



**PUGET SOUND ENERGY**

*The Energy To Do Great Things*


## **Pierce County 230 kV Project**

### **Implementation Plan**

**230 kV Transmission & Substation  
Project Closeout**

***JULY XX, 2018***

***CURRENT OWNER: Dave Jenness***

 <b>PUGET SOUND ENERGY</b>	<b>Puget Sound Energy</b>	Rev 1
	<b>PIP - Pierce County</b>	Pierce Co. 230 Project Closeout Phase Date July XX, 2018
<b>230 kV Transmission Line &amp; 230 kV Sub</b>		

## Section 1. Document Revision History

Version	Date	Description	Contributor
1.0	6/14/10	Initiate document based on <i>January 2009 System Planning Notification # 10549422</i>	Kebede Jimma
2.0	10/5/11	Update to Document	Janet Olsen
3.0	6/18/12	Update to Document – Gate 3 230 kV Transmission	Janet Olsen
4.0	4/3/2014	Update for CSA; For the full route analysis see the 1/18/2013 Rev 1 Version	Dave Jenness
5.0	12/24/2014	Update for partial gate 4; the project team requests to release the civil construction at Alderton, complete real estate acquisition, procure long lead materials and complete permitting.	Dave Jenness
6.0	10/31/2016	Initiate Gate 4 to complete construction of the transmission line and the Alderton 230 kV Substation	Dave Jenness
6.1	01/19/2017	<b>Gate 3 (Execution Phase)</b>	Dave Jenness
7.0	July xx, 2018	<b>Gate 4 Project closeout</b>	Dave Jenness

## Section 2. Project Overview

### 2.1 Purpose:

Add capacity in Pierce County to address bulk power limits and ensure continued reliability for PSE's customers in Pierce and Thurston counties.

### Problem Statement:

This project is necessary to address the bulk power delivery transmission system into Pierce County, which is approaching limits where by NERC Planning Standards criteria can no longer be assured and customer reliability is at risk. Planning studies show the bulk power 230-115 kV transformers at White River and certain 115 kV transmission lines could exceed or are at near operating limits for Category "B" (N-1) and Category "C" (N-2) contingencies.

### 2.2 Executive Summary:

At this time the project team is seeking approval to close out the project. The project was constructed and energized in 2017. In May of 2018 the restoration work was completed and the project is ready to be closed.

The project includes 8.5 miles of 230 kV construction on steel monopoles, with associated acquisition of easements. The route was chosen with assistance of an Advisory Committee composed of external stakeholders from the community, as well as Pierce County, Cities of



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**230 kV Transmission Line & 230 kV Sub**

