

**EXHIBIT NO. \_\_\_(RG-8HC)**  
**DOCKET NO. \_\_\_\_\_**  
**2005 POWER COST ONLY 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-\_\_\_\_\_**

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

**REDACTED VERSION**

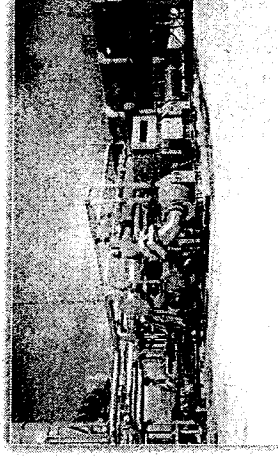
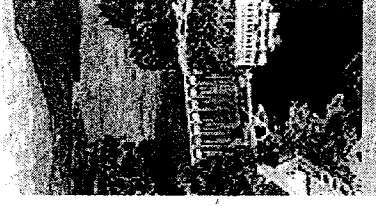
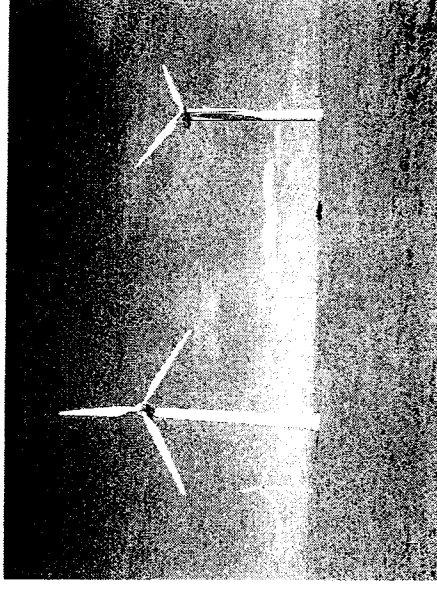
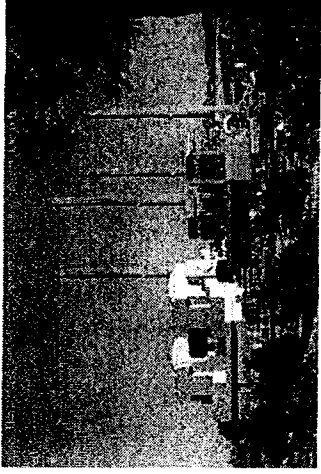
**JUNE 7, 2005**

RESOURCES ACQUISITION  
2004 ALL-SOURCE RFP  
WVTC Staff Program Meeting  
Evaluation Process & Review  
September 30, 2004

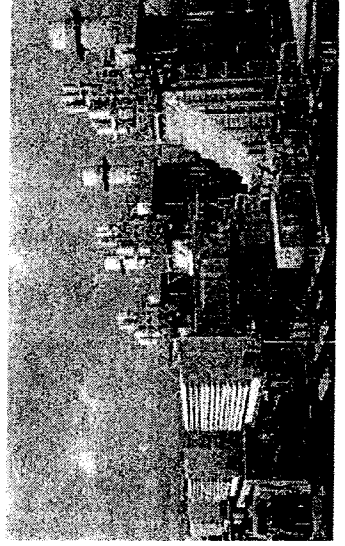
# All-Source RFP Evaluation Review & Status Update

- Resource Acquisition Review
  - ◆ Acquisition Process
  - ◆ All-Source RFP
- Modeling Overview
- Current Short-List
  - ◆ Zilkha - Wild Horse
  - ◆ RES - Hopkins Ridge
  - ◆ [REDACTED]
  - ◆ ORMAT - Sumas Recovered Heat
  - ◆ APS 2-yr PPA
  - ◆ [REDACTED] 22-yr PPA
  - ◆ [REDACTED] 10-yr PPA
- Continuing Investigation List
- Resource Options are Limited
- Least Cost Planning

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WAC 480-07-160



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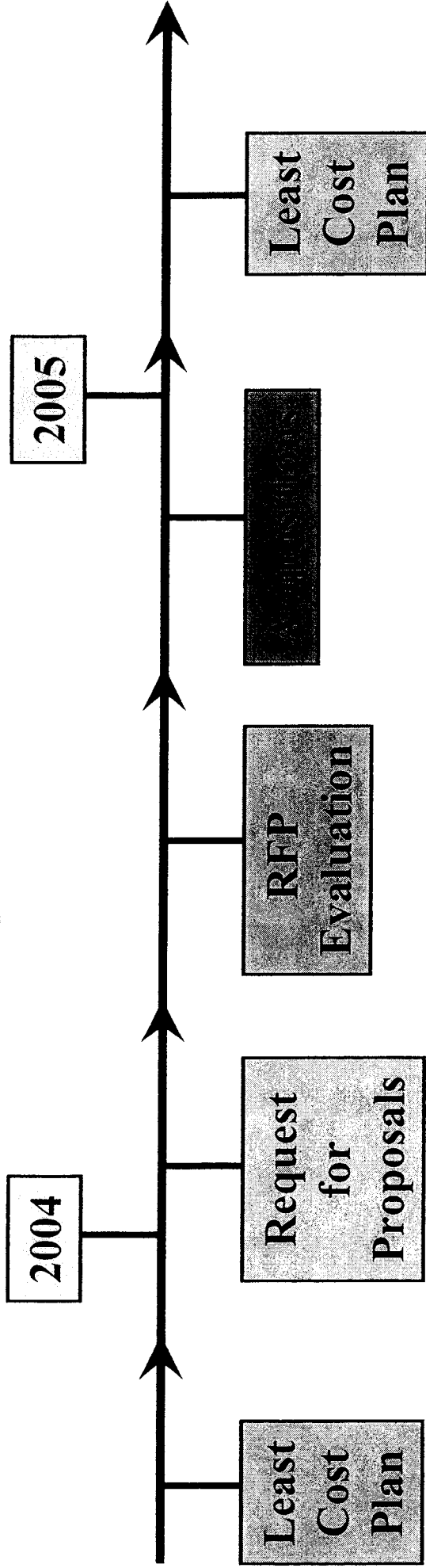


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# **Resource Acquisition Review**

