EXHIBIT NO. ___(RG-16HC)
DOCKET NO. UE-11___/UG-11___
2011 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-11____** **Docket No. UG-11____**

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

REDACTED VERSION

JUNE 13, 2011

Lower Snake River Wind Project Update

PSE Board of Directors

Roger Garratt
Director, Resource Acquisition & Emerging Technologies

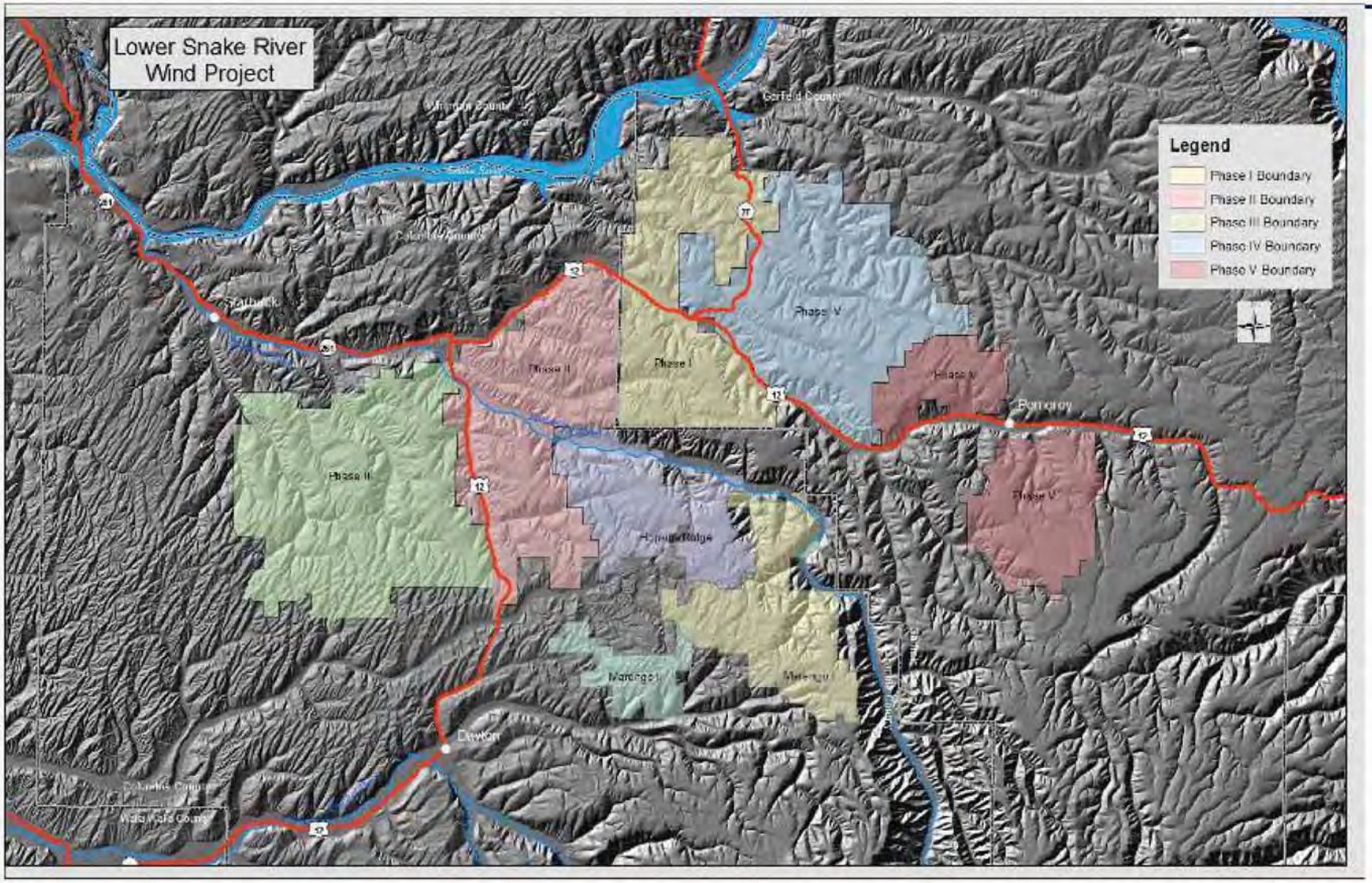
November 4, 2009

PUGET SOUND ENERGY
The Energy To Do Great Things

Agenda

- Project Overview
- Project Execution
  - Development Schedule
  - Wind Turbine Generator Recommendation
  - Permitting
  - Interconnection & Transmission
- Project Analysis & Alternatives
- Renewable Incentives
- Project Budget & Schedule
- Next Steps

Lower Snake River Wind Project



Development Schedule Recommendation

PUGET SOUND ENERGY

The Energy To Do Great Things

2009 Electric Resource Plan

Cumulative Capacity Additions (MW)

	2012	2016	2020	2029
Demand-Side Resources	205	597	917	1064
Wind	300	600	1000	1100
Biomass	0	0	20	40
CCCT w/ Duct Firing	275	275	825	1100
Peakers	160	160	480	1760

Proposed Schedule – Phase in 500 MW

[redacted]

Key Factors in Schedule:

- Accelerating wind more than the 2009 IRP takes advantage of:
  - U.S. Treasury grant
  - Sales tax exemption
  - Low turbine costs
- Maximum acceleration schedule tempered by:
  - Physical construction capabilities
  - Transmission and interconnection availability
  - Potential for future PTC post 2013
  - On-line dates overlay timing of Chelan PPA renewal (rate impact not yet evaluated)

REDACTED VERSION

[redacted]

LSRP Development

	Indicative Wind Capacity on-line at beginning of years 2011-2013
▪ **2009 IRP:**	300 MW
▪ **Fine Tuning the 2009 IRP:** Refine IRP broad strategy using IRP assumptions and IRP model (PSM-II)	400 MW
▪ **Quantitative Evaluation Changes since the IRP:** ▪ Lower turbine cost ▪ Treasury Grant ▪ Extension of WA State sales tax exemption	600 MW
▪ **Qualitative risk factors moderate schedule:** transmission and interconnection availability, seasonal construction capability, possibility of future tax credits, etc.	500 MW Recommended

Why wind now and not gas?

- Wind and gas are not directly comparable
- Wind provides energy, RECs, and qualifies for renewable incentives
  - Production tax credits, investment tax credits, or Treasury grants
- Wind acts as a hedge to natural gas price risk in PSE portfolio
- Gas provides capacity and energy
- Addition of wind will not reduce need for gas additions to portfolio as set forth in 2009 Integrated Resource Plan
- Wind and gas are roughly comparable on a levelized cost basis
  - Levelized cost is one of various metrics used to evaluate resource alternatives

Levelized Cost of Wind in Range of Gas CCCT

REDACTED VERSION

Wind Turbine Generator Recommendation

PUGET SOUND ENERGY
The Energy To Do Great Things

Turbine Procurement Update

- Three Wind Turbine Generator (WTG) suppliers shortlisted
  - Siemens – SWT101
  - [redacted]
  - [redacted]
- LSR Turbine Selection Team completed final technical review and review of final bids.
- Siemens SWT101 2.3 MW WTG selected for final negotiations.

REDACTED VERSION

LSR WTG Technical Review Process

- Turbine technical overview completed
- PSE open questions identified and answered
- Vendor presentations held to address open questions
  - Turbine capabilities
  - SCADA review
  - Connectivity
  - O&M services
  - Corporate culture
- Team completed WTG ranking (individually)
- Team established criteria weighting factors (collectively)

Technical Review Survey Results

- Overall, Siemens ranks best technically
- Siemens is leading or tied in four of six categories
- Vestas ranks well in service, but technology trailed competitors
- V100 not in commercial operation

Criteria	Weight	[redacted]	[redacted]	Siemens SWT101	[redacted]
Reliability Risk	25%	1.04	0.71	1.11	0.93
Performance Risk	20%	0.80	0.57	0.89	0.80
O&M Capabilities	15%	0.64	0.62	0.56	0.45
SCADA System	20%	0.57	0.57	0.86	0.60
Maintainability	10%	0.37	0.37	0.37	0.31
Partnering	10%	0.37	0.37	0.36	0.26
Totals	100%	3.79	3.21	4.15	3.35

REDACTED VERSION

Exhibit No. ___(RG-16HC)
Page 13 of 77

LSR WTG Commercial Review Process

- Vendors sent letter confirming commercial terms and requesting response in uniform terms
- Burns and McDonnell validation of RES BOP schedule
- Updated Phase 1 project costs based on final commercial terms
- Updated project proformas on WTG-specific basis

Pro Forma Model Results

Supplier	WTG Model	Levelized Cost[1] ($/MWh)	Rank	Comment
Siemens	SWT101	$[redacted]	1	Preferred WTG based on technical evaluation
[redacted]	[redacted]	$[redacted]	2	$1.5M more than SWT101
[redacted]	[redacted]	$[redacted]	3	$9.6M more than SWT101