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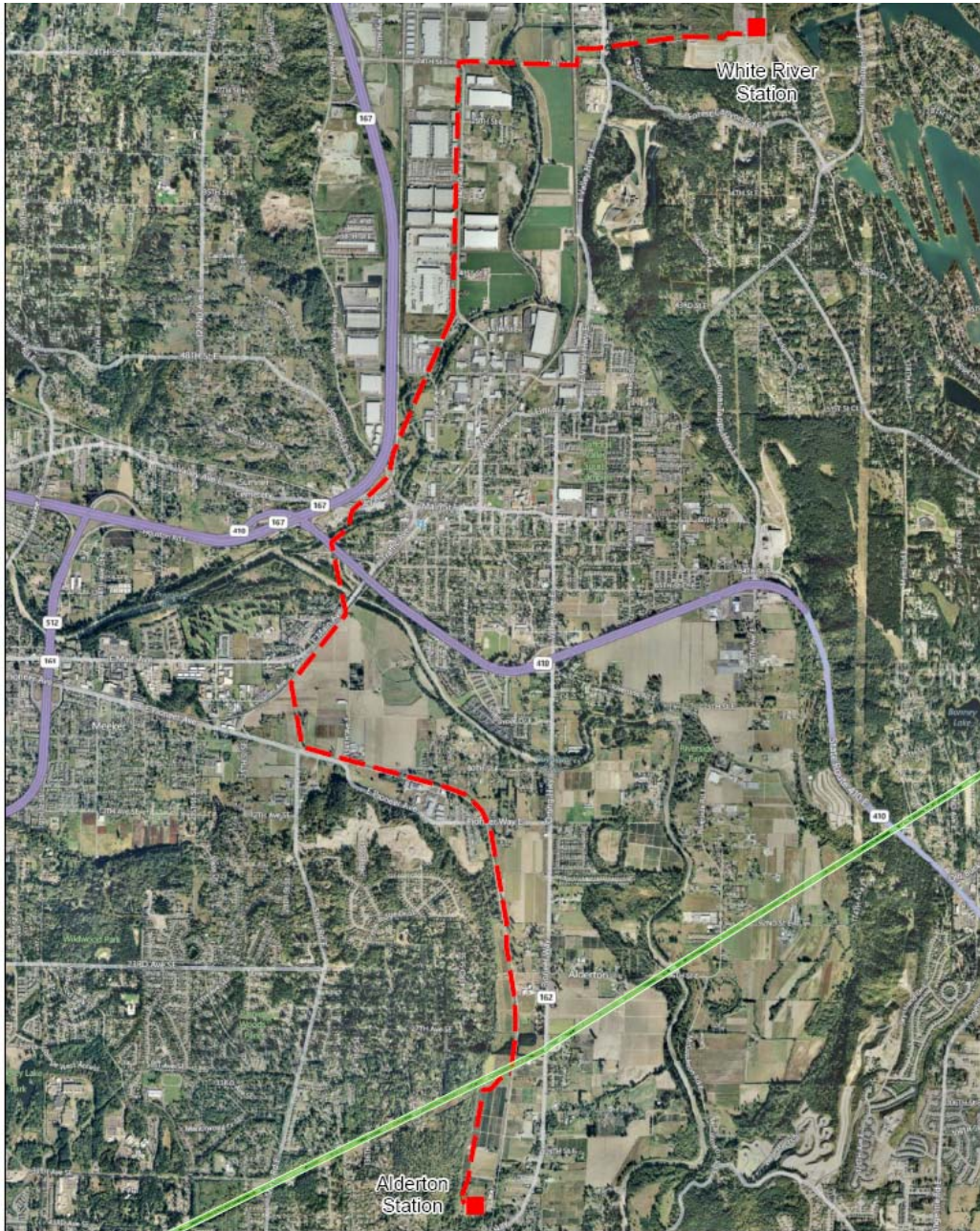
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Sumner and Puyallup, and WSDOT. The route touches on all these jurisdictions. The south 2 miles of the route is proposed to be located on Pierce County Foothills trail, a use that is permitted by virtue of the existing franchise agreement; however PSE has obtained durable easement rights from Pierce County. On the Foothills Trail, the existing White River-Alderton #4 115 kV line will be placed on the same structures as the new 230 kV line (double circuit). Alderton 230 kV station will be constructed adjacent to and north of the existing Alderton 115 kV station.



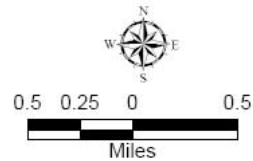
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**Legend**

- Proposed transmission line**
- - - West Route
- Existing Substations
- BPA Corridor



**Pierce County 230 kV  
 Transmission Project**

CONCEPTUAL Alignment  
 Overview Map: October 2011




Data Source: Bing Maps

Projection: NAD 1983 HARN StatePlane Washington North FIPS 4001 Feet

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.


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### 2.3 Project Assumptions:

1. It is more fiscally prudent to construct the 8 mile White-River Alderton 230 kV line rather than creating an interconnection for the BPA lines ½ mile to the north of Alderton Station. A BPA interconnection study from February 2008 estimates the cost for this alternative to be \$2.6 M, but additional costs to mitigate loss of Raver-Paul path capacity are not estimated. PSE System Planning estimates point to point interconnection wheeling costs at \$3 M per year, which of course would continue for the duration of the interconnection.
2. The earlier Conditional Use Permit and SEPA for Alderton Station included the 230 kV yard; Pierce County Planning indicates their agreement with this assumption. Expansion of the 230 kV yard will only require Building Permits