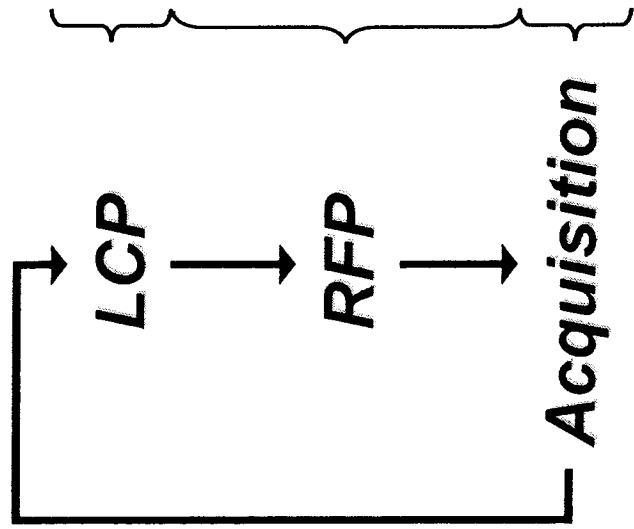
**Roger Garratt**

# Resource Acquisition Process

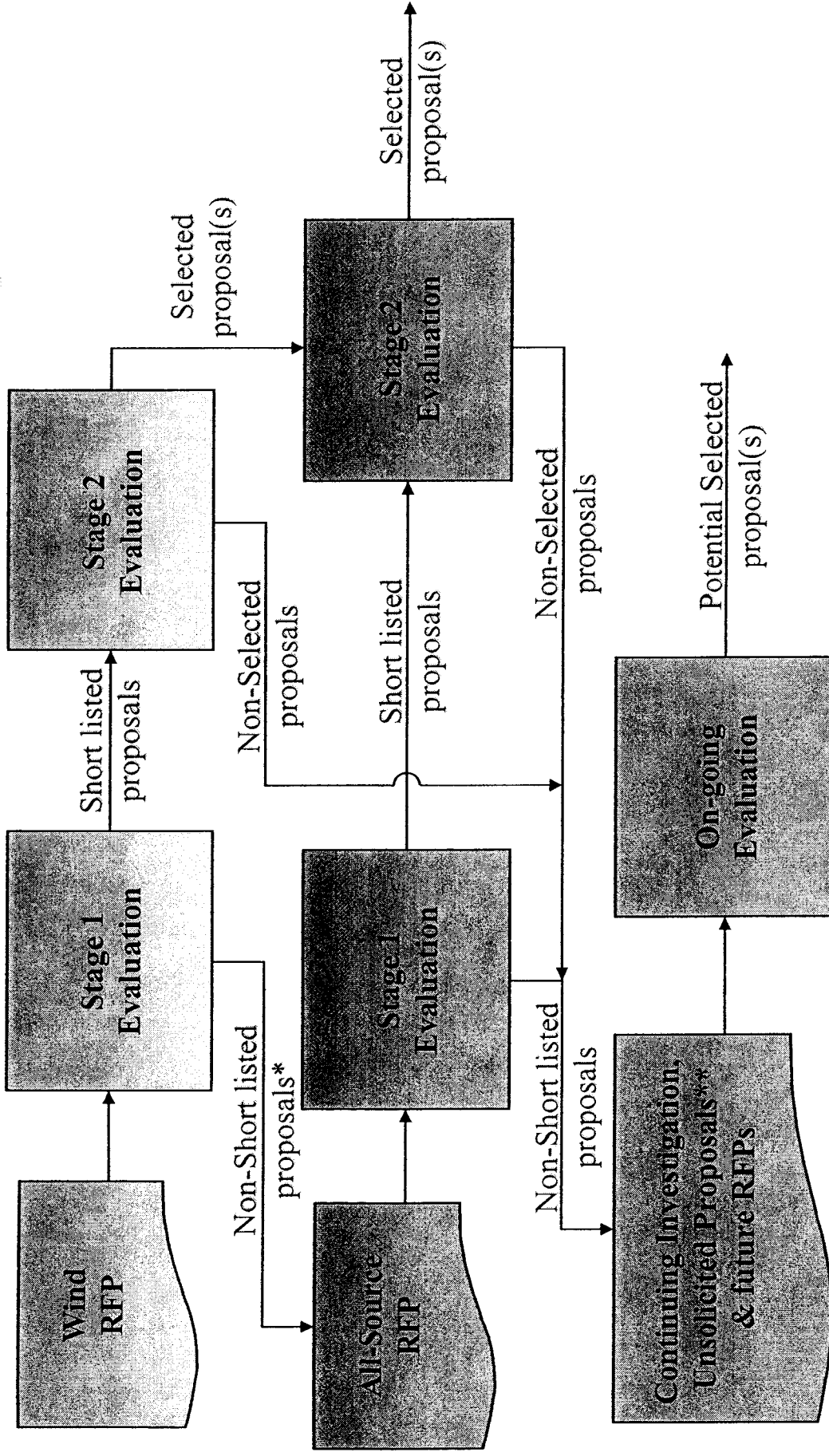


**Date** | **Milestone**

Date	Milestone
Apr 2003	LCP Filed
Aug 2003	LCP Updated
Nov 2003	Wind RFP Issued
Feb 2004	All-Source RFP Issued
Feb 2004	Energy Efficiency RFP Issued
Feb 2004	Wind RFP Short List Selected
May 2004	All-Source Short List Selected
Jul 2004	Energy Efficiency RFP Short List Selected
Sep 2004	Letter of Intent(s) Executed
Dec 2004	Definitive Agreement(s) Executed
Apr 2005	LCP Filed
Nov 2005	RFP Issued



# Resource Acquisition Process Wind & All-Source RFP Process Merge



\* - All but two Non-Short listed as well as all of the Short listed proposals wind projects were officially resubmitted in the All-Source, some with revisions.

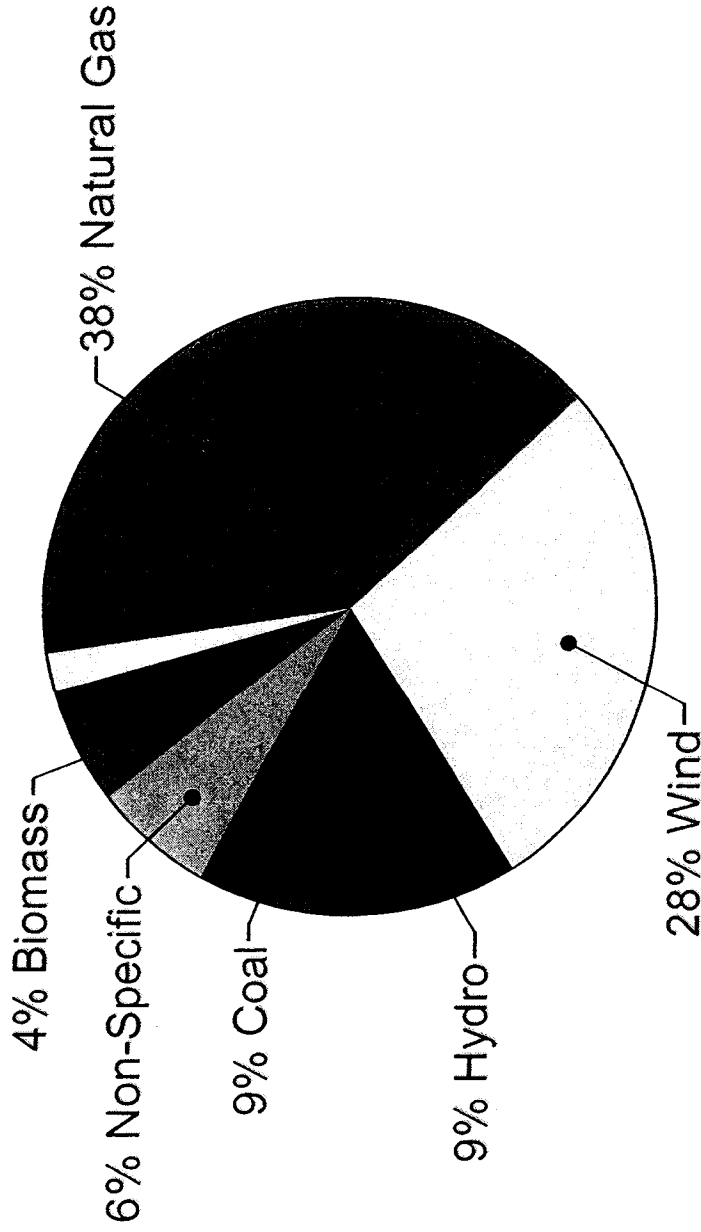
\*\* - Non-Short listed all-source proposals and Non-Selected proposals may be revised on an on-going basis to better meet PSE's Least Cost Planning needs and strategies.

# Resource Acquisition

## Summary of Proposals

### Wind RFP & All Source RFP

48 - Proposals with options for PPA, Ownership and/or Hybrid  
40 - Owners/Developers



■ 18 - Natural Gas	
□ 13 - Wind	
■ 4 - Hydro	
■ 4 - Coal	
■ 3 - Non-Specific	
■ 2 - Biomass	
■ 1 - Cogeneration	
□ 1 - Geothermal	
■ 1 - Recovered Heat	
<b><u>Status of Proposals</u></b>	
34 - Development	
12 - Operating	
2 - Suspended	

*Summary is based on initial draft figures from bid opening.  
All figures are not final and subject to change and revision at any future date.*