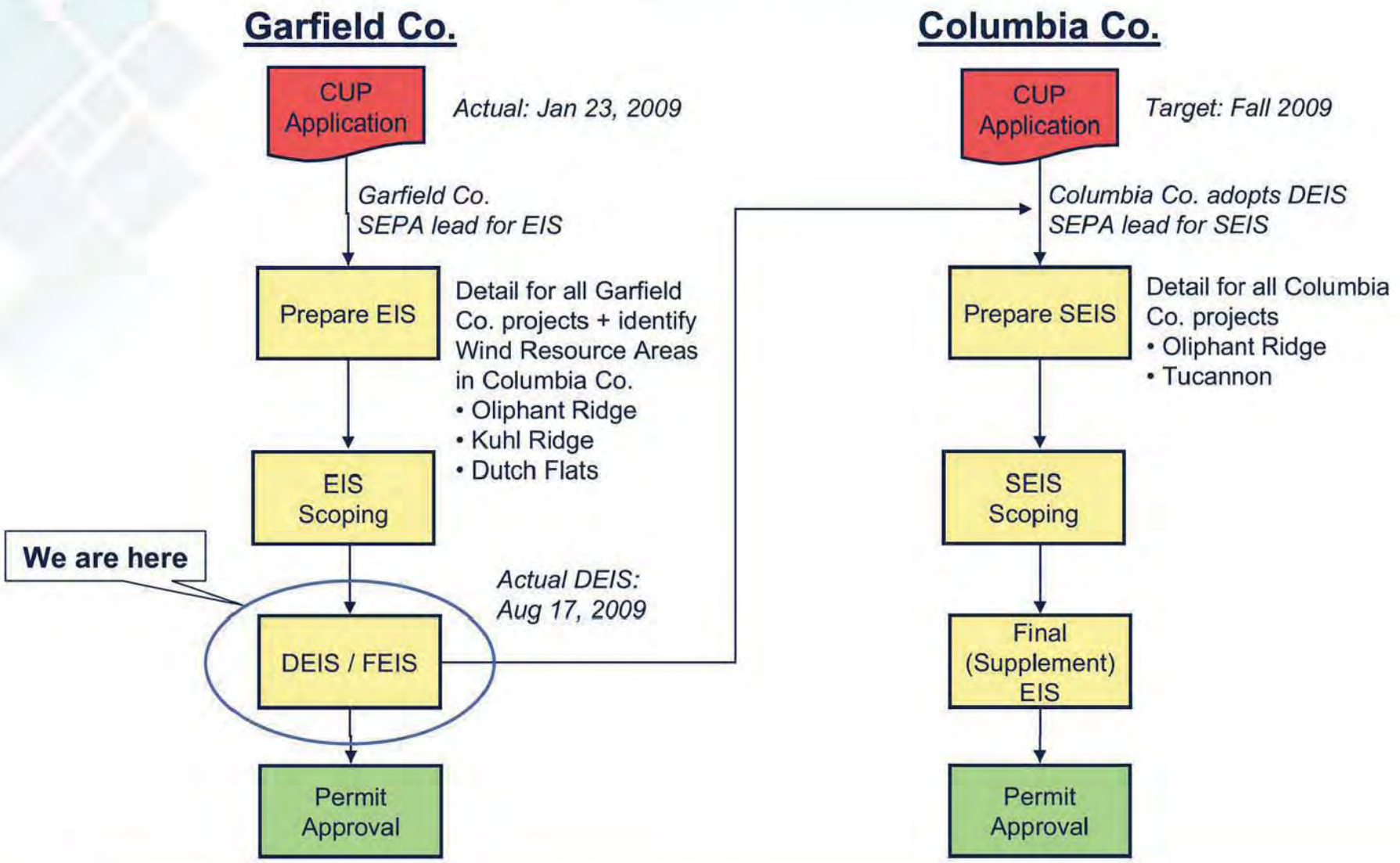
REDACTED VERSION

[1]- All-in levelized cost for 250 MW installed in 2011 for 25 year asset life

Permitting

PSE PUGET SOUND ENERGY
The Energy To Do Great Things

Lower Snake River - Permitting



LSR Project Permits

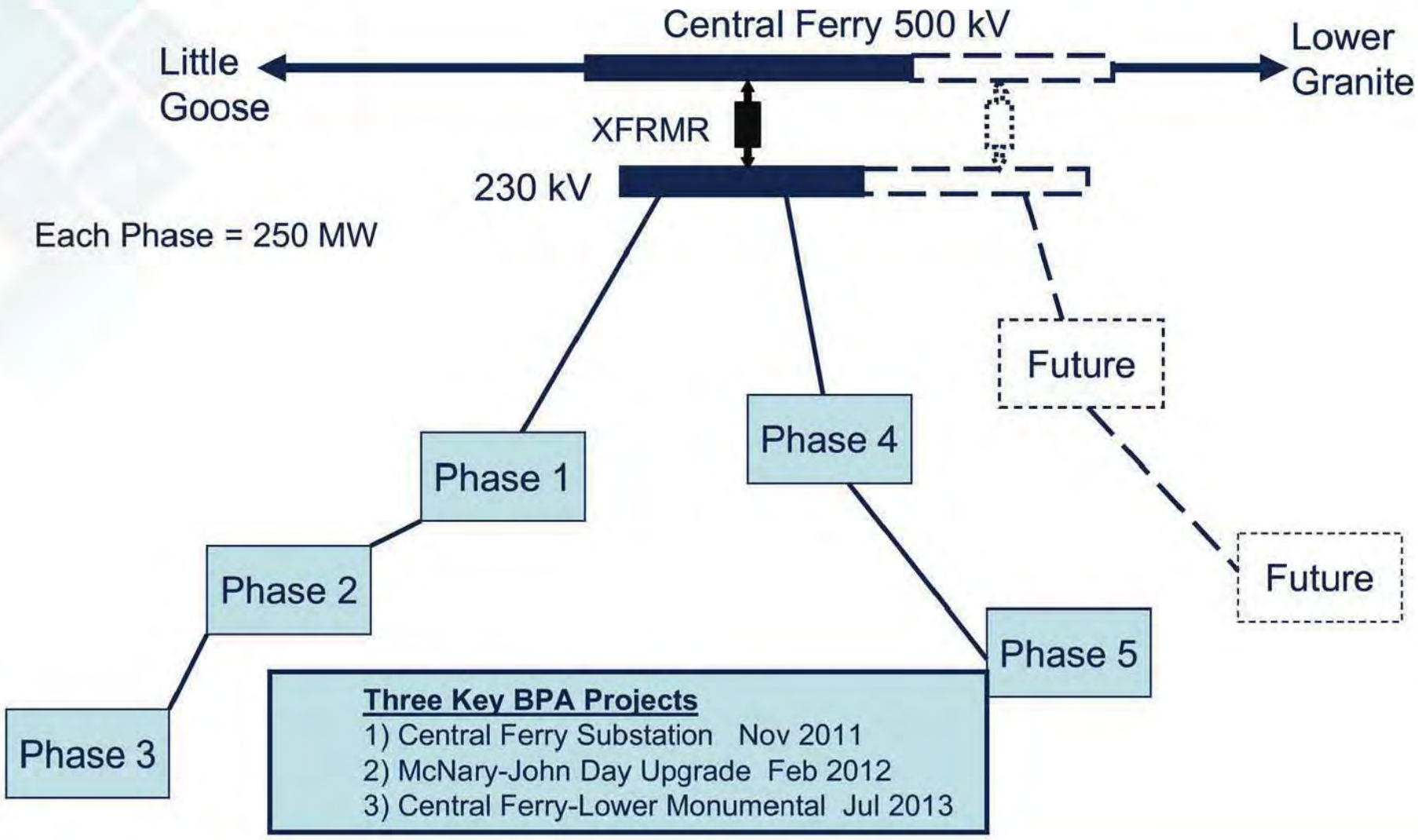
- **Permits That May Require Decisions**
  - Clean Water Act Section 404
    - If the projects has impacts it may trigger ESA Section 7 Consultation
    - Minimize risk by siting project infrastructure to avoid impacts
  - Archeological Excavation Permit
    - Archeological review must occur 60-days prior to construction
    - Minimize risk by conducting reviews early before infrastructure design is completed and incorporate in project layout and design

- **Other Significant Permits**
  - BPA Record Of Decision (ROD)
    - BPA will not proceed with construction and may not proceed with engineering without the ROD
    - Potential for delay in constructing the Central Ferry Substation without a ROD
    - Minimize risk by assisting BPA in preparation of ROD. PSE has prepared text for BPA.
    - Minimize risk with favorable PSE permitting outcomes on LSRP. BPA may be willing to advance Central Ferry work before ROD is issued.

Interconnection and Transmission

PSE PUGET SOUND ENERGY
The Energy To Do Great Things

Simplified LSR Wind Project Interconnection



Transmission Strategy

REDACTED VERSION

- 800 MW transmission obtained through the 2008 BPA Network Open Season
  - 550 of 800 MW contingent upon the completion of the following projects:
    - McNary-John Day (Feb. 2012 schedule)
    - Central Ferry-Lower Monumental (Jul. 2013 schedule)
- [redacted]
- Short-term transmission will be requested where need exists
- Excess transmission will be deferred at estimated cost of ~$130K/100 MW/year

Project Analysis and Alternatives

PUGET SOUND ENERGY

The Energy To Do Great Things

LSR Phase 1 Project Analysis

- Analysis to date[1] indicates Key Benefits of Phase 1 include:
  - [redacted] Net Capacity Factor
  - [redacted] / MWh Levelized Cost
  - $102 Million Portfolio Benefit
  - 0.17 Portfolio Benefit Ratio

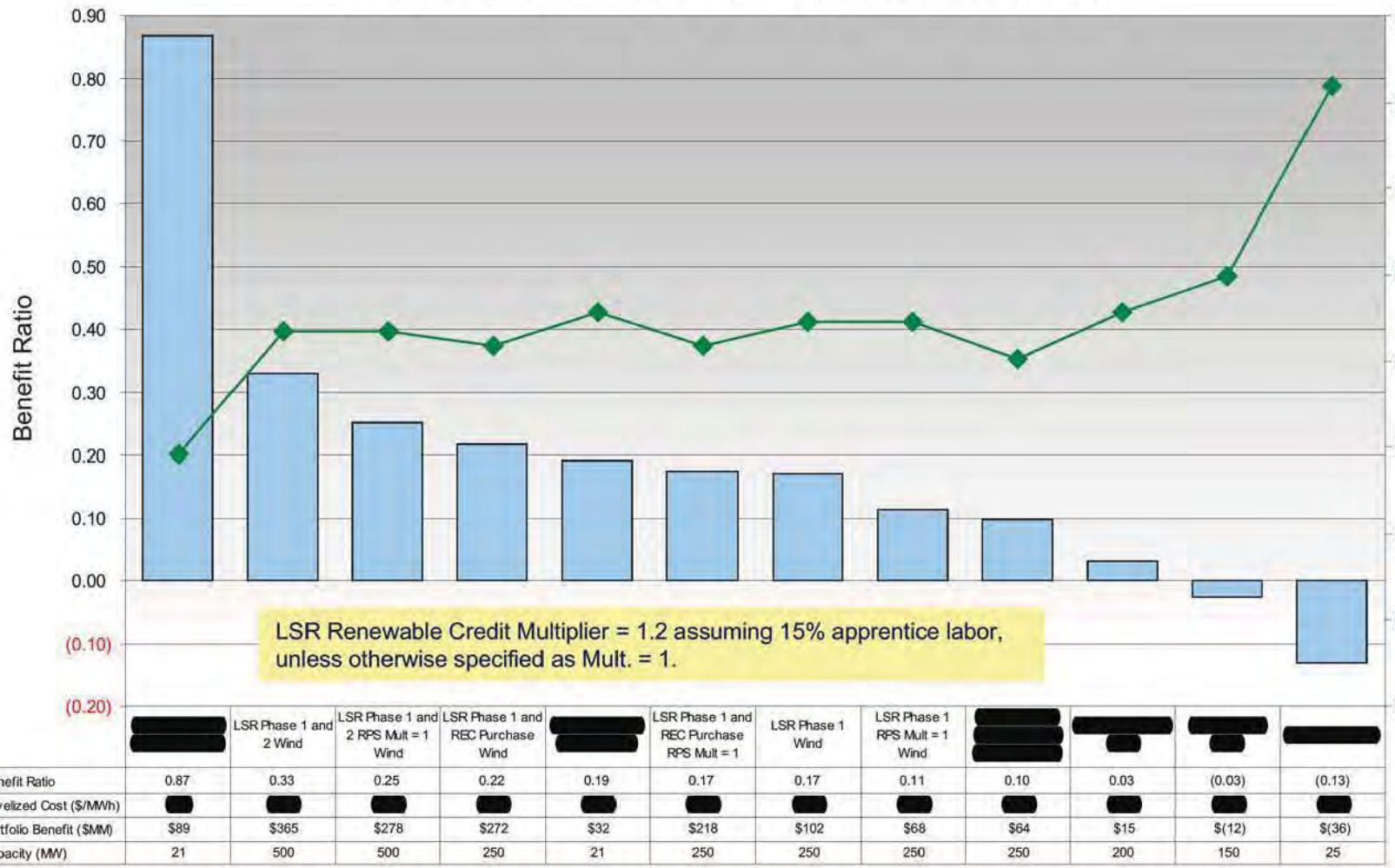
REDACTED VERSION

[1] – Analysis for '2009 Trends Scenario'

LSR Phase I Comparative Analysis

REDACTED VERSION

REDACTED VERSION



	[redacted]	LSR Phase 1 and 2 Wind	LSR Phase 1 and 2 RPS Mult = 1 Wind	LSR Phase 1 and REC Purchase Wind	[redacted]	LSR Phase 1 and REC Purchase RPS Mult = 1	LSR Phase 1 Wind	LSR Phase 1 RPS Mult = 1 Wind	[redacted]	[redacted]	[redacted]	[redacted]
Benefit Ratio	0.87	0.33	0.25	0.22	0.19	0.17	0.17	0.11	0.10	0.03	(0.03)	(0.13)
Levelized Cost ($/MWh)	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Portfolio Benefit ($MM)	$89	$365	$278	$272	$32	$218	$102	$68	$64	$15	$(12)	$(36)
Capacity (MW)	21	500	500	250	21	250	250	250	250	200	150	25

Renewable Incentives

- Cross-department PSE team considered multiple scenarios with respect to benefit to utility customers and transactional risk
  - Production Tax Credit (with Tax Equity Partner)
  - Investment Tax Credit (with Tax Equity Partner)
  - Treasury Grant in lieu of Investment Tax Credit

- The Treasury Grant amortized over 10 years provides an attractive benefit to utility customers at an acceptable level of legal and regulatory risk.
  - Dewey & LeBoeuf memorandum finds proposed treatment "…reasonable and appropriate position for accounting for the Grant for ratemaking purposes…"
  - WUTC Accounting Petition drafted and filed for Wild Horse Expansion
  - Grant Application states PSE intention to amortize the Treasury Grant benefits to utility customers over 10 years

Project Budget

PUGET SOUND ENERGY

The Energy To Do Great Things

LSR Phase 1 Preliminary Capital Budget

	$000's	$/kW	Percent of Total
DEVELOPMENT BUDGET			
	[redacted]		
Development Rights			
PSE Development Costs			
Interconnection Costs			
Prepaid Transmission Expense			
TOTAL DEVELOPMENT BUDGET			
CONSTRUCTION BUDGET			
	[redacted]		
Wind Turbine Generators			
Balance Of Plant			
PSE Project Management			
Start-Up Costs			
Sales Tax			
Contingency			
AFUDC			
TOTAL CONSTRUCTION BUDGET			
TOTAL ALL-IN CAPITAL COSTS			

REDACTED VERSION

Exhibit No. ___(RG-16HC)
Page 27 of 77

LSR Phase I Preliminary O&M Budget

Projected first year operating costs

	$000's
2012 OPERATING COSTS	
	[redacted]
Siemens O&M Expenses	
PSE Operating Expenses	
PSE Maintenance Expenses	
PSE Transmission & Substation Expenses	
PSE Administrative Expenses	
PSE Environmental Expenses	
PSE Startup Expenses	
BPA Fixed Transmission Expenses	
BPA Fixed Transmission Credit	
BPA Variable Transmission Expenses	
PSE Insurance Expenses	
Landowner Royalty Expenses	
PSE Property Tax Expenses	
TOTAL 2012 OPERATING COSTS	

REDACTED VERSION

* An additional charge related to the BPA Prepaid Transmission Regulatory Asset is included in revenue requirement calculations, but excluded from the above operating expenses.

Exhibit No. ___(RG-16HC)
Page 28 of 77

Next Steps

PUGET SOUND ENERGY
The Energy To Do Great Things

LSR Phase 1 – What's Next

- Obtain Garfield County Conditional Use Permit
- Obtain BPA Record of Decision
- Execute BPA Large Generator Record of Decision (subject to Board approval)
- Execute Turbine Supply and Erection Agreement and Five-year Service and Warranty Agreement with Siemens (subject to Board approval)
- Execute Balance of Plant Engineering, Procurement and Construction Agreement with RES (subject to Board approval) and issue Notice to Proceed

Appendix

PSE PUGET SOUND ENERGY
The Energy To Do Great Things

Project History

Date	Event
Nov 26, 2008	PSE & RES sign Joint Development Agreement.
Dec 5, 2008	PSE & RES close Joint Development Agreement transaction.
Mar 23, 2009	RES issues marketing material for sale of their 50% interest.
May 15, 2009	PSE signs Option Letter for the purchase of the RES 50% undivided interest for $[redacted] (about $[redacted]/kW).
July 27, 2009	PSE Board of Directors approves recommendation to purchase RES interest
August 5, 2009	PSE & RES close Development Rights transaction.