### Summary of Project Chronology

- 2006: System Planning Notification, Budget estimate \$18,700. Initial concept to use existing PSE fee and easement rights on SR 162 and Valley Avenue (Sumner CBD), currently occupied by a de-energized 55 kV line.
- 2007-2008: BPA facilities study for project alternative to intertie new Alderton 230 kV station with BPA Tacoma South Tacoma-White River 230 kV line, ½ mile north of Alderton station.
- 2009-2010: Route alternative studies and environmental assessment of 3 corridors (East, Central and West)
- March 11, 2010: Executive Summary presentation to Mgrs System Planning and Project Management, recommending that PSE move forward with presenting **route alternatives** as part of public outreach; acknowledging that this would involve acquisition of 8 miles of new right-of-way for 230 kV line.
- January 2011-June 2011: Convened Advisory Committee for recommendation of 3 corridors for further study. Advisory Committee recommended study of WEST corridor (The two other corridors were CENTRAL - Sumner CBD/Valley Ave/ SR 162 or EAST which goes south of White River station and impacts some of the same property owners as the White River-Alderton 115 kV project, which acquired a 120 foot corridor south of and adjacent to BPA lines).
- June 11, 2011: Project presentation to Executive Review Committee
- Fall 2011: February 2012 Acquired rights of entry for survey. Continued discussions with Pierce Co re position of 230 kV line on Foothills trail, and need for durable rights
- April 6, 2012: Executive Summary; presentation of project team recommendation to double circuit the new 230 kV line with the existing White River Alderton #4 115 kV line on Foothills trail south of Pioneer avenue, to minimize transmission footprint and in the interest of viewshed aesthetic; Opportunity to relocate .75 miles of WHR-ALD #4 115 kV line north of Pioneer Avenue to double circuit position on Foothills trail. This section of line is located near a steep unstable slope, which is forested and has experienced storm related outages due to trees falling on the line, and over Pioneer avenue, blocking the road.
- June 2012: Development of Gate 3 PCR, and Project Implementation plan which re-estimated the project cost to include 8 miles of new transmission right of way, 230 kV clearing, 3 river crossings, crossing of SR 410, double circuit line with existing 115 kV line on Foothills Trail and relocation of .75 miles of WHR-ALD #4 115 kV line north of Pioneer avenue to the double circuit with the new 230 kV line on Foothills Trail.  
 Current estimate range for 230 kV Substation: \$11 M (rounded)  
 Current estimate range for 230 kV Transmission: \$30.3 M (rounded)  
 Gate 3 was passed January 18, 2014
- 2012 activities included numerous meetings with Pierce County and City of Puyallup to explore opportunities for joint transmission and trail use, on existing trails and new trail proposed to connect the Foothills and Riverwalk trails.

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- 2013 activities included the start of the property acquisition and included preparation of a detailed construction plan for the Pierce county Trail segment. Several of the geotechnical bores needed for the foundation design were completed. A risk register was developed with the help of Golder associates and the estimate was updated based on the results. A PCR was written and approved for the new budget. Detailed design started on the transmission and fiber lines. Preliminary mitigation and landscaping plans were developed for the Foothills Trail portion of the line. Easement appraisals and legal descriptions were developed. TESC drawings for 2/3 of the route were drafted for the permit applications. Public outreach included newsletter updates to the community and meetings with the State St neighborhood. Substation civil design was substantially completed.
- 2014 activities include completion of the borings, continued property acquisition including a public condemnation meeting in February, receiving PSE executive approval to proceed with condemnation and development of the project permit applications.

The project team reviewed the design, construction plan, estimate and schedule with Black and Veatch. Transmission design commenced to 85% in coordination with fiber design. PSE hired Power Engineers to design the pole foundations and the type of foundation to be used was established at each location.

Public outreach included a presentation to City of Puyallup Council on March 21, 2014; Newsletter updates to the community in February and an on-line public meeting with an open house was held in December 2014.

- 2015 Activities; completed the civil construction of the Alderton 230 kV substation including the fence. Installation of the deadend structures on the foundations. Worked with city of Sumner and Sumner Business Park to alter the route on 24<sup>th</sup> Street to minimize our impact on the new proposed intersection. Initiated the aerial easement negotiation with LIT who owns the storm ponds under the altered route. Completed acquisition of the Sumner Business Park, Pierce County Parks Foothills Trail, and UPRR easements. Prepared for project deferral in 2016.
- 2016 Activities; Completed acquisition of the Knutson easement. Held the final notice meeting for LIT. Issued the RFP for the 78 steel poles; contract awarded to Trinity Meyers. Hydraulic project approval application for Sotain Creek crossing submitted (Dec 2016). Retained Power Engineers to design the foundations and review design submittals from Trinity Meyers. Completed a constructability review with Potelco; updated estimates based on current foundation pricing and updated design.
- 2017 Activities; The project was bid out in early 2017 and Wilson Construction was chosen as the General Contractor. Construction of the project started in June and continued through the end of the year with the line being energized December 31, 2018. Restoration work started in early 2018 and was complete by May.

## 2.4 Project Constraints:


1. Foothills Trail closures must be kept to a minimum during construction.
2. Durable rights on Foothills trail are subject to the rights granted or conveyed by Burlington Northern Railroad to Pierce County, which include reversionary clauses that may be invoked by Federal action.

## 2.5 Project External Stakeholders

### Tier 1 Stakeholders:

Meeker Southern Railroad  
City of Puyallup  
Pierce County Council  
Pierce County Executive  
Pierce County Planning  
Puyallup Tribe

City of Sumner  
Foothills Trail Coalition  
Pierce County Parks  
Pierce County Public Works  
WSDOT  
State Street residential community

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Muckleshoot Tribe

Alderton Land Use Advisory Commission

## Section 3. High Level Business Case and Milestones

See 1/18/2013 Rev 1 for Project Lifecycle Gate 3

### 3.1 Project Costs

At this time the project team is seeking approval to move the project through Gate 4 and close the project out.