# Resource Acquisition

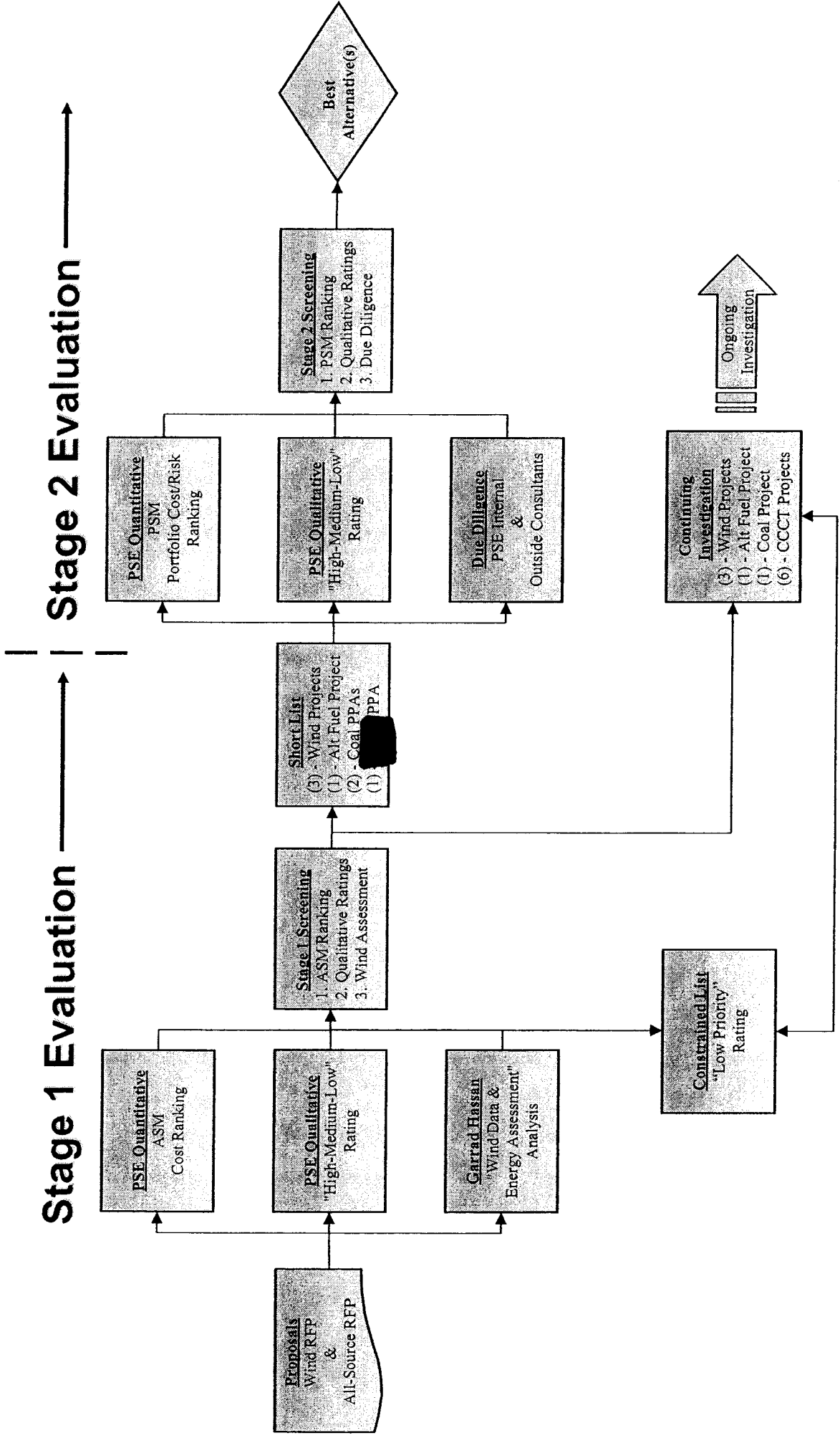
## RFP Evaluation Criteria

Compatibility with Need	Cost Minimization	Risk Management	Public Benefits	Strategic & Financial
<ul style="list-style-type: none"> <li>• Meet short and long term energy and capacity requirements</li> <li>• Balance capacity and energy needs without risk of excess capacity</li> <li>• Provide shaped resource to balance seasonality of load</li> </ul>	<ul style="list-style-type: none"> <li>• Provide lowest cost alternative to meet energy and capacity needs</li> <li>• Includes costs of                             <ul style="list-style-type: none"> <li>• transmission</li> <li>• upgrades and</li> <li>• firming</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Balance potential future exposure to power purchase risk</li> <li>• Balance potential future exposure to power sales risk</li> <li>• Reasonable exposure to counterparty risk</li> </ul>	<ul style="list-style-type: none"> <li>• Lower portfolio emission levels</li> <li>• Contribute to regional energy adequacy</li> <li>• Support renewable energy development objectives</li> <li>• Promote energy efficiency (conservation and demand response)</li> </ul>	<ul style="list-style-type: none"> <li>• Reasonable exposure to future environmental regulations</li> <li>• Reasonable exposure to future state wholesale market restructuring trends</li> <li>• Contribute to regional energy needs</li> <li>• Limits balance sheet impact of imputed debt from PPAs</li> </ul>



# All-Source RFP

## Evaluation Process & Analysis Flow Chart



# All-Source RFP

## Stage 1 Evaluation Results

TECHNOLOGY	COSTS <sup>1</sup> (\$ / MWh)
ALTERNATE FUEL (Biomass, Recovered Energy, Geothermal)	48 - 61
POWER PURCHASE - Long-Term (>10yrs) (Coal, Hydro, Natural Gas)	46 - 69
POWER PURCHASE - Short-Term (<10yrs) (Coal, Hydro, Natural Gas)	43 - 75
COAL <sup>2</sup>	50 - 75
NATURAL GAS <sup>3</sup>	61 - 85
WIND	44 - 63

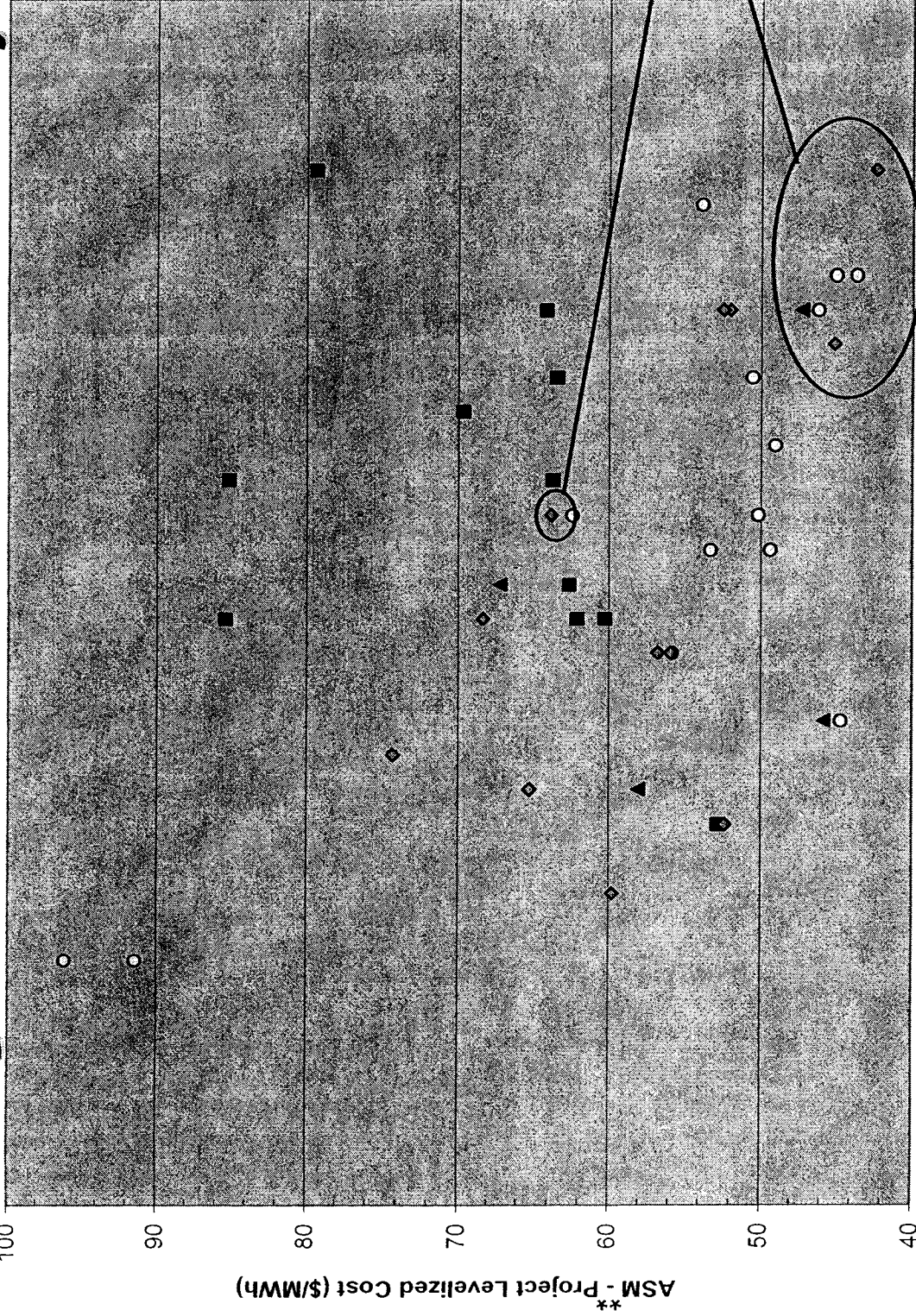
Notes:

1. Acquisition Screening Model (ASM8) 20-yr Levelized Costs
2. Transmission solution is not mature
3. Does not include imputed debt and credit
4. All delivered to PSE System

# All-Source RFP: Stage 1

## Rating vs. Cost Distribution\* of Projects

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- Wind
- Thermal
- ▲ Alternate Fuel
- ◇ Power Purchase

On-Peak PPA  
"Short-Listed" Projects

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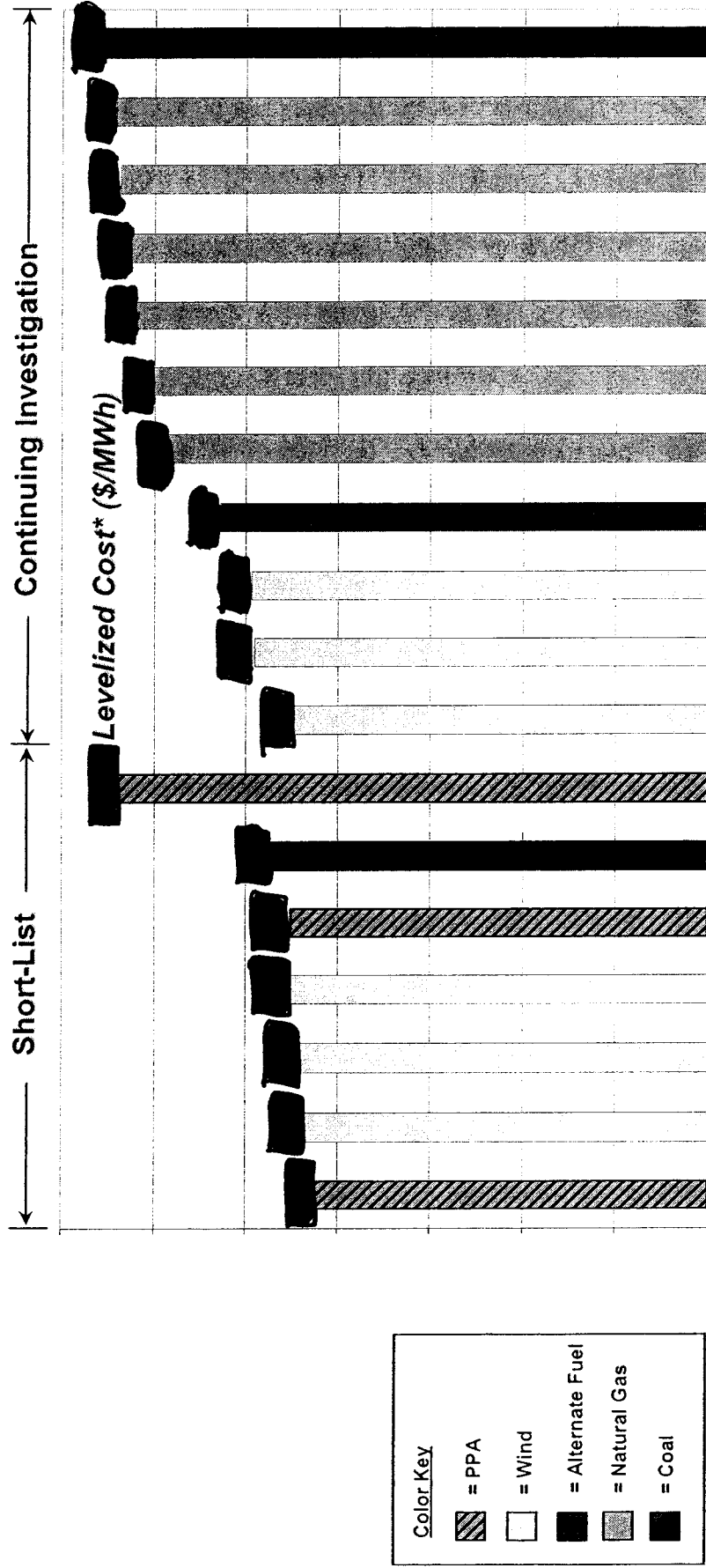
LOW ← Evaluation Rating → HIGH

\* This chart is for graphical illustration purposes. Evaluation Ratings for this chart weigh all evaluation ratings equally; however, each criteria is evaluated on its own risk.  
\*\* ASM8

REDACTED

# All-Source RFP: Stage 1

## Short-List & Investigating List Graph



REDACTED

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Notes:

\*ASM8 Levelized Costs for PPA includes imputed debt

\*\* PPA offers seasonal on-peak energy

\*\*\* includes 100MW PPA from [REDACTED]

\*\*\*\* assumes no PTC given pending legislation

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# All-Source RFP: Stage 1

## Short-List Selection Summary

- (1) Alternate fuel (gas compressor recovered heat)
- (2) Coal PPAs (10-yr & 2-yr terms)
- (1) PPA (22-yr On-Peak)
- (3) Wind project (3 of 4 from Wind RFP)

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PROPOSAL		ASMB				STAGE 1 EVALUATION RATINGS						
Owner/Developer Project Name	Location	Status	MW	COD	Levelized Cost* (\$/MWh)	Business/ Commercial	Fuel Supply	Transmission	Technical	Real Estate	Environmental	Community
<b>POWER PURCHASE AGREEMENTS</b>												
APS - 2-yr PPA	Centralia, WA	Operating		Jan-05		HIGH	HIGH	VERY HIGH	HIGH	N/A	MEDIUM-HIGH	HIGH
10-yr PPA		Operating		Jan-05		LOW	HIGH	VERY HIGH	N/A	N/A	MEDIUM-HIGH	HIGH
22-yr PPA		Operating / Development		Jan-05		HIGH	N/A	MEDIUM	N/A	N/A	MEDIUM-HIGH	N/A
<b>ALTERNATE FUEL</b>												
ORMAT - Sumas Recovered Heat	Sumas, WA	Development		Oct-06		MEDIUM	HIGH	LOW-MEDIUM	HIGH	LOW	HIGH	HIGH
<b>WIND</b>												
RES - Hopkins Ridge	Columbia Co, WA	Development		Apr-06		HIGH	MEDIUM	LOW	HIGH	MEDIUM	HIGH	HIGH
Zilka - Wild Horse	Kititas Co, WA	Development		Apr-06		MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM	HIGH	HIGH
		Development		Aug-06		HIGH	MEDIUM	MEDIUM-HIGH	MEDIUM	MEDIUM	HIGH	MEDIUM

**Notes:**

\*Using Mid-year MACRS instead of 1Q MACRS to compare with non-wind bids.

\*PTC error in year 10 corrected.

\*\*Based on \$ flat price.

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# All-Source RFP

## Evaluation Criteria & Teams

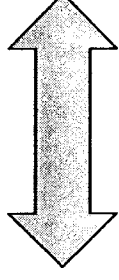
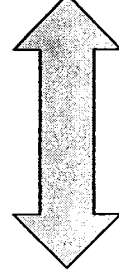
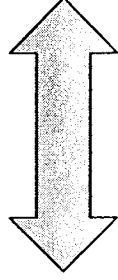
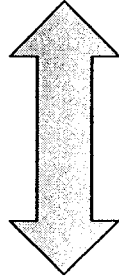
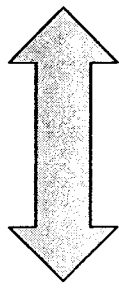
**A. Compatibility with PSE Resource Need**  
A1. Timing  
A2. Resource match to monthly need  
A3. Match to monthly need through contract  
A4. Operational Flexibility

**B. Cost Minimization**  
B1. Resource price  
B2. Transmission

**C. Risk Management**  
C1. Status & Schedule  
C2. Price Volatility  
C3. Resource Flexibility and Stability  
C4. Resource Technology  
C5. Long-term Flexibility  
C6. Project Risk