REDACTED VERSION

Changes since IRP → More wind early

- Recession has resulted in lower prices and better availability of wind turbines
  - Future escalation of costs more likely from current market "low"
- Extension of WA State sales tax exemption – May 2009
  - In May 2009, Washington passed SB 6170, effective July 1, 2009. The sales and use tax exemption (i.e. 100% exemption) was extended to June 30, 2011 for systems generating electricity using wind and other renewable technologies. The tax exemption also applies to labor and services related to the installation of the equipment.
  - From July 1, 2011 to June 30, 2013, the exemption for the systems described above will be reduced from 100% of the sales and use tax to 75% of the sales and use tax.
  - Future price increase of over 5% is expected post 2013. Assume that 70% of cost qualifies for exemption at 7.7% sales tax rate in LSRP counties.
- Treasury Grant Guidance – July 2009
  - American Recovery and Reinvestment Act ("ARRA") extended Production Tax Credit ("PTC") through 2012 – this assumption was included in the 2009 Integrated Resource Plan
  - PSE's requesting WUTC approval for 10-yr amortization that results in slightly better benefits than PTC for customers – this assumption was not included in 2009 IRP
  - Better grant benefits favors early acquisition of wind

Fine Tuning the 2009 IRP Wind Plan

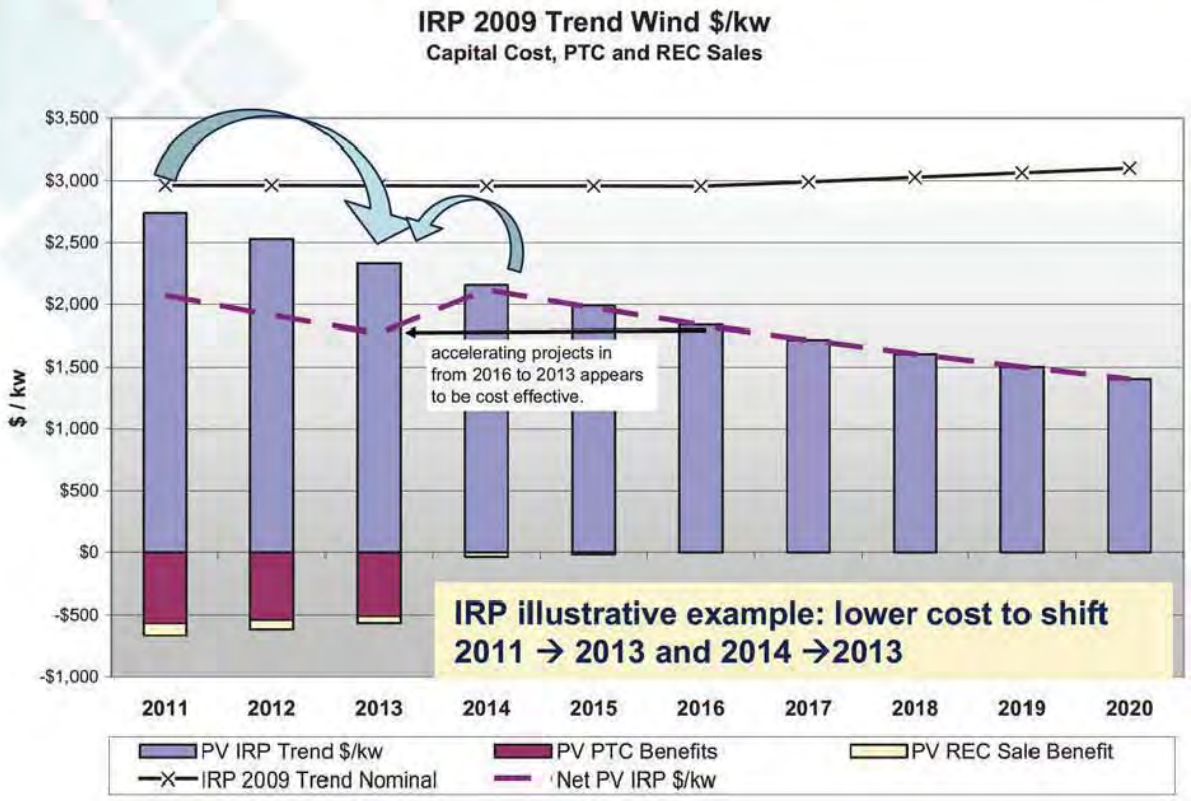
Alternative Timing of Wind using PSM II from 2009 IRP

		$000	$ Diff	% Diff	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	LSR 7-28-09 Development Plan	$20,037,481	-$16,177	-0.08%	0	0	250	250	0	0	250	0	0	0	250
2	Accelerated 500 MW, then IRP	$20,056,098	$2,440	0.01%	0	0	500	0	0	0	100	0	200	0	200
3	IRP Development Plan	$20,053,659	$0	0.00%	0	100	200	0	100	0	200	0	200	0	200
4	Phase 400 MW - then IRP	$20,000,947	-$52,712	-0.26%	0	0	200	200	0	0	200	0	200	0	200
5	Phase 500 MW - then IRP	$20,018,464	-$35,195	-0.18%	0	0	250	250	0	0	100	0	200	0	200
6	Phase 600 MW - then IRP	$20,035,972	-$17,687	-0.09%	0	0	300	300	0	0	0	0	200	0	200

Capacity of wind available at BEGINNING of year

- 2009 IRP Plan shown above as Alternative #3
- IRP method results in broad strategy to accelerate wind to take advantage of PTC
- Use the same PSM-II Model as used by PSE Planning Group. No change in assumptions of cost.
- Test relatively small changes in the timing of wind. Significant changes would require re-run of full IRP optimization model.
- Conclusion: Alternative #4, 400 MW phased in by shifting 200 MW into 2013 *(COD in late 2012 for PTC eligibility)* results in a lower cost by taking better advantage of the Production Tax Credits and Renewable Energy Credit benefits of wind.

400 MW Lower Cost than 2009 IRP Plan



Key drivers of IRP

- PTC available for project COD 2012
- Low capital cost escalation
- REC sales

Simple model

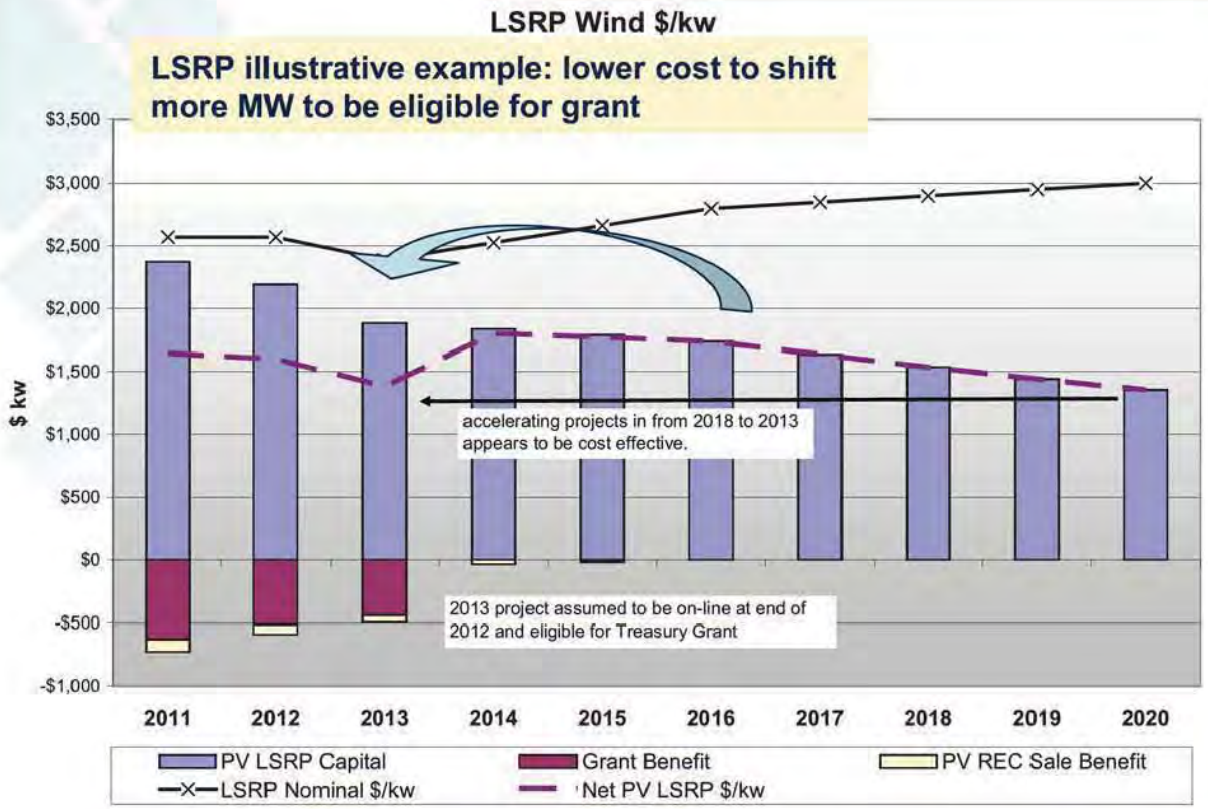
- Uses only key drivers
- Discount at 8.25% per year.
- Shifting 100 MW out of 2011 is lower cost
- Shifting 100 MW from 2014 into 2013 to capture PTC is lower cost

IRP Assumptions	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
IRP 2009 Plan	100	200	0	100	0	200	0	200	0	200	1000
		100		100							
400 MW Phased In		200	200	0	0	200	0	200	0	200	1000

Fine tuning of IRP to achive lower costs

		Rank IRP
1	LSR 7-28-09 Plan	4
2	Accelerated 500, then IRP	5
3	IRP Development Plan	6
4	Phase 400 MW - then IRP	1
5	Phase 500 MW - then IRP	2
6	Phase 600 MW - then IRP	3
7	Phase 800 MW - then IRP	7
8	Phase 1000 MW - then IRP	8
9	Phase 1200 MW - then IRP	9

LSRP assumptions → More MW early



LSRP Assumptions	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
IRP 2009 Plan	100	200	0	100	0	200	0	200	0	200	1000
	100		100		200						
600 MW Phased In		300	300	0	0	0	0	200	0	200	1000

Key drivers of LSRP

- Current low cost of turbines
- Sales tax driving some cost escalation
- Grant usually > PTC for COD 2012 or earlier
- Allocation of development and BPA costs to early projects.
- REC sales

Results based only on REC, PTC / Grant and Capital cost

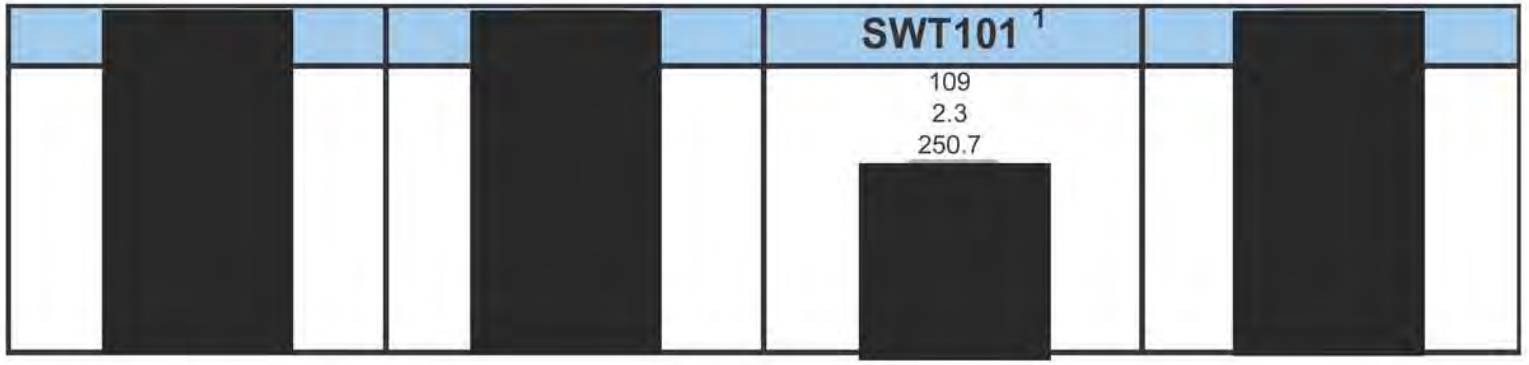
		Rank IRP	Rank LSRP
1	LSR 7-28-09 Plan	4	5
2	Accelerated 500, then IRP	5	7
3	IRP Development Plan	6	8
4	Phase 400 MW - then IRP	1	4
5	Phase 500 MW - then IRP	2	3
6	Phase 600 MW - then IRP	3	1
7	Phase 800 MW - then IRP	7	2
8	Phase 1000 MW - then IRP	8	6
9	Phase 1200 MW - then IRP	9	9

Qualitative risk evaluation

Development Alternatives (for 2012 & 2013)					
	#3 IRP	***#4 PHASE 400***	***#5 PHASE 500***	***#6 PHASE 600***	***#2 ACCEL. 500***
PROS	▪ Known to IRPAG ▪ Almost identical with IRP (no turbines planned for COD 2010) ▪ Good alignment with firm transmission requests ▪ Low rate impact in short term	▪ Lowest cost in 2009 IRP models testing ▪ 200 MW per year can easily be constructed ▪ Phase I always has firm transmission ▪ Good alignment with firm transmission requests	▪ Captures significant amount of Federal stimulus and WA sales tax exemption ▪ Plan previously presented to Board, PSE Management, Garfield and Columbia Co. ▪ All turbine vendor and BOP estimates contemplate this build schedule	▪ Less vulnerable to losing real estate rights post-2013 ▪ Captures most Federal stimulus and WA sales tax exemption ▪ Most favorable scenario for WTG negotiations	▪ Increases certainty of capturing full Treasury Grant ▪ Provides most negotiating leverage when turbine demand is soft
CONS	▪ More vulnerable to losing real estate rights post-2013 ▪ Least benefits from stimulus and WA sales tax exemption benefits ▪ 300 MW in one year escalates constructability risks ▪ Least favorable scenario for TSA negotiations	▪ More vulnerable to losing real estate rights post-2013 ▪ Low benefits from stimulus and WA sales tax exemption benefits	▪ Does not maximize Treasury grant potential ▪ Phase II relies on some non-firm transmission	▪ Higher CAPEX commitments prior to CUP in Garfield and Columbia Cos ▪ Heavily reliant on non-firm transmission ▪ 300 MW per year escalates constructability risks	▪ Greatest exposure to timely Central Ferry completion ▪ Highest rate impact ▪ Significant construction challenges - 2 work crews - >200 turbines ▪ Exposure to permitting risk in 2 counties ▪ Heavily reliant on non-firm transmission

Bid Summary

	SWT101 [1]
Turbine Count (#)	109
Turbine Capacity (MW)	2.3
Project Capacity (MW)	250.7
Project NCF (%)	
TSA Cost ($)	
$ / kW	
Warranty Term	
O&M Agreement	
O&M Start Price ($)	



Note #1: Price includes unloading and erection.