#### Pierce County 230kV Transmission Line


Project Phase Costs	TOTAL	2015 & PRIOR	2016	2017	2018	2019	2020
Initiation	233,754	233,754					
Planning	3,445,151	3,445,151					
Design	2,865,482	\$ 1,520,485	1,344,997				
Execution	35,394,175	\$ 15,686,691		8,452,684	1,254,800		
Close-out	-						
Base Contingency	8,889,690	-	-	2,947,180	131,127	\$ -	-
Reserve Contingency	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
<b>Total Capital</b>	<b>\$ 45,016,869</b>	<b>20,886,081</b>	<b>1,450,000</b>	<b>\$ 21,399,864</b>	<b>\$ 1,385,927</b>	<b>\$ -</b>	<b>\$ -</b>

**1) Base Contingency** – A portion of Project Contingency under the control of the project manager and allocated using standard project governance. Base Contingency is established by applying a standard percentage set by the EPMO .. – *This amount cannot exceed 5% of Project Estimate.*

**2) Reserve Contingency** – A portion of Project Contingency under central governance. Reserve Contingency is allocated to the Project Manager in response to project request. Reserve Contingency is the remaining Project Contingency after establishing Base Contingency.. – *Sponsor approval and justification required if no Project Contingency requested.*

**3.2 Budget Assumptions:** List any statements that were used to determine the budget numbers.

1. 230 KV Substation:
  - Greenfield project; Conditional Use Permit granted for earlier site development includes 230 kV Sub site.
  - 230 kV transformer will be charged to project when put in-service: Avg. cost estimated at \$2.5 M plus 22% OH = \$3 M.
  - Alderton 230 kV Station is an estimate based on 90% design.
2. White River – Alderton 230 kV transmission line – 8.5 miles
  - 8.5 miles New Easements – approx 2 miles on Pierce Co. Foothills trail.
  - Three river crossings (Stuck, Stuck & Puyallup). Crossing of SR 410
  - Removal and replacement of trees based on 230 kV Clearing Standard.
  - Steel Pole Design; Direct embed and drilled pier foundation for turning structures and Dead-ends.

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- Double circuit with WHR-ALD #4 115 kV line on Foothills Trail. Remove old 115 kV poles and wire south of Pioneer Ave.
- Transmission design work will be complete by the end of 2016. Estimates at this time have a level of accuracy of -5 to +15%. Mitigation costs and Easement Acquisition costs are volatile, and permit requirements are also a consideration.

**3.3 Benefits:** List quantitative and qualitative benefits to executing the project, including specific benefits for the customers and region.

Capacity: The two existing 230-115 kV transformers at White River Transmission Substation provide nearly all of the bulk power delivery into Pierce County. Without additional transmission capacity, the system has the potential to exceed operating limits in the event one transformer is forced out of service

Compliance: This project is driven by NERC Transmission Planning Standards at seasonal peak load periods. This area (Pierce / Thurston counties) experienced an all-time peak on December 9, 2009. The transmission system is modeled and tested at peak load levels to validate that all applicable NERC performance requirements are met. In addition, planning sensitivity studies show the bulk power 230-115 kV transformers at White River and certain 115 kV transmission lines could exceed or are at near overload limits for Category "B" (N-1) and Category "C" (N-2) contingencies.

Outage Scheduling: Even though peak load can occur for 100-200 hours throughout a year, other transmission constraints can occur for N-1-1 conditions where PSE load level is at 3000 MW or higher. This limits PSE's ability to schedule certain outages to perform maintenance on several parts of the transmission equipment, particularly those at White River. Some of these outages may require running the peaking generation units at Frederickson at a non-competitive rate.

Restrictions exist about 40% of the time where maintenance or emergency repair outages cannot be performed without risk. The consequence could be significant if equipment related to White River bulk power supply needs repair or replacement at load levels above 3000 MW. Even though this occurs very seldom, repairs that require a bus outage at White River is one such example.


Major Outage Support: A second bulk power delivery at Alderton not only adds flexibility for scheduled outages, it will also provide the county with a more secure 230 kV transmission line that is less likely to be forced out of service during storm conditions. Existing 115 kV tie lines between White River and Alderton are particularly vulnerable to storm-related outages due to their combined 40 miles of exposure. The January 2012 storm served as an example where all the 115 kV tie lines were lost and Alderton substation was "dead" for several days.