**D. Public Benefits**  
D1. Environmental Impacts  
D2. Resource Location  
D3. Community Impacts

**E. Strategic & Financial**  
E1. Capital Structure Impacts  
E2. Future exposure to environmental regulations and/or taxes



Quantitative

Business /  
Commercial Issues

Environmental

Transmission

Real Estate

Fuel Supply

Credit

Community Impacts

# **Modeling Overview**

*Jim Elsea*


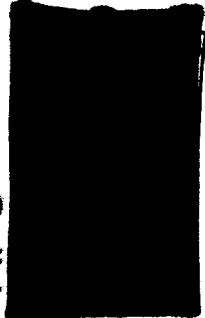

# **Current Short List**

*Roger Garratt*  
*Wayman Robinett*  
*Tom Hiestler*  
*Christine Philipps*  
*Chris Bevil*



# Short List

## Overview & Status

- Wind
  - ◆ Wild Horse
  - ◆ Hopkins Ridge
  - ◆ 
  
- Alternate Fuel
  - ◆ Sumas Recovered Heat
  
- Power Purchase Agreements
  - ◆ APS
  - ◆ 
  - ◆ 

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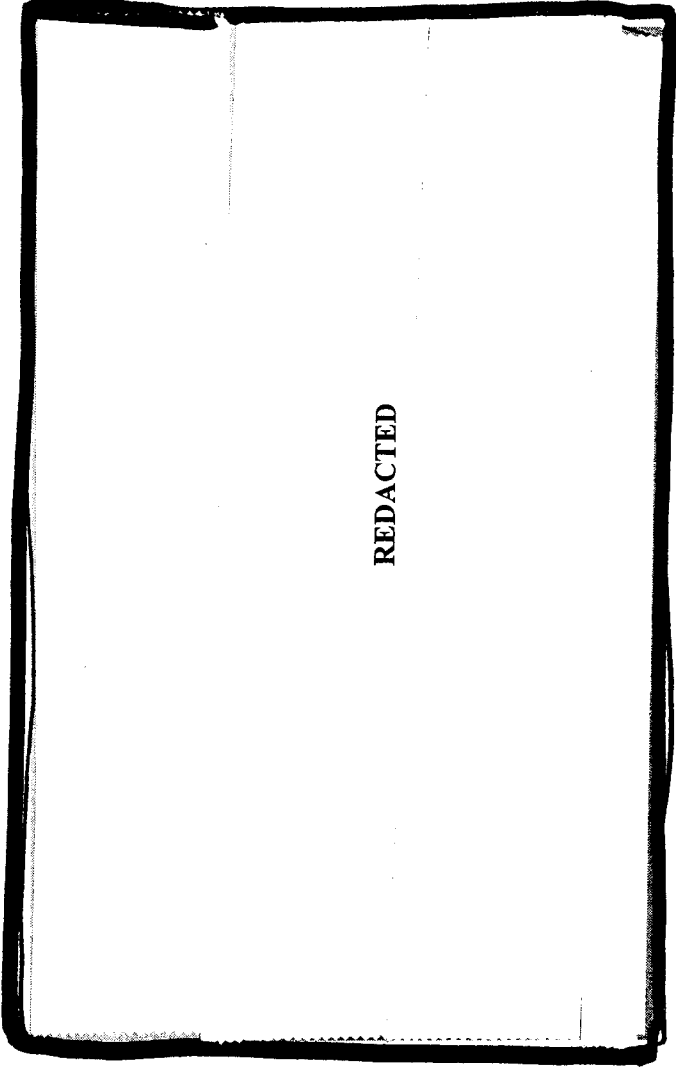
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# Wild Horse Wind Power Project

## Project Overview

- Letter of Intent (LOI) signed September, 01 2004
  
- Size
  - ◆ 150 – 220 MW nameplate capacity [REDACTED] (turbines)
  - ◆ [REDACTED] aMW of wind energy (> [REDACTED] % capacity factor)
  
- Location
  - ◆ Eastern end of Kittitas County
  - ◆ 10 miles west of Vantage and 6 miles north of I-90
  
- Wind Turbine Generator (WTG) alternatives
  - ◆ GE 1.5 MW
  - ◆ Vestas 1.65 MW



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# Wild Horse Wind Power Project

## Project Overview (continued)

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- Permitting via Washington EFSEC
- ◆ Zilkha working cooperatively with County to obtain local land use consistency determination
- ◆ Project less likely to be appealed since [REDACTED]
- ◆ PSE assisting relationship [REDACTED]
- Interconnection/Transmission
  - ◆ Project substation step-up to 230kV and transmit to interconnection on PSE IP line
  - ◆ New Columbia River crossing and connection to Wanapum Substation
  - ◆ Network transmission over upgraded IP line
- Real Estate
  - ◆ Private land to be owned by PSE (≈120 turbine sites, 5,000 acres)
  - ◆ State land (Department of Fish & Wildlife and Department of Natural Resources) ≈13 turbine sites

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# Wild Horse Wind Power Project

## Deal Terms

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- Zilkha Renewable Energy completes project development
- PSE purchases development rights at closing
- PSE issues Notice to Proceed (NTP) at closing provided defined conditions precedent are met
  - ◆ Pay for turbine and Balance of Plant (BOP) engineering and construction over  $\approx$ 9 month period ( $\approx$ \$[REDACTED] MM depending upon project option selected, not including AFUDC) REDACTED
- PSE pays production payment for 20 years
- Guarantees
  - ◆ Turbine performance and availability
  - ◆ On-line date (delay Liquidated Damages (LDs) devised to PSE's cost-of-carrying)
  - ◆ Loss of Production Tax Credit (PTC) (turbine supplier stands in 100% subject to cap, developer loses production payment)

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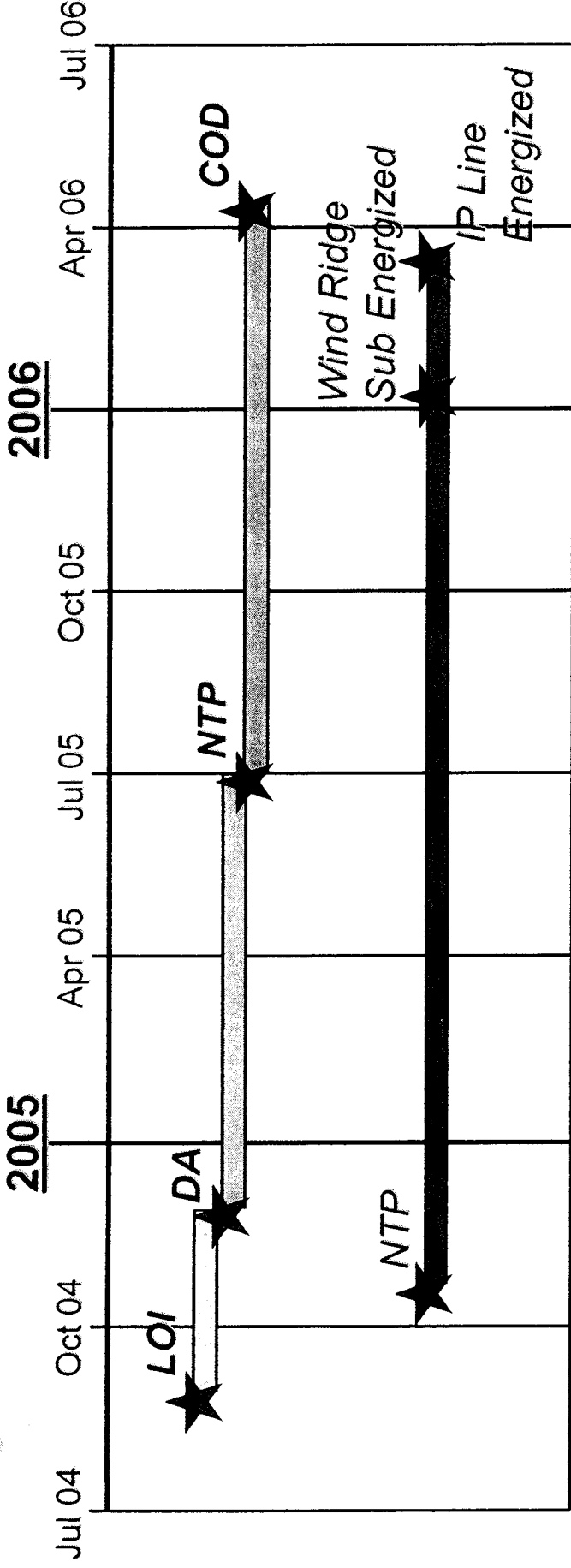
# **Wild Horse Wind Power Project**

## *Closing Conditions Precedent*

- Receipt of all non-appealable permits
- Extension of Production Tax Credit (PTC)
- IRS letter ruling on applicability of PSE qualification for PTC
- Certain other tax rulings and regulatory approvals may be sought
- Opinion of industry expert that project schedule allows adequate time to qualify for PTC

# Wild Horse Wind Power Project

## Project Schedule & Milestones



- Non-Binding Letter of Intent (LOI) Signed      Sep 01, 2004
- Definitive Agreements (DA)      Dec 01, 2004
- Closing & Notice to Proceed (NTP)      Jul 16, 2005\*
- IP Line Upgrade Complete      Mar 15, 2005
- Commercial Operation Date (COD)      Apr 15, 2006

\*Schedule assumes no permit delay or appeal of EFSEC determination.

# Wild Horse Wind Power Project

## Project Challenges/Risks

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- PTC renewal
  - ◆ PTC recently renewed through Dec 31, 2005
  - ◆ Project will require subsequent renewal through Dec 31, 2006
  - ◆ Last two PTC renewals have occurred with PTC lapse
  - ◆ Without PTC through Dec 31, 2006, PSE will be unable to issue NTP
- Availability of wind turbines
  - ◆ Recent renewal of PTC may result in spate of orders for already permitted projects and less favorable commercial terms and availability of wind turbines for 2006 project
- Environmental permits
  - ◆ Although project opposition is minimal, possibility exists for permit delays and appeals
- Delay in completion of IP line upgrade
  - ◆ Prior to completion of IP line upgrade, curtailment of wind farm production results in loss of approximately 90% of the energy that would otherwise be produced
  - ◆ Resulting loss of tax benefits from the Production Tax Credit is approximately \$ [REDACTED] million per month (gross) of curtailed operation

*Note: This is not a full risk analysis. A detailed risk analysis will be presented when Board approval is sought.*

**REDACTED**

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# **Wild Horse Wind Power Project**

## ***Due Diligence\****

- Wind resource and wind farm energy production
  - ◆ Confirm energy projections
- Real estate
  - ◆ Verify all needed real estate is secured
- Environmental permits
  - ◆ Determine if any required permits have been missed or if any critical environmental research is missing or flawed
- Technical
  - ◆ Suitability of turbines for the site, engineering requirements/specifications for the Balance of Plant (BOP) scope

*\*To be completed prior to execution of Definitive Agreements*



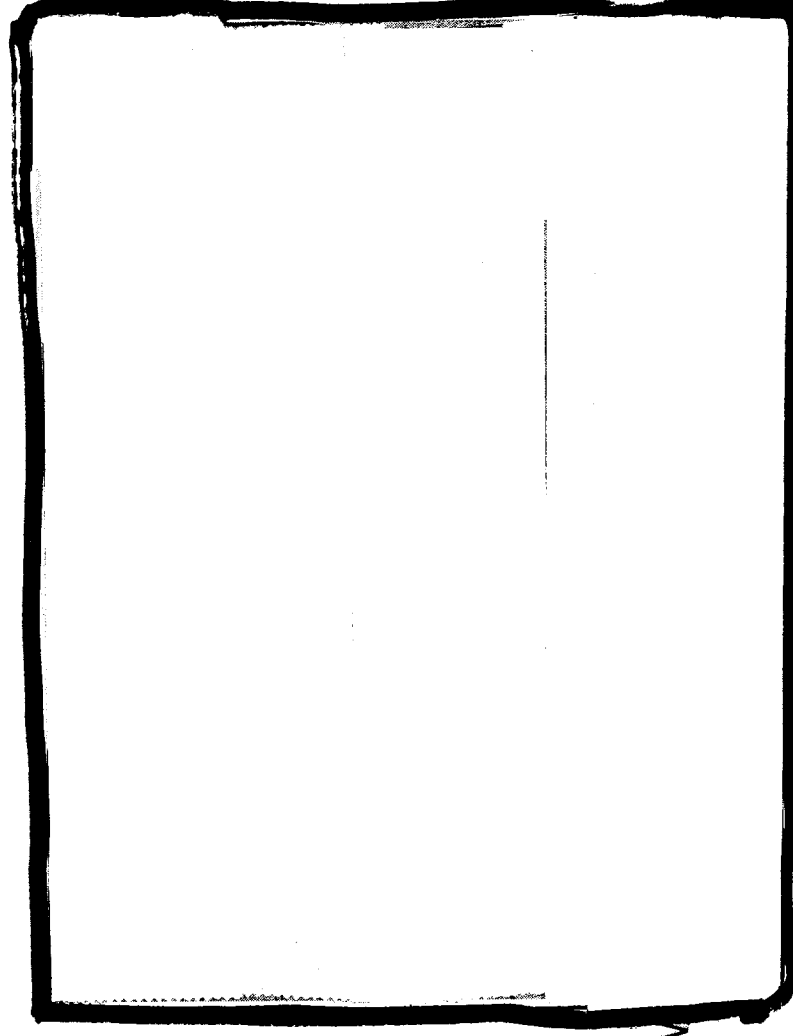
# Hopkins Ridge Wind Project

## Project Overview

Exhibit No. \_\_\_\_ (RG-8HC)  
Page 24 of 38

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- Developer: RES North America
- Owner: PSE
- Capital Cost: \$200 MM "all in"
- Energy Cost: \$49/MWh (20-yr levelized cost)
- Production Tax Credit Value: \$18/MWh
- Estimated COD: 2007
- Size: 150 MW
- Turbine Choice: Vestas V80 1.8 MW
- Capacity Factor: █%
- Rotor Diameter: 80m
- Tower Height @ Hub: 70m
- No. Turbines: 83
- Project Foot Print: 5000 acres



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# Hopkins Ridge Wind Project

## Project Schedule & Milestones

### Key Dates:

- PTC extension..... Sept 2004
- Non-binding LOI..... Oct 2004
- PSE Board Action..... TBD
- Definitive Agreements..... 2Q05
- Non-Appealable Permits..... 2Q05
- Acquisition of Development Assets..... TBD
- Notice To Proceed (NTP) to Turbine Supplier..... 2006
- NTP to BOP Contractor..... 2006
- COD..... 2007

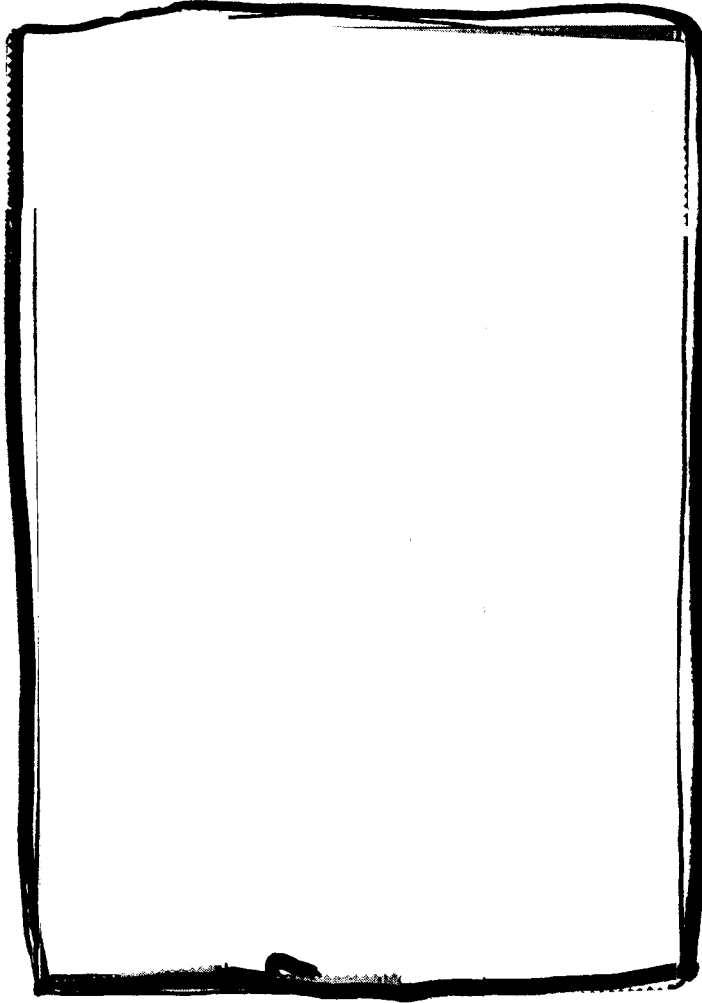
O&M Operator: Turbine Supplier (2-5 years); PSE thereafter

# Wind Power Project

## Project Overview

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- Developer [REDACTED]
- Location: [REDACTED]
- [REDACTED]
- [REDACTED]
- COD - August 2006 (planning case)
- Some community opposition
- Permitting via [REDACTED] process
- Likely opposition appeal
  - ◆ Appeals venues to both Superior Court and Growth Management Hearings Board
- Due diligence revealed wind resource issue



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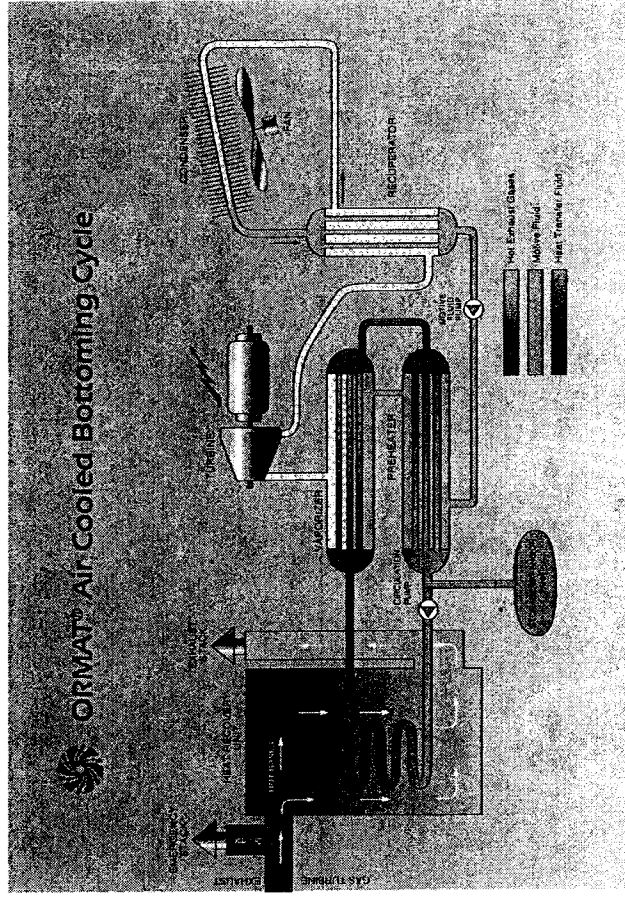
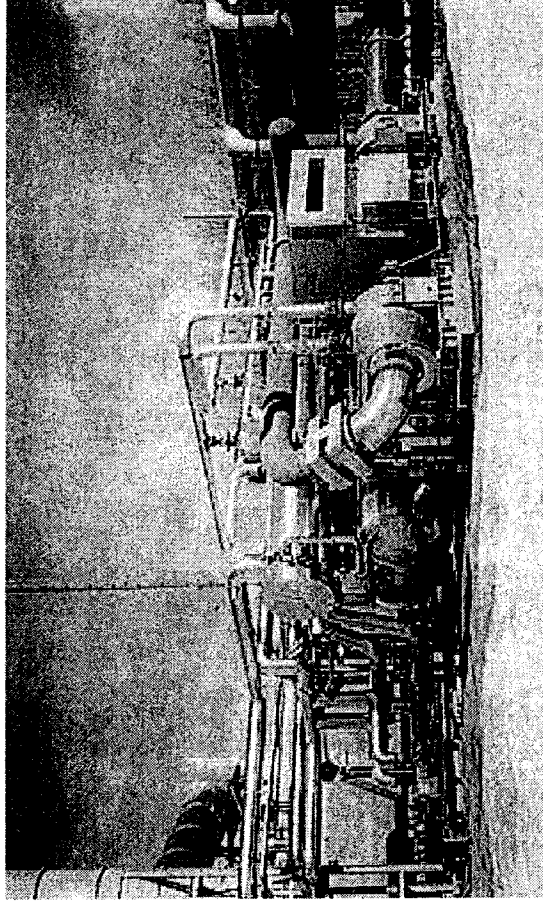
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# ORMAT - Sumas Recovered Heat

## Project Overview

- Developer: ORMAT Nevada, Inc.
- Owner: PSE
- Host: Northwest Pipeline Corp
- O&M Provider: Northwest Pipeline Corp
  - ◆ Major O&M by ORMAT
- Location: Northwest Pipeline Sumas Compressor Station, WA
- Size: 4.5 MW Net
- Technology: Organic Rankine Cycle
- Best Case COD: October 2006
  - ◆ 18-month Schedule from NTP
- Transmission: Transmission request under review by PSE
- Turn-Key Asset Purchase
  - ◆ Capital Cost: ≈\$ [REDACTED]
  - ◆ Energy Cost: ≈\$ [REDACTED] MWh (20-yr levelized)

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# Arizona Public Service Company

## PPA Overview

- Executed PPA on June 25, 2004 after RMC approval on June 2, 2004
- Term: 2-year (Jan 2005 to Dec 2006)
- Product: Firm Energy
- Hour Quantity: 85 MW
- Price: DJ Mid-C\* less \$ [REDACTED] /MWh
- Delivery Point: PSE System / CW Paul
- Event of Default: WSPP - Liquidated damages for any event or default
- Credit Terms: None
- Benefits:

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- ◆ Provides needed baseload energy
- ◆ Below market resource
- ◆ Provides reliability
- ◆ Reduced Mid-C wheeling/losses
- ◆ Index can be swapped for fixed financial to convert to a fixed price product
- ◆ Minimal credit exposure with index product
- ◆ Potential bridge to new resource(s)

REDACTED

\*Dow Jones Mid-Columbia Electricity Price Index for on and off peak hours

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# PPA Overview

REDACTED

- Capacity: [REDACTED] MW (2005-2006); [REDACTED] MW (2007-2026)
- Annual Energy: [REDACTED] MWh (2005-2006); [REDACTED] MWh (2007-2026)
- Seasonal Shape: September-March, On Peak Hours Only
- Counterparty: [REDACTED]
- Counterparty Credit Rating: [REDACTED]
- Energy Source: [REDACTED]
  - ◆ Key sources to include:
    - ◆ [REDACTED]
    - ◆ [REDACTED]
- Price: \$ [REDACTED] /MWh plus [REDACTED] % annual escalation; \$ [REDACTED] MWh 22-year levelized cost
- NPV Savings: \$ [REDACTED] MM to \$ [REDACTED] MM

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Continued...

## PPA Overview (continued)

- Credit Requirements: PSE has proposed a “mutual credit and collateral posting” pass; pending [REDACTED] Board of Directors action [REDACTED]
- Benefits:
  - ◆ Firm multi-point system delivery
  - ◆ Shaped to PSE’s seasonal need
  - ◆ No forced outage risk
  - ◆ Uses existing transmission; no incremental cost
  - ◆ No fuel procurement risk; no fuel hedging requirements
  - ◆ No risk of “summer sales”, price, or volume
- Risks:
  - ◆ Short term under-recovery of \$ [REDACTED] MM until [REDACTED]

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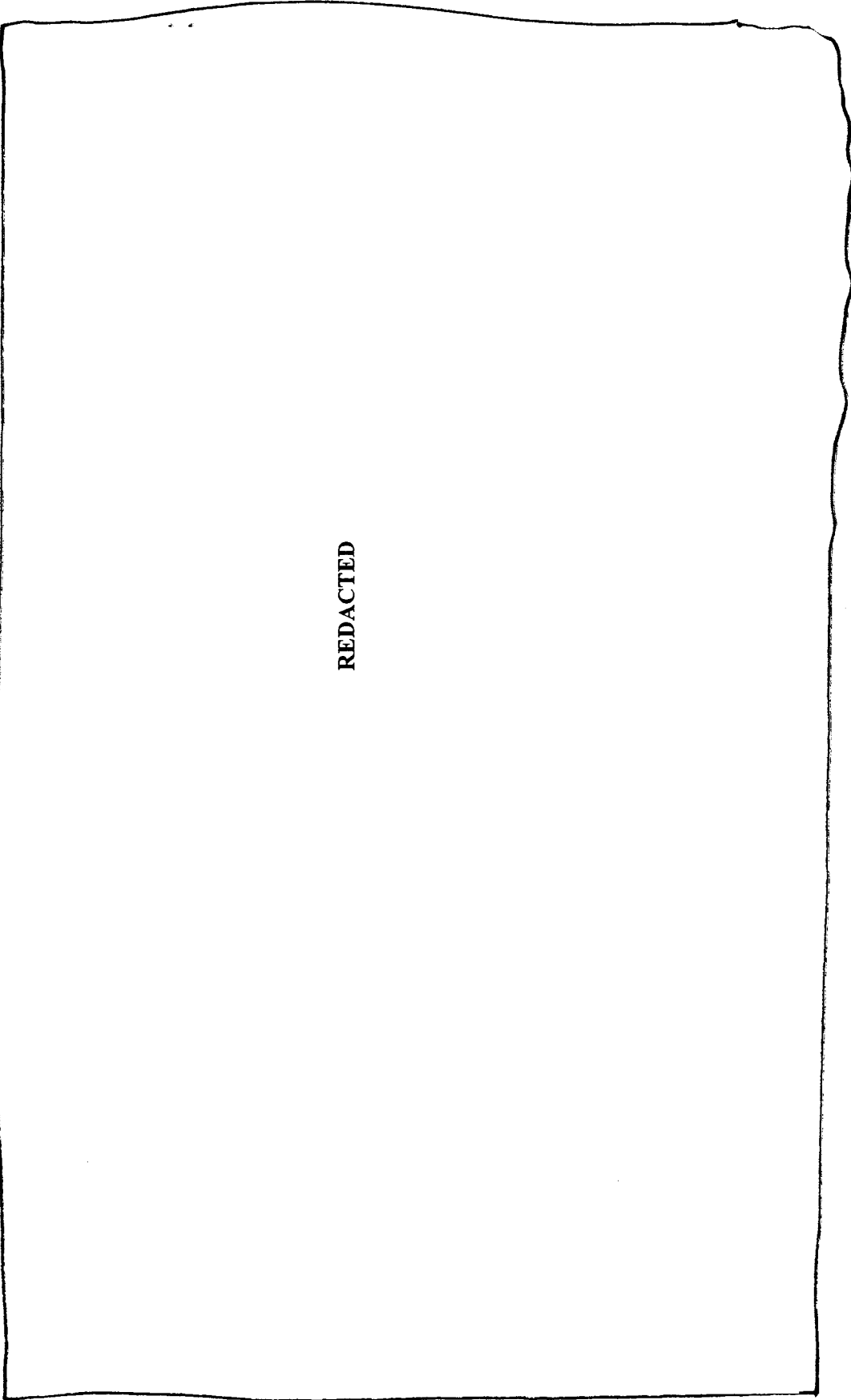
REDACTED

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# Overview

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- [REDACTED] proposed attractive 10-year PPA; mutual credit concerns  
[REDACTED] makes such transaction improbable
- 
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REDACTED



# **Continuing Investigation List**

**Chris Bevil**

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WAC 480-07-160

# Continuing Investigation List

PROPOSAL *					
Owner/Developer/ Project Name	Proposal Option	Location	Status	MW	COD
	100% Ownership		Development		Oct-05
	30-yr PPA + 50% Ownership		Development		Dec-05
	100% Ownership		Development		Dec-05
	100% Ownership		Development		late 2008
	100% Ownership + 10-yr 100MW PPA		Operating		Aug-02
	50.2% Ownership		Development		Dec-05
	100% Ownership		Suspended		Nov-05
	100% Ownership		Suspended		late 2005
	70% Ownership		Development		Sep-07
	100% Ownership		Operating		Oct-03
	Joint Venture w/ PSE		Development		May-06

TEXT IN BOX IS HIGHLY  
CONFIDENTIAL

\*COD per original proposal; not reflective of currently feasible COD

REDACTED

# **Resource Options are Limited**

*Roger Garratt*  
*Wayman Robinett*

# Resource Acquisition

## *Near Term Issues*

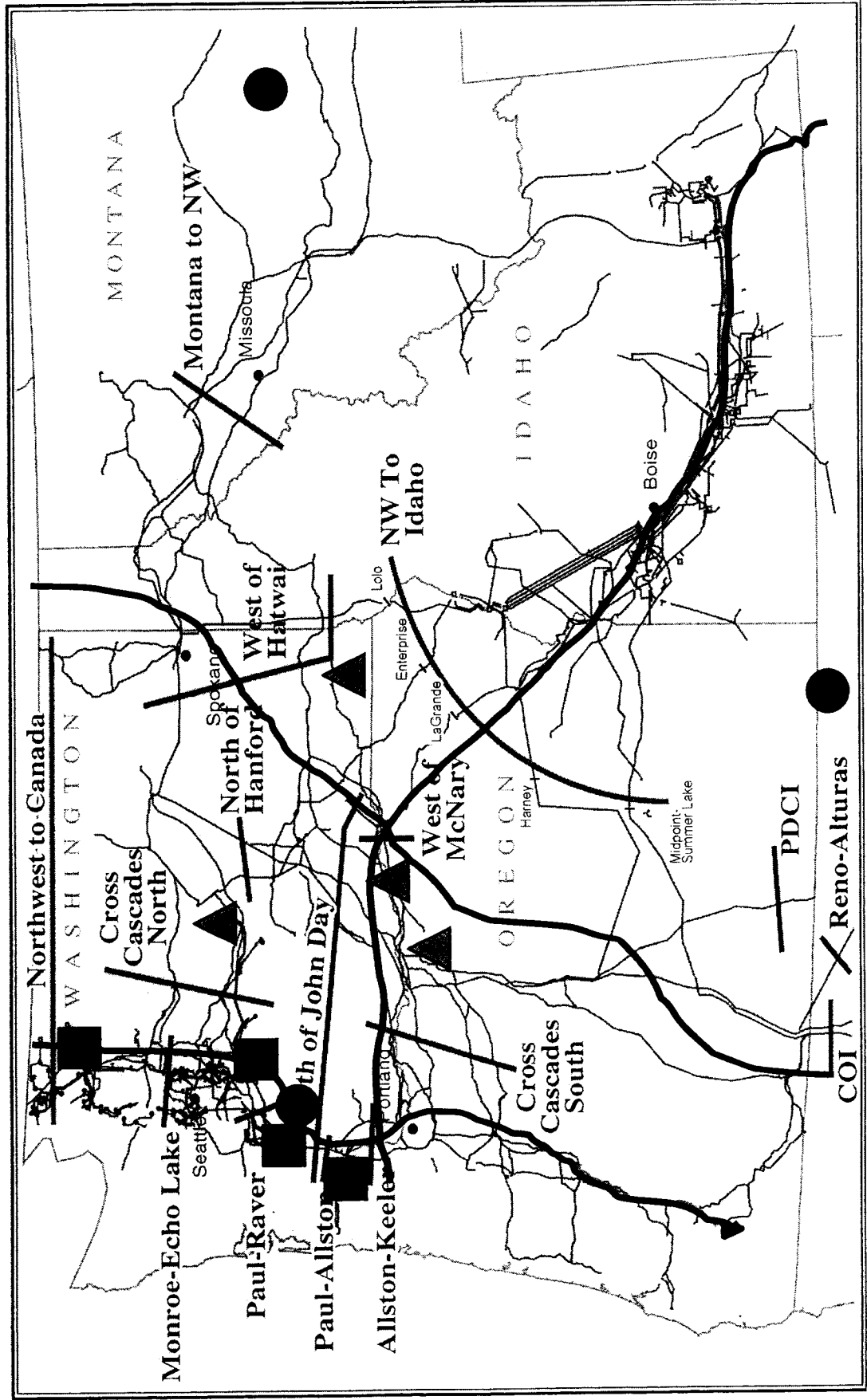
Wind
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Coal
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Gas
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# Resource Opportunities and Transmission Constraints



■ Gas ▲ Wind ● Coal

# **Least Cost Planning**

**Doug Loreen**

# **Model Detail Review**

**Jim Elsea**