REDACTED VERSION

Technical Review Survey

Criteria	Issue	Observations	Score
Reliability Risk	'Track record' for turbine system Field-proven components Component testing in laboratory Prototype experience, loads testing Certification status Other		
Performance Risk	Availability guarantee and track record Power curve validation Demonstrated performance in similar wind regimes and terrain Ability to meet interconnection requirements Other		
O&M Capabilities	Comprehensive service offering for extended periods Quality and comprehensive technician training programs 24/7 monitoring On-site tooling and fixtures Safety record Manufacturer control over major parts production Major parts storage depots Off-hour response plan Other		
SCADA system	Park power output and ramp-rate control Park voltage/VAR support capability Operator interface security Operator interface 'useability' and 'friendliness' Downtime allocation reconciliation Comprehensive measurement point list Time resolution and depth of OPC server Condition monitoring integration Other		
Maintainability	Crane requirements for major replacements (gearbox, generator) On-board capability for parts replacement (yaw drives, cylinders, pumps) Direct access to hub from nacelle for technician and parts Ability to sustain extended power outage without intervention Lift or climb assist Emergency egress Parts replacement intervals (e.g. pitch batteries, slip rings) Other		
Partnering	System for communicating technical issues to customer System for customer feedback System for tracking spares usage and component failures Commitment to working with customer to resolve technical problems 'Continuous improvement' efforts Comprehensive monthly reporting - spares usage, major contributors to downtime Commitment to community relations Training and education opportunites for customer Other		

Technical Evaluation

	[redacted]	Siemens SWT-2.3-101	[redacted]
IEC Class		IIB	
Average design wind speed (m/s)		8.5	
Rated windspeed (m/s)		12	
Rated power (kW)		2300	
Rotor diameter (m)		101	
Specific rating (kW/m^2)		0.29	
Tower Height (m)		80	
Temp range running		-10 to +35	
Generator type		Induction	
Power regulation		Full converter	
Drive train		Three-point	
Transformer location		padmount not included	
Nacelle access		Climb assist option	
Hub access		Through nacelle	
Noise level (dBA)		107	
Grid integration		ZVRT, Voltage control	
Fleet		3 proto/2installed	
Risks		New blade design	
Advantages		Reputation for robust product, plant control	

REDACTED VERSION

LSR Permitting Schedule

Date	Item
August 17, 2009	Draft Environmental Impact Statement ("DEIS") available for Public Review
September 16, 2009	Close of DEIS Comment Period
October 7, 2009	Release of the Final Environmental Impact Statement ("FEIS") by Garfield County
October 21	State Environmental Policy Act ("SEPA") appeal period expired. One SEPA appeal filed.
November 5, 2009	Garfield County SEPA Appeal and Conditional Use Permit ("CUP") Public Hearing
Early November 2009	Garfield County CUP Decision
Late Nov/Early Dec 2009	30 day appeal of CUP expires
Late- April 2010	Any appeals addressed by State Superior Court
February 2011	Any appeals addressed by State Court of Appeals

LSR Project Permits

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
Clean Water Act Section 404 Permit	U.S. Army Corps of Engineers (USACE) – Walla Walla District	Discharge/impacts to jurisdictional wetlands and/or other waters of the U.S. (i.e., excavation, fill)	Yes	Yes	Detailed project drawings, including the location of the project in relation to wetlands, and other waterbodies are required with application submittal.
Clean Water Act Section 401 Water Quality Certification	WA Department of Ecology	Discharges/impacts to jurisdictional wetlands and/or other waters of the U.S.	Yes	Yes	If applicable, mitigation plans, operation and maintenance plans, stormwater site plans and restoration plans may need to be submitted along with the application.
National Pollutant Discharge Elimination System (NPDES) Construction General Permit (and State Stormwater Construction General Permit)	WA Department of Ecology	Ground disturbance exceeding 1 acre	Yes	Yes	Complete and submit a Notice of Intent (NOI) at least 30 days prior to commencing construction activities. Storm Water Pollution Prevention Plan (SWPPP) must be prepared prior to construction activities. SWPPP must include at a minimum: site description, site map, and a narrative description of BMPs that will be implemented before, during, and after construction.
Sand and Gravel General Permit – Portable Facilities (NPDES and State Waste Discharge General Permit)	WA Department of Ecology	Wastewater discharges, including industrial storm water and process water, associated with portable concrete batch plants, asphalt batch plants, and rock crushers	Yes	N/A	Need to include a list identifying the major components of the portable operation with application. Permit coverage cannot be issued to a new facility unless applicable State Environmental Policy Act requirements have been satisfied.

LSR Project Permits

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
Hydraulic Project Approval/Joint Aquatic Resource Permit Application	WA Department of Fish and Wildlife	Activities that use, divert, obstruct, or change the natural flow or bed of any water in the state	Yes	N/A	A complete application package for an HPA must include a completed Joint Aquatic Resource Permit Application (JARPA) form, general plans for the overall project, and complete plans and specifications of the proposed work within the ordinary high water line in fresh waters of the state, complete plans and specifications for the proper protection of fish life, and notice of compliance with any applicable requirements of the State Environmental Policy Act (SEPA).
Well Construction and Operator's License	WA Department of Ecology	Construction of water wells, monitoring wells, geotechnical soil borings	Yes	N/A	A Notice of Intent to construct a well must be submitted to Ecology at least 72 hours prior to well construction.
Section 106 of National Historic Preservation Act	Department of Archaeology and Historic Preservation (DAHP)	Construction activities that may disrupt or destroy cultural or historic resources	Yes – may include potential surveys	N/A	Consultations with DAHP and any affected tribes must be undertaken
Endangered Species Act – Section 7 Consultations	NOAA Fisheries; U.S. Fish and Wildlife Service	Projects requiring Federal 404 permit or with the potential to adversely affect federally-listed species or their habitat	Yes	N/A	USFWS consultation required; potentially conduct biological surveys and prepare a Biological Assessment
Federal Aviation Administration (FAA) Form 7460: Notice of Proposed Construction or Alteration	Federal Aviation Administration	Erecting structures greater than 200 feet tall	Yes	N/A	Latitude and longitude need to be provided for each wind turbine tower, as well as ground elevation

LSR Project Permits

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
General Order of Approval for Concrete Batch Plants	WA Department of Ecology, Eastern Regional Office	Operation of temporary onsite concrete batch plant	Yes	N/A	
General Order of Approval for Portable Rock Crushers	WA Department of Ecology	Operation of temporary onsite portable rock crushers	Yes	N/A	
Highway Access Permit	WA Department of Transportation	Any private access to U.S. 12 or SR 127	Yes	N/A	Site plan, vehicle trips generated, drainage plan, and property owner information are required with the permit application
Building Permit	Garfield County Public Works; Columbia County Public Works	Development and facility construction	Yes	N/A	Including other necessary County development approvals, such as water, septic, addressing, etc.
Conditional Use Permit	Garfield County Public Works; Columbia County Planning Department	Construction of a wind energy facility in agriculturally zoned area	Yes	N/A	
Right of Way Permit (includes both access and use)	Columbia County Public Works	Placement of utilities within County right of way and construction/modification of an approach to a County road	Yes	N/A	Requires the submittal of a site plan showing the site location and location of utilities to be installed in relation to the road, as well as right of way limits
Right of Way Use Permit	Garfield County Public Works	Placement of utilities within County right of way	Yes	N/A	Requires the submittal of a site plan showing right of way limits and a plan view
Right of Way Approach Permit	Garfield County Public Works	Construction or modification of an approach to a County road	Yes	N/A	Requires the submittal of a site plan showing right of way limits and a plan view

LSR Project Permits

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
Haul Road Agreement	Garfield County Public Works	Hauling operations	Yes	N/A	Requires the completion of a Road Use plan which designates which County roads are to be used, vehicle trips/day, hours and dates of travel, gross weight loadings, vehicle types, etc.
Franchise Agreement/Bonding	Columbia County Public Works	Hauling operations/roadway usage	Yes	N/A	No haul road agreement exists in Columbia County; instead, a bonding requirement is placed. The franchise agreement/bonding are addressed in the CUP.
	Garfield County Public Works	Occupancy and Use Agreement	Yes	N/A	Requires a fully executed Franchise Agreement as per Garfield and Columbia counties' accommodation of utilities policies.
Critical Areas Review/Determination	Garfield County Public Works; Columbia County Planning Department	Working in or near critical areas	Yes	N/A	
Archaeological Excavation Permit	Department of Archaeology & Historic Preservation	Excavating, altering, defacing, or removing archaeological objects or resources or Native Indian graves, cairns, or glyptic records per statutory requirements	Yes	N/A	Provide clear maps and graphics with application.

LSR Project Permits

Table 3-1 Permits and Consultation that May be Required for the Project

Permit/Consultation	Agency	Activity	Before Construction	Before Operation	Notes
Surface Mining Reclamation Permit	WA Department of Natural Resources	A reclamation permit is required for quarries that: (1) results in more than 3 acres of mine-related disturbance, or (2) has a high-wall that is both higher than 30 feet and steeper than 45 degrees	N/A	Yes	The Applicant must submit an application for a surface mining reclamation permit, including a reclamation plan, and the Surface Mining Reclamation Permit Checklist.

LSR Phase I Comparative Analysis

REDACTED VERSION

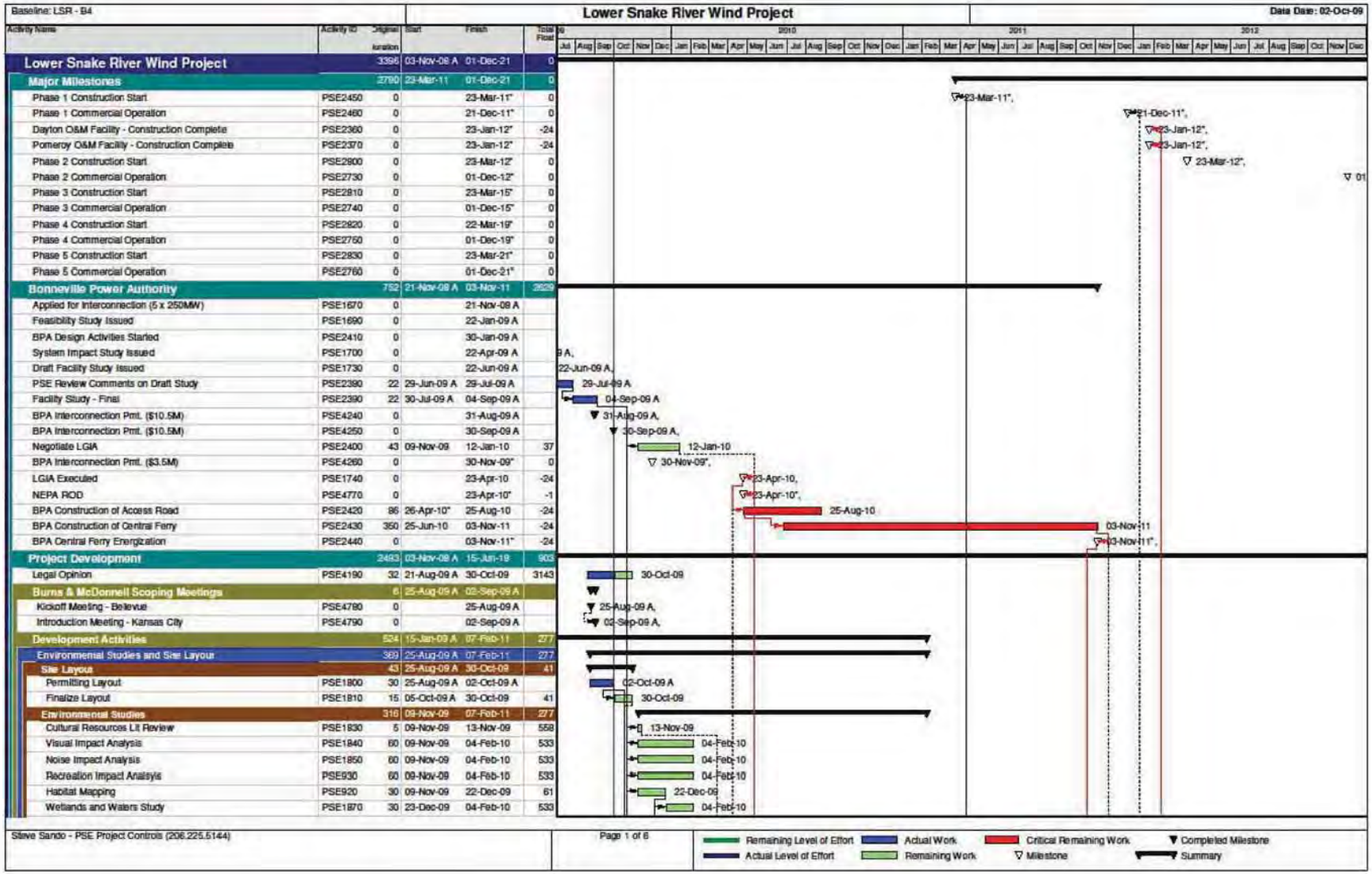
- Analysis as of October 26, 2009
- LSR – Based on most current and available information. Positive portfolio benefit derived from displacement of "generic" IRP wind development schedule. Assumes LSR qualifies for Washington State 1.2 multiplier on RECs resulting from apprentice program.
- [redacted]
- [redacted]

REDACTED VERSION

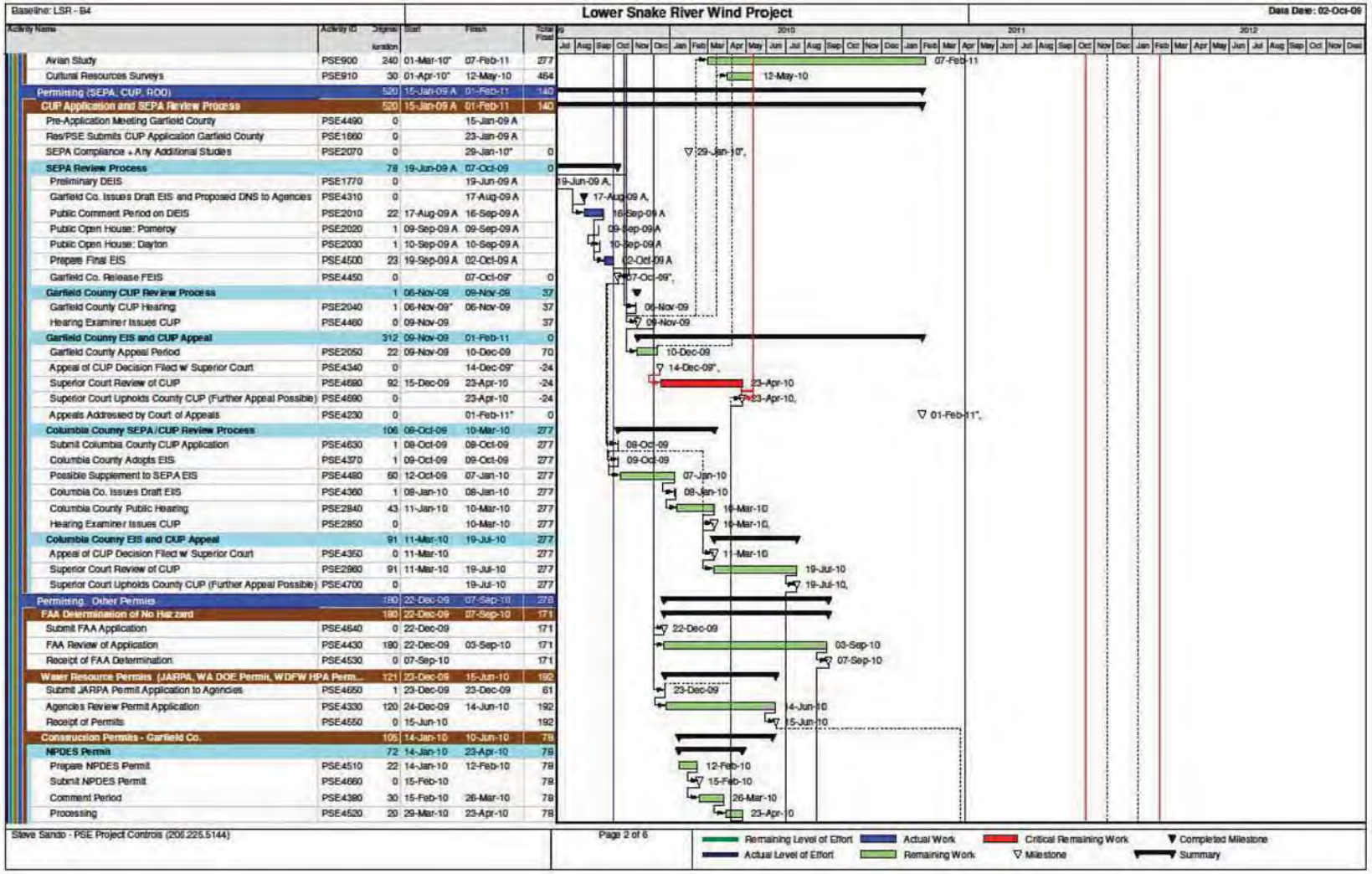
- Alternatives with REC Purchases – Assumed prices of between $[redacted] and $[redacted] per REC based on informal survey. Supply is uncertain; requesting REC only product in the 2009 RFP.
- All portfolios meet 15% planning reserve margin for capacity.
- PSE analysts will be evaluating alternatives under two additional scenarios representing both lower and higher market power prices.

Exhibit No. ___(RG-16HC)
Page 47 of 77

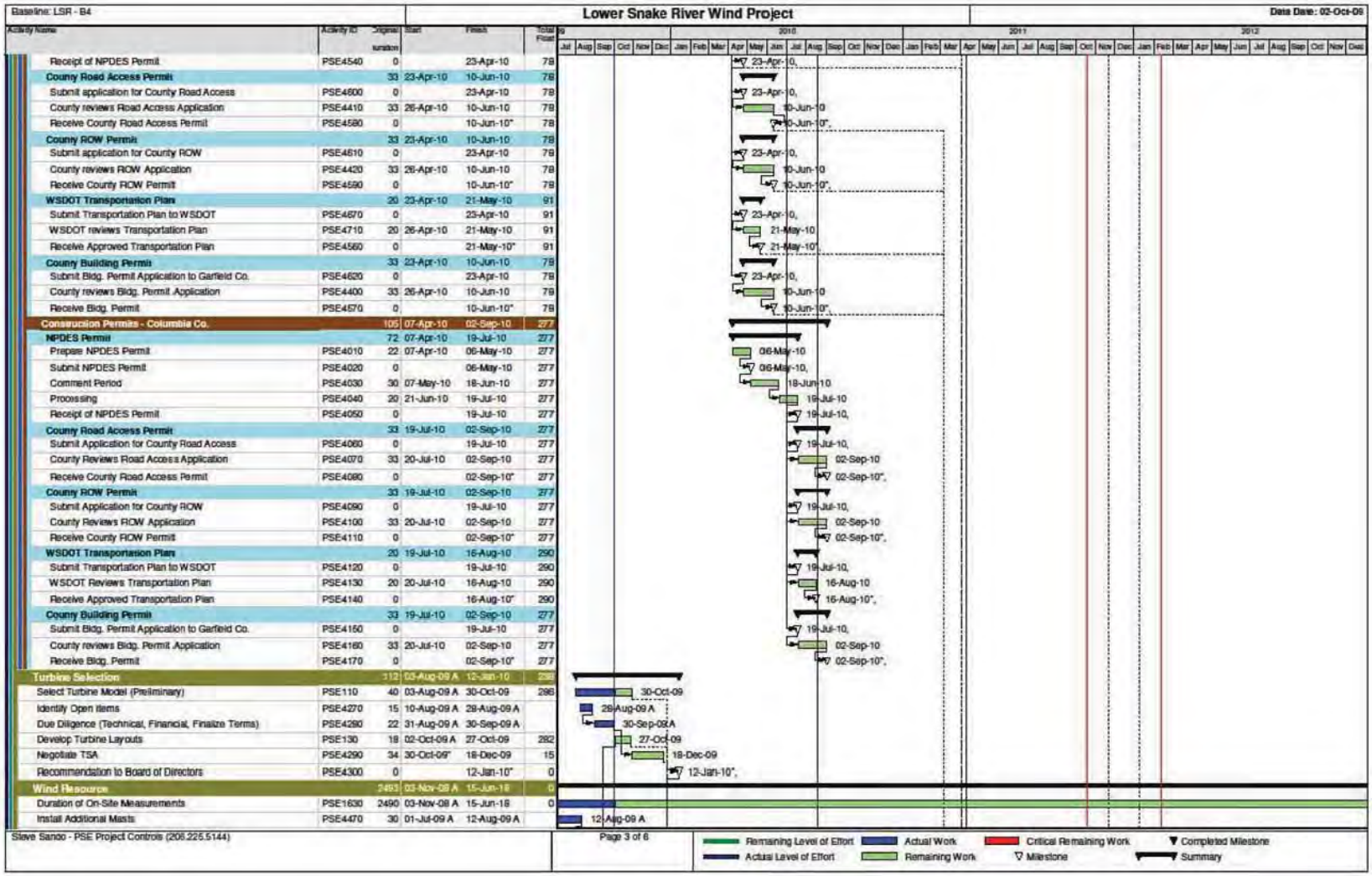
LSR Phase 1 Project Schedule



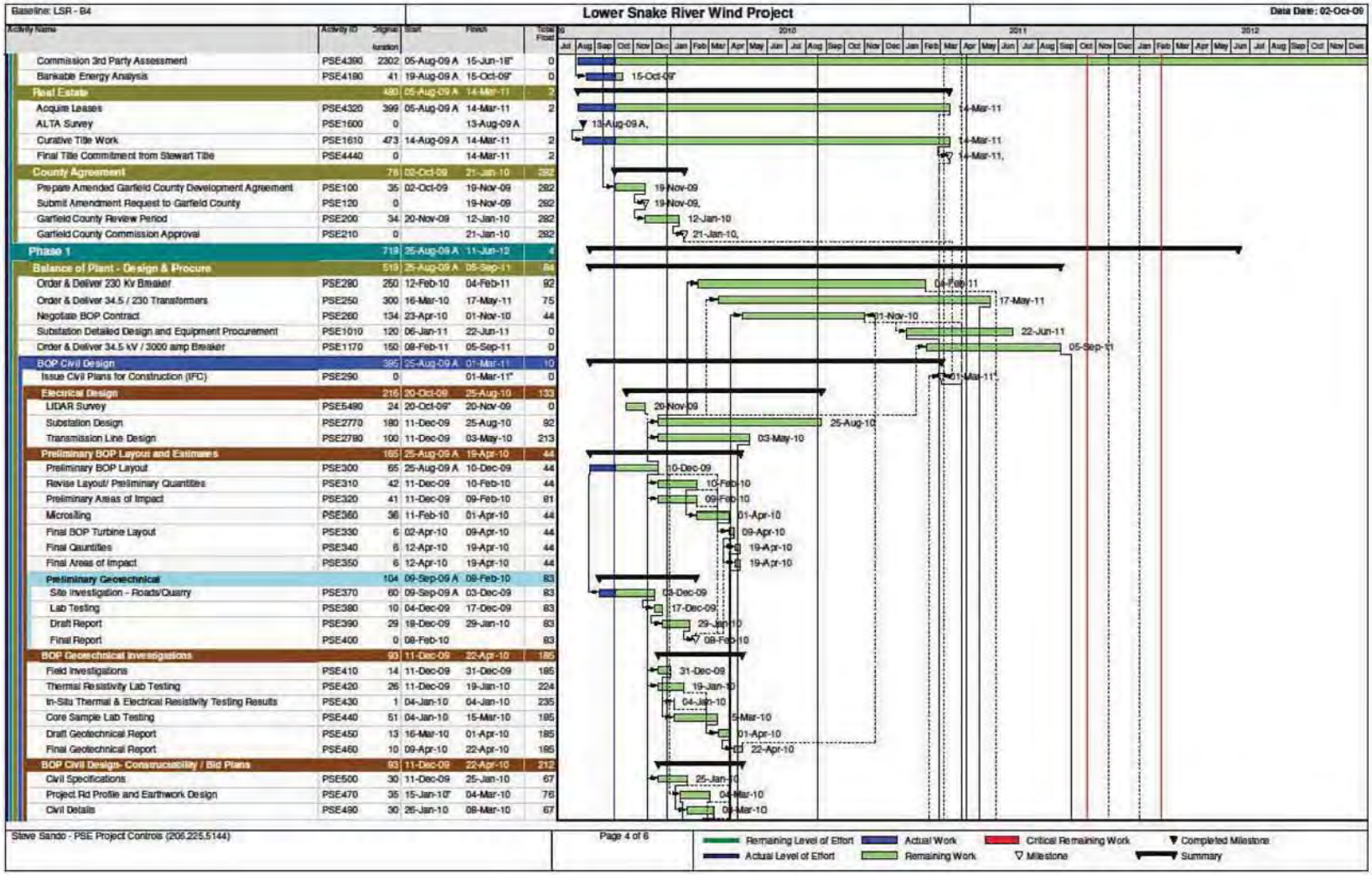
LSR Phase 1 Project Schedule



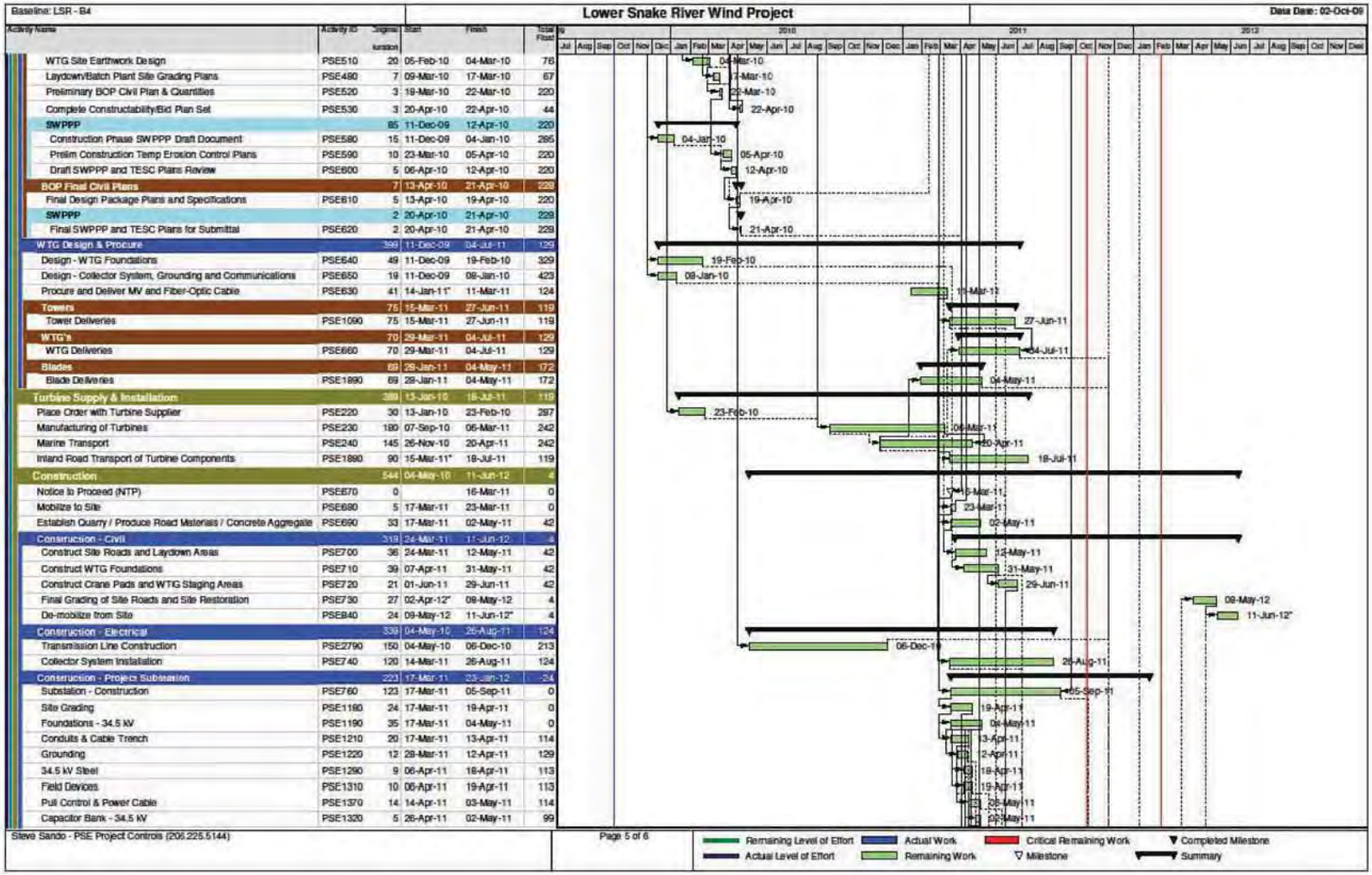
LSR Phase 1 Project Schedule



LSR Phase 1 Project Schedule

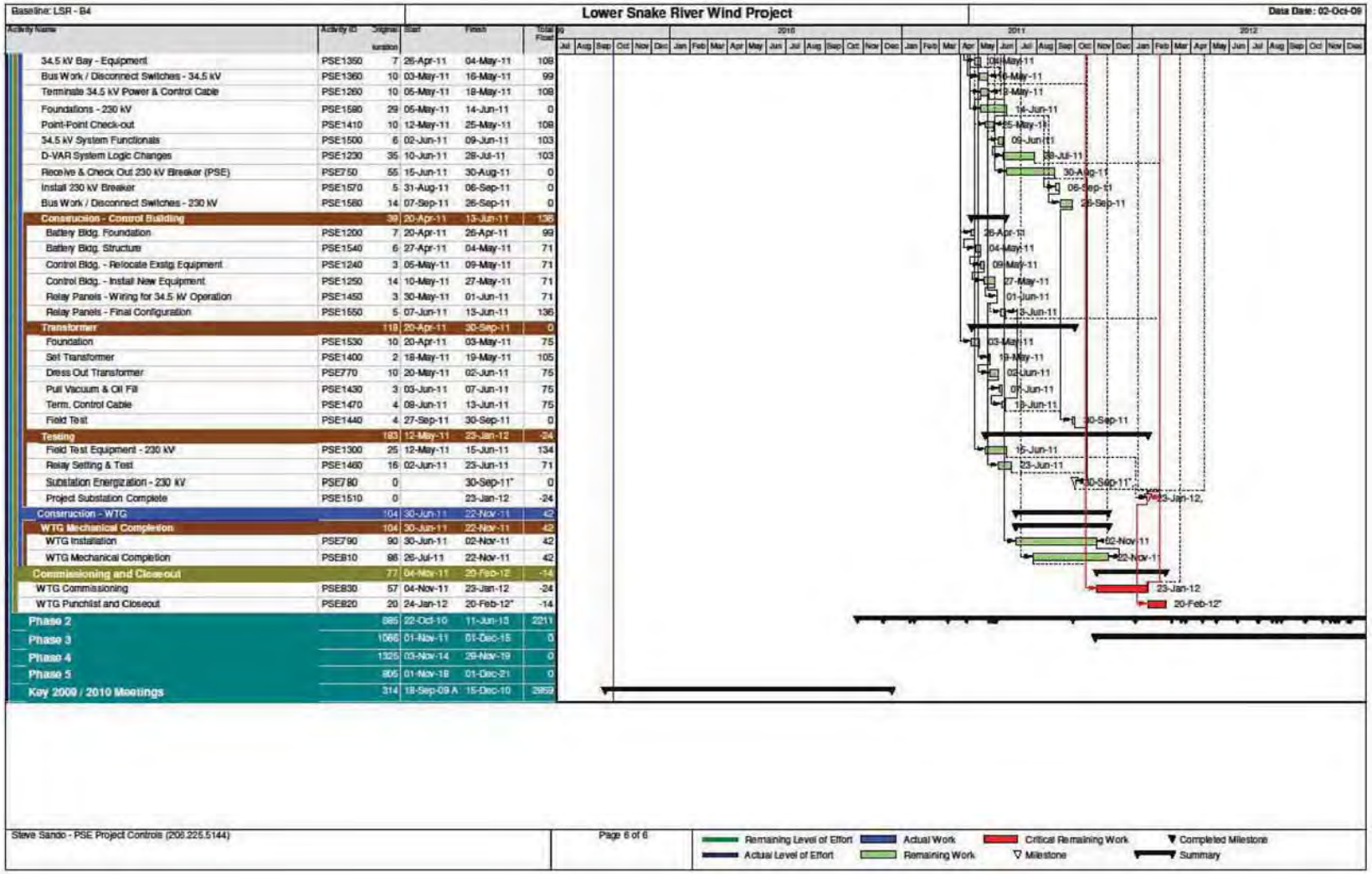


LSR Phase 1 Project Schedule

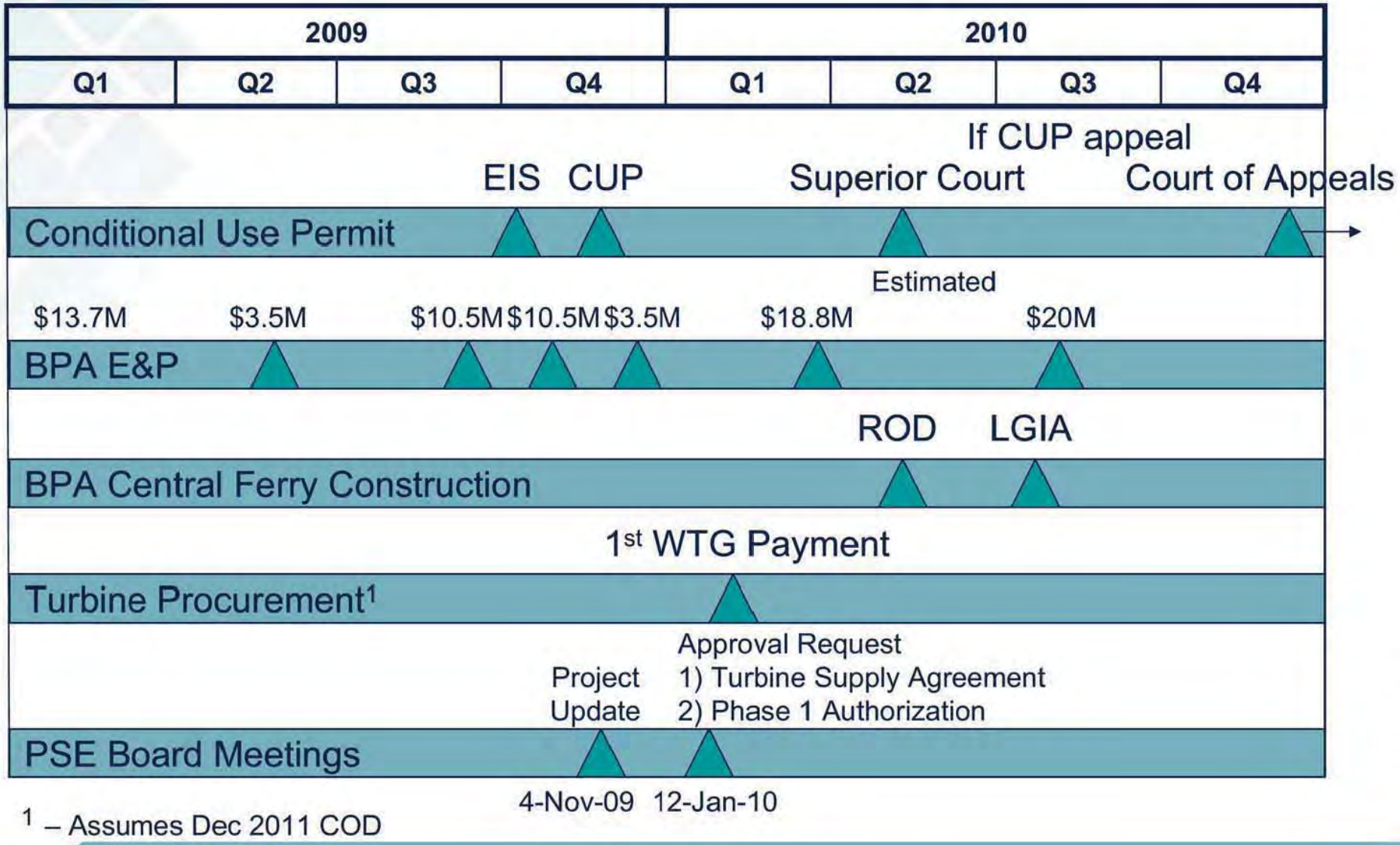


Activity Name	Activity ID	Original Duration	Start	Finish	Total Float
WTG Site Earthwork Design	PSE510	20	05-Feb-10	04-Mar-10	76
Laydown/Batch Plant Site Grading Plans	PSE480	7	09-Mar-10	17-Mar-10	67
Preliminary BOP Civil Plan & Quantities	PSE520	3	19-Mar-10	22-Mar-10	220
Complete Constructability/Bid Plan Set	PSE530	3	20-Apr-10	22-Apr-10	44
SWPPP		85	11-Dec-09	12-Apr-10	220
Construction Phase SWPPP Draft Document	PSE580	15	11-Dec-09	04-Jan-10	285
Prelim Construction Temp Erosion Control Plans	PSE590	10	23-Mar-10	05-Apr-10	220
Draft SWPPP and TESC Plans Review	PSE600	5	06-Apr-10	12-Apr-10	220
BOP Final Civil Plans		7	13-Apr-10	21-Apr-10	229
Final Design Package Plans and Specifications	PSE610	5	13-Apr-10	19-Apr-10	220
SWPPP		2	20-Apr-10	21-Apr-10	229
Final SWPPP and TESC Plans for Submittal	PSE620	2	20-Apr-10	21-Apr-10	229
WTG Design & Procure		399	11-Dec-09	04-Jul-11	129
Design - WTG Foundations	PSE640	49	11-Dec-09	19-Feb-10	329
Design - Collector System, Grounding and Communications	PSE650	19	11-Dec-09	08-Jan-10	423
Procure and Deliver MV and Fiber-Optic Cable	PSE630	41	14-Jan-11*	11-Mar-11	124
Towers		75	15-Mar-11	27-Jun-11	119
Tower Deliveries	PSE1090	75	15-Mar-11	27-Jun-11	119
WTG's		70	29-Mar-11	04-Jul-11	129
WTG Deliveries	PSE660	70	29-Mar-11	04-Jul-11	129
Blades		69	29-Jan-11	04-May-11	172
Blade Deliveries	PSE1890	69	29-Jan-11	04-May-11	172
Turbine Supply & Installation		389	13-Jan-10	18-Jul-11	119
Place Order with Turbine Supplier	PSE220	30	13-Jan-10	23-Feb-10	297
Manufacturing of Turbines	PSE230	180	07-Sep-10	06-Mar-11	242
Marine Transport	PSE240	145	26-Nov-10	20-Apr-11	242
Inland Road Transport of Turbine Components	PSE1890	90	15-Mar-11*	18-Jul-11	119
Construction		544	04-May-10	11-Jun-12	4
Notice to Proceed (NTP)	PSE670	0		16-Mar-11	0
Mobilize to Site	PSE680	5	17-Mar-11	23-Mar-11	0
Establish Quarry / Produce Road Materials / Concrete Aggregate	PSE690	33	17-Mar-11	02-May-11	42
Construction - Civil		319	24-Mar-11	11-Jun-12	4
Construct Site Roads and Laydown Areas	PSE700	36	24-Mar-11	12-May-11	42
Construct WTG Foundations	PSE710	39	07-Apr-11	31-May-11	42
Construct Crane Pads and WTG Staging Areas	PSE720	21	01-Jun-11	29-Jun-11	42
Final Grading of Site Roads and Site Restoration	PSE730	27	02-Apr-12*	08-May-12	4
De-mobilize from Site	PSE840	24	09-May-12	11-Jun-12*	4
Construction - Electrical		339	04-May-10	26-Aug-11	124
Transmission Line Construction	PSE2790	150	04-May-10	06-Dec-10	213
Collector System Installation	PSE740	120	14-Mar-11	26-Aug-11	124
Construction - Project Substation		223	17-Mar-11	23-Jan-12	-24
Substation - Construction	PSE760	123	17-Mar-11	05-Sep-11	0
Site Grading	PSE1180	24	17-Mar-11	19-Apr-11	0
Foundations - 34.5 kV	PSE1190	35	17-Mar-11	04-May-11	0
Conduits & Cable Trench	PSE1210	20	17-Mar-11	13-Apr-11	114
Grounding	PSE1220	12	28-Mar-11	12-Apr-11	129
34.5 kV Steel	PSE1250	9	06-Apr-11	18-Apr-11	113
Field Devices	PSE1310	10	06-Apr-11	19-Apr-11	113
Pull Control & Power Cable	PSE1370	14	14-Apr-11	03-May-11	114
Capacitor Bank - 34.5 kV	PSE1320	5	26-Apr-11	02-May-11	99

LSR Phase 1 Project Schedule



Timeline of Key Decisions



1 – Assumes Dec 2011 COD

Lower Snake River Wind Project Update

PSE Board of Directors

Roger Garratt
Director, Resource Acquisition & Emerging Technologies

January 12, 2010

PUGET SOUND ENERGY
The Energy To Do Great Things

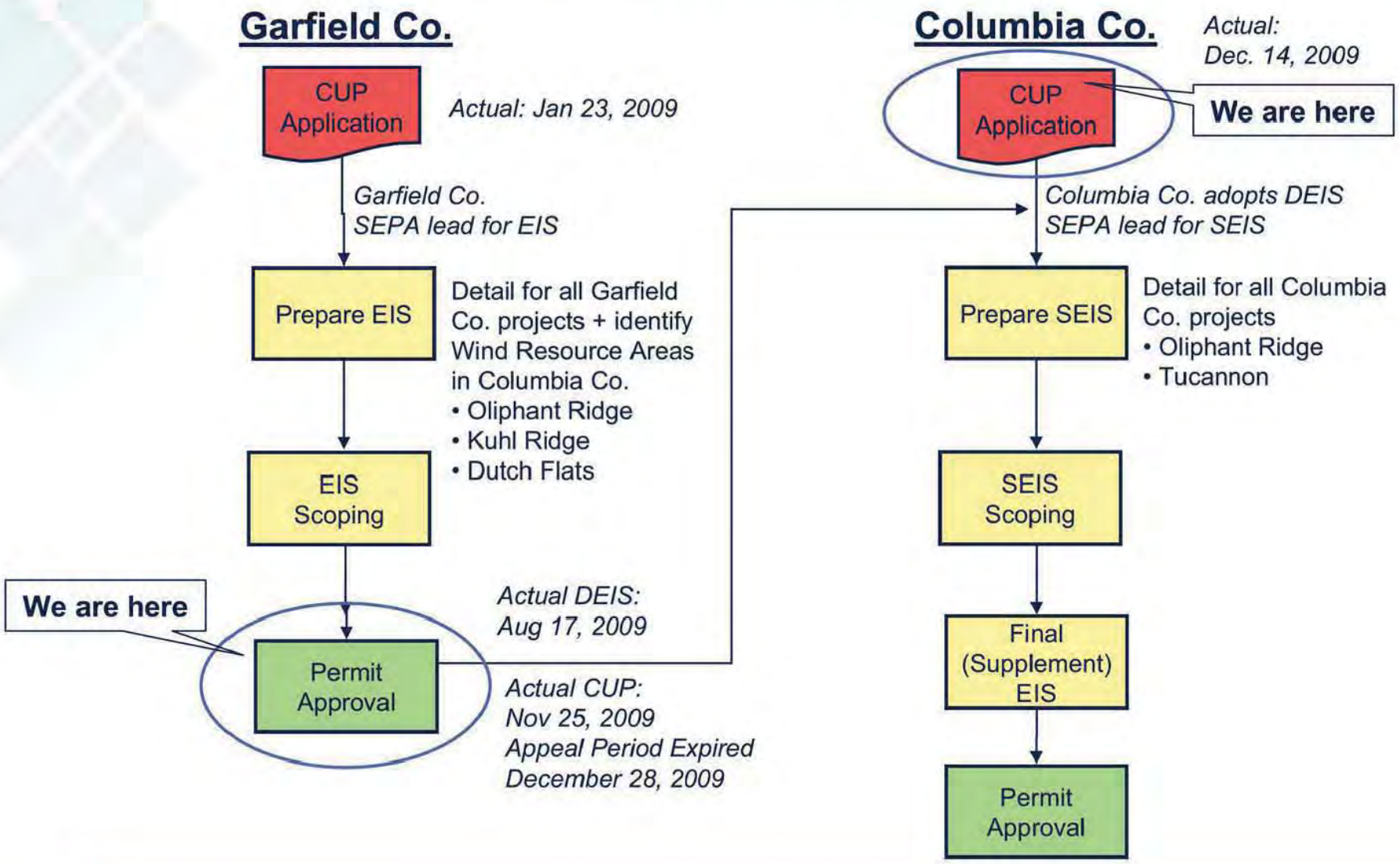
Agenda

- Permitting Update
- Open Issues
  - Grant v. PTC
  - BPA Schedule
  - RFP Coordination
  - Development Schedule
- CAPEX Impact
- Appendix

Lower Snake River Wind Project

Current plan considers development in five phases of 250 MW each
Phase I is entirely within Garfield County

Lower Snake River - Permitting



Current Open Issues

- Renewable Incentives: Treasury Grant v. PTC
- BPA Schedule
- RFP Coordination
- Development Schedule

Renewable Incentives: Grant v. PTC

Screening Analysis (hypothetical used in response to GRC data request)
Assume $625 million, 85% qualifying, 30% CF

As Filed	Benefit to Utility Customers ($M)	Comparative Benefit of PTC ($M)	Likely Low Cost
Grant Normalized over 10 years	$160.2		
		$14.0	Grant*
PTC (100% use as generated)	$174.2		
Update for Flow Through Tax on Book			
Grant Normalized over 10 years	$140.8		
		$33.4	
PTC (100% use as generated)	$174.2		
less PTC Deferral at $27 million tax appetite	-$52.1	($18.7)	Grant*
PTC Net	$122.1		

* Assumes that tax equity cost or carry cost of deferral exceeds the difference.

Recent Changes:

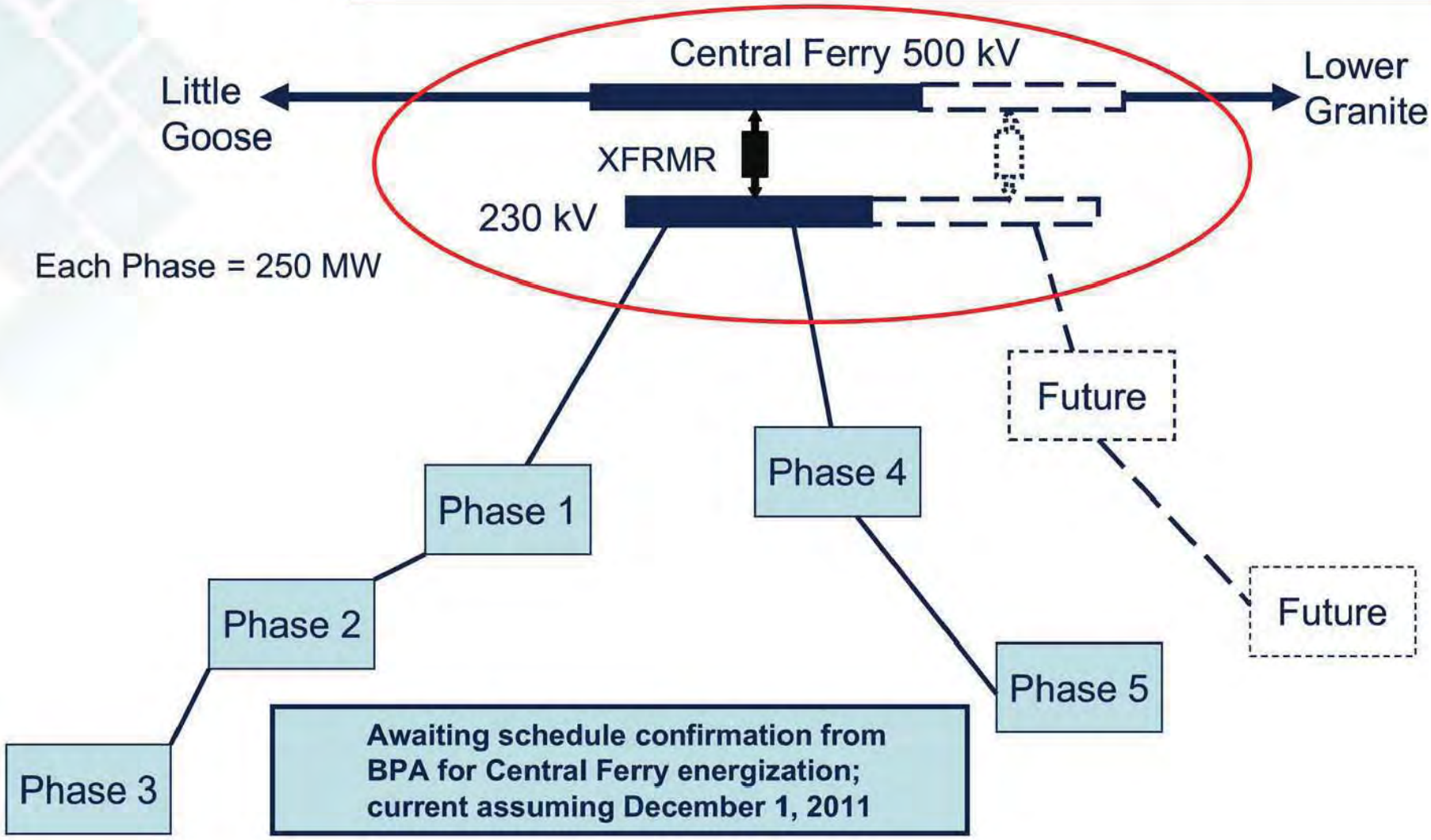
Estimate qualifying property. Current 90% up from 85%
Current Capital Cost = $590 down from $625 (before removal of BPA transmission)
Financial Plng. estimated tax appetite ~$33 million (up from ~$25 to 27 in multi year plan)
Capacity Factor down from 30% to 29.9%
Current Analysis project starts in 2012 (higher PTC); screening analysis project starts in 2010 (lower PTC)
Discount benefits to 2011 to match financial proforma

Current Analysis

Capacity Factor of 29.90%
A 250.7 MW Wind Project with cost net of BPA $590,406,000
90% Assumed qualifying property percent of capital net of BPA

Grant Normalized Over 10 years	$128.9		
		$40.5	
PTC (100% use as Generated)	$169.4		
less PTC Deferral at $33 million tax appetite	-$34.9	$5.6	PTC
PTC Net	$134.5		

Simplified LSR Wind Project Interconnection



BPA LGIA Agreement

- Discussion are on-going, should be concluded in January 2010
- LGIA contract largely non-negotiable
- Anticipated Key Terms
  - $104,400,000 pre-payment to BPA in 2010/2011, reimbursable network upgrades repaid to PSE as transmission credits
    - PSE has already advanced $38,200,000 to BPA under the Engineering and Procurement Agreement.
    - Engineering has been slow to start.
  - PSE does not have option to self-construct BPA network upgrades
  - PSE has limited contractual remedies in the case of BPA non-performance or ability to pursue other alternatives

Central Ferry Construction Schedule

Issue:

- Energization of Central Ferry Substation is necessary for commercial operation of LSR Phase I
- Central Ferry and LSR Phase I both start construction in 2010
  - Central Ferry tentative completion date: December 1, 2011
  - LSR Phase I estimated Commercial Operation Date: December 31, 2011

Solution:

- Work cooperatively with BPA to ensure timely execution Central Ferry Substation construction schedule
- If BPA schedule slips
  - Use portable generators for partial turbine commissioning
  - Complete final commissioning once Central Ferry energized
  - Delay cost

Months Delay	Additional Cost ($M)*
1	[redacted]
2	
3	
4	
5	

* AFUDC plus incremental commissioning cost

  - Commercial Operation Date for Phase I anticipated four weeks after Central Ferry is energized

REDACTED VERSION

RFP Coordination

October 12, 2009	Draft RFP filed with WUTC
October 29, 2009	PSE hosts public meeting on draft RFP
December 11, 2009	Public comments due
December 23, 2009	WUTC approval of RFP
January 12, 2010*	PSE releases final RFP solicitation
January 28, 2010	PSE hosts proposal conference
February 15, 2010	Mutual Confidentiality Agreements due to PSE
March 2, 2010	Offers due to PSE
May 2010	"Candidate" short list selected
July 2010	Final short list selected, respondents notified
Summer 2010	PSE hosts live solicitation for market PPAs
	Negotiations

*estimated date

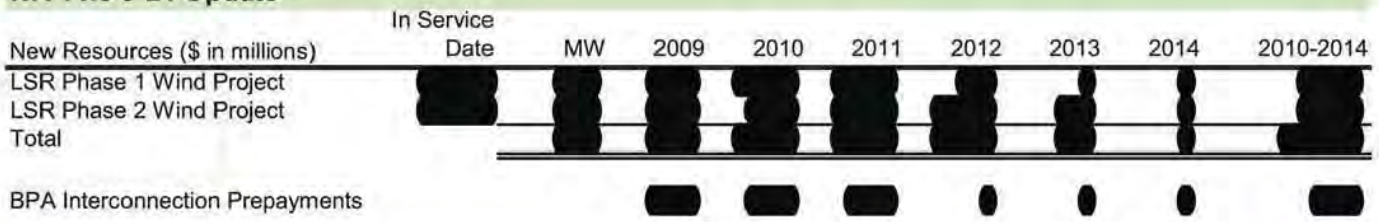
Lower Snake Wind Project Development

	Indicative Wind Capacity on-line at beginning of years 2011-2013
▪ **2009 IRP:**	300 MW
▪ **Fine Tuning the 2009 IRP:** Refine IRP broad strategy using IRP assumptions and IRP model (PSM-II)	400 MW
▪ **Quantitative Evaluation Changes since the IRP:** ▪ Lower turbine cost ▪ Treasury Grant ▪ Extension of WA State sales tax exemption	600 MW
▪ **Qualitative risk factors moderate schedule:** transmission and interconnection availability, seasonal construction capability, possibility of future tax credits, etc.	500 MW Recommended

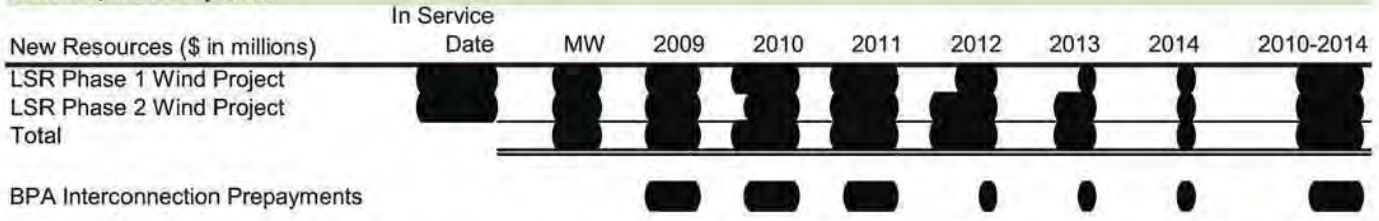
Delay of Phase I approval provides opportunity to revisit development strategy
For example, construction of one phase completed prior to 12/31/12 up to 400 MW

Impacts on 5-Year Plan

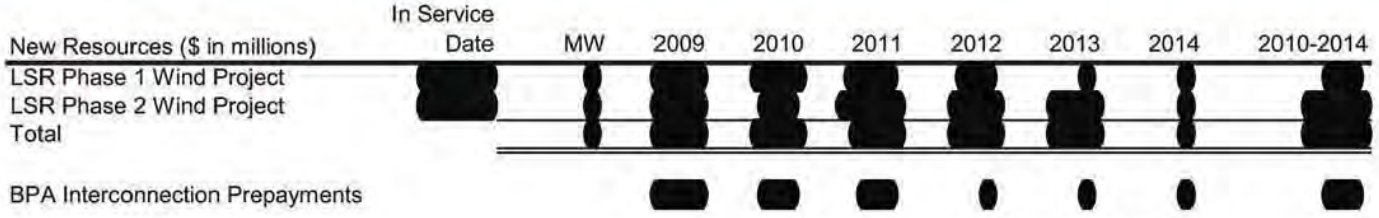
NR 11.3 9-21 Update



Jan 12, 2010 Update



Variance (Ending - Beginning)



Notes:

Development costs were updated to reflect new estimated costs.
P1 interconnection costs were updated to reflect BPA equipment at 2 phase 1 site substations.
Prepaid transmission expenses were marginally decreased because of a non-reimbursed expense to RES.
WTG prices were increased based on prevailing wage requirements, appreticeship costs, etc.
BOP costs were increased to reflect new estimates that include site step-up transformer equipment.
Project infrastructure was added to reflect PSE communications requirements.
Other costs capture the PSE O&M facility; test power was removed from P1.
Sales tax reflects higher costs and different timing of WTGs / BOP.
Contingency was reduced to reflect known communications, structure, WTG, BOP charges.
AFUDC reflects a shifting out of turbine payments and marginally lower project costs.

REDACTED VERSION

APPENDIX

PSE PUGET SOUND ENERGY

The Energy To Do Great Things

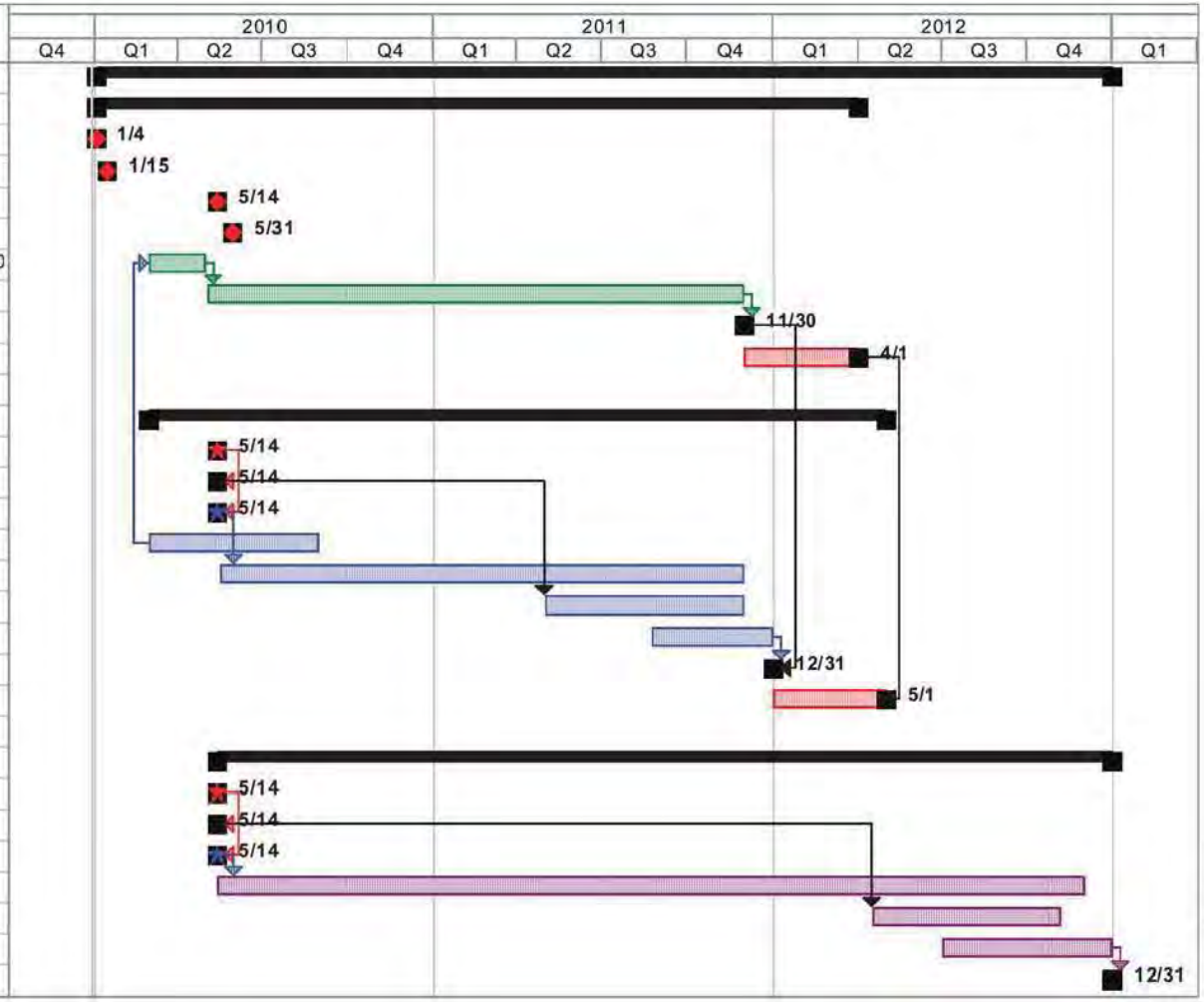
Lower Snake River Phase I Milestone Schedule*

Milestone	Date
Order Transformers (long lead item)	March 25, 2010
Execute Turbine Supply Agreement	May 15, 2010
Balance of Plant Engineering, Procurement, Construction (BOP EPC), Partial Notice to Proceed (PNTP) – Phase I & II Infrastructure	May 15, 2010
BOP EPC Full Notice to Proceed– Final Design & Competitive Open Book Bid and Construction	December 31, 2010
Wind Turbine Generator (WTG) Substantial Completion – Phase I	November 22, 2011
Project Substantial Completion (Commercial Operation) – Phase I	December 22, 2011
Project Final Completion – Phase I	March 31, 2012

* Assumes May 2010 authorization

LSR and Central Ferry Timelines

ID	Task Name
1	**LSR Phase I & II Construction Schedule**
2	**BPA Central Ferry**
3	Initiate Design
4	Issue ROD
5	Execute LGIA
6	Select EPC Contractor for Substation
7	Access Road Construction (Assuming limited NTP on 3/1/10
8	Substation Construction
9	Energize Substation
10	Energize Substation (if BPA Delayed)
11	
12	**LSR Phase I**
13	BOD Authorize Phase I
14	Execute TSA
15	Execute BOP
16	Limited NTP, BOP (Roads, Common Infrastructure)
17	Unlimited NTP, BOP
18	WTG Erection
19	WTG Commissioning
20	Commercial Operation
21	Comercial Operaton (if BPA Delayed)
22	
23	**LSR Phase II**
24	BOD Authorize Phase II
25	Execute TSA
26	Execute BOP
27	NTP, BOP
28	WTG Erection
29	WTG Commissioning
30	Commercial Operation



Stimulus Bill renewable incentives require COD by Dec 31, 2012

Lower Snake River Transmission Strategy

- 800 MW transmission obtained through the 2008 BPA Network Open Season
  - 550 of 800 MW contingent upon the completion of the following projects:
    - McNary-John Day (Feb. 2012 schedule)
    - Central Ferry-Lower Monumental (Jul. 2013 schedule)
- [redacted]
- Short-term transmission will be requested to cover short-term deficits
- Excess transmission will be deferred at estimated cost of ~$130K/100 MW/year

REDACTED VERSION

LSR Phase I & II Preliminary Capital Budget

	Phase I	Phase II	Phase I & Phase II		
	$000's	$000's	$000's	$/kW	Percent of Total
DEVELOPMENT BUDGET	[redacted]				
Development Rights					
PSE Development Costs					
Interconnection Costs					
Prepaid Transmission Expense					
TOTAL DEVELOPMENT BUDGET					
CONSTRUCTION BUDGET					
Wind Turbine Generators					
Balance Of Plant					
PSE Project Management					
Project Infrastructure					
Other Costs					
Sales Tax					
Contingency					
TOTAL CONSTRUCTION BUDGET					
AFUDC					
TOTAL ALL-IN CAPITAL COSTS					

REDACTED VERSION

2010 CAPEX Impact

REDACTED VERSION

PROJECT SUMMARY (Current Forecast)

	Total	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Development Rights													
Development Costs*													
Interconnection Costs													
Prepaid Transmission Expense													
Wind Turbine Generators													
Balance of Plant													
Construction Management													
Project Infrastructure													
Other Costs													
Sales Tax													
Contingency*													
Project Total													

PROJECT SUMMARY (9/21/09 Forecast)

	Total	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Development Rights													
Development Costs*													
Interconnection Costs													
Prepaid Transmission Expense													
Wind Turbine Generators													
Balance of Plant													
Construction Management													
Project Infrastructure													
Other Costs													
Sales Tax													
Contingency*													
Project Total													

VARIANCE (Current Forecast - 9/21/09 Forecast)

	Total	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Development Rights													
Development Costs*													
Interconnection Costs													
Prepaid Transmission Expense													
Wind Turbine Generators													
Balance of Plant													
Construction Management													
Project Infrastructure													
Other Costs													
Sales Tax													
Contingency*													
Project Total													

* - includes costs for Phases I - V

Exhibit No. ___(RG-16HC)
Page 72 of 77

Siemens Turbine Supply and Erection Agreement

- EMC approved recommendation to enter exclusive negotiations with Siemens for 109 SWT 101 2.3 MW WTGs
- Negotiations continue and are expected to conclude in January 2010
- Key Terms And Conditions
  - Total contract price: $[redacted]
    - Includes turbine erection
    - [redacted] due at signing
    - Remaining payment schedule tied to production and commissioning milestones
  - 'Intended use' provision
  - Option to purchase 2012 turbines at fixed price
  - [redacted] Availability Guaranty
  - Provisions to ensure union labor and apprentices
  - Performance remedies and damage provisions to protect PSE interest

REDACTED VERSION

Siemens Service & Maintenance Agreement

- Negotiations are currently underway and anticipated to conclude before mid-January

REDACTED VERSION

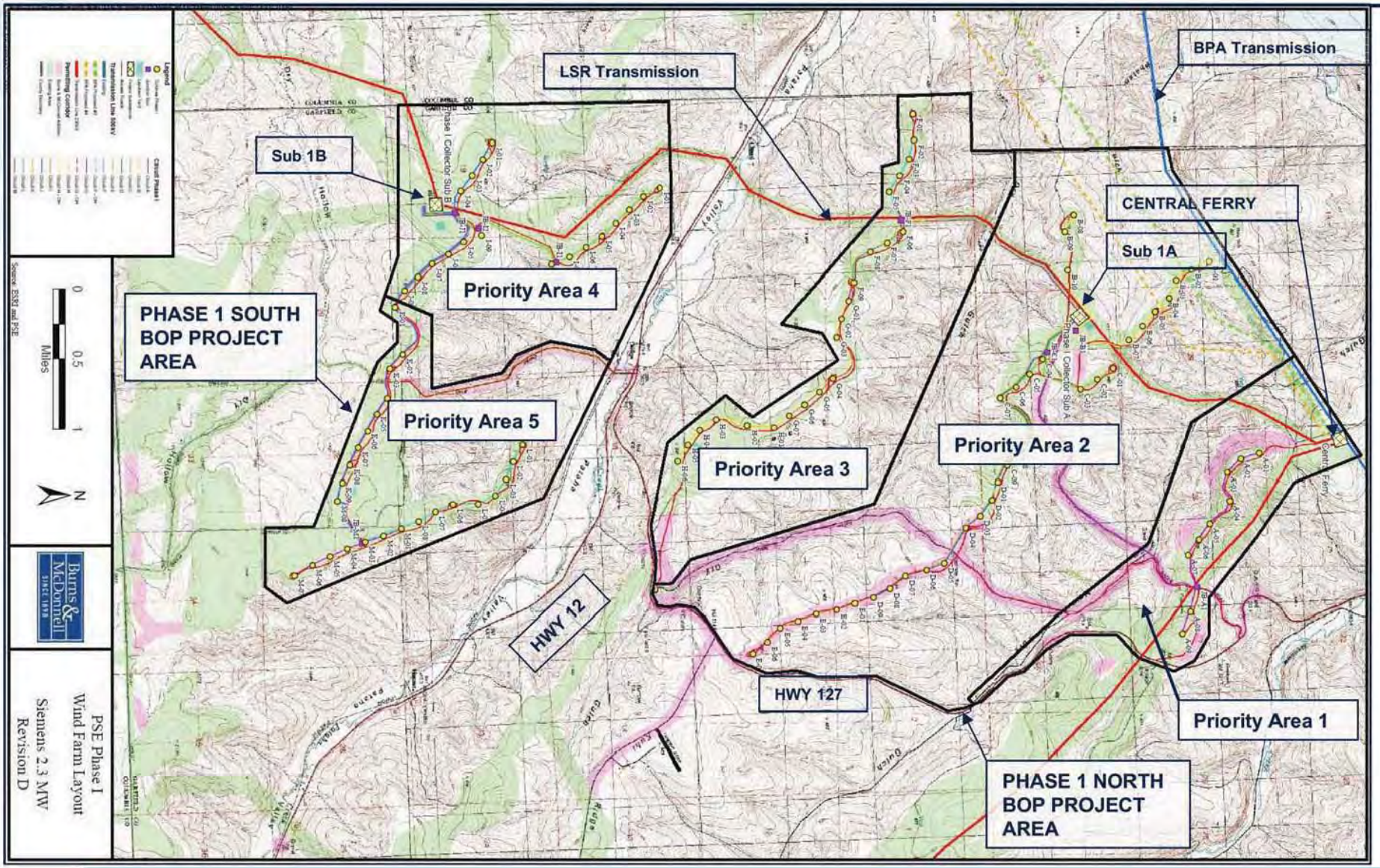
- Key Provisions
  - Payment
    - $[redacted] per WTG per year ($[redacted] annually)
  - Term
    - [redacted] year term
  - Spare parts guaranties and step in provisions
  - Cooperation provisions
  - Performance remedies and damage provisions to protect PSE interest

RES Construction BOP Agreement

- Negotiations with RES Construction are continuing and expected to be finalized in January 2010.
- Key Terms
  - Follows Form BOP agreement negotiated with RES in the Joint Development Agreement
  - $[redacted] budget estimate. BOP price will be fixed through 'Open Book Process' used for Wild Horse Expansion
  - Provisions for union labor and apprentices
  - Performance remedies and damage provisions to protect PSE interest

REDACTED VERSION

Phase 1 Project Layout & Priority Areas



Updated Wind Resource Assessment*

	Phase I	Phase I & II	Phase I & III	Phase I, II & III
P50 Net Energy (GWhr/yr)	[redacted]			
P50 Net Capacity Factor				

*DNV-GEC Draft Wind Resource Assessment, December 21, 2009

REDACTED VERSION