**3.4 Alternatives - See 1/18/2013 Gate 3 Rev 1 PIP for detail**

**3.5 Milestones and Deliverables**

Milestones and Deliverables )	Description	Schedule Baseline Date (Complete by)
<b>230 kV yard expansion</b>	Feasibility	12/31/10
	Develop Project Plan	12/31/10
	Detailed Design	2012-2014



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<b>(2016 in service)</b>	Order Material and Permitting	2015
	Civil Construction	2015
	Electrical Assembly	2017
	Commissioning	November 2017
	<b>Description</b>	<b>Schedule Baseline Date</b>
<b>Milestones and Deliverables: WHR-ALD 230 kV Transmission line</b>	Feasibility	2010
	Public Outreach	February 2011 – Project Completion 2016
	ROW Purchase	2013-2014
	Develop Detailed Project Plan	2012-2014
	Detailed Design	2014
	Order Material and Permitting	2015/2016
	Construction	2017
	Commissioning Complete	November 30, 2017
	Project Close-Out Complete	Q1 2018 (Due to restoration)

## Section 4. Engineering and Permitting Criteria at 95% Design

### 4.1 Transmission

**White River-Alderton 230 kV line: Target construction 2017; In-service date Q 4 2017.**

1. 8 miles of new 230 kV line construction between White River and Alderton, and acquisition of easement rights. Approximately 82 steel poles; Dead-ends and turning structures will require pile foundations. An advisory committee was engaged to consider route alternatives (see attached June 2011 Report to Community).
2. UG Conversion for approximately 6 spans of distribution on the frontage of 142<sup>nd</sup> Av, to accommodate placement of the 230 kV line on a straight path with good access for construction.
3. Significant permitting for river crossings, as well as robust community outreach to gain neutral or better acceptance of the project.
4. Significant mitigation for tree removal to 230 kV standards in river crossings and sections of the Foothills Trail; Replanting of street trees on 142<sup>nd</sup> St. E.
5. The south 2 miles of the corridor approaching Alderton 230 station are proposed to be within the Pierce County Foothills Trail, which is Franchise ROW. PSE proposes to double circuit the 230 kV line with the existing 115 kV line; in the interest of addressing aesthetic concerns and minimize footprint of pole structures, AND to limit veg management to one transmission corridor within the trail. PSE has obtained durable rights within this corridor.
6. Opportunity to relocate approximately .75 miles of the White River-Alderton #4, from its exposed location on Pioneer Way on to the double circuit line proposed within the Foothills Trail Corridor. This section has a high risk of outages due to it's proximity to a steep, unstable, heavily treed slope.
7. Neutral or better acceptance of the new transmission line by the community.

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#### 4.2 Transmission Line Permitting

**All permits are in hand with the exception of the Street Use permits.**

1. 230 kV Transmission: The vast majority of the route allows a 230 kV transmission line outright. There is however two areas, the slope below the White River yard and the area near Sumner's wastewater treatment plant where PSE will be on either residential or General Commercial zoned property. T-lines are allowed in both of those zones by Conditional Use Permit only by the City of Sumner.

Additionally, a Shoreline Substantial Development Permit will be required from Sumner for the crossing of the White River, and a Shoreline Substantial Development Permit from Pierce County for the crossing of the Puyallup River immediately south of Sumner.

Based on these requirements, SEPA review will be needed.

Pierce County will be the lead agency

2. Special considerations: PSE has performed a route alternative analysis.
3. Consultants: Geo Engineers, Sensitive Area studies, route analysis studies and permit support. Enviro Issues supports public involvement and Corporate Comm in developing materials.

#### 4.3 230 kV Station Project Overview

**The civil work including construction of the deadend towers is complete; remaining work is the electrical assembly**


2/7/12 Design Basis Checklist by Substation Engineering

Construct new 230kV breaker and a half switching yard with space for 4 complete rungs (8 line positions) – Within property owned by PSE, previously filled but otherwise Greenfield.

- 8 total line bays (2 of these future, 2 to be completed in under 5 years, 4 additional in ~5 years)
- Install first 2 line bays using only one breaker (extra breakers are not needed until the 3<sup>rd</sup> line is connected)
- Expect two additional 230kV lines in ~5 yrs (Loop-thru of BPA-White River 230 kV Line)
- Fencing around new 230 kV yard
- Security Installation includes shaker system and cameras
- Expansion of existing detention pond for drainage
- No landscaping required outside the station
- 230 kV Controls will utilize the “old” control house building (115 kV Controls and Communications gear are located in new MPAC and Comm building in 115 kV yard.
- 325MVA 230kV-115kV autotransformer with connection between 230 and 115kV switchyards (currently on site as a spare, will be commissioned with 230 kV Station)

Possible scope additions: **There are currently no scope additions**

- Foundation for spare 325MVA 230kV-115kV autotransformer
- Complete north and south bus for 2 rungs to the disconnect switches (to allow for future installation of 230kV lines with minimal outages)
- Expect two additional 230kV lines in 10 yrs

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**4.4 Station Permitting - Complete**

1. Pierce County. The 230 kV yard development included in earlier 1990's era SEPA and Conditional Use Permit
  
2. Alderton Substation requires Grade and Clear permit for 230 kV yard and building permit for perimeter fence. C&G permit has been issued, PSE recieved a one time, one year extension of the permit in late 2014, after that, civil work must begin prior to November 2015.

**4.5 Public Relations/ Corporate Communications Strategy - Mailers and direct contact with impacted stakeholders**

## **Section 5. Coordination with Other Projects**

- 5.1** This project must be coordinated with Central Pierce project.

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## **Attachments/Appendix**

**Appendix A – CMT & Budget Documents**

**Appendix B – Executive Summary with recommended Route Alternative Analysis  
dated March 11, 2010**

**Appendix C – Executive Summary dated April 6, 2012**

**Appendix D – Transmission Decision Document**

**Appendix E - Baseline Schedule**

**Appendix F - 10 Year Plan**

**Appendix G – Project Issues and Opportunities**

**Appendix H – Project Team**

**Appendix I – Project Record Register**


**Appendix J – Project Change Approval Record (CAR) Log**

**Appendix K – Project Change Request (PCR) History Log**

**Appendix L – Lessons Learned Document**

**Appendix M – Notification, WBS, Order Numbers**

**Appendix N – Risk Register and Plan**

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## **Appendix A – CMT & Budget Documents**


J:\Chris Brown\EMC presentation\Pierce 230 kV\1-18-13 PIP Pierce Co 230

## **Appendix E - Baseline Schedule**

T&D Project Folders\Electric\Pierce Co-Alderton 230kV\_111008107\106  
Schedule\Proj Sched - Held by Project Controlstrols\Monthly Updates


## **Appendix F - 10 Year Plan:**

[http://pseweb2/TESP/WebSite/documents/TESP\\_Files/PIERCECOUNTY/ALDERTON/230KV/PROJECT.pdf](http://pseweb2/TESP/WebSite/documents/TESP_Files/PIERCECOUNTY/ALDERTON/230KV/PROJECT.pdf)

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## Appendix G - Project Issues and Opportunities

#	ISSUE DESCRIPTION	RECOMMENDATION/CORRECTIVE ACTION	SEVERITY	OWNER	DUE DATE
1	City of Sumner development plans	Seek advice of the City in the route selection process	Med	MLM and MCP	Oct 2010
2	Pierce Count Comp Plan did not allow for power facilities over 55 kV in Parks and Rec Zoning (i.e. Foothills Trail)	On 4/1/12 the Comp Plan was amended to allow 115 kV and 230 kV Power lines in this zoning, due to efforts by PSE Municipal Land Planner Andy Markos.	High	MLP	Completed 4/1/12
3	Public Opposition	Avoid high density residential areas and areas with the potential for high environmental impact	Med	Project Team	Feb 2011
4	Complex commissioning process for 115 kV station improvements due to new 115 kV MPAC switch-over for all controls, and new Comm building for Com and Security	Early commissioning plan involving Project Engineer, Communications, Meter Relay Tech and Sub Ops Supv.	Med	Project Engineer	Dec 2011 (Completed)
5	Opportunity to place 2.5 miles of 230 kV line in Foothills Trails trail; Trail users and County Parks are sensitive to aesthetic impacts Pierce County sees an opportunity to fund trail improvements with easement compensation.	Pierce County has been very engaged in finding a solution for routing the 230 kV line on Foothills trail, seeking mutual benefits.  The project team recommends a double circuit line on the trail, see Executive Summary.	Med	Team	Hope to resolve by July 2012
6	Right of way acquisition will be significant for a new 230 kV Route that avoids Sumner CBD and SR 162, which may be widened.	Route Alternative Studies and analysis will provide justification for route selection and ROW expense.  Announcement of Preferred WEST route in Newsletter to Community, July 2011.  Project team will continue to work with property owners.	Med	Project Team	Advisory committee recommended west route, which avoids SR 162.

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*This section should identify which risks are likely to affect the project and document the characteristics of each risk. Characteristics of risks should include definition of the event, any mitigation plan, impact of the event, probability of occurrence of the event, and trigger date if known.*

#	RISK	MITIGATION / CONTINGENCY PLAN	IMPACT	PROB.	COST IMPACT
1	Property owners decline to grant easement along preferred transmission alignment; potential for condemnation	Work early with owners, City, County and other stakeholders to gain support for project plan and route. Last resort is condemnation.	Cost	High	Med
2	Rights on Pierce County Foothills Trail need to be durable, on easement. Trail is currently Franchise Right of Way. County council and executive will need to approve an easement to PSE for the 230 line.	If there is substantial variation from standard PSE easement rights, the "quality" of rights granted to PSE by Pierce County will be presented to managers and directors to determine if the rights are satisfactory	High	Med	Med
2		Another alternative is to locate the line parallel to the Foothills Trail, which would have similar aesthetic impacts with NO compensation to Pierce County.	High	Low	High
3	Challenge to Route on 142nd St, Commercial property frontage with street trees and construction/land closure issues, as well as	Work with property owners to minimize impacts to any features on frontage (parking and drainage). Last resort is condemnation.	High	Med	High
4	Crossing/ Tree Clearing for crossings of Puyallup River and Stuck River confluence, Puyallup River Tribe	Work early with tribes and communicate PSE efforts to develop route that (1) avoids impacts (2) minimizes impacts (3) mitigates for impacts	High	Mod	Mod
5	Challenge by Meeker Southern RR to joint use of Foothills Trail corridor; they operate by easement within the Pierce Co owned trail property	PSE design will Stay out of Meeker Southern easement. PSE will work with RR and perform EMF studies if necessary and design to eliminate any potential influence of line to rail tracks and equipment.	Mod	Low	Mod
6	Radio Frequency Interference from KIZM AM radio station Near Valley Road and 24 <sup>th</sup> St east.	PSE will conduct "before and after" studies to determine zone of influence and pole design that will avoid influence of PSE on radio transmission and vice versa, radio transmission on PSE lines. Reroute of lines to area further from radio station is still an option.	Mod	High	Mod
7	Permit delays due to River Crossings, COE wetland permits	Accelerate sensitive area reports; meet early with agencies; pay for agency PM to track permit progress	Cost and Schedule	Med	Med
<b>Probability of Risk Occurring</b>		Low 0-25%	Med 25-50%	High 50-100%	


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## Appendix H Project Team

Alderton Sub and Transmission - Pierce County 230 kV Project Team

Dave Jenness	Project Manager
Kebede Jimma	Transmission System Planner
Sandy Leek	Municipal Liaison Manager
Julie Nelson	Assoc Municipal Land Planner
Jeff Payne	Municipal Liaison Manager (Franchise)
Matt Perry	Local Gvt and Comm Relations Manager
Alison Smith	Sub Electrical Engineer
Rob Stewart	Sub Civil Engineer
Bryan Brennan	System Protection
Yung Fu	Substation Controls
Vu Luu	Transmission Engineer
Steve Botts	Real Estate
Vince Xaudro	Project Controls
John (Red) Bonnette	Sub Supv Operations
Ron Tornquist	PSE SCADA
Dennis Libadia	Fiber
Phil Moran	Security
Lawrence Timpe	EMS
Dennis Taylor	Supv. IT infrastructure
Joel Snow	Telecom / EMS
Joel Snow	IT Project Manager




	<b>Puget Sound Energy</b>	Rev 1
	<b>PIP - Pierce County</b> <b>230 kV Transmission Line &amp; 230 kV Sub</b>	Pierce Co. 230 Project Closeout Phase Date July XX, 2018

## Appendix I Project Record Register

See the link below to the Project Record Register.

**H:\~T&D Project Folders\Electric\Pierce Co-Alderton 230kV\_111008107\102 PIP - Scope\Proj Record Register\Pierce Co - Project Record Register.xls**

 <b>PUGET SOUND ENERGY</b>	<b>Puget Sound Energy</b>	Rev 1
	<b>PIP - Pierce County</b> <b>230 kV Transmission Line &amp; 230 kV Sub</b>	Pierce Co. 230 Project Closeout Phase Date July XX, 2018

## Appendix J - Project Change Approval Record (CAR) Log


Alderton Substation CAR Log (2011 & 2012):

[X:\#Change Orders-Project Conditions\Change Order Documents\Projects\Alderton Substation\\_101061549\Alderton Substation CAR LOG.xls](X:\#Change Orders-Project Conditions\Change Order Documents\Projects\Alderton Substation_101061549\Alderton Substation CAR LOG.xls)

## Appendix K - Project Change Request (PCR) History Log


PCR Log Link:

<https:\\sestdpt1.puget.com\sopmpps\PM Budget Forecast\PCRs\PcrLog.xls>

	<b>Puget Sound Energy</b>	Rev 1
	<b>PIP - Pierce County</b> <b>230 kV Transmission Line &amp; 230 kV Sub</b>	Pierce Co. 230 Project Closeout Phase Date July XX, 2018

## Appendix L - Lessons Learned Document

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230kV\_111008107\402 Project Closeout\Lessons Learned

	<b>Puget Sound Energy</b>	Rev 1
	<b>PIP - Pierce County</b> <b>230 kV Transmission Line &amp; 230 kV Sub</b>	Pierce Co. 230 Project Closeout Phase Date July XX, 2018

## Appendix M - Notification, WBS, Order Numbers


Note – the WBS elements have been changed due to FTIP and are not reflected here



**Puget Sound Energy**  
**PIP - Pierce County**  
**230 kV Transmission Line & 230 kV Sub**

Rev 1  
 Pierce Co. 230 Project  
 Closeout Phase  
 Date July XX, 2018

Pierce County 230 kV Project - WBS and WORK ORDERS				
P.10003.22.0	Pierce Co 230kV-Alderton TLine (DNU)			
<b>P.10003.22.0 CAP_Pierce Co - WHR-ALD 230 kV Transmission Line</b>				
	Superior Order WHR-ALD 230 kv Transm	111008107	Moved notification 11027005 from 571008775 here. Changed the WC and partner to Potelco. PO will be here and any capital install labor.	
	Pre-Con Order WRH ALD 230 kv Transm	111008108		
	Sub Order: Fiber on Transmission Line	111016627		
	REAL ESTATE / Easments	153002348		
move to new project WBS	<del>UPRR 108071383-RR Removal Work Tacoma-56</del>	<del>408071383</del>		
<b>2012 new Potelco</b>				
	*Removal ALD-Fred#2 Move Shoofly Bay Q to Bay R	108075611	Retirement for Potelco, labor for Potelco here	Closed 6/15/12 Jill Bateman
2012 new	Expense ALD- FRED #2 Move Shoofly Bay Q to Bay R	571008775	Cancelled because stand alone order.	
2012 new	Expense ALD- FRED #2 Move Shoofly Bay Q to Bay R	571009077	Replaces order #571008775 and is a sub order to 111008107. Labor for Potelco here	Closed 6/15/12 Jill Bateman
	Closed Superior Order Fred #2 Shoofly Bay Q - Capital	111018309	Closed in svcc	
	Closed Removal/Retire:	108069625	Closed in svcc	
	Closed Expense/OMRC:	593119283	Closed in svcc	
<b>P.10003.22.0 OMRC_Pierce Co 230kV-Alderton TLine</b>				
<b>P.10003.22.0 CAP_Pierce Co 230kV Substations</b>				
	Superior Order Alderton 230 kv Transmission Station	111016385		
	Precon Order Alderton 230 kv Transmission Station	111016386		
	Removal	***		
We will need (3) 141 WO's.				
	1 - for Communications/SCADA	141001240	1904E045 ALD 230 SUB Comm/SCADA,	
	1 - for IT Hardware Orders	141001241	1904E045 ALD 230 SUB IT Hardware	
	1 - for Fiber ***IN THE STATION. (Fiber on the TLine)	141001242	1904E045 ALD 230 SUB Fiber	
P.10003.22.0	OMRC_Pierce Co 230kV Substations			
<del>UPRR 108071383</del>				
P.10003.22.0	(DNU) Pierce Co 230kV Substations			
<b>P.10003.22.0 CAP_Pierce Co 230kV Substations</b>				
	Superior Order Alderton 115 Transmission Station	101061549	Jill Bateman PM03'd the order and provided Potelco with the PO 450047973 Line 350 so we can bill on it and allocate to sub order #111019953	Closed 6/15/12 Jill Bateman
	Precon Order Alderton 115 kv Transmission Station	101061550		Closed 6/15/12 Jill Bateman
	Removal	108071870		
	Communications - Control House and Comm building (not for fiber on 230 kv poles - see work above- 111016627)	101062483		Closed 6/15/12 Jill Bateman
	FIBER ISOLATION (Stevenson)	101071607		Closed 6/15/12 Jill Bateman
	Internal Work Order Network Comm 6/21/11	130006383		Closed 6/15/12 Jill Bateman
	ASAT Server- 11k			
	Cisco Router- 4k			
	Fiber T1 Card- 2,500			
	King county Inventory Work Order (230 KV Trf)	19900004		
<b>2012 New Potelco</b>				
	String OH Drops Bay N to 230 kv xfmr	111019953	Changed to Potelco WC and partner. Notif #11027070. Potelco will allocate labor from our PO to this order. Alex Basinger moved materials from 101061549 here.	Closed 6/15/12 Jill Bateman
			Get plant accounting to take out of service and move charges to superior; 1000' of wire is not a unit of property	Closed 6/15/12 Jill Bateman

	<b>Puget Sound Energy</b>	Rev 1
	<b>PIP - Pierce County</b> <b>230 kV Transmission Line &amp; 230 kV Sub</b>	Pierce Co. 230 Project Closeout Phase Date July XX, 2018

**Appendix N – Risk Register and Plan**

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PIP - Scope\Risk Mngmnt Plan**