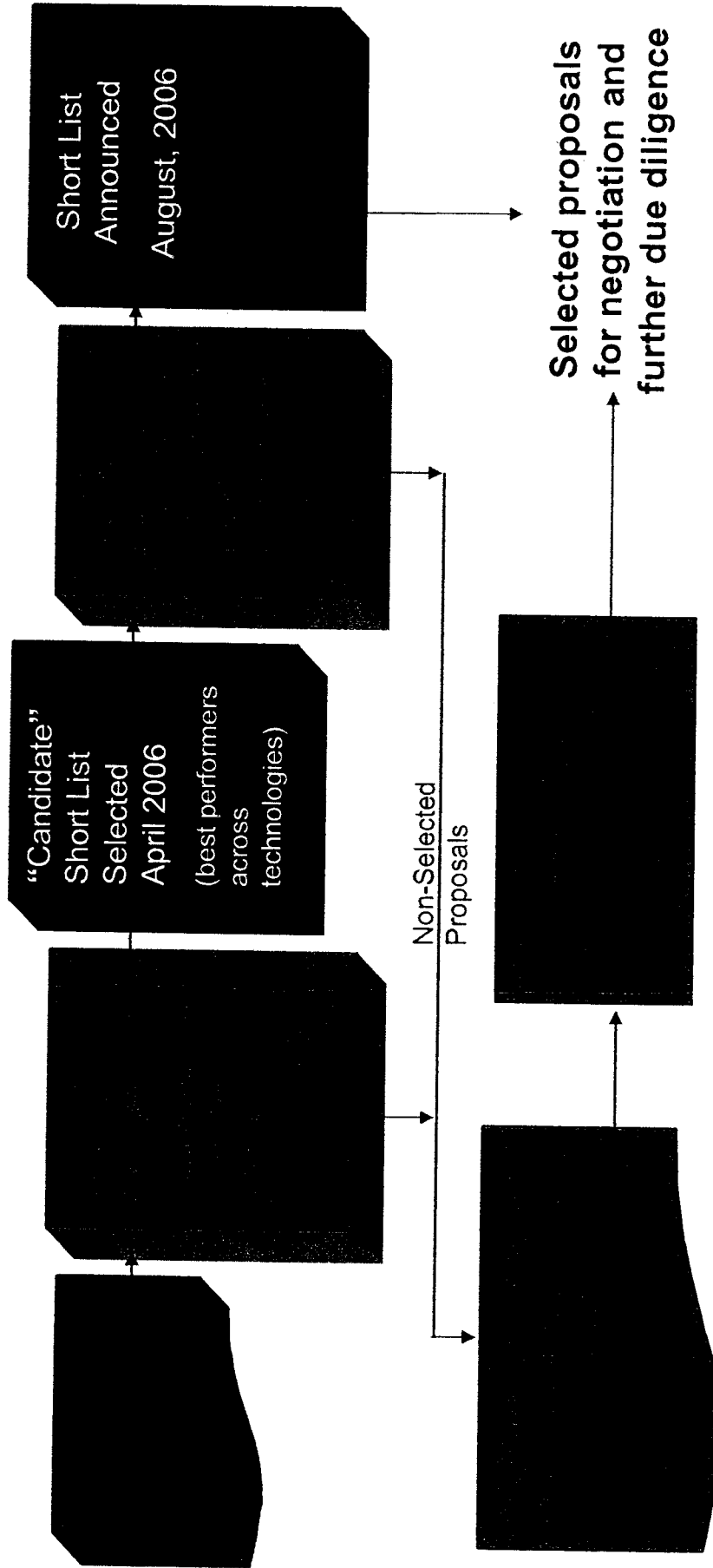
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Portfolio Cost & Risk



Phase II Short List Selections

Phase II Completed...



Final Short List Selections: 5 projects/2 short term PPAs

Fuel	Project	Owner /Developer	MW	Status	Offer	COD/Term
Geothermal	Redacted					
Wind						
Natural Gas						
Natural Gas	Goldendale	Calpine	277	Operating since September 2004	ownership	Jan-07
Natural Gas	Redacted					
PPA						
PPA						

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This slide will contrast what we received in the RFP in terms of technology and megawatts contrasted with what was selected in the final

Evaluation Summary

Fuel	Project/Offer	MW	Benefit Ratio	Cost \$/MWh	Portfolio Benefit \$000	Comments
G			0.18		8,139	Redacted
W			0.19		95,499	
			0.22		106,292	
NG			0.23		133,084	Distressed asset - low capital cost; opportunistic purchase; potential to redirect transmission to PSE's system; requires participation in bankruptcy auction process; project shows lowest cost and risk in Phase II Current Trends scenario
NG	Goldendale	277	0.16		179,820	
NG			0.01		40	Redacted
PPA			0.42		21,039	
PPA			0.28		69,041	

20-year levelized cost

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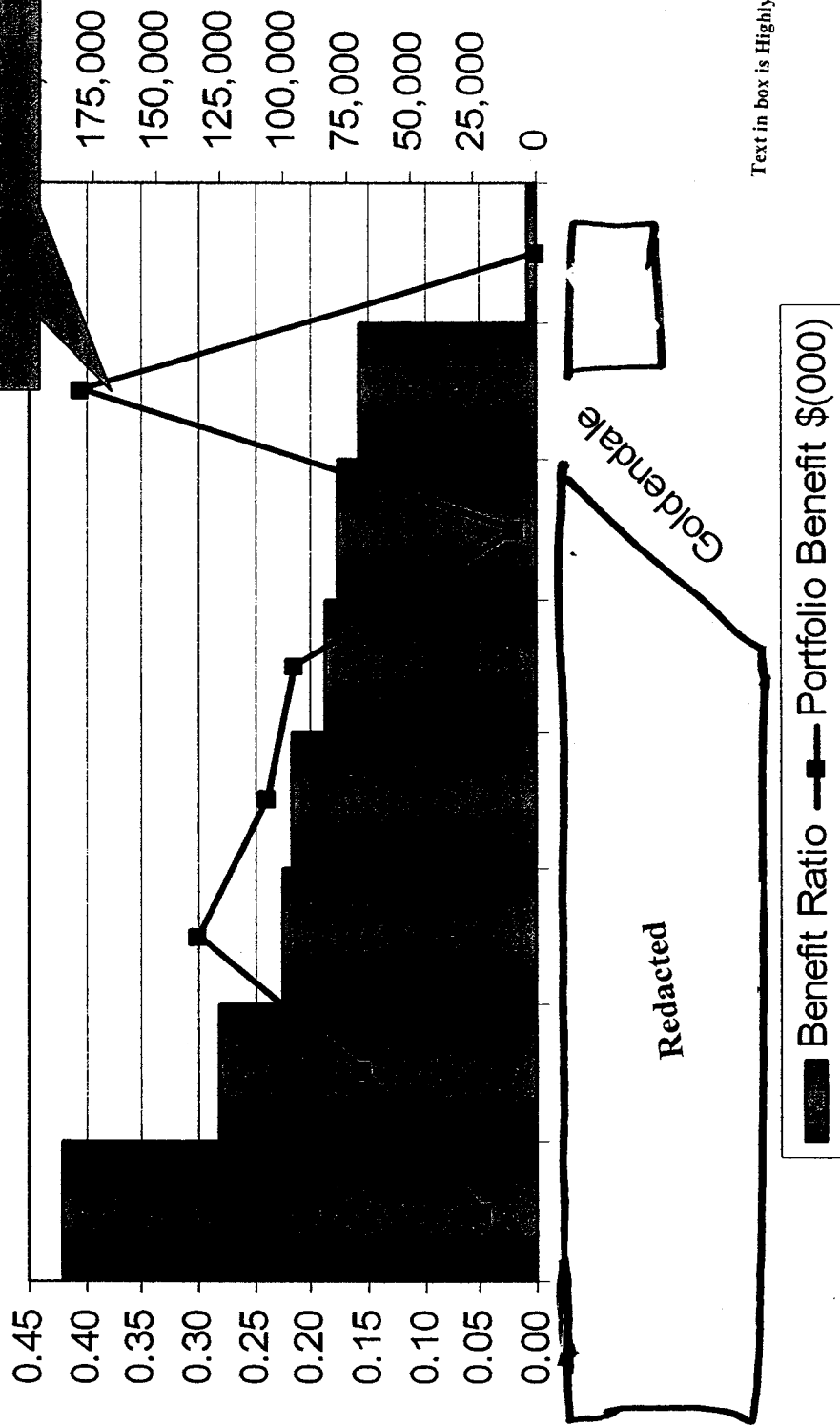
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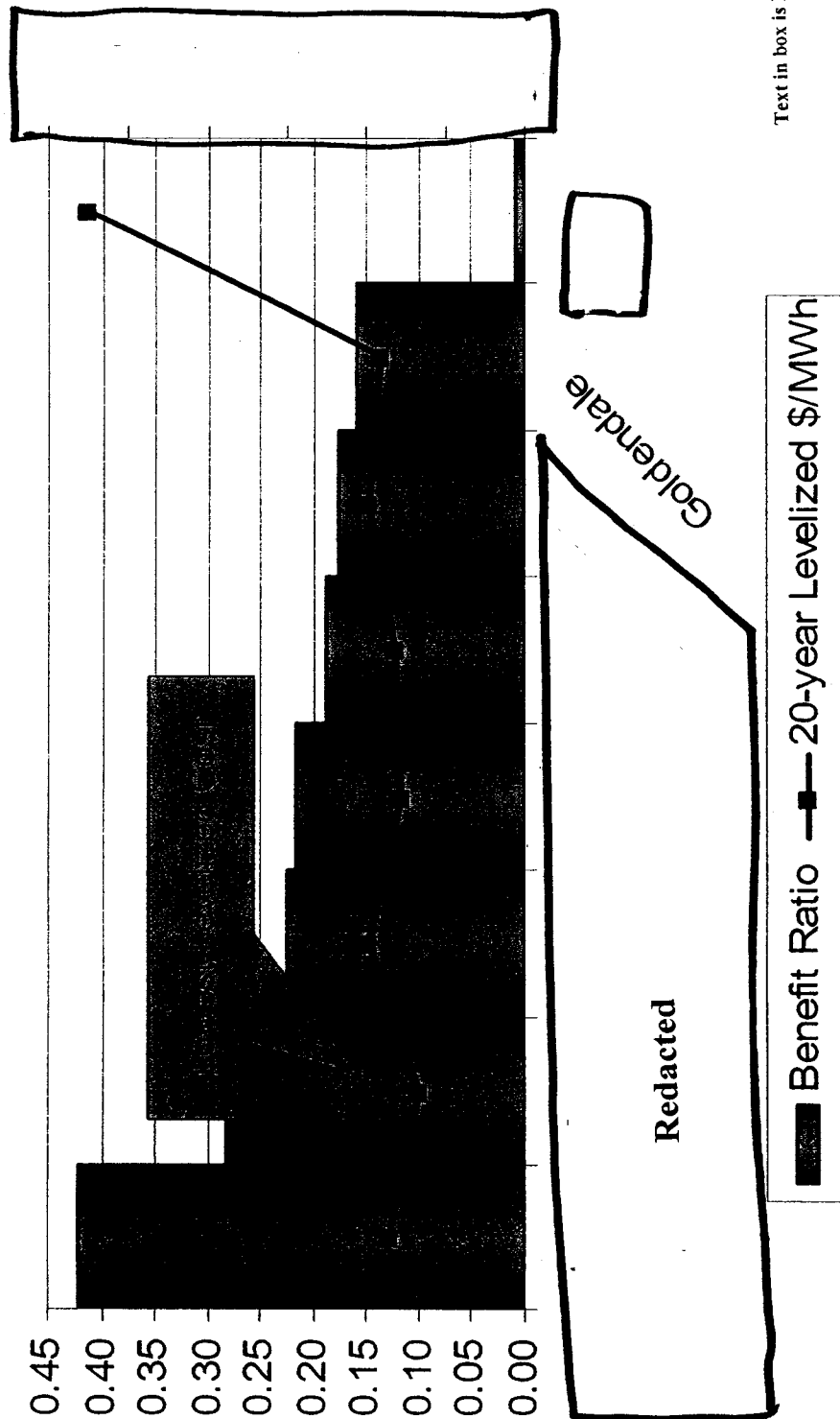
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Benefit ratio must be balanced with absolute portfolio benefit



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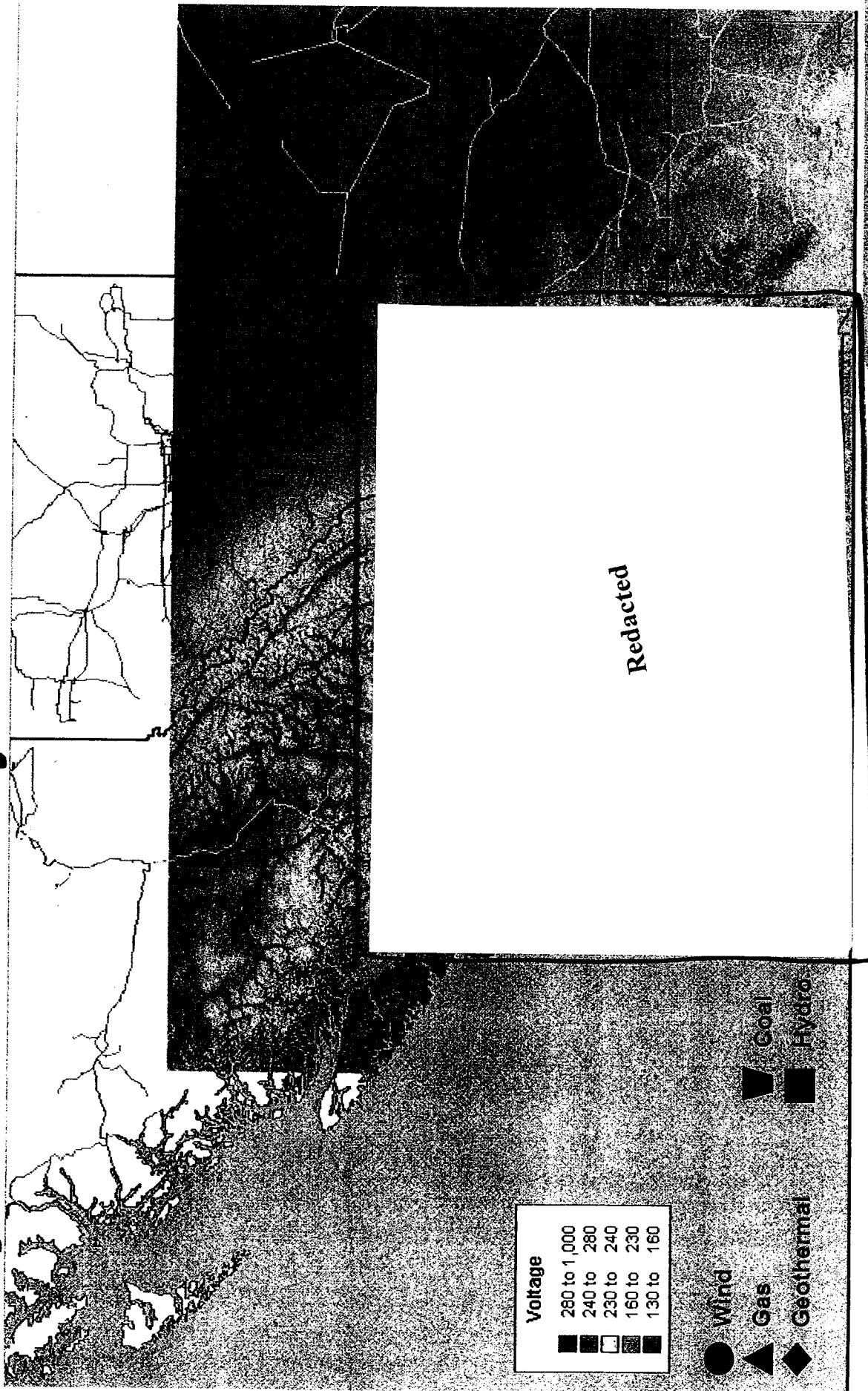
...Benefit ratio must be balanced with 20-year levelized cost



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Benefit Ratio — 20-year Levelized \$/MWh

Project Short List by Location



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“Continuing Investigation”

- [Redacted]
♦ Pros: [Redacted]
♦ Cons: [Redacted]
- [Redacted]
♦ Pros: [Redacted]
♦ Cons: [Redacted]

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Non-Selected Proposals

Fuel	Project/Offer	Owner /Developer	MW	Benefit Ratio ¹	Levelized Cost \$/MWh	Portfolio Benefit \$000	Comments
W				0.17		42,744	
W				(0.099)		(25,673)	
W				0.06		16,443	
NG				0.063		54,928	
C				0.061		101,961	
C				(0.054)		(15,936)	
PPA				0.318		n/a	

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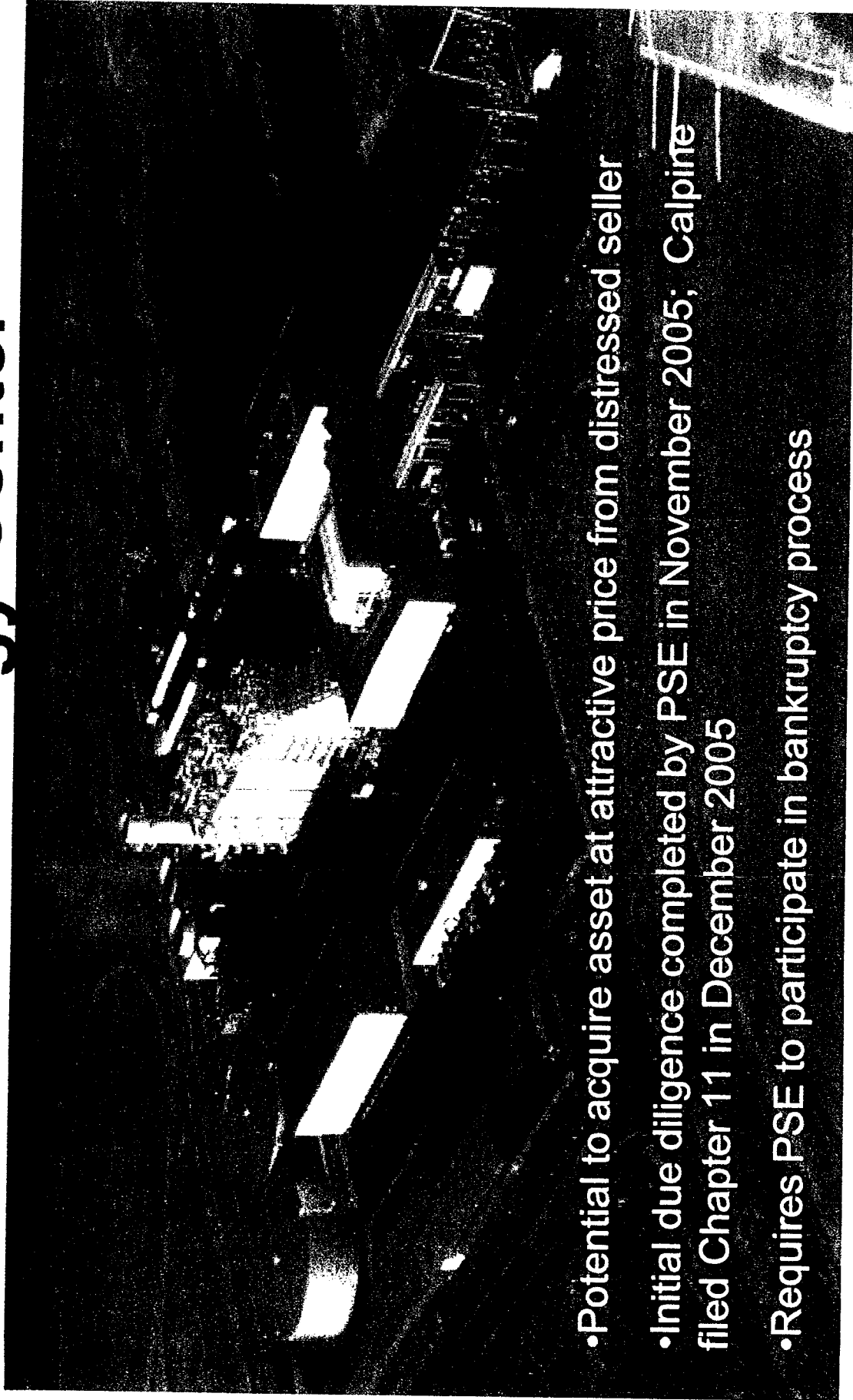
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Post-Proposal Negotiations Update



Goldendale Energy Center



- Potential to acquire asset at attractive price from distressed seller
- Initial due diligence completed by PSE in November 2005; Calpine filed Chapter 11 in December 2005
- Requires PSE to participate in bankruptcy process

Goldendale Profile

COD: September 2004

Location: West of the City of Goldendale, WA; Goldendale Industrial Park

Size: 250-MW combined cycle plant; incremental 25 MW duct fire capability

Technology: 1x1; GE 7FA turbine (Model 7241); Hitachi HRSG w/duct burner; 90-MW Hitachi steam turbine; 115-MW Siemens generator; hybrid wet/dry cooling

Heat Rate: [Redacted]

Fuel: [Redacted]

Gas Transport: NWPL 5.1 mile lateral (50,350 Dth/d); no NWPL mainline transportation

Transmission: 315 MW Klickitat PUD to BPA Harvalum Substation (term through 2031)
250 MW from BPA Harvalum to Mid-C (contract term 2001-2023)

Water Supply: 30-year agreement with the City of Goldendale. Sanitary and wastewater discharged to City of Goldendale sewer system; stormwater is directed to drainage ditch across the facility to 2 detention ponds

Operation: 170 starts (Sept04-Sept06); 8445 hours of operation

O&M: No LTSA (O&M provided by Calpine Services)

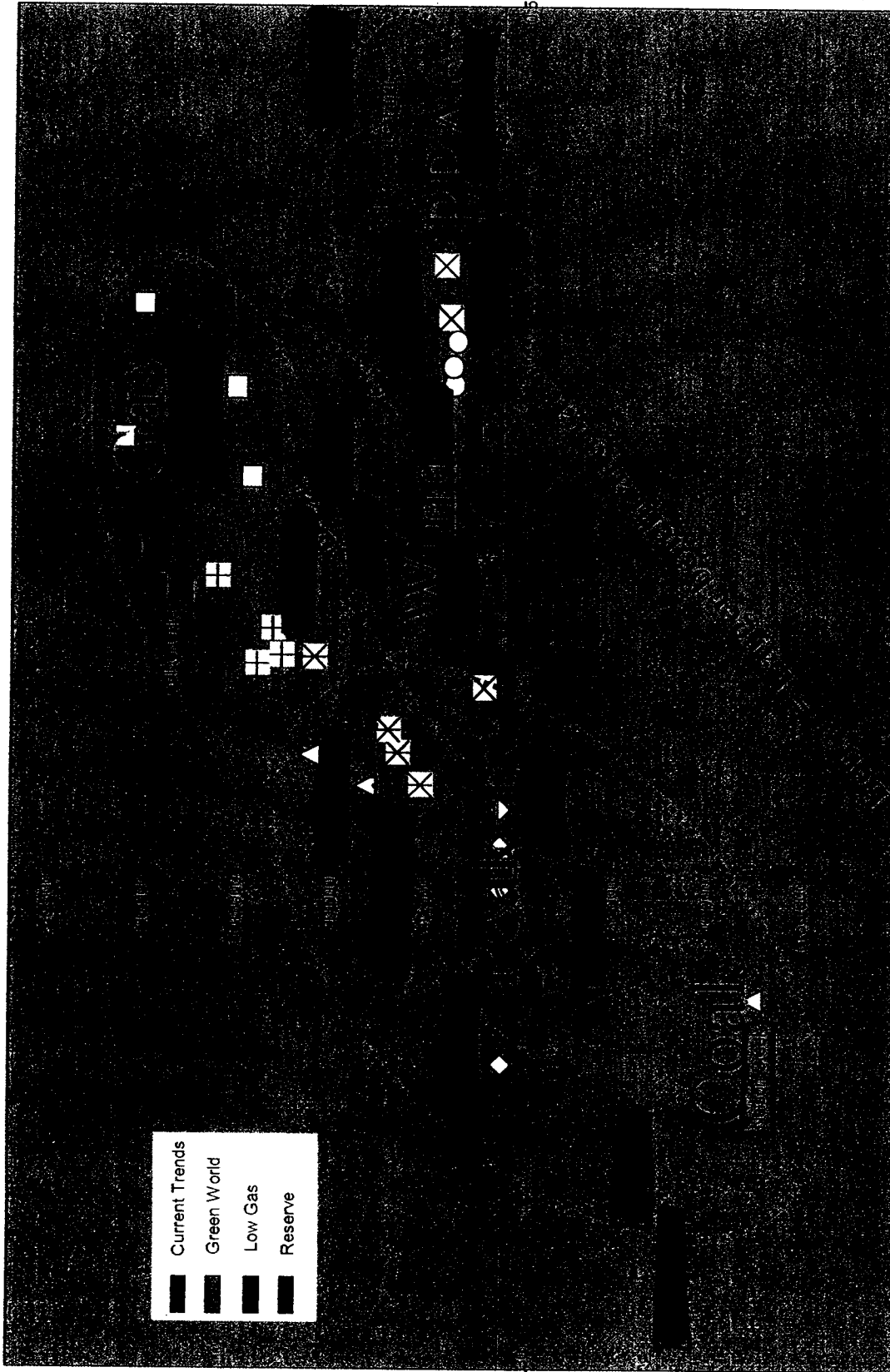
Levelized Cost

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RFP Evaluation

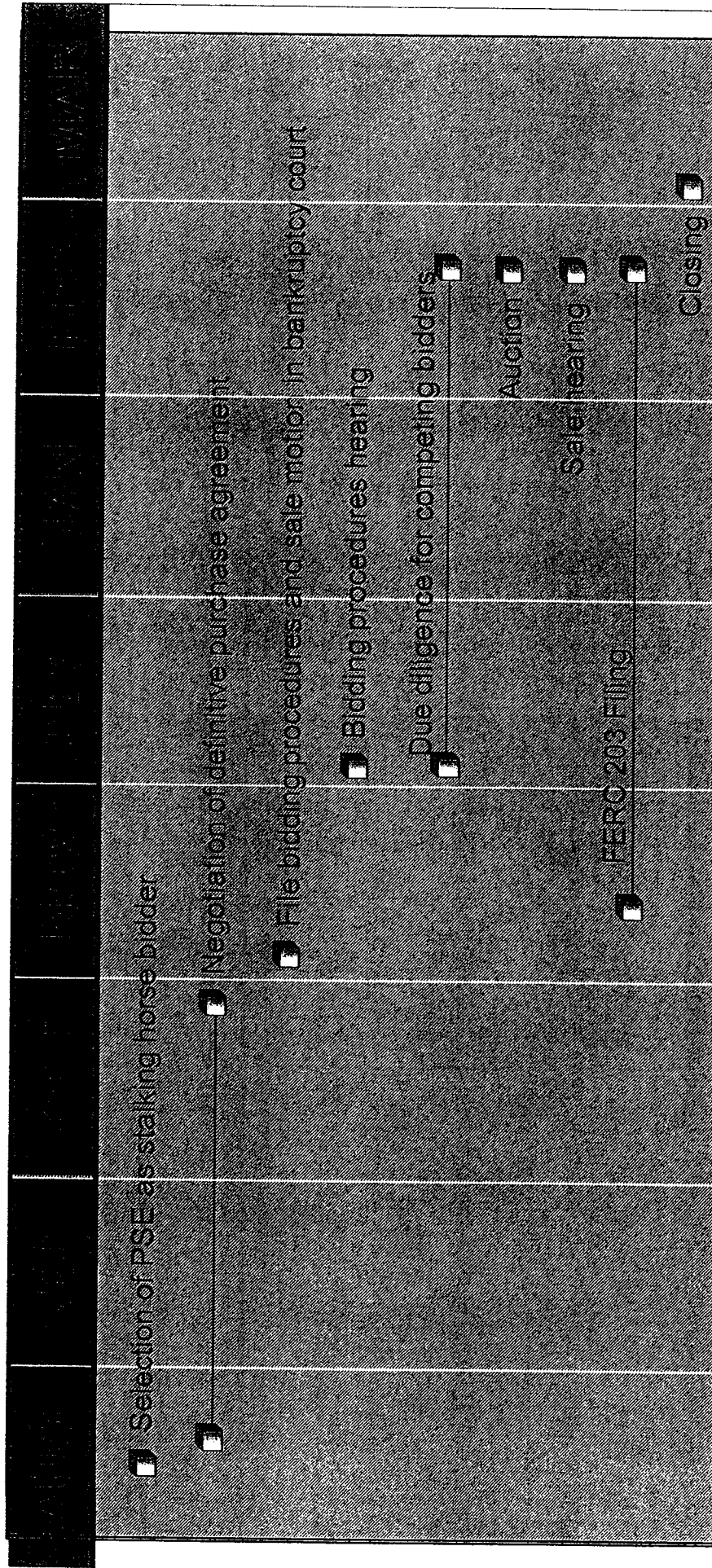


Portfolio Benefit (\$000s)

Benefit Ratio

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Calpine Bankruptcy Process



Note: Timing is best estimate.



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PPAs

Redacted

- [Redacted] and [Redacted] selected as most favorable short term PPAs
- Required update to PSE's KWI model to test resources with and without acquisitions
- Price refresh week of October 16th

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Appendix

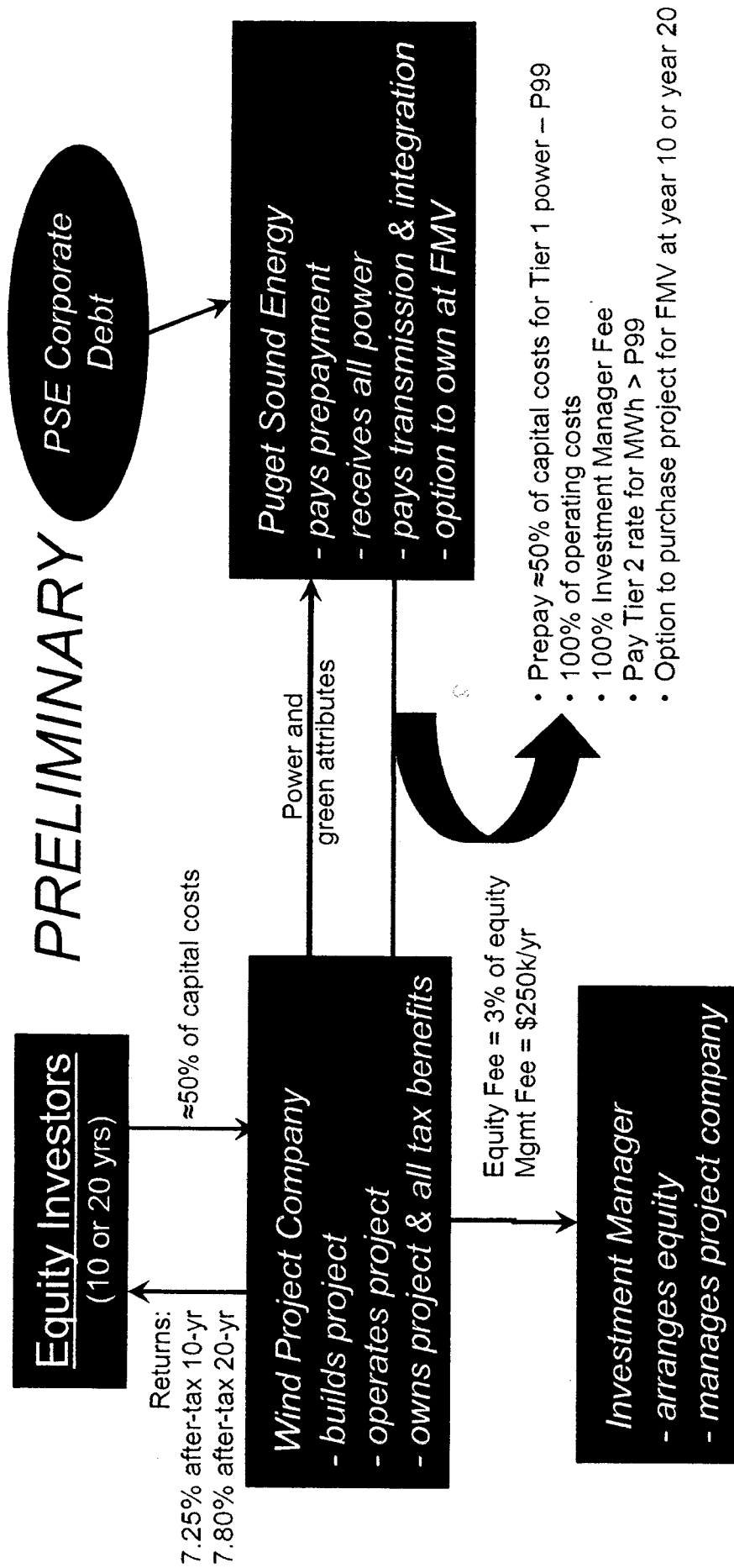


Commercial Concerns

- Strong competition for renewables
 - ♦ High likelihood that Washington will have an RPS
 - ♦ PSE looking at possibility for expansion of existing wind projects
- PSE's tax appetite is limited; alternative tax financing structures being explored
 - ♦ 200-MW White Creek project as potential financing model for co-ops and munis
- Application for IOUs for projects \$50M or greater
 - ♦ Preserves significant amount of PTC benefit
 - ♦ As close to ownership as possible



Hybrid Finance Structure for Wind Projects



Notes:

1. Extremely important that Wind Project Company and PSE recognized as two separate tax payers
2. Prepayment reduces risk to equity investor and thus lower returns required by equity investor
3. Year 10:
 - recalculate energy estimates at P50 and P99
 - reset contracted power price for Tier 2 power sales
 - PSE buyout at Fair Market Value (FMV) subject to minimum 10 year returns to equity investor
4. PSE sets up regulatory asset September 1, 2008/WESTCO Staff Meeting

Comparison of Wind Acquisition Strategies

Relationships to Wind Production	Ownership	Strategy	Power Purchase Agreement from IPP
Leasing	PSE	Equity	IPP
Capital Investment	PSE	PSE and 50% Tax Equity	IPP
Physical Possession	PSE	Tax Equity	IPP
Operating Costs	PSE	PSE	IPP
Operating Control	PSE	Tax Equity (Subject to negative covenants in favor of PSE)	IPP
Right to Receive Power	PSE	PSE	PSE
Right to Curtail Production	PSE	None	None
Basis for Cost of Energy	CAPEX + OPEX + PSE blended cost of capital	CAPEX + OPEX + Partial PSE cost of capital and partial cost of tax equity	Negotiated rates based on power market conditions
CAPEX included in Rate Base	100%	Prepay Amount (~50% of CAPEX)	0%
Benefit of PTCs	PSE (assuming adequate tax capacity)	PSE indirectly through lower cost of energy (Tax Equity, directly, as owner and producer)	Retained by Project Company (indirect subsidy to power price)
Impact of PTCs on Rate Base	Included, at full value (even if PSE cannot use them)	None	None
Assets Recorded on Balance Sheet	100% of CAPEX	Prepay Amount (~50% of CAPEX)	0 (but see capital lease rules)
Liabilities Recorded on Balance Sheet	PSE debt, as used	PSE debt to fund Prepay	0 (but see capital lease rules)
Residual Value	PSE	Tax Equity but PSE may purchase at 10 & 20 yrs at FMV (at 10 yrs FMV "collared" by contracted rates for power, conditioned on minimum returns to investors)	IPP
Modifications or Improvements to Equipment	at PSE discretion and expense	by request, and as negotiated	by request, and as negotiated

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Economic Comparison

Costs	PPA	Ownership	Hybrid
Energy Costs (\$/MWh)	8.5	7.5	7.5
Transmission (\$/MWh)	4.00	3.00	3.00
Capital Expenses (\$/MWh)	7.0	4.00	2.00
PPA Payments (\$/MWh)	8.5	7.5	7.5
Annual Costs (\$/MWh)	20.00	14.50	12.50
Annual Payments (\$/MWh)	8.5	7.5	7.5



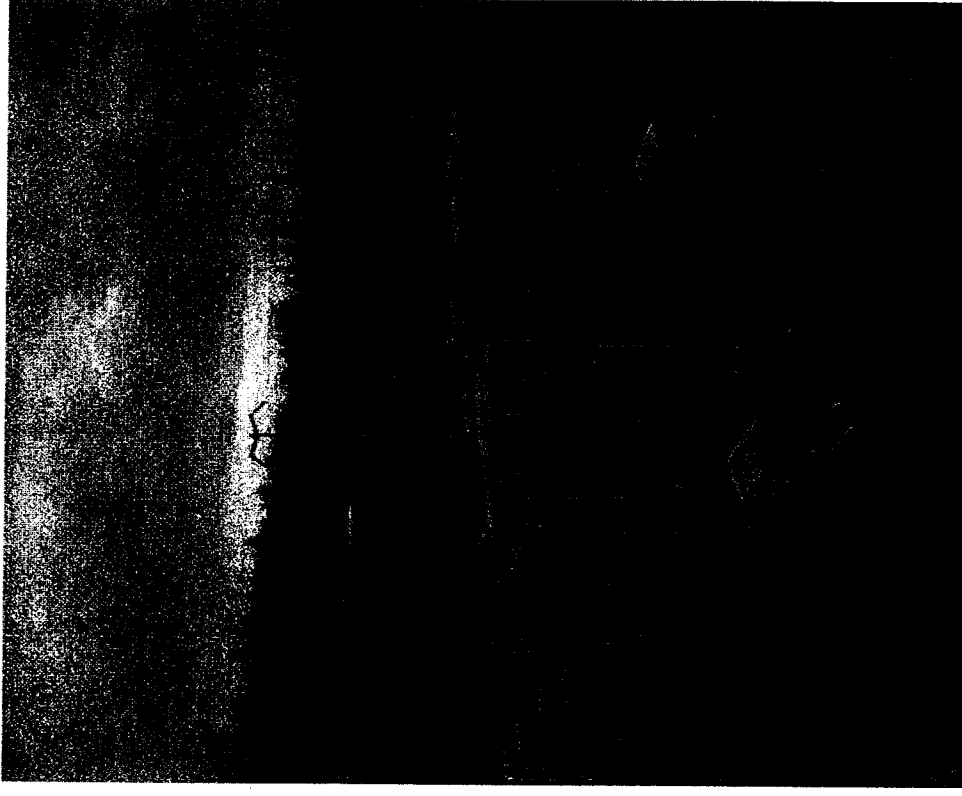
Whitehorn Units 2&3




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Overview – Whitehorn

- Location
 - ◆ Adjacent to the BP Cherry Point Refinery
 - ◆ 10 miles south of Canadian border
- Currently leased from Public Service Resources Corporation (PSRC)
 - ◆ Units are GE MS7001Es peakers, rated at 75 MW each and installed in early 1980s
- ◆ Lease terminates on February 2, 2009



Proposed Purchase – Whitehorn

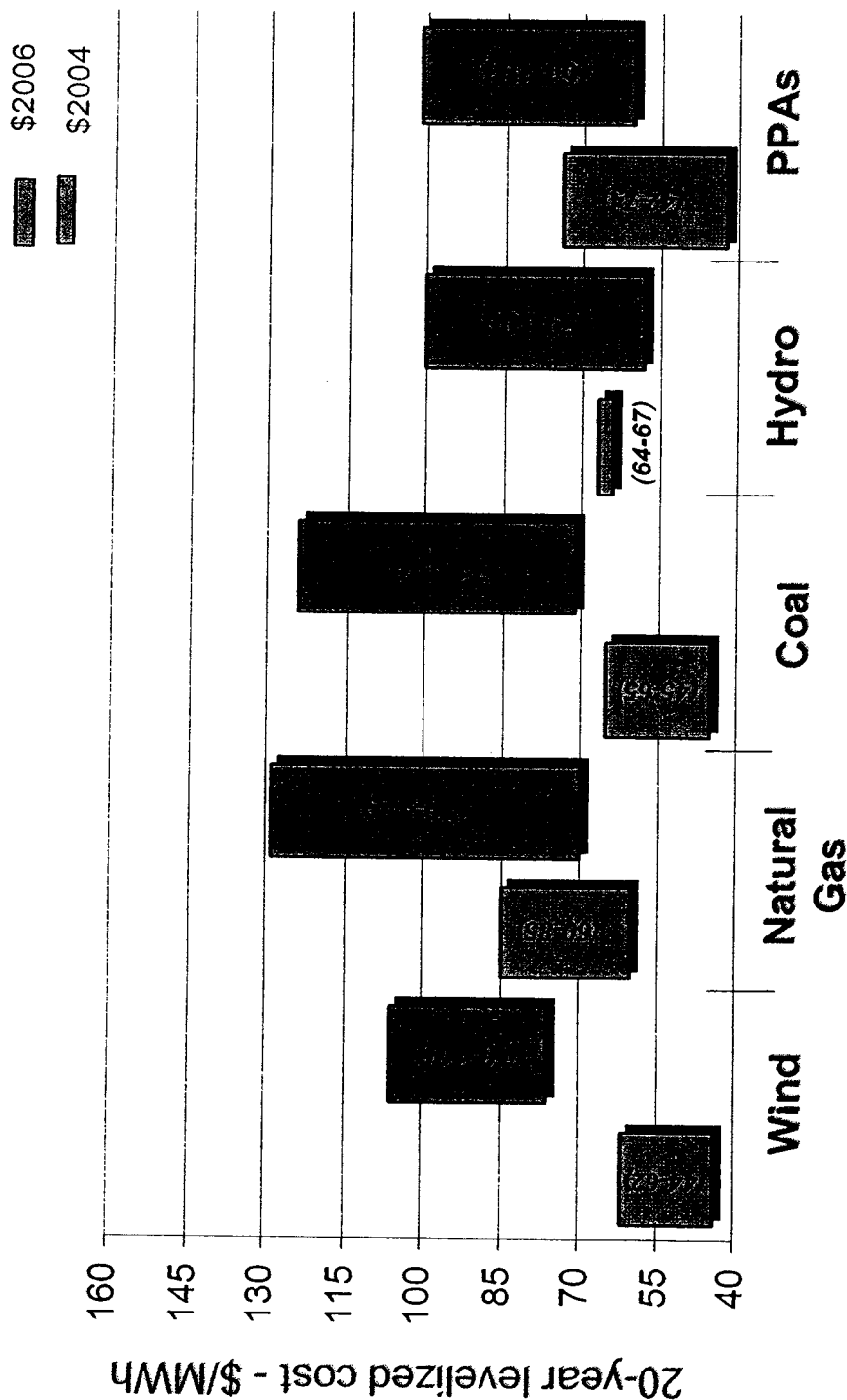
- PSE has agreed, in principle, to purchase units from PSRC at end of lease for 
- Analysis indicates that purchase under these terms has a lower cost to PSE customers than complying with the lease and purchasing alternative capacity when the lease is completed
 - ◆ Analysis takes estimated future cost of maintenance and other associated costs of lease and ownership into account.
 - ◆ Purchase also independently cost-effective in comparison to resources offered in RFP process.
 - ◆ PSE estimates that, with prudent maintenance, units would have a useful life through 2016.
- Purchase agreement will provide PSE with a general release under the lease that would significantly restrict PSRC's ability to claim defaults against PSE for the remainder of the lease term.

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Alleged Default of Lease

- PSRC has alleged that PSE has defaulted under the lease
- PSE disagrees that a default has occurred and believes that PSRC has alleged default as leverage to get PSE to purchase units.
 - ◆ PSRC appears to want to get out of leasing business by year-end 2006.
 - ◆ PSRC would sell lease and purchase agreement upon FERC approval.
- Regardless of default contentions, units remain valuable and cost-effective for PSE capacity and peaking uses.

Significant increase in resource costs since 2004 RFP



1. PPA range represents fixed price offers only and is inclusive of imputed debt and exclusive of credit
2. 2004 levelized costs do not include transmission from Mid-C to PSE